# Harmony
## Advanced

# Toon Boom
# Harmony Advanced V15.0

## User Guide

**Toon Boom**
*Bring Your Stories To Life*

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# Table of Contents

# User Guide

The Harmony core functionality are explained in this User guide. All the steps required to create and complete a project are covered in the following chapters with concept descriptions and detailed step-by-step procedures focused on the task at hand.

Detailed parameter descriptions for all buttons, commands, and functions are covered in the Reference guide and Preference guide. Some of them are explained here where necessary to the understanding of a given concept or procedure.

# Chapter 1: Project Creation

Once Harmony Advanced is installed, you are ready to start the application and animate! In this chapter, you will learn about starting the application, as well as creating, opening and saving scenes

# About Harmony Stand Alone

Harmony Stand Alone allows you to create, open, save and manage scenes on your computer's file system. Unlike Harmony Server, Harmony Stand Alone does not have a database system. Each scene you create is an independent project, and you must organize your scenes yourself.

If you have a Harmony Server license, you can still choose to run Harmony in Stand Alone mode if you like. However, if you have a Harmony Stand Alone license, you can only run Harmony in Stand Alone mode.

# Starting Harmony in Stand Alone Mode

You can run Harmony Advanced from your operating system's desktop.

> ⚠️ **WARNING**
>
> On macOS, Harmony and its other applications will not run on the first time unless you right-click on the application, then select **Open**. You will be prompted to confirm a security exception, which will require administrative privileges.

### How to start Harmony Stand Alone

1. Do one of the following:

    - **Windows**: Start > Programs > Harmony 15.0 Advanced > Harmony Advanced

    - **macOS**: Applications > Toon Boom Harmony 15.0 Advanced > Harmony Advanced

    - **GNU/Linux**: Applications > Toon Boom Harmony 15.0 Advanced > Harmony Advanced

    The Harmony Advanced application launches and displays a splash screen. After the splash screen:

    - If you have a Harmony Stand Alone license, the Welcome Screen will appear

    - If you have a Harmony Server license, the Log-In Screen will appear. You can proceed from the Log-In Screen to the Welcome Screen by selecting **Work Offline** and clicking on the **OK** button.

    Once you are at the Welcome Screen, see *About the Welcome Screen* on page 36.

# About the Welcome Screen

T-HFND-001-003

When you start Toon Boom Harmony, the Welcome screen appears. If a scene is already open, you can display the Welcome screen by selecting **Help > Show Welcome Screen**.

> **NOTE**
>
> If you are using Harmony Server in Database mode, the Welcome screen will not open. Instead, the database selector will open and allow you to open a scene from the database.
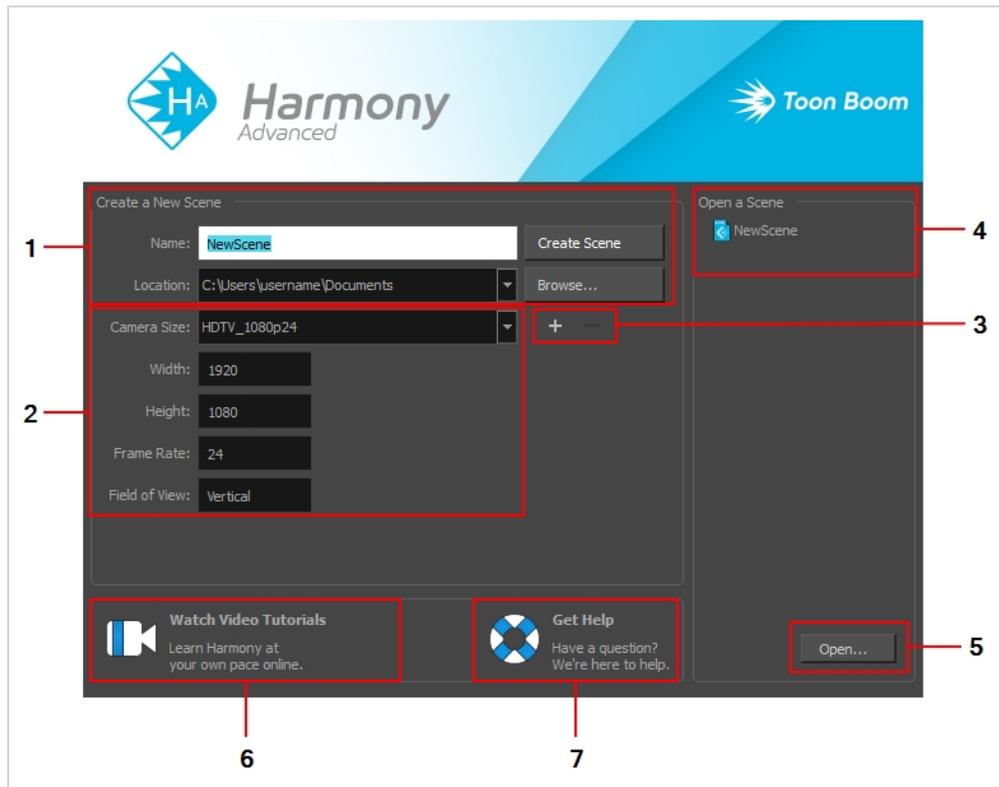


The Welcome screen allows you to:

1. Create scenes

2. Choose your scene resolution

3. Manage your scene resolution presets

4. Quickly open recently opened scenes

5. Browse for and open a scene from your documents

6. Watch Harmony video tutorials

7. Open the online support page

# About Harmony Stand Alone Scenes

When working in production, it is important to keep your work organized. It is important to create a naming convention chart and establish a file storage structure before starting the project. It is not only extremely important that everyone follows the criteria laid out in the naming convention chart and the file storage structure, but also that they understand the organization and where to find the files.

A well thought-out and logical naming convention will help keep your production structured and allow it to run smoothly by preventing the loss of files due to chaotic organization.

In this section, you will learn how to create, open, organize, and name the different components in your animation project.

# Creating Scenes in Harmony Stand Alone

T-HFND-001-005

All scenes created via Harmony Stand Alone are independent and local to the computer. You can create or open a scene using the Welcome screen or the File menu.

If you are using Harmony Server, you must use the Control Center application to create your scenes before you can open them in Harmony. Harmony Server scenes cannot be created directly in Harmony.

## How to create a scene from the Welcome screen

1. In the **Name** field, type the scene's name.
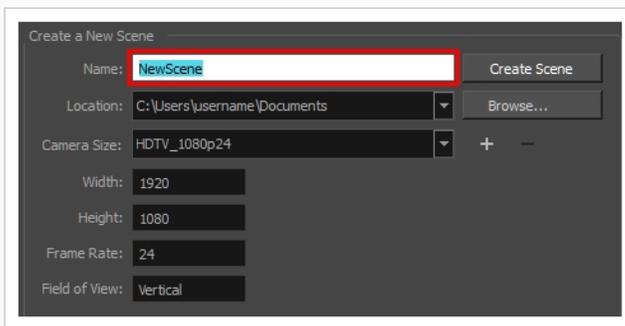


> **NOTE**
>
> The scene name should **not** exceed 23 characters and cannot contain special characters, such as *&^%!.

2. To decide in which directory the scene will be created, click the **Browse** button next to the Location field.
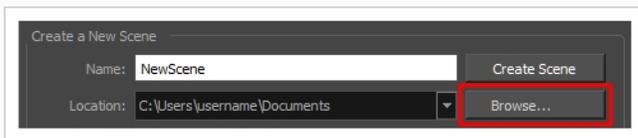


3. From the Camera Size menu, select a scene resolution.
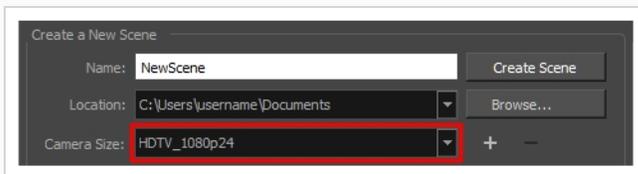


4. Click on **Create Scene**.

   A new scene is created.

**How to create a new scene from the File menu**

1. Do one of the following:

   - From the top menu, select **File > New.**

   - In the File toolbar, click the New ☐ button.

   - Press Ctrl + N (Windows/Linux) or ⌘ + N (macOS).

     The New Scene dialog box opens.
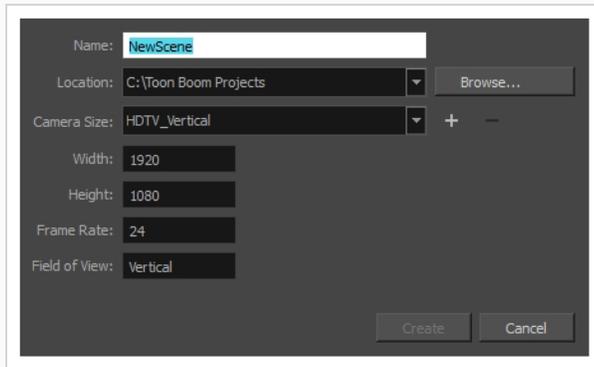
     

2. In the Project Name field, type the scene's name.
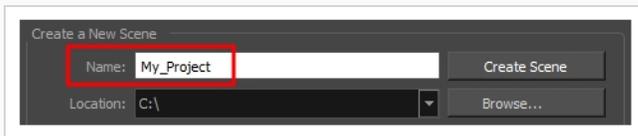
   

3. Select a scene directory by clicking the Browse button.
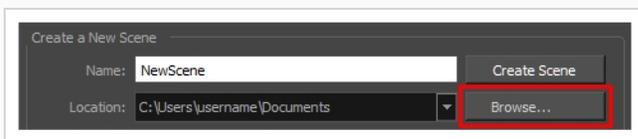
   

   ✎ **NOTE**

   The scene name **cannot** exceed 23 characters and cannot contain special characters, such as *&^%!.

4. In the Resolution window, select the scene's resolution and click **Create**.

   A new scene is created.

# Creating Custom Resolutions in Harmony Stand Alone

T-HFND-001-006

You can create your own custom resolution presets for your projects.

## How to create a custom resolution

1. Create a new scene from the Welcome screen or from the File menu in Harmony.

2. Set the scene resolution by doing one of the following:

   - Select a scene resolution from the Camera sizes drop-down menu.

   - Set a custom resolution by changing the values in the Width and Height fields. This preset will not be saved.

     > **NOTE**
     >
     > The different editions of Harmony support the following maximum render resolutions:
     >
     > - Harmony Essentials: 2K (2048x1556)
     > - Harmony Advanced: 4K (4096x3112)
     > - Harmony Premium: Unlimited

   - Add a new resolution to the list by clicking the Add ➕ button. You can delete a custom resolution from the Resolution list by selecting it, and clicking the Delete ➖ button.

3. In the New Resolution dialog box, fill in the following fields and click **Create**.
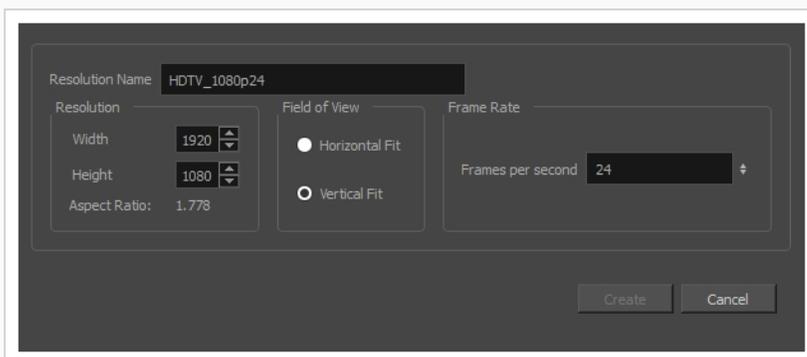


   - **Resolution Name**: Name your new resolution.

   - **Resolution**: Set the width and height of the scene, in pixels.

- **Field of View**: Select how the angle of the field of view should be determined.

  - **Horizontal Fit:** The angle of the field of view is adjusted to the width of the scene.

  - **Vertical Fit:** The angle of the field of view is adjusted to the height of the scene.

  - **Custom Fov:** Set the angle of the field of view to a custom value.

- **Frame Rate**: Type in the amount of animation frames to play each second.

# Opening Scenes in Harmony Stand Alone

T-HFND-001-007

You can open scenes from the Welcome Screen and the File menu. You can also open your recent scenes.

### How to open a scene from the Welcome screen

1. In the Recent Scenes section, click **Open**.

   The Open Scene browser opens.

2. Browse and select an `.xstage` file.

3. Click **Open**.

### How to open a scene from the File menu

1. Do one of the following:

   - From the top menu, select **File > Open**.

   - In the File toolbar, click the Browse 📁 button.

   - Press Ctrl + O (Windows/Linux) or ⌘ + O (macOS).

   The Open Scene browser opens.

2. Browse and select the desired `.xstage`file.

3. Click **Open**.

### How to open a recent scene from the Welcome screen

1. In the Open a Scene section, select a scene from the list.
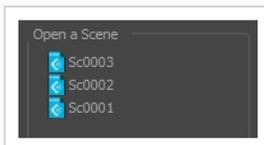
   

### How to open a recent scene from the File menu

1. From the top menu, select **File > Open Recent**.

2. Select a scene from the displayed list.

# Setting the Scene Length in Harmony Stand Alone

Once you have opened your scene, you can set its length.

### How to set the scene length

1. Select **Scene > Scene Length.**

   The Set Scene Length dialog box opens.
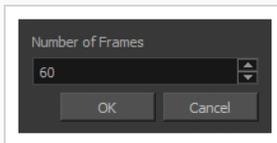
   

2. In the Number of Frames field, enter the number of frames needed.

# About Scene Settings in Harmony Stand Alone

T-HFND-001-010

When you created your scene, you set up the resolution and the alignment. However, if you want to change these settings later, you can do it using the Scene Settings dialog box. The different Scene Settings options are separated into four tabs.

> **NOTE**
>
> Refer to the Scene Setting dialog box in the Reference guide to learn more about the individual parameters of the Scene Settings dialog box.
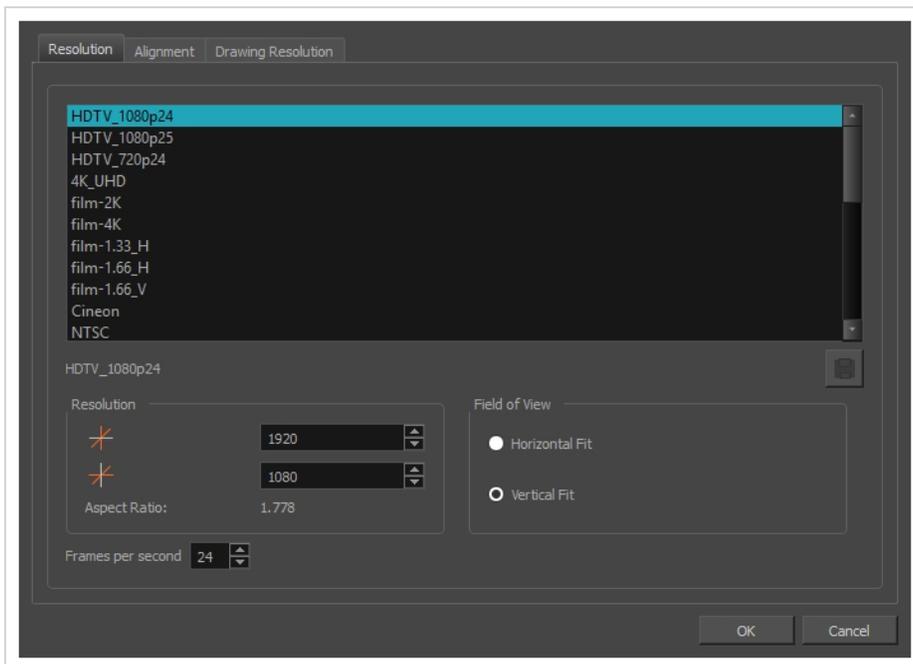


## How to access the Scene Settings dialog box

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

   The Scene Settings dialog box opens.

# About Saving in Harmony Stand Alone

It is important to regularly save your scene. As you make changes to a scene, an asterisk (*) appears in the title bar beside the scene name to indicate that the scene contains unsaved changes.

To save the current state of a scene as another scene, you can use the Save As command. The Save As window prompts you to give a new name and choose a different location to this scene before saving it. This will create a complete scene directory for the new scene. The Save As command is not available in Harmony Server.

It is quite frequent, when working on a scene, to try out different timings, effects, camera motions or parameters to see which one will work best. Harmony allows you to save several versions of the same scene.

You can also automatically save your work by enabling Auto-Save.

> **IMPORTANT**
>
> When a scene has several versions, the drawings and palettes are the same between all the different scene versions. You can modify the timing, effects, parameters and camera motions in a specific scene version, but if you make change to a drawing or a palette, the change will affect all scene versions.

# Saving Scenes in Harmony Stand Alone

You can save your scene, save a new copy or save a new version. Don't forget that saving a new version uses the same drawings in all versions.

**How to save a scene**

1. Do one of the following

   - In the top menu, select **File > Save**.

   - Press Ctrl + S (Windows/Linux) or ⌘ + S (macOS).

# Saving Scenes as Copies in Harmony Stand Alone

Saving a copy of your scene allows you to choose a new file name and location for your scene.

**How to save a scene as a copy**

1. Select **File > Save As**.

2. In the Save As dialog box, browse to the location of the new archive and give the copy of the scene a new name. The name cannot exceed 23 characters.

3. Click **Save**.

# Saving Scenes as New Versions in Harmony Stand Alone

Saving a new version of your scene allows you to save your scene at it's current location, under a new file name.

**How to save a new version of a scene**

1. Select **File > Save As New Version**.

   The Save Version dialog box opens.

2. In the Save Version dialog box, type the new version name.

3. Click **OK**.

# Enabling Auto-Save in Harmony Stand Alone

T-ANIMPA-001-001

You can allow the software to automatically save your scene, as well as decide on the interval of time between auto-saves.

**How to auto-save a scene**

1. Do one of the following:

    - Windows/Linux: Select **Edit > Preferences**.

    - macOS: Select **Harmony Advanced > Preferences**.

    - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

2. Select the **General** tab.

3. In the **Save** section, set the Auto-Save parameters:

    - **Interval (minutes):** The frequency at which auto-save happens.

    - **Inactivity Interval (seconds):** When Auto-save is about to take place, it verifies if you are drawing or doing anything in the application. Auto-save will not happen until you have stopped using the application for this amount of seconds.

    - **Ask Before Saving:** Before performing an auto-save, you are prompted with a message to confirm if you want to save or not.

    - **Enabled:** This enables the Auto-save feature. If you do not want the system to automatically save your work, uncheck this option. Auto-save is off by default.

# About the File Structure in Harmony Stand Alone

A Harmony project is composed of several files. The drawings and colour palettes are not embedded in the project. They are separate linked files. Therefore, if you want to archive or share a project, you require all the files contained in the folder structure.

Here is an example of the file structure contained in a scene. As you work and use more features, different folders may appear in your structure.



Harmony Standalone File Structure

The Harmony scene folder contains the following folders:

| Folder | Contents |
| --- | --- |
| annotation | Contains the images and thumbnails created while drawing in an Annotation column in the Xsheet view. |
| audio | Contains all imported audio files. |
| elements | Contains all the drawing files. The drawings are organized by folders named like the layers they are associated with. |
| environments | If the scene was exported from a Harmony Server database, this directory will contain the palettes and templates that were stored in the scene's environment. Otherwise, it is empty. |
| frames | Contains the final frames after a render if you are using the default settings of the Write node in the Node view. |

| | |
|---|---|
| jobs | If the scene was exported from a Harmony Server database, this directory will contain the palettes and templates that were stored in the scene's job. Otherwise, it is empty. |
| palette-library | Contains scene palettes and scene palette list files. |
| timings | This folder is used when a user links external images to a scene and wants to store a backup copy in case the link breaks. |

# About Harmony Server



Harmony can be used in database mode (online) via the server connection (Harmony Server) or as a standalone application (offline).

Several animators can work simultaneously on the same project while the asset library provides users with easy access to up-to-date media assets. Harmony is scalable; more than 100 staging clients can share animation just as easily as a few can.

Harmony Server is the link between the client machines and the server. It lets you work on the different projects stored in the central Harmony database.

At the heart of the Harmony solution is the server, which centralizes all the production assets in a repository. The server is compatible with Windows, GNU/Linux or macOS. To learn more, refer to the Control Center Guide.

If you have a Harmony Server license, when you start Harmony, you can opt to either work offline in the application as a standalone software, or connect to the database to work on projects via the database.

When working with Harmony Server, the scenes and their data are stored directly on the server. No data is saved or stored on the client machine. The client machines access the database and load the scenes and drawings directly from the server. Each time the user saves his scene, the data is updated directly on the server. There are no upload or download operations (check-in, check-out) done between the server and the clients.

> **NOTE**
>
> If you have a standalone license, you will not have access to the database. You will automatically start the application in standalone mode.

# About the Database Structure in Harmony Server

Harmony Server has a client-server configuration linked through a network. Although the user is working on a client machine, all of the data is saved on the server.

You can compare the Harmony Server structure to a filing cabinet. Every element is structured and follows a strictly organized hierarchy.

The following production structure hierarchy is used:

- **Environment**: Production, project, feature film, series—see <span>Environment Structure</span> on page 53
- **Job:** Episode and sequence from each environment
- **Scene:** Scene from each job
- **Element:** Layers and columns from each scene
- **Drawing:** Drawings from each element
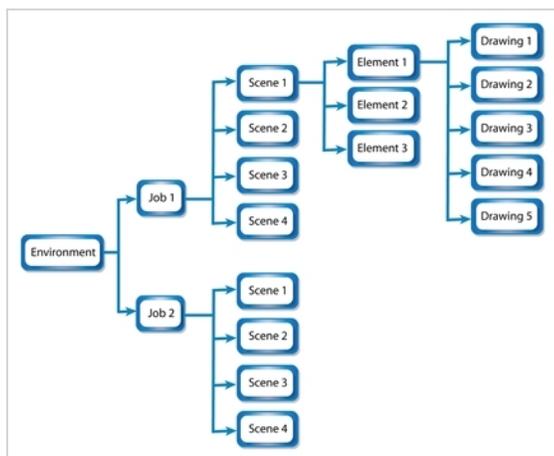


If you imagine the environment as a filing cabinet containing all the folders and information, then the following structure is used:

- The job is a drawer in the filing cabinet containing all the folders related to the drawer's topic.
- The scenes are the folders contained in that drawer
- The elements are the papers contained in the folder
- The drawings are the information contained on the paper

A Harmony Server scene can only be saved inside the structure. This maintains structural organization so nothing is lost. By adhering to this structure, every user working in the database always knows where to find the scenes to work on.

# Environment Structure

Before you create or save any elements in your production, you should decide upon a project name. This should reflect the content or title. Use the name to create the project's environment, where you will store all of your

production elements.

For example, the environment could be called **adventure_movie**. An environment can be used for movies, series, commercials, student work database, etc.

For a series, you can create an environment with the same name as the series, such as **smith_family**. Then you can create a job per episode: **smep_001**, **smep_002**, and so on. Here is what the letters and numbers represent:

- **sm:** The first two letters of the name smith

- **ep:** Episode

- **001:** The number of the episode

For commercials, which are rather short, you can create an environment, such as **commercials**. Then you can create one job per commercial: toothpaste, soap, car, and so on. As commercials are short and do not require splitting into episodes or sequences, you can group them all in the same environment.

For a database of student's work, you can create an environment and name it with the class or group name, such as **gr402a**. Then you can create one job per student: **smith_john**, **robertson_jane**. And then store the different student exercises in separate scenes under their job name.

# About the Database File Structure in Harmony Server

ForHarmony Server, the scene files as well as user and configuration files are contained within the database structure. If you want to share or archive a project, you will need to use Control Center to export your data from the database. If you receive a package from another user or studio, you will also need to use Control Center to import it in your database. Refer to the Control Center User Guide to learn how.

All Harmony Server directories are located at the root of your file system by default. On Windows, this is at the root of the `C:\` drive. On macOS and GNU/Linux, this is simply referred to as the root directory, or `/`.

| | |
|---|---|
| /usa_db | The usa_db directory contains the file structure of the database server. This is where all the information about the database structure is stored, including the hierarchy of environment, jobs and scenes, their various settings, user profiles and the location of the scene data on the network. |
| /usadata | The usadata directory is where all the scene data is actually stored. It is stored in a different directory than the database structure to allow using different machines to store the database and to store the scene data. There may be several usadata folders, each followed by a number. This occurs when the server is configured to store scene data on more than one data server, to expand its storage space. |

Although the hierarchy of a database starts with environments, inside which are jobs and inside which are scenes, the environments and jobs in a Harmony Server database are stored in separate folders in /usa_db. Hence, while browsing /usa_db, you cannot navigate from an environment to one of its jobs. You must go directly to the jobs directory to find its content.

Inside a job directory, you will find one folder for each scene contained in the job. This is actually a shortcut that points to the actual scene data folder of the scene, which is located to one of the /usadata folder for the database.

# Starting Harmony in Server Mode

You can run Harmony Advanced from your operating system's desktop.

> ⚠️ **WARNING**
>
> On macOS, Harmony and its other applications will not run on the first time unless you right-click on the application, then select **Open**. You will be prompted to confirm a security exception, which will require administrative privileges.

### How to start Harmony

1. Do one of the following:

   - **Windows**: Start > Programs > Harmony 15.0 Advanced > Harmony Advanced

   - **macOS**: Applications > Toon Boom Harmony 15.0 Advanced Network > Harmony Advanced

   - **GNU/Linux**: Applications > Toon Boom Harmony 15.0 Advanced > Harmony Advanced

   The Harmony Advanced application launches and displays a splash screen. After the splash screen, the log-in dialog box appears—see *Connecting to the Database in Harmony Server* on page 57.

# Connecting to the Database in Harmony Server

Before you can work in Harmony via Harmony Server, you must be connected to the Harmony database.

## How to connect to the Harmony database

1. Start Harmony —see [Starting Harmony in Server Mode](#).

2. In the log-in dialog, select the **Connect to Database** option.

   

3. In the **User Name** field, type in your Harmony username.

   > 📄 **NOTE**
   >
   > This username should be provided to you by your project lead or system administrator.

4. Click on **OK**.

   The Database Selector dialog box opens, displaying the environments available in Harmony database.
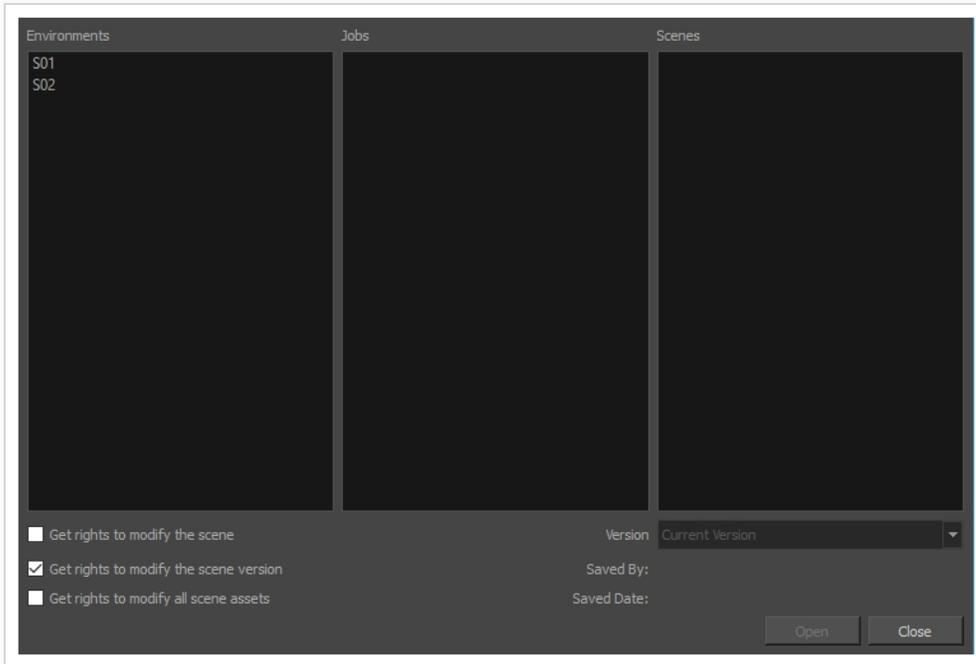
You can now navigate to a scene and open it—see Opening a Scene in Harmony Server.

# About Scenes in Harmony Server

In Harmony Server, you must use Control Center to create scenes. Then, you can open your scenes in Harmony and configure them, set them up, create several versions and manage those versions.

# About Scene Creation in Harmony Server

When working in Harmony Server, you can only open and edit scenes that were already created. To create scenes, you must use the Control Center module.

For documentation on how to use Control Center to create scenes, refer to the Control Center User Guide.

# Opening a Scene in Harmony Server

Once you are connected to the database in Harmony, you can open a scene in the database.

## How to open a scene in Harmony Server

1.  Connect to the database—see *Connecting to the Database in Harmony Server* on page 57.

    The Database Selector appears when you log-in.
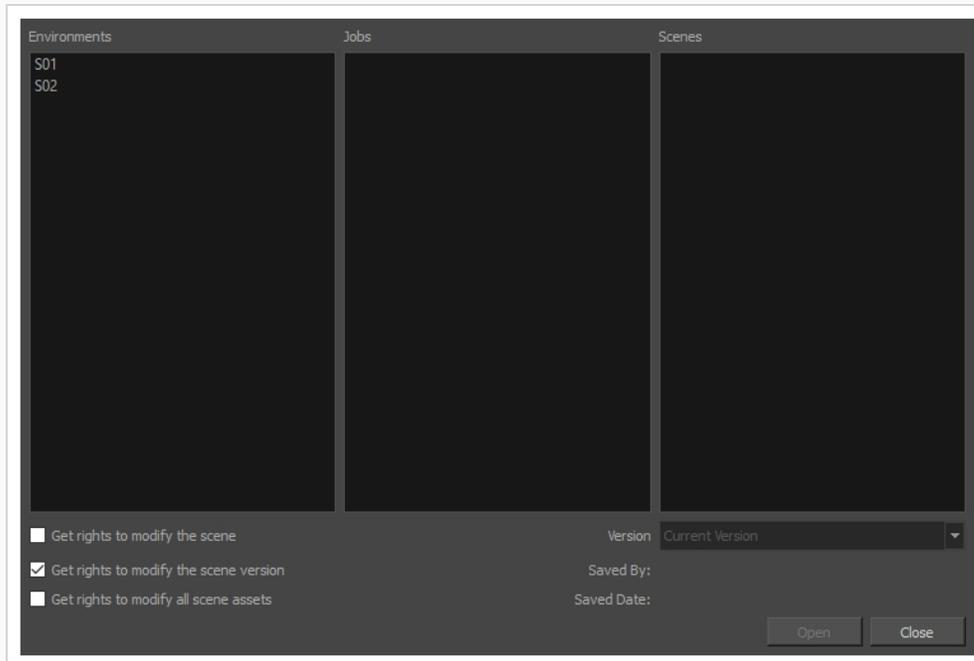
    

2.  In the **Environments** column, select the scene's environment (project, movie, season).
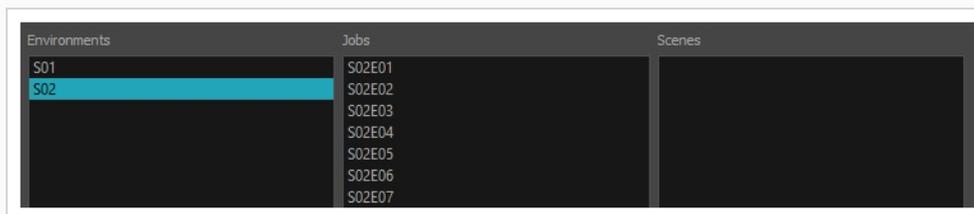
    

3.  In the **Jobs** column, select the scene's job (episode, sequence).

4.  In the **Scenes** column, select the scene.

5.  Get the permissions needed for this session by selecting one or several of the following options:
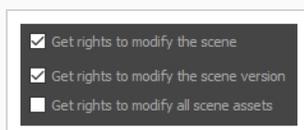
- **Get rights to modify the scene:** Allows you to modify the selected version of the scene as well as to manage and overwrite other versions. Other users will not be able to open a different version of the scene until you close the scene..

- **Get rights to modify the scene version**: Allows you to modify the currently selected scene version only. Unless the **Get rights to modify the scene** option is also checked, you will not be able to change other versions of the scene. This allows other users to modify different versions of the scene while you are working on the selected version.

- **Get rights to modify the scene assets**: Automatically gets the rights to modify all of the scene's assets, locking other users from making changes to them until you close the scene. This means that you will have the rights to modify all the scene's versions, drawings, palettes, its palette list, but not its library folder. If this option is unchecked, drawings and palettes will be locked unless you unlock them manually. This can allow another user to work on the scene's drawings and palettes in Harmony Paint while you are working on the scene's timing or staging in Harmony.

6. Choose the version you want to open from the Version menu.
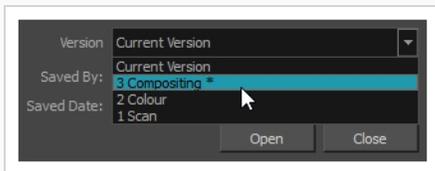


> **NOTE**
>
> The Saved By and Saved Date fields display the user who last saved the selected scene and the date of the last save.
>
> 
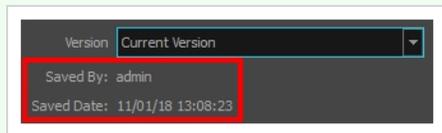
7. Click on **Open**.

# About Scene Settings in Harmony Server

When you create a scene in Harmony Server, its settings such as the scene resolution and framerate are set to default values. You can change your scene's resolution, framerate, alignment and other settings using the Scene Settings dialog.

> **NOTE**
>
> Refer to the Scene Setting dialog box in the Reference guide to learn more about the individual parameters of the Scene Settings dialog box.
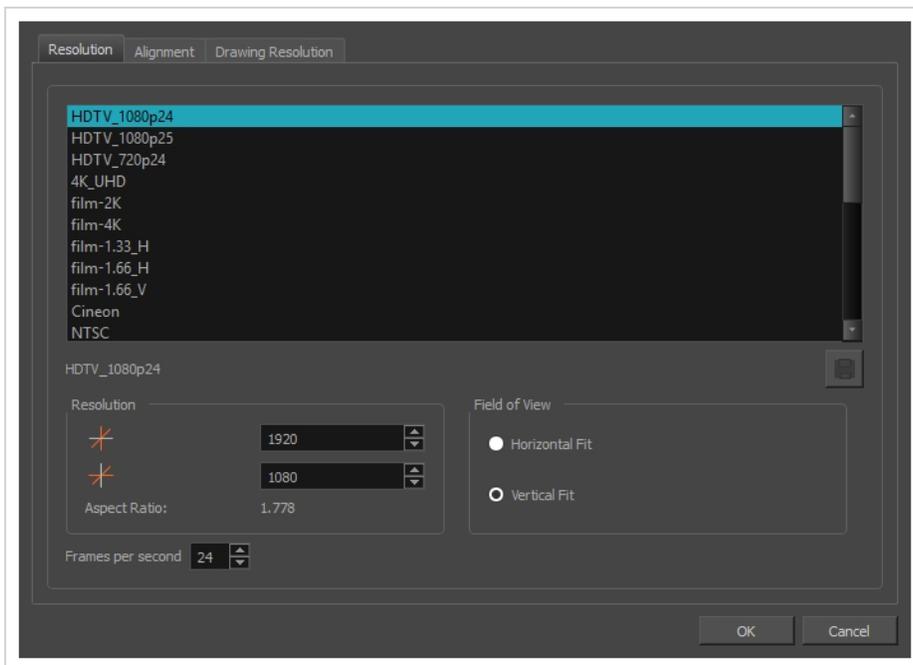


### How to access the Scene Settings dialog box

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

   The Scene Settings dialog box opens.

# Setting the Scene Length in Harmony Server

### How to set the scene length

1. Select **Scene > Scene Length.**

   The Set Scene Length dialog box opens.
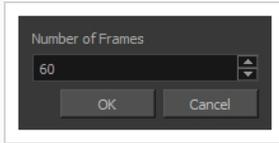
   

2. In the Number of Frames field, enter the number of frames needed.

# About Saving and Scene Versions in Harmony Server

When you use Harmony Server and work in a scene on the database, there are many choices and options available when you save your work. Specifically, the Advanced Save dialog lets you do the following:

- Save the scene as the current version.

- Save different versions representing different stages of the production of your scene.

- Save different versions representing different scene setups.

- Choose specific assets that you want to save, such as drawings or palettes.

When you open the scene from the database and select the version you want to edit, you can save the changes you made in the current version or create a new version. The simplest way to save your work is to update the current version.

You can delete any unnecessary versions using the Versions window.

When working with multiple versions, you may want to merge some of the changes from one version into another. You may have created a version with some suggestions that you submitted to the director while continuing to work on the official version. If the director has approved some of the changes, you can go ahead and import them into the official version.

You might want to save some specific aspects of your scene or save a new version. The Advance Save feature allows you to do this. Once you have chosen the components to save, you will conclude the procedure by following the instructions in the section. All the specific components that are selected throughout the different tabs of the Advanced Save dialog box will be saved.

You can also automatically save your work by enabling Auto-Save.

> **IMPORTANT**
>
> When a scene has several versions, the drawings and palettes are the same between all the different scene versions. You can modify the timing, effects, parameters and camera motions in a specific scene version, but if you make change to a drawing or a palette, the change will affect all scene versions.

# Saving a Scene in Harmony Server

The first time you save a scene in Harmony Server, you will be prompted to create a first scene version. Once the scene has at least one scene version, you can instantly save to that version every time you make changes to your scene.

### How to save the first version of a scene in Harmony Server

1. Make sure you have the necessary rights to save the current scene version. If you do not, you can acquire the rights by selecting **File > Rights to Modify Scene Version** or **Rights to Modify Scene** in the top menu.

2. Do one of the following:

    - In the top menu, select **File > Save**.

    - In the File toolbar, click on the ⊟ Save button.

    - Press Ctrl + S (Windows/Linux) or ⌘ + S (macOS).

    When saving the scene for the first time, the Save dialog box opens, prompting you to name the version.

3. In the **This Version** field, enter a relevant name for the current version.
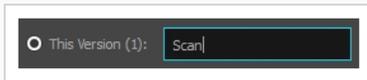
4. In the **Description** field, if you want, you can enter a short description of the current version.
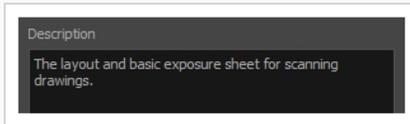
5. Click on **Save**.

# Saving a New Scene Version in Harmony Server

You can save different versions of your scene and add descriptions to each version to keep track of the changes made to a scene over time

### How to save a new version of the scene in Harmony Server

1. Make sure that you have the necessary rights to save the current scene version. If you do not, you can acquire the rights by selecting **File > Rights to Modify Scene Version** or **Rights to Modify Scene** from the top menu.

2. From the top menu, select **File > Advanced Save**.

   The Advanced Save dialog appears.
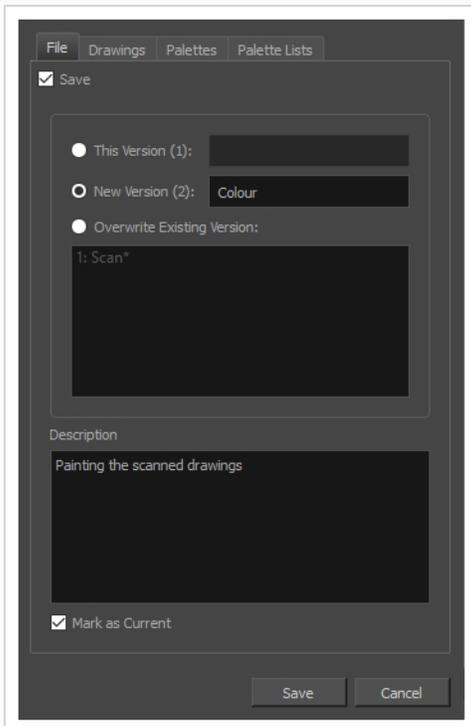
   

3. Make sure the **Save** option is checked.

4. Select the **New Version** option.

5. In the **New Version** field, enter a relevant name for the new version of your scene.
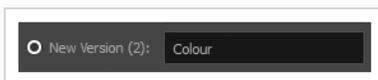
6. In the **Description** field, if you want, you can enter a short description of the current version.
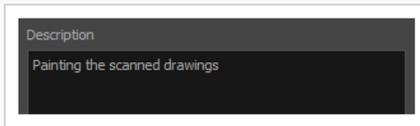


7. If you want the new version to be marked as the current scene version, make sure the **Mark as Current** option is checked. This will make the version you are creating the default version of the scene, when opening it.

8. Click on **Save**.

# Deleting Scene Versions in Harmony Server

View a list of the different versions of your scene, along with their corresponding description. Use this information to delete various versions.

## How to delete versions

1. Make sure you have the necessary rights. If you do not, select **File > Rights to Modify Scene**.

2. Select **File > Manage Versions**.

   The Versions window opens.
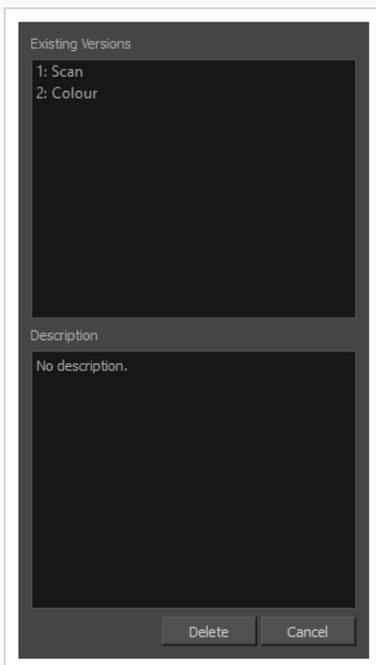
   

3. In the Existing Versions list, select the scene version you want to delete. When a version is selected, information about it appears in the Description area.

4. Click **Delete**.

   The Confirm Delete Versions dialog box opens, warning you that the operation cannot be undone.
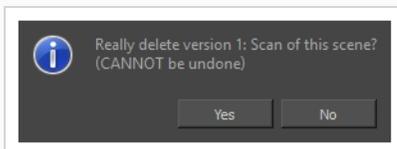
   

5. Click one of the following:

   - **Yes:** *Only* if you are absolutely certain that the version can be deleted.

- **No**: To cancel the operation and keep the version.

# Merging Scene Versions in Harmony Server

If you have two different versions of a scene that need to be brought together, you can merge them.

**How to merge scene versions**

1. From the top menu, select **Edit > Open Merge Editor**.

   The Choose Scene Versions for Merge window opens.
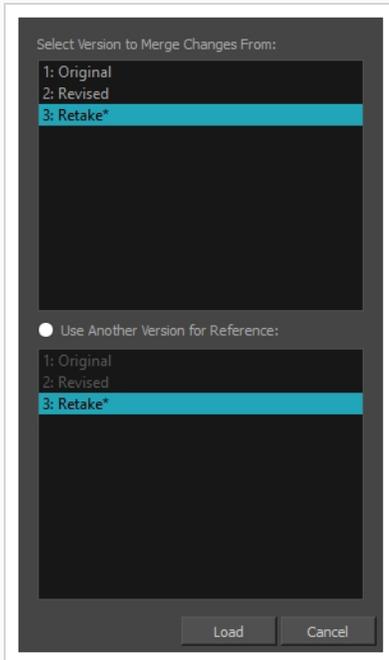
   

2. In the Select Version to Merge Changes From list, select the scene version from which you want to merge the changes from in your current open version.
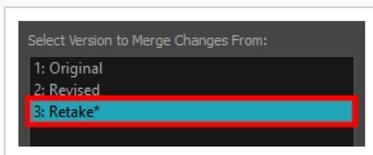
   

   In the Use Another Version for Reference section, you can select a different scene version to merge the changes into, rather than your current version.

3. Click **Load**.

   The Merge Editor opens.
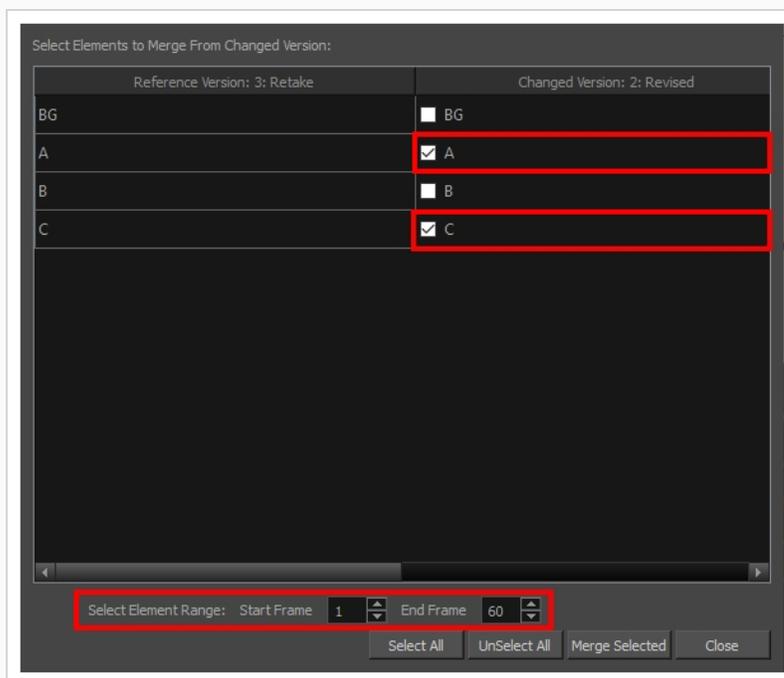
4. From the right column, select the layers you want to merge the changes from into the reference version.

5. In the Select Element Range section, set the Start Frame and End Frame fields to indicate from what frame to what frame you want to take the changes from.

6. Click **Merge Selected** to complete the operation.

# Advanced Saving in Harmony Server

Use the Advanced Save dialog box to save specific drawings, palettes and palette lists as a version of your scene.

## How to use the Advanced Save dialog box

1. Make sure that you have the necessary rights to save the current scene version. If you do not, you can acquire the rights by selecting **File > Rights to Modify Scene Version** or **Rights to Modify Scene** from the top menu.

2. From the top menu, select **File > Advanced Save**.

   The Advanced Save dialog appears.
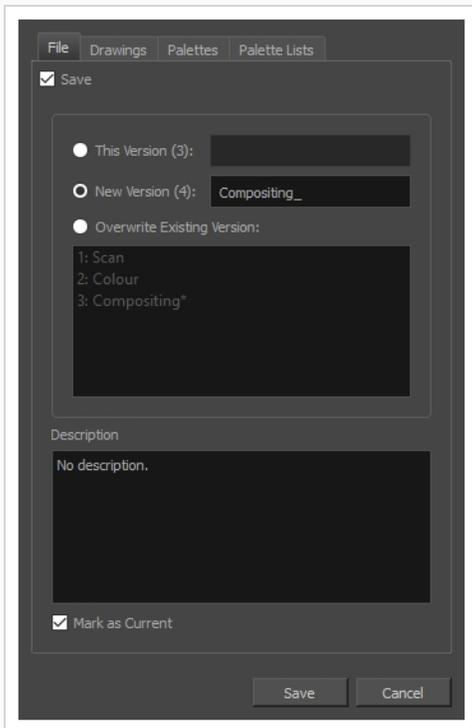
   

   For information on the parameters in the Advanced Save Dialog Box, refer to the *Advanced Save Dialog Box* topic of the Reference guide.

# Enabling Auto-Save

You can allow the software to automatically save your scene, as well as decide on the interval of time between auto-saves.

**How to auto-save a scene**

1. Do one of the following:

    - Windows/Linux: Select **Edit > Preferences**.

    - macOS: Select **Harmony Advanced > Preferences**.

    - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

2. Select the **General** tab.

3. In the **Save** section, set the Auto-Save parameters:

    - **Interval (minutes):** The frequency at which auto-save happens.

    - **Inactivity Interval (seconds):** When Auto-save is about to take place, it verifies if you are drawing or doing anything in the application. Auto-save will not happen until you have stopped using the application for this amount of seconds.

    - **Ask Before Saving:** Before performing an auto-save, you are prompted with a message to confirm if you want to save or not.

    - **Enabled:** This enables the Auto-save feature. If you do not want the system to automatically save your work, uncheck this option. Auto-save is off by default.

# About the Scene File Structure in Harmony Server

A Harmony project is composed of several files. The drawings and colour palettes are not embedded in the project. They are separate linked files. Therefore, if you want to archive or share a project, you require all the files contained in the folder structure.

Here is an example of the file structure contained in a scene. As you work and use more features, different folders may appear in your structure.



The Harmony scene folder contains the following folders:

| Folder | Contents |
|---|---|
| annotation | Contains the images and thumbnails created while drawing in an Annotation column in the Xsheet view. |
| audio | Contains all imported audio files. |
| database | This is no longer used for new projects. It remains for projects created with older versions of the software. |
| elements | Contains all the drawing files. The drawings are organized by folders named like the layers they are associated with. |
| frames | Contains the final frames after a render if you are using the default settings of the Write node in the Node view. |
| palette-library | Contains scene palettes and scene palette list files. |
| stage | Contains one `.stage` file for each version of the scene. |

| | |
|---|---|
| timings | This folder is used when a user links external images to a scene and wants to store a backup copy in case the link breaks. |

# About Global Lock in Harmony Server

Harmony Server has a lock system, referred to as Global Lock, for the different scenes and scene assets. Because all the data on the server can be accessed directly and modified from any client machine by default, the scenes are locked. You must obtain the rights to modify scenes in order to save your work on the server.

Only one user at a time can modify a scene. Once a scene is opened on a client machine, other users can only open the scene in read-only mode. They will not be able to save any modifications.

If you work in standalone mode, you automatically have the rights to modify all drawings and palettes.

Global Lock offers three levels which are available from the Database Selector when you log in to Harmony. From there, you can select a scene and obtain the rights to modify it by selecting the desired lock option.
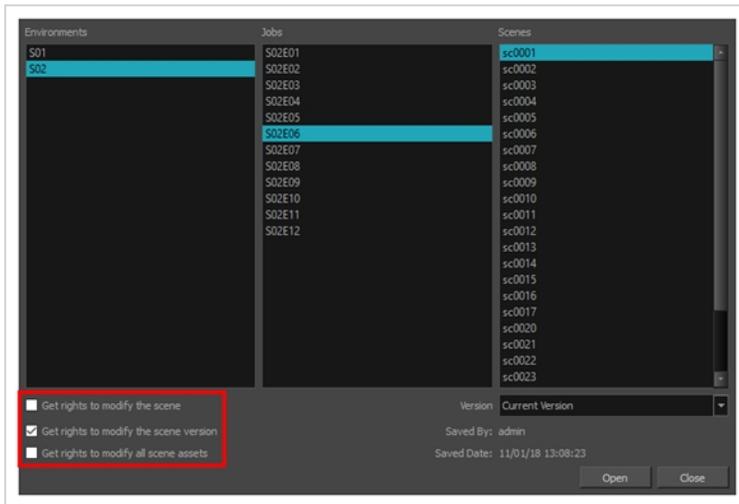


A Harmony project can be locked at various levels. Its timing, drawings, version and palettes can be locked. Locking means that you have the rights to modify a scene or its assets. Other users cannot modify locked items. If someone tries to open a locked scene, it will be displayed as read-only.

Here are the different lock possibilities:

| Lock | Description |
| --- | --- |
| Scene or Version Lock | Controls the Xsheet timing, layers, nodes but not the drawing, palettes, palette-lists or templates. |
| Drawing Lock | Only one user can edit and save a locked drawing. |
| Palette Lock | Only one user can edit and save a locked palette. |
| Palette-list Lock | Only one user can edit and save a locked palette-list. |

| | |
|---|---|
| Library Folder lock | Only one user can edit and save into that folder in the Library. |

There are several different ways to obtain the rights to modify the scenes. It can be done when the user loads a scene from Harmony, inside the application once the scene is loaded, or when an environment, job or scene is created using the Control Center module.

# Acquiring Rights to Loaded Scenes in Harmony Server

If you opened a scene in read-only mode, but realize that you need to modify it, you can easily acquire the necessary rights without closing and reloading the scene.

Note that it is not possible to acquire the rights to modify the scene assets once the scene is loaded. This process is done during the initial loading of the scene. To learn more about enabling the rights to modify while creating environments, jobs and scenes, refer to the Control Center Guide.

### How to set the scene's rights after the scene is loaded

1. In the top menu, select **File** and one of the following:

   - **Rights to Modify Scene**: Allows you to modify the selected version of the scene as well as to manage and overwrite other versions. Other users will not be able to open a different version of the scene until you close the scene.

   - **Rights to Modify Scene Version: Allows you to modify the currently selected scene version only. Unless the Get rights to modify the scene option is also checked, you will not be able to change other versions of the scene. This allows other users to modify different versions of the scene while you are working on the selected version.**

# About Drawing Lock in Harmony Server

The drawings are stored on the server database providing access to them from every client machine. They are locked to avoid different users from modifying the same drawings simultaneously. Only one person at a time can get the rights to modify them. The drawing rights are independent from the scene rights because in a production rush, two users may need to work on the same scene to finish painting the drawings faster. One user will get the rights for one set of drawings, and the second user the rights to another set of drawings. This prevents work from being duplicated.

When enabled, the Edit Drawings mode gives you the right to modify drawings, as well as create new drawings by drawing directly on an empty cell. This mode is enabled by default when you open a scene version with the rights enabled.

> **NOTE**
>
> If you open the scene with full rights from the Welcome screen or Control Center, the Edit Drawing mode is not available.

When you disable the Edit Drawing Mode, you can use the Get Rights to Modify Drawings option on a selection of specific drawings. This is useful when, for example, many users are working on the same scene during the ink and paint process and they want to split the drawings to paint between them.

Also, once you got the rights to modify drawings, you can release these rights if necessary.

If your system crashes and the drawings remain locked, you can force the release of the rights. You must use this option carefully as data loss may occur if the scene is currently open and being edited by another person. Verify that no one else is using the scene prior to forcing the release of the drawing rights.

Since the drawings are stored on the server, you might at times need to refresh the drawings that are displayed in your scene.

# Locking & Unlocking Drawings in Harmony Server

You can acquire and release the rights to modify drawings when working with Harmony Server.

## How to enable the Edit Drawing Mode

- From the top menu, select **Edit > Edit Drawing Mode**.

## How to get the rights on a selection of drawings

1. Make sure that the Edit Drawing Mode is disabled.

2. In the Xsheet view, select the drawings you want to edit.

3. Select **Edit > Get Rights to Modify Drawings** or press Alt + L.

## How to release the rights on a selection of drawings

1. In the Xsheet view, select the drawings you want to release.

2. Select **Edit > Release Rights to Modify Drawings** or press Alt + Shift + L.

## How to force the release of the rights of locked drawings

1. In the Xsheet view, select the drawings you want to release.

2. Select **Edit > Force Release Rights to Modify Drawings**.

   A Warning dialog box opens.

   - Click **Yes** if you want to continue to force the release.

   - Click **No** if you want to cancel the force release.

## How to read changed drawings

- Select **File > Read Changed Drawings**.

# Verifying a Scene's Integrity

The Check Files commandVerifies the integrity of the drawing and palette files in your project. Use the Check Files dialog box to verify that the data is consistent, correct, and accessible.

## How to open the Check Files dialog box

1. From the top menu, select **> Check Files**.

   ```
   *********************************************
   SCENE: Top

   ---------------------------------------------
   MODULE: Sketch
   Sketch-1.tvg  OK    39 Kb
   Sketch-2.tvg  OK    27 Kb

   Sketch        OK
   ---------------------------------------------
   MODULE: Model
   Model-1.tvg   OK    56 Kb

   Model         OK
   ---------------------------------------------
   MODULE: RocketShip
   RocketShip-1.tvg OK     9 Kb

   RocketShip    OK
   ---------------------------------------------
   SCENE SUMMARY:

   Sketch        OK
   Model         OK
   RocketShip    OK

   *********************************************
   OVERALL SUMMARY: No error
   ```
   [ Close ]          [ Check Colours ]
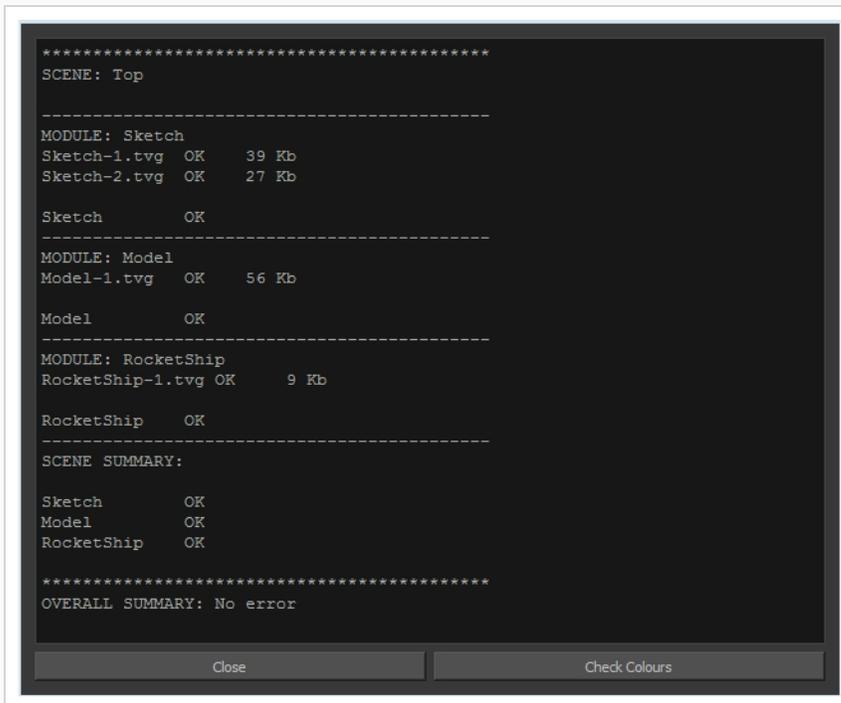
2. Click **Check Colours** to open the Check Colours dialog box.

   The Check Colours dialog box checks the palette integrity and displays the colour recovery data.

   The following colours need to be recovered or have been recovered and need to be saved.

   | | Colour | Type |
   |---|---|---|
   | ▼ RocketShip | | |
   | ▼ RocketShip | | |
   | Sketch | | Solid Colour |
   | Outline | | Solid Colour |
   | Body | | Linear Gradient |
   | Letters | | Solid Colour |
   | Window Outline | | Solid Colour |
   | Lights Outline | | Solid Colour |
   | Lights | | Solid Colour |
   | Windows | | Linear Gradient |

   [ Ok ]
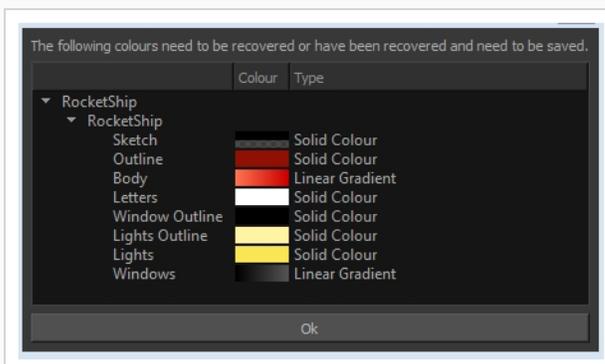
# Chapter 2: Interface

Knowing how to manage the Toon Boom Harmony interface helps you to work efficiently and organize your workspace conveniently. There are a series of views and toolbars you can use as you perform different operations. Usually, each person has a specific way of working in the interface and prefer particular views and toolbars. In this chapter, you will learn about the main elements of the interface and how to manage them.

> **NOTE**
>
> To learn more about each view's properties, see the Reference guide.
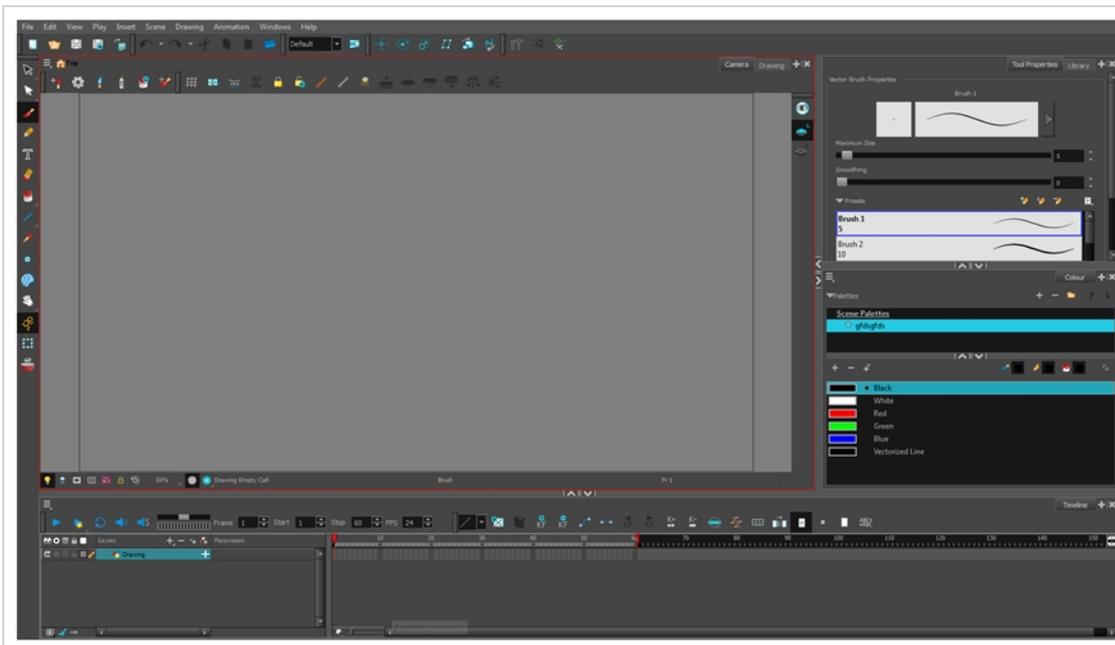
# Changing the Theme Colours

The Harmony interface is set to a dark theme by default. You have the option of switching to a light theme.

**How to change the interface theme**

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS) .

   The Preferences dialog box opens.

2. Select the **General** tab.

3. In the Options section, deselect the **Use Dark StyleSheet** option to use the light theme.

4. Restart Harmony.
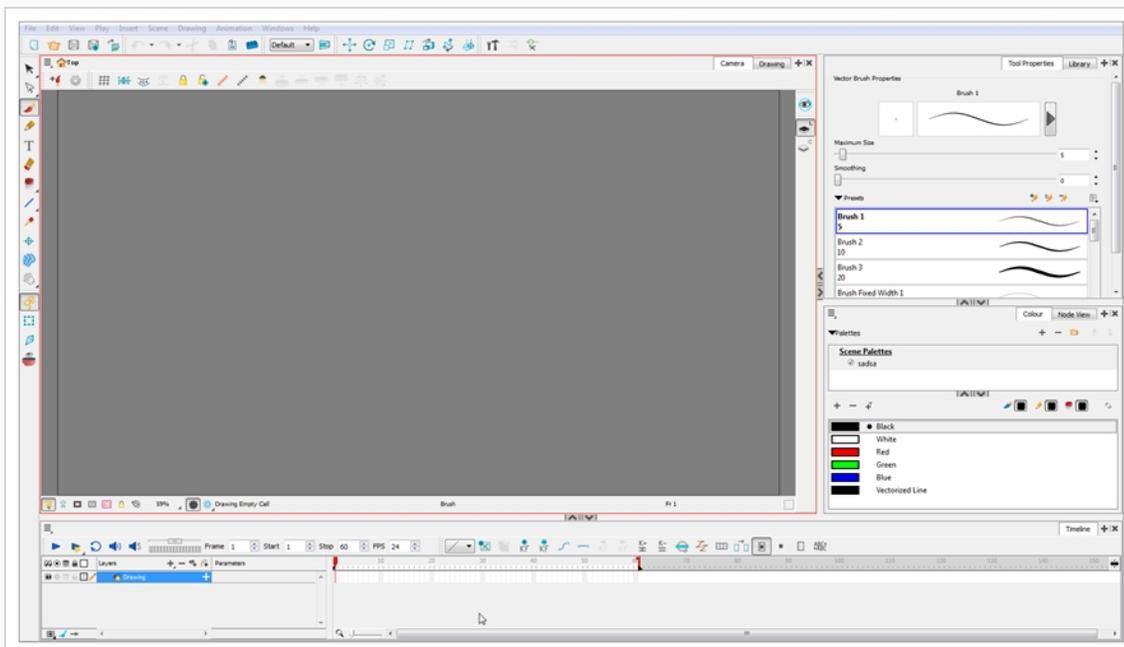
# Changing the User Interface Language

Harmony is available in English, Spanish, Japanese, and Chinese. Harmony will automatically change to you OS language if it corresponds to one of these four languages. If you would like to start Harmony in one of those language independently from your OS, you can do so by launching it from a command prompt terminal with a parameter that specifies the desired language.

## How to start Harmony using a specific user interface language

1. Start a termninal, command prompt, or shell on your OS.

2. Using the change drive command (cd), navigate to the Harmony executable file location:

   - Windows: `cd "C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony 15.0 Advanced\win64\bin"`

   - macOS (Stand Alone): `cd "/Applications/Toon Boom Harmony 15.0 Advanced/tba/macosx/bin"`

   - macOS (Server): `cd "/Applications/Toon Boom Harmony 15.0 Advanced Network/tba/macosx/bin"`

   - GNU/Linux: `cd /usr/local/ToonBoomAnimation/harmonyAdvanced_15.0/lnx86_64/bin`

3. To start Harmony in a specific language, type in the name of the Harmony application including the language argument (-lang) and language code (two letters):

   - Windows:

     - English: `HarmonyPremium.exe -lang en`

     - Chinese: `HarmonyPremium.exe -lang zh`

     - Japanese: `HarmonyPremium.exe -lang ja`

     - Spanish: `HarmonyPremium.exe -lang es`

   - macOS:

     - English: `./Harmony\ Premium -lang en`

     - Chinese: `./Harmony\ Premium -lang zh`

     - Japanese: `./Harmony\ Premium -lang ja`

     - Spanish: `./Harmony\ Premium -lang es`

- GNU/Linux:

  - English: `./HarmonyPremium -lang en`

  - Chinese: `./HarmonyPremium -lang zh`

  - Japanese: `./HarmonyPremium -lang ja`

  - Spanish: `./HarmonyPremium -lang es`

4. Press Enter/Return to validate and launch Harmony in the desired language.

# About Menus

Harmony contains three types of menus from which you can access many commands and options:

## Top Menu

The top menu contains most of the commands. Depending on the view you're working in and the element, some commands are available and others are not. The top menu is always located at the very top of the interface.
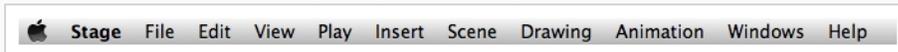




The top menu contains the following categories:

- File
- Edit
- View
- Play
- Insert
- Scene
- Drawing
- Animation
- Windows
- Help

On macOS, there is also a Harmony Advanced category that contains the following commands:

- Preferences
- About
- Quit

## View Menu

A view menu contains commands specifically related to that view.

To access a view menu, click the Menu ☰ button in the top-left corner of a view.
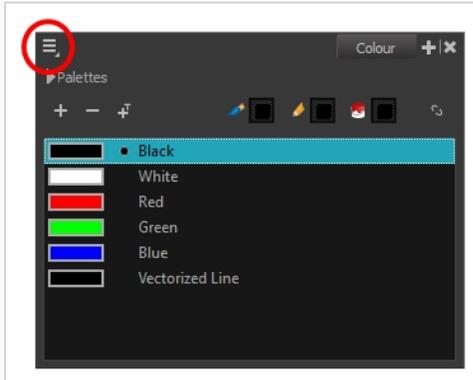


A view menu is available in the following views:

- Camera

- Colour

- Drawing

- Function

- Library

- Model

- Perspective

- Script Editor

- Side

- Timeline

- Top

- Xsheet

## Quick Access Menu

A quick access menu lets you open a list of the commands you will use most often.

To access this menu, right-click anywhere in a view.

| | | |
|---|---|---|
| Animation Tools | | ▶ |
| Drawing Tools | | ▶ |
| Cut | Ctrl+X | |
| Copy | Ctrl+C | |
| Paste Drawing Object | Ctrl+V | |
| Delete | Del | |
| Select All | Ctrl+A | |
| Deselect All | Esc | |
| Select Strokes with Current Colour | Ctrl+Shift+A | |
| Invert Selection | Ctrl+Shift+I | |
| Switch To Colour Art | L | |
| ◉ Preview Line Art and Colour Art | P | |
| ✓ Light Table | Shift+L | |
| Grid | | ▶ |
| Show Strokes | K | |
| Show Strokes with Colour Wash | | |
| Arrange | | ▶ |
| Duplicate Drawings | Alt+Shift+D | |
| Create Empty Drawing | Alt+Shift+R | |
| Convert | | ▶ |
| Transform | | ▶ |
| Group | | ▶ |
| Distribute to layers | | |

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# About Toolbars

Harmony contains toolbars which, by default, are located at the top of the interface. Some of the views also have their own toolbars which you can move around. You can reposition the toolbars to suit your work style or hide unused ones.

> **NOTE**
>
> Throughout this section, there may be slight differences between your interface and the illustrations in this guide. This is because the images are taken from Harmony Premium.

You can display or hide toolbars using the menus. The Toolbar menu only contains the View toolbars of the views that are displayed in the workspace. As you show or hide views in your workspace, the Toolbar menu updates.

The top toolbars can also be displayed directly in a view. Only one instance of each toolbar can be displayed. If a toolbar is already displayed in the top area and you decide to display it in a view, the selected toolbar will move from the top area to the view.

The toolbars in any of the views can be customized with your favourite tools. Using the Toolbar Manager dialog box, you can organize different toolbars to suit your working style.

If the default toolbar does not contain the tools you require, you can customize the toolbar.

If you prefer to have all your tools visible in the Tools toolbar, the Flat Tool Toolbar option allows you to expand the toolbar so there are no nested toolsets in the toolbar. When you set this option, you will need to close Harmony and restart it for the new interface to be displayed. A default set of tools will appear in the toolbar. However, you can customize the toolbar with the tools that more closely fit your work pattern.



The default Tools toolbar

These arrows denote nested toolsets.



The Flat Tool Toolbar option expands the toolbar so there are no nested toolsets.
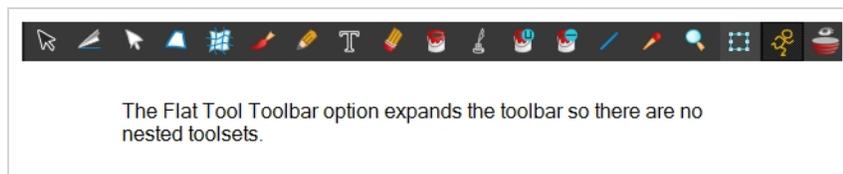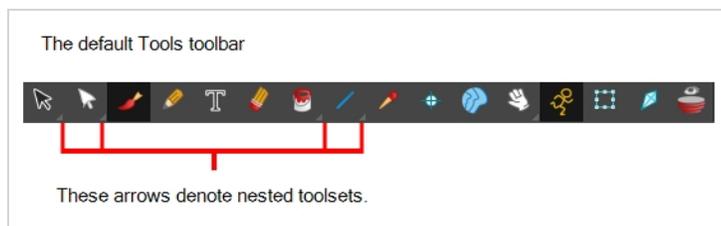
Once you are displaying the flat toolbars, you can customize the tools which appear in the toolbar. This means that you can change the default set of tools and replace the tools you use less frequently with ones use more often. This customizing is done through the Toolbar Manager.

# Adding Toolbars

You can add toolbars simply by using menus.

## How to add or close a toolbar

1. Select **Windows > Toolbars >** *toolbar*.

   - You can right-click anywhere in the toolbar area to access Harmony toolbars. View toolbars, however, are not available by right-clicking the toolbar area. You can access the toolbar of any open and active view by right-clicking in the view's top area or the Windows menu.

# Moving Toolbars

You can move toolbars simply by dragging them to a new location.

## How to move a toolbar

1. Select the toolbar you want to move by clicking its anchor point and dragging it into a view toolbar area or another position in the top or side interface toolbar area.
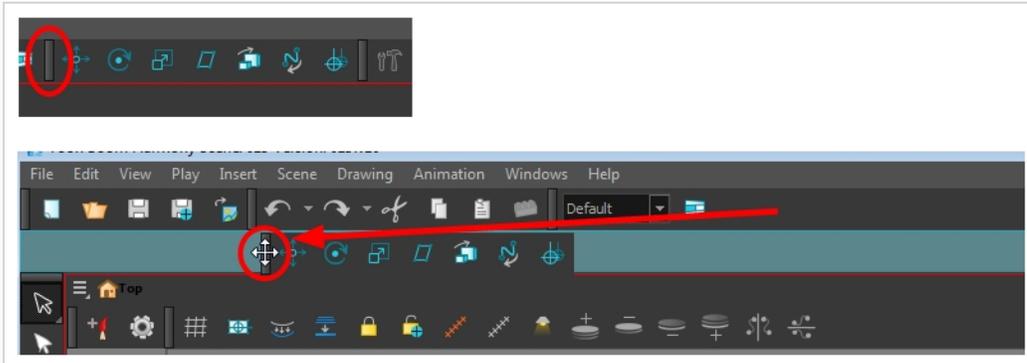


2. When a highlighted zone appears showing an available location for the toolbar, release the mouse button and drop the toolbar into position.

# Resizing Toolbars

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You can resize a toolbar by sliding its tail-end.

**How to resize a toolbar**

1. Hide a portion of a toolbar by dragging another open toolbar over its tail-end.

2. Click on the arrows appearing at the end of the collapsed toolbar to expand it.
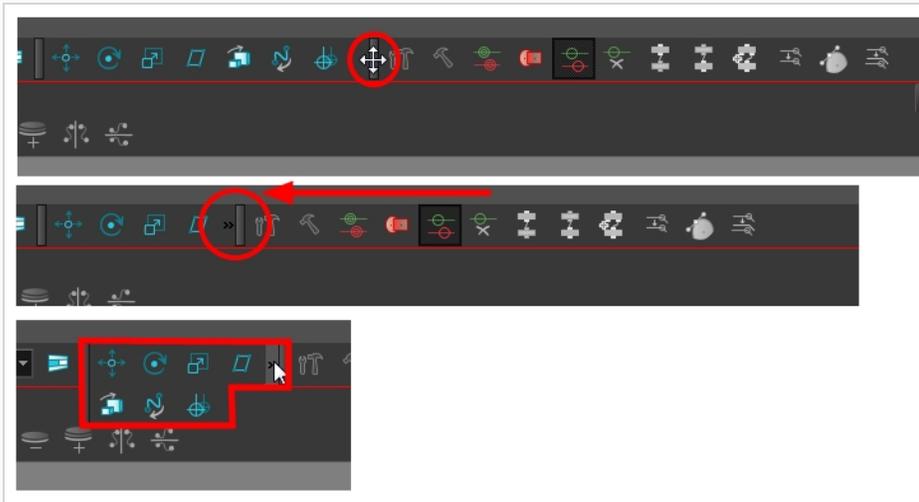
# Customizing View Toolbars

You can customize a view toolbar to add, remove, and reorder icons.

## How to customize a view toolbar

1. In the chosen view, right-click on any button in the toolbar where you want to add or subtract a new button. You can also reorder the buttons. Make sure the button you right-click on is active.

2. From the menu, select **Customize**.
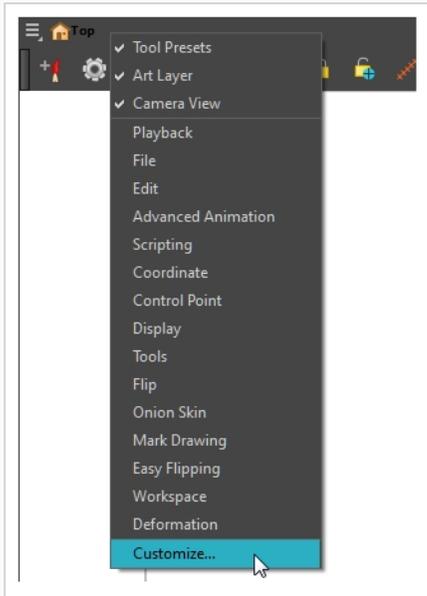


   The Toolbar Manager window opens.

3. To add a new icon to your toolbar, select the tool or command from the Available Tools list and click the Right Arrow ▷ button to switch it to the Toolbar list.
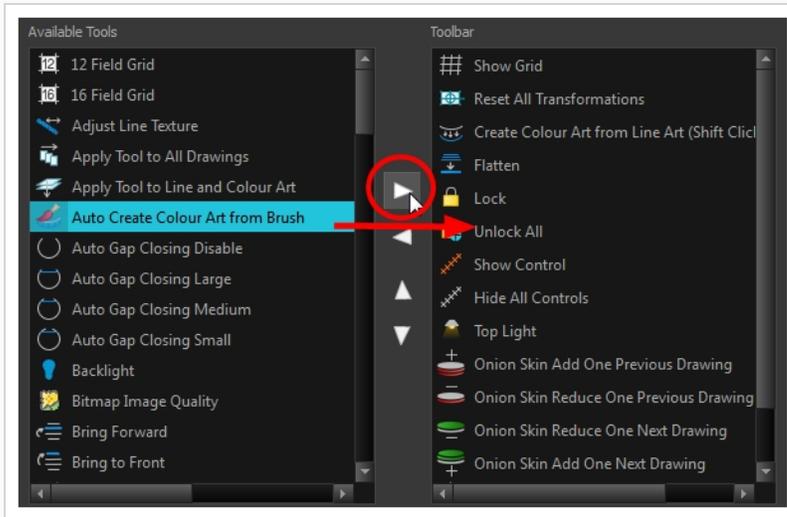
4.  To remove an icon from your toolbar, select the tool or command in the Toolbar list and click the Left Arrow ◁ button to switch to the Available Tools list.
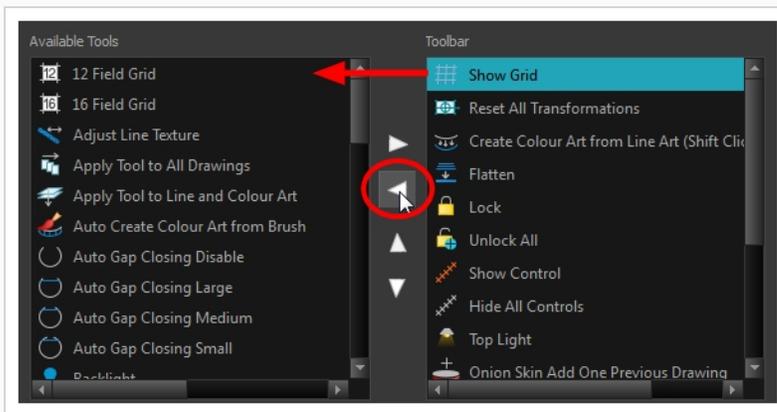


5.  To reorder the icons in your toolbar, select the command to be moved from the Toolbar list and click the Up △ or Down ▽ buttons to move it to the correct location.
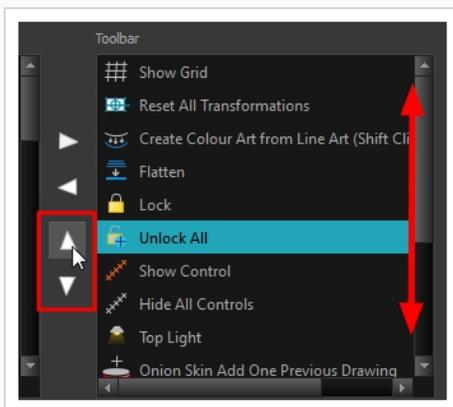


6.  Click **OK** when you are finished.

# Enabling the Flat Toolbar

Delete this text and replace it with your own content.

**How to use enable the Flat Tool Toolbar preference**

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS).

2. In the Preferences dialog box, select the **General** tab.

3. Select the **Flat Tool Toolbar** option.

4. Click **OK**.

5. Save your work and close Harmony.

6. Restart Harmony.

   The Tools toolbar no longer contains nested tools.

# About Views

T-HFND-003-008

The Harmony interface is composed of different views, each one designed for a specific purpose. You can modify the location of the views by adding a new view as a tab or as a window. You can also swap the location of a view.

When a view is active, a red rectangle appears around the view. Keyboard shortcuts and top menu options are associated with the active view. If a menu option is greyed out, it means it does not apply to the layer, drawing or other type of selection or the option does not apply to the active view.
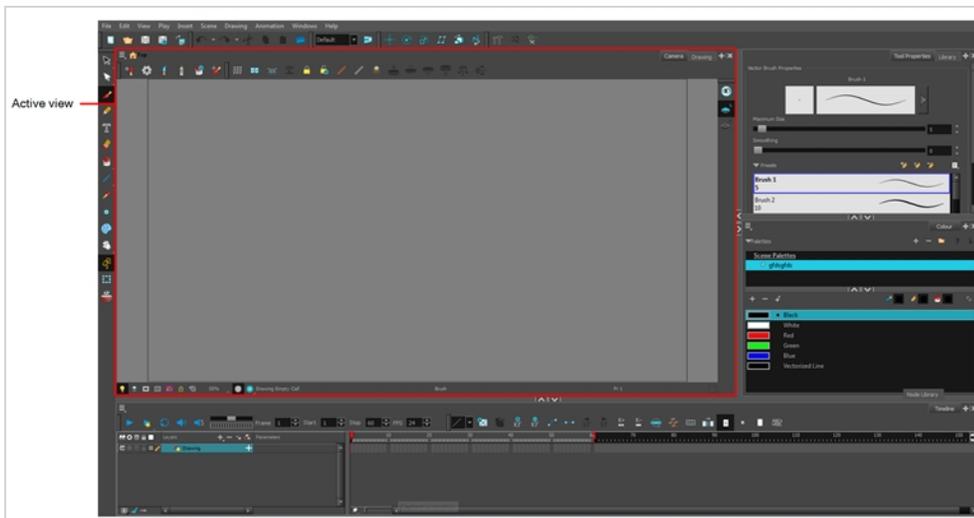


Workspace modifications are automatically saved when you exit the application, unless you disable the Automatically Save Workspace option in the Preferences dialog box.

# Adding Views

You can easily add views through the top menu or each view.

### How to add a view to your workspace as a tab

1. In the top-right corner of an existing view, click the Add View ➕ button
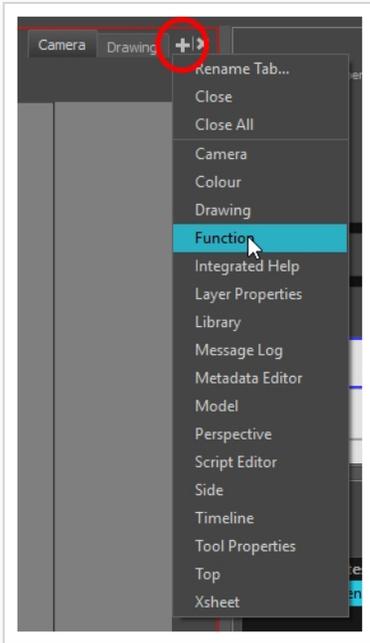
   

2. Select the desired view from the list.

   The view appears as a new tab in the same section of your workspace:

> **NOTE**
>
> Some views, such as the Camera, Perspective, Library and Model views, can be opened in multiple instances. For example, this can be useful if you want to have two instances of the Camera views open, each focused on different areas of your scene, to quickly switch between working on these two areas.

## How to add a view to your workspace as a window

1. Open the **Windows** menu.

2. Select the view you wish to add.

   The view will appear as a new window over Harmony's main application window.

## How to dock a view window to your workspace

1. Drag a window by its tab and do one of the following:

   - Drop the window onto other existing tabs to add it to that set of tabs.

   - Drop the window above, below or beside an existing view. When you get close to the edge of a view, a black rectangle with a blue background appears, indicating where the view will be inserted.
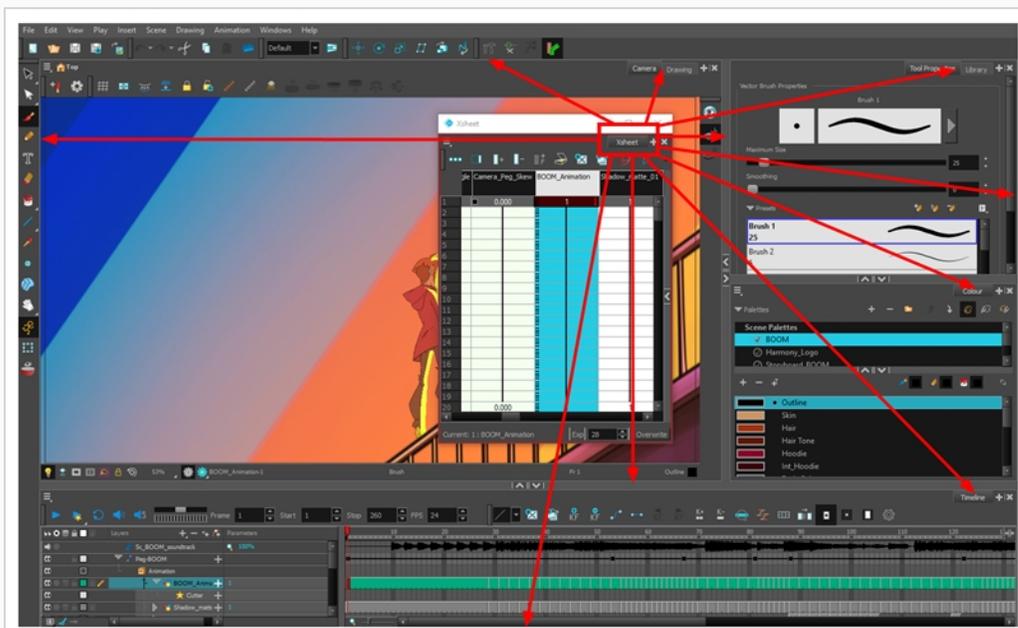
> **NOTE**
>
> The view in which you are currently working will have a red square surrounding it, marking is as your active view.

# Closing Views

You can close one or multiple views by using their closing button.

**How to close a view**

1.  Click the Close View ⚹ button.

    If there are several tabs in the same view, press Shift and click the Close View ⚹ button to close all tabs at the same time.
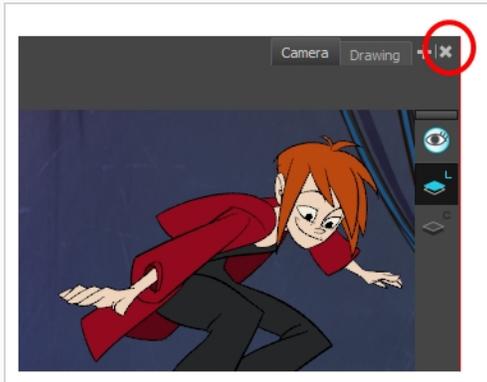
# Showing and Hiding Views

You can temporarily show and hide views using the collapsing buttons.

### How to temporarily hide a view

1. On the edge of the window you want to hide, click the **Collapse/Expand** button.

   The view is compressed and only the Collapse/Expand button is visible.

2. Click the **Collapse/Expand** button again to redisplay the view.

# Moving Views

You can move views by dragging their name tab to a new location.

### How to move views

1. Select the view's tab and drag it onto one of the view's separators, top area or onto another view's tab.

2. When a blue rectangle outline appears showing an available location for the view, release the tab to drop the view into position. One of three things will happen:
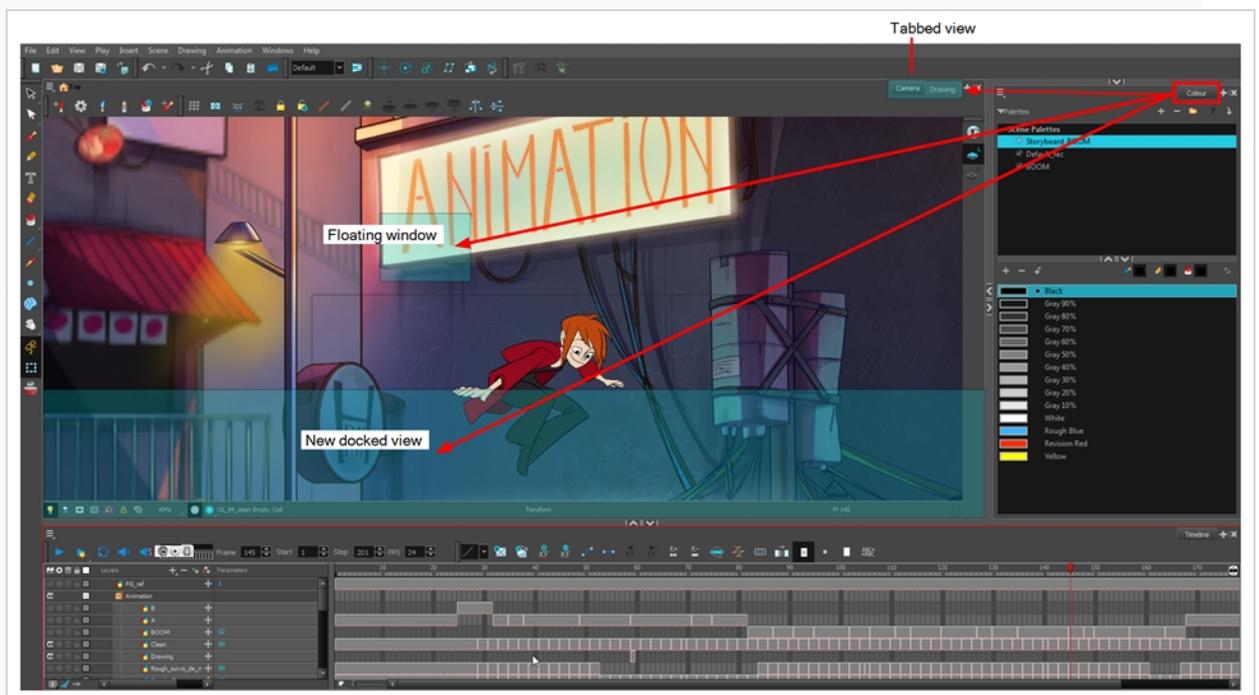


- The view becomes a tabbed view.

- The view becomes a floating window.

- The view becomes a new docked view.

# Resizing Views

You can resize a view by sliding its edges.

## How to resize a view

1. Place the pointer on the edge of the view to resize.

2. When you see the Resizing � icon, drag the side of the view to the desired size.
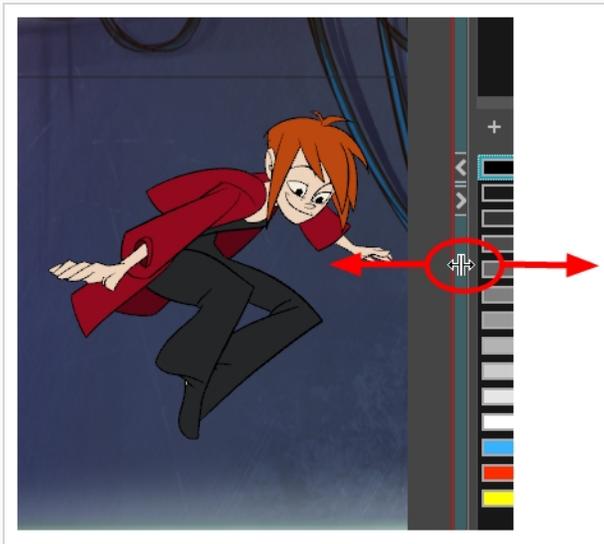
# About Preferences

An important feature of Toon Boom Harmony is the Preferences dialog box. From here you can customize your interface, tool behaviour and shortcuts. Throughout this guide, you are often required to go to the Preferences dialog box to set parameters and options.

> **NOTE**
>
> To learn about the different preferences available, refer to the Preferences Guide.
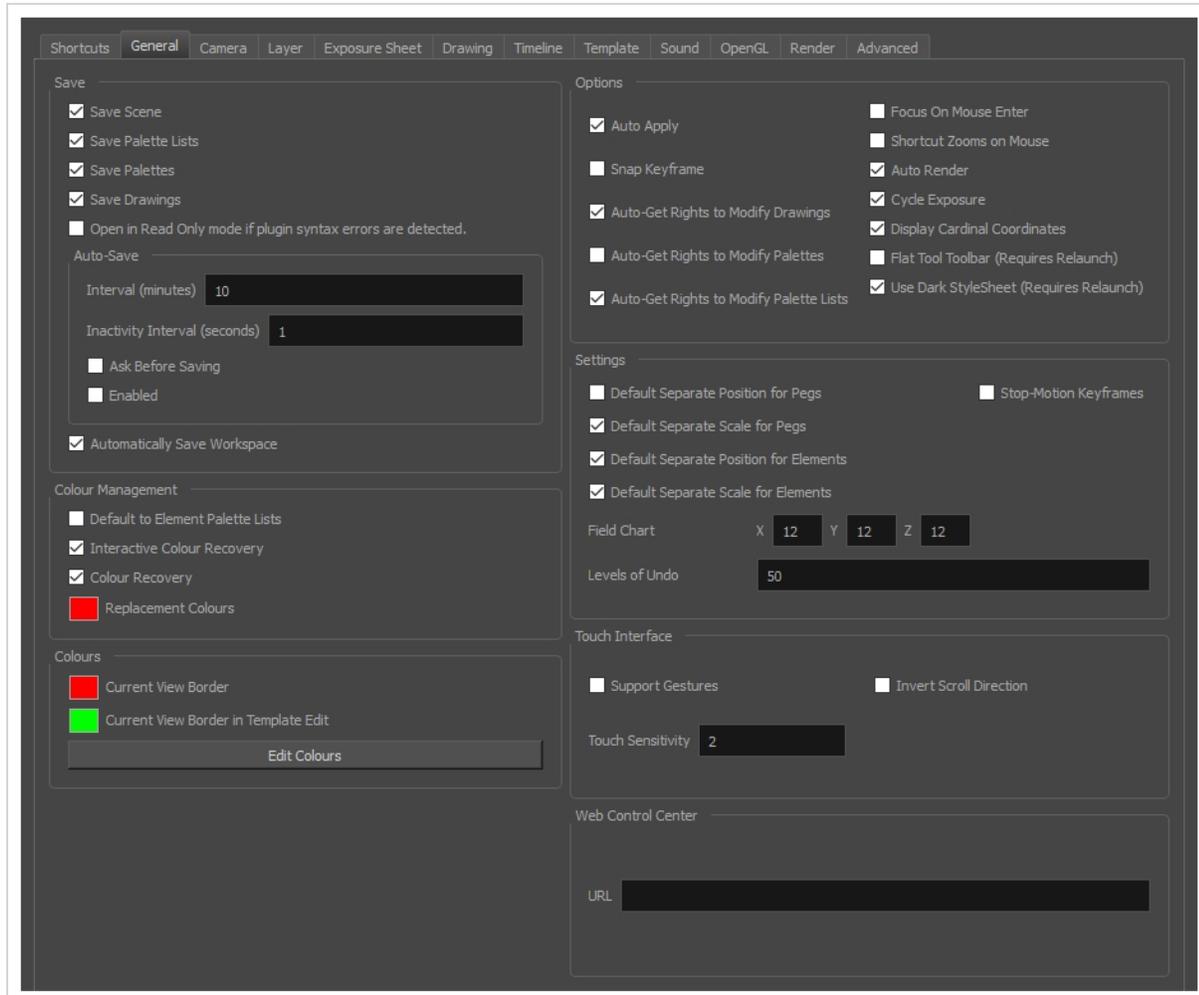


When using Harmony Stand Alone, your custom preferences are stored in the following location, depending on your operating system:

- **Windows:** C:\Users\[user_name]\AppData\Roaming\Toon Boom Animation\Toon Boom [Harmony Advanced\full-1500-pref

> **NOTE**
>
> On Windows, the AppData folder is hidden. To display it in Explorer, in the top menu, open the **View** pane and check the **Hidden Items** checkbox.

- **macOS:** /Users/[user_name]/Library/Preferences/Toon Boom Animation/Toon Boom [Harmony Advanced/full-1500-pref

> **NOTE**
>
> On macOS, the Library folder is hidden. To display it in Finder, hold down the Alt key.

- **GNU/Linux:** /home/[user_name]/Toon Boom Animation/Toon Boom [Harmony Advanced/full-1500-pref/

When using Harmony Server, preferences are stored in your Harmony Server account's user space on the database server, in the following path:

- /USA_DB/users/[user_name]/Harmony Advanced/full-1500-pref

**How to open the Preferences dialog box**

1. Do one of the following:

    - Windows or GNU/Linux: In the top menu, select **Edit > Preferences**.

    - macOS: In the top menu, select **Harmony Advanced > Preferences**.

    - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

# About Workspaces

The Harmony interface is composed of several views. You can customize your workspace to suit your working style, save it as a new workspace, and load it from the Workspace toolbar.

The first time you open Harmony, the default workspace is loaded. Other workspaces are available such as the Hand-Drawn Animation and Compositing workspaces. These display different views and toolbars. You can access these workspaces, and any others you create, from the Windows menu and the Workspace toolbar.

By default, when you modify the look of a workspace, it is automatically saved. If you prefer to keep your workspaces as they are and only save the modifications when you really want to, you must disable the Automatically Save Workspace option.

The Workspace Manager allows you to modify, create, delete, rename and reorder you workspaces. You can save your workspace as a new version to avoid over-writing the current one. If you do not want to modify the current workspace, use the Workspace Manager to create another one and then modify that one.

Your customized preferences are stored in the following location and you can save them to either share with someone else, copy to a second computer or simply back them up.

When working with Harmony Stand Alone, your custom workspaces are stored in:

- **Windows**: `C:\Users\[username]\AppData\Preferences\Toon Boom Animation\Toon BoomHarmony Advanced\1500-layouts-xml`

- **macOS**: `/Users/[username]/Library/Preferences/Toon Boom Animation/Toon Boom Harmony Advanced/1500-layouts-xml`

- **GNU/Linux**: `/home/[username]/Toon Boom Animation/Toon Boom Harmony Advanced/1500-layouts-xml`

When working with Harmony Server, you workspaces are stored in:

`/USA_DB/users/Harmony Advanced/1500-layouts-xml`

# Loading Workspaces

You can load an existing workspace from the drop-down menu.

### How to load a workspace

1. Do one of the following:

   - Select **Windows > Workspace > Workspace.**

   - Select a workspace from the Workspace toolbar.
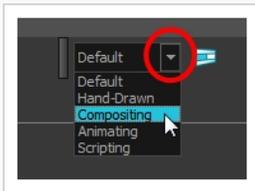
# Creating Workspaces

You can create new workspaces through the Workspace Manager dialog box.

### How to create a new workspace

1. Do one of the following:

    - In the Workspace toolbar, click the ▣ button.

    - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. In the Available Workspaces list, select an existing workspace.
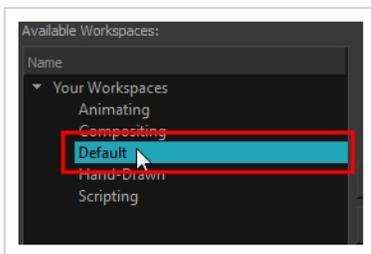


3. At the bottom of the Available Workspaces list, click the Add ✛ button to add a workspace.
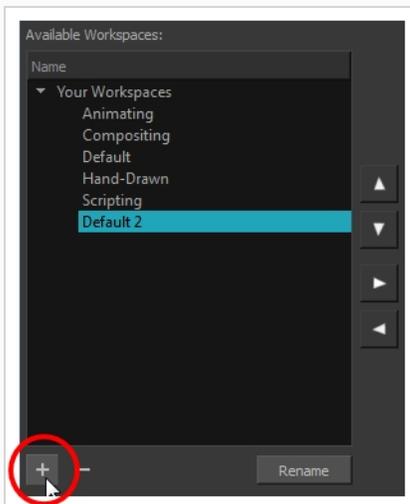


4. Select the new workspace that was created. Click **Rename** and give it a new name.
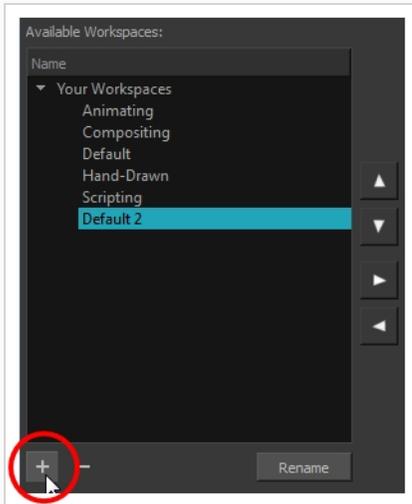
5.  Select the new workspace and click the Right Arrow ▷ button to move it to the Workspace toolbar.
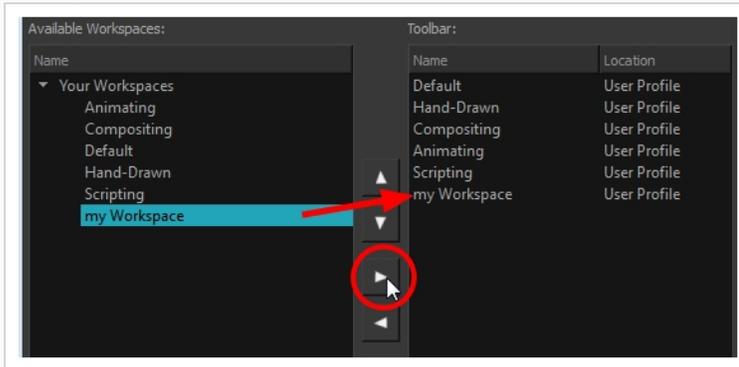


6.  Click **OK**.

# Renaming Workspaces

You can rename a workspace through the Workspace Manager dialog box.

### How to rename a workspace

1. Do one of the following:

   - In the Workspace toolbar, click the ▤ button.

   - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. Choose the workspace to be renamed from the list.

3. Double-click on the workspace to be renamed or click the **Rename** button. This allows you to edit the name.
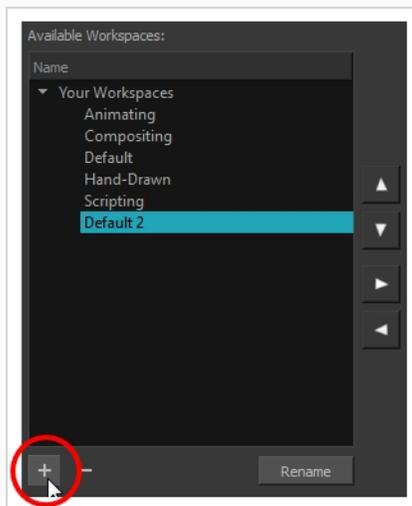


4. Type in the new name of the workspace.

5. Press the Enter/Return key to validate the name.

6. Click **OK**.

# Saving Workspaces

You can either save your workspaces automatically or manually.

### How to save your workspace as a new version

1. From the top menu, select **Windows > Workspace > Save Workspace As**.

   The Save Workspace As dialog box opens.

2. Type in a workspace name and click **OK**.

### How to disable the Automatically Save Workspace preference

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS) to open the Preferences dialog box.

2. Select the **General** tab.

3. In the Options section, deselect the **Automatically Save Workspace** option.

4. Click **OK**.

   The Save Workspace  button appears in the Workspace toolbar.

### How to save a workspace manually

1. Do one of the following:

   - In the Workspace toolbar, click the Save Workspace  button.

   - You can also select **Windows > Workspace > Save Workspace**.

# Deleting Workspaces

You can delete a workspace through the Workspace Manager dialog box.

### How to delete a workspace

1. Do one of the following:

    - In the Workspace toolbar, click the ▣ button.

    - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. In the Workspace Manager, select the workspace to be deleted and click the Left Arrow ◁ button to move it to the Available Workspaces list.
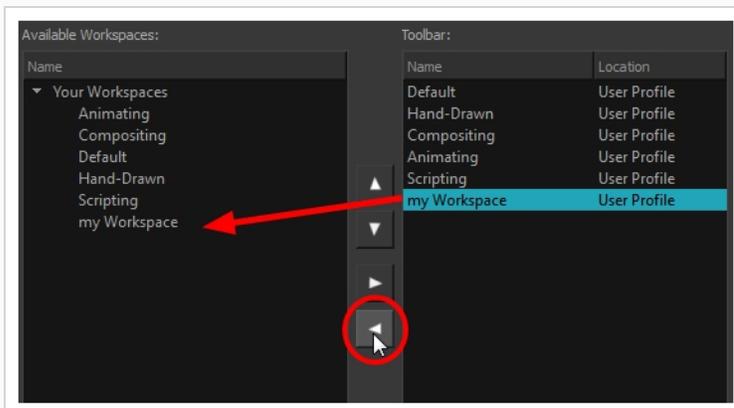


3. Select the workspace from the Available Workspaces list, then click the Delete — button to delete the workspace.

4. Click **OK**.

# Showing and Hiding Workspaces

You can show and hide workspaces from your drop-down list through the Workspace Manager dialog box.

**How to show a workspace**

1. Do one of the following:

    - In the Workspace toolbar, click the ⊞ button.

    - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. In the Available Workspaces list, select the workspace to be displayed and click the Right Arrow ▷ button to move it to the Workspace toolbar.

3. Click **OK**.

**How to hide a workspace**

1. Do one of the following:

    - In the Workspace toolbar, click the ⊞ button.

    - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. In the Workspace Manager, select the workspace to be hidden and click the Left Arrow ◁ button to move it to the Available Workspaces list.

3. Click **OK**.

# Reordering Workspaces

You can reorder workspaces in your drop-down list through the Workspace Manager dialog box.

### How to reorder workspaces

1. Do one of the following:

   - In the Workspace toolbar, click the ⊞ button.

   - From the top menu, select **Windows > Workspace > Workspace Manager**.

2. In the Workspace toolbar, select the workspace to be reordered and on the Up △ or Down ▽ buttons to move it up or down.
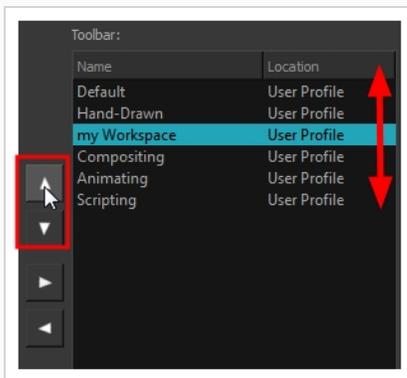
   

3. Click **OK**.

# Restoring the Default Workspace

You can restore modified workspaces to their original layout.

**How to restore the default workspaces**

- Select **Windows > Restore Default Workspace**.

# About Interface Navigation

Toon Boom Harmony lets you zoom in, zoom out, rotate, pan and reset views for easy navigation of the interface.

The navigation commands in the table below can be used in the following views, with some exceptions:

- Camera
- Drawing
- Perspective
- Timeline
- Xsheet
- Function
- Side and Top
- Model

| Command | Action | Access Methods |
|---------|--------|----------------|
| Zoom In | Zooms in the view. | **View > Zoom In**<br><br>Press 2<br><br>Roll the mouse wheel up (except in the Timeline and Xsheet views) |
| Zoom Out | Zooms out the view. | **View > Zoom Out**<br><br>Press 1<br><br>Roll the mouse wheel down (except in the Timeline and Xsheet views) |
| Zoom In or Out | Zooms in or out of the view. | Roll the middle mouse button up or down.<br><br>Hold down the Spacebar and the middle mouse button while dragging the mouse up or down. |
| Pan | Moves the view horizontally or vertically. | Hold down the Spacebar and drag in the direction you want to pan the view. |
| Reset Pan | Resets the view's pan to its default position. | **View > Reset Pan** |

| | | Press Shift + N |
|---|---|---|
| Reset View | Resets the view to its default position. | **View > Reset View** <br><br> Press Shift + M |
| Reset Rotation | Resets the view's rotation to its default position. | **View > Reset Rotation** <br><br> Press Shift + X |
| Reset Zoom | Resets the view's zoom to its default position. | **View > Reset Zoom** |
| Rotate View | Rotates the view. | Press Ctrl + Alt (Windows/Linux) or Ctrl + ⌘ (macOS) and drag in the direction you want to rotate the view. |
| Rotate 30 CW | Rotates the Camera view 30 degrees clockwise, like an animation table. | **View > Rotate View CW** |
| Rotate 30 CCW | Rotates the Camera view 30 degrees counter-clockwise, like an animation table. | **View > Rotate View CCW** |
| Toggle Quick Close-up | Instantly multiplies the view's Zoom Factor by 4. For example, if the Camera View's Zoom Factor is at 100%, this will make it toggle between 400% and 100%. | Shift + Z |
| Toggle Full Screen | Cycles through the following display modes: <br><br> • **Normal Full-Screen:** The main application window becomes full screen. <br><br> • **View Full-Screen:** The selected view becomes full screen and all other views are collapsed. <br><br> • **Normal:** The main application window is restored to its original size and collapsed views are expanded. | **View > Toggle Full Screen** <br><br> Press Ctrl + F (Windows/Linux) or ⌘ + F (macOS) |

# Using the Play Menu to Navigate

From the top menu, you can select any of the following commands from the Play menu to navigate around the interface.

| Command | Description |
|---------|-------------|
| Start Frame | Lets you set the frame on which playback will start. |
| End Frame | Lets you set the frame on which playback will end. |
| First Frame | Jump to the first frame. You can also press <. |
| Previous Frame | Jumps to the frame before the frame currently selected in the Timeline view. You can also press the comma (,) key. |
| Next Frame | Jumps to the frame after the currently selected frame in the Timeline view. You can also press the period (.) key. |
| Last Frame | Jumps to the last frame. You can also press >. |
| Go to Frame | Opens the Go to Frame window in which you can enter the number of the frame you want to display.<br><br>You can also use the Go button, which you can add to the Timeline toolbar through the Toolbar Manager. Open the Go to Frame dialog box and enter the frame number to jump to. |
| Enable Playback | Plays back your animation from the Top, Side, or Perspective views. |

# About Documentation

The documentation is a way to help you find answers to your questions about how things work in Harmony. The documentation of features and procedures exists online, but you can access it through the software.

A simple, but fast way to find a description of certain menu items and preferences is through the Integrated Help.

# Accessing the Documentation

T-HFND-001-004

The Harmony documentation can be accessed from the Help menu.

**How to access the Harmony Advanced documentation**

1. From the top menu, select Help > Online Help.

# Using the Integrated Help

If you are unsure about what a certain menu item is in the Top menu or the function of a specific preference in the Preferences panel, use the Integrated Help.

If you keep the Integrated Help window open for the entire duration of your work session, then you can use the forward and backward arrows to scroll through a history of the help information that you called up during your session.

### How to use the Integrated Help with Menu Items

1. In the top menu, go to **Help > Show What's This** or press F1 on Windows/Linux or ⌘ + / on macOS.

   The Integrated Help window appears.

   

2. In the top menu, click on a menu heading to display its contents.

3. Use your mouse to hover over a menu item.
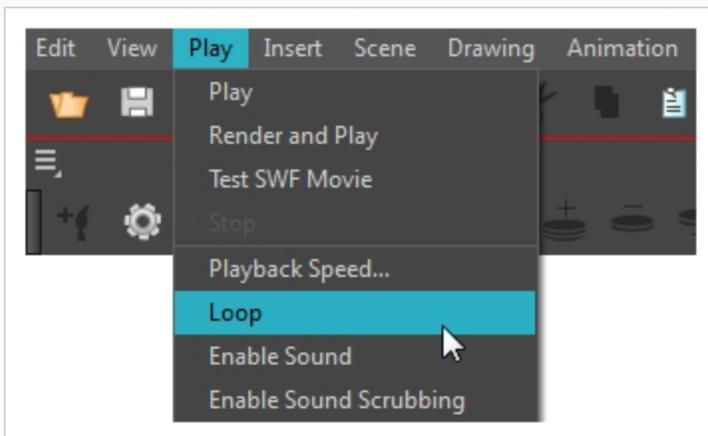
   

4. Press F1 on Windows/Linux or ⌘ + / on macOS.

   In the Integrated Help window, a description of the menu item appears.
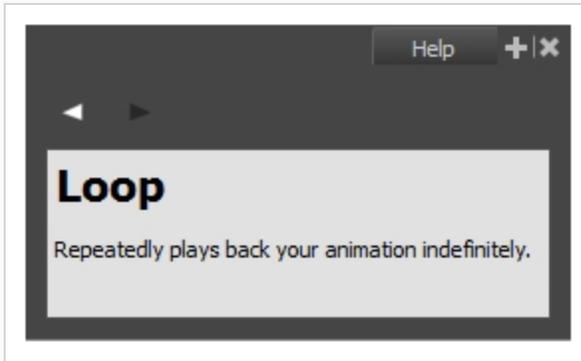
## How to use the Integrated Help with Preferences

1. In the top menu, go to **Help > Show What's This** or press F1 on Windows/Linux or ⌘ + / on macOS.

   The Integrated Help window appears.

   

2. In the top menu, go to **Edit > Preferences** (Windows/Linux) or **Harmony > Preferences** (macOS).

   The Preferences window appears.

3. In the Preferences window, use your mouse to hover over a preference.
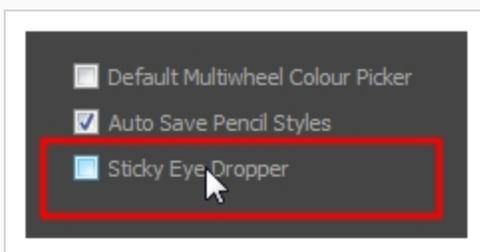
   

4. Press F1 on Windows/Linux or ⌘ + / on macOS.

   In the Integrated Help window, a description of the preference appears.
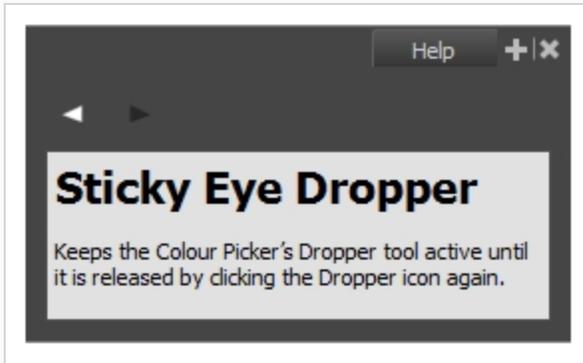
## How to scroll through the bank of searched items

- In the **Integrated Help** window, click on the forward or backward arrow buttons.

> **NOTE**
>
> The moment you close the Integrated Help window all searched items will be erased from the memory bank. In order to keep an on-going record of all the search requests made, you must keep the window open.

# Chapter 3: Drawing

Harmony has many powerful tools, views, and features for sketching, drawing and animating with ease. This chapter describes the main assets needed when drawing , as well as tips on how to start and use these tools efficiently.

# About Drawing Tools

Harmony has a wide array of drawing tools and drawing features to allow flexible design, work methods and styles.

Here are the drawing tools available in Harmony, followed by the types of layer on which they are supported. If you are editing a vector layer, then all of the tools are available to you. If you are drawing on a bitmap layer, some tools are not available. When tools are not available, they are grayed out in the Tools toolbar.

| Icon | Tool Name | Vector Layer | Bitmap Layer |
|------|-----------|--------------|--------------|
|      | Select | • | • |
|      | Cutter | • | • |
|      | Reposition All Drawings | • | |
|      | Contour Editor | • | |
|      | Centerline Editor | • | |
|      | Pencil Editor | • | |
|      | Smooth Editor | • | |
|      | Perspective | • | |
|      | Envelope | | |
|      | Edit Gradient/Texture | • | |
|      | Brush | • | • |

| | | | |
|---|---|---|---|
| | Pencil | • | |
| T | Text | • | • |
| | Eraser | • | • |
| | Paint | • | • |
| | Ink | • | |
| | Paint Unpainted | • | • |
| | Repaint | • | |
| | Unpaint | • | • |
| | Stroke | • | |
| | Close Gap | • | |
| | Line | • | • |
| | Rectangle | • | • |
| | Ellipse | • | • |
| | Polyline | • | |
| | Dropper | • | • |

Each drawing tool has a series of options to customize its behaviour and drawing style. When you select a tool, the Tool Properties view displays the properties of the currently selected tool, where you can configure your drawing tool's behavior and style, if applicable.

# About the Brush Tool

T-HFND-004-003

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 solid vector strokes or textured bitmap strokes, depending on your brush properties. Solid vector brush strokes are made of a vector shape filled with a solid colour, making them limited in terms of art style, but lightweight and easy to manage. Textured brush strokes can have a bitmap brush tip, a bitmap paper texture, and various settings such as hardness, randomness, antialiasing and transparency. Hence, they can be used to draw in various art styles, add natural-looking details to your drawing and reproduce the feel of a real brush stroke.

When drawing on vector layers, you can use the Select Tool, Contour Editor, Smooth Editor, Perspective and Envelope tool to scale your brush strokes or to tweak their shape. If your strokes contain a bitmap texture, Harmony will scale or deform the texture to fit the new shape of your brush. If your brush is scaled up or deformed in a way that takes more volume, Harmony will automatically generate new pixels for the textures, which might cause them to lose quality.

On vector layers, textured vector brush strokes are composed of a greyscale bitmap mask applied to their colour. Hence, their colour can be repainted or updated as easily as with solid vector brush strokes. Changing the colour used to paint a textured vector brush stroke from the colour palette will update the colour in textured vector brush stroke, as it would with solid vector brush strokes, all the while preserving its texture.

You can also create dynamic brushes, which allow you to use artwork created in Harmony as if it was a brush tip or a stamp.

# Drawing with the Brush Tool

In the Camera or Drawing view, you can draw on any drawing layer type with the Brush tool.

## How to draw with the Brush tool on a vector layer

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

2. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

3. In the Tool Properties view, set the Maximum Size to the desired brush size.

> **NOTE**
>
> If you are drawing with a mouse, your strokes will always be at their maximum size. If you are using a pressure-sensitive tablet, your strokes will vary in size depending on the pressure of your pen, ranging between 25% to 100% of the maximum size.

4. In the Colour view, click a colour swatch to select a colour.
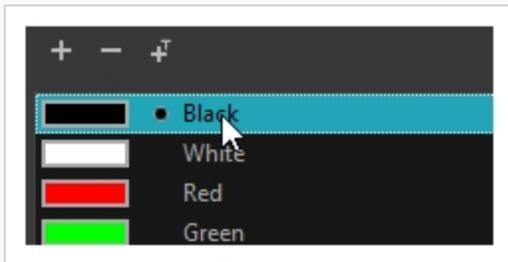


5. In the Drawing or Camera view, start drawing.

## How to draw with the Brush tool on a bitmap layer

1. In the Timeline view, add a bitmap drawing layer.

2. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

3. In the Tool Properties view, set the Maximum Size to the desired brush size. If you are drawing with a mouse, your strokes will always be at their maximum size. If you are using a pressure-sensitive tablet, your strokes will vary in size depending on the pressure of your pen, ranging between 25% to 100% of the maximum size by default.

4. In the Colour view, select a colour.
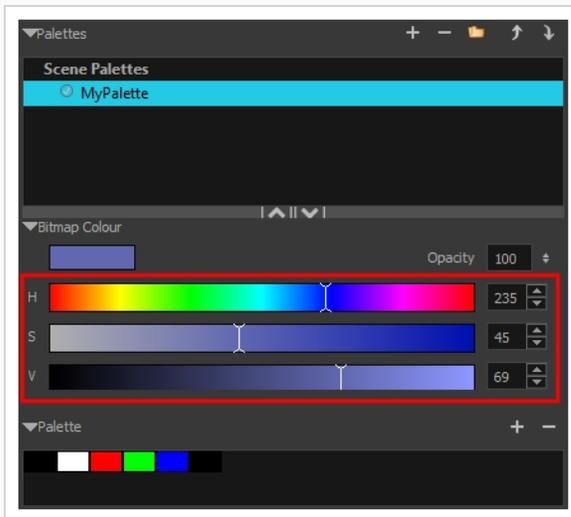
5. If you would prefer using Red/Green/Blue sliders, you can switch between HSV and RGB sliders by doing one of the following:

   - Select **Colour > Bitmap Colour Sliders > HSV Sliders** or **RGB Sliders**.

   - Right-click on the colour sliders and select **RGB Sliders** or **HSV Sliders**.
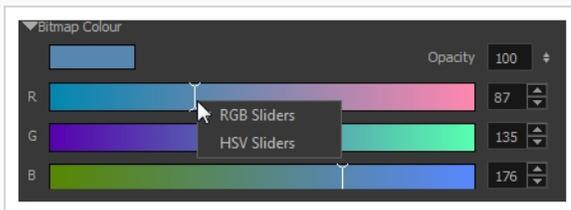


> **NOTE**
>
> Although you can use colours from your colour palette to paint on a bitmap layer, colours used in a bitmap drawing layer are not linked to their colour swatch in the palette. This means that, contrary to vector drawing, updating the colours in your colour palette will not update your bitmap drawings with the new colours.

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

> **NOTE**
>
> You can hold Ctrl (Windows/Linux) or ⌘ (macOS) while drawing to force your stroke to be a closed shape. This will automatically draw a straight line between the beginning and the end of your stroke.
>
>
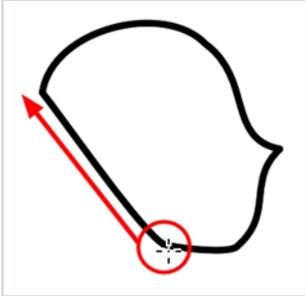
# Creating a Solid Brush

When drawing with the Brush tool on a vector layer, you can use either solid vector brushes or textured vector brushes. By default, your brush will be a solid vector brush. A solid vector brush creates a vector shape and simply fills it with the selected colour, making lightweight, simple crisp strokes.

A solid vector brush's tip can be shaped like a circle, a diamond or a square, and can be configured to have a specific size, aspect ratio and angle. Also, solid vector brushes can be automatically smoothed by Harmony as you draw.

If you are drawing on a bitmap layer, you can only use textured brushes. You can create a textured brush that makes solid looking strokes, but they can not be automatically smoothed by Harmony, nor can they tweaked with vector tools such as the Contour Editor. For more information, see *About Vector and Bitmap Layers* on page 368.

## How to create a solid vector brush

1. In the Tools toolbar, select the Brush 🖌 or Eraser 🖍 tool.

2. In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

   The Brush Properties dialog opens.
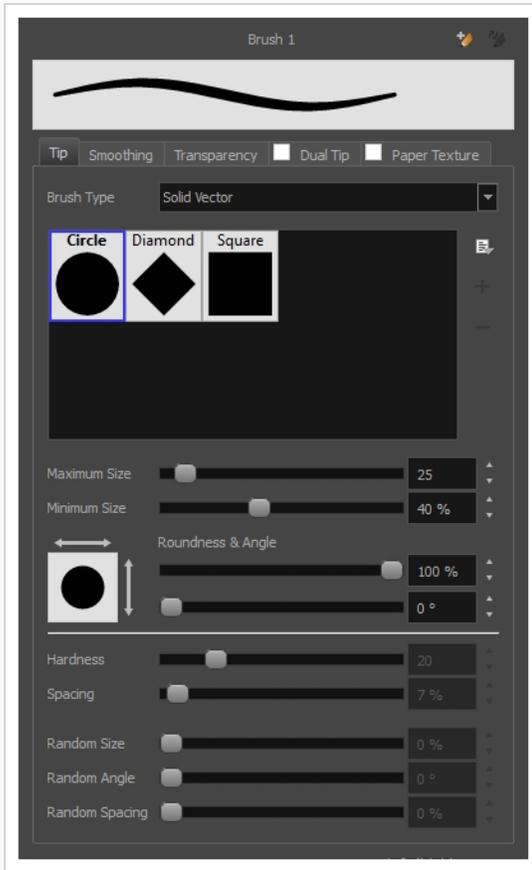
1. In the **Brush Type** dropdown list, select **Solid Vector**.

2. In the brush tip list, select either **Circle**, **Diamond** or **Square**.

3. Use the **Maximum Size** slider to set the maximum size of your brush tip.

    > **NOTE**
    >
    > When drawing with a mouse, your brush is always at its maximum size. When drawing with a pressure-sensitive pen tablet, your brush's size will range between its minimum and maximum size, depending on the amount of pressure you put on the pen when drawing.

4. If you are using a pressure-sensitive pen tablet, use the **Minimum Size** slider to set the size of your brush when using your pen with very little pressure. The minimum size is set to a percentage of your brush tip's maximum size, which is 25% by default. If you don't want the pressure on your pen to affect the brush size, set this parameter to 100%.

5. If you want your brush tip to have uneven dimensions, use the **Roundness** slider to shrink the brush tip vertically all the while preserving its horizontal size.

6. If you want your brush tip to be at an angle, use the **Angle** slider to rotate your brush tip.

7. Click on the **Smoothing** tab.
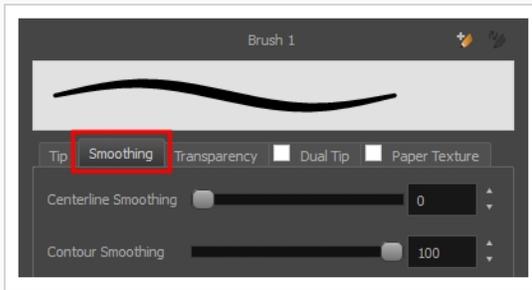


8. Use the **Centerline Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's direction, curves and corners. A higher setting will prevent your line from being shaky, but is liable to reduce your drawing precision and to round sharp corners into curves.

9. Use the **Contour Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's contour. A higher setting will round sharp corners and reduce the amount of control points for the resulting vector shape.

10. Either close or set aside the Brush Properties dialog.

11. In the Camera or Drawing view, start drawing to test your brush settings.

# Creating a Textured Brush

T-LAY-001-004

Using textured brushes, you can create an infinite range of fuzzy, textured and watercolour lines. You can use bitmap brush tips, adjust your line's hardness and opacity, combine two tips and apply a paper texture to your brush strokes so as to adapt the Brush tool to a variety of art styles and create natural-looking brush strokes.

When drawing on a vector layer, brushes are solid vector brushes by default. You can however create a textured vector brush which combines both Harmony's vector and bitmap drawing capabilities. You can tweak textured vector brush strokes using various vector editing tools such as the Contour Editor, the Smooth Editor, the Perspective and the Envelope tools, and Harmony will resample the textures inside your brush strokes with each modification.

If you are drawing on a bitmap layer, your brush is always textured. You can configure a textured brush to look crisp and solid if desired, but brush strokes on a bitmap layer cannot be tweaked or smoothed.

# Configuring a Textured Brush Tip

T-ANIMPA-002-002

The Brush tool supports two types of brush tips: Solid and Textured. Solid brush tips are plain shapes that can be used to draw vector shapes filled with a solid color, whereas textured brush tips are bitmap images with various shapes and opacity levels that can be used to create natural-looking brush strokes.



Square-shaped solid brush      P-shaped textured brush
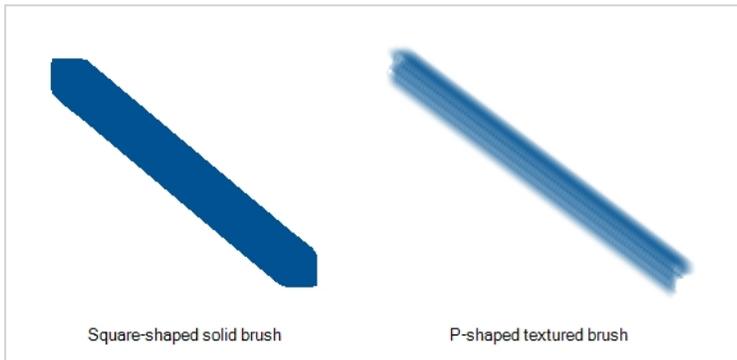
Solid brush tips are not customizable. The selection is limited to either a circle, diamond or square-shaped brush tip, the proportions and angle of which can be adjusted. While Harmony also comes bundled with preset textured brush tips, it is also possible to create and use your own textured brush tips.

### How to configure a textured brush tip

1. In the Tools toolbar, select the Brush ✎ tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.

   

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.
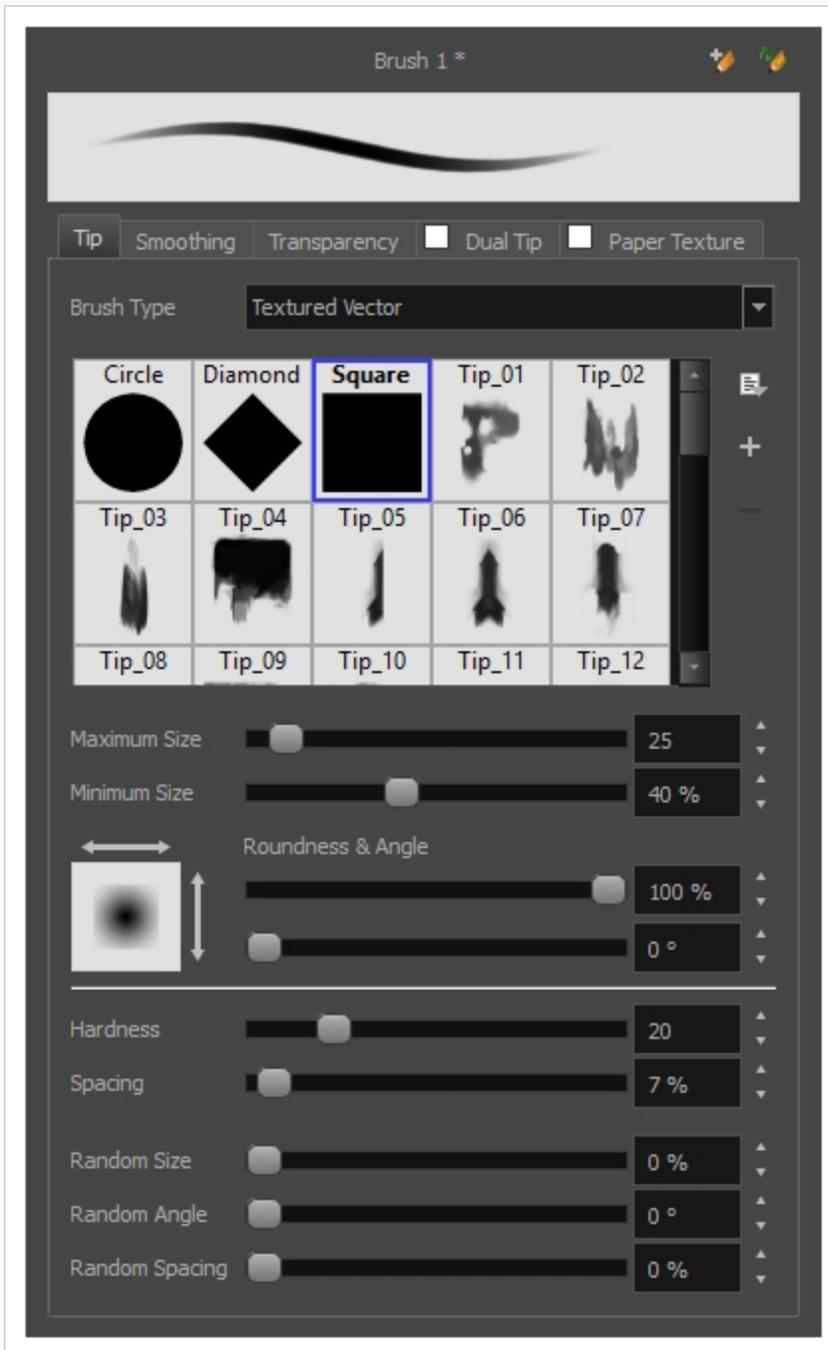
4. In the **Brush Tip** list, select the desired brush tip. If you want to create your own brush tip, see *Adding a Brush Tip* on page 142.

5.  Use the **Maximum Size** slider to set the maximum size of your brush tip.

> **NOTE**
>
> When drawing with a mouse, your brush is always at its maximum size. When drawing with a pressure-sensitive pen tablet, your brush's size will range between its minimum and maximum size, depending on the amount of pressure you put on the pen when drawing.

6.  If you are using a pressure-sensitive pen tablet, use the **Minimum Size** slider to set the size of your brush when using your pen with very little pressure. The minimum size is set to a percentage of your brush tip's maximum size, which is 25% by default. If you don't want the pressure on your pen to affect the brush size, set this parameter to 100%.

7.  If you want your brush tip to have uneven dimensions, use the **Roundness** slider to shrink the brush tip vertically all the while preserving its horizontal size.

8.  If you want your brush tip to be at an angle, use the **Angle** slider to rotate your brush tip.

9.  Use the **Hardness** slider to set how much of the outer part of your brush tip should fade to transparency. If you set it to 100 %, the brush will be completely solid. If you set it to 0 %, the brush will only be opaque in its center, and will gradually become transparent towards its edges.

10. Use the **Spacing** slider to set how much distance you must drag your brush before Harmony prints the brush tip onto your canvas, relative to your brush's size. The default setting is 7%, which produces a relatively realistic brush stroke-like result. If this setting is too low, your brush strokes might feel too thick and opaque. If this setting is too high, your strokes will look like the brush tip has been stamped repeatedly over your canvas instead of dragged on it.

11. If you want the size of your brush tip to vary each time it's printed on your canvas, set the **Random Size** setting to any value above 0 %.

12. If you want the angle of your brush tip to be random each time the tip is printed on your canvas, set the **Random Angle** setting to any value above 0 °.

13. If you want the spacing between each instance of the brush tip to be random, set the **Random Spacing** setting to any value above 0 %.

14. If you want the spacing between each instance of the brush tip to be random, set the **Random Spacing** setting to any value above 0 %.

15. In the Camera or Drawing view, start drawing to test your brush settings.

It is also possible to use textures when drawing with the Pencil tool. Those textures follow the angle of your pencil lines, which may create more interesting results depending on your desired drawing style. For more information, see *About Pencil Line Textures* on page 191.

**Adding a Brush Tip**

In the Brush or Eraser Properties dialog, you will find a set of default brush tips which are bundled with Harmony, but you can also create your own brush tips, then export your collection or import an existing set.

To make your own brush tip, you must first create an image file containing the brush tip, either in Harmony or in a third party software, like Adobe Photoshop, then import it into Harmony. A brush tip must be a greyscale image. Colors in brush tips are not acknowledged by Harmony, as brush tips only use the colour you are painting with in Harmony. Your brush tip should also not contain transparency, as Harmony determines the brush tip's transparency based on its black, white and grey levels. Its black parts will appear 100% opaque, its white parts will appear 100% transparent, and its grey parts will appear semitransparent.

You can import brush tips in any image format supported by Harmony. It is recommended to create brush tips in a resolution ranging from 100 x 100 pixels to 400 x 400 pixels.

Brush tips are shared between the brush tool and the eraser tool. Like paper textures and brush presets, paper textures are saved in your preferences. You can also export your brush tips into an `.xml` file, and import them on a different workstation, allowing you to share your brush tips between the different people collaborating on your project.

## How to add a brush tip

1. In the Tools toolbar, select the Brush 🖌 or Eraser 🖌 tool.

2. In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

   

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the eraser tool.

4. Do one of the following:

   - Click on the Paper Texture menu icon ☰ and select **Add**.

   - Click the Add Paper Texture button.
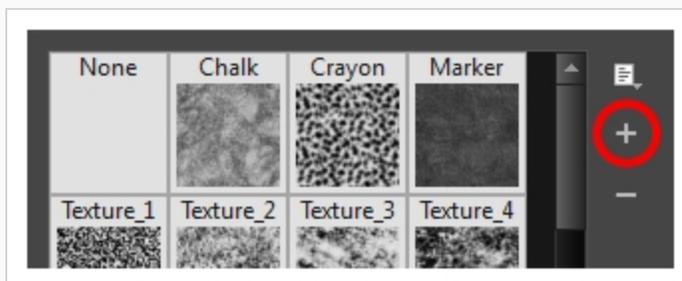
5.  In the file browser window, navigate to the location of your texture image file and select it.

6.  Click **Open** to import the file into the Paper Texture library.

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

**Renaming Brush Tips**

You can rename your bitmap brush tips to keep your list organized.

## How to rename a brush tip

1.  In the Tools toolbar, select the Brush ✐ or Eraser ◢ tool.

2.  In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

3.  If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the eraser tool.

4.  Select the brush tip you wish to rename.

5.  Click on the Paper Texture menu icon 🗐 and select **Rename**.

6.  In the Rename dialog box that appears, type in the new name of the brush tip.

7.  Click **OK**.

**Deleting Brush Tips**

You can delete unnecessary brush tips to keep your list organized.

## How to delete a brush tip

1.  In the Tools toolbar, select the Brush ✐ or Eraser ◢ tool.

2.  In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

3.  If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the

eraser tool.

4. Select the brush tip you wish to delete.

5. Do one of the following:

- Click on the Paper Texture menu icon ▤ and select **Delete**.

- Click the Delete — button.

> **NOTE**
>
> You can delete any brush tip in the Paper Texture library, including the default paper textures, except for the three solid brush tips: Circle, Diamond and Square. Also, brush tips will not get deleted if they are used in a brush preset.

**Exporting Brush Tips**

You can export brush tips to share, backup or install on a new computer.

## How to export brush tips

1. In the Tools toolbar, select the Brush 🖌 or Eraser 🖌 tool.

2. In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the eraser tool.

4. Click on the Paper Texture menu icon ▤ and select **Export**.

   The Export Tips and Textures dialog opens. This dialog allows you to export both your textured brush tips and your paper textures.
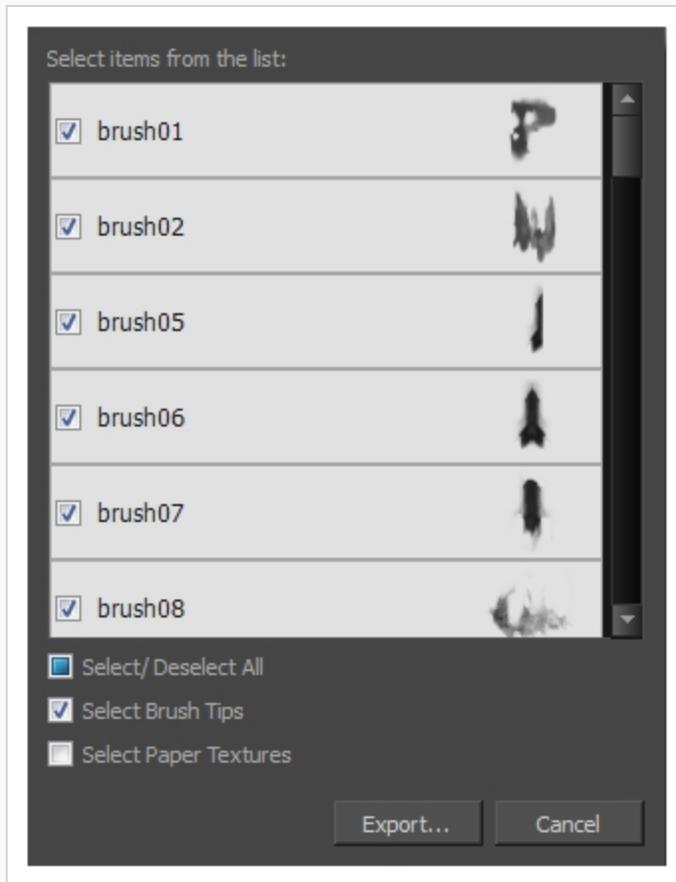
5.  By default, both your brush tips and your paper textures are selected for export. If you only wish to export your brush tips, uncheck the **Select Paper Textures** option.

6.  Click **Export**.

7.  In the Export Textures window that appears, browse to a location where you want save the `.xml` file and give it a name.

8.  Click **Save**.

**Importing Brush Tips**

You can import Harmony brush tips you previously exported.

## How to import brush tips

1.  In the Tools toolbar, select the Brush ✒ or Eraser 🖌 tool.

2.  In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

3.  If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the eraser tool.

4.  Click on the Paper Texture menu icon ▤ and select **Import**.

5.  In the browser window that appears, navigate to and select the `.xml` file in which you exported your brush tips.

6.  Click **Open.**

    In the Import Tips and Textures dialog box appears.
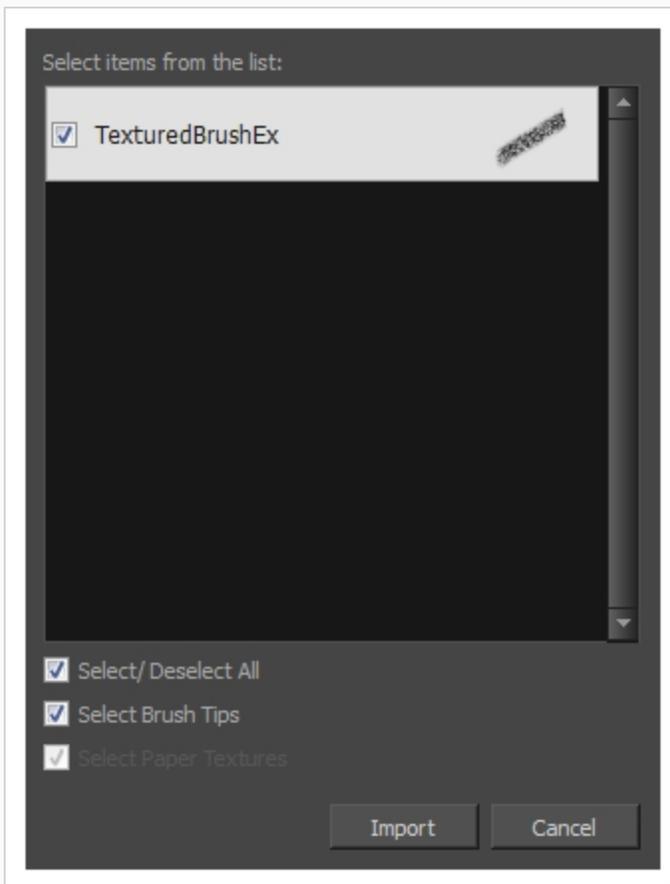


7.  If the selected `.xml` file also contains paper textures, they will be selected for import along with the brush tips by default. If you wish to only import the paper textures, uncheck the **Select Paper Textures** option.

8.  Click **Import**.

    The imported brush tips appear in the Brush Tips Library.

**Changing the Brush Tip Display**

You can display your preset list as thumbnails or a list.

### How to change the Brush Tips thumbnail display

1. In the Tools toolbar, select the Brush 🖌 or Eraser 🖍 tool.

2. In the Tool Properties view, click the arrow button to open the Brush/Eraser Properties dialog.

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** if you are using the brush tool or the **Eraser Type** to **Textured Eraser** or **Textured, Preserve Vector** if you are using the eraser tool.

1. Click on the Brush Tips menu icon ▤ .

2. Select one of the following options:

   - **Small Thumbnail:** Displays brush tips in a grid of small thumbnails.

   - **Large Thumbnail:** Displays brush tips in a grid of large thumbnails with their name. The default view setting.

   - **List View:** Displays brush tips in a list, with their name on the left and their texture on the right of each row.

# Configuring Smoothing for a Textured Brush

If you are drawing on a vector layer, the Brush Properties dialog will have a Smoothing tab, which allows to configure how Harmony automatically smooths your brush strokes. If you are drawing on a bitmap layer, this topic is not applicable, as bitmap layers do not support automatic smoothing.

### How to configure a textured brush's smoothing

1. In the Brush Properties dialog, open the **Smoothing** tab.
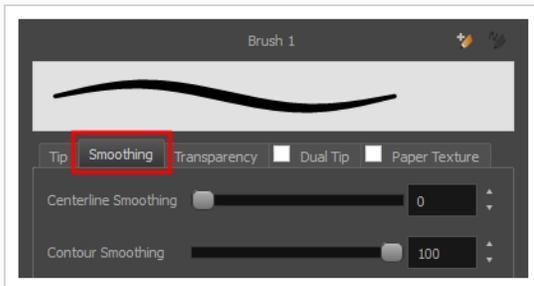


2. Use the **Centerline Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's direction, curves and corners. A higher setting will prevent your line from being shaky, but is liable to reduce your drawing precision and to round sharp corners into curves.

3. Use the **Contour Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's contour. A higher setting will round sharp corners and reduce the amount of control points for the resulting vector shape.

4. In the Camera or Drawing view, start drawing to test your brush settings.

# Configuring Antialiasing and Transparency for a Textured Brush

A textured brush can be either antialiased or not antialiased. Without antialiasing, your brush strokes will only create fully opaque artwork. With antialiasing enabled, you also have the option to set the flow and opacity of your brush, allowing you to simulate the effect of inks and paints with various consistencies.

> **NOTE**
>
> If you are working on a vector layer, make sure the **Brush Type** option in the Tip tab is set to **Textured Vector Brush** to enable the textured brush options.

### How to configure a brush's antialiasing and transparency settings

1. In the Brush Properties dialog, open the **Transparency** tab.
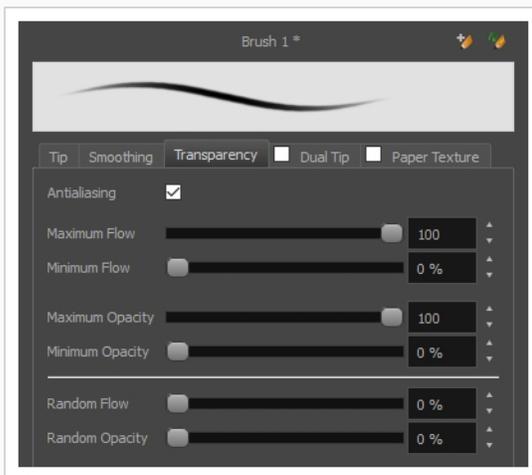


2. If you want your brush to have antialiasing or transparency, enable the **Antialiasing** option.

> **NOTE**
>
> If the Antialiasing option is disabled, all Transparency settings will be disabled, and your brush will only create fully opaque artwork.

3. Use the **Maximum Flow** slider to set the consistency of your brush strokes. A lower flow will make your stroke more transparent towards the extremities and more opaque in its center, whereas a higher flow will make your stroke consistently opaque.

4. If you are using a pressure-sensitive pen tablet, use the **Minimum Flow** slider to set the percentage of the maximum flow that you want your brush to use when using your pen with very little pressure. If you don't want the pressure on your pen to affect the flow, set this parameter to 100%.

5. Use the **Maximum Opacity** slider to set the maximum opacity of your brush strokes.

6. If you are using a pressure-sensitive pen tablet, use the **Minimum Opacity** slider to set the percentage of the maximum opacity that you want your brush to use when using your pen with very little pressure. If you don't want the pressure on your pen to affect the opacity, set this parameter to 100%.

7. If you want the **Flow** of your brush to be randomized, set the Random Flow setting to any value over 0 %.

8. If you want the **Opacity** of your brush to be randomized, set the Random Opacity setting to any value over 0 %.

9. In the Camera or Drawing view, start drawing to test your brush settings.

# Configuring a Textured Brush with a Dual Tip

Textured brushes can also have a dual tip. A dual tip is a secondary tip that can be blended into your primary tip in various blend modes, with its own full set of tip settings.

> **NOTE**
>
> If you are working on a vector layer, make sure the **Brush Type** option in the Tip tab is set to **Textured Vector Brush** to enable the textured brush options.

### How to configure a brush with a dual tip

1. In the Brush Properties dialog, click on the **Dual Tip** tab.

2. Check the check box in the **Dual Tip** tab to enable the Dual Tip functionality.
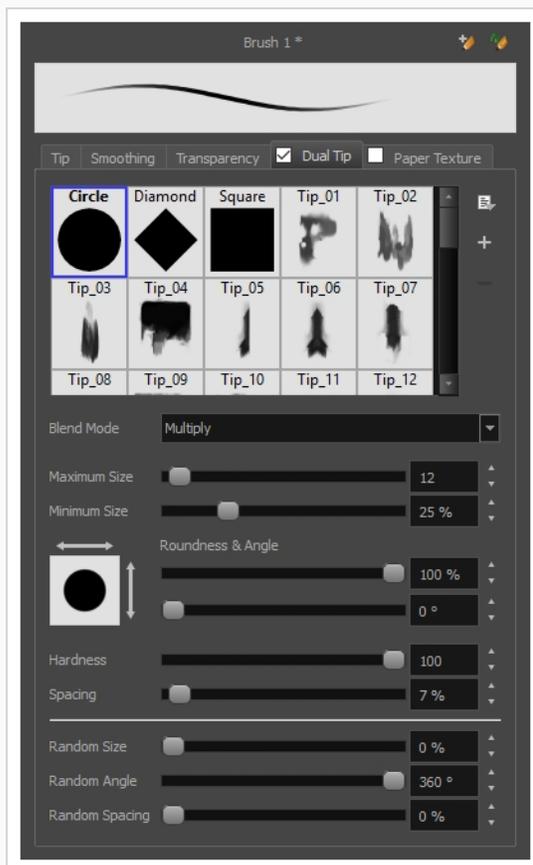


3. In the **Brush Tip** list, select the desired brush tip. If you want to create your own brush tip, see <span>Adding a Brush Tip</span> on page 142.

4. In the Blend Mode drop-down list, select the algorithm with which you want your secondary tip to blend into your primary tip:

   - **Multiply** will draw the least opaque pixel of either brush tip, making more spaced out, inconsistent strokes.

   - **Color Dodge** will add the opacity of the pixels in both brush tips, making more opaque strokes.

   - **Combine** will draw the most opaque pixel of either brush tip, combining the tip shapes without increasing their opacity.

5. Use the **Maximum Size** slider to set the maximum size of your brush tip.

> **NOTE**
>
> When drawing with a mouse, your brush is always at its maximum size. When drawing with a pressure-sensitive pen tablet, your brush's size will range between its minimum and maximum size, depending on the amount of pressure you put on the pen when drawing.

6. If you are using a pressure-sensitive pen tablet, use the **Minimum Size** slider to set the size of your brush when using your pen with very little pressure. The minimum size is set to a percentage of your brush tip's maximum size, which is 25% by default. If you don't want the pressure on your pen to affect the brush size, set this parameter to 100%.

7. If you want your brush tip to have uneven dimensions, use the **Roundness** slider to shrink the brush tip vertically all the while preserving its horizontal size.

8. If you want your brush tip to be at an angle, use the **Angle** slider to rotate your brush tip.

9. Use the **Hardness** slider to set how much of the outer part of your brush tip should fade to transparency. If you set it to 100 %, the brush will be completely solid. If you set it to 0 %, the brush will only be opaque in its center, and will gradually become transparent towards its edges.

10. Use the **Spacing** slider to set how much distance you must drag your brush before Harmony prints the brush tip onto your canvas, relative to your brush's size. The default setting is 7%, which produces a relatively realistic brush stroke-like result. If this setting is too low, your brush strokes might feel too thick and opaque. If this setting is too high, your strokes will look like the brush tip has been stamped repeatedly over your canvas instead of dragged on it.

11. If you want the size of your brush tip to vary each time it's printed on your canvas, set the **Random Size** setting to any value above 0 %.

12. If you want the angle of your brush tip to be random each time the tip is printed on your canvas, set the **Random Angle** setting to any value above 0 °.

13. If you want the spacing between each instance of the brush tip to be random, set the **Random Spacing** setting to any value above 0 %.

14. If you want the spacing between each instance of the brush tip to be random, set the **Random Spacing** setting to any value above 0 %.

15. In the Camera or Drawing view, start drawing to test your brush settings.

# Configuring a Brush with a Paper Texture

Paper textures are bitmap textures that you can apply to your brush strokes as you draw. They act as transparency filters that are tiled over your brush strokes to make them look grainy, as if you were drawing on a rough paper surface. While Harmony comes bundled with preset paper textures, it is also possible to create and use your own paper textures.



### How to configure a brush with a paper texture

1. In the Brush Properties dialog, click on the **Paper Texture** tab.

2. Check the check box in the **Paper Texture** tab to enable paper textures.
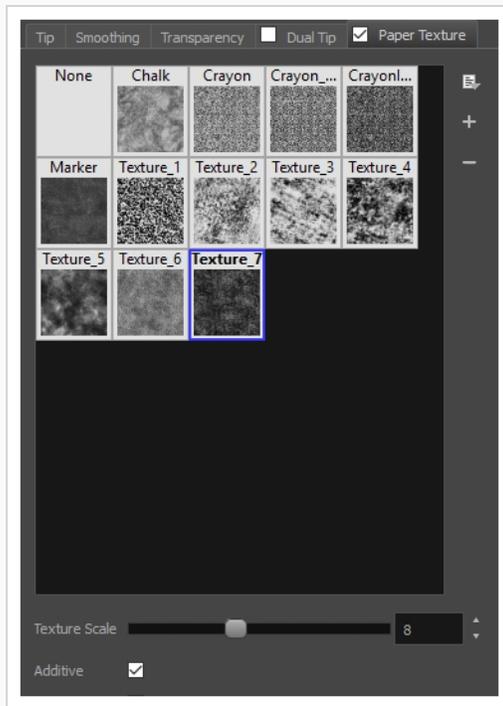
3. In the paper texture list, select the desired paper texture. If you wish to create your own paper texture, see _Adding a Paper Texture_ on page 155.

4. Using the **Texture Scale** slider, select the scaling factor at which to scale the paper texture when applying it to your brush strokes.

5. If you want your brush strokes to get more opaque as you drag your brush or when you draw over them, enable the **Additive** option.

6. If you want the paper texture to always be aligned to the same grid regardless of where you draw your strokes, enable the **Aligned** option. Otherwise, your paper textures will be positioned relative to where you start your drawing stroke, and if you draw two strokes one over the other, their paper textures will clash with each other.

7. In the Camera or Drawing view, start drawing to test your brush settings.

It is also possible to use textures when drawing with the Pencil tool. However, those textures follow the shape of the line instead of tiling over your strokes. For more information, see _About Pencil Line Textures_ on page 191

**Adding a Paper Texture**

In the Brush Properties dialog, you will find a set of default paper textures which are bundled with Harmony, but you can also create your own paper textures, then export your collection or import an existing set.

To make your own paper texture, you must first create an image file containing the texture, either in Harmony or in a third party software, like Adobe Photoshop, then import it into Harmony. A paper texture must be a greyscale image. Colors in paper textures are not acknowledged by Harmony, as paper textures are applied onto the colour you are painting with in Harmony. Your texture should also not contain transparency, as

Harmony determines the texture's transparency based on its black, white and grey levels. When drawing with a paper texture, its black parts will appear 100% opaque, its white parts will appear 100% transparents, and its grey parts will appear semitransparent.

You can import brush tips in any image format supported by Harmony. It is recommended to create paper textures in a resolution ranging from 100 x 100 pixels to 400 x 400 pixels.

Like brush tips and brush presets, paper textures are saved in your preferences. You can also export your paper textures into an `.xml` file, and import them on a different workstation, allowing you to share your textures between the different people collaborating on your project.

**How to add a paper texture**

1. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.



3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

   1. Click on the **Paper Texture** tab.

   2. Check the check box in the **Paper Texture** tab to enable paper textures.
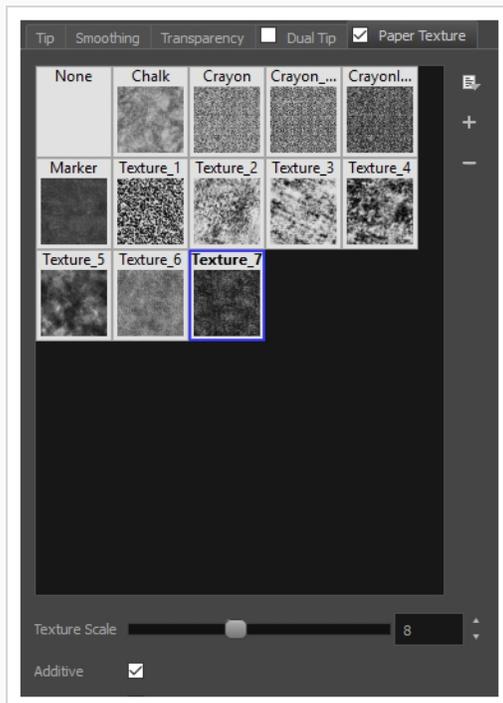
1. In the Brush Properties dialog, do one of the following:

   - From the Paper Texture menu, select **Add**.

   - Click the Add Paper Texture button.
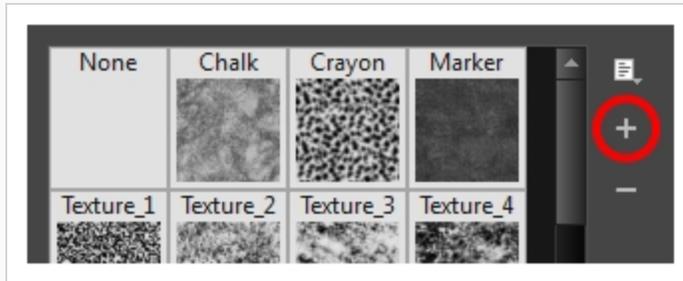
   

2. In the browser window that appears, navigate to where you saved your texture file.

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.

**Renaming a Paper Texture**

You can rename your paper textures to keep your list organized.

## How to rename a paper texture

1. In the Tools toolbar, select the Brush ✎ tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.

   

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

1. Click on the **Paper Texture** tab.

2. Check the check box in the **Paper Texture** tab to enable paper textures.
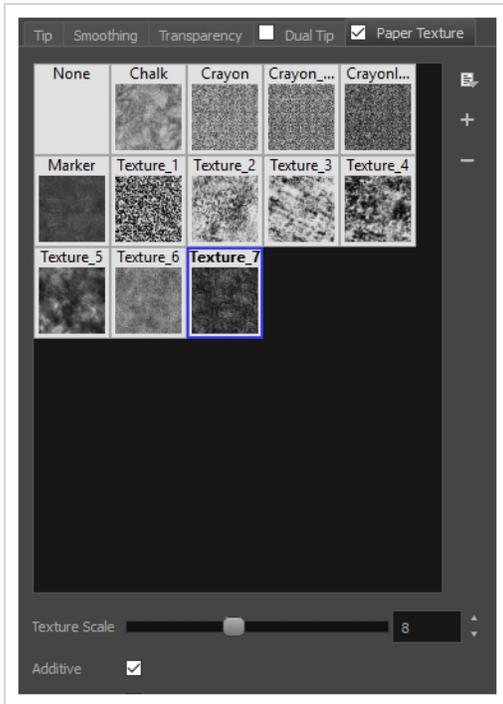
3. Select the texture you want to rename.

4. Click on the Paper Texture menu icon ▤ and select **Rename**.
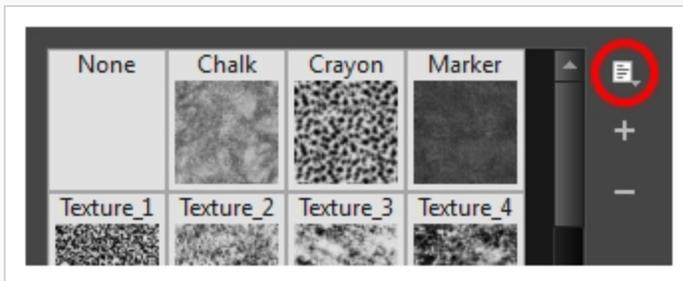


5. In the Rename Texture dialog box that appears, type in the new name for the texture.
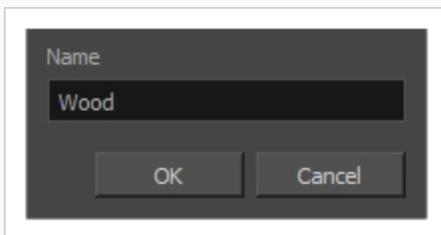


6. Click **OK**.

**Deleting Paper Textures**

You can delete unnecessary paper textures from your preset list.

### How to delete a paper texture

1. In the Tools toolbar, select the Brush ✐ tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.



3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

    1. Click on the **Paper Texture** tab.

    2. Check the check box in the **Paper Texture** tab to enable paper textures.
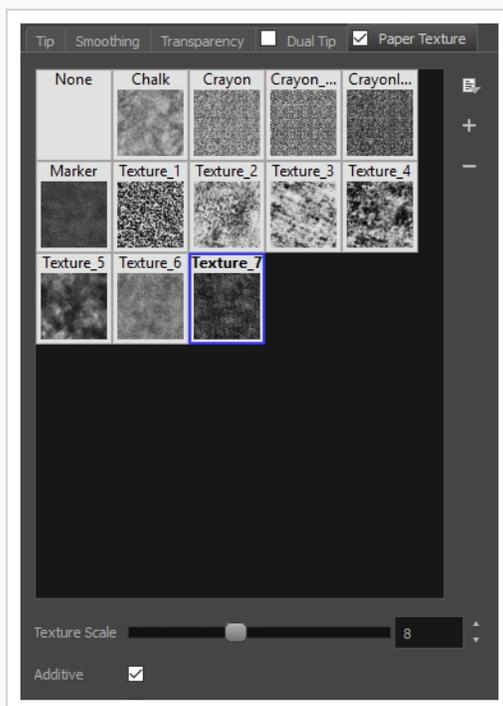


    1. Select the texture you want to delete.

    2. Do one of the following:

        - Click on the Paper Texture menu icon ▤ and select **Delete**.

        - Click the Delete — button.
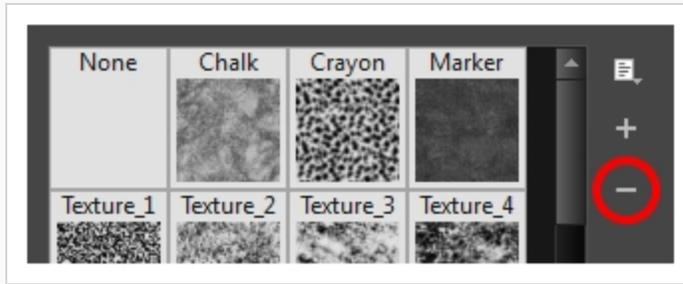
> **NOTE**
>
> You can delete any paper texture in the Paper Texture library, including the default paper textures, as long as no brush preset is using that paper texture.

**Exporting Paper Textures**

You can export paper textures into an `.xml` file which will contain their name and bitmap texture. This can be useful if you wish to back up or share your paper textures.

## How to export paper textures

1. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.

   

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

4. Click on the **Paper Texture** tab.

5. Check the check box in the **Paper Texture** tab to enable paper textures.

6.  Click on the Paper Texture menu icon 🗐 and select **Export**.

    The Export Tips and Textures dialog opens. This dialog allows you to export both your textured brush tips and your paper textures.

7. By default, both your brush tips and your paper textures are selected for export. If you only wish to export your paper textures, uncheck the **Select Brush Tips** option.

8. Click on the **Export** button.

9. In the Export Textures dialog that appears, browse to a location where you would like to save the .xml file, then type in the desired file name.

10. Click **Save**.

**Importing Paper Textures**

You can import paper texture presets you previously exported from Harmony.

## How to import paper textures

1. In the Tools toolbar, select the Brush ✐ tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

4. Click on the **Paper Texture** tab.

5. Check the check box in the **Paper Texture** tab to enable paper textures.
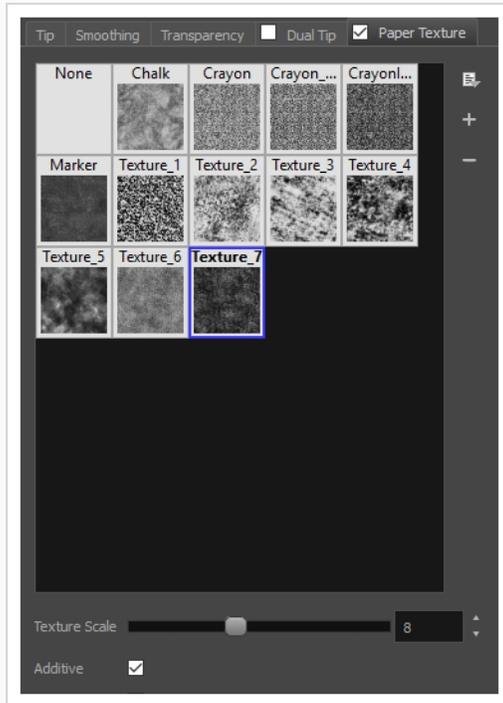


6. Click on the Paper Texture menu icon ▤ and select **Import**.

7. In the browser window that appears, navigate to and select the `.xml` file in which you exported your paper textures.

8. Click **Open.**

   In the Import Tips and Textures dialog box appears.
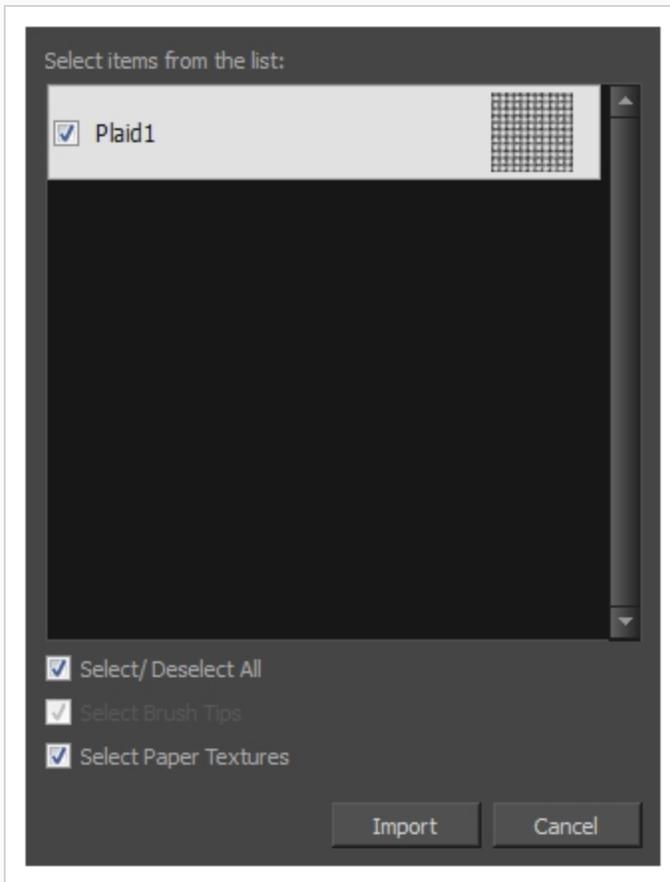
9. If the selected `.xml` file also contains brush tips, they will be selected for import along with the paper textures by default. If you only wish to import the paper textures, uncheck the **Select Brush Tips** option.

10. Click **Import**.

    The imported paper textures will appear in the Paper Texture Library.

**Changing the Paper Texture Display**

You can change the way the paper textures are displayed in the paper textures list of the Brush Properties dialog.

### How to change the Paper Texture thumbnail display

1. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

2. In the Tool Properties view, click the Arrow button to open the Brush Properties view.

3. If you are drawing on a vector layer, set the **Brush Type** to **Textured Vector** to enable the textured brush options. If you are drawing on a bitmap layer, the textured brush options are always enabled.

4. Click on the **Paper Texture** tab.

5. Check the check box in the **Paper Texture** tab to enable paper textures.
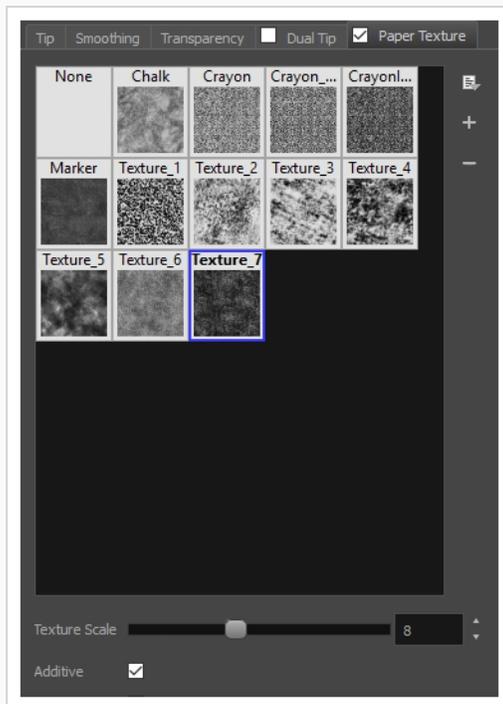


1. Click on the Paper Texture menu icon ☰ .

2. Select one of the following options:

   - **Small Thumbnail:** Displays paper textures in a grid of small thumbnails.

   - **Large Thumbnail:** Displays paper textures in a grid of large thumbnails with their names. The default view setting.

   - **List View:** Displays paper textures in a list, with their name on the left and their texture on the right of each row.

# Setting the Textured Brush Resolution

An important thing to take in consideration when drawing with textured brushes is that, contrary to solid vector brushes, textured brushes store their texture in bitmap data, which is stored in individual pixels. This implies that, where solid vector artwork can be scaled and zoomed in without issue, textured brush strokes are resolution dependent, and are liable to lose quality and appear pixelated if they are enlarged or zoomed in.

By default, textured brush strokes have a pixel density of 100%. At this density, when your scene is not zoomed in and your artwork is not scaled up, each pixel in the textured brush strokes corresponds to one pixel in the rendered image. Scaling it up or zooming in will require Harmony to render several pixels using the same pixel from the brush stroke's texture, making the artwork lose quality.

Hence, before you start drawing using textured brushes, it is important to consider if you will need to zoom onto or scale up your artwork, and set the pixel density accordingly. For example, if you intend to scale your bitmap artwork up to 300%, or if you intend to zoom in from 12 fields to 4 fields, you should make sure the pixel density for your textured brush strokes is of at least 300% before you start drawing.

You can specify the pixel density for textured brushes at the scene level or at the drawing level:

- Setting the pixel density at the scene level will make newly created drawings have the specified pixel density, but it will not change the pixel density of existing textured artwork.

- Setting the pixel density at the drawing level will allow you to change the pixel density of existing drawings, but will not affect the pixel density of drawings created afterward.

> **NOTE**
>
> If you are drawing on a bitmap layer, you must set the pixel density and canvas size for bitmap artwork instead—see _Setting the Bitmap Resolution_ on page 372.

**How to set the pixel density for textured brush strokes for a scene**

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

   The Scene Settings dialog box opens.

2. Select the **Bitmap Resolution** tab.
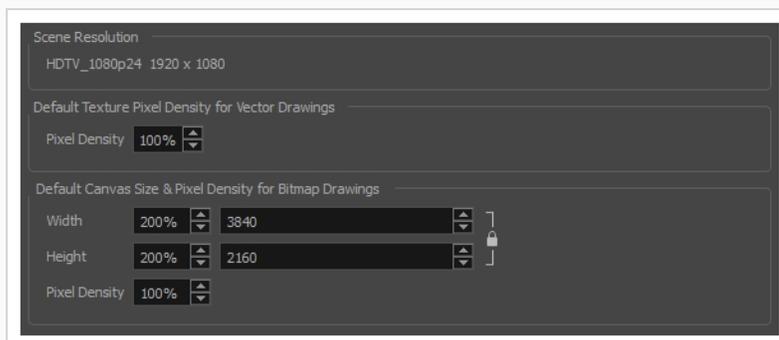
3.  In the **Pixel Density** field of the **Default Texture Pixel Density for Vector Drawings** section, enter the desired percentage of pixel density. If you intend to scale or zoom in on your artwork, make sure your pixel density is set to be at least the factor by which your artwork will scaled or zoomed on. For example, if you intend to scale your artwork by 300%, you need to set the pixel density to at least 300%. If you intend to zoom in on your artwork from 12 fields to 6 fields, you need to set the pixel density to at least 200%. If you intend to do both, you need to set the pixel density to at least 600%, as the camera zoom and scaling factor will have a multiplying effect on the apparent scaling of your artwork.

4.  Click **OK**.

    From now on, new drawings created in your scene will have the selected pixel density for textured brush strokes.

Since changing the bitmap resolution settings for your scene will only affect newly created drawings, you may also want to change the pixel density for existing drawings. This is possible. However, if you choose to change the pixel density of textures in existing artwork, it will be resampled. If you increase the pixel density of existing artwork, Harmony will have to generate extra pixels for the texture, which will cause the artwork to lose quality. Hence, it is important to calculate and set the proper pixel density for your textured artwork before you start drawing.

### How to change the pixel density for textured brushes strokes in existing drawings

1.  In the Timeline or Camera view, select the drawing for which you want to change the textured brush stroke resolution.

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

    The Change Vector Drawing Brush Textures Resolution dialog opens.
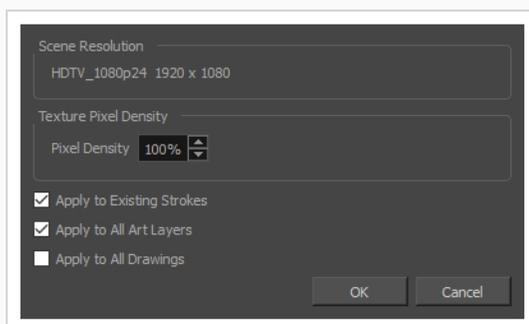
    

3.  In the **Pixel Density** field, enter the desired percentage of pixel density. If you intend to scale or zoom in on your artwork, make sure your pixel density is set to be at least the factor by which your artwork will scaled or zoomed on. For example, if you intend to scale your artwork by 300%, you need to set the pixel density to at least 300%. If you intend to zoom in on your artwork from 12 fields to 6 fields, you need to set the pixel density to at least 200%. If you intend to do both, you

need to set the pixel density to at least 600%, as the camera zoom and scaling factor will have a multiplying effect on the apparent scaling of your artwork.

4. If you want the specified pixel density to be applied on the existing textured brush strokes in the drawing, check the **Apply to Existing Strokes** option.

5. If you want the specified pixel density to be applied to all the drawing's art layers (ie: Line Art, Colour Art and, if enabled, Overlay Art and Underlay Art), check the **Apply to All Art Layers** option. Otherwise, only the currently active art layer will be affected.

6. If you want the specified pixel density to be applied to all drawings in the active layer, check the **Apply to All Drawings** option. Otherwise, only the current drawing will be affected.

7. Click **OK**.

From now on, new brush strokes will be in the selected drawing will be in the specified pixel density.

> **NOTE**
>
> This does not change the default pixel density for the scene. New drawings will still be created with the scene's default pixel density.

# About Brush Presets

Setting up your brush to perfectly reproduce the desired art style can require a lot of tweaking as well as trial and error. Once you have found the correct settings for your brush, you will want to reuse it throughout your project for consistency. You can do that by creating and using brush presets.
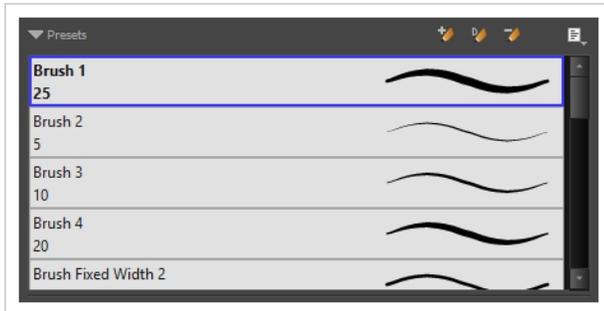


Harmony comes preloaded with many brush presets which you can select from the Tool Properties view. It is also possible to create your own brush presets by configuring your brush, then saving it as a preset.

Like brush tips and paper textures, brush presets are saved in your preferences. You can also export your brush presets into an `.xml` file, and import them on a different workstation, allowing you to share your brush presets between the different people collaborating on your project.

> **NOTE**
>
> Brush presets are not to be confused with brush tips and paper textures. Brush tips and paper textures are one of the many properties of a brush, whereas a brush preset contains all the properties of a brush.

> **NOTE**
>
> Brush presets for vector layers and for bitmap layers are separate. A brush preset created while working on a vector layer cannot be used when working on a bitmap layer, and vice versa.

# Creating a Brush Preset

You can create your own custom brush presets by configuring your brush, then adding it as a preset.

## How to create a brush preset

1. Make sure the current drawing layer is vector if you wish to create a vector brush preset, or bitmap if you wish to create a bitmap brush preset—see About Vector and Bitmap Layers

2. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

3. Click on the Arrow button to open the Brush Properties dialog.



4. Configure your brush to be exactly how you wish to use it in the future—see Creating a Solid Brush or Creating a Textured Brush.

5. Do one of the following:

   - From the Brush Properties dialog, click on the New Brush Preset 🖊 button in the top-right corner.

   - In the Tool Properties view, click the New Brush Preset 🖊 button.

   - In the Tool Properties view, open the Brush Presets menu 📄 and select **New Brush Preset**.

6. In the New Preset window, type a name for your new brush preset.

   Your new brush preset is added to the end of the list of brush presets.

# Creating a Dynamic Brush Preset

You can create dynamic brush presets allowing you to stamp custom patterns. You can either repeat the same pattern or loop a pattern made of several drawings.

**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.
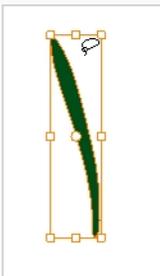
4. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

5. In the Tool Properties view, do one of the following:

   - Click the Add Dynamic Brush 🖍 button.

   - Open the Brush Preset menu 🗏 and select **New Dynamic Brush**.

   A new dynamic brush preset is added at the bottom of the Presets list.

6. Open the Brush Preset menu 🗏 and select **Rename Brush**.

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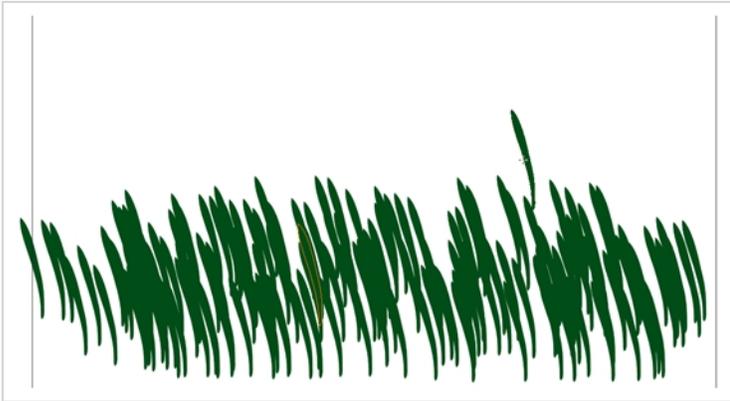
9.  To adjust the scale of your pattern to make it bigger or smaller as you stamp it, adjust the Maximum Size value in the Tool Properties view.

## 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.
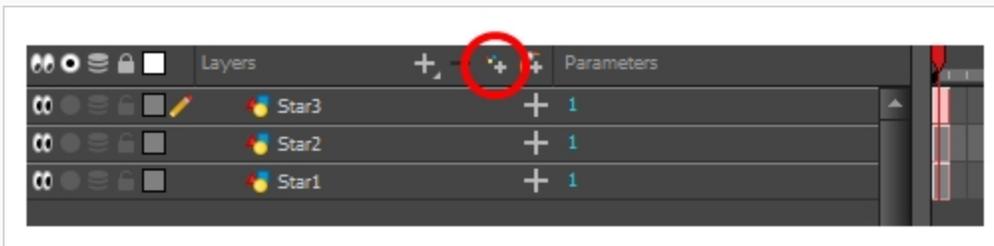


2.  In the Camera view, draw the individual drawings of your pattern on separate layers.
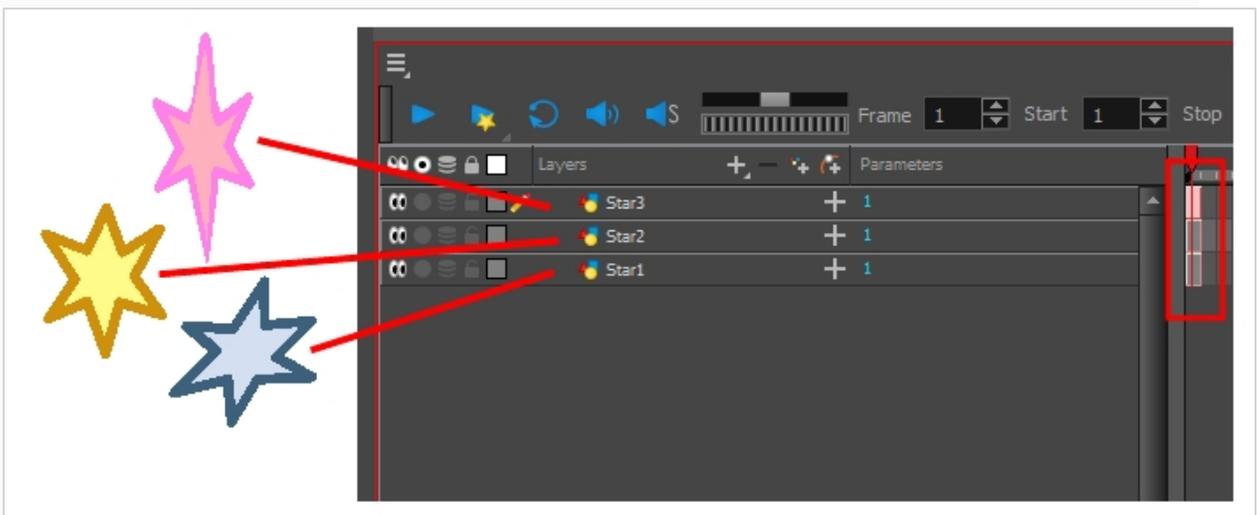
3. In the Tools toolbar, select the Select ➤ tool.

1. In the Tool Properties view, disable the Works on Single Drawing ⬉ option to allow the Select tool to grab artwork on multiple layers.

2. In the Camera view, select all the drawings you want to add to your new dynamic brush.
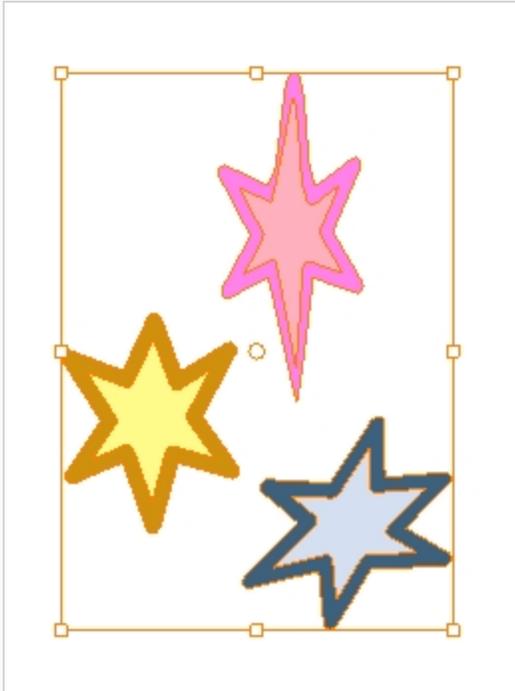


3. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

4. In the Tool Properties view, do one of the following:

    - Click the Add Dynamic Brush 🖌 button.

    - Open the Brush Preset menu 🗏 and select **New Dynamic Brush**.

    A new dynamic brush preset is added at the bottom of the Presets list.

5. Open the Brush Preset menu 🗏 and select **Rename Brush**.

6. In the Rename Brush dialog box, type in a name for the new dynamic brush and click **OK**.

7. 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.
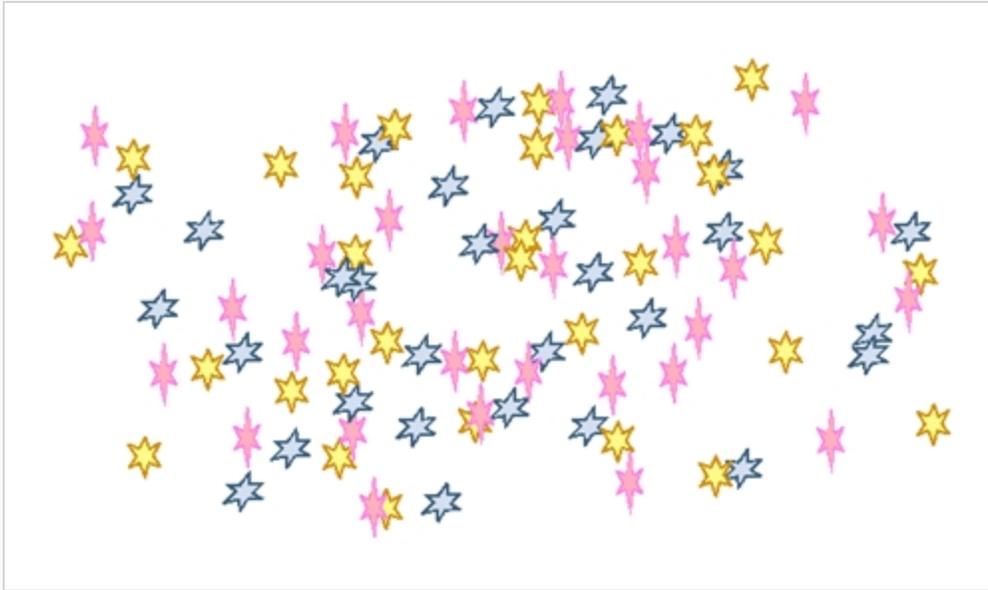
# Selecting a Brush Preset

Harmony provides you with default brush presets available in the Tool Properties view.

## How to select a brush preset

1. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

2. In the Tool Properties view, select a brush preset from the Presets list.

# Updating a Brush Preset

If you want to modify the settings of an existing custom preset, you can do so by adjusting the parameters in the Tool Properties view, then updating your preset with your brush current's parameters.

**How to update a brush preset**

1. In the Tools toolbar, select the Brush ✏️ tool or press Alt + B.

1. In the Tool Properties view, select the Brush Preset you wish to update.

2. Click on the Arrow button to open the Brush Properties view.



3. Configure your brush to be exactly how you wish to use it in the future—see Creating a Solid Brush or Creating a Textured Brush.

4. Click on the Update Brush Preset ✏️ button in the upper-right corner of the Brush Properties dialog.

# Renaming a Brush Preset

To keep your list comprehensive and organized, you can name your custom brush presets.

**How to rename a brush preset**

1. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

2. In the Tool Properties view, select a brush preset to rename.

3. Open the Brush Preset menu 🗐 and select **Rename Brush**.
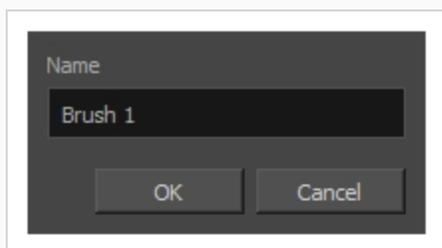


4. Type in a new name for the brush and click **OK**.

# Deleting a Brush Preset

You can keep your preset list clean by deleting unwanted custom presets.

**How to delete a brush preset**

1. In the Tools toolbar, select the Brush ✐ tool or press Alt + B.

2. In the Tool Properties view, select the brush preset you want to delete.

3. Do one of the following:

   - Click the Delete Brush ✐ button.

   - Open the Brush Preset menu ▤ and select **Delete Brush**.

# Exporting Brush Presets

You can export brush presets into an **.xml** file which will contain all of your brush's settings. This can be useful if you wish to back up or share your brush presets.

**How to export pencils, brushes and erasers**

1. In the Tools toolbar, select either the Brush 🖌, Pencil ✏ or Eraser 🖍 tool.

2. Open the Brush Preset menu 📄 and select **Export Brushes**.

   The Export Tips and Textures dialog opens. This dialog allows you to export brush presets for the Brush, Pencil and Eraser tools.

   

3. By default, the presets for all your tools will be selected for export. If you only wish to export presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets.

4. Click **Export**.

5. In the Export Presets dialog that appears, browse to the location where you want to save the `.xml` file and enter its file name.
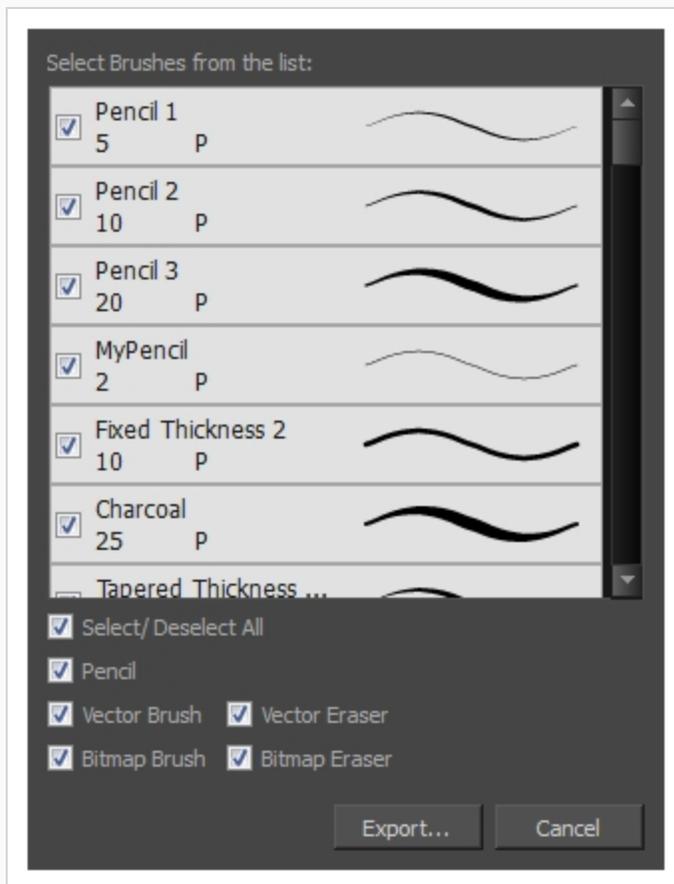
6. Click **Save**.

# Importing Brush Presets

You can import brush presets that you previously exported from Harmony.

### How to import pencils, brushes and erasers

1. In the Tools toolbar, select either the Brush ✏, Pencil ✏ or Eraser ✏ tool.

2. Open the Brush Preset menu 🗐 and select **Import Brushes**.

3. In the browser window that appears, navigate to and select the `.xml` file in which you exported your brush presets.

4. Click **Open.**

   The Import Brushes dialog box opens.

   

5. By default, the presets for any tools included in the file will be selected for import. If you only wish to import presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets

6. Click **Import**.

The imported brush, eraser and pencil styles will appear in the Presets list.

# Changing the Brush Preset Display

You can display your preset list as thumbnails or a list.

**How to change the Brush Presets display**

1. In the Tool Properties view, click on the Brush Presets menu button  ▤  .

2. Select one of the following options:

   - **Small Thumbnail:** Displays presets in a grid of small thumbnails with a preview of their tip.

   - **Large Thumbnail:** Displays presets in a grid of big thumbnails, with their name and a preview of their tip.

   - **Stroke View:** Displays presets in a list, with their name and a preview of a stroke done with each preset. This is the default setting.

# Adjusting Texture Opacity

An advantage of using textured vector brushes on vector layers is that you can adjust their opacity afterward. Using the Adjust Line Texture Opacity dialog, you can adjust the opacity levels between the most opaque and the most transparent pixels in your textures.

### How to adjust the line texture opacity

1. If you are in Camera view, select the **Current Drawing on Top** option—see .

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.
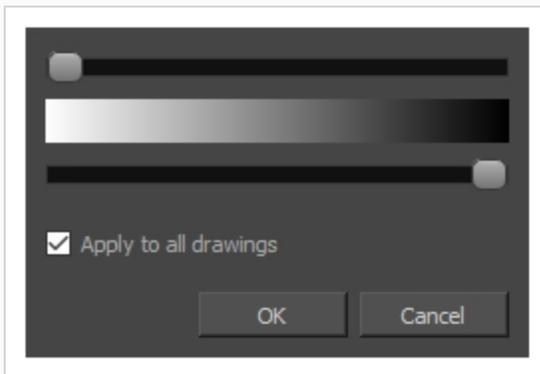
   

4. Do one of the following:

   - Drag the upper slider towards the right to increase the transparency of the more transparent pixels.

   - Drag the lower slider towards the left to increase the opacity of the more opaque pixels.

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

6. Click **OK**.

# About the Pencil Tool

T-HFND-004-004

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.
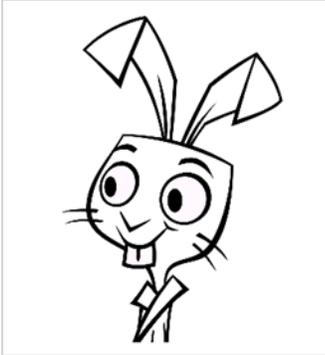


The Brush and Pencil tools are used for drawing and sketching. Both tools support pressure sensitivity, allowing you to create lines with variable thickness. The Brush tool produces contour vector lines. The Pencil and shape tools produce central vector lines. This means that a pencil line's control 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.
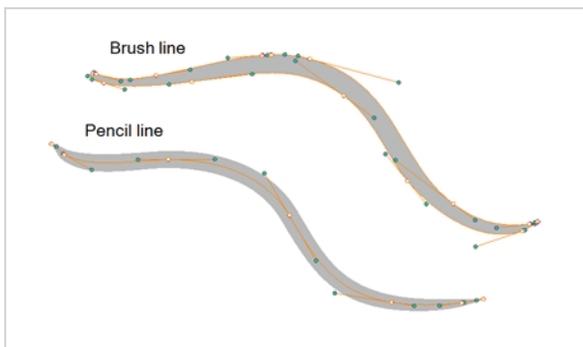


- If you draw with the Brush tool and want to modify the thickness variation, use the Contour Editor tool.

- 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. Transparent pencil lines may not display the way you want when they overlap:

Pencil line    Brush line
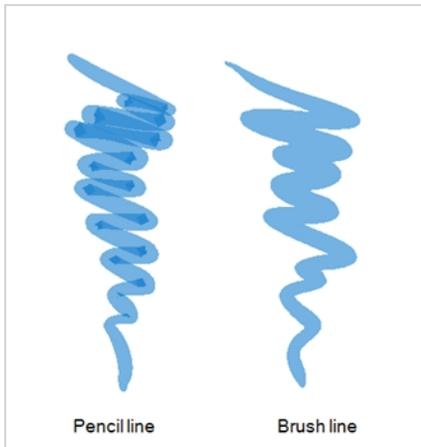
The pencil line is more appropriate for the final line of your clean drawings. Also, if you're drawing for digital animation and intend to use the Auto-Patch effect to connect the parts of your character model, you should use pencil lines for the Auto-Patch effect to work as expected.

# Drawing with the Pencil Tool

T-HFND-004-004A

Using the Pencil tool, you can draw vector pencil lines which can be easily tweaked and reshaped as needed.

## 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.
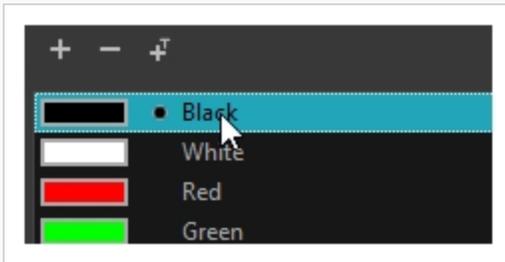


4. In the Drawing or Camera view, start drawing.



> **NOTE**
>
> You can press Shift + Alt as you draw to draw straight lines.

**NOTE**

Pencil lines are central vector lines. Sometimes, two pencil lines may look connected because their edges overlap, but if their centerline is not connected, they will be considered an open shape. To make sure the end of your stroke connects to the beginning of your stroke, hold the Alt key when you start or finish drawing a pencil line.
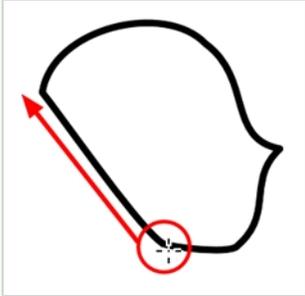
# Creating a Pencil

T-LAY-001-001

You can configure a pencil's size, how much Harmony should automatically smooth your pencil lines when drawing, the shape of the tips and corners of your pencil line as well as its texture.

## How to modify the pencil settings

1. In the Tools toolbar, select the Pencil ✏ tool or press Alt + /.

2. In the **Tool Properties** view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.

   

   The Pencil Properties dialog opens.
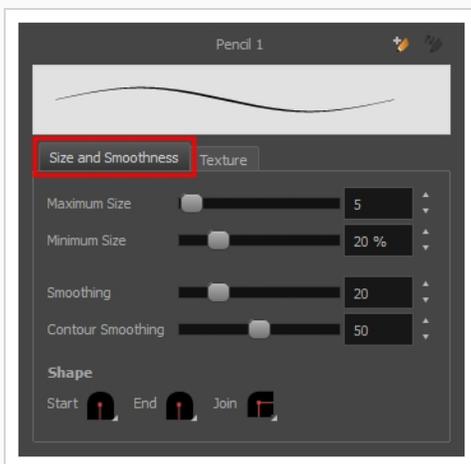
   

3. Use the **Maximum Size** slider to set the maximum size of your pencil line.

4. If you are using a pressure-sensitive pen tablet, use the **Minimum Size** slider to set the size of your pencil when using your pen with very little pressure. The minimum size is set to a percentage of your pencil's maximum size, which is 20% by default. If you don't want the pressure on your pen to affect the pencil size, set this parameter to 100%.

5. Use the **Centerline Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's direction, curves and corners. A higher setting will prevent your line from being shaky, but is liable to reduce your drawing precision and to round sharp corners into curves.

6. Use the **Contour Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's contour. A higher setting will round sharp corners and reduce the amount of control points for the resulting vector shape.

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7. Click on the **Shape** pop-up buttons to select whether you want the **Start** and **End** of your pencil lines to be **Round** or **Flat**, and whether you want the points and corners where pencil lines **Join** to be **Round**, **Mitre**-shaped or **Bevel**ed.
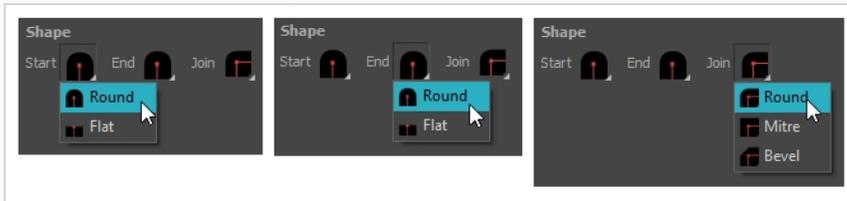


8. Click on the **Texture** tab.
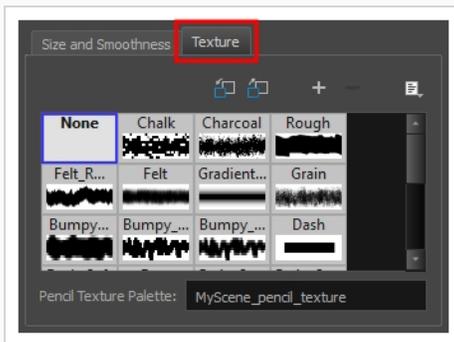


9. If you want your pencil line to have a texture, select the desired pencil line texture from the pencil line texture library. Otherwise, select None. For more information on pencil line textures, see *About Pencil Line Textures* on page 191.

10. Either close or set aside the Pencil Properties dialog.

11. In the Camera or Drawing view, start drawing to test your pencil settings.

# About Pencil Line Textures

Just like the Brush tool, the Pencil tool also supports textures. However, there are important differences between the way brush textures and pencil textures work.

For one thing, a pencil line texture is applied with regard to the width and direction of the pencil lines. For example, if you draw a spiral with a dash texture, the dashes will follow the curves of the spiral, and if you draw a thicker line with the same texture, the dashes will be both longer and thicker.
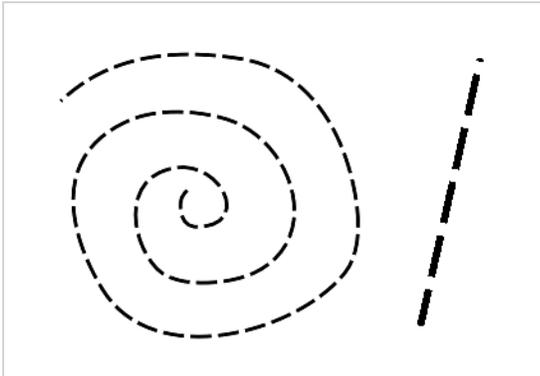


Like colours, pencil textures are stored in special palettes in your scene. While brush textures are stored in your artwork as bitmap data, pencil textures are stored in your artwork by linking the pencil line with its pencil texture in the palette. This means that if you scale or tweak your pencil line, the pencil texture will be generated again based on the new line's shape and the original texture. This also means that you are able to change the pencil texture of an existing pencil line or to apply a texture to a pencil line that does not already have one.



Scale with Select tool          Apply different texture
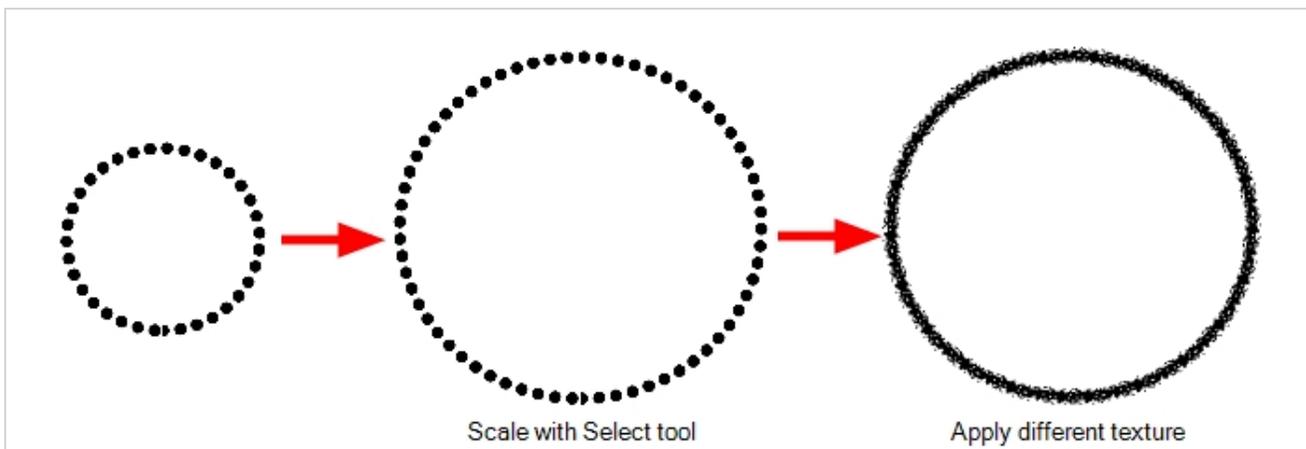
Pencil line textures can also be used with the Line, Rectangle, Ellipse and Polyline tools, as those tools also draw pencil lines.

# Drawing with Pencil Textures

You can draw a textured pencil line by selecting the pencil texture, then drawing.

There are two ways to select a pencil texture line. You can select a pencil texture palette, then one of its pencil texture swatches in the Colour view, as you would do to select a colour, or you can select a pencil texture from the current pencil texture palette in the Pencil Properties dialog.

Your pencil texture will be combined with the selected colour to make a textured colour line.

> **NOTE**
>
> You can also draw with textured pencil lines with the Line, Rectangle and Ellipse tools.

## How to draw with a textured pencil line using the Colour view

1. In the Tools toolbar, select the Pencil 🖊 tool or press Alt + /.

2. In the Colour view, select the colour with which you wish to draw.

3. In the Colour view, click on the Show Pencil Texture Palettes 🖉 button to display your pencil texture palettes.
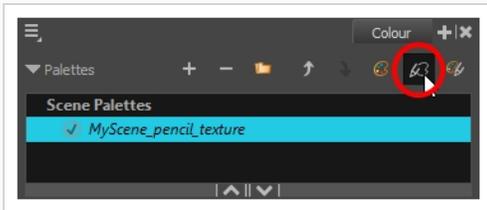


4. In the palette list, select the pencil texture palette containing the desired pencil texture.
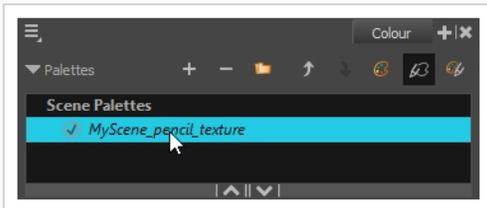


5. In the swatch list, select the pencil texture you want to use.
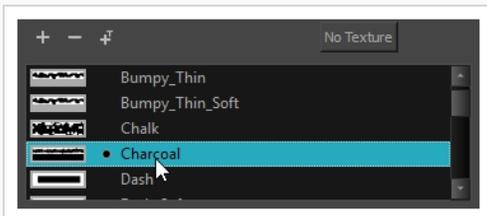
6. In the Camera or Drawing view, draw a pencil line.



## How to draw with a textured pencil line using the Pencil Properties dialog

1. In the Colour view, select the colour with which you wish to draw.

2. In the Tools toolbar, select the Pencil ✏ tool or press Alt + /.

3. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.
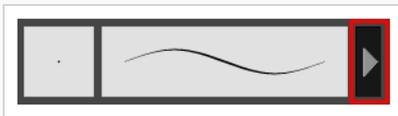


4. In the Pencil Properties dialog, click on the **Texture** tab.
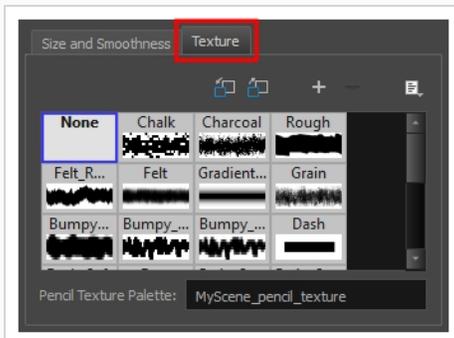


> 📝 **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

5. In the Texture library, select a texture for the pencil.

6. In the Camera or Drawing view, draw a pencil line.

# Applying a Pencil Textures to a Pencil Line

You can apply a pencil texture to an existing pencil line. You can also change a textured pencil line's texture by following the same steps.

> **NOTE**
>
> You can also apply pencil line textures on artwork created with the Line, Rectangle, Ellipse and Polyline tools.

### How to apply a pencil line texture to an existing pencil line using the Colour view

1. In the Tools toolbar, select the Select ↖ tool or press Alt + S.

2. In the Drawing or Camera view, select a pencil line.
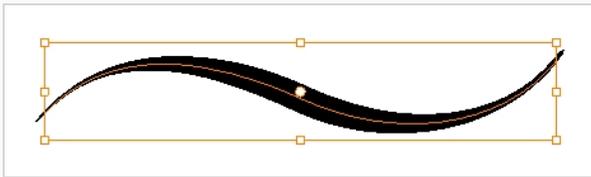
   

3. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.
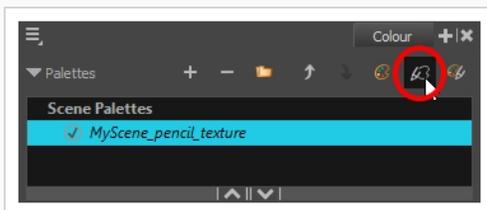
   

4. In the palette list, select the pencil texture palette containing the desired pencil texture.
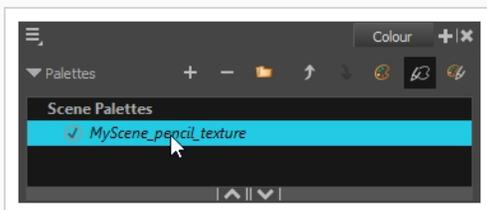
   

5. In the swatch list, select the pencil texture you want to apply to your pencil line.
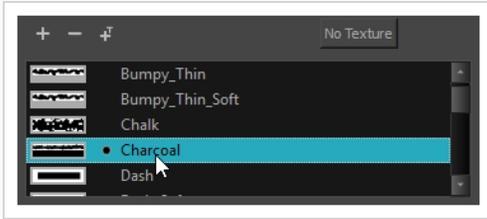
6. The selected pencil line now uses the selected pencil line texture.
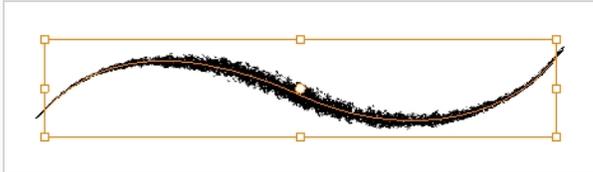


## How to apply a pencil line texture to an existing pencil line using the Tool Properties view

1. In the Tools toolbar, select the Select ↖ tool or press Alt + S.

2. In the Drawing or Camera view, select a pencil line.
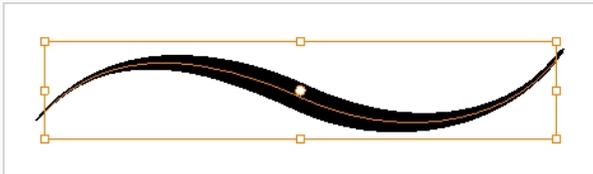


3. In the Tool Properties view, scroll down to the pencil texture library panel.
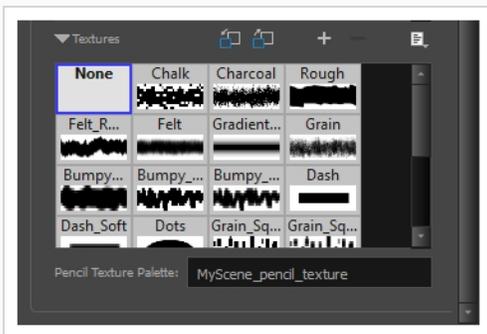


> 📝 **NOTE**
>
> The texture library in the Tool Properties view lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

4. Select the pencil texture you wish to apply.
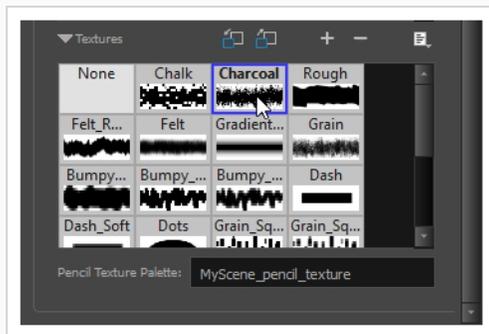


5. The selected pencil line now uses the selected pencil line texture.
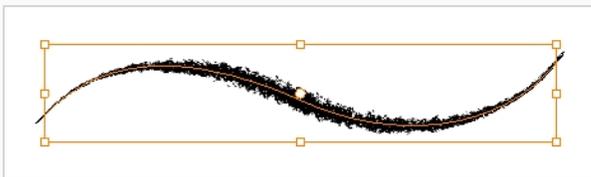
# Editing a Pencil Line's Texture

There are two kinds of modification you can make to a pencil line's texture. Using the Edit Gradient/Texture tool, you can scale the texture by its length and thickness, as well as offset its starting position. Using the Pencil Editor tool, you can change the texture's symmetry relative to the line's center.

**How to scale the length or thickness of a pencil line texture.**

1. In the Tools toolbar, select the Edit Gradient/Texture ⬜ tool or press Shift + F3.

2. Click on the pencil line you want to edit.
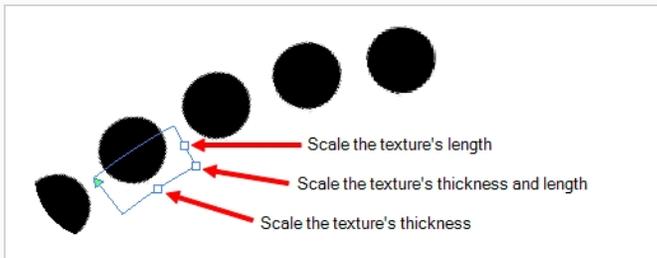


3. Drag one of the square-shaped handles to scale the texture's length, thickness, or both simultaneously.
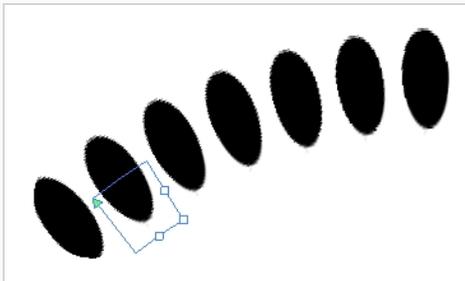


**How to offset a pencil line's texture.**

1. In the Tools toolbar, select the Edit Gradient/Texture ⬜ tool or press Shift + F3.

2. Click on the pencil line you want to edit.
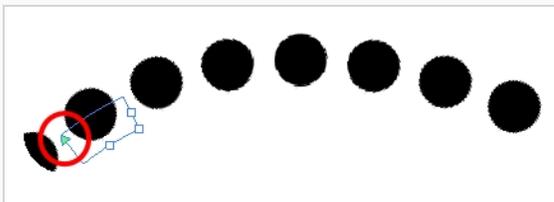


3. Drag the triangle-shaped handle to offset the texture.
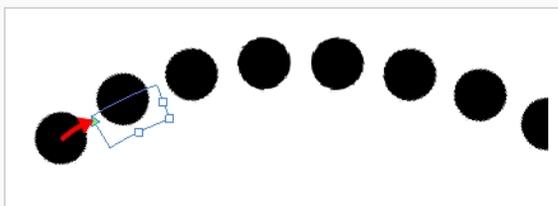
## How to change a pencil line's symmetry

1. In the Tools toolbar, select the Pencil Editor ✏ tool or press 8.

2. Click on the pencil line you want to edit.
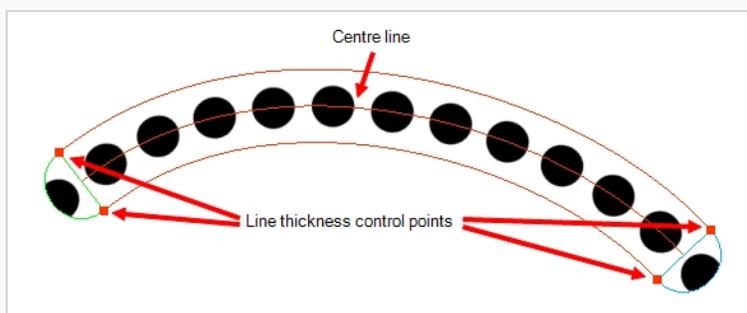


3. Drag one of the line's control points closer or further away from the center line to change the size of its half of the texture.
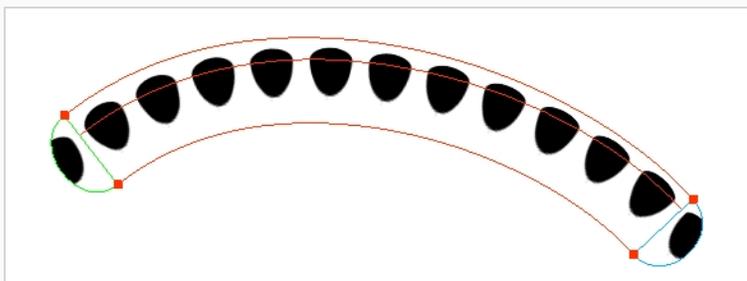
# Disabling Pencil Line Textures

After you selected a pencil line texture, if you wish to resume drawing solid pencil lines again, you can do so using either the Colour view or the Pencil Properties dialog.

### How to resume drawing with a solid pencil line using the Colour view

1. Click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.
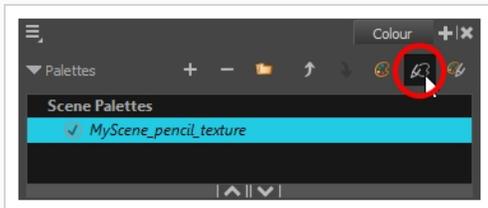
   

2. Over the swatch list, click on the **No Texture** button.
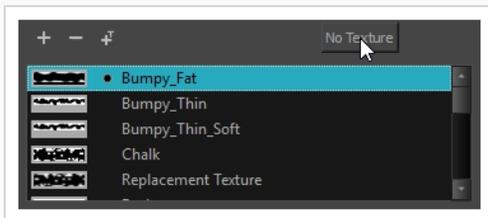
   

   From now on, the pencil lines you draw will not have a texture.

### How to resume drawing with a solid pencil line Pencil Properties dialog

1. In the Colour view, select the colour with which you wish to draw.

2. In the Tools toolbar, select the Pencil ✍ tool or press Alt + /.

3. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.

   

4. In the Pencil Properties dialog, click on the **Texture** tab.

5. In the pencil textures library, select **None**.
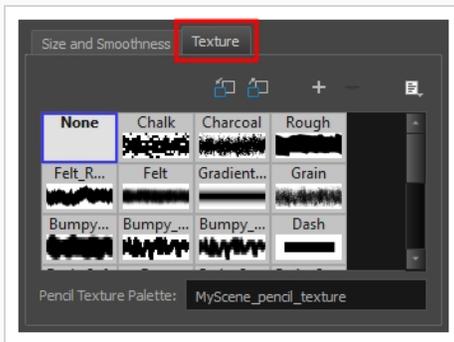
From now on, the pencil lines you draw will not have a texture.

# Pencil Texture Palettes

Just like colours used by your drawings, pencil textures are stored in pencil texture swatches, which are stored in pencil texture palettes. Because pencil lines drawn with pencil textures are linked to the pencil texture in their pencil texture palette, pencil textures can be shared and updated just as easily as colours in your Harmony project.

For example, you can create the texture palette for your character in your character model's scene, then make scenes that include this character link to that character's pencil texture palette, as you can with their colour palette, to make sure both their colour and line textures are the same throughout your project. For more information, see *About Advanced Palette Management* on page 410.

Just as with colour palettes, you can update a swatch in a pencil texture palette with a different texture, and the pencil lines that are drawn with this texture will update with the new texture. This means your pencil textures can always be subjected to revisions.

When you create a new scene, your palette list will be preloaded with a default colour palette and a default texture palette, the latter which is contains some sample pencil textures. If you wish, you can use these textures for your project, you can build on this palette and add new textures as needed, or you can create your own texture palette, loaded with only your custom textures, to use across your project. You can configure Harmony to create new scenes with your own custom pencil texture palette.

> **NOTE**
>
> The following topics will introduce you to the basics of creating and using pencil texture palettes. For more information on creating and managing swatches and palettes, see *About Colour Swatches* on page 387 and *About Palettes* on page 408.

**Creating a Pencil Texture Palette**

Creating a pencil texture palette allows you to manage your own pencil textures as you wish. You can create separate pencil texture palettes for different characters, props and backgrounds as needed, and share them among the people collaborating on your project like you would with colour palettes.

Creating a pencil texture palette is as simple as creating a colour palette. When creating a palette, you have the option to create it as a colour or a pencil texture palette.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

**How to create a pencil texture palette (Basic palette list mode)**

1. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.

2. Do one of the following:

   - In the Colour View, click the New Palette ➕ button over the palette list.

   - From the Colour view menu, select **Palettes > New**

   The Create Palette dialog box opens.

3. In the Create Palette dialog, enter the new palette's name. Make sure your palette name contains information to be easy to identify, such as the name of the character and information about the type of setting for this palette, if any.
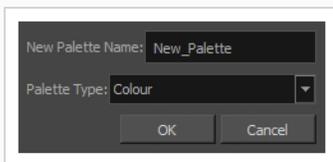
   

4. In the **Palette Type** drop-down, select **Pencil Texture**.

5. Click **OK**.

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

**How to create a pencil texture palette (Advanced palette list mode)**

1. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.

2. If you want to add the palette to an element's palette list, select a drawing from the element for which you want to create a palette in the Timeline, Xsheet or Camera view.

3. Do one of the following:

   - In the Colour View, click the New Palette ➕ button over the palette list.

   - From the Colour view menu, select **Palettes > New**

   The Palette Browser dialog box opens.

Harmony Server                    Harmony Stand Alone

4.  In the **Palette Location** panel, select the location where you want to store the palette file. If you are using Harmony Server, you can store the palette in any environment, job, scene or element on your database. In Harmony Stand Alone, you can store the palette in the scene, inside one of its element, or inside its provisional job or environment. For more information, see *About Palette Storage Locations* on page 413.

5.  In the **New Palette Name** field, enter the name for the new palette. The palette list above this field lists the palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

6.  In the **Palette Type** drop-down, select **Pencil Texture**.

7.  In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see *About Scene and Element Palette Lists* on page 412.



8.  Click **OK**.

    The new palette appears in the palette list.

**Adding a Pencil Line Texture**

You can create your own pencil textures by first creating an image file containing the texture, either in Harmony or in a third party software, then importing it to your pencil texture palette.

A pencil texture must be created with transparency, as Harmony will only use the image's transparency channel to determine how to apply the texture to your pencil lines. Hence, pencil textures can be in image format that are supported by Harmony and which supports transparency: **.png**, **.tga**, **.tif**, **.psd**, **.psb** and **.sgi**.

A pencil texture can be of any size, but the bigger the image resolution, the thicker the lines you can draw with it without seeing pixels. The pencil texture will follow your pencil lines on their horizontal axis, like so:
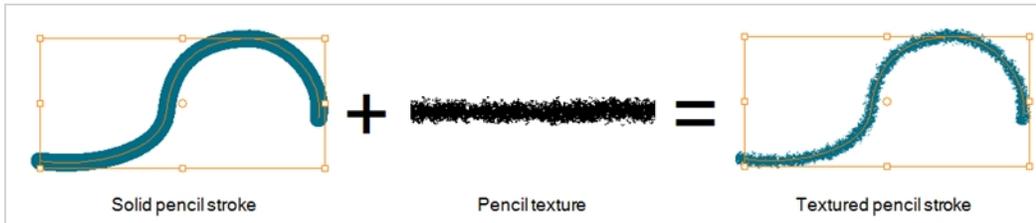


Solid pencil stroke      Pencil texture      Textured pencil stroke

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### How to add a pencil line texture using the Colour view

1. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.
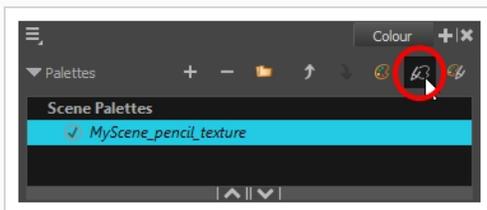


2. In the palette list, select the pencil texture palette containing the desired pencil texture.
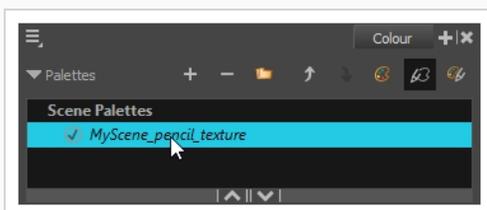
3. Do one of the following:

   - Click on the Add Texture ╋ button.

   - Right-click on the swatch list and select **New Texture**.

   - Open the Colour view menu ☰ and select **Colours > New Texture**.

4. In the file browser dialog, navigate to the location of your texture image file and select it.

5. Click **Open**.

   The texture is added to your pencil texture palette.
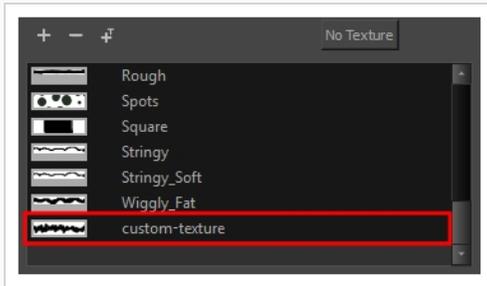
   

   You can start drawing with your new pencil texture.

## How to add a pencil line texture using the Pencil Properties dialog

1. In the Tools toolbar, select the Pencil ✏ tool or press Alt + /.

2. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.

   

3. In the Pencil Properties dialog, click on the **Texture** tab.
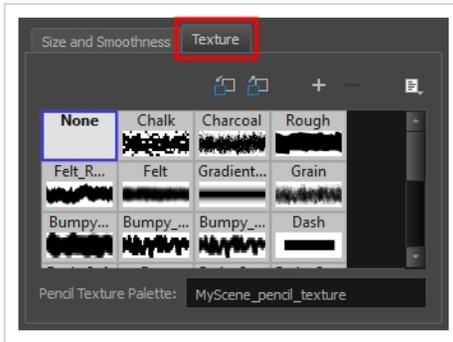
> **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

4. Do one of the following:

   - Click on the New Texture ✚ button over the pencil textures list.

   - Open the Brush menu ▤ and select **New Texture**.

5. In the file browser dialog, navigate to the location of your texture image file and select it.

6. Click **Open**.

   The texture is added to your pencil texture palette.
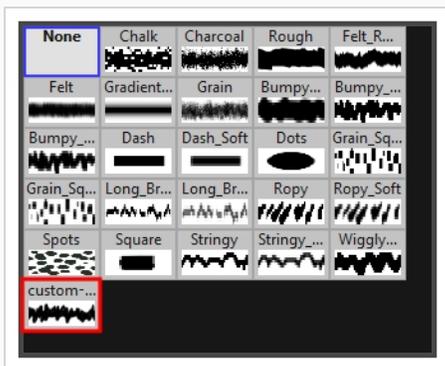


7. In the pencil texture library, select the new pencil texture.
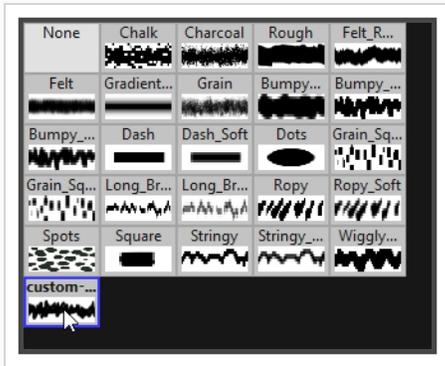
You can start drawing with your new pencil texture.

**Renaming Pencil Line Textures**

You can rename pencil textures from the Colour view or from the Pencil Properties dialog box.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔲 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

## How to rename a pencil line texture using the Colour view

1. In the Colour view, click on the Show Pencil Texture Palettes 🖋 button to display your pencil texture palettes.



2. In the palette list, select the pencil texture palette containing the desired pencil texture.

3. In the swatch list, double-click on the name of the texture you wish to rename.
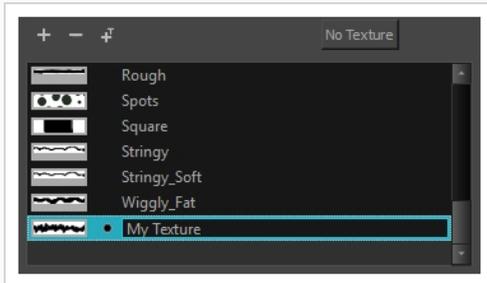


4. Enter the texture's name, then click outside of the text input field to confirm the new name.

## How to rename a pencil line texture using the Pencil Properties dialog

1. In the Tools toolbar, select the Pencil ✐ tool or press Alt + /.

2. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.
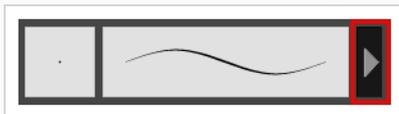


3. In the Pencil Properties dialog, click on the **Texture** tab.
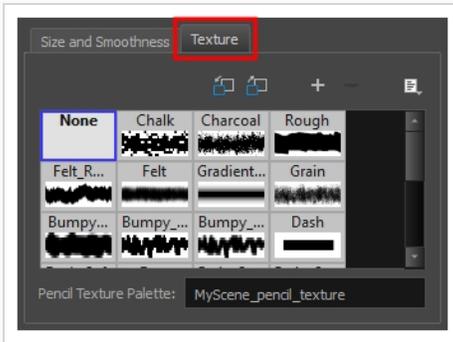
> **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

4. In the pencil texture library, select the texture you wish to rename.
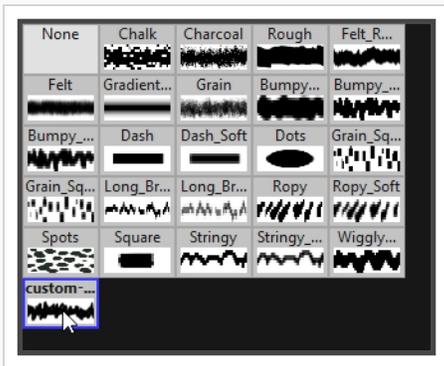


5. Open the Brush menu ▤ and select **Rename Texture**.

   The Rename Texture dialog box opens.
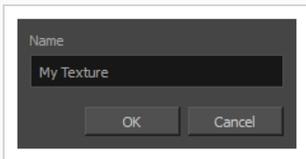


6. In the **Name** field, type in the desired name for your texture

7. Click **OK**.

   You can start drawing with your new pencil texture.

**Deleting Pencil Line Textures**

You can delete pencil texture palettes that you do not need.

> **NOTE**
>
> You should not delete any pencil texture that is used in your project, as pencil lines using a deleted pencil texture will become solid pencil lines.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode ⬚ toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

**How to rename a pencil line texture using the Colour view**

1. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.



2. In the palette list, select the pencil texture palette containing the desired pencil texture.



1. In the swatch list, select the pencil texture you wish to delete.
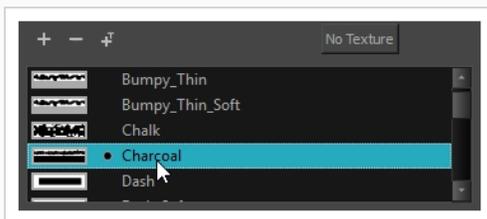
2. Do one of the following:

- Click on the Remove Colour button.

- Right-click on the pencil texture and select **Delete**.

- Open the Colour view menu and select **Colours > Delete**.

- Press Del (Windows/Linux) or Backspace (macOS).

The selected pencil texture is removed from the pencil texture palette.

### How to rename a pencil line texture using the Pencil Properties dialog

1. In the Tools toolbar, select the Pencil ✎ tool or press Alt + /.

2. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.



3. In the Pencil Properties dialog, click on the **Texture** tab.
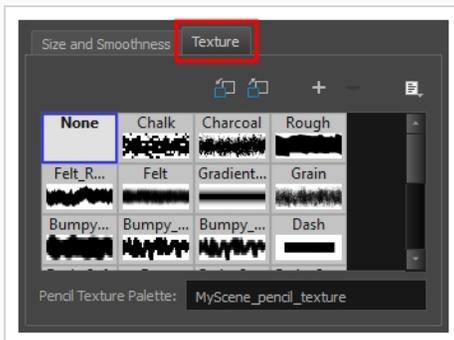


> 📝 **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

4. In the pencil texture library, select the texture you wish to delete.
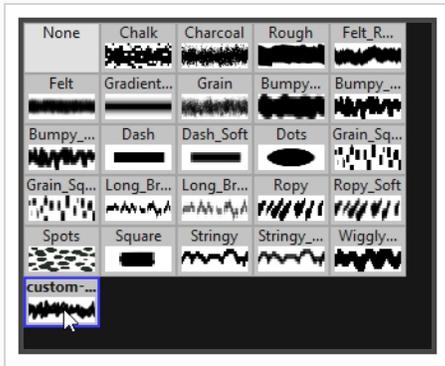
5. Do one of the following:

- Click on the Delete Texture — button.

- Open the Brush menu and select **Delete Texture**.

The selected pencil texture is removed from the pencil texture palette.

**Replacing a Pencil Texture**

Just like you can edit a colour swatch and simultaneously update all the drawings using the colour swatch with this new colour, you can replace an existing pencil texture with a different texture, and update all pencil lines that use this texture with the new texture.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode toggle button is pressed in.
>
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
>
> - From the Colour view menu , select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

## How to replace an existing pencil line texture

1. In the Colour view, click on the Show Pencil Texture Palettes button to display your pencil texture palettes.
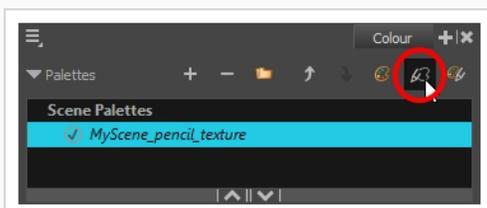
2. In the palette list, select the pencil texture palette containing the desired pencil texture.
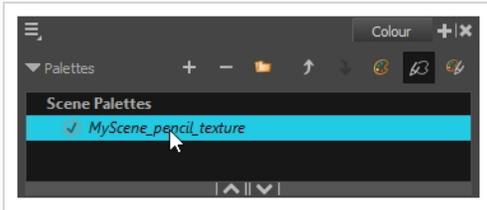


3. In the swatch list, select the pencil texture that you want to replace.
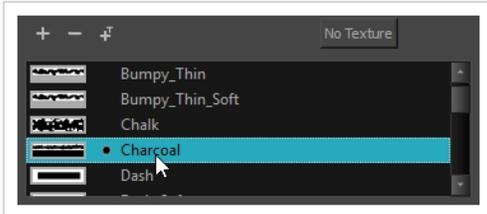


4. Do one of the following:

   - Right-click on the pencil texture and select **Edit Texture**.

   - Open the Colour view menu and select **Colours > Edit Texture**.

5. In the file browser dialog, navigate to the location of your new texture image file and select it.

6. Click **Open**.

   The selected texture is replaced with the new texture file. It is also renamed based on the new texture's file name.
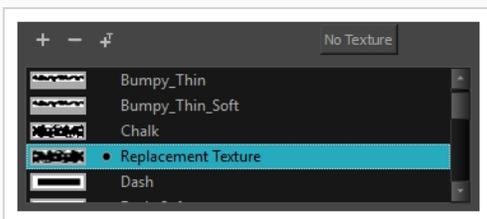


   Any pencil line that was drawn with the older pencil texture will now be drawn with the new pencil texture.

**Setting the Default Pencil Texture Palette**

You can make a pencil texture palette into the default texture palette which is added to every new scene you create. This will be saved in your user preferences.

## How to add a texture to your preferences

1. In the Colour view, click on the Show Pencil Texture Palettes ✍ button to display your pencil
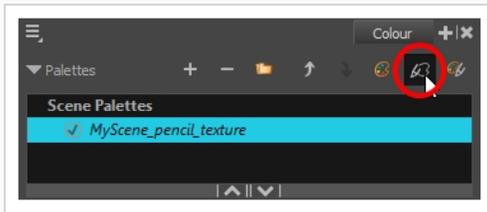
texture palettes.



2. In the palette list, select the pencil texture palette containing the desired pencil texture.
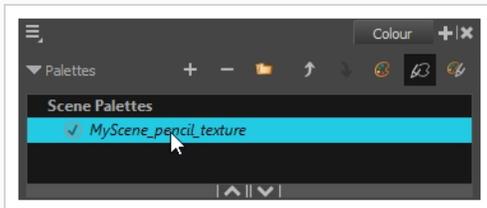


3. In the Tools toolbar, select the Pencil ✎ tool or press Alt + /.

4. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.
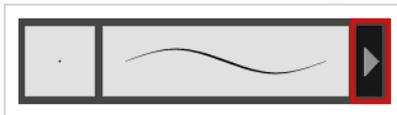


5. In the Pencil Properties dialog, click on the **Texture** tab.
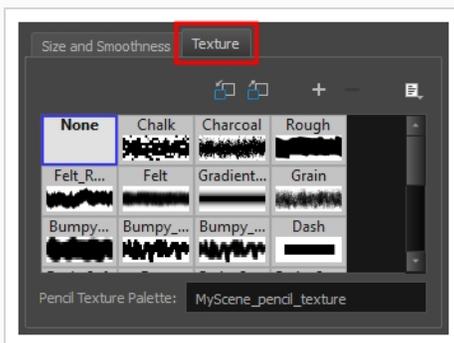


> 📝 **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

6. Do one of the following:

   - Click on the Use as Default Texture Palette

⌑ button.

- Open the Brush menu ▤ and select **Use as Default Texture Palette**.

From now on, new scenes created in Harmony will have the selected pencil texture palette as their default pencil texture palette.

**Recovering the Default Pencil Texture Palette**

If you have made modifications on the default pencil texture palette in your scene that you wish to undo, you can easily re-import the default pencil texture palette back into your scene as a new pencil texture palette.

## How to recover the default pencil texture palette into your scene

1. Click on the Show Pencil Texture Palettes ✍ button to display your pencil texture palettes.



2. In the Tools toolbar, select the Pencil ✐ tool or press Alt + /.

3. In the Tool Properties view, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.



4. In the Pencil Properties dialog, click on the **Texture** tab.
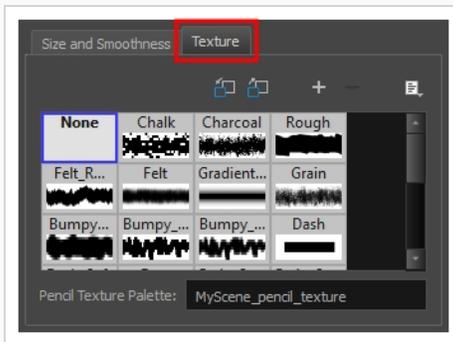
> **NOTE**
>
> The texture library in the Texture tab lists the same pencil textures as the ones in the currently selected pencil texture palette in the Colour view.

5. Click on the Reload Default Texture Palette ⬚ button.

   A copy of the default pencil texture palette is added to the scene's pencil texture palette list.

**Converting a Colour Palette to a Pencil Texture Palette**

As of Harmony 15, each palette is set to either be a colour palette, or a texture palette, and both palette types are kept in separate lists. However, in Harmony 14 and prior versions, pencil texture palettes were just regular palettes, which you had to temporarily set at your pencil texture palette in order to use it for pencil line textures.

Because of this, if you open a scene created in Harmony 14 or prior, and which contains pencil texture palettes, Harmony 15 will not be able to tell which palettes are colour palettes and which ones are pencil texture palettes. Hence, you must manually move your pencil texture palettes to the pencil texture palette list before you can use them for pencil line textures.

The only exception to this is if a scene created in a prior version of Harmony has a pencil texture palette named **penstyle_opacity**. Because this was the default name for pencil texture palettes in older versions of Harmony, Harmony 15 will automatically convert those palettes to pencil texture palettes.

> **NOTE**
>
> Converting a colour palette to a pencil texture palette is permanent. You cannot convert a pencil texture palette to a colour palette. However, you will be prompted to confirm before making the conversion, and the conversion can be undone with the Undo command.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔲 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### How to convert a colour palette to a pencil texture palette

1. In the palette list of the Colour view, select the palette you want to convert to a pencil texture palette.

2. Do one of the following:

   - Right-click on the palette and select **Change to Pencil Texture**.

   - Open the Colour view menu ☰ and select **Palettes > Change to Pencil Texture**.

   The palette will be moved from the colour palette list to the pencil texture palette list. To see it, click on the Show Pencil Texture Palettes ✏ button or the Show All Palettes 🎨 button.

# About Pencil Presets

Setting up your pencil to perfectly reproduce the desired art style can require a lot of tweaking as well as trial and error. Once you have found the correct settings for your pencil, you will want to reuse it throughout your project for consistency. You can do that by creating and using pencil presets.
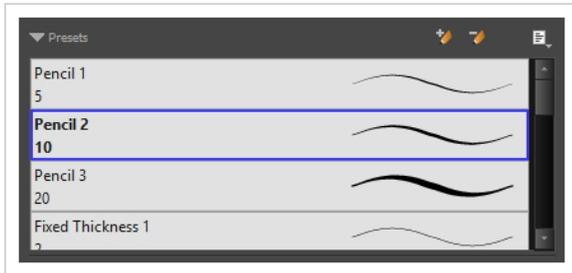


Harmony comes preloaded with a few pencil presets which you can select from the Tool Properties view. It is also possible to create your own pencil presets by configuring your pencil, then saving it as a preset.

Pencil presets are saved in your preferences. You can also export your brush presets into an `.xml` file, and import them on a different workstation, allowing you to share your brush presets between the different people collaborating on your project.

# Creating Pencil Presets

You can create your own custom pencil presets.

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.



> **NOTE**
>
> To learn more about the Pencil tool options, see the Reference guide .

## 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, click on the arrow button next to the stroke preview area to open the Pencil Properties dialog.

   

3. Configure your brush to be exactly how you wish to use it in the future—see *Creating a Pencil* on page 189.

4. In the Tool Properties view, click the New Brush 🖌 button.

   The New Preset dialog box opens.
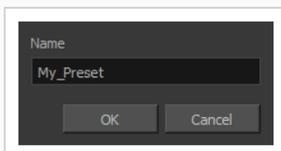
   

5. Type in a name for your new pencil thickness stencil and click **OK**.

6. Start drawing in the Drawing or Camera view.

# Creating Pencil Thickness Presets

Thickness stencils that are indicated with this [icon] icon are also set with specific properties, but disregards the pressure of 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 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.
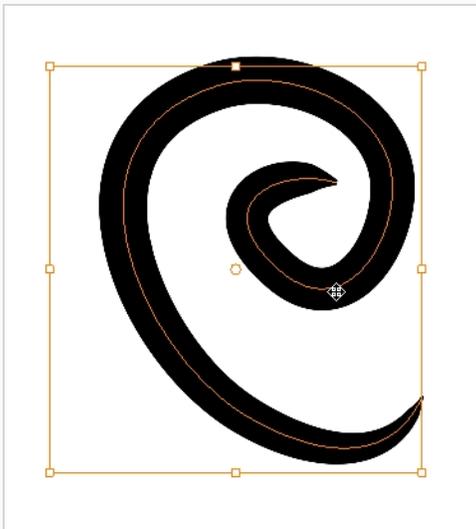
    

3.  In the Tool Properties view, click the New Thickness Stencil 🖊 button.

    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.

# Selecting a Pencil Preset

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

**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.
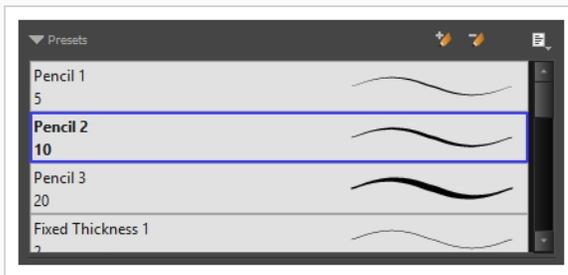


3. In the Drawing or Camera view, draw your pencil line or shape.
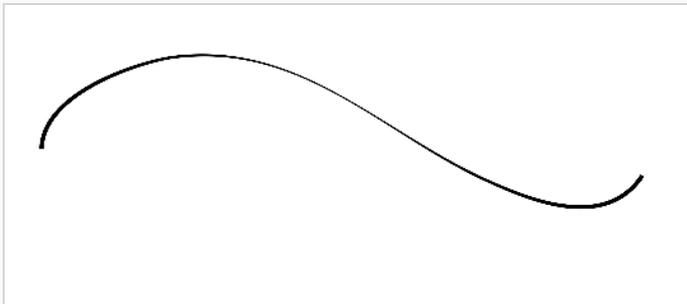
# Applying a Pencil Preset

You can apply a pencil preset on already drawn pencil lines using the Select tool.

### 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.
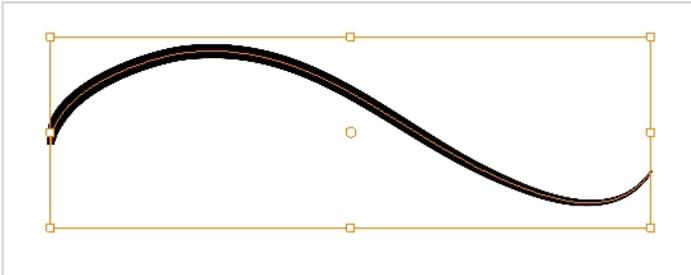


3. In the Tool Properties view, select the style you want to apply from the Presets list.



   The style you selected is applied to your selection.
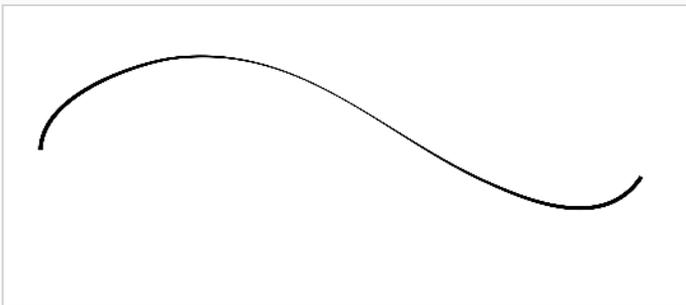
# Renaming Pencil Presets

You can rename your pencil presets to keep your list organized.

**How to rename a 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.
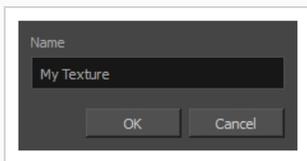
    

4.  In the Name field, type in the new name.

5.  Click **OK**.

# Deleting Pencil Presets

You can delete unnecessary presets from your list.

### 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.

# Exporting Pencil Presets

You can export your pencil presets to either backup, share or install on a different computer.

### How to export pencils, brushes and erasers

1. In the Tools toolbar, select either the Brush ✎, Pencil ✐ or Eraser ✎ tool.

2. Open the Brush Preset menu ▤ and select **Export Brushes**.

   The Export Tips and Textures dialog opens. This dialog allows you to export brush presets for the Brush, Pencil and Eraser tools.

   

3. By default, the presets for all your tools will be selected for export. If you only wish to export presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets.

4. Click **Export**.

5. In the Export Presets dialog that appears, browse to the location where you want to save the `.xml` file and enter its file name.
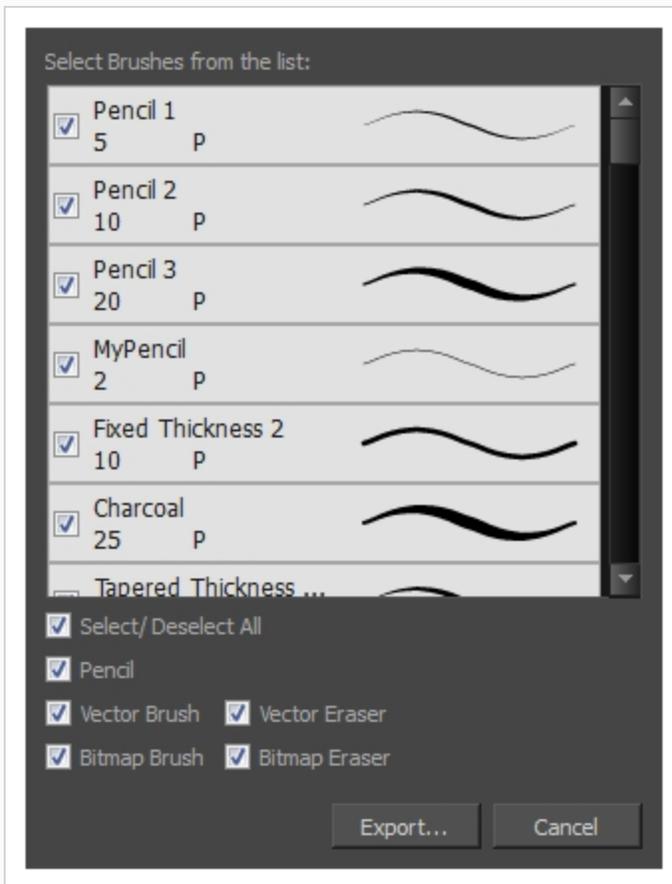
6. Click **Save**.

# Importing Pencil Presets

You can import Harmony pencil presets that you previously exported.

### How to import pencils, brushes and erasers

1. In the Tools toolbar, select either the Brush 🖌, Pencil ✏ or Eraser 🖊 tool.

2. Open the Brush Preset menu 📄 and select **Import Brushes**.

3. In the browser window that appears, navigate to and select the `.xml` file in which you exported your brush presets.

4. Click **Open.**

   The Import Brushes dialog box opens.
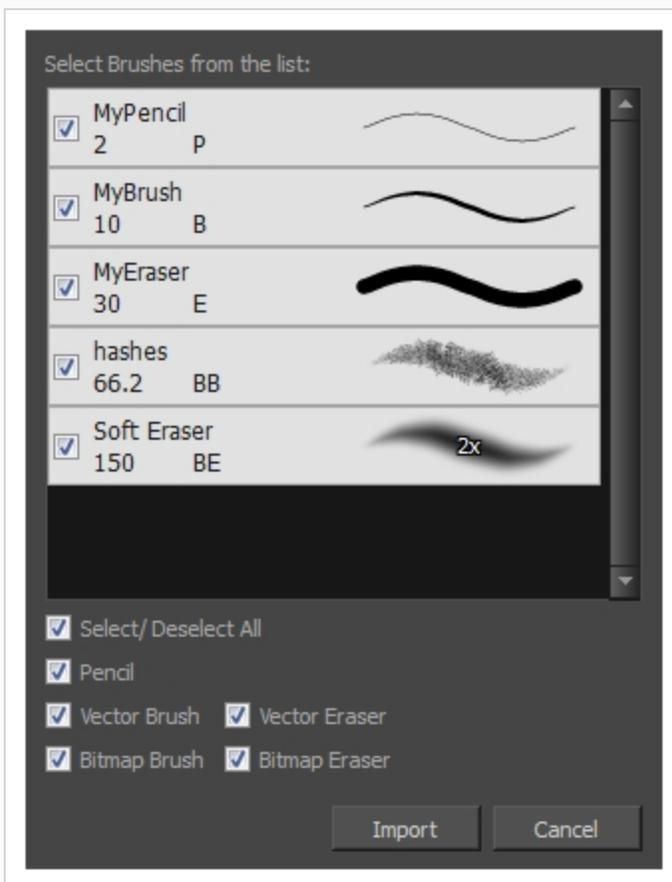
   

5. By default, the presets for any tools included in the file will be selected for import. If you only wish to import presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets

6. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the Presets list.

# Changing the Pencil Preset Display

You can display your preset list as thumbnails or a list.

### How to change the Brush Presets display

1. In the Tool Properties view, click on the Brush Presets menu button ▤ .

2. Select one of the following options:

    - **Small Thumbnail:** Displays presets in a grid of small thumbnails with a preview of their tip.

    - **Large Thumbnail:** Displays presets in a grid of big thumbnails, with their name and a preview of their tip.

    - **Stroke View:** Displays presets in a list, with their name and a preview of a stroke done with each preset. This is the default setting.

# Changing Pencil Line Opacity Display

A central vector outline can obscure the true edges of a shape's fill. You can change the opacity of central vector lines and outlines, while working, to bypass this problem. This feature only works in the OpenGL view. This feature is meant to be used as a working tool, like the Light Table or Onion Skin, therefore this transparency effect will not appear when the scene is rendered. However, the opacity value that you set will remain as the set preference, even after you end a session and close the software.
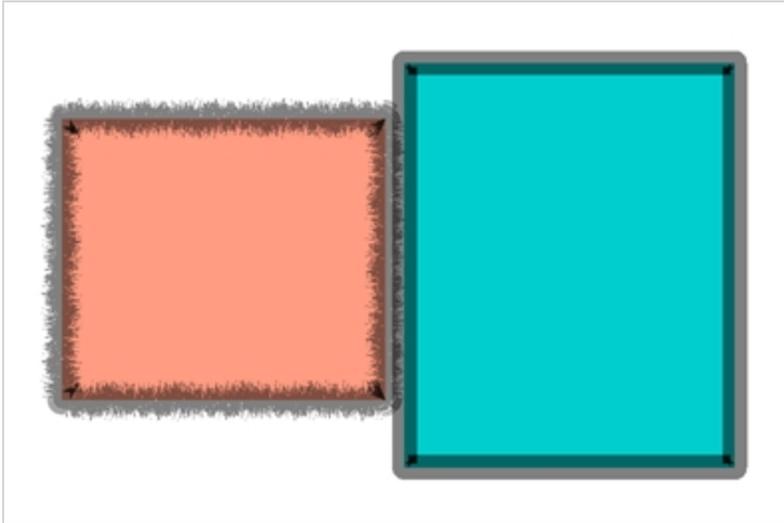


If you want the transparency of a line or outline to show up in the render of your scene, use one of the many other options that Harmony offers, such as colouring the line with a semi-transparent swatch or using the Transparency or Colour-Override effects.

### How to Use the Pencil Line Opacity feature

1. In either the Drawing view or Camera view toolbar, click on the Top Light icon. The Pencil Lines Opacity feature can also be accessed through the Preferences panel.
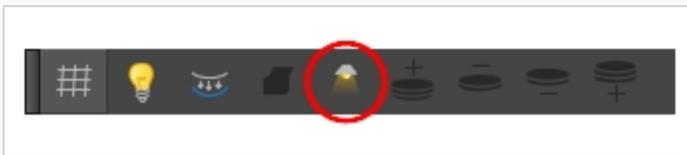
   

   The Onion Skin and Light Table Transparency dialog opens.

2. In the Onion Skin and Light Table Transparency dialog box, use the Pencil Lines Opacity slider to globally increase or decrease the opacity of central vector lines. Sliding the slider all the way to the right equals 100% opacity. Sliding the slider all the way to the left equals 0% opacity.
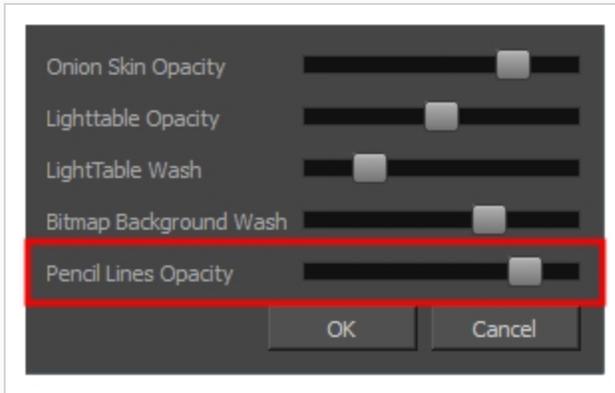
3. Click OK.

> **NOTE**
>
> If your object has a vector contour outline (created by the Brush tool), this feature will not work. It must have a central vector outline (created by one of the shape tools or Pencil tool).

# About Shape Tools

In Harmony, you can use the shape tools to draw circles, lines and rectangles. You can also easily reshape a square or circle into a much more complex drawing—see *About the Contour Editor Tool* on page 279  and *About the Pencil Editor Tool* on page 290.

The available shape tools are:

- Line tool

- Rectangle tool

- Ellipse tool

- Polyline tool

The shape tools use the same pencil presets as the Pencil tool. To learn how to create, delete, rename, import and export presets, see *About the Pencil Tool* on page 185.

To learn more about the shape tool parameters, see the Reference guide .

# Creating Rectangles, Circles and Lines with the Shape Drawing Tools

T-HFND-004-006A

You can use the Line, Rectangle, or Ellipse tool to draw shape without having to trace them. You can also draw perfect circles and squares.

> **NOTE**
>
> To learn more about the shape tool parameters, see the Reference guide .

## 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 the Rectangle □ , Ellipse ○ , or Line ╱ 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.
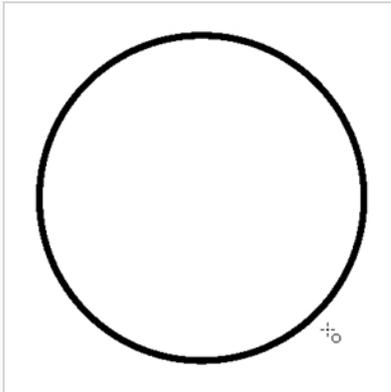
   

   - Hold down Shift to lock the rectangle or the ellipse ratio to 1:1.

   - 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.
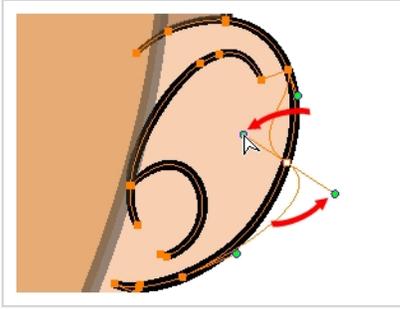
# Creating Vector Shapes with the Polyline Tool

You can use the Polyline tool to draw long and curvy lines.

> **NOTE**
>
> To learn more about the Polyline tool options, see the Reference guide .

## 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.

4. Click a new area and drag to create a second point and Bezier handle.

   - Press Alt to pull only one handle, instead of two.

   - Press Shift to snap the handles to 45, 90, or 180 degrees.
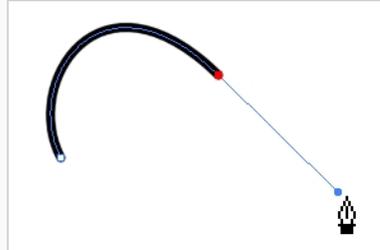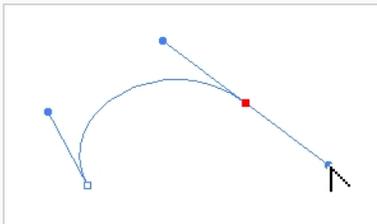


5. Repeat the previous step until your shape is completed.

6. Press Ctrl (Windows/Linux) or ⌘ (macOS) 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 Shape, Pencil Line or Stroke with the Contour Editor Tool* on page 280.

# About the Stroke Tool

There are two different ways to draw invisible lines, using the Pencil tool or Stroke tool.

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 strokes, especially if your colours are similar to the blue stroke colour. In Harmony, you can display the strokes in washed-out colours so the invisible lines stand out.



> **NOTE**
>
> To learn more about the Stroke tool parameters, see the Reference guide

**Authors**

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# Creating Invisible Lines with the Stroke Tool

T-HFND-004-013A

You can draw invisible lines with the Stroke tool as well as with the Pencil tool.

> **NOTE**
>
> To learn more about the Stroke tool parameters, see the Reference guide

## 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.
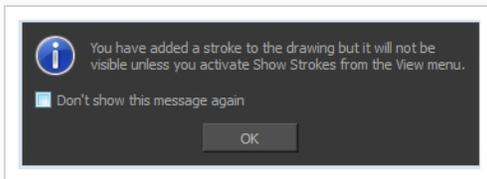
   

   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.

6. Click **OK**.

7. You can modify the stroke shape with the Contour Editor ▷ tool.

## How to 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.
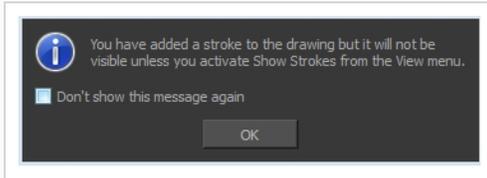


Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.

6. Click **OK**.

7. You can modify the stroke shape with the Contour Editor ⩓ tool.

## How to show the strokes with washed-out colours

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

**Authors**

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# About the Eraser Tool

Using the Eraser tool, you can remove parts of your drawing.

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

The Eraser tool has as many options as the Brush tool. You can configure an Eraser to have a vector or textured tip, automatic smoothing, transparency, a dual tip and a paper texture.

# Erasing

You can erase portion of your artwork using the Eraser tool.

### 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 Tool Properties view, set the Maximum Size to the desired Eraser size.

   > **NOTE**
   >
   > If you are drawing with a mouse, your strokes will always be at their maximum size. If you are using a pressure-sensitive tablet, your strokes will vary in size depending on the pressure of your pen, ranging between 25% to 100% of the maximum size.

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

# Creating a Solid Eraser

When using the Eraser tool on a vector layer, you can use either solid vector erasers or textured vector erasers. By default, your eraser will be a solid vector eraser. A solid vector eraser cuts out the shape of its stroke from your vector artwork.

A solid vector eraser's tip can be shaped like a circle, a diamond or a square, and can be configured to have a specific size, aspect ratio and angle. Also, solid vector erasers can be automatically smoothed by Harmony as you draw.

If you are erasing on a bitmap layer, you can only use textured erasers, although you can configured a textured eraser to appear solid.

**How to create  a solid vector eraser**

1. In the Tools toolbar, select the Eraser ✏ tool or press Alt + B.

2. In the Tool Properties view, click the arrow button to open the Eraser Properties view.

   

   The Eraser Properties dialog opens.
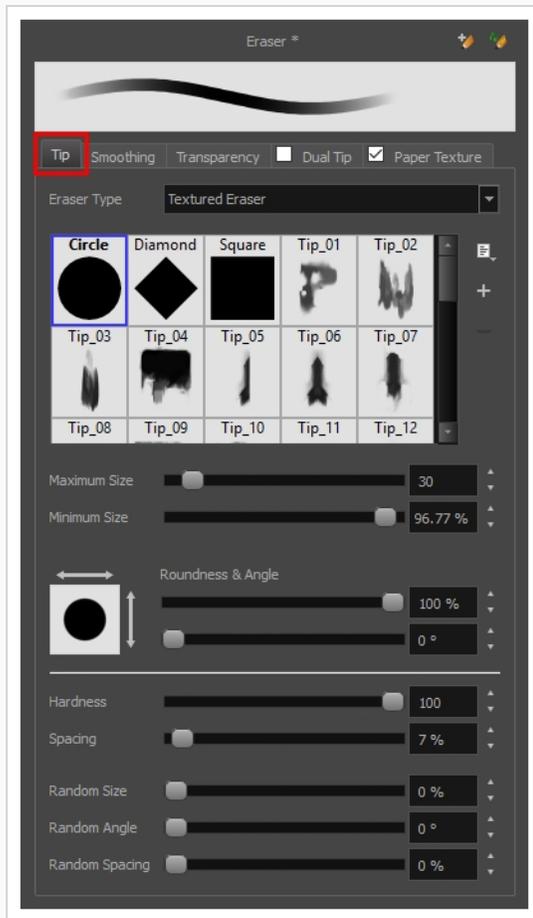
3. In the **Eraser Type** dropdown list, select **Solid Vector**.

4. In the brush tip list, select either **Circle**, **Diamond** or **Square**.

5. Use the **Maximum Size** slider to set the maximum size of your eraser tip, in pixels.

> **NOTE**
>
> When drawing with a mouse, your eraser is always at its maximum size. When drawing with a pressure-sensitive pen tablet, your eraser's size will range between its minimum and maximum size, depending on the amount of pressure you put on the pen when drawing.

6. If you are using a pressure-sensitive pen tablet, use the **Minimum Size** slider to set the percentage of your eraser tip's maximum size your eraser should be when you use your pen with very little pressure. If you don't want the pressure on your pen to affect the eraser size, set this parameter to 100%.

7. If you want your eraser tip to have uneven dimensions, use the **Roundness** slider to shrink the eraser tip vertically all the while preserving its horizontal size.

8. If you want your eraser tip to be at an angle, use the **Angle** slider to rotate your brush tip.

9. Click on the **Smoothing** tab.
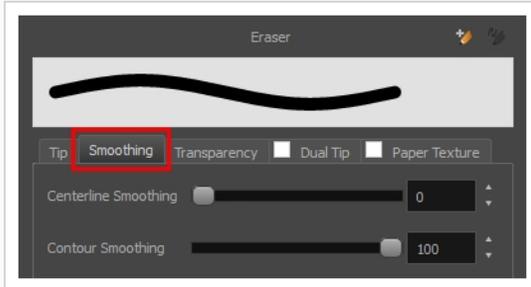


10. Use the **Centerline Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's direction, curves and corners. A higher setting will prevent your line from being shaky, but is liable to reduce your drawing precision and to round sharp corners into curves.

11. Use the **Contour Smoothing** slider to set the amount of smoothing Harmony should perform on your stroke's contour. A higher setting will round sharp corners and reduce the amount of control points for the resulting vector shape.

12. Either close or set aside the Eraser Properties dialog.

13. In the Camera or Drawing view, start erasing to test your eraser settings.

# Creating a Textured Eraser

A textured eraser can have the same settings as a textured brush: It can have a bitmap tip of any shape, can be hard or soft, semi-transparent, combine two tips and be applied with a paper texture effect.

When working on a bitmap layer, the eraser tool is always textured, whereas when working on vector layers, erasers are solid vector by default. A solid vector eraser merely cuts out the shape of the eraser stroke from the vector artwork, whereas a textured vector eraser makes the artwork's bitmap texture more opaque or fully invisible, depending on its intensity, then cuts out some of the vector artwork that the eraser made fully invisible.

A textured eraser works like a reverse textured brush: It makes the pixels in a brush stroke's texture more—or completely—transparent, depending on the eraser's intensity. This effect can only be obtained by using a textured eraser on a textured brush stroke. If you use a textured eraser on solid vector shapes or on pencil lines, the eraser will act like a solid vector eraser, that is, it will merely cut out the shape of the stroke from the artwork. This is because solid vector shapes and pencil lines don't have a bitmap texture, and therefore the textured eraser cannot work on the opacity of their individual pixels. Hence, when working on vector layers, it is better to use a textured eraser only if all your artwork is composed of textured brush strokes, or it might wield strange-looking results.
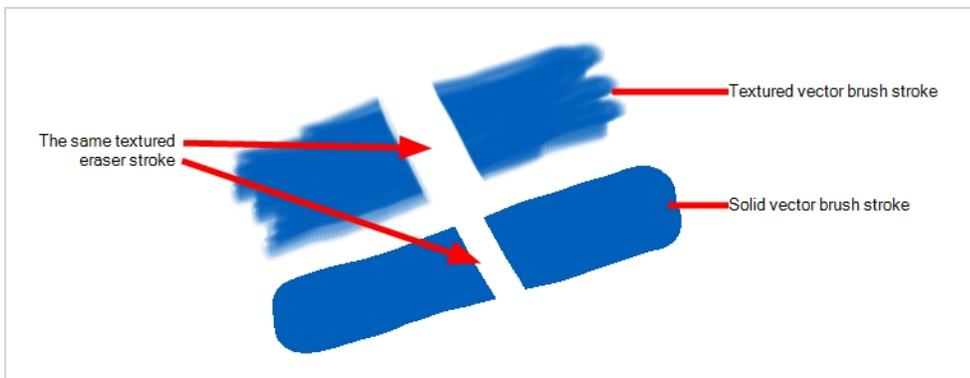


This outlines one of the advantages of working with bitmap layers. On bitmap layers, your brushes and erasers always work as textured brushes and erasers.

Another issue you might encounter when erasing textured vector artwork is that textured vector brush strokes are not flattened together, whereas on bitmap layers, your artwork is always flattened. This implies that if you use a semi-transparent eraser on textured vector artwork, and the artwork has overlapping strokes, all the strokes you erase will become semi-transparent, the resulting image will be a composite of the overlapping strokes. On a bitmap layer, this would simply result in a single layer of semi-transparent artwork.
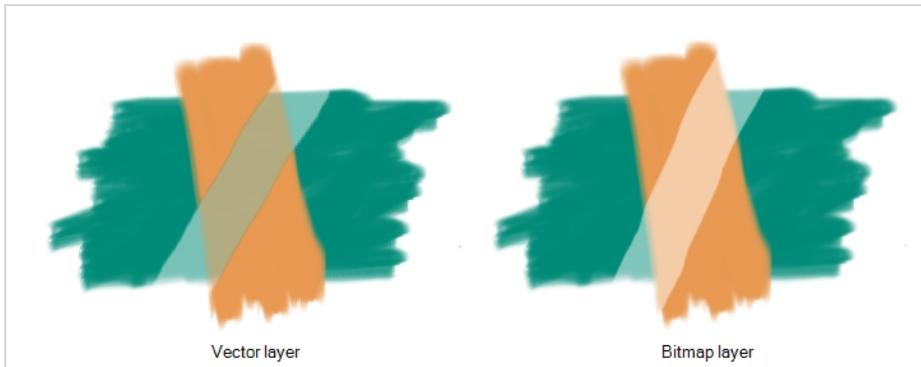
There are two different types of textured vector erasers: **Textured** and **Textured, Preserve Vector**. A simple textured eraser will do two things: First, it will make textured brush strokes more or completely transparent where you erased, and second, it will cut out from the brush stroke's vector shape where it made its texture completely transparent. In contrast, a Textured, Preserve Vector-type eraser will only make the texture brush strokes more or fully transparent, but will leave its vector shape intact.
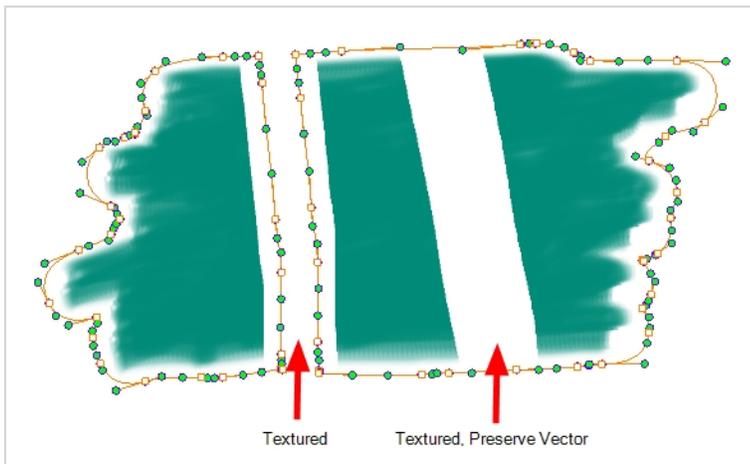


Creating a textured eraser works exactly like creating a textured brush. Therefore, you can follow the steps in the Creating a Textured Brush section to learn how to create a textured eraser.

# About Eraser Presets

Once you have found the correct settings for your eraser, you might want to reuse it throughout your project for consistency. You can do that by creating and using eraser presets.

Harmony comes preloaded with a few eraser presets which you can select from the Tool Properties view. It is also possible to create your own eraser presets by configuring your eraser then saving it as a preset.

Like eraser tips and paper textures, eraser presets are saved in your preferences. You can also export your eraser presets into an `.xml` file, and import them on a different workstation, allowing you to share your eraser presets between the different people collaborating on your project.

> **NOTE**
>
> Eraser presets are not to be confused with eraser tips and paper textures. Eraser tips and paper textures are one of the many properties of an eraser, whereas an eraser preset contains all the properties of a brush.

> **NOTE**
>
> Eraser presets for vector layers and for bitmap layers are separate. An eraser preset created while working on a vector layer cannot be used when working on a bitmap layer, and vice versa.

# Creating an Eraser Preset

You can create your own custom eraser preset by configuring your eraser, then adding it as a preset.

**How to create an eraserpreset**

1. Make sure the current drawing layer is vector if you wish to create a vector eraser preset, or bitmap if you wish to create a bitmap eraser preset—see About Vector and Bitmap Layers

2. In the Tools toolbar, select the Eraser ✐ tool or press Alt + E.

3. Click on the Arrow button to open the Eraser Properties dialog.



4. Configure your brush to be exactly how you wish to use it in the future—see Creating a Solid Eraser and Creating a Textured Eraser.

5. Do one of the following:

   - From the Eraser Properties dialog, click on the New Brush Preset ✐ button in the top-right corner.

   - In the Tool Properties view, click the New Brush Preset ✐ button.

   - In the Tool Properties view, open the Brush Presets menu ▤ and select **New Brush Preset**.

6. In the New Preset window, type a name for your new eraser preset.

   Your new eraser preset is added to the end of the list of eraser presets.

# Selecting an Eraser Preset

Harmony provides you with default eraser presets available in the Tool Properties view.

### How to select a brush preset

1. In the Tools toolbar, select the Eraser 🖌 tool or press Alt + E.

2. In the Tool Properties view, select an eraser preset from the Presets list.

# Updating a Brush Preset

If you want to modify the settings of an existing custom preset, you can do so by adjusting the parameters in the Tool Properties view, then updating your preset with your brush current's parameters.

### How to update a brush preset

1. In the Tools toolbar, select the Brush ✐ tool or press Alt + B.

1. In the Tool Properties view, select the Brush Preset you wish to update.

2. Click on the Arrow button to open the Brush Properties view.

   

3. Configure your brush to be exactly how you wish to use it in the future—see Creating a Solid Brush or Creating a Textured Brush.

4. Click on the Update Brush Preset ✐ button in the upper-right corner of the Brush Properties dialog.

# Renaming an Eraser Preset

To keep your list comprehensive and organized, you can name your custom brush presets.

## How to rename a brush preset

1. In the Tools toolbar, select the Eraser ✏ tool or press Alt + E.

2. In the Tool Properties view, select an eraser preset to rename.

3. Open the Brush Preset menu ☰ and select **Rename Brush**.
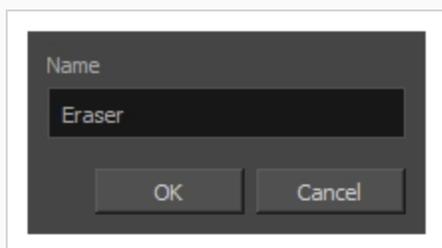


4. Type in a new name for the brush and click **OK**.

# Deleting a Brush Preset

You can keep your preset list clean by deleting unwanted custom presets.

### How to delete a brush preset

1. In the Tools toolbar, select the Eraser ✏ tool or press Alt + E.

2. In the Tool Properties view, select the eraser preset you want to delete.

3. Do one of the following:

   - Click the Delete Brush ✏ button.

   - Open the Brush Preset menu ☰ and select **Delete Brush**.

# Exporting Eraser Presets

You can export eraser presets into an `.xml` file which will contain all of your eraser's settings. This can be useful if you wish to back up or share your eraser presets.

### How to export pencils, brushes and erasers

1. In the Tools toolbar, select either the Brush ✐, Pencil ✐ or Eraser ✐ tool.

2. Open the Brush Preset menu ▤ and select **Export Brushes**.

   The Export Tips and Textures dialog opens. This dialog allows you to export brush presets for the Brush, Pencil and Eraser tools.



3. By default, the presets for all your tools will be selected for export. If you only wish to export presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets.

4. Click **Export**.

5. In the Export Presets dialog that appears, browse to the location where you want to save the `.xml` file and enter its file name.
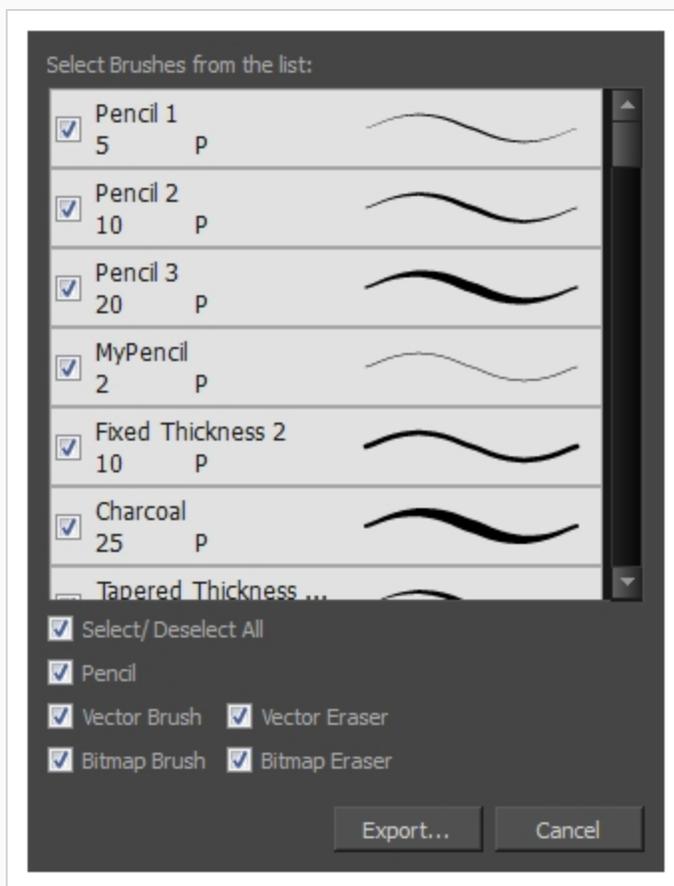
6. Click **Save**.

# Importing Eraser Presets

You can import eraser presets that you previously exported from Harmony.

### How to import pencils, brushes and erasers

1. In the Tools toolbar, select either the Brush 🖌, Pencil 🖊 or Eraser 🖌 tool.

2. Open the Brush Preset menu 📄 and select **Import Brushes**.

3. In the browser window that appears, navigate to and select the `.xml` file in which you exported your brush presets.

4. Click **Open.**

   The Import Brushes dialog box opens.

   

5. By default, the presets for any tools included in the file will be selected for import. If you only wish to import presets for specific tools, uncheck **Select/Deselect All** and select the tools for which you want to export the presets

6. Click **Import**.

The imported brush, eraser and pencil styles will appear in the Presets list.

# Changing the Brush Preset Display

You can display your preset list as thumbnails or a list.

### How to change the Brush Presets display

1. In the Tool Properties view, click on the Brush Presets menu button &#8862; .

2. Select one of the following options:

   - **Small Thumbnail:** Displays presets in a grid of small thumbnails with a preview of their tip.

   - **Large Thumbnail:** Displays presets in a grid of big thumbnails, with their name and a preview of their tip.

   - **Stroke View:** Displays presets in a list, with their name and a preview of a stroke done with each preset. This is the default setting.

# Erasing Synced Drawings

Normally in the Camera view, the only drawings and lines that can be erased are those on the selected layer. The Apply to Synced Drawing Layers ✪ option allows for the inclusion of drawings on layers synced to the selected drawing layer.

Layers are synced when drawings need to be separated on different layers, but need to have the same timing.

### How to erase synced drawings

1. In the Tools toolbar, select the Erase ✏ tool.

2. In the Timeline view, select a synced drawing layer. When you click on a synced layer, the other layers that it is synced with will display the link icon.
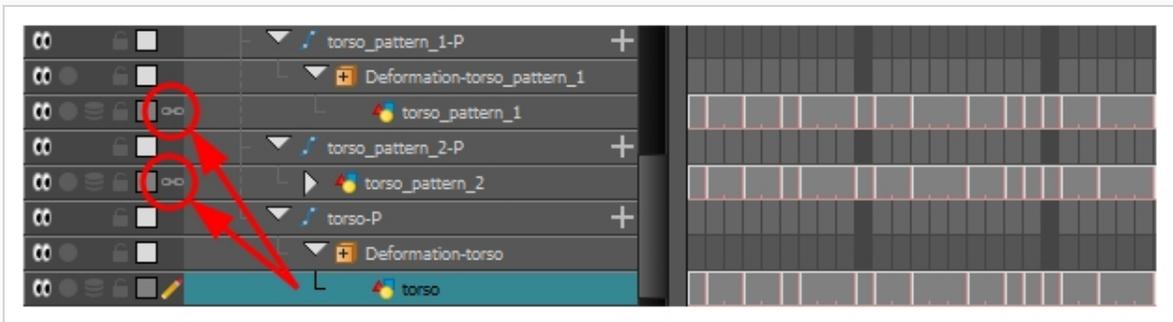


3. In the Tool Properties panel, enable the Apply to Synced Drawing Layers option.
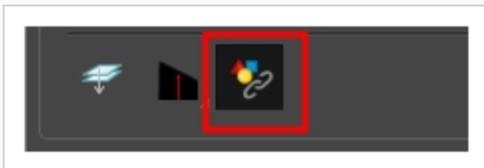


4. In the Camera view, start to erase.

   Notice that only the selected drawing and its corresponding synced drawings have been erased.

# About the Select Tool

T-HFND-004-005

The Select tool allows you to select drawing strokes and drawing objects. When selected, you can use the Select tool to scale, translate, rotate, resize, flip and delete them.

> **NOTE**
>
> To learn more about the Select tool options, see the Reference guide .

**Authors**

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# Selecting

Using the Select tool, you can select drawing strokes and groups.

> **NOTE**
>
> To learn more about the Select tool options, see the Reference guide .

## How to select objects

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 strokes or drawing object you want to edit by doing one of the following:

   - Click on a stroke or drawing object to select it.

   - Shift + Click on a stroke or drawing object to add it to a multiple selection.

   - Draw a lasso around drawing strokes or objects to select them simultaneously.

   - From the top menu, select **Edit > Select All** or press Ctrl + A (Windows/Linux) or ⌘ + A (macOS) to select all the strokes and drawing objects in the drawing.

4. Do one of the following to edit your selection:

   - To reposition, click the selected drawing object and drag the selection to a new area.
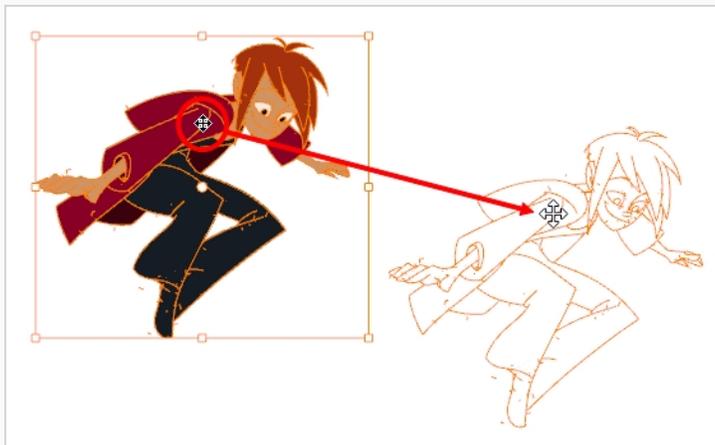
> **NOTE**
>
> You can also nudge your selection using the arrow keys, and fast-nudge your selection by holding Shift and pressing the arrow keys.

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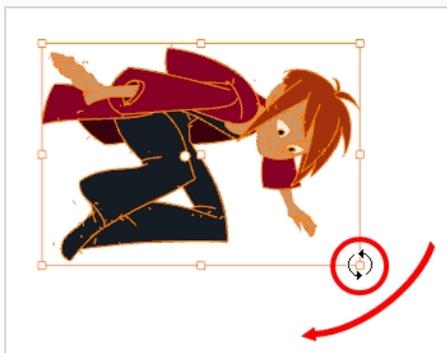


- To scale, pull or push on the top, side, bottom or corner control point. Hold down Shift to lock the selection's ratio.
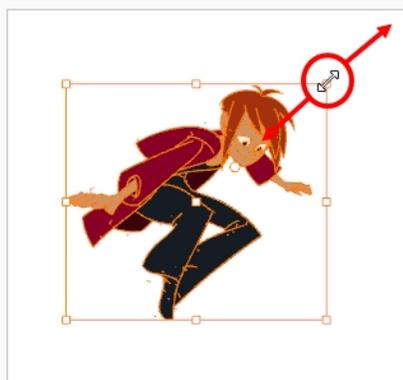


- To skew, drag sideways or up and down the sides or top and bottom segments, between the control points.
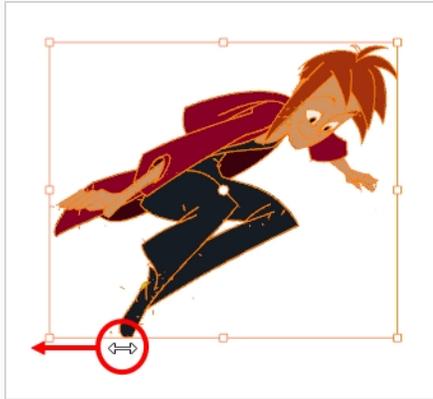
- To delete, press Del (Windows/Linux) or Backspace (macOS).

# Selecting Drawing Strokes in Synced Drawings

Normally in the Camera view, any visible line or drawing can be selected. When you enable the Works on Single Drawing mode, only drawings from the currently selected layer can be selected.

The Apply to Synced Drawing Layers option works in conjunction with the Works on Single Drawing mode. The Works on Single Drawing mode still limits the selection to a single layer, but the Apply to Synced Drawing Layers option allows for the inclusion of drawings on layers synced to the selected drawing layer.

Layers are synced when drawings need to be separated on different layers, but need to have the same timing.

## How to select synced drawings

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

2. In the Timeline view, select a synced drawing layer. When you click on a synced layer, the other layers that it is synced with will display the link icon.
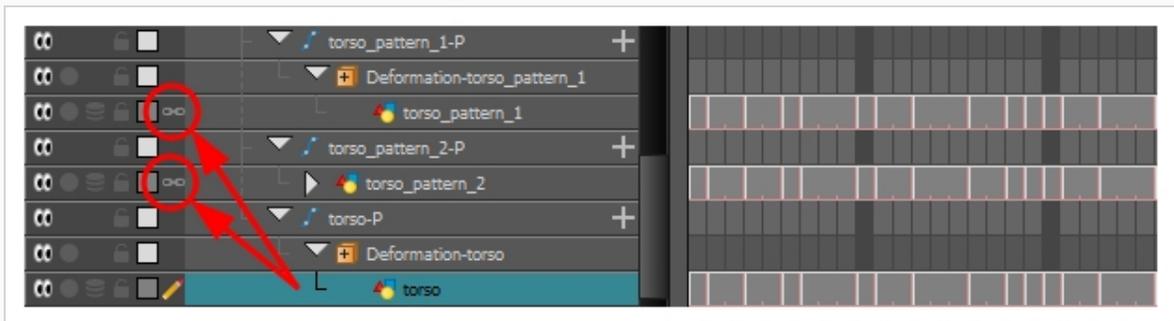


3. In the Tool Properties panel, enable the Works on Single Drawing mode and the Apply to Synced Drawing Layers option.
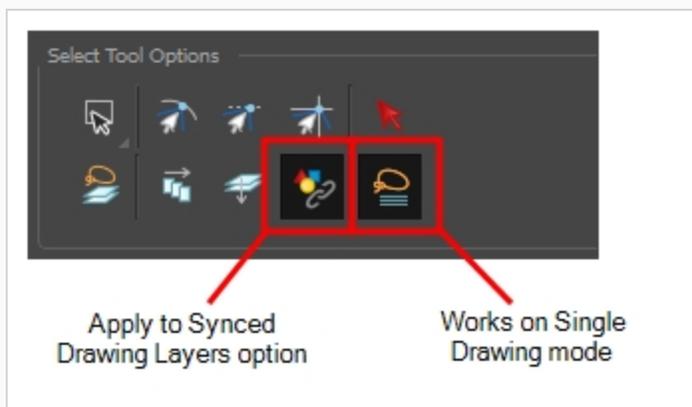


4. In the Camera view, select a drawing or any of its corresponding synced drawings.

   Notice that only those drawings are selectable.
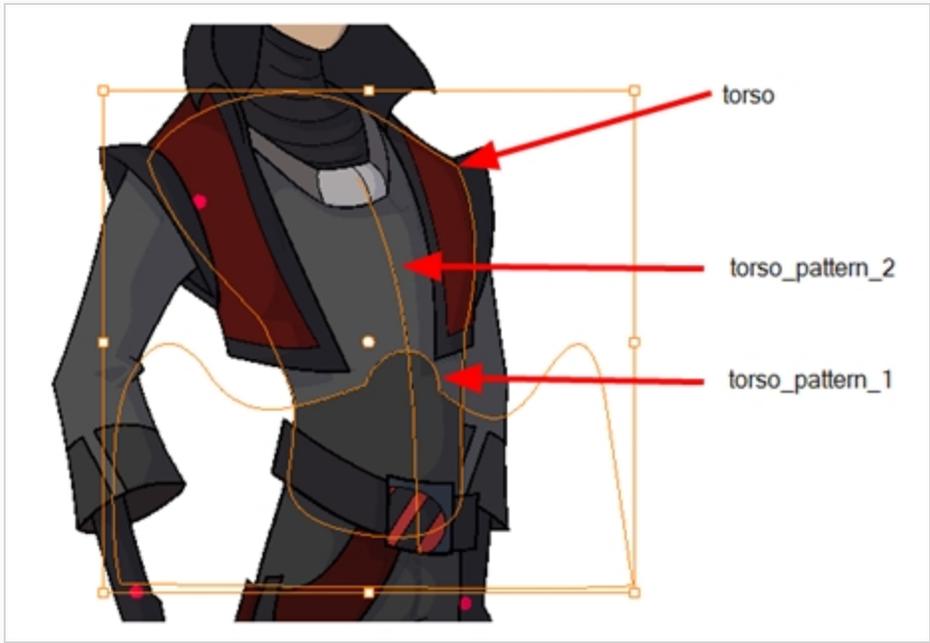
# Inverting a Selection

You can invert your selection to select everything else in your drawing that was not previously selected.

## How to invert a selection

1. From the top menu, select **Edit > Invert Selection** or press Ctrl + Shift + I (Windows/Linux) or Shift + ⌘ + I (macOS).

   You can also find the Invert Selection option in the Camera or Drawing View menu by selecting **Edit > Invert Selection**.

# Repositioning the Selection Pivot

You can temporarily reposition the selection's pivot position to rotate, scale, or skew from a different point.

**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.
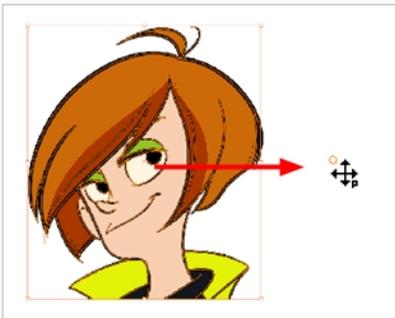
# Arranging and Reordering Drawing Strokes

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

## How to arrange drawing strokes

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

2. In the Camera or Drawing view, select the strokes to be reordered.

3. Do one of the following:

   - From the top menu, select **Drawing > Arrange > Bring to Front**—Moves the selected art to the front (on top). Press Ctrl + Shift + PgUp (Windows/Linux) or ⌘ + Shift + PgUp (macOS).

   - From the top menu, select **Drawing > Arrange > Bring Forward**—Moves the selected art one level forward (closer to the front). Press Ctrl + PgUp (Windows/Linux) or ⌘ + PgUp (macOS).

   - From the top menu, select **Drawing > Arrange > Send Backward**—Moves the selected art one level lower (behind). Press Ctrl + PgDown (Windows/Linux) or ⌘ + PgDown (macOS).

   - From the top menu, select **Drawing > Arrange > Send to Back—**Moves the selected art behind everything (bottom / back). Press Ctrl + Shift + PgDown (Windows/Linux) or ⌘ + Shift + PgDown (macOS).

4. In the Drawing View and Camera View toolbars, you can also add the following buttons—see *Customizing View Toolbars* on page 96.

   - Bring to Front ⬒ button

   - Bring Forward ⬒ button

   - Send Backward ⬒ button

   - Send to Back ⬒ button

# Grouping Drawing Strokes

Use the grouping options to group and ungroup selected drawing objects and strokes. This can help in the selection, repositioning, re-scaling and other transformations to be applied to multiple objects of a drawing. Grouping does not flatten your objects. You can ungroup your selection at any time. You can also group groups.

### How to group strokes

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

2. In the Camera or Drawing view, select the strokes to be grouped.

3. Do one of the following:

    - From the top menu, select **Edit > Group > Group**.

    - From the Camera or Drawing view menu, select **Edit > Group > Group.**

    - Press Ctrl + G (Windows/Linux) or ⌘ + G (macOS).

### How to ungroup strokes

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

2. In the Camera or Drawing view, select the groups to be ungrouped.

3. Do one of the following:

    - From the top menu, select **Edit > Group > Ungroup**.

    - From the Camera or Drawing view menu, select **Edit > Group > Ungroup**.

    - Press Ctrl + Shift + G (Windows/Linux) or ⌘ + Shift + G (macOS).

# Working on a Single Drawing with the Select Tool

In the Drawing view, the select tool will always work on the selected layer only. In the Camera view, you can set the Select tool to either work on all visible layers or on the selected layers only.

> **NOTE**
>
> To learn more about the Select tool options, see the Reference guide .

**How to enable 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:

   - In the Tool Properties view, click the Single Drawing Mode ⬙ button.

   - Select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS). In the Camera tab, go to the Tools section and select the **Select Tool Works on Single Drawing** option and click **OK**.

3. In the Camera view, make your selection. Note that you may need to restart Harmony depending on your system.
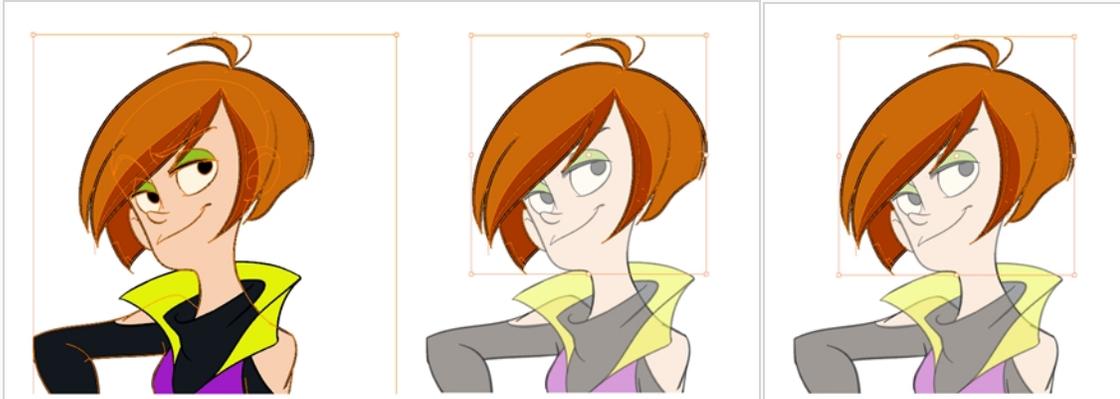
# About the Repositioning All Drawings Tool

The Reposition All Drawings tool is used to reposition, scale, rotate or skew all drawing strokes on every drawing included in a layer.
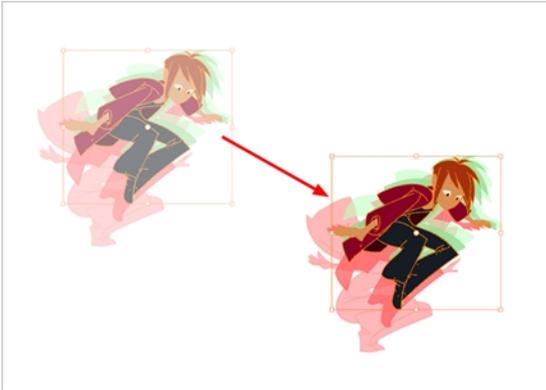


If your hand-drawn animation requires to be repositionned in the grid, as soon as your select the Reposition All Drawings tool, all the strokes in all the drawings exposed on the current layer are selected. You can use the controls the same was as the Select tool—see *About the Select Tool* on page 259.

You can use the Drawing Desk feature to select specific drawings and avoid repositioning all the drawings—see *About the Drawing Desk* on page 528.

> **NOTE**
>
> To learn more about the Reposition All Drawings tool options, see the Reference guide .

# Repositioning All Drawings in a Layer

Use the Reposition All Drawings tool to reposition all the drawing strokes on all drawings exposed in the current layer.

> **NOTE**
>
> To learn more about the Reposition All Drawings tool options, see the Reference guide .

### 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.
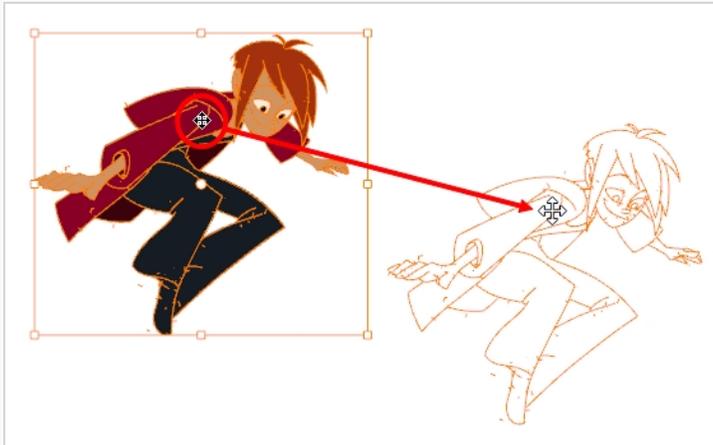
    

    - To rotate, rotate the selection box handle.
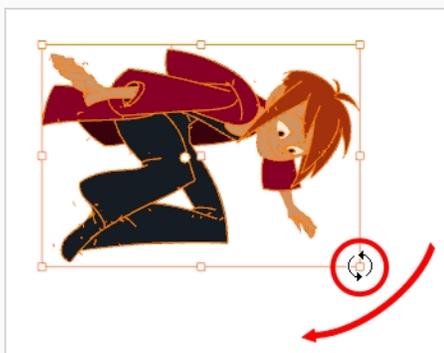
- To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to maintain the selection's ratio.
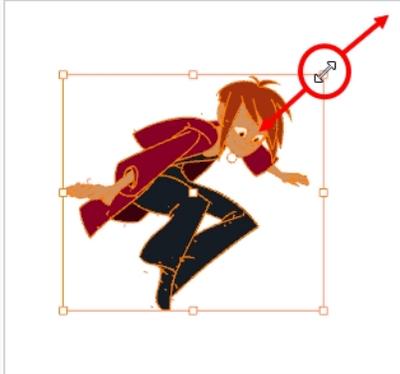


- To skew, drag the sides or top and bottom segments, between the control points.
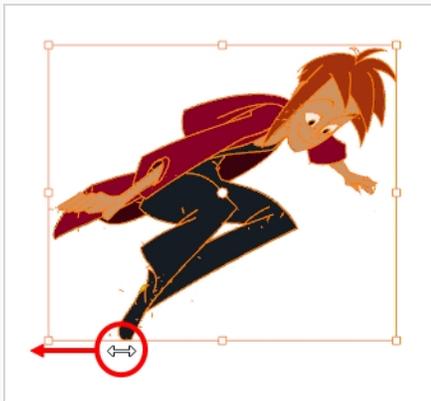


3. When you release your cursor, every drawing in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.

4. You can also adjust the position by modifying the settings and using the operation buttons in the Tool Properties view.

# Repositioning All Drawings in Synced Layers

Normally in the Camera view, the only drawings that can be repositioned are those from the selected layer. The Apply to Synced Drawing Layers option allows for the inclusion of drawings on layers synced to the selected drawing layer.

Layers are synced when drawings need to be separated on different layers, but need to have the same timing.

### How to reposition all synced drawings

1. In the Tools toolbar, select the Reposition All Drawings ✏ tool.

2. In the Timeline view, select a synced drawing layer. When you click on a synced layer, the other layers that it is synced with will display the link icon.

   

3. In the Tool Properties panel, enable the Apply to Synced Drawing Layers 🔗 option—see the Reference guide .
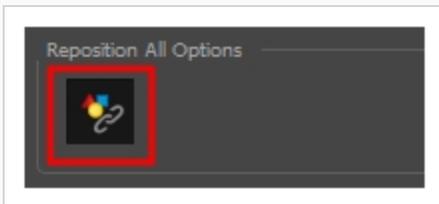
   

4. In the Camera view, click and drag the drawings highlighted by a bounding box to a new location.

   Notice that only drawings from the selected layer and its corresponding synced drawings have been selected.
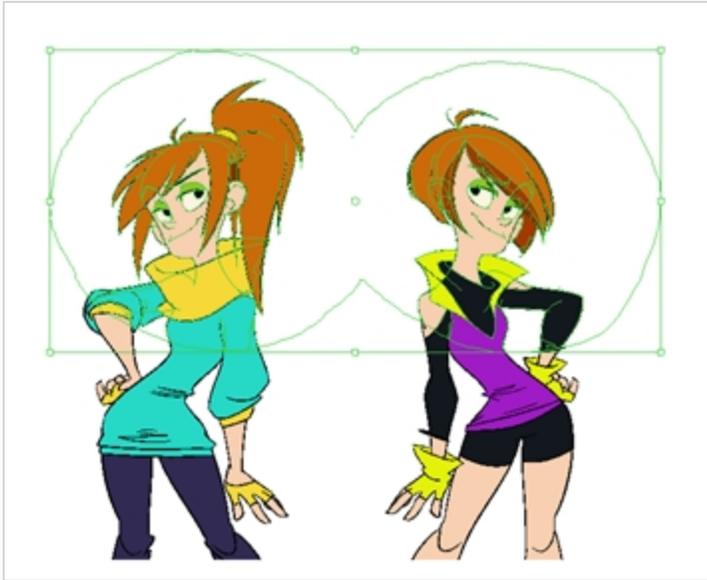
5.  Delete, move, scale, skew or rotate the cut selection.

# About the Cutter Tool

T-HFND-004-007

The Cutter tool lets you cut a drawing to move, copy, or delete it. You can use it to scale or reposition the portion of a flattened or bitmap drawing. You can also use it to trim strokes using a single gesture.

> **NOTE**
>
> To learn more about the Cutter tool options, see the Reference guide .

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# Cutting Artwork

T-HFND-004-007A

Use the Cutter tool to trim and cut your artwork.

> **NOTE**
>
> To learn more about the Cutter tool options, see the Reference guide .

## How to cut drawings

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

2. In the Camera or Drawing view, select an area to cut away.

   

   - To delete the selected area, press Del.

   - To move the selection, drag it to a new area.

   - Use the bounding box controls to scale, skew, or rotate the cut piece.
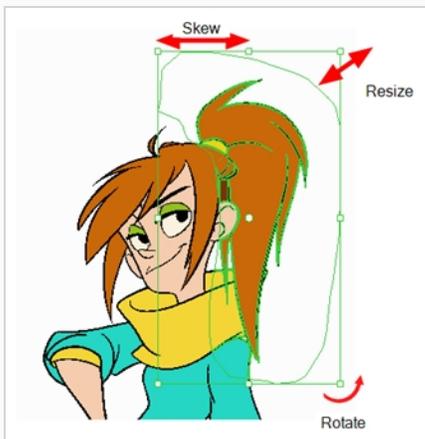
# Cutting Synced Drawings

Normally in the Camera view, the only drawings and lines that can be cut are those on the selected layer. The Apply to Synced Drawing Layers 🔗 option allows for the inclusion of drawings on layers synced to the selected drawing layer.

Layers are synced when drawings need to be separated on different layers, but need to have the same timing.

**How to cut synced drawings**

1. In the Tools toolbar, select the Cutter ✐ tool.

2. In the Timeline view, select a synced drawing layer. When you click on a synced layer, the other layers that it is synced with will display the link icon.



3. In the Tool Properties panel, enable the Apply to Synced Drawing Layers option.
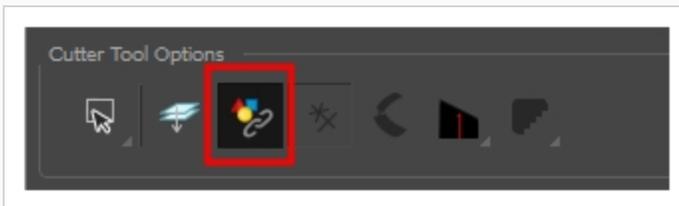


4. In the Camera view, create a region that includes both drawings.

   Notice that only drawings from the selected layer and its corresponding synced drawings were repositioned in the Camera view.
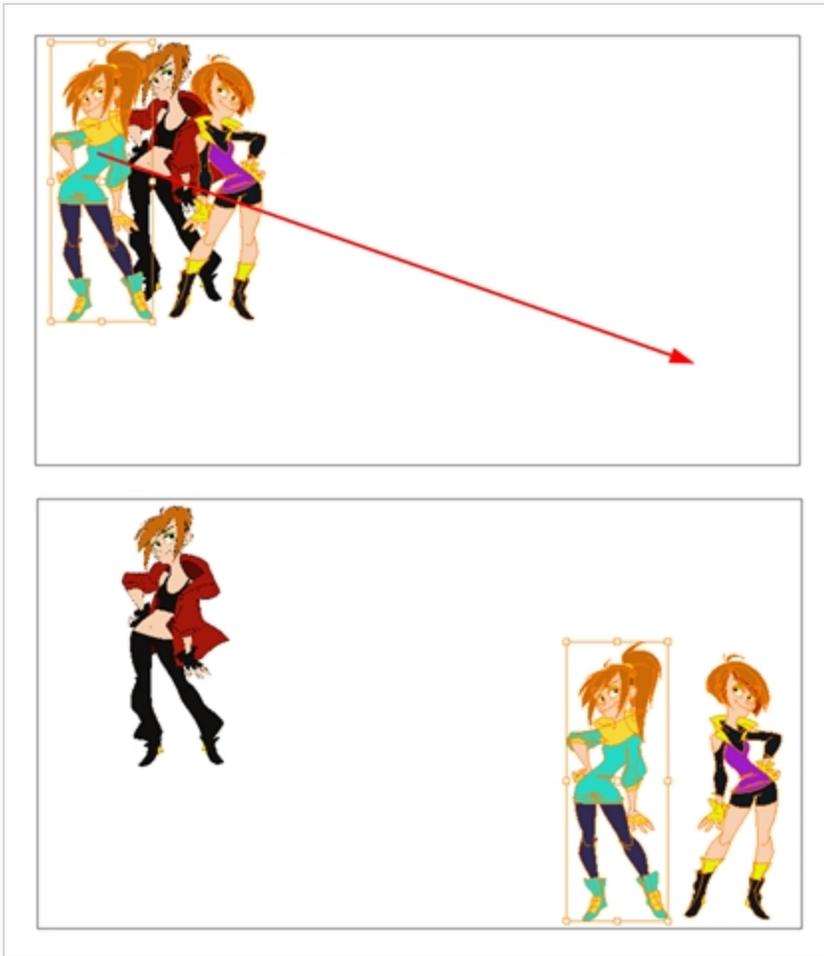
# About the Contour Editor Tool

T-HFND-004-008

The Contour Editor lets you reshape vector shapes, brush strokes and lines in your drawings.

Artwork in Harmony is made of vector shapes. Vector shapes are defined by points, the lines joining the points together (contours) and the curve vectors, represented by Bezier handles, which make the curve of said lines.
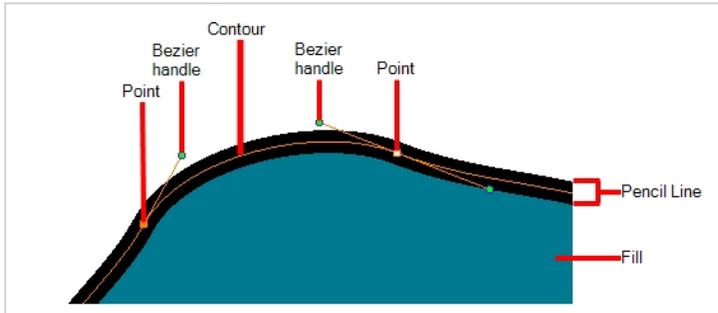


The Contour Editor tool allows you to select a contour or point, and change the position of points, add and remove points from the shape, rotate, lengthen and shorten curve handles to influence the curve of contours between those points, or drag contours between points to change their curve directly.

Since pencil lines are defined by a single line with a line width, you can use the Contour Editor to easily modify the shape of pencil lines. In contrast, brush strokes are full vector shapes, so the Contour Editor can be used to modify their shape.
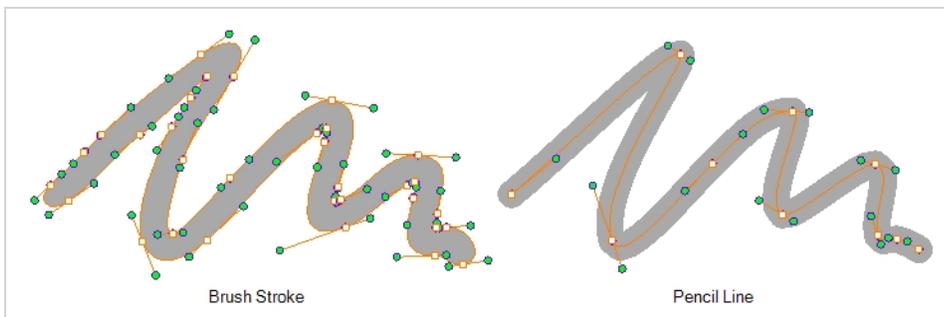


The Contour Editor can be used to tweak vector artwork in all sorts of ways. It can be used to perfect a pencil line, correct shapes, or create complex shapes out of a basic ellipse or rectangle.

> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

# Reshaping a Shape, Pencil Line or Stroke with the Contour Editor Tool

T-HFND-004-008A

You can use the Contour Editor tool to tweak the contours of vector shapes and brush strokes in your drawings, as well as reshape pencil lines and strokes.

> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

## How to reshape drawings

1. In the Tools toolbar, select the Contour Editor ⬚ tool or press Alt + Q.

2. In the Drawing or Camera view, click the shape, contour or pencil line you want to edit near the area you wish to change.

   The shape or line's control points appear.
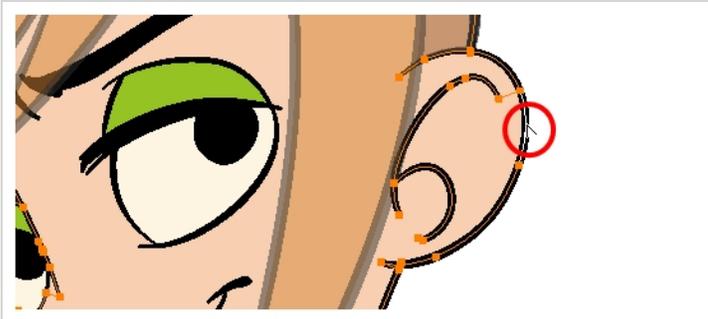
   

3. Click on one of the points to select it.

   The point's Bezier handles appears, as well as Bezier handles for the surrounding points.
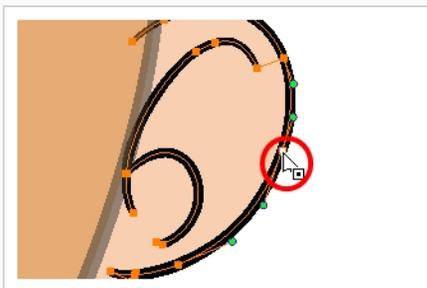
> ☀ **TIP**
>
> You can select several points by drawing a lasso around the points, or by holding Shift while clicking on points to add them to your selection. You can use the Contour Editor to scale and rotate a selection of multiple points by enabling the Show Contour Editor Control ☒ option in the Tool Properties view.

4. Do one of the following:

    - To move a point or a selection of multiple points, click and drag it.

    

    - To change the curve on both sides of a point, drag one of its Bezier handles.

    

    - To change the curve on only one side of a point, press and hold the Alt key, then drag one of its Bezier handles.

    

    - To deform the contour, drag a part of the contour between two points.

- To deform the curve between two points, hold the Shift key and drag the contour between two points.



- To remove a point's Bezier handles and make the lines it is connected to straight, press and hold the Alt key and click on the point.



- Straight lines have no Bezier handles at their points by default. To create Bezier handles for these points and make their lines curved, pres and hold the Alt key, then click and hold the point and drag the mouse cursor away from it. A new Bezier handle will follow your mouse cursor until you release the mouse button.

- To add a control point, press Ctrl (Windows/Linux) or ⌘ (macOS) and click on the contour where you want the new point to be created.



- To remove a control point, select the control point and press Del (Windows/Linux) or Backspace (macOS).
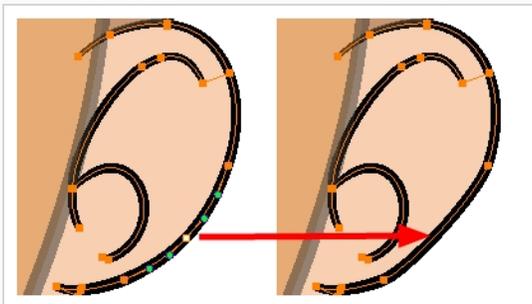
# About the Centerline Editor

The Centerline Editor allows you to tweak and reshape brush strokes by manipulating their center line rather than their contour. This gives you a flexibility that is similar to the one you have when using the Contour Editor tool to manipulate pencil lines.

In Harmony, pencil lines are vector information calculated by their center line and the width of the line. This makes it easy to edit pencil lines with the Contour Editor. Brush strokes, however, are stored as shapes. Therefore, using the Contour Editor on a brush stroke does not allow you to edit the center line of the stroke, but rather, its contour.

The Centerline Editor tool creates a center line for a brush stroke, and gives you access to control points and Bezier handles for this center line, allowing you to deform the brush stroke the same way you can deform a pencil line using the Contour Editor.

.



Centerline Editor on brush stroke

Contour Editor on brush stroke                    Contour Editor on pencil line
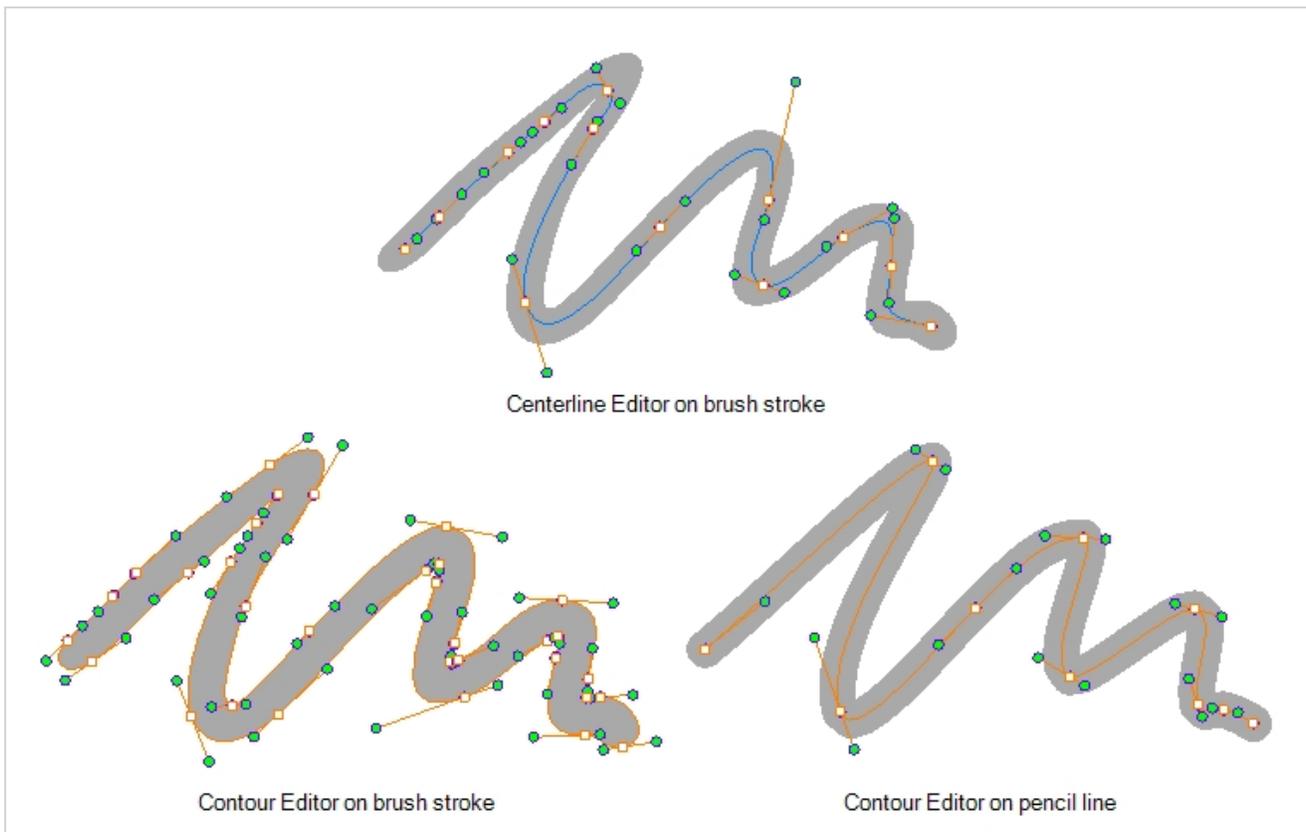
Keep in mind that brush strokes are vector shapes with a fill. As such, the Centerline Editor must do guess work to figure out the center line of your brush strokes, and apply deformations on its shape as you tweak its control points. The Centerline Editor will not be able to make a clear center line out of brush strokes that merge together, that look scrambled or that do not have a clear direction.
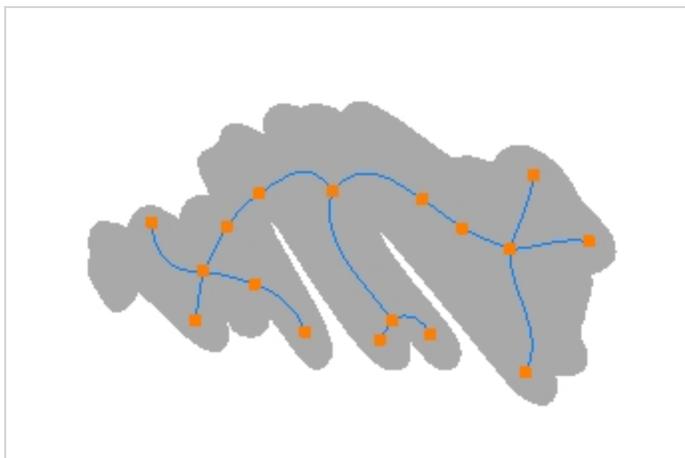
> **NOTE**
>
> The Centerline Editor is also able to tweak textured brush strokes with their texture. Note that this will resample its texture, which may make it lose quality.

> **NOTE**
>
> If you use the Centerline Editor to deform a closed brush stroke with a fill inside it, the fill will not be reshaped to fit the new shape of the brush stroke.

# Reshaping Brush Strokes Using the Centerline Editor

T-HFND-004-009C

You can use the Centerline Editor tool to reshape brush strokes from their center line rather than their contour, like you would reshape pencil lines using the Contour Editor.

> **NOTE**
>
> The Centerline Editor is also able to tweak textured brush strokes with their texture. Note that this will resample its texture, which may make it lose quality.

> **NOTE**
>
> If you use the Centerline Editor to deform a closed brush stroke with a fill inside it, the fill will not be reshaped to fit the new shape of the brush stroke.

**How to reshape brush strokes**

1. In the Tools toolbar, double-click on the Contour Editor ⬉ button and select the Centerline Editor 🖊 tool, or press Alt + W.

2. In the Drawing or Camera view, click the contour or pencil line you want to edit near the area you wish to change.

   The Centerline Editor creates a center line manipulator based on the outline's shape, with control points.
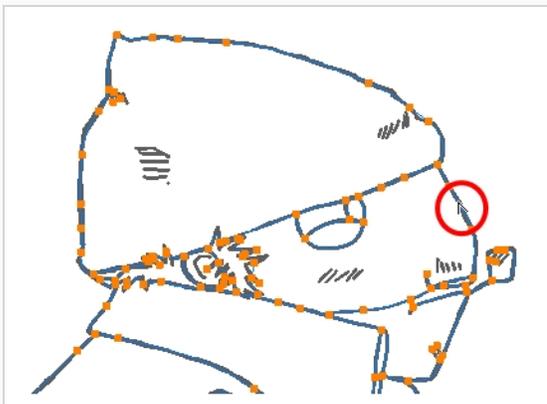
   

3. Click on one of the points to select it.

   The point's Bezier handles appears, as well as Bezier handles for the surrounding points.
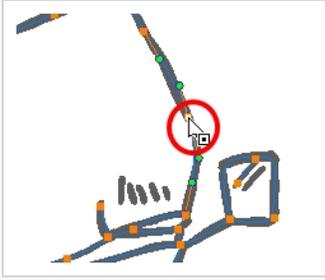
> **TIP**
>
> You can select several points by drawing a lasso around the points, or by holding Shift while clicking on points to add them to your selection. You can use the Contour Editor to scale and rotate a selection of multiple points by enabling the Show Centerline Editor Control ⬚ option in the Tool Properties view.

4. Do one of the following:

    - To move a point or a selection of multiple points, click and drag it.

    

    - To change the curve on both sides of a point, drag one of its Bezier handles.

    

    - To change the curve on only one side of a point, press and hold the Alt key, then drag one of its Bezier handles.

- To deform the contour, drag a part of the contour between two points.



- To deform the curve between two points, hold the Shift key and drag the contour between two points.



- To remove a point's Bezier handles and make the lines it is connected to straight, press and hold the Alt key and click on the point.

- Straight lines have no Bezier handles at their points by default. To create Bezier handles for these points and make their lines curved, press and hold the Alt key, then click and hold the point and drag the mouse cursor away from it. A new Bezier handle will follow your mouse cursor until you release the mouse button.
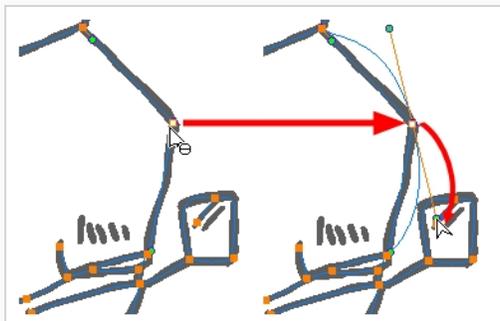


- To add a control point, press Ctrl (Windows/Linux) or ⌘ (macOS) and click on the contour where you want the new point to be created.

# About the Pencil Editor Tool

A pencil line is a central vector shape. Control points are located along the central spine allowing you to adjust the stroke curve and position. Using the Pencil Editor tool, you can adjust the thick and thin areas of pencil lines. Using the Contour Editor tool, you can reposition the spine of the stroke.

> **NOTE**
>
> To learn more about the Pencil Editor tool options, see the Reference guide .
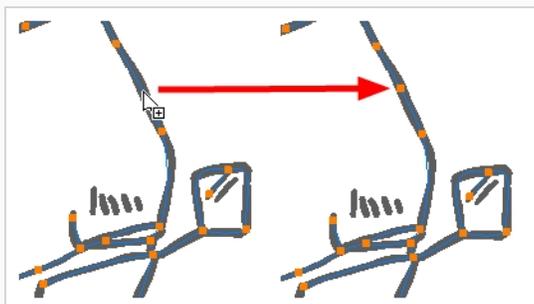
# Tweaking the Thickness of Pencil Lines with the Pencil Editor Tool

T-HFND-004-009A

You can use the Pencil Editor tool to reshape the pencil line thickness.

> **NOTE**
>
> To learn more about the Pencil Editor tool options, see the Reference guide .

## How to reshape pencil lines

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

2. In the Camera or Drawing view, select a pencil line and click to reshape it.



Pencil Editor
Contour control points

Contour Editor
Central spine control points
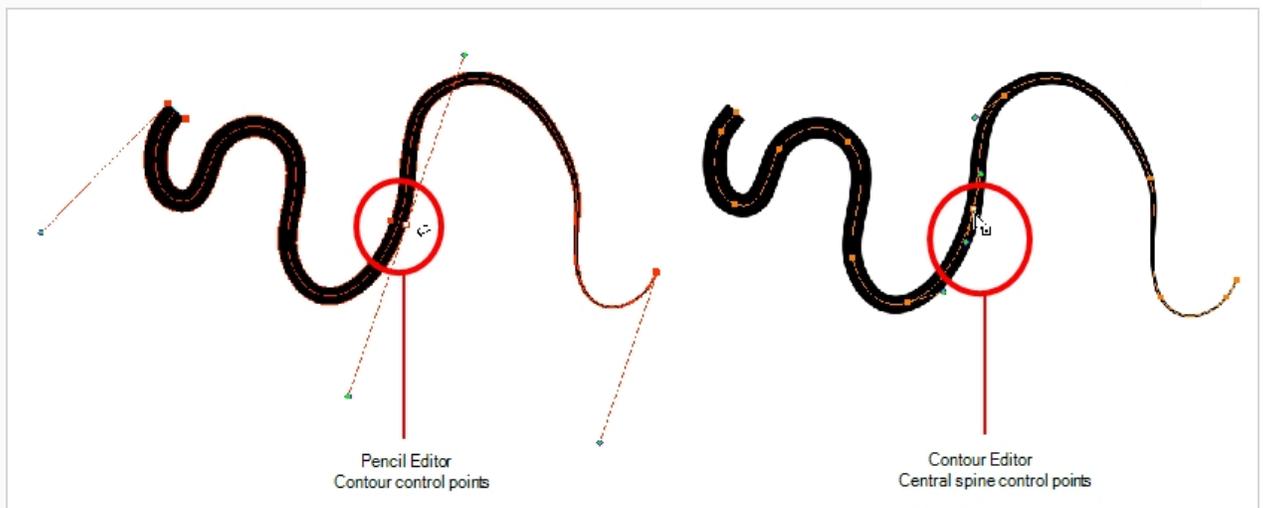
3. Select one or several points by clicking them or circling around.
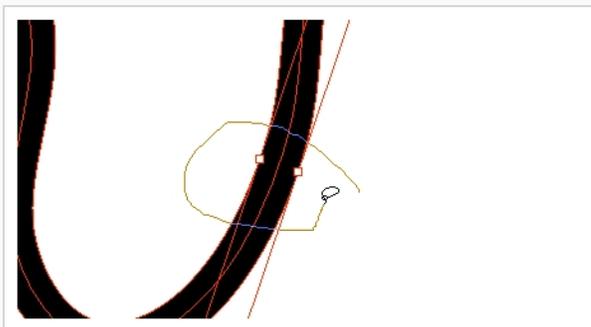


4. Press Del to delete a selected point.

5. Press Ctrl (Windows/Linux) or ⌘ (macOS) 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.
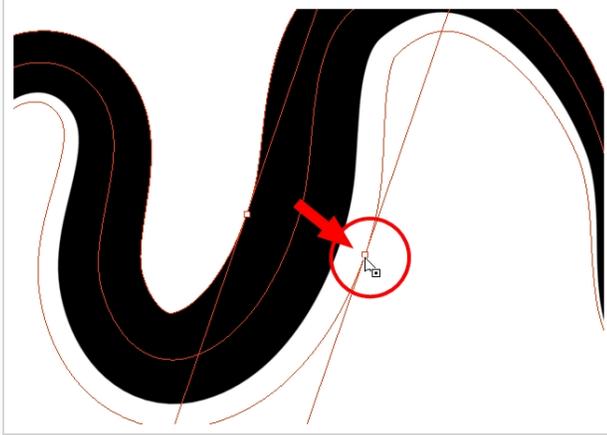
    

    - Pull on the Bezier handle to move both points' handles as one.
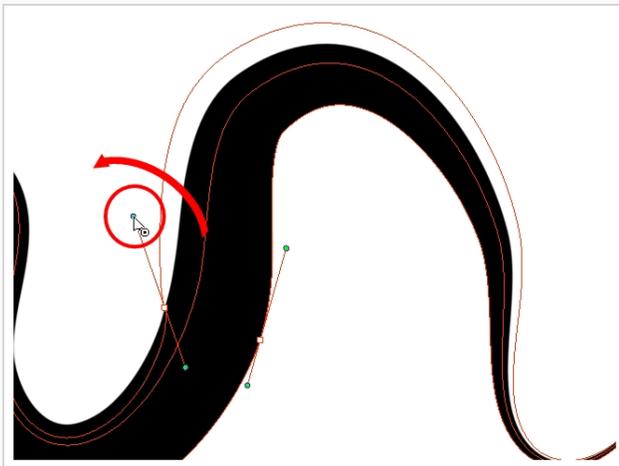
    

    - Hold down Alt and pull on one of the Bezier handles. It moves the handle independently from the other one.
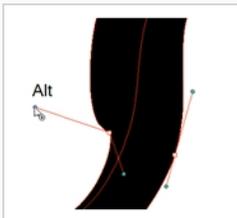
- Pull directly on the line between two points. No selection is necessary. Holding down the Shift key will limit the contour modification to the curve between the two first points.
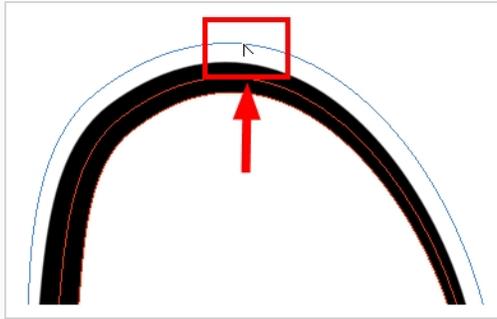


- If an anchor point has no visible Bezier handle, hold down Alt to display them.

# Editing a Pencil Line Texture with the Pencil Editor Tool

When working with textured pencil lines, the Pencil Editor will deform the textures starting from the centre lines.

**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.

2. Click on the pencil line to be modified to bring up its contour envelope.
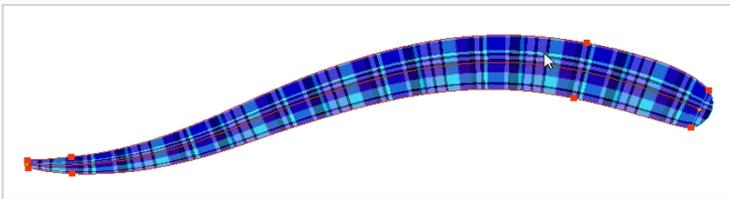




3. Select one of the contour points around the envelope and move its position to change the size of the tiled texture or gradient. You can also pull directly on the lines of the contour envelope or play with the Bezier handles of any given point in order to continue to modify the envelope form.
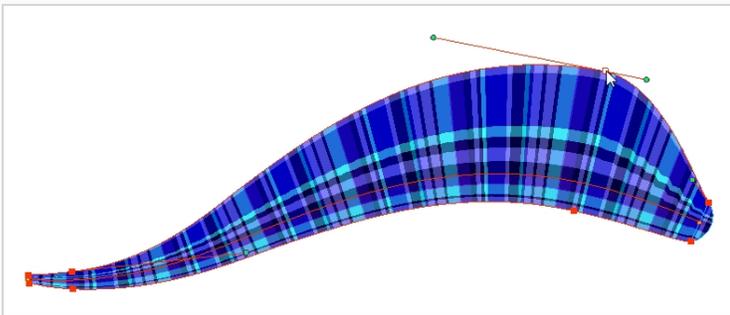


    Expanding the width of the envelope parallel to the pencil line's central vector will cause the tiled texture to be stretched. Conversely, reducing the envelope's width will cause the tiled texture to look squashed.

    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.
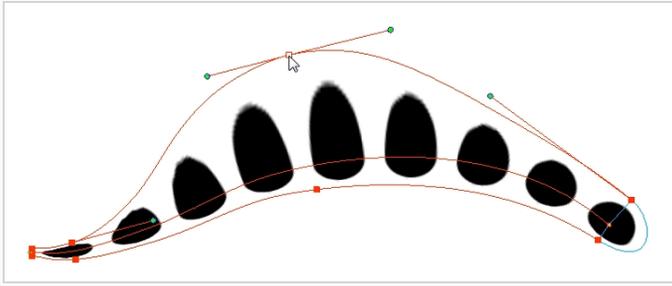
# About the Smooth Editor Tool

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.
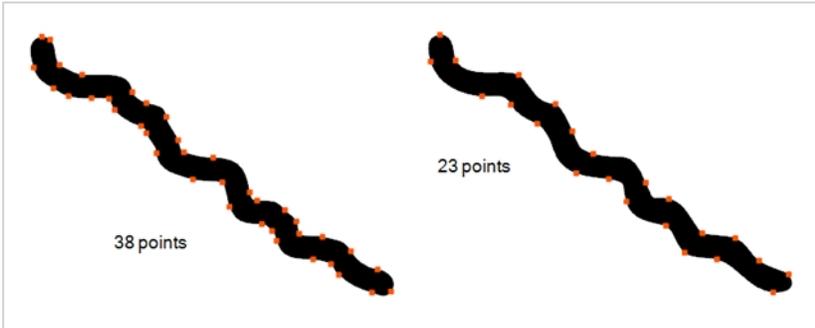


Harmony has a very powerful tool you can use to optimize contours and reduce the number of points on the lines, the Smooth Editor tool.

> **NOTE**
>
> To learn more about the Smooth Editor tool options, see the Reference guide .

# Smoothing Artwork Using the Smooth Editor

You can use the Smooth Editor to smooth out specific areas of your drawing strokes.

**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 the Reference guide to learn about the various settings available.
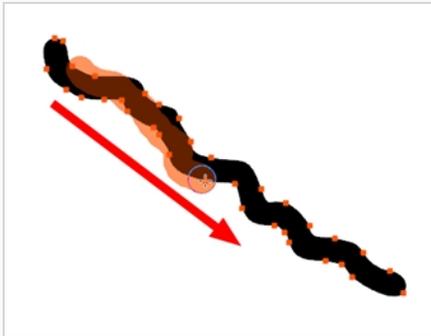
# About the Perspective Tool

The Perspective tool lets you deform a drawing selection and alter its perspective. You can use the corner and edge anchor points to warp the shape.
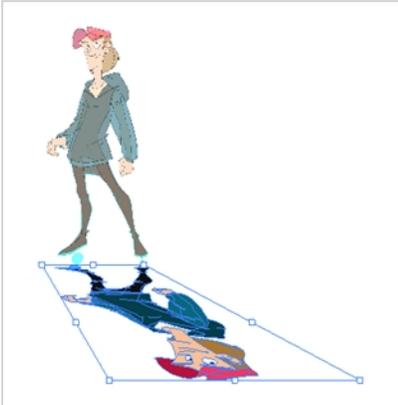


> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

> **NOTE**
>
> To learn more about the Perspective tool options, see the Reference guide .

# Deforming a Drawing with the Perspective Tool

Use the Perspective tool to distort a drawing's bounding box and simulate a perspective effect.

> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

> **NOTE**
>
> To learn more about the Perspective tool options, see the Reference guide .

### 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.

# About the Envelope Tool

The Envelope tool lets you deform and warp part of a drawing using a grid envelope and Bezier handles. You can warp images to make them look like they are reflected in water or in a deformable mirror.



> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

> **NOTE**
>
> To learn more about the Envelope tool options, see the Reference guide .

# Warping a Drawing with the Envelope Tool

You can warp your drawings using the Envelope tool.

> **NOTE**
>
> If you use the Contour Editor, Perspective or Envelope tool on a textured brush stroke, it will deform its texture to fit the new shape of the brush stroke. Note that this will resample the texture, which is liable to make it lose quality.

> **NOTE**
>
> To learn more about the Envelope tool options, see the Reference guide .

### 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
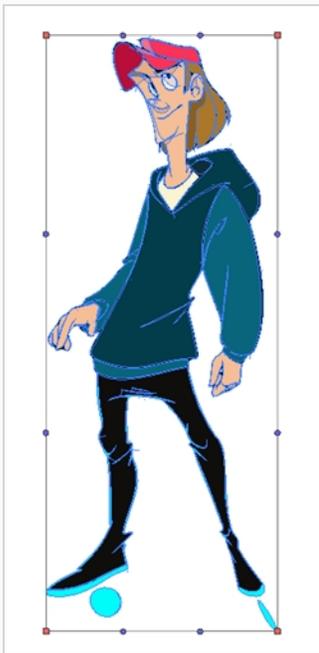


4. Click and drag the different anchor points and handles to deform the image.
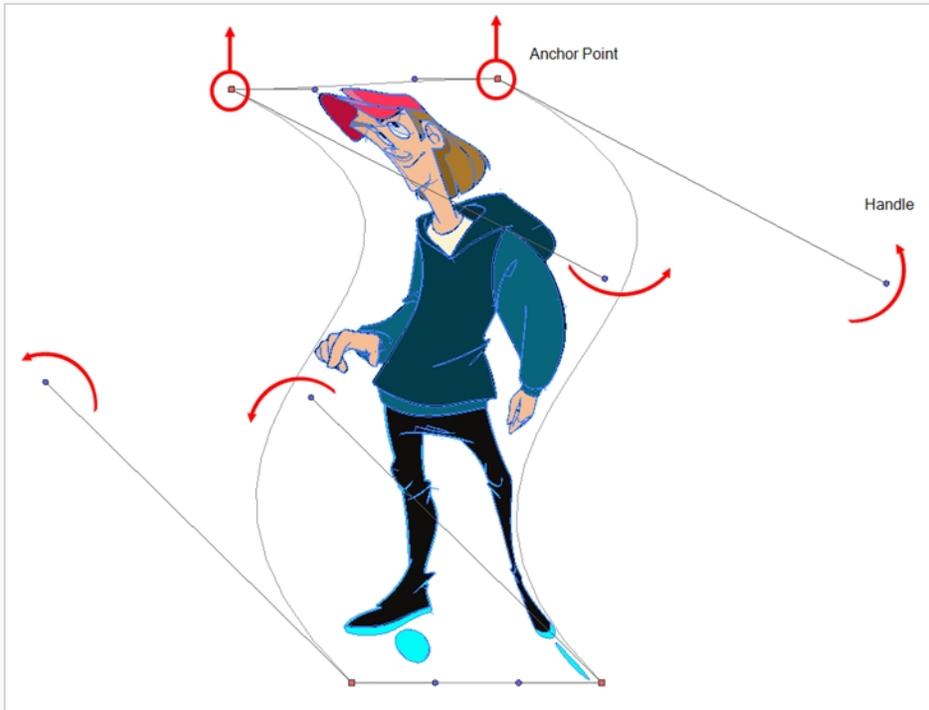
5. To display more controls, in the Tool Properties view, click the Show Advanced Controls ⠿ button.
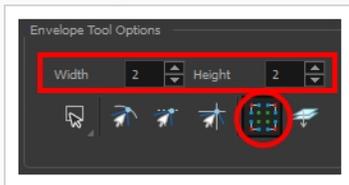


6. Increase the height and width of the grid to get more control points to deform your image.
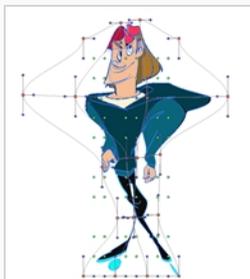
# About the Text Tool

With the Text tool, you can add text in your project using various fonts and texts attributes.



Text objects are drawing objects in the same was as brush strokes and drawing groups are, so they can be manipulated with the select tool. After you have written and formatted your text, you can break the string apart to convert the letters into drawing objects that can than be individually modified with tools such as Select, Perspective, Contour Editor, Smooth Editor.

> **NOTE**
>
> To learn more about the Text tool options, see the Reference guide .

# Adding Text to Drawings

You can use the Text tool to add text to your drawings.

> **NOTE**
>
> To learn more about the Text tool options, see the Reference guide .

### 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 the Reference guide .

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.

7. 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.

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.
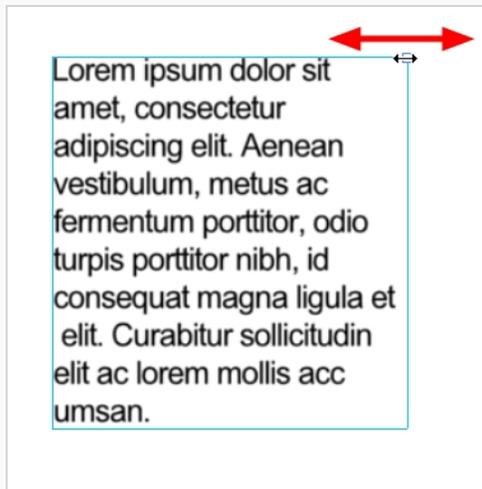
# Breaking Text Into Letters or Vector Shapes

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.
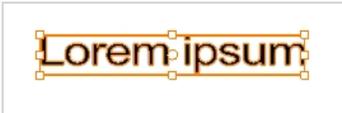
   

3. From the top menu, select **Drawing > Convert > Break ApartText Layers**.

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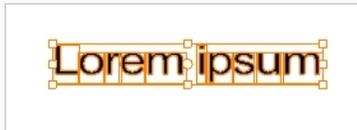
   

   Each character is surrounded by a bounding box that you can modify; they remain text objects that you can edit.

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.

# About Tool Presets

T-ANIMPA-002-008

Tool presets let you save a variety of settings and are very 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.

The difference between a tool preset and a brush preset is that when you save a tool preset, you have the option of saving the colour and assigning a shortcut, which you cannot do with brush presets.

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

# Displaying the Tool Preset Toolbar

Use the Tool Preset toolbar to create, manage and select your custom tool presets. You can display the toolbar in the Drawing and Camera views as well as the top area.

**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**.
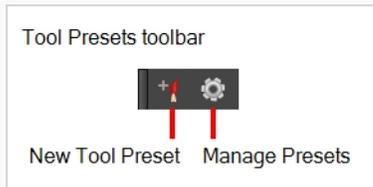
# Creating Tool Presets

You can create your custom tool presets to quickly access brushes and pencils settings and colours you use frequently.

## How to create a tool preset

1. In the Tools toolbar, select a tool, for example the Brush tool.

2. Use the Tool Properties view to customize the tool.

3. To set a specific colour for your preset, in the Colour view, select the colour swatch to link to the tool.

   > **NOTE**
   >
   > When using a tool preset in a scene that is not using the assigned colour swatch, a colour recovery dialog box appears prompting you to add the colour to the scene.

4. In the Tool Presets toolbar, click the New Tool Preset button.

5. In the New Preset dialog box, in the Name field, type a name for your new preset.
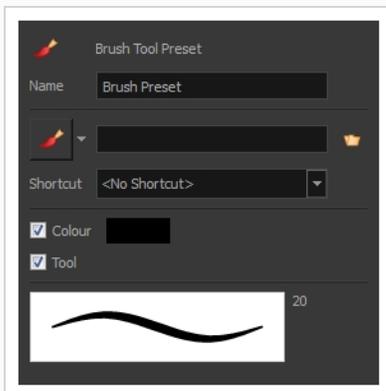
   

6. From the icon list, select an icon to quickly identify your preset or upload your own by clicking the File button.
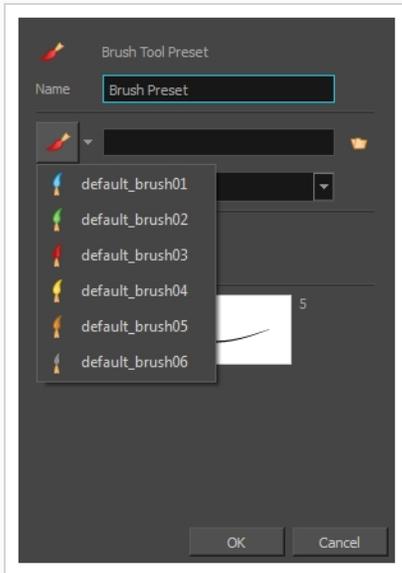
7. (Optional) From the Shortcut menu, set a keyboard shortcut to quickly access your preset. By default, the shortcuts are unassigned. To assign a keyboard shortcut, select **Edit > Preferences > Shortcuts > Tool Presets** (Windows/Linux) or **Harmony Advanced > Preferences > Shortcuts > Tool Presets** (macOS).

8. When you select an option, it 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.

9. Click **OK**.

# Selecting Tool Presets

You can select tool presets in the Tool Presets toolbar.

### 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.

# Deleting Tool Presets

You can delete unnecessary tool presets to keep your list organized.

### How to delete a tool preset

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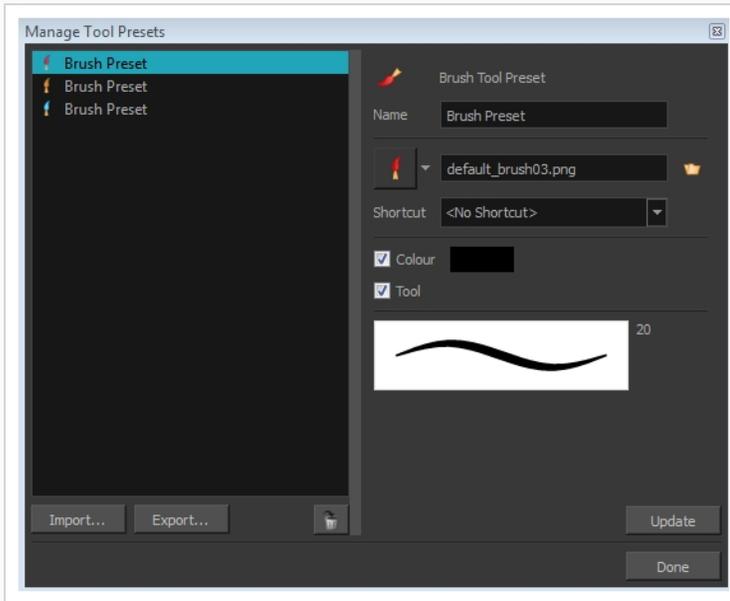


2. From the list of tool presets on the left, select a preset to delete and click the Trash icon.

# Updating Tool Presets

You can update existing tool presets through the Manage Tool Presets dialog box.

### How to update a tool preset

1. In the Tool Properties view, update the tool settings.

2. In the Tool Presets toolbar, click the Manage Tool Presets ⚙ button.

3. In the Manage Tool Presets dialog box, select the tool preset from the list.

4. Update the additional parameters such as the icon, Colour, Layer and Draw Behind options.

5. Click **Update**.

6. Click OK.

# Exporting Tool Presets

You can export tool presets for backup, sharing, or installing on a different computer.

### 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.

2. Click **Export**.

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

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

# Importing Tool Presets

You can import Harmony tool presets you previously exported.

**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.

2. Click **Import**.

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

# About the Tool Colour Swatches

T-ANIMPA-010-018

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

- 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.
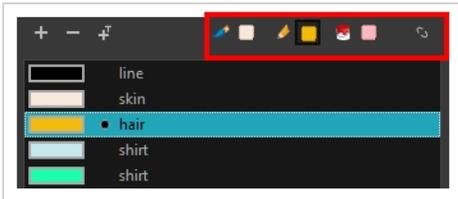


You can also link or unlink the colour swatch used between vector and bitmap layers.

# Unlinking the Tool Colour Swatches

T-ANIMPA-010-019

You can unlink the tool colour swatches and use separated colours for the Brush, Paint, and pencil line tools.

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 unlink the tool colour swatches

1. In the Colour view, if the storage swatches are linked, click the Link 🖈 button to unlink them.
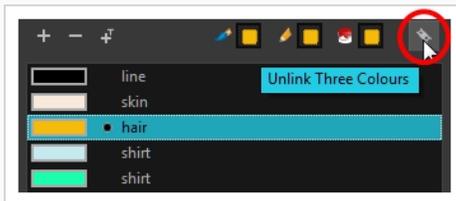
2. Click on the Brush 🖌 storage swatch.
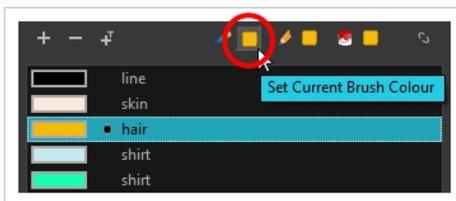
3. In the Colour list, select the desired colour.

4. Click the Pencil ✏ storage swatch.
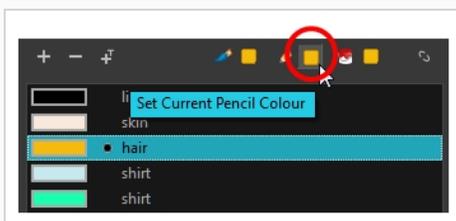
5. In the Colour list, select a colour.

6. Click the Paint 🪣 storage swatch.
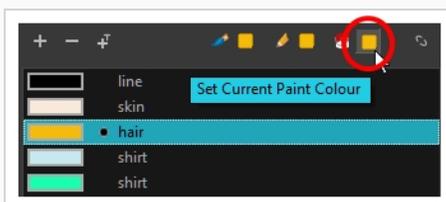
7. In the Colour list, select a colour.
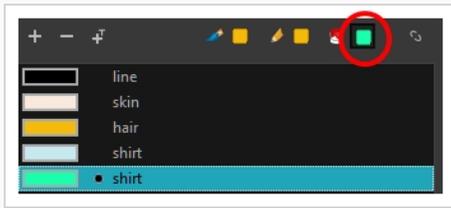
# Linking the Tool Colour Swatches

You can link the tool colour swatches so all the tools use the same colour swatch.

## 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.
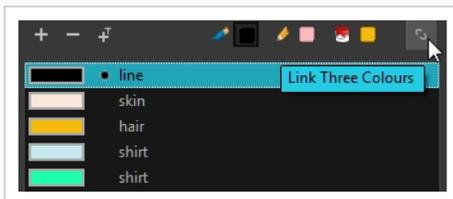
    

    Each time you select a new colour for your current tool, all the storage swatches are updated.

# Using Independent Bitmap Colour Swatches

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.

Although you can use colours from your colour palette to paint on a bitmap layer, colours used in a bitmap drawing layer are not linked to their colour swatch in the palette. This means that, contrary to vector drawing, updating the colours in your colour palette will not update your bitmap drawings with the new colours.

### 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.

# About Drawing Space Management

When you are drawing in the Camera or Drawing view, you can zoom, pan and rotate the view to make it easier to determine where to place objects, determine the scale of objects, and when zooming out, get an overall view of the panel and its contents. You can also use the grid to help you determine the size and placement of objects as you draw.

If you like drawing in the Camera view, but don't want overlays to cover the drawing you're working on, you can enable the Current Drawing on Top option.

# About the Zoom Tool

The Zoom tool in the Tools toolbar lets you zoom in and zoom out of the Camera or Drawing view.

> **NOTE**
>
> To learn more about the Zoom tool options, see the Reference guide .

### How to use the Zoom tool

1. In the Tools toolbar, select the Zoom 🔍 tool available in the Hand tool drop-down menu.

2. Click in the Camera or Drawing view.

3. In the Tools Properties view, do the following:

   - Enable the Zoom In 🔍 mode to zoom in mode when you click in the Camera or Drawing view. When you're in Zoom In mode, hold as you click to zoom out.

   - Enable the Zoom Out 🔍 mode to zoom out when you click in the Camera or Drawing view.

   - Click on the Zoom In 🔍 button to immediately zoom in. You can also press 2.

   - Click on the Zoom Out 🔍 button to immediately zoom out. You can also press 1.

# About the Hand Tool

You can use the Hand tool to pan through the Drawing or Camera view. When you are zoomed in your workspace, you may need to pan to a different area of your image. You can do so with the Hand tool or the Spacebar keyboard shortcut.

The Hand tool has no options in the Tool Properties view.

**How to use the Hand tool**

1. Do one of the following:

   - 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.

# About the Rotate View Tool

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



The rotation angles for the Camera and Drawing views 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.

When using the Rotate View tool, you are only rotating your workspace. You can not changing the actual rotation angle of your drawings. Exporting your project will completely ignore the Rotate View angle.

The Rotate View tool has no options in the Tool Properties view.

# Rotating the Workspace

You can use the Rotate View tool to rotate your drawing workspace.

## How to use the Rotate View tool

1. Do one of the following:

   - From the top menu, select **Drawing > Tools > Rotate View**.

   - In the Tools toolbar, select the Rotate View tool in the Hand tool menu.

   - In the Drawing or Camera view, right-click and select **Drawing Tools > Rotate View**.

   - Hold down Ctrl + Alt (Windows/Linux) or ⌘ + Alt (macOS).

   The rotary table appears.

   

2. In the Drawing or Camera view, click and drag to rotate the space.
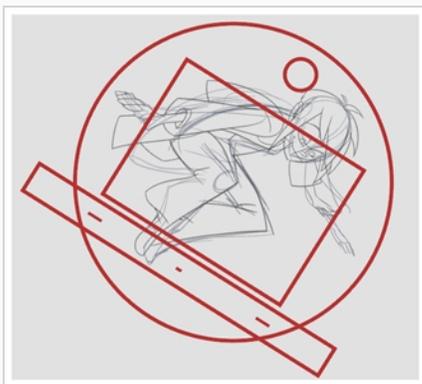
   

3. Release the keyboard shortcut or switch to a new drawing tool.

4. Reset the view rotation using **View > Reset Rotation** or press Shift + X to reset the rotation.

# Displaying the Current Drawing on Top

In the Camera view, 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 draw will be hidden behind that object.
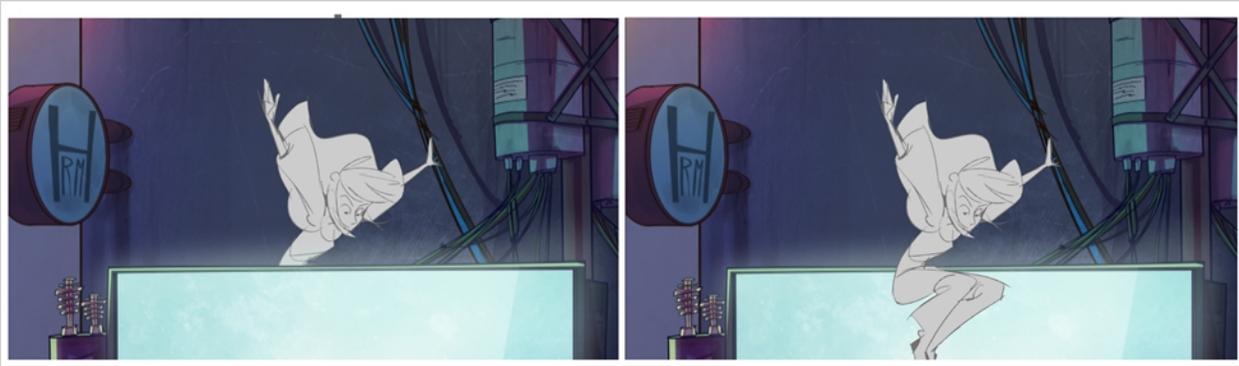


You can display a selected drawing on top of everything while you draw. Then, each time you select a drawing tool, the drawing is displayed in front of everything in the Camera view. The Timeline view ordering remain unchanged.

**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.

    > **NOTE**
    >
    > The Current Drawing on Top status is retained when you exit Harmony. When you restart the application, the last status will be used.

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

3. In the Camera view, start drawing.

# About the Grid

Harmony is equipped with a traditional animation grid. You can use it as a reference while drawing to fit a given layout field chart, align elements, or simply see the center of your drawing. You can draw beyond the grid boundaries as it is only a visual reference.

In the Camera view, the Grid is visible when you select a drawing tool.
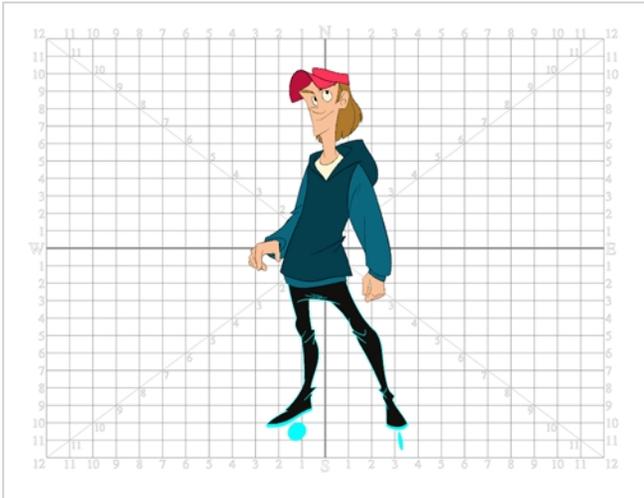
# Displaying the Grid

You can display the grid and it will be visible in the Drawing view. It will be visible in the Camera view when you select a drawing tool.

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

**How to display the grid**

1. Do one of the following:

    - In the Drawing View toolbar, press the Show Grid ⊞ button.

    - In the Camera View toolbar, press the Show Grid ⊞ button.

    - Select **View > Grid > Show Grid**.

    - Press Ctrl + ' (Windows/Linux) or ⌘ + ' (macOS).

# Modifying the Grid

You can modify the look of the grid to be either square, 12-field, 16-field, outline, and so on.

**How to modify the grid display**

1. Select **View > Grid > Show Grid** to display the grid.

2. To modify the grid, select one of the following:

    - **View > Grid > Grid Outline Only**—Displays the outline of the grid only.

    - **View > Grid > Square**—Displays a standard square grid.

    - **View > Grid > 12 Field Grid**—Displays a 12-field size grid.

    - **View > Grid > 16 Field Grid**—Displays a 16-field size grid.

    - **View > Grid > Underlay**—Displays the grid under the drawing elements.

    - **View > Grid > Overlay**—Displays the grid over the drawing elements.

3. In the Drawing View and Camera View toolbars, you can also add the following buttons—see [Customizing View Toolbars](#) on page 96.

    - Grid Outline Only ⊡ button

    - Square ⊞ button

    - 12 Field Grid ⊞ button

    - 16 Field Grid ⊞ button

    - Underlay ⊚ button

    - Overlay ⊚ button

# About OpenGL Antialiasing

T-ANIMPA-010-016

Everything you draw in Harmony is vector-based, unless you purposely elected to draw as bitmap. 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 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 or 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.

# Setting the Full Scene Antialiasing Preference

You can enable the Full Scene Antialiasing preference to smooth out the OpenGL artwork.

> **NOTE**
>
> You must restart Harmony after you change the parameters.

### How to customize the full scene antialiasing parameters

1. Do one of the following:

   - Select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS).

   - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

   The Preferences dialog box opens.

2. In the OpenGL tab, select the **Enable** option in the Full Scene Antialiasing section.
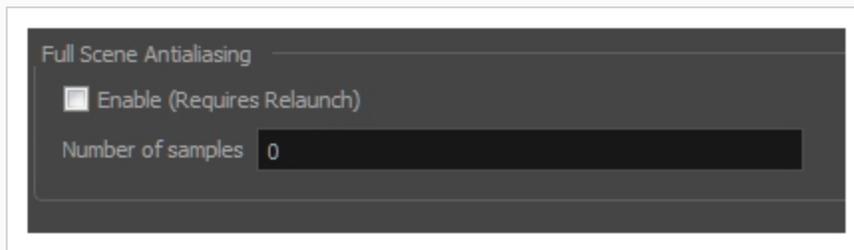
   

3. **Number or samples**: Enter the number of samples you want to be used for the antialiasing process. The number of samples is basically equivalent to the amount of times a pixel will be enlarged to calculate the antialiasing. This technique is called *supersampling*. The higher the number of samples, the better the antialiasing quality will be, but the longer it will take to calculate.

4. Restart Harmony.

# About Drawing Guides

Drawing guides can assist you in drawing background and objects that require straight lines, square angles and, more importantly, perspective. In traditional art. This is usually done using rulers, set squares, and vanishing points to draw lines from. Guides are meant to reproduce the usage of such tools in combination with Harmony's drawing tools.

When a guide is in use, it adds a horizon line and vanishing points to your drawing space, which can be moved to fit your scene's needs, and it locks your drawing tools so that they draw straight lines, either going from one of your vanishing points, or parallel to your guide's horizontal or vertical axis. This makes the process of drawing structures with volume and perspective streamlined. Also, guides display dotted lines going through your mouse cursor going from your vanishing points or parallel to your guide's horizontal and vertical axes to help you visualize the axes your drawing strokes will follow.

Harmony supports the following types of drawing guides:

- The **Square Grid** guide simply helps you draw on the horizontal and vertical axes, which are relative to the horizon line.
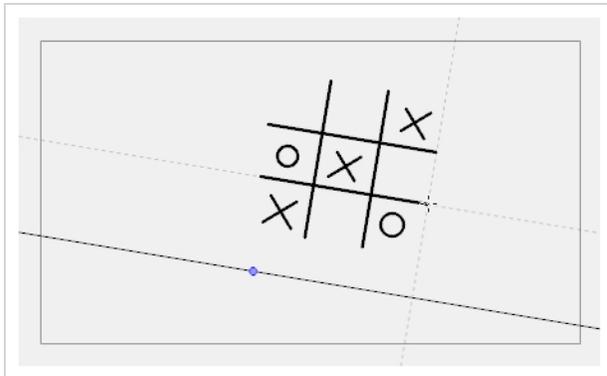


- The **1-Point Perspective** guide helps you draw lines coming from a single vanishing point, which is in the middle of the horizon by default. It also helps you draw along the horizontal and vertical axes. This can help create realistic-looking backgrounds with buildings, walls and objects that are facing your camera.
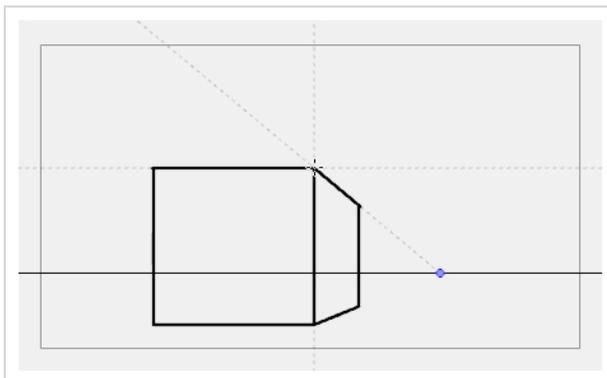
- The **2-Point Perspective** guide helps you draw lines going from one of two vanishing points, which are positioned left and right of your drawing space. This can help create realistic-looking backgrounds with buildings, walls and objects that are at an angle from your camera.
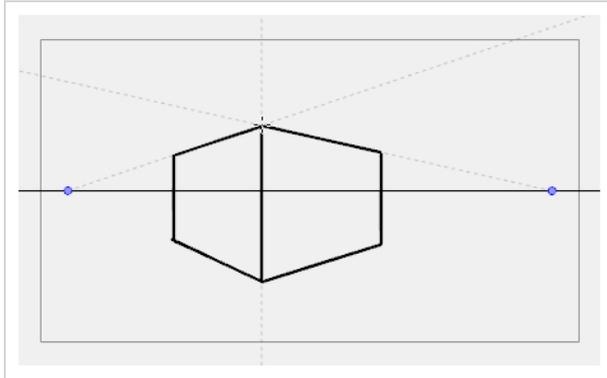


- The **3-Point Perspective** guide helps you draw lines going from one of 3 vanishing points: Two horizontal vanishing points positioned left and right of your drawing space, and one vertical vanishing point positioned below or above your drawing space. This can help you draw realistic looking backgrounds from a low or high angle. The 3-Point Perspective guide has two presets: Bird's Eye View preset and the Worm's-Eye View, which can be used for high angle and low angle perspectives, respectively.
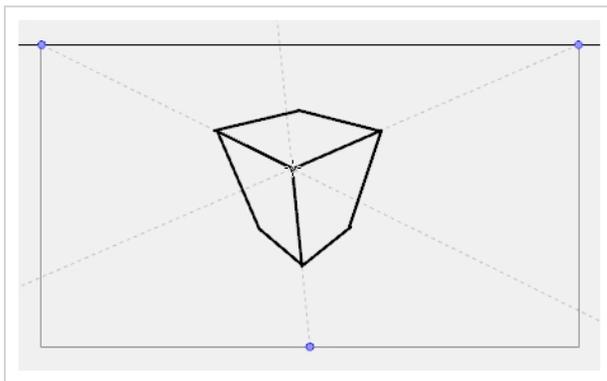


Guides are made to work with the following tools. They are only visible in your drawing space when one of these tools is selected:

- Brush

- Pencil

- Stroke

- Line

Before you can use a guide, you must use the Guide view to add the guide you wish to use to your scene's guides list. A new guide will have its horizon line and vanishing points in preset positions, which can be adjusted to fit your scene's needs. Using the Guides view, you can add, select, rename, delete, cut, copy, paste and reorder guides as needed. Your guides list can also be exported to a file and re-imported into a different scene. When a guide is selected, you can use it, but you can also adjust its horizon line and vanishing points.

> **NOTE**
>
> Your guide list and its guides are part of your scene's data. They are saved with your scene. Changes done to your guides list or to a guide can be undone with the Undo command.

# Adding Drawing Guides

The first step in using drawing guides is to create a guide in the Guides view.

### How to Add a Drawing Guide to your Scene

1. From the top menu, select **Windows > Guides** to add the Guides view to the current workspace.

2. In the Guides view, select the ➕ New Guide button and choose one of the following types of guides:

   - ▦ Square Grid
   - ⊞ 1-Point Perspective
   - ⬥ 2-Point Perspective
   - ▽ 3-Point Perspective (Bird's-eye View)
   - △ 3-Point Perspective (Worm's-eye View)

   The new guide appears in the Guides view list.
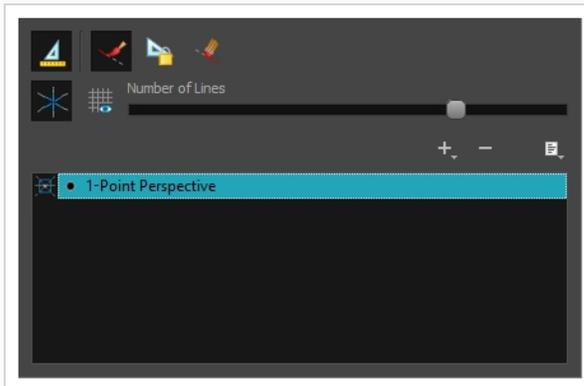
   

3. To add another guide, repeat the previous step.

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# Renaming Drawing Guides

Since guides can be customized, you may want to give them specific name to help you identify them

### How to rename a guide using the Guide Menu

1. In the Guides view, select a guide from the list.

2. In the Guide Menu, select **Rename Guide.**

   The Rename Guide dialog box opens.

3. In the Rename Guide dialog box, enter the new guide name.

4. Press **OK**.

### How to rename a guide using the Guide List

1. In the Guides view, double-click on a guide displayed in the list.

   The guide's name becomes editable.

2. In the editable name field, enter a new name for the guide.

3. Press Enter/Return.

> **NOTE**
>
> It is not required to give a unique name to each guide in a guides list.

# Deleting Drawing Guides

You can delete a drawing guide from your list.

**How to delete a Drawing Guide**

1. In the Guides view, select one or multiple guides from the list.

2. In the Guides view, select the Delete Guide ➖ button or press Del (Windows/Linux) or Backspace (macOS).

   The selected guided are deleted from the list.

# Selecting the Active Drawing Guide

A Harmony scene can have as many guides as needed, but you can only use one guide at a time. You can decide which guide you're using by selecting it from the guides list. The selected guide will display in your drawing space.

Although you can select the active guide at any time, a guide will only behave as active if one of the following drawing tools is selected:

- Brush
- Pencil
- Stroke
- Line

Once a guide is active, it will display its horizon line and vanishing points in your drawing space. There will also be two or three dotted lines following your mouse cursor in the drawing area: One line for each horizontal or vertical axis in your guide, and one line going from each vanishing point in your guide through your mouse cursor.

### How to select the active guide from the guides list

1. In the Guide view, click on the desired guide in the guides list

    The selected guide will become active.

    > **NOTE**
    >
    > If Guides are disabled, clicking on a guide in the guides list will enable them.

### How to quickly switch between guides

1. Set the focus on your Camera or Drawing view, for example, by clicking on the view's tab.
2. Press the Up Arrowor Down Arrow key to select the previous or next guide in the list.

    > **NOTE**
    >
    > Using the Up Arrow or Down Arrow to select a guide will only work if guides are already enabled.

# Cutting Drawing Guides

You can cut a drawing guide from your guides list. This will remove the guide from the list allow you to paste it into another scene.

### How to cut a Drawing Guide

1. In the Guides view, select one or multiple guides from the list.

2. In the Guides view menu, select **Cut** or press Ctrl + X (Windows/Linux) or ⌘ + X (macOS).

   The selected guides are deleted from the list and stored in the clipboard.

3. In the top menu, select **File > Open** and open a different Harmony scene.

4. In the Guides view, click on the guides list to set the focus on it. If the guides list already contains guide, select a guide that will act as an insertion point.

5. In the Guides View menu, select **Paste** or press Ctrl + V (Windows/Linux) or ⌘ + V (macOS).

   Drawing Guides that were copied from the previous guides list are pasted in the current guides list, under the selected guide, if any.

> **NOTE**
>
> If you want to use the Cut, Copy and Paste keyboard shortcuts on guides, make sure the focus is on the Guides view.

# Copying Drawing Guides

You can copy drawing guides and paste them into other scenes.

### How to copy a Drawing Guide

1. In the Guides view, select one or multiple guides from the list.

2. In the Guides View menu, select **Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

3. In the top menu, select **File > Open** and open a different Harmony scene.

4. In the Guides view, click on the guides list to set the focus on it. If the guides list already contains guide, select a guide that will act as an insertion point.

5. In the Guides View menu, select **Paste** or press Ctrl + V (Windows/Linux) or ⌘ + V (macOS).

   Drawing Guides that were copied from the previous guides list are pasted in the current guides list, under the selected guide, if any.

   > **NOTE**
   >
   > If you want to use the Cut, Copy and Paste keyboard shortcuts on guides, make sure the focus is on the Guides view.

# Reordering Drawing Guide Lists

The drawing guides in your guides list can be reordered.

### How to reorder a Drawing Guide list

1. In the Guides view, select one or multiple guides from the list.

2. Drag and drop the selected guides to their desired position in the list.

# Editing Drawing Guides

When a new guide is created, it comes with a preset horizon line and, if applicable, preset vanishing points. The position and angle of the horizon line as well as the position of any vanishing point in the selected guide can be adjusted visually from within your drawing space.

Guides can only be edited with the Brush, Pencil, Stroke or Line tool. The selected guide will only be visible when one of these tools is selected.

### How to edit a drawing guide

1. In the Timeline or Xsheet view, select a drawing, or select an empty cell and create a new drawing by doing one of the following:

   - Right-click on the cell and select **Drawing > Create Empty Drawing**.

   - Press Alt + Shift + R

2. In the Tools toolbar, select the Brush ✏, Pencil ✏, Stroke ◯ or Line ╱ tool.

3. In the Guides view, select a guide to make it the active guide.

   Once a guide is active, its horizon line and vanishing point(s) appear in the drawing area.
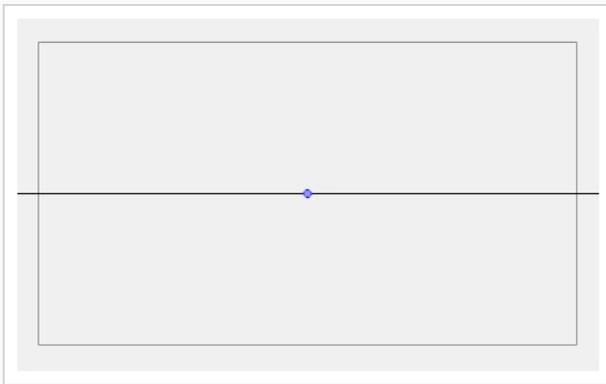
   

4. In the Guides view, make sure the Lock Guide 🔒 option is disabled. This ensures you're able to edit the active guide.

5. In the drawing area, zoom out until all vanishing points are visible (if necessary).

6. In the drawing area, grab either the horizon or a vanishing point and move it to its desired location.
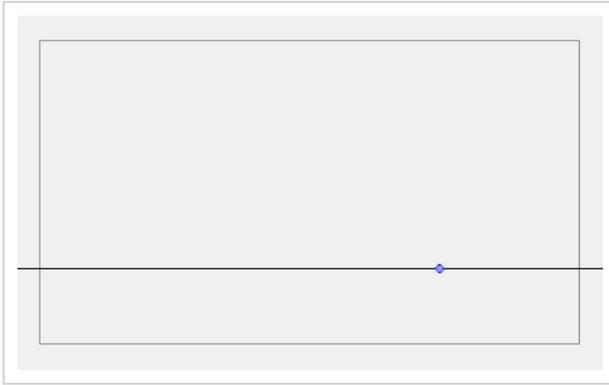
When using the square grid or 1-point perspective guides, the angle of the horizon can be modified by manipulating the horizon line itself.
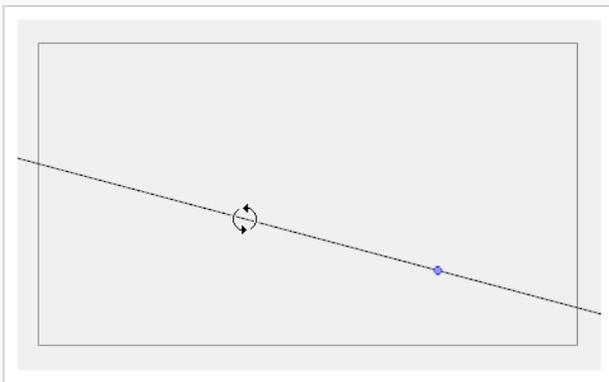


When using the 2-point or 3-point perspective guides, the angle of the horizon can be modified by manipulating one of the two vanishing points on the horizon.
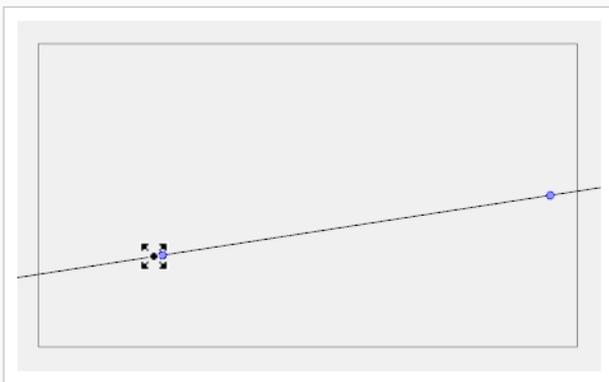


When adjusting the horizon line, you can hold down Shift to snap the horizon line at every 15 degrees. This makes it easy to maintain a perfectly horizontal horizon.

> **NOTE**
>
> Each modification to a guide can be undone with the Undo command.

# Drawing with Drawing Guides

T-LAY-001A-006

Once a guide is active and properly set up, you can use it to assist you in creating a drawing with perspective. The guide will display its axes going through your mouse cursor as you move it inside your drawing space. When you start drawing a stroke, your drawing tool will become locked to the axis that most closely matches the angle of your stroke, forcing you to draw a straight line along that axis, as if you were using a ruler or a set square.

Guides can only be used with the Brush, Pencil, Stroke or Line tool. The selected guide will only be visible when one of these tools is selected.

### How to draw using guides

1. In the Timeline or Xsheet view, select a drawing, or select an empty cell and create a new drawing by doing one of the following:

    - Right-click on the cell and select **Drawing > Create Empty Drawing**.

    - Press Alt + Shift + R

2. In the Tools toolbar, select the Brush 🖌, Pencil ✏, Stroke 🗨 or Line ╱ tool.

3. In the Guides view, select the guide you wish to use.
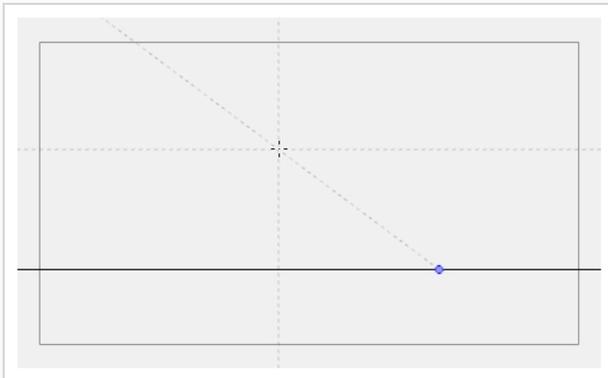
    

4. In the drawing area, draw a stroke with the current drawing tool. From the initial gesture, the tool locks on one of the guide's axes, forcing it to draw a straight line that follows the axis.
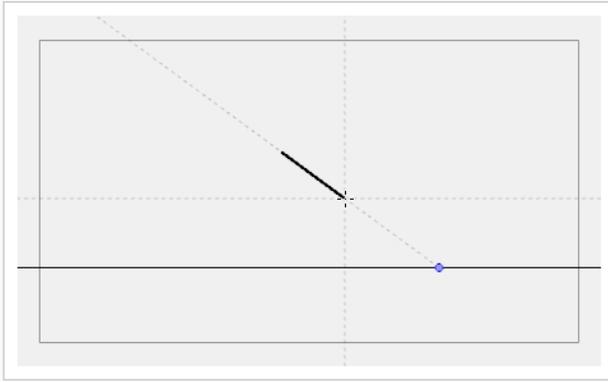
> **NOTE**
>
> Some guides do not lock onto a horizontal or vertical axis line by design. At any time, when drawing with the Brush or Pencil tool, you can hold down Shift + Alt before starting the stroke; this will force the tool to draw a straight line that locks at every 15 degrees. You can also achieve the same effect with the Line tool by holding down Shift before drawing a stroke.

# Locking Drawing Strokes to a Specific Axis

T-LAY-001A-010

When using a drawing guide, your drawing tool with lock onto one of its axes based on the initial direction of your drawing stroke. In some situations, it may be hard for the tool to lock onto the expected guide axis. To remedy this, it is possible to manually select which axis you want to lock your drawing strokes to.

### How to lock your drawing tool to a specific axis

1. Set the focus to the Camera or Drawing view, for example, by clicking on the view's tab.

2. Press the Left Arrow or Right Arrow key repeatedly to cycle through your guide's axes. The selected axis will be displayed in bold across your mouse cursor.

   All your drawing strokes will lock onto the selected axis.

### How to re-enable using all axes

1. Press the Left Arrow or Right Arrow key repeatedly to cycle through your guide's axes, until none of them are displayed in bold across your mouse cursor.

# Drawing Freehand Perspective with Drawing Guides

By default, all strokes drawn with an active drawing guide are straight lines that follow one of the guide's axes. To achieve a different style, you might want to draw with freehand perspective instead, where you use the guides as references, but without forcing your strokes to be straight and aligned with their axes. This can be done by disabling the Align with Guide option, which is enabled by default.

When the Align with Guide option is disabled:

- The Brush, Pencil, Line and Eraser tools will no longer lock to your guide's axes, allowing you to draw strokes in any direction.

- The guide will still be visible, but will only serve as a visual aid.

- The initial angle of your stroke will still determine which axis you're using, but instead of locking your stroke on the axis, it will simply make the reference line for that axis bolder, to help you draw along it.

### How to draw freehand perspective

1. In the Guides view, activate the Align with Guide ✐ button.

   You can now draw freely and use the guide as a visual aid.
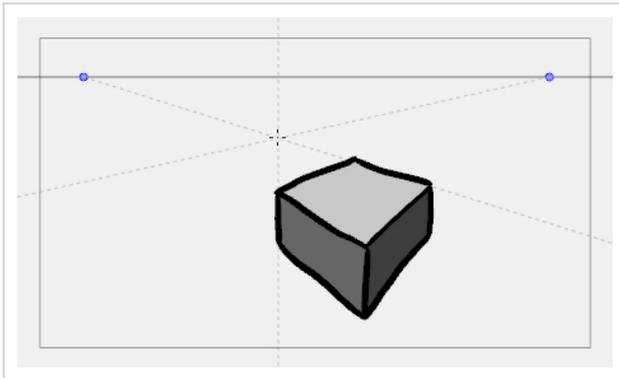
   

2. Start drawing.

# Erasing Using Drawing Guides

By default, drawing guides have no effect when using the Eraser tool. However, if needed, you can make the Eraser tool use your selected guide.

### How to erase using a Drawing Guide

1. In the Guides view, activate the Enable Guide with Eraser 🖌 button.

   The Eraser 🖍 tool will now work with the currently selected guide, just like the Brush 🖌, Pencil 🖍, Stroke 🗨 and Line ╱ tools.

2. Start erasing.

   > **NOTE**
   >
   > With the Enable Guide with Eraser option, you can also edit your guide's horizon line and vanishing points using the Eraser tool.

# Viewing Drawing Guide Reference Lines

By default, a guide will only display its horizon line, its vanishing point, and its axes relative to your mouse cursor's position. To help you lay out the objects in your drawing, you can also enable reference lines. Reference lines are multiple semi-transparent lines that are drawn in parallel to your axes and from your vanishing points, at an equal distance or angle from each other, to cover your entire drawing space with visual guides.

When using reference lines, you can decide the amount of lines that display in your drawing space. If you have too many reference lines, they will be very close to each other and your drawing space might feel cluttered, but if you have too few, you might not always have a reference line close enough to the stroke you wish to draw to help serve as a reference.

### How to view Drawing Guide Reference lines

1.  In the Guides view, activate the Show Reference Lines ⊞ button.

    The reference lines appear as a semi-transparent overlay.
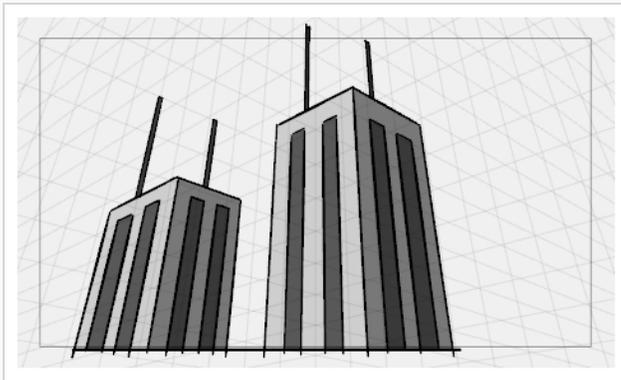
    

2.  In the Guides view, use the Number of Lines slider to adjust the line density.

# Minimizing Guide Cursor Axes Display

By default, the guide axes that are drawn across your mouse cursor extend throughout your entire drawing space. You may want those axes to only extend to a short distance around your cursor, so that they can still serve as guides without obstructing your drawing space or drawing your eye away from your mouse cursor. You can do this by disabling the Full Cursor Display option, which is enabled by default.

When the Full Cursor Display option is disabled:

- The guide axes displaying across your mouse cursor only span on a short distance from your mouse cursor.

- When drawing a stroke, all guide axes disappear until you finish drawing the stroke. By default, only the axis you are drawing on disappears.

- The actual axes used to lock your drawing tool still extend across the entire drawing space. Only the axes displayed in your drawing space are shortened.

### How to minimize the Drawing Guide's cursor axes display

1. In the Guides view, toggle the Full Cursor Display ✳ button off.

   The guide axes now only span over a short distance from your mouse cursor.
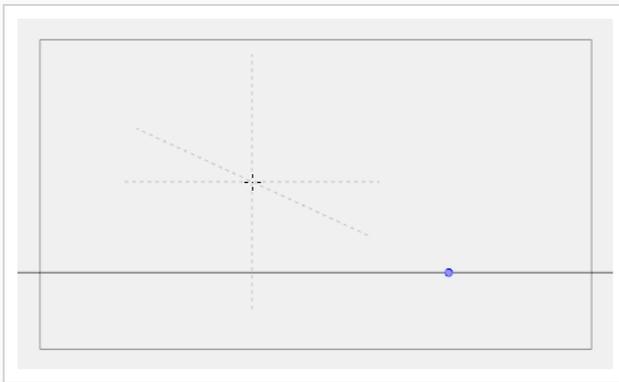
# Preventing the Editing of Drawing Guides

When using a drawing tool with a guide, you are also able to edit the guide's horizon line and vanishing points. This may be a problem if you need to draw close to the horizon line or to your vanishing points, as you may accidentally displace them instead. Once you're sure that your guide is properly set up, it is recommended to lock your guides before you start drawing, so you don't have to worry about editing them by accident.

### How to prevent editing of Drawing Guides while drawing

1. In the Guides view, activate the Lock Guide  button.

> **NOTE**
>
> The Lock Guide option locks the editing of all guides, not just the selected one. When creating a new guide, the Lock Guide option is automatically disabled to allow the new guide to be edited immediately.

# Enabling and Disabling Drawing Guides

When you want to stop working with guides, you must disable them. When drawing guides are disabled:

- The Brush, Pencil, Line and Eraser tools have their normal, non-constrained behavior.

- The horizon, vanishing points, guide axes and reference lines are not displayed.

### How to enable and disable a Drawing Guide

1. To enable or disable Drawing Guides, do one of the following:

   - In the Guides view, enable or disable the Enable Guide ◿ button.

   - Press Shift + G.

   > **NOTE**
   >
   > The guide that was selected when you disable guides will be restored when you enable them again.

   > **NOTE**
   >
   > Drawing guides only work with the Brush, Pencil, Stroke and Line tools. They will behave as if they were disabled when any other tool is selected.

# Importing and Exporting Drawing Guide Lists

## How to export Drawing Guides to a file

1. In the Guides view, select one or multiple guides from the list.

2. In the Guides View menu, select **Export Selected Guides**.

3. In the Export Guides dialog box that displays, choose a destination filename and folder and click **Save**.

   The selected guides are written into the destination file. A message displays to confirm the amount of guides that were exported.

## How to import Drawing Guides from a file

1. In the Timeline or Thumbnail view, select the destination panel.

2. In the Guides View menu, select **Import Guides.**

3. In the Import Guides dialog box that displays, choose a file from a previous export and click **Open**.

   The Drawing Guides from the imported file are inserted at the bottom of the Drawing Guide list. A message displays to confirm the amount of guides that were added.

> **NOTE**
>
> When importing a list of guides, duplicate guides are filtered out to avoid cluttering the list. The import confirmation will indicate if duplicates were detected and filtered out.

# About Drawing Optimization

As you work, you drawing can get complex and contain multiple strokes. You may want to optimize those drawings to reduce the number of brush strokes, pencil lines, and invisible strokes. You may also want to flatten your artwork or optimize your brush stroke textures.

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.
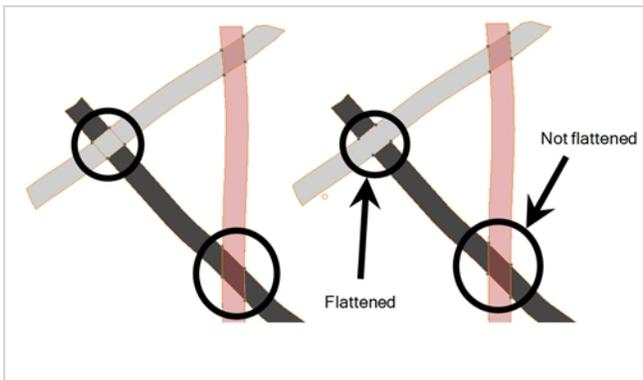


You could also want to add invisible contour strokes so that if you unpaint lines, the vector container remains to be repainted later.
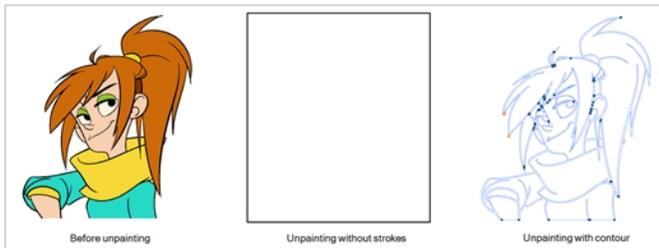


The Crop Brush Textures option is used to crop an unnecessarily large texture bitmap that lies unseen beneath the vector contour of a textured line. This often occurs when you cut and paste textured lines from one drawing into another. If you cut a portion from a textured line and paste it into a different 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.
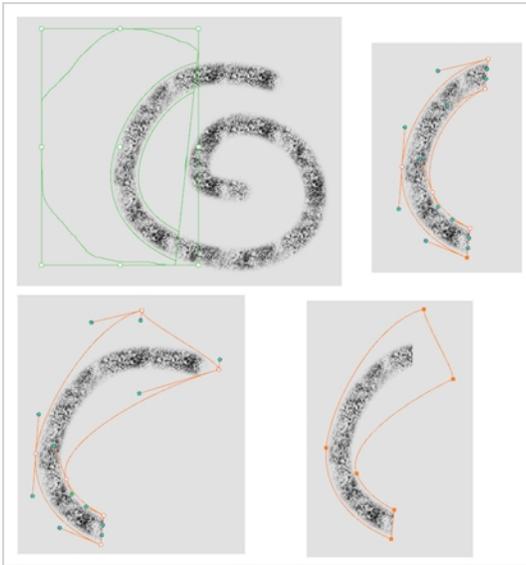
In the example shown above, a textured line is cut from a drawing and pasted into a new drawing. At first, it appears as if only a cropped section of the underlying texture bitmap was cut and pasted as well. However, using the Contour Editor tool to expand the vector envelope of the textured line, it 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).

# Flattening Drawings

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.

## How to flatten drawings

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

2. In the Camera or Drawing view, select the drawing strokes you want to flatten.

3. Select **Drawing > Optimize > Flatten** or press Alt + Shift + F. You can also press the Flatten ⬇ button in the Tool Properties view.
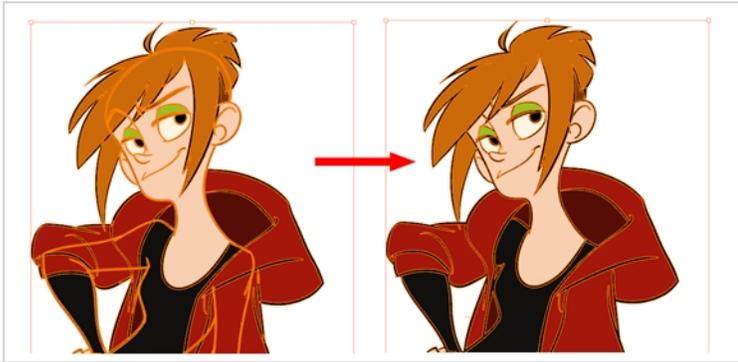
# Smoothing Drawings

The Smooth operation is used to reduce the number of contour points on a brush stroke and center points on a pencil line. It also smooths out the shape.

**How to smooth drawings**

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

2. In the Camera or Drawing view, select the drawing strokes you want to smooth out.

3. Select **Drawing > Optimize > Smooth** or press Alt + Shift + S. You can also press the Smooth button in the Tool Properties view.
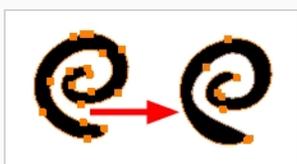
# Creating Contour Strokes

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.
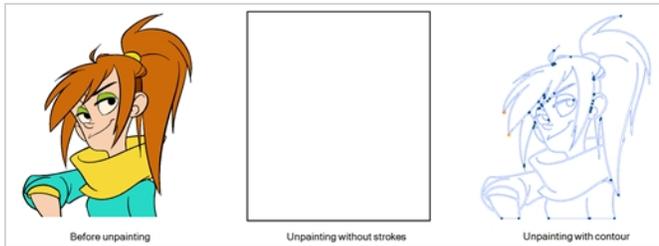


This command is useful when inking and painting and using the Apply to All Drawings in Layer option.

**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.**

# Removing Contour Strokes

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.**

# Removing Extra Strokes

The Remove Extra Strokes command allows you to instantly remove invisible lines that are adjacent to the artwork in your selection.

> **NOTE**
>
> This will only remove invisible lines that are adjacent to visible artwork. Invisible lines that are not connected to any visible shape or line will not be removed.

**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 artwork from which you want to remove extra strokes.

3. Do one of the following:

   - In the top menu, select **Drawing > Optimize > Remove Extra Strokes**.

   - In the Camera or Drawing view, open the View Menu ☰ and select **Drawing > Optimize > Remove Extra Strokes**.

# Optimizing Drawings

You can use the Optimize feature to flatten your drawing strokes without changing the aspect of your drawings. This mainly means that transparencies will not be flattened.

**How to optimize a drawing**

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

2. In the Camera or Drawing view, select the drawing strokes you want to optimize.

3. Do one of the following:

   - From the top menu, select **Drawing > Optimize > Optimize**.

   - From the Camera or Drawing view menu, select **Drawing > Optimize > Optimize**.

# Cropping 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

### How to crop the brush texture

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

2. Do one of the following:

    - From the top menu, select **Drawing > Optimize > Crop Brush Textures**.

    - From the Camera View or Drawing View menu, select **Drawing > Optimize > Crop Brush Textures**.
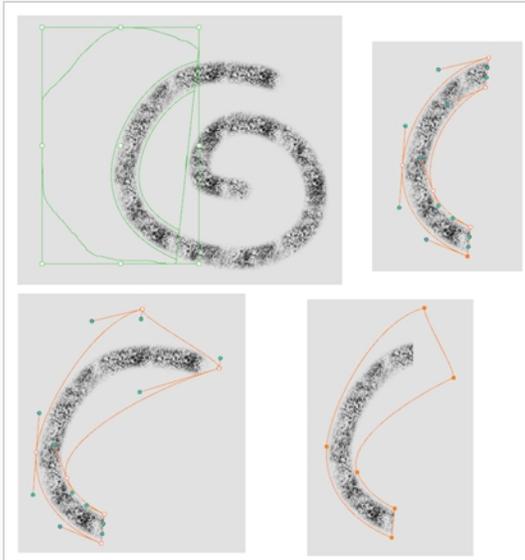
# Reducing the Drawing Texture Resolution

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.

### 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 whose texture resolution you wan to reduce.

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**.
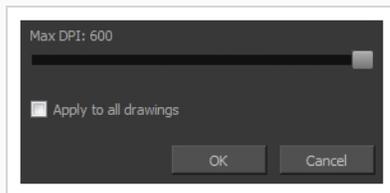
   

4. In the dialog box, drag the slider toward the left to reduce the texture resolution.

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**.

# About Strokes Conversion

You may have drawing stroke using the Pencil tool when you wanted to use the Brush tool. You may also have drawing your image using the Polyline tool and now you want to convert your strokes to brush strokes. For many reasons, you may want to switch your stroke types to another type to use the various advantage set they offer.

There are three types of strokes:

- Brush strokes (contour vector)

- Pencil strokes (central vector)

- Invisible strokes (central vector with a thickness value of 0)



Harmony lets you convert pencil lines to brush strokes, brush strokes to pencil lines, and invisible strokes (strokes) to pencil lines.

You can also break text objects apart—see *Breaking Text Into Letters or Vector Shapes* .

# Converting 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**

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

2. In the Camera or Drawing view, select the strokes you want to convert.

3. Do one of the following:

   - 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 ^

# Converting 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**

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

2. In the Camera or Drawing view, select the strokes you want to convert.

3. Do one of the following:

   - 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 &.

   - In the Tool Properties view, press the Pencil Lines to Brush Strokes button.

# Converting 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

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

2. In the Camera or Drawing view, select the strokes you want to convert.

3. Do one of the following:

   - 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)

# About Vector and Bitmap Layers

T-LAY-001-002

With Harmony, you have the choice to use vector or bitmap drawing tools. Vector drawing tools allow you to make drawings that can be scaled without losing quality, to easily tweak and fine tune your drawings and to use the whole suite of drawing tools available in Harmony, whereas bitmap drawing tools allow you to lay on brush strokes to make more traditional-looking artwork, and to tweak your drawing by the pixel rather than by their strokes and contours.



When drawing, whether you can use vector or bitmap drawing tools is determined by whether the art layer you are drawing on is a vector or a bitmap layer. By default, each drawing layer has two art layers: Line Art and Colour Art, and each of these art layers can be a vector or a bitmap layer. This can be useful if, for example, you wish your line art to be done using bitmap drawing tools, and then to paint your drawings using vector drawing tools, or vice versa.

> **NOTE**
>
> Optionally, drawing layers can have two extra art layers, the Overlay Art layer, which appears over the other art layers, and the Underlay Art layers, which appears underneath. For more information, see *Enabling Overlay and Underlay Art Layers* on page 547.

Using bitmap layers may be preferable if you find that vector drawings are too limiting for the desired art style, or if your vector drawings are so complex that they affect software performance. However, bitmap layers have the following limitations which you should carefully consider before using them:

- In vector drawings, each stroke is a separate drawing object by default, and each of these drawing objects, as well as each of their points, curves and outlines, can be manipulated independently. It is not possible to do that with bitmap layers, as they are always a single drawing object. They can be drawn, filled or erased over, and manipulated as a whole, but its individual elements cannot be manipulated independently.

- By default, bitmap layers are created at the same pixel density as your scene's camera when it is in its default position. This means that your artwork will lose picture quality if you zoom in on it or scale it up. If you need bitmap drawings to be scaled up or zoomed on, you must set your bitmap artwork's pixel density higher before you start drawing.

- Bitmap drawings may require more storage space than vector drawings. Note that this depends a lot on the amount of space in your drawing that is covered by artwork. Harmony does not store bitmap data for empty areas of your drawings.



The yellow tiles are the spaces containing artwork. The white tiles are empty spaces, which do not use storage space.
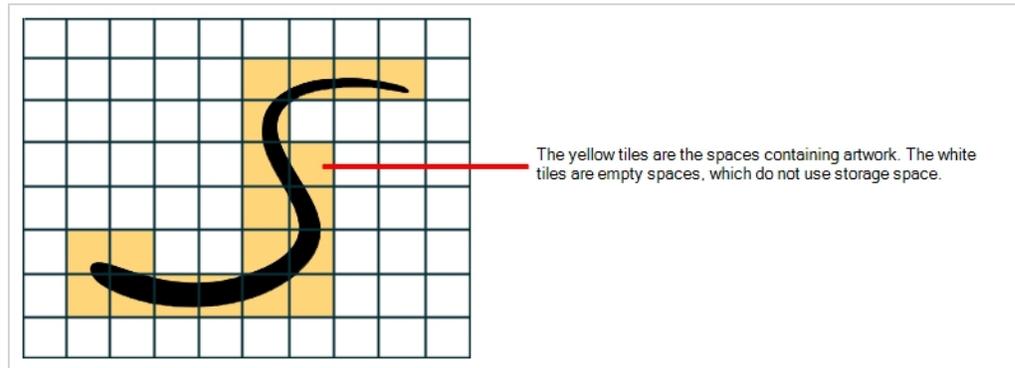
When drawing on a bitmap layer, the following tools are unavailable, as they exploit the vector drawing capabilities of Harmony:

- Pencil

- Contour Editor

- Pencil Editor

- Smooth Editor

- Perspective

- Envelope

- Ink

- Stroke

- Close Gap

- Polyline

# Adding Bitmap Layers

T-ANIMPA-002-013

By default, new scenes created in Harmony will have a single vector layer. You can choose whether a drawing layer will be a vector or a bitmap layer at its creation. Therefore, if you want to use a bitmap layer, you can simply create one.

Each drawing layer in your scene has two sub-layers, referred to as *Line Art* and *Colour Art*, each which can be either Vector or Bitmap. When creating a new layer, you can choose whether each of these art layers will be vector or bitmap art layers.

### How to add a bitmap layer

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

   The Add Drawing Layer window opens.
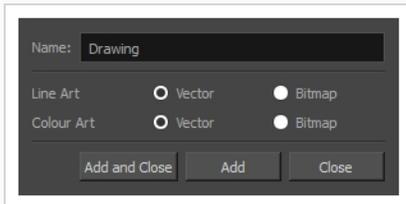
   

   By default, drawing layers have two art layers: Line Art and Colour Art. If your Support Overlay and Underlay Arts preference is enabled, your drawing layers will have four art layers: Overlay Art, Line Art, Colour Art and Underlay Art. For more information, see *Enabling Overlay and Underlay Art Layers* on page 547.
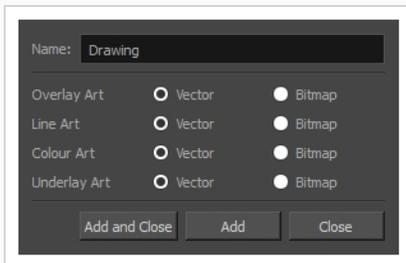
   

2. If you want a fully bitmap layer, select **Bitmap** for all the art layers. If you want parts of your drawing to use bitmap drawing tools and other parts of your drawings to use vector drawing tools, set the corresponding art layers to **Bitmap** or **Vector**, depending on your needs.
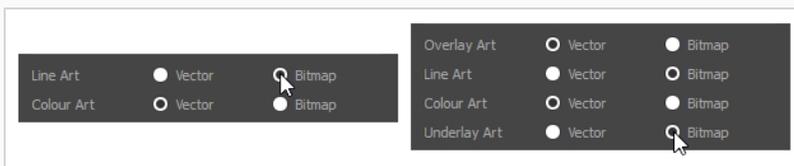
3. Click **OK**.

# Setting the Bitmap Resolution

When drawing in bitmap, it is important to understand that, contrary to vector artwork, bitmap artwork is stored in pixels. This implies that, where vector artwork can be scaled and zoomed in without issue, bitmap artwork is resolution dependent, and is liable to drop in picture quality and appear pixelated if it is enlarged or zoomed in.

By default, bitmap layers created in Harmony have a pixel density of 100%. At this density, when your scene is not zoomed in and your artwork is not scaled up, each pixel in your artwork corresponds to one pixel in the rendered image. Scaling it up or zooming in will require Harmony to render several pixels using the same bitmap pixel, making the artwork lose quality.

Hence, before you start drawing on your bitmap layer, it is important to consider if you will need to zoom onto or scale up your artwork, and set the pixel density accordingly. For example, if you intend to scale your bitmap artwork up to 300%, or if you intend to zoom in from 12 fields to 4 fields, you should make sure your bitmap artwork's pixel density is of at least 300% before you start drawing.

The pixel density of a bitmap layer affects the amount of pixels it contains, but not its apparent size in the scene. For example, if your scene resolution is set to 1920 x 1080 and your bitmap artwork's pixel density is 300%, its resolution will be 5760 x 3240. However, it will be scaled down to 1920 x 1080, and the extra pixels will be used to preserve the image quality if the artwork is zoomed on or scaled up.
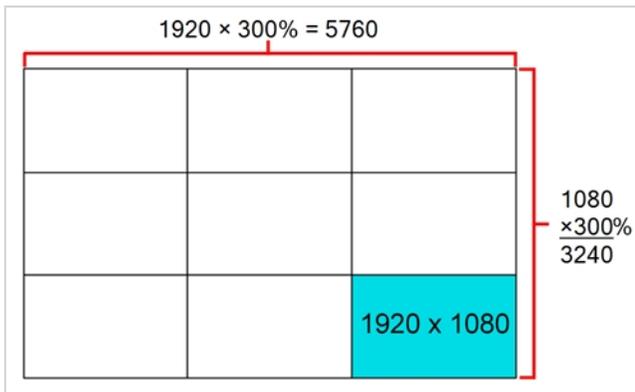


Bitmap layers are also limited by a canvas. By default, this canvas is set to be 200% of the scene's width and height. This means that your artwork can bleed outside any edge of the camera frame by 50% of its size. If you need your bitmap artwork to have a larger canvas, it is possible to change its canvas size. This can be useful for example if you want to create a panning background in a bitmap layer. If you want a background to pan horizontally over three times the width of the camera frame, you would need to set its canvas width to at least 300%, but it is recommended to make your canvas bigger than what you plan to use so as to avoid accidentally including the edges of your artwork in the picture.
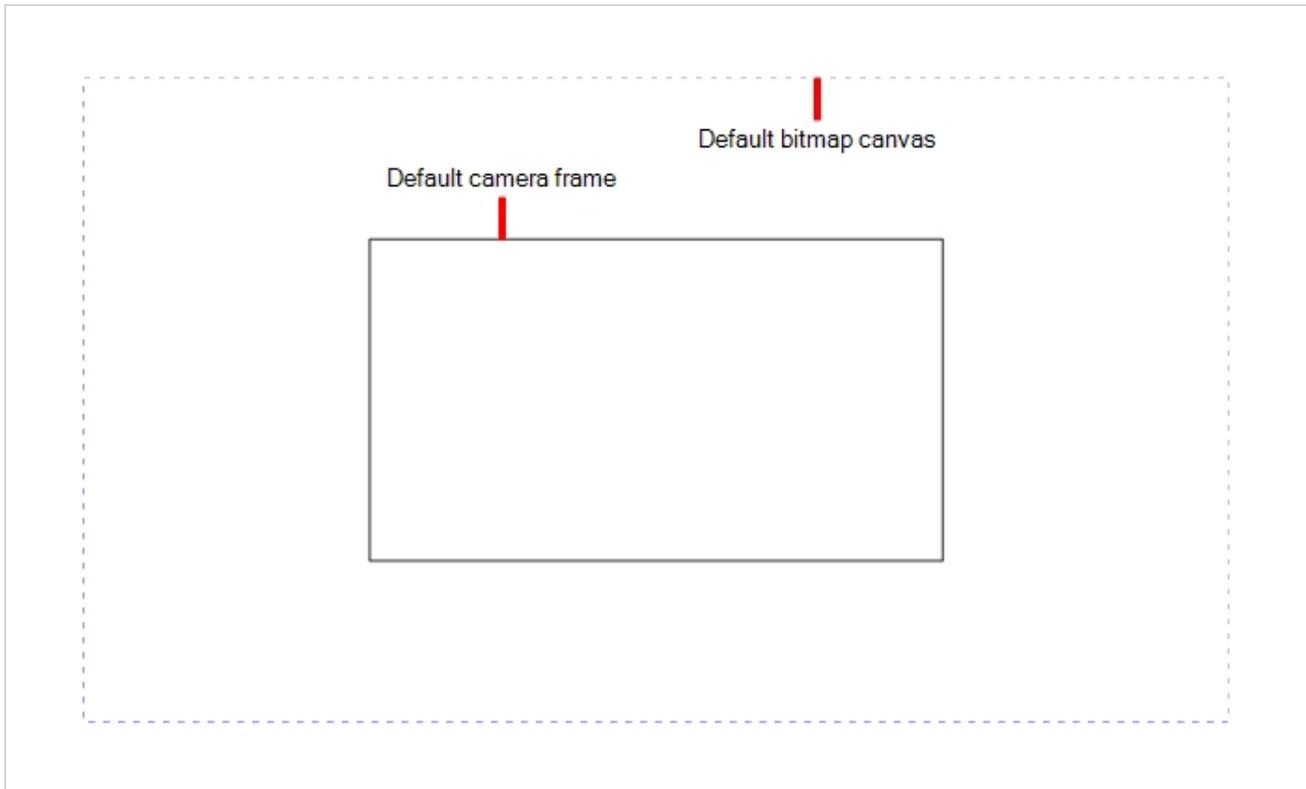
You can specify the pixel density and canvas size at the scene level or at the drawing level:

- Setting the pixel density and canvas size at the scene level will make it newly created bitmap drawings have the specified settings, but it will not change the pixel density and canvas size of existing bitmap drawings.

- Setting the pixel density and canvas size at the drawing level will allow you to change the pixel density and canvas size of existing drawings in a bitmap layer, but will not affect the pixel density and canvas size of drawings created afterward.

> **NOTE**
>
> If you are using textured brushes on a vector drawing layer, you must set the pixel density for vector drawing brush textures instead—see *Setting the Textured Brush Resolution* on page 166.

## How to set the canvas size and pixel density of bitmap layers for a scene

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

    The Scene Settings dialog box opens.

2. Select the **Bitmap Resolution** tab.
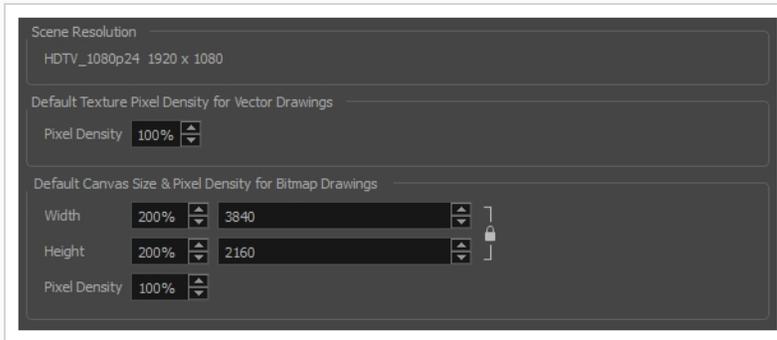
1. In the **Default Canvas Size & Pixel Density for Bitmap Drawings** section, do the following:

   a. In the **Width** and **Height** fields, enter the percentage of your scene's resolution that you want the canvas of your bitmap layer to occupy. By default, both values will be set to 200%, which means the width and height of your bitmap canvas will be twice the width and height of your scene's resolution. When the camera is in its default position, this leaves extra space around the camera frame to draw on your bitmap layer.

   b. In the **Pixel Density** field, enter the desired percentage of pixel density. If you intend to scale or zoom in on your artwork, make sure your pixel density is set to be at least the factor by which your artwork will scaled or zoomed on. For example, if you intend to scale your artwork by 300%, you need to set the pixel density to at least 300%. If you intend to zoom in on your artwork from 12 fields to 6 fields, you need to set the pixel density to at least 200%. If you intend to do both, you need to set the pixel density to at least 600%, as the camera zoom and scaling factor will have a multiplying effect on the apparent scaling of your artwork.

2. Click **OK**.

   From now on, new bitmap drawings created in your scene will have the selected canvas size and pixel density.

Since changing the bitmap resolution settings for your scene will only affect newly created bitmap drawings, you may also want to change the bitmap resolution settings for existing bitmap drawings. This is possible. However, if your bitmap layer already contains artwork, it will be resampled.

This is not necessarily a problem if you want to lower your bitmap layer's pixel density, which you might want to do to save on disk space and help Harmony's performance. However, if you want to increase your bitmap layer's pixel density, Harmony will have to generate extra pixels for your bitmap drawing, which will cause the image to lose quality. Hence, it is important to calculate and set the proper pixel density for your bitmap drawings before you start drawing.

### How to change the canvas size and pixel density of existing bitmap drawings

1. In the Timeline or Camera view, select the bitmap drawing for which you want to change the canvas size or pixel density.

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

   The Change Bitmap Drawing Resolution dialog opens.



3. In the **Width** and **Height** fields, enter the percentage of your scene's resolution that you want the canvas of your bitmap layer to occupy. By default, both values will be set to 200%, which means the width and height of your bitmap canvas will be twice the width and height of your scene's resolution. When the camera is in its default position, this leaves extra space around the camera frame to draw on your bitmap layer.

4. In the **Pixel Density** field, enter the desired percentage of pixel density. If you intend to scale or zoom in on your artwork, make sure your pixel density is set to be at least the factor by which your artwork will scaled or zoomed on. For example, if you intend to scale your artwork by 300%, you need to set the pixel density to at least 300%. If you intend to zoom in on your artwork from 12 fields to 6 fields, you need to set the pixel density to at least 200%. If you intend to do both, you need to set the pixel density to at least 600%, as the camera zoom and scaling factor will have a multiplying effect on the apparent scaling of your artwork.

5. Enable the **Resample Bitmap** option if you want your drawings to preserve their apparent size in the scene.

6. If you want the specified settings to be applied to all of the drawing's art layers (ie: Line Art, Colour Art and, if enabled, Overlay Art and Underlay Art), check the **Apply to All Art Layers** option. Otherwise, only the currently active art layer will be affected.

7. If you want the specified settings to be applied to all drawings in the active layer, check the **Apply to All Drawings** option. Otherwise, only the current drawing will be affected.

8. Click **OK**.

   The selected drawing's canvas size and pixel density is set to the specified settings.

**NOTE**

This does not change the default canvas size and pixel density for the scene. New drawings will still be created with the scene's default canvas size and pixel density.

# Using Colours with Bitmap Layers

Contrary to vector layers, colours used in bitmap layers are not linked to their swatch in your scene's palette. Therefore, if you update a colour in your palette, this new colour will be updated in the drawings in your vector layers, but your bitmap layers will remain intact. Hence, it is important to know exactly the colours you wish to use before your start painting on a bitmap layer.

Because bitmap layers are not linked to your colour palettes, this adds extra flexibility when painting on a bitmap layer. Although you are still able to use the colour swatches from your colour palette, you can also pick any other colour and paint right away with it, without having to create a colour swatch for it in your palette. Hence, when a bitmap layer is selected, the Colour view lists your palettes and their swatches, but it also features an extra panel, Bitmap Colour, which allows you to create a colour on the go.
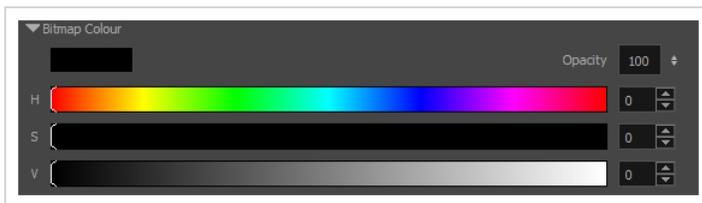


> **NOTE**
>
> The Bitmap Colour panel only allows you to create solid or semi-transparent colours. If you wish to use a gradient or bitmap texture in a bitmap drawing, you must still create a colour swatch for it in one of your scene's palettes.

By default, the bitmap colour sliders allow you to pick a colour by choosing its **H**ue, **S**aturation and **V**alue. These sliders are referred to as the **HSV Sliders**. If you prefer, you can also pick your bitmap colour by choosing its **R**ed, **G**reen and **B**lue values, by switching to the **RGB sliders** .

## How to change between HSV and RGB sliders

1. Do one of the following:

   - Right click on the Bitmap Colour panel and select either **HSV Sliders** or **RGB Sliders**.

   - Open the Colour View menu ☰ and select **Colour > Bitmap Colour Sliders > HSV Sliders** or **RGB Sliders**.

# Painting with Gradients or Textures on Bitmap Layers

When drawing on a vector layer, each stroke is its own vector drawing object, and can be manipulated independently at any time unless you flatten or group your strokes together. When drawing on a bitmap layer, most modifications are immediately merged into the artwork, making it a single bitmap drawing that can only be drawn on, painted on or erased. One exception to this rule is when you paint a zone with a gradient or texture.

When using the Paint tool to fill a zone in a bitmap layer with a gradient or texture, a temporary vector object in the shape of the fill is created, and contains the fill. This allows you to use the Edit Gradient/Texture tool on this vector shape to tweak your gradient or texture so that it has the intended position, angle and scale. Then, the next modification you make to your bitmap layer—be it with a drawing tool, or by pasting artwork—will cause the gradient/texture to merge with your artwork, making it no longer possible to tweak it with the Edit Gradient/Texture tool from that point on. Hence, it is important to make sure your gradients or textures look exactly as you intend them to before continuing to work on your drawing.

> **NOTE**
>
> Certain tools, such as the Text or Cutter tool, will not cause your gradient/texture to merge with your artwork.

# Manipulating Bitmap Artwork

T-ANIMPA-002-014

Since bitmap artwork is stored as color information for each pixel, scaling your artwork requires Harmony to resample it. This means that if you scale up your artwork, it is liable to lose picture quality. Furthermore, since Toon Boom bitmaps are embedded in a rectangular canvas, you cannot select a part of your bitmap with the Select tool to transform it. With Toon Boom bitmaps, the Select tool is only able to select the entire canvas. If you want to transform a part of your bitmap drawing, you must use the Cutter tool to cut out the part you wish to manipulate.

However, artwork that you manipulate is not immediately resampled. This is to make sure you can manipulate your artwork in multiple steps before it is merged into your artwork again, allowing to preserve as much of its quality as possible. While manipulating your artwork, it temporarily becomes an object that is separate from your bitmap canvas. Then, it is merged back into your canvas and resampled to match its pixel density when you perform your next drawing operation on it.

In the following example, a circle is scaled down. Then, when zooming in on it, it appears to have preserved all its precision. R ight after drawing a short stroke right next to the edge, it is sampled down to match the layer's pixel density:
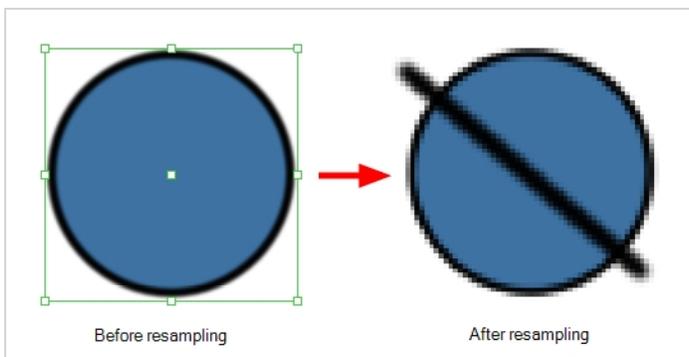


Likewise, if bitmap artwork is scaled up, it will be resampled after a drawing operation is performed on it. In this example, the artwork is scaled up and looks pixelated. Once a stroke is drawn next to it, Harmony resamples it, and creates the missing pixels so that it does not look pixelated:
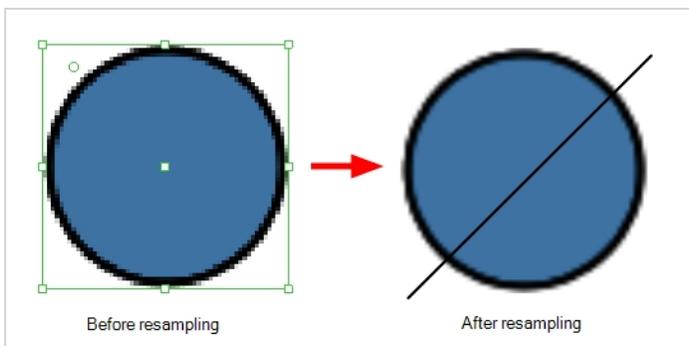
# Changing Art Modes

Whether a layer is a bitmap or a vector layer is decided when creating it. However, it is also possible to change the art mode for an existing layer.

If you convert a vector layer to a bitmap layer, the artwork will not be immediately converted, but it will be automatically flattened and rasterized into a single bitmap image if you make any modifications to your artwork using drawing tools.

If you convert a bitmap layer into a vector layer, the existing bitmap artwork will become a single drawing object, which you will be able to manipulate with the select tool or cutter tool, but which you won't be able to draw over, erase or repaint. However, you can convert it to a vector rectangle with its artwork as its texture using the Convert Drawings to Match Layer Type command. It will still not be possible to edit the actual artwork, but you will be able to draw or erase over it, as well as tweak the contour of its canvas.

If you want to actually vectorize a bitmap layer's artwork into vector outlines, see Vectorizing Bitmap Artwork.

**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 whether the art mode should be **Vector** or **Bitmap** for each art layer.
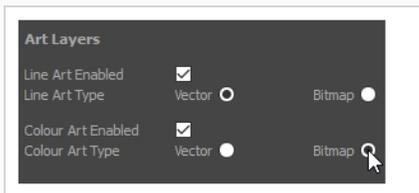


   By default, drawing layers have two art layers: Line Art and Colour Art. If your Support Overlay and Underlay Arts preference is enabled, your drawing layers will have four art layers: Overlay Art, Line Art, Colour Art and Underlay Art. For more information, see *Enabling Overlay and Underlay Art Layers* on page 547.
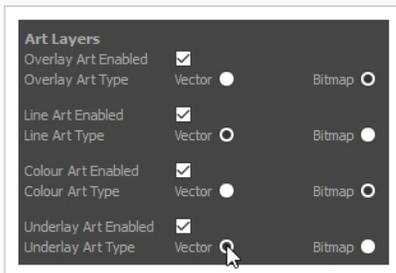


5. In the Timeline view, right-click on the layer and select **Convert Drawings to Match Layer Type**.

A message box appears informing you of how many drawings were converted.

# Vectorizing Bitmap Artwork

It is possible to convert artwork in a bitmap layer into vector outlines, which you can then edit and paint using Harmony's vector drawing tools. This procedure takes the bitmap drawing in the layer's line art layer, then converts it to vector outlines and inserts them into a vector drawing layer, which you must create as your destination layer for the vectorization.

> **NOTE**
>
> To do this, your bitmap drawing you should be line art only, and it should be in your drawing layer's line art layer.

### How to vectorize a bitmap drawing

1. In the Timeline view, create a new vector drawing layer, and make sure it is listed right below your bitmap drawing layer. If it is not, drag and drop the vector drawing layer below the bitmap drawing layer to reorder it.

   

2. On the right side of the Timeline view, select all the bitmap drawings you vectorize, along with the frames in the vector layer which should serve as a destination for the vectorized images.
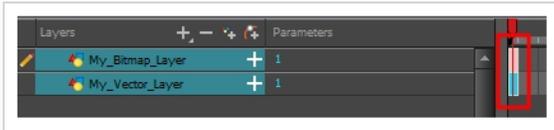
   

3. Right-click on the selected frames, then select **Drawings > Vectorize Line Art in Selected Drawing**.

   The Convert to Vector Drawing dialog box opens.
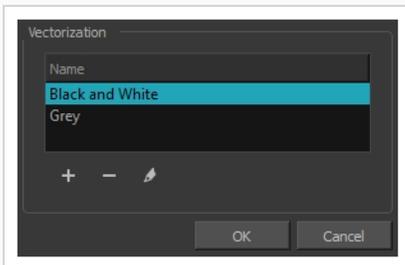
   

4. In the Vectorization section, select a vectorization preset. Among the default presets, you can select **Black and White** if you wish to make crisp, vector only outlines, or **Grey** if you wish to preserve your line art's texture. You can customize your own preset using the Add or Edit buttons.

5. Click **OK**.

Your bitmap drawing layer's line art is vectorized and inserted into your vector drawing layer.

6. Click on the Enable/Disable Layer 👀 icon next to your bitmap drawing layer to hide your bitmap line art and see your vectorized line art.

> **NOTE**
>
> For this functionality to work, your selection must absolutely have frames from a bitmap drawing layer on top, and frames from a vector drawing layer in the bottom, and nothing else. Otherwise, an error message indicating how to use this feature will appear.
>
> Vectorize drawings usage:
>
> In the timeline, select a range of drawings on two separate layers.
>
> The top layer should hold the source to vectorize.
> Therefore, its line art needs to be in bitmap mode.
>
> The bottom layer serves as the destination.
> It will be overwritten with the vectorized line art and color art.
> Therefore, its line art and colour art need to be in vector mode.
>
> OK
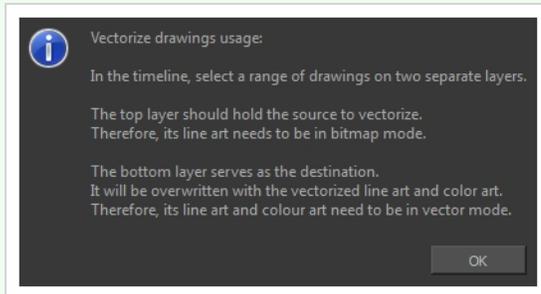
# Setting the Default Art Mode for New Layers

You can configure Harmony to create drawing layers with specific art modes for each art layer using the Preferences dialog.

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

1. From the top menu, select **Edit > Preferences** ( Windows/Linux ) or **Harmony Advanced > Preferences** ( macOS ).

2. Select the **Layer** tab.
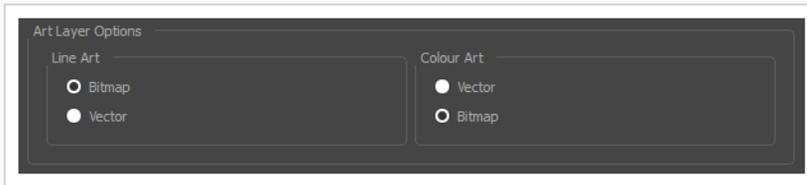


By default, drawing layers have two art layers: Line Art and Colour Art. If your Support Overlay and Underlay Arts preference is enabled, your drawing layers will have four art layers: Overlay Art, Line Art, Colour Art and Underlay Art. For more information, see _Enabling Overlay and Underlay Art Layers_ on page 547.
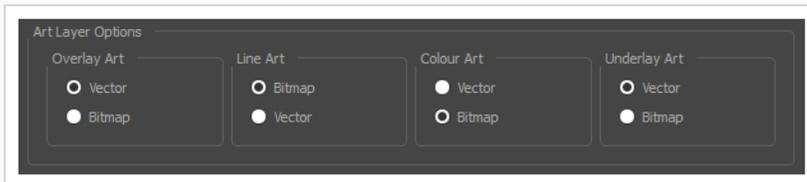


3. In the Layer Drawing Options section, set the art layers to the desired art mode. Once this option is enabled, all new layers will follow these settings. It will not affect any existing layers.

4. Click **OK**.

# Chapter 4: Colours

T-ANIMFX-003-001

Toon Boom Harmony has some very powerful painting features to add colour to your drawings. Whereas some other software only allow users to work with one colour swatch at a time, painting in Harmony is done by using palettes containing multiple colour swatches that can be saved and reused as needed.



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 scene. 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!

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 having to repaint each element.

It is also possible to use colour swatches from palettes in bitmap drawings, although changing the colours in the palettes will not automatically update colours used in bitmap layers. Likewise, it is possible to create drawing layers with bitmap line art and vector colour art, all with the same palettes —see *About Art Layers* on page 543 and *Creating Colour Art from Line Art* on page 549.

# About Colour Swatches

You can use several different types of colour swatches, including solid colour, gradient colour and bitmap texture swatches.
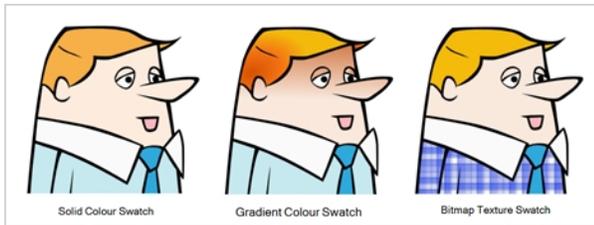


A colour palette is an actual file on the hard drive.

In Harmony Server, 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.

In Harmony Server, 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 add a swatch, it 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.
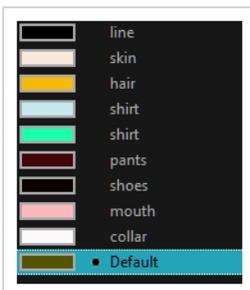
# Locking and Unlocking the Colour List

In Harmony Server, you can lock and unlock the colour list to avoid modifying or modify the colour swatches.

### How to lock and unlock the colour list

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

   A grey pencil icon appears in the top-right corner of the Palette list.
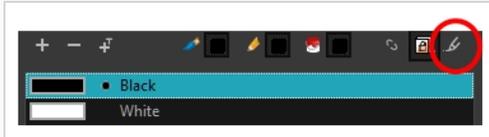
# Adding a Colour Swatch

T-HFND-006-017A

You can add as many colour swatches as you want in your palette.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### How to add a solid colour swatch

1. In the Colour view, click the Add Colour ➕ button.

2. Do one of the following to edit the colour swatch:

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

   - Double-click on the colour swatch.

   The Colour Picker window opens.
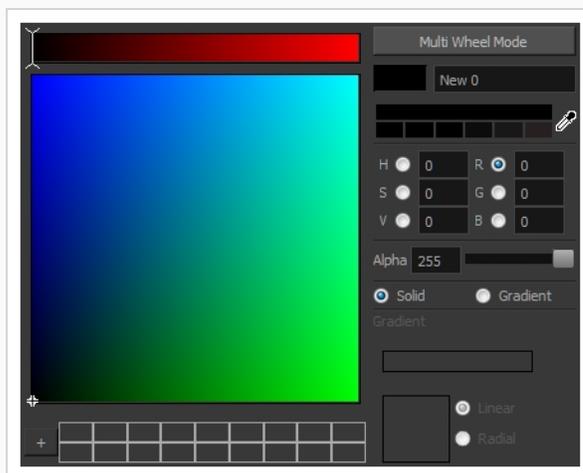
   

3. To set your colour, do one of the following:

   - Select either **R**ed, **G**reen, **B**lue, **H**ue, **S**aturarion of **V**alue to change the colour wheel's spectrum, then click on the desired colour in the colour wheel.

- Enter the hue, saturation, value, red, green and blue values manually into their corresponding fields. All values range from 0 to 255.



- 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.
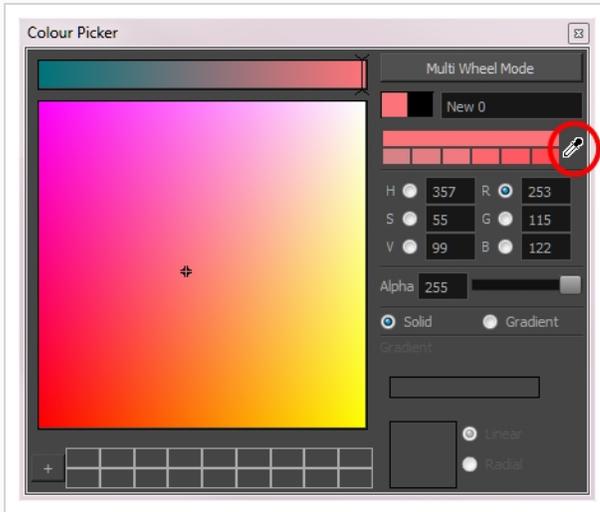


You can also click **Multi Wheel Mode** to open the Multiwheel Colour window. This displays all the picking area styles together and also contains a picking undo list. To return to the regular Colour Picker window, click **Single Wheel Mode**.
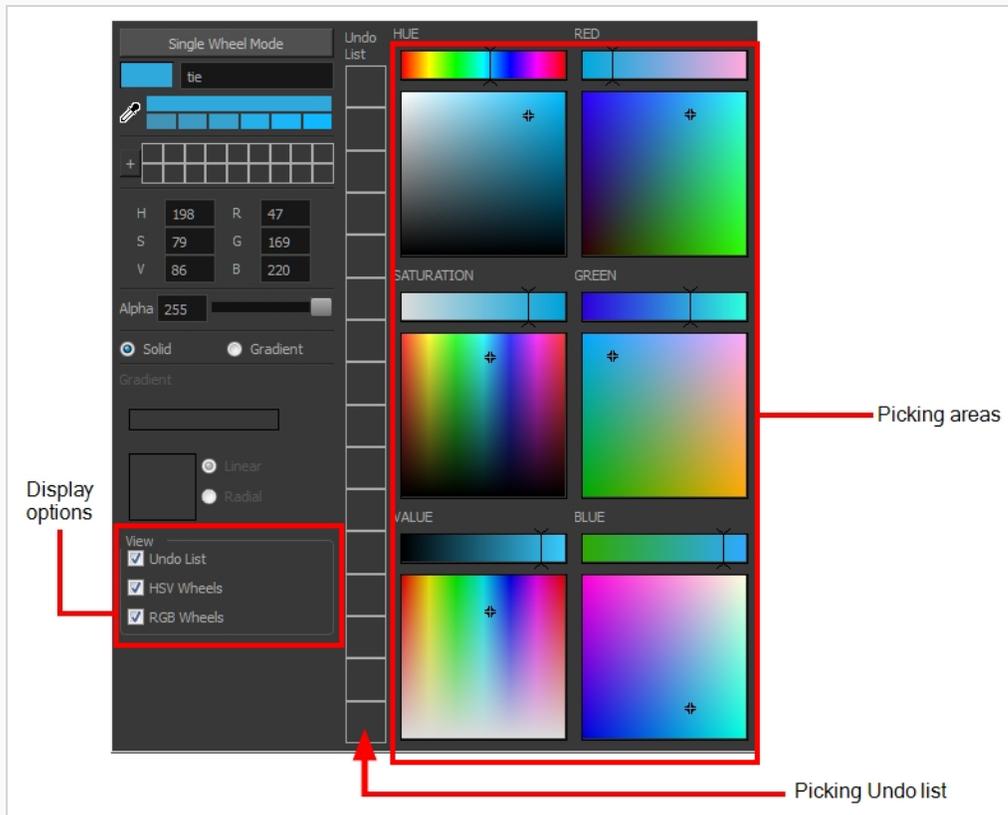
4. Click on the Shade Scale swatches to modify the shade of the selected colour.



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.
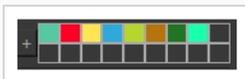


7. Rename the colour swatch in the Colour Picker window or directly in the colour list by double-clicking on its name.



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By default, when you create a new colour swatch, its colour will be the same as the currently selected colour swatch, or black if no colour swatch is selected. You can make Harmony create new colour swatches with a specific default colour instead.

**How to change the default swatch colour for all your colour palettes**

1. Select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS).

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 the colour swatch beside the option to change the default colour.

# Adding a Gradient Colour Swatch

T-HFND-006-017B

You can transform any colour swatch into a linear or radial gradient.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ≡, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

## 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.
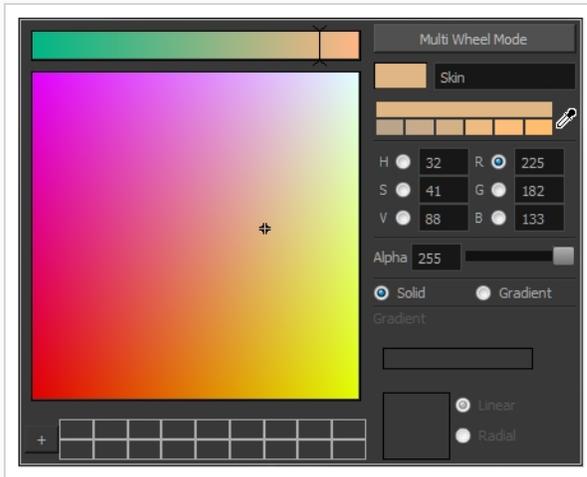
3.  Select the **Gradient** option.

4.  Select the **Linear** or **Radial** option.

5.  In the Gradient slider, create your gradient:

    - To change one of the colours of your gradient, select a key colour from the gradient slider, then pick its colour in the colour picker.

      

    - To add a key colours to your gradient, click anywhere on the colour slider, between the existing key colour.

      

    - To delete a key colour, use the mouse to pull down on it.
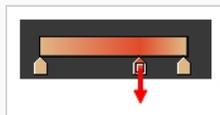
      

    - To move a key colour's position in the gradient, use the mouse to drag it left or right.

> **NOTE**
>
> To learn how to reposition the gradient zones in your drawings, see *About the Edit Gradient and Texture Tool* on page 489.

# Adding a Texture Colour Swatch

You can add bitmap texture colour swatches to your palette. This allows you to fill zones in your artwork with custom patterns and textures.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔓 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

**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.
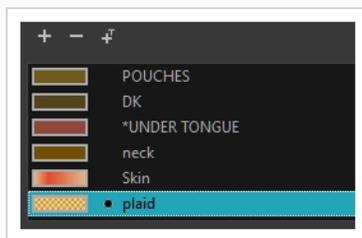
   

   You can also replace a texture once it is painted. If you decide to make the character's shirt wool instead of plaid, just update the texture file in the swatch and the entire project updates. Any transformation previously applied to the texture's position in your drawings will be kept.
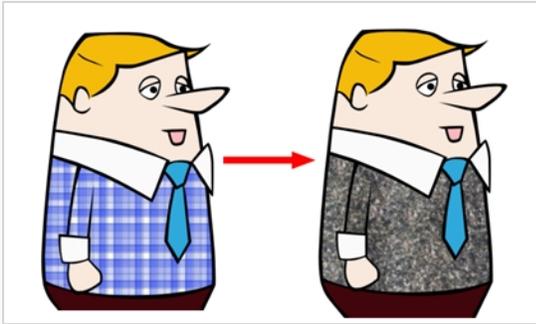
> **NOTE**
>
> To learn how to reposition the textured zones in your drawings, see *About the Edit Gradient and Texture Tool* on page 489.

# 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
```

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### 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.
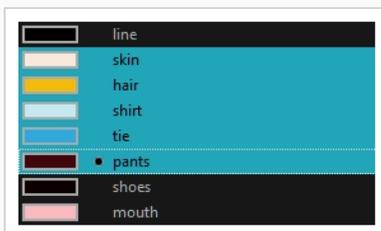
2. In the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

3. In the Palette list, select the palette in which you want to paste the colours.
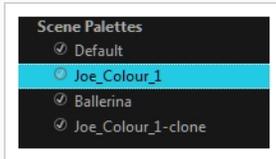


4. From the Colour View menu, select **Colours** > **Paste as New Colours** or press Ctrl + V (Windows/Linux) or ⌘ + V (macOS).

   - 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 (macOS).

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 (macOS).

3. Paste the copied value as plain text in the desired document.

# Deleting a Colour Swatch

You can delete unnecessary colour swatches from your palette. If painted zones are using this colour, they will be displayed in red and the system will try to recover them the next time you load the scene.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### 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 Del.

   If the colour swatch is used in a drawing, the Delete Colour dialog box opens.
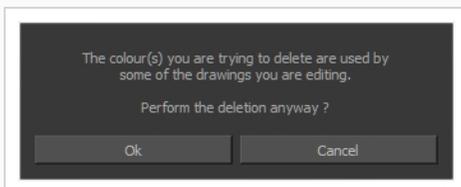


3. Click **OK** to delete the colours or click **Cancel** to abort the operation.

If you delete colour swatches already in use, the zones painted with them turn red so you can easily identify them.

# Modifying a Texture Colour Swatch

You can replace a texture colour swatch and all zones already painted with it will update.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ≡, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### 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.
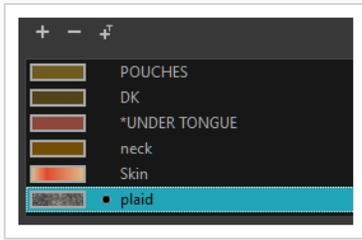
# Replacing Colours and Textures in Drawings

T-H15NEW-004-001

Although it is always possible to change colours and textures in existing drawings by updating the swatch in the palette, there may be situations where you want to replace a colour or texture in your drawings with a different colour or texture swatch, without updating the existing swatch. For example, you may want to only replace a colour with a different colour in specific drawings, but not in all the drawings that use the original colour, or you may want to replace a colour with a colour from a different palette without changing your palettes.

Using the Recolour Drawing dialog, you can replace all instances of a colour or texture used in your drawings with a different colour or texture swatch. This will actually change the colours or textures from within the drawings, without making any changes to your palette. You can perform this operation on the currently selected drawing, on all drawings in the current layer or in all drawings in your scene.

## How to recolour drawings

1. First, make sure one of the palettes in your scene already has a swatch containing the colour or texture you want to replace the original colour with—see About Colour Swatches on page 387, About the Edit Gradient and Texture Tool, Adding a Texture Colour Swatch on page 396 and Adding a Pencil Line Texture on page 204.

2. In the Timeline or Xsheet view, select the drawing or drawing layers you wish to recolour.

   > **NOTE**
   >
   > You can select multiple layers if needed.

   > **NOTE**
   >
   > You can skip this step if you intend to recolour all the drawings in your scene.

3. In the Colour view, click on Show Colour Palettes 🎨 if you want to replace a colour, gradient or texture, or on Show Pencil Texture Palettes 🖌 if you want to replace a pencil texture. You can also click on Show All Palettes 🎨.

4. In the Colour view, select the colour or texture swatch you want to replace by doing one of the following:

   - Select the palette in which the colour or texture swatch is located, then select the swatch you wish to replace.

   - If the drawing in the Camera or Drawing view contains the colour or texture you want to replace, select the Dropper 🖊 tool in the Tools toolbar, then click on that colour or texture in

the drawing. The Colour view will automatically select that colour or texture's palette as well as that colour or texture's swatch.

5. Do one of the following:

- Right-click on the swatches list, then select **Recolour Drawings**.

- Open the Colour view menu ☰, then select **Colours > Recolour Drawings**.

The Recolour Drawings dialog appears.
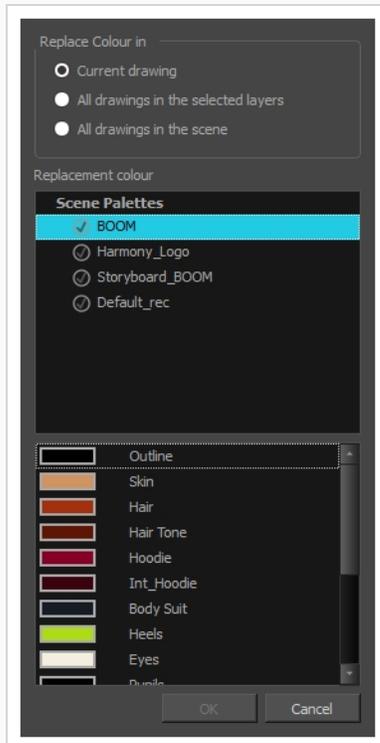


6. In the Replace Colour In panel, select whether you want to replace the selected colour in the **Current Drawing**, in **All drawings in the selected layers** or in **All drawings in the scene**.

7. In the palette list in the Replacement Colour panel, select the palette that contains the colour or texture swatch you want to replace the original colour or texture with.

8. In the swatches list, select the colour or texture swatch you want to replace the original colour or texture with.

9. Click OK.

A dialog displays showing the progress of the recolour operation. When finished, the original colour or texture is replaced with the replacement colour or texture in your drawing.

# 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.

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 protect colours

1. In the Colour view, select the colour to be protected.
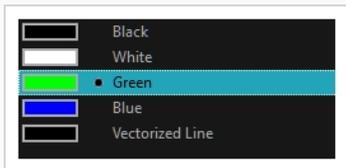
   

2. Do one of the following:

   - 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.
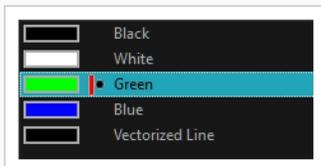
   

## How to enable the Respect Protected Colours option

1. 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.

# Changing the Colour Display Mode

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.
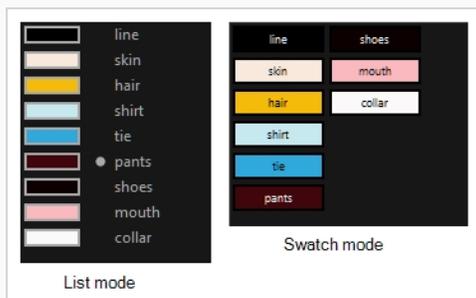


### How to display the swatch colour values

- 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).
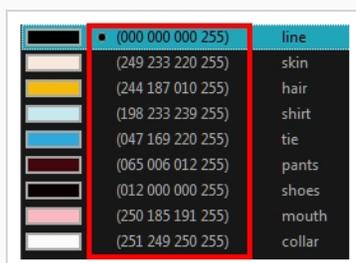
# About Palettes

In animation, specific colours are used to paint each part of each character. In order to maintain absolute consistency, a base colour palette should be created for each character, prop and effect in the production. This is referred to as a *master palette*.

Master palettes contain a colour swatch for each area to colour. Each swatch stores a colour in precise levels of red, green, blue and opacity (the latter which is referred to as *alpha*).

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.

Harmony uses palettes to hold all the colours needed to paint your elements, allowing complete control and consistency in the painting process.

A palette 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.

When you modify the colour of an existing swatch, it automatically updates all the zones painted with this swatch throughout the entire scene. 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!

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 having to repaint each element.

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

# About Advanced Palette Management

In Harmony, palettes are individual `*.plt` files that can be copied, transferred and stored. When a palette is created in Harmony,it is stored in your scene's `palette-library` subfolder by default, and linked to your scene's palette list. However, Harmony has advanced palette management features that allow you to store and manage your palettes in manners that may better serve your production's needs. This is called Advanced Palette Lists mode. To enable these features, you must enable the Advanced Palette Lists preference.

The Advanced Palette Lists mode unlocks two features that can be very useful, especially for a big production:

- **Palette location:** While palette files are stored in a scene's palette library directory by default, you can choose to store palettes in different locations, allowing you to easily share palettes between different scenes in a Harmony Server database.

- **Palette list type:** Whereas palettes are usually added to a scene's palette list, making them available to all the elements in your scene, you can also choose to add palettes to the palette list of individual elements (layers) in your scene.

When the Advanced Palette Lists mode is enabled, Harmony open a dialog called the Palette Browser whenever you want to create, import, clone, duplicate or link to a palette, which allows you to decide your palette's location and palette list type.



Harmony Server                                    Harmony Stand Alone
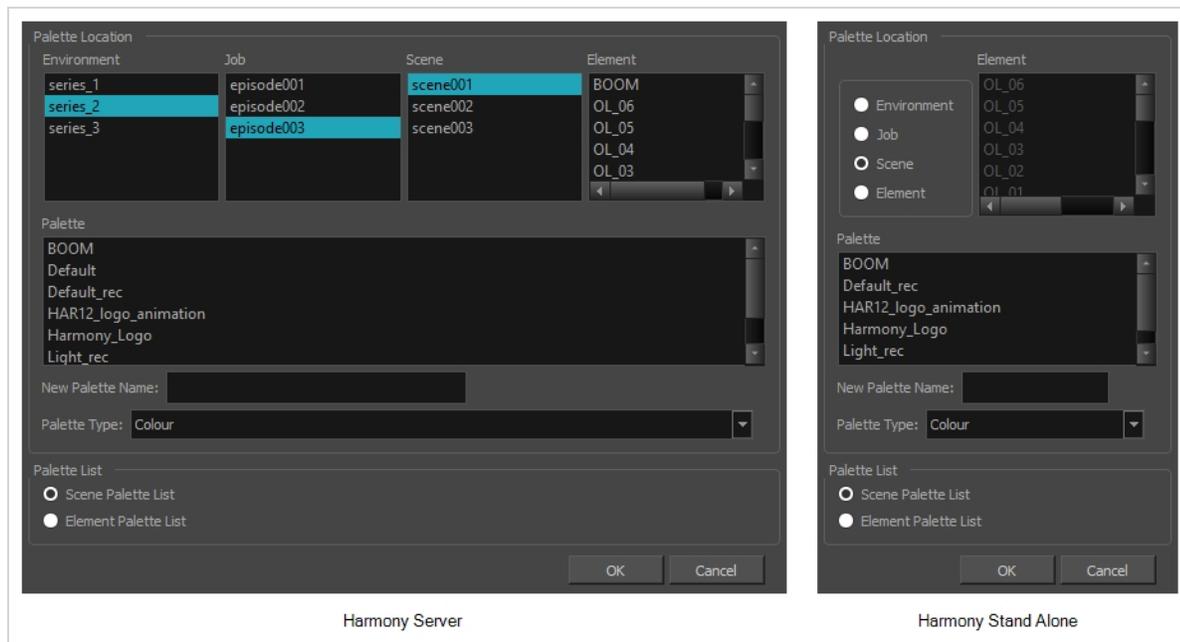
To use advanced palette lists, it is important to understand the difference between a palette's location and a palette list's level. For example, it is possible to add a palette file stored in a scene's palette library folder to an element's palette list. This can be useful if you wish to have the same palette file used by several specific elements in your scene, without copying it in the palette library folder of each element that uses it. The reverse is possible: You can add a palette file stored in an element's palette library folder to a scene's palette list, making the palette usable for all the elements in the scene, even if it is stored inside a single element's folder.

# Enabling the Advanced Palette Lists Mode

Advanced Palette Lists mode is disabled by default to avoid cluttering a basic workflow with too many options, but it enables palette management capabilities that are very useful for big productions. Mainly, this preference allows you to:

- Create palettes inside a scene's environment, job or element palette-library directory, instead of the scene's palette-library directory. Storing a palette at the environment or job level can be especially useful if you want to use the same palette in several scenes without creating dependencies between animation scenes and colour model scenes.

- Create palettes for specific elements instead of the entire scene. You can do this by adding, importing or linking to a palette in an element's palette list. A palette in an element's palette list can only be used by that element.

You can set up the Advanced Palette Lists option in the Preferences panel.

### How to set the Advanced Palette Lists mode

1. Do one of the following:

    - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS).

    - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

2. Select the **Advanced** tab.

3. In the Advanced Options section, select the **Advanced Palette Lists** option.

4. Click **OK**.

# About Scene and Element Palette Lists

By default, you can only add palettes to a scene's palette list. With the Advanced Palette Lists preference enabled, you can choose to store add palettes to the palette list of individual elements if you choose. Here is an explanation of the two different levels of palette lists:

- **Scene palette list:** This palette list and its palettes are available for and can be used in all of the scene's elements. Hence, it is the most simple and least restrictive approach, and is the type of palette used by Harmony when Advanced Palette Lists mode is disabled. It is most recommended to add your palettes to your scene's palette list if you are doing digital animation, where character models can be made of many different elements that must use the same palette.

- **Element palette list:** A palette list associated with a single element in your scene. An element is the container for the drawings used by a drawing layer. Hence, when an element has a palette list with its own palettes, only the drawings in that element can use the colours in these palettes, and the palettes in this element's palette list will only be shown in the Colour view when a drawing from this element is selected.

Using element palette lists as certain advantages, depending on your type of production:

- In paperless and traditional animation projects, characters are usually drawn on single elements. Hence, you can use this to associate characters in a scene to their colour palette.

- If a scene requires a lot of palettes, linking those palettes only to elements that need them rather than to the whole scene can help declutter your palette list.

- When a palette and its clone are in the scene's palette list, Harmony will only use whichever palette is highest in the list. If you want one element to use the original palette and another element to use the cloned palette, you can do so by adding the right palette to each element's palette list.

# About Palette Storage Locations

Palettes can also be stored in four different locations. The best location to store palettes depends on the type of production, the purpose of the palette, your pipeline and your backup plan. Here is an introduction to each type of palette location and their purpose:

- **Element:** The palette-library folder inside an element's folder in the scene. This is the recommended location if you are adding palettes to the palette lists of individual elements.

- **Scene:** The palette-library folder inside the scene's folder.  This is the default location when creating a palette in the scene's palette list, and is the location chosen by Harmony when creating a palette with the Advanced palette Lists preference disabled. This is a suitable location to store the palettes of characters, props and backgrounds used in a single scene, a small project, or any production that uses Harmony Stand Alone.

- **Job:**  For Harmony Server, this is the palette-library folder inside the job's folder on the database server. This is the recommended location if you want to share the same palette between several scenes in the same job, like for characters, props and backgrounds that are used in across entire episodes or smaller-scale projects.

- **Environment:** For Harmony Server, this is the palette-library folder inside the environment's folder on the database server. This is the recommended location if you want to share the same palette between several scenes in the same environment, like for characters, props and backgrounds that are used across an entire series or movie.

It is actually possible, but not recommended, to use palettes that are from a different job or environment. For example, if you wish to store a colour model's palette in the colour model's scene, you can make animation scenes that user this character link to the palette in the colour model's scene. However, this means your scene will depend on the colour model's scene and its palette being available at this location to render its colours. If the colour model's scene is moved or deleted, or if you export the animation scene and import it in another database, it will not be able to retrieve the palette. Hence, you would have to export the colour model along with the animated scene, and import it into the other database. If you were to store the colour model's palette in its element folder, this would have the same restriction, with the added risk of breaking links to the original palette if the character model's element is renamed. However, if you are sure that the structure of your Harmony database will remain static and available at all time and at all steps of your production, then you can store your palettes in whichever job or environment you see fit.

Another reason why it is better to store shared palettes in a scene's job or environment is because, when you export a Harmony scene, you can choose to export the palettes in the scene's job or environment palette libraries along with it. These palettes are then stored with the exported scene and, when importing the scene back into the database, you can choose to import the job and environment palettes that were exported with it back into the scene's job and environment.

Even in Harmony Stand Alone, you can store palettes at the job or environment level, even though Harmony Stand Alone scenes do not have a job or an environment. When you do this, palettes are stored inside a provisional jobs or environments directory inside the scene directory. If you import your scene to a Harmony Server database, you can choose to import the files located in that scene's provisional job and environment into

the scene's job and environment. Hence, when using Harmony Stand Alone, you should only store palettes at the job or environment level if you intend to import your scene in a database later.

> **NOTE**
>
> In Harmony Server, even if you store palettes in a job or environment, they will not become immediately accessible to the scenes inside that job or environment. You must still add them to the scene's palette list, or to the palette list of one of its elements, before you can use the palette.

# About Exporting Palettes

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, you can choose to export it with palettes stored in the scene's own job or environment, but if your scene uses palettes stored in other jobs, environments, or in any other location, **those palettes will not be exported**. Hence, if you wish to use the same palette for several scenes, it is recommended to store that palette at the environment or job level to avoid ever facing a situation where a scene no longer has access to its palette.

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.
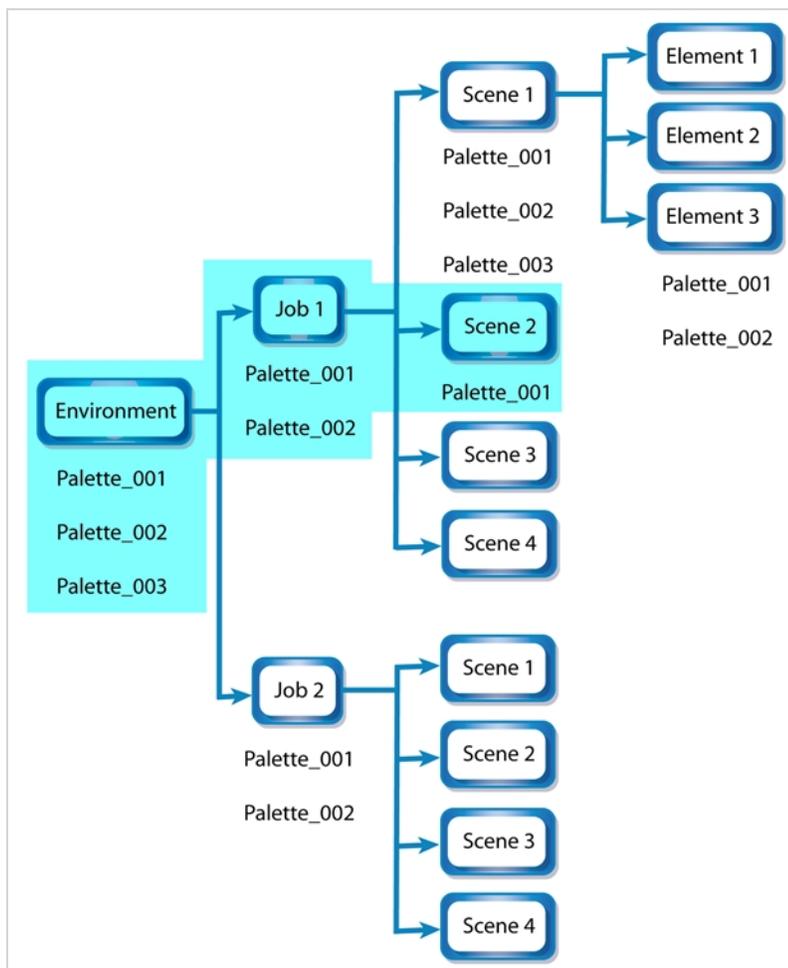
# About Backing Up and Recovering Palettes

Although Harmony Server opens palettes in read-only mode by default, there is always the possibility of palettes that are shared between scenes getting modified or their swatches getting deleted by accident. That is why it is a good idea to copy and back up your palette libraries, your master palette directories and your colour models.

If you open a scene and a palette file happens to be missing, it will still appear in the palette list for that scene or element, with a strike through across its name.
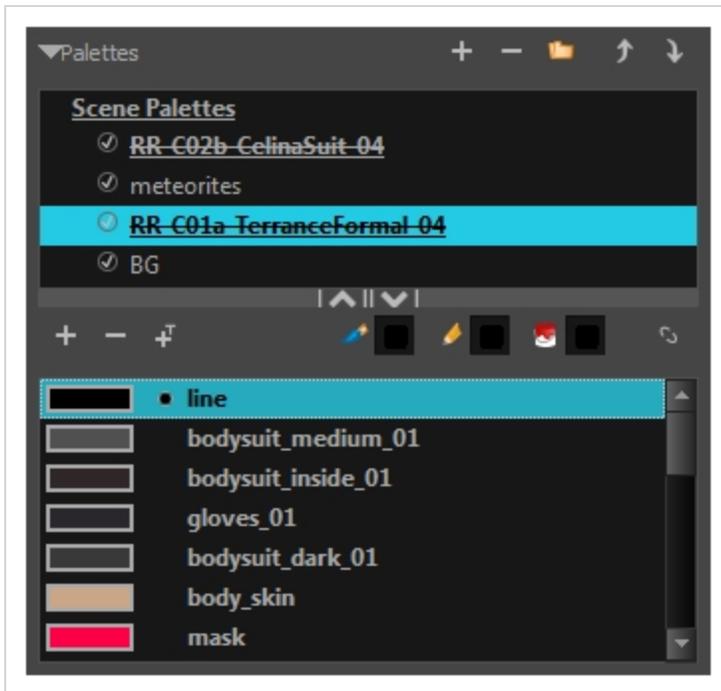


When Harmony attempts to load a drawing that uses colours from a missing palette, or colours that were removed from their palette, it will display the zones painted with the missing colours in red. Then, it will prompt you to recover the missing colours into a recovery palette. A recovery palette is based on the colour information which Harmony stores in each drawing as a backup mechanism. This palette is stored at the scene level, and is not shared or sourced externally.

Whether you choose to perform colour recovery or not, your artwork will preserve the colour IDs which Harmony uses to associate brush strokes, pencil lines and filled zones with the colour swatches in your palettes. Hence, if you recover your original palette, you can just import or link it back to your scene—and remove the recovery palette, if you have one—and Harmony will automatically associate your artwork with the original palette again. You will not have to repaint your drawings.

You can backup your palettes by copying them manually using your operating system's shell, or by cloning them using the Palette Operations dialog. In both cases, the palette preserves the colour IDs, making it easy to replace a missing palette with its backup. For more information on the Palette Operations, see *Palette Operations* on page 445.

# About the Palette List

A palette list is a file containing all of the links to the palette files. Each scene created has its own palette list. However, it is also possible to assign palette lists to individual layers in a scene. To be able to do that, you must first enable Advanced Palette Lists mode—see *Enabling the Advanced Palette Lists Mode* on page 411.

- **Scene Palette List**

  The scene palette list is simple to understand and convenient. Every element in your scene can use colours from a palette in your scene's palette list. This is especially useful for digital animation, as a cut-out character model will often be divided into dozens of different layers which will all use the same palette.
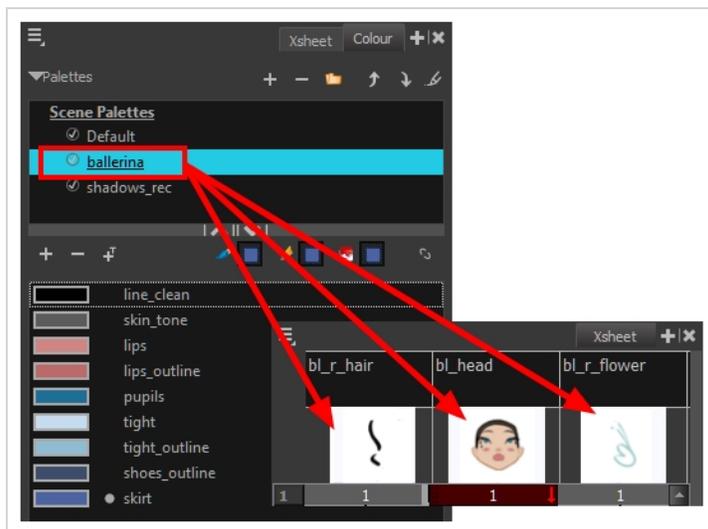
  

  The scene palette list is stored inside the scene's directory in a file named **PALETTE_LIST**, and its palettes are usually located in the scene's **palette-library** subfolder.

- **Element Palette List**

An element palette list is a list of palettes that is associated to an individual layer (element) in your scene. Only the drawings inside that element are able to use the colours in the palettes of its element palette list. The palettes in an element palette list will only be visible in the colour view when a drawing from that element is selected. This can be useful if you are doing traditional animation in which characters are usually drawn on a single layer, so you can assign each character to their individual palette.
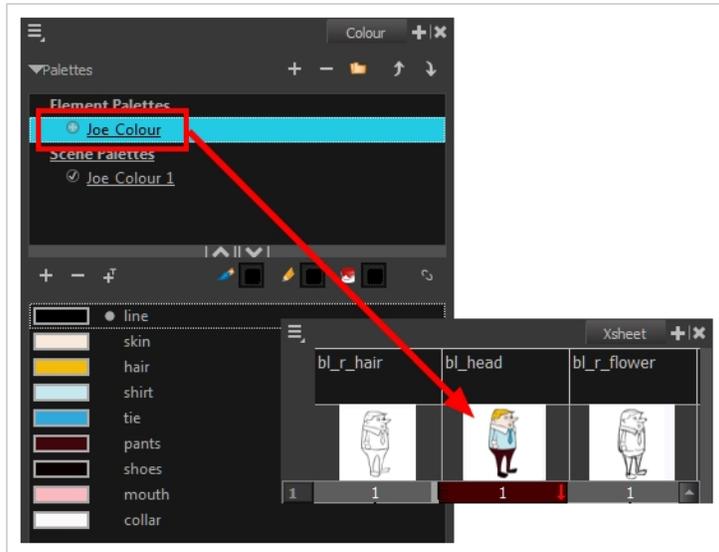


An element's palette list is stored in a file named **PALETTE_LIST**, inside the element's directory in the scene's **elements** subdirectory. An element's palettes can be stored in **palette-library** subdirectory of the element's directory.

If you have the Advanced Palette List preference enabled, then you can build a palette list by creating palettes in different locations, or linking to palettes from different locations. You might notice that the icon left of each palette in the list looks different depending on where the palette is sourced from. The following is a table explaining the meaning of each icon in the list.

| Icon | Description |
|------|-------------|
| ⊘ | Indicates that the palette is stored at the same level as its palette list. For example, a palette that is stored in the scene's palette library and which is listed in the scene's palette list, or a palette that is stored in an element's palette library and which is listed in that same element's palette list. |
| ⊘ | Indicates that the palette file is stored in an external location, such as a different scene, an element in a different scene, a job other than the scene's job, or an environment other than the scene's environment. This means the palette is liable to be missing if it is moved from its original location, or if the scene is exported from the database into an offline scene or to a different database. |
| ⊕ | This indicates that the palette is stored at a higher level than its palette list, making it a shared palette. For example, a palette in your scene's palette list that is stored in the palette library of the scene's job or environment, or a palette in an element's palette list that is stored in the palette library of the scene. |

| | |
|---|---|
| 🔗 | Indicates a potentially dangerous situation. For example, a palette file that is stored in one of the scene's element folders, but which is added to your scene's palette list. The whole scene can use the palette, but since it's stored inside an element, deleting that element will make your whole scene lose access to that palette. |

# Showing and Hiding the Palette List

By default, the palette list is enabled. If you want to only use one palette for all of your scenes, you can disable the palette list simply by collapsing it, which will give more vertical space to your colour swatch list:

## How to show or hide the palette list

1. In the Colour view, right over the palettes list, click on the expand/collapse arrow to expand or collapse the palettes list.
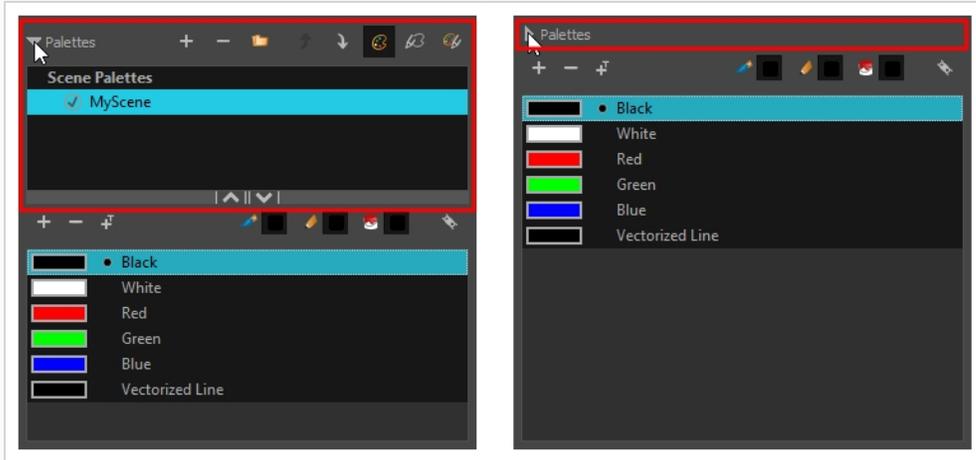
# Locking and Unlocking the Palette List

In Harmony Server, palette lists are open in read only mode when loading a scene. This is to prevent users from accidently removing palettes. To create, link to, reorder or remove palettes, you must first unlock your scene's palette list.

### How to lock and unlock to the palette list

1. Do one of the following:

   - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked

   - Right-click on the palette list and select **Get Rights to Modify Palette List**.

   - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

   A grey pencil appears on the top-right corner of the Palette list to indicate that it can be modified.
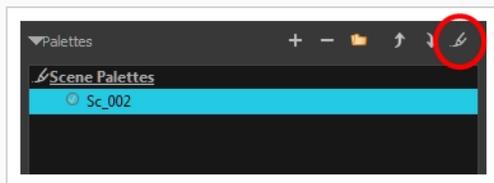
# Displaying Colour and Pencil Texture Palettes

Besides regular colour palettes, Harmony also supports pencil texture palettes. A pencil texture can be combined with a colour to create pencil lines of various styles, ranging from styles reproducing traditional drawing tools such as chalk or felt to simple patterns like dots and circles. For more information, see *About Pencil Line Textures* on page 191.

By default, the Colour view only lists colour palettes in its palette list. You can make the Colour view list only pencil texture palettes, or all types of palettes.

**How to change the palette list's filter to show colour palettes, pencil texture palettes, or both**

1. In the Colour view, do one of the following:

   - If you only want to only see colour palettes, press the Show Colour Palettes 🎨 button.

   - If you only want to see texture palettes, press the Show Texture Palettes 🖌 button.

   - If you want to see both types of palettes, press the Show All Palettes 🎨 button.

> **NOTE**
>
> If you open the Link Palette dialog, it will only list either colour palettes or pencil texture palettes, depending on which filter is currently applied to the palette list. If the palette list is set to display all palettes, the dialog will list the type of palettes of the last palette list filter that was used.

# Creating a Palette

T-ANIMPA-003-002

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.To enable Advanced Palette Lists, see *Enabling the Advanced Palette Lists Mode  on page 411*.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

### How to create a new palette (Basic palette list mode)

1. Do one of the following:

   - In the Colour View, click the New Palette ✚ button over the palette list.

   - From the Colour view menu, select **Palettes  > New**

   The Create Palette dialog box opens.

2. In the Create Palette dialog, enter the new palette's name. Make sure your palette name contains information to be easy to identify, such as the name of the character and information about the type of setting for this palette, if any.
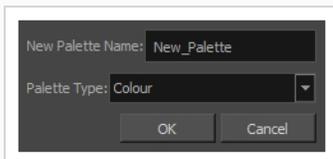
   

3. Set the **Palette Type** to **Colour** if you want to create a colour palette, or to **Pencil Texture** if you want to create a pencil texture palette—see About Pencil Line Textures.

4. Click **OK**.

   The palette appears in the drawing element's palette list.
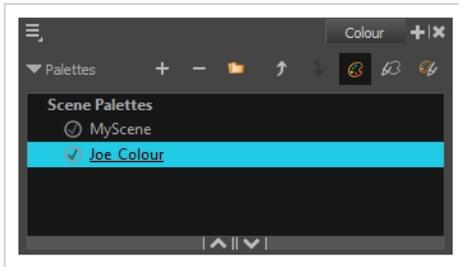
## How to create a palette (Advanced palette list mode)

1. If you want to add the palette to an element's palette list, select a drawing from the element for which you want to create a palette in the Timeline, Xsheet or Camera view.

2. Do one of the following:

   - In the Colour View, click the New Palette ✚ button over the palette list.

   - From the Colour view menu, select **Palettes > New**

   The Palette Browser dialog box opens.



3. In the **Palette Location** panel, select the location where you want to store the palette file. If you are using Harmony Server, you can store the palette in any environment, job, scene or element on your database. In Harmony Stand Alone, you can store the palette in the scene, inside one of its element, or inside its provisional job or environment. For more information, see *About Palette Storage Locations* on page 413.

4. In the **New Palette Name** field, enter the name for the new palette. The palette list above this field lists the palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

5. Set the **Palette Type** to **Colour** if you want to create a colour palette, or to **Pencil Texture** if you want to create a pencil texture palette—see About Pencil Line Textures.

6. In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see About Scene and Element Palette Lists on page 412.
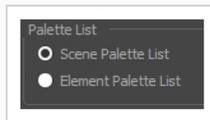


7. Click **OK**.

   The new palette appears in the palette list.

# Linking a Colour Palette

Linking a palette means adding a palette to your scene's palette list, or to an element's palette list, without making a local copy of that palette in your scene's palette library. This means your scene will depend in this palette remaining in its location in order to render its colours, but it allows you to reuse the same palette files for several scenes, making sure that recurring characters and objects keep their original colours across a production and that any late change done to their colour scheme can be quickly reflected across all your scenes.

In Harmony Server, environments, jobs, scenes and elements can all have their own palette library, and you can link to a palette from the palette library of any environment, job, scene or element in your database. However, to make it easier to ensure scenes do not lose access to their palettes, it is recommended to only link to palettes from within the scene's own environment, job, scene or elements. The most important reason for this is that if you export a scene that uses palettes from other jobs, environments, scenes or elements, these palettes will not be exported. Hence, they will be missing if you import them in a different database. However, you can export a scene with all of its assets along with the assets contained in its own job and environment.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

## How to link a colour palette

1. If you want to add the palette to an element's palette list, select a drawing from the element for which you want to create a palette in the Timeline, Xsheet or Camera view.

2. Do one of the following:

    - From the Colour View menu, select **Palettes > Link**.

    - Right-click and select **Link**.

    - Click the Link Palette 📁 button.

    The Palette Browser: Link Palette dialog box opens.

Harmony Server                    Harmony Standalone
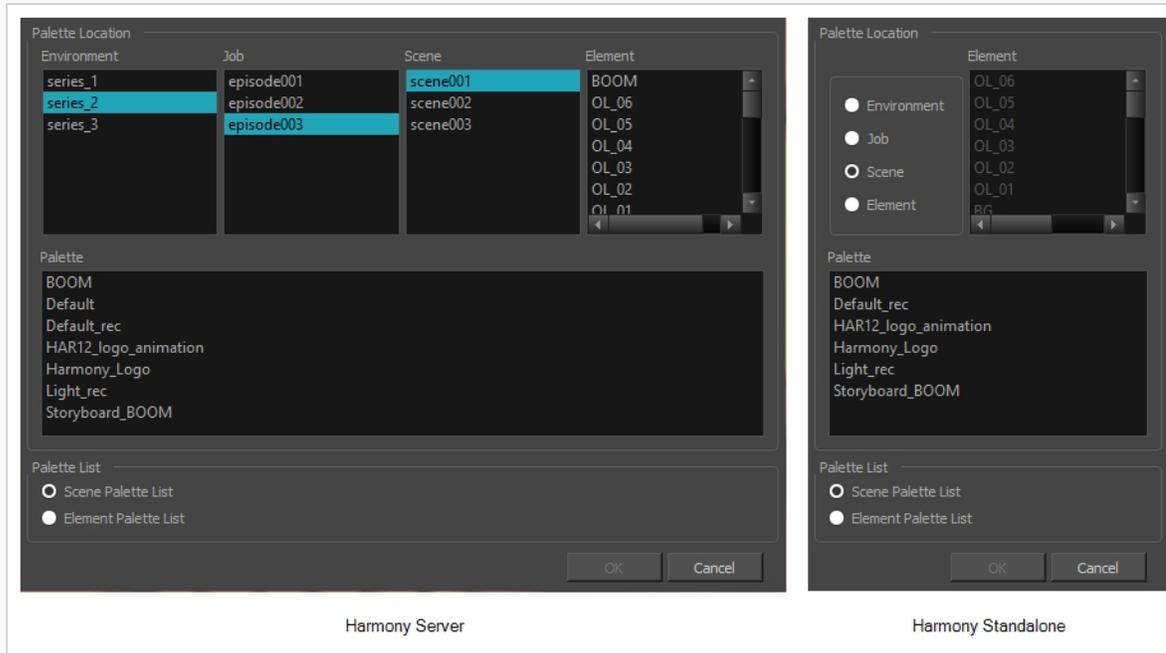
3. In the **Palette Location** panel, browse to the location of the palette you want to link to.

4. In the **Palette** list, select the palette you want to link to.

5. In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see *About Scene and Element Palette Lists* on page 412.

   The palette appears in the Colour view.

# Importing a Colour Palette

You can import an existing palette from your file system or network into your scene. This will create a copy of the palette file and add it to your palette list.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

### How to import a palette into your project (Basic palette list mode)

1. Do one of the following:

   - From the Colour menu ☰, select **Palettes > Import**.

   - Right-click on the palette list and select **Import**.

   The Browser window opens.

2. Browse for a palette file located (`*.plt`) on your hard drive. You can usually find a scene's palettes by browsing to the **palette-library** sub-folder of the scene's folder.

3. Click **Open**.

   The Import Palette dialog box appears.
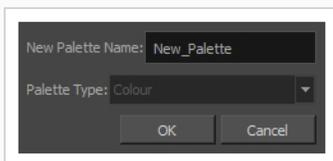
   

4. In the **New Palette Name** field, enter the name for the imported palette.

   The palette is copied to your project and added to your scene's palette list.

### How to import a palette into your project (Advanced palette list mode)

1. If you want to add the palette to an element's palette list, select a drawing from the element for

which you want to create a palette in the Timeline, Xsheet or Camera view.

2. Do one of the following:

    - From the Colour menu ☰, select **Palettes > Import**.

    - Right-click on the palette list and select **Import**.

    The Browser window opens.

3. Browse for a palette file located (`*.plt`) on your hard drive. You can usually find a scene's palettes by browsing to the `palette-library` sub-folder of the scene's folder.

4. Click **Open**.

    The Palette Browser dialog box appears.



Harmony Stand Alone                Harmony Server
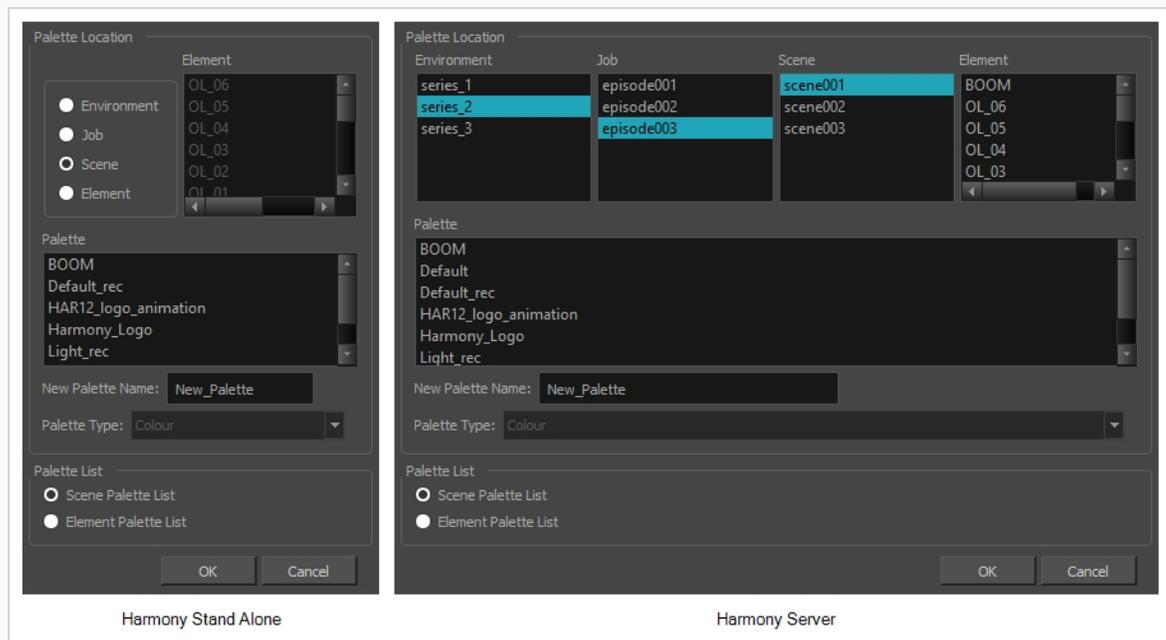
5. In the **Palette Location** panel, select the location where you want to store the palette file. If you are using Harmony Server, you can store the palette in any environment, job, scene or element on your database. In Harmony Stand Alone, you can store the palette in the scene, inside one of its element, or inside its provisional job or environment. For more information, see *About Palette Storage Locations* on page 413.

6. In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see *About Scene and Element Palette Lists* on page 412.

7. In the **New Palette Name** field, name the imported palette.

    The palette is copied to your project and added to your scene's palette list.

# Renaming a Palette

You can rename a colour palette to keep your list organized.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔒 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### How to rename a palette

1. In the Colour view, select the palette to rename.
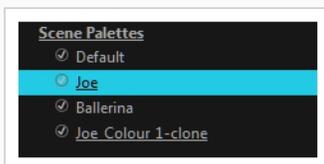
   

2. Do one of the following:

   - 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**.

Name: Joe_Colour_1

Ok    Cancel
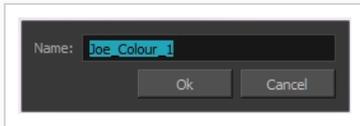
# Removing a Palette

You can remove palettes from your Palette list if they're not needed in your scene. The actual palette file will not be deleted, so you can add it back to your palette list later if you need it.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

### How to remove a palette

1. In the Colour view, select the palette to remove.
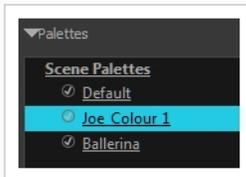
   

2. Do one of the following:

   - 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.
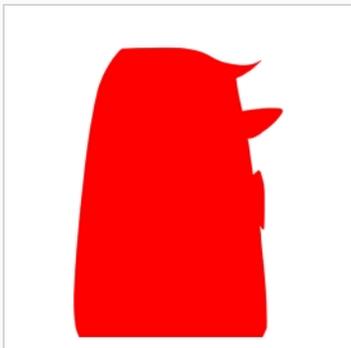
**NOTE**

If you wish to delete the palette file, you can select the **Remove and Delete From Disk** option from the same menu. You will be prompt to confirm the deletion. Note that the palette will be deleted from your file system, and there will be no way to recover it.

# Duplicating a Palette

A duplicated palette is a simple copy of the original palette. When you duplicate a palette, the duplicated palette will have the same colour names and values, but will have different colour IDs so that Harmony does not mix it up with its original palette. This is useful when you want to create different palettes for similar models, but want to avoid having to create the palette and its colours all over again. You can just start with your duplicate palette, tweak the colours and add and remove colours as needed.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

**How to duplicate a palette  (Basic palette list mode)**
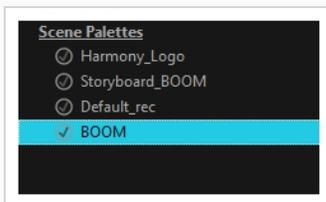
1. In the Colour view, select a palette to duplicate.



2. Do one of the following: From the Colour menu, select **Palettes > Duplicate**or right-click and select **Duplicate**.

   - Right-click on the palette and select **Duplicate**.
   - Open the Colour menu ☰, then select select **Palettes > Duplicate**.

   The Duplicate palette dialog box opens
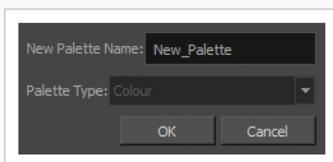


3. In the **New Palette Name** field, enter the name for the new palette. By default, the palette's name is based on the original palette name followed by "-copy". The palette list above this field lists the

palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

4. Click **OK**.

   The duplicated palette appears in the palette list.
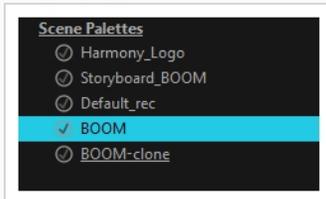


## How to duplicate a palette (Advanced palette list mode)
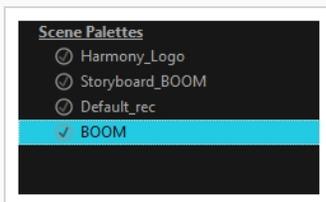
1. In the Colour view, select a palette to duplicate.



2. Do one of the following: From the Colour menu, select **Palettes > Duplicate** or right-click and select **Duplicate**.

   - Right-click on the palette and select **Duplicate**.

   - Open the Colour menu ☰, then select select **Palettes > Duplicate**.

   The Palette Browser dialog box opens.

Harmony Server                    Harmony Stand Alone

3. In the **Palette Location** panel, select the location where you want to store the palette file. If you are using Harmony Server, you can store the palette in any environment, job, scene or element on your database. In Harmony Stand Alone, you can store the palette in the scene, inside one of its element, or inside its provisional job or environment. For more information, see *About Palette Storage Locations* on page 413.

4. In the **New Palette Name** field, enter the name for the new palette. By default, the palette's name is based on the original palette name followed by "-copy". The palette list above this field lists the palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

5. In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see *About Scene and Element Palette Lists* on page 412.



6. Click **OK**.

The duplicated palette appears in the palette list.

**Scene Palettes**
- ⊘ Harmony_Logo
- ⊘ Storyboard_BOOM
- ⊘ Default_rec
- ✓ BOOM
- ⊘ BOOM-copy

# Cloning a Palette

Cloning a palette creates an exact copy of the palette, where each colour swatch has the same colour ID as in the original palette, but which you can modify independently afterward. Since painted zones in drawings are associated to their colour by their colour ID, this means that any drawing colored with the original palette can have its colours replaced with the cloned palette's colours just by switching the palette in the scene with the cloned palette.

A good example of how this can be useful is when you want to make variants of a character's 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. Instead of creating a different palette for the character and repainting all of its zones with the night palette, you can just clone the character's master palette, tweak its colours, and the character will have its original colours or its night colours depending on which one of the palettes is in the palette list, without having to repaint your drawings.
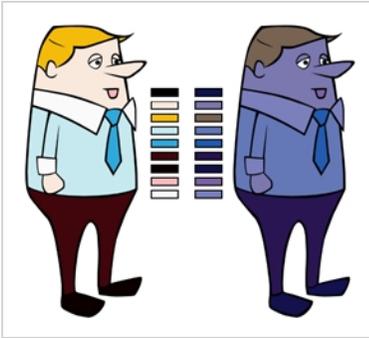


When a palette and its clone are present in the same scene, Harmony uses the palette that is highest in the list. If one palette clone is present in the scene's palette list and another clone is present in the element's palette list, the element will use the palette in its own palette list.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ≡, select **Palettes > Get Rights to Modify Palette List**

**How to clone a palette  (Basic palette list mode)**
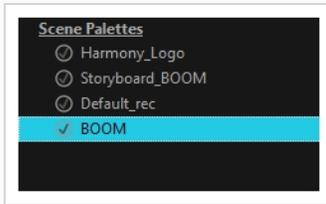
1. In the Colour view, select a palette to clone.

2. Do one of the following: From the Colour menu, select **Palettes > Clone** or right-click and select **Clone**.

   - Right-click on the palette and select **Clone**.

   - Open the Colour menu ☰, then select select **Palettes > Clone**.

   The Clone palette dialog box opens
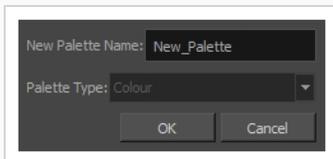
   

3. In the **New Palette Name** field, enter the name for the new palette. By default, the palette's name is based on the original palette name followed by "-clone". The palette list above this field lists the palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

4. Click **OK**.

   The cloned palette appears in the palette list.
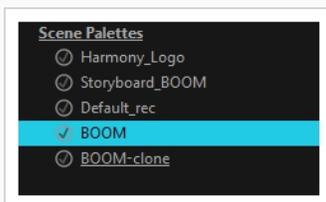
   

## How to clone a palette (Advanced palette list mode)
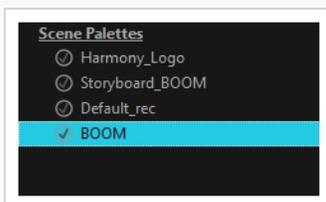
1. In the Colour view, select a palette to clone.

   

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2. Do one of the following: From the Colour menu, select **Palettes > Clone** or right-click and select **Clone**.

   - Right-click on the palette and select **Clone**.

   - Open the Colour menu ☰, then select select **Palettes > Clone**.

   The Palette Browser dialog box opens.



3. In the **Palette Location** panel, select the location where you want to store the palette file. If you are using Harmony Server, you can store the palette in any environment, job, scene or element on your database. In Harmony Stand Alone, you can store the palette in the scene, inside one of its element, or inside its provisional job or environment. For more information, see *About Palette Storage Locations* on page 413.

4. In the **New Palette Name** field, enter the name for the new palette. By default, the palette's name is based on the original palette name followed by "-clone". The palette list above this field lists the palettes that already exist in the selected location. Make sure you enter a name that is not already used by another palette.

5. In the **Palette List** panel, select whether you want the palette to be added to the **Scene Palette List**, or to the **Element Palette List** of the currently selected element. Note that in the latter case, the palette will only be usable by the element. For more information, see *About Scene and Element Palette Lists* on page 412.

6. Click **OK**.

   The cloned palette appears in the palette list.



> **NOTE**
>
> You can modify your cloned palette by changing its colour swatches individually, or you can use the Tint Panel to change all of the palette's colour swatches simultaneously—see *Tinting a Palette's Colour Swatches* on page 442.

# Tinting a Palette's Colour Swatches

You can use the Tint Panel dialog to offset, blend or mix all the different colour swatches in a palette simultaneously. This can be useful if you want to give a cloned palette a different tint, for example to make a night-themed version of a character's master palette.
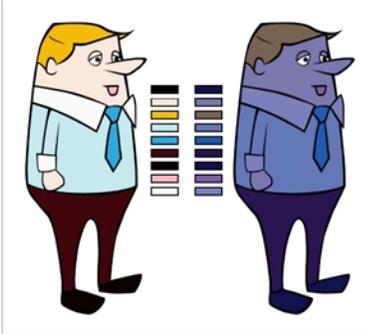


> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the selected palette by doing one of the following:
>
> - In the Colour view, make sure the Edit Palette Mode 🔲 toggle button is pressed in.
> - In the palette list of the Colour view, right-click on the selected palette and select either **Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette** or **Get Rights to Modify All Palettes**.

### How to tint a palette

1. In the Palette list, select the palette you want to tint.

2. From the Colour View menu, select **Palettes > Tint Panel** or right-click and select **Tint Panel**.

   The Blend/Offset Tint panel opens.
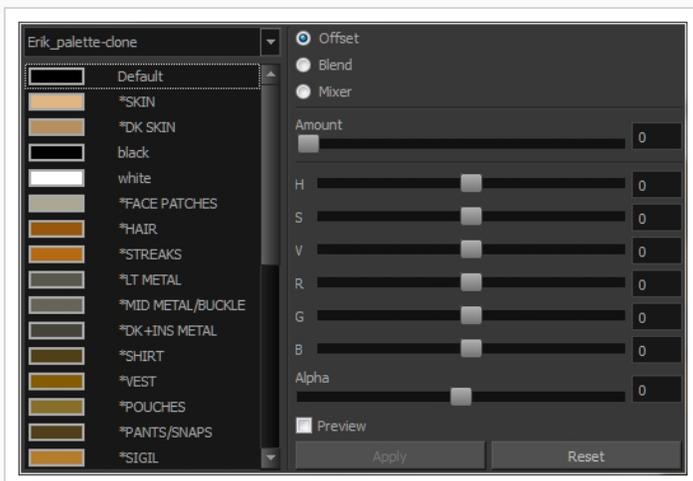
3.  Select one or more colours to modify. You can select all your colours by pressing Ctrl + A (Windows/Linux) or ⌘ + A (macOS).

4.  Offset, blend, or mix the colours using the sliders and increasing the Amount value.
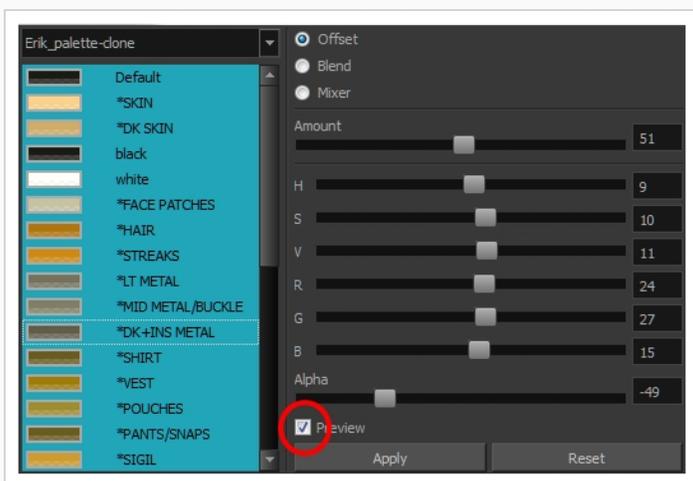


5.  Select the **Preview** option to see a preview of the colours while you adjust them.

# Reordering Palettes in the Palette List

You may want your palettes to be listed in a specific order. In a lot of cases, this is strictly a matter of convenience. However, if your palette list contains palettes that have been cloned off each other, Harmony will use the palette that is located the highest in the list to determine the colours to use in the drawings. Hence, if you are using cloned palettes, you must mind the order of your palettes in the palette list. For more information, see *Cloning a Palette* on page 438.

> **NOTE**
>
> If a palette in the scene's palette list has been cloned into an element's palette list, Harmony will use the palette in the element's palette list for this element.

> **NOTE**
>
> If you are using Harmony Server, make sure you have the rights to modify the palette list by doing one of the following:
>
> - From the top menu, open the **Edit** menu and ensure the **Edit Palette List Mode** option is checked
> - Right-click on the palette list and select **Get Rights to Modify Palette List**.
> - From the Colour view menu ☰, select **Palettes > Get Rights to Modify Palette List**

### How to reorder palettes in the palette list

1. Select the palette you wish to reorder.

2. Do one of the following:

   - In the Palette list toolbar, click the Up ⬆ or Down ⬇ buttos.

   - From the Colour View menu, select **Palettes > Move Up** or **Move Down**.
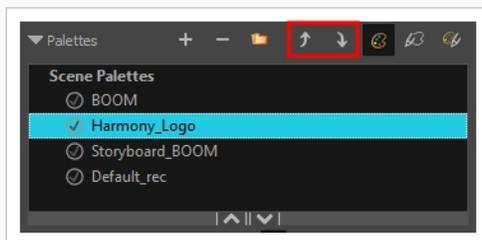
# Palette Operations

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 in your database, without having to open a scene or browse the database's file system in your operating system's shell.

> **NOTE**
>
> The Palette Operations dialog box never makes any change to any palette list in your database. All it allows you to do is manipulate palettes files. You should be careful not to rename or delete palettes that are required by some of your existing scenes, or Harmony will be unable to locate those palettes when you open one of those scenes.
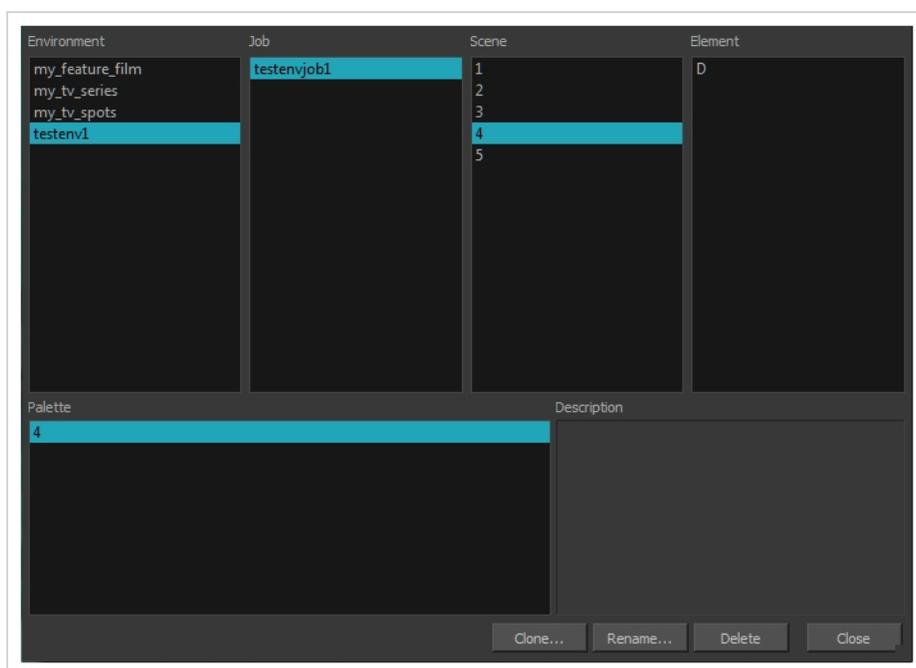
# Opening the Palette Operations Dialog Box

You can open the Palette Operations dialog box in Harmony Server.

### How to open the Palette Operations dialog box

1. Start and log in.

2. Close the Database Selector dialog box.

3. From the top menu, select **Tools > Palette Operations**.
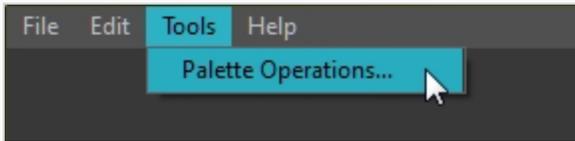


The Palette Operations dialog box opens.
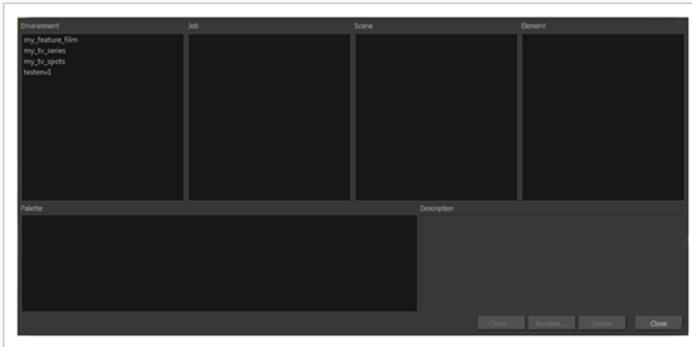
# Cloning a Palette in the Palette Operations Dialog Box

From the Palette Operations window, you can clone palettes in Harmony Server.

## 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.
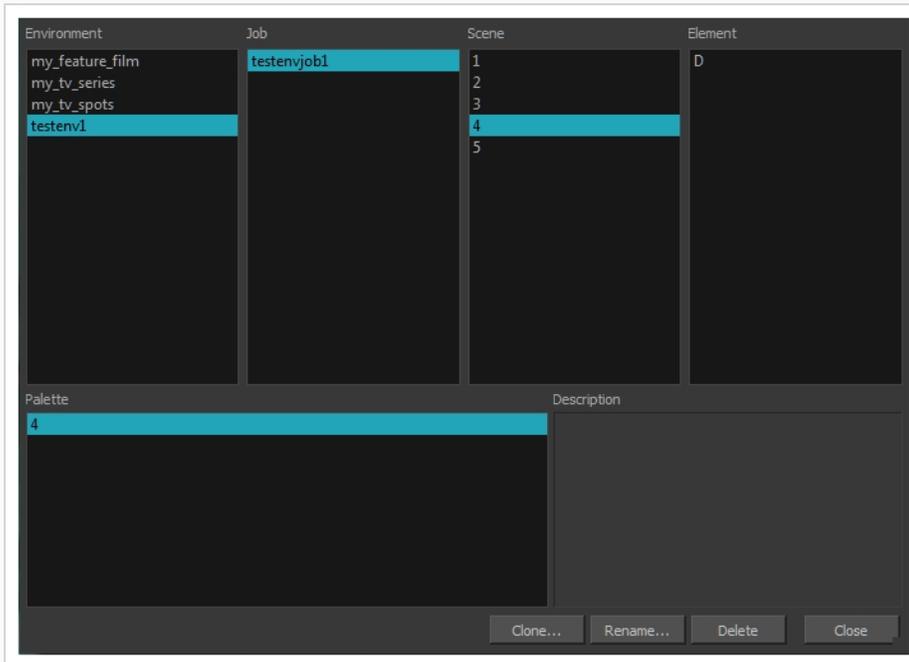


2. Click **Clone**.

   A Warning dialog box opens.
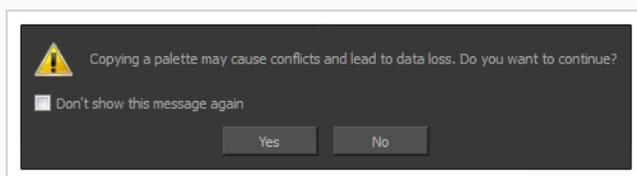


3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.

4. Click **Yes**.

   The Palette Browser dialog box opens.

5. Select the level to store the palette file.
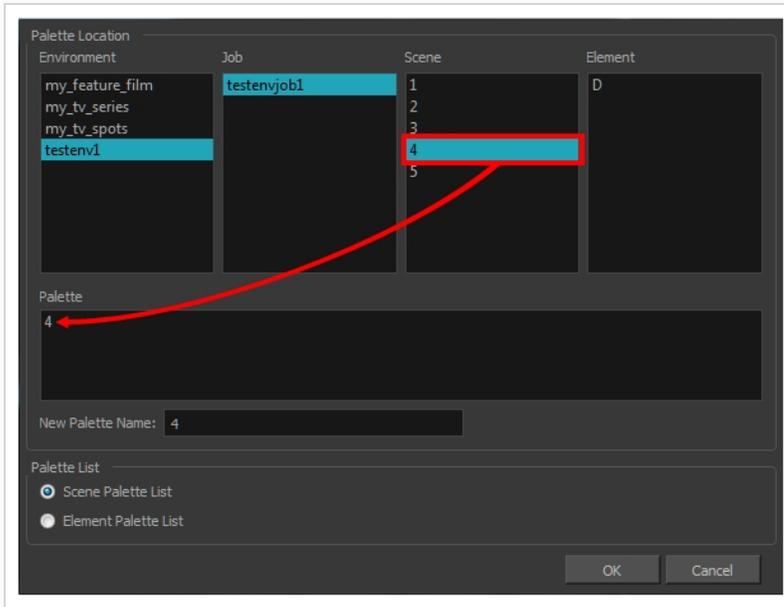
6. In the New Palette Name field, enter the name of your palette.

7. Click **OK**.

# Renaming a Palette in the Palette Operations Dialog Box

You can rename palettes in the Palette Operations dialog box in Harmony Server.

**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.
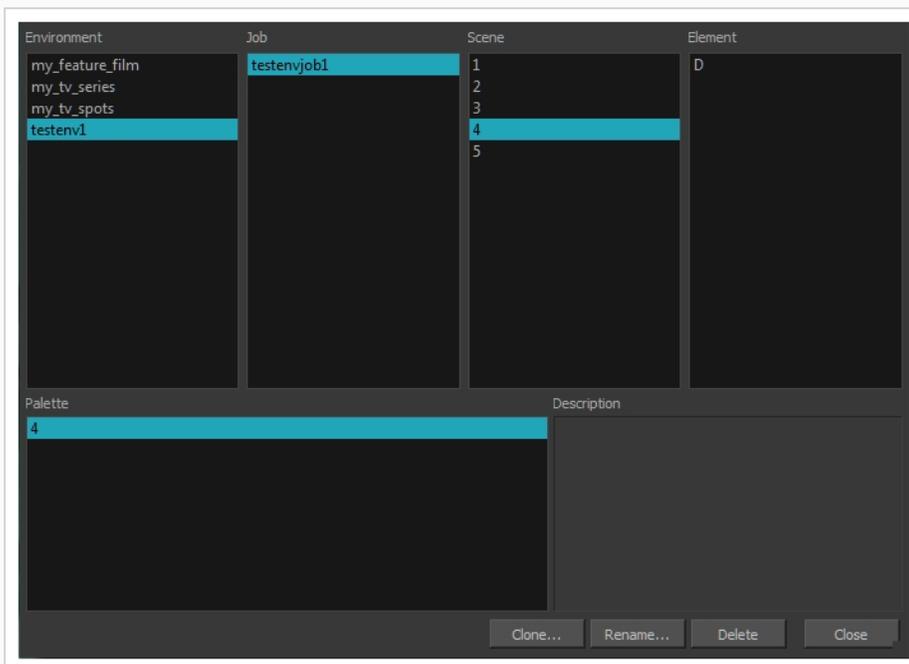


2. Click **Rename**.

   A Warning dialog box opens.
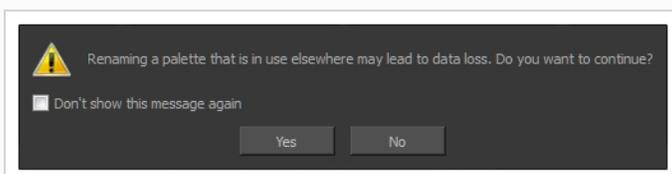


3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.

4. Click **Yes**.

   The Rename Palette dialog box opens.
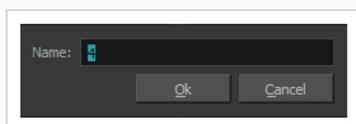
5. Type in a name for the palette.

6. Click **OK**.

# Deleting a Palette in the Palette Operations Dialog Box

You can delete palette files from the Palette Operations dialog box in Harmony Server.

### 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.
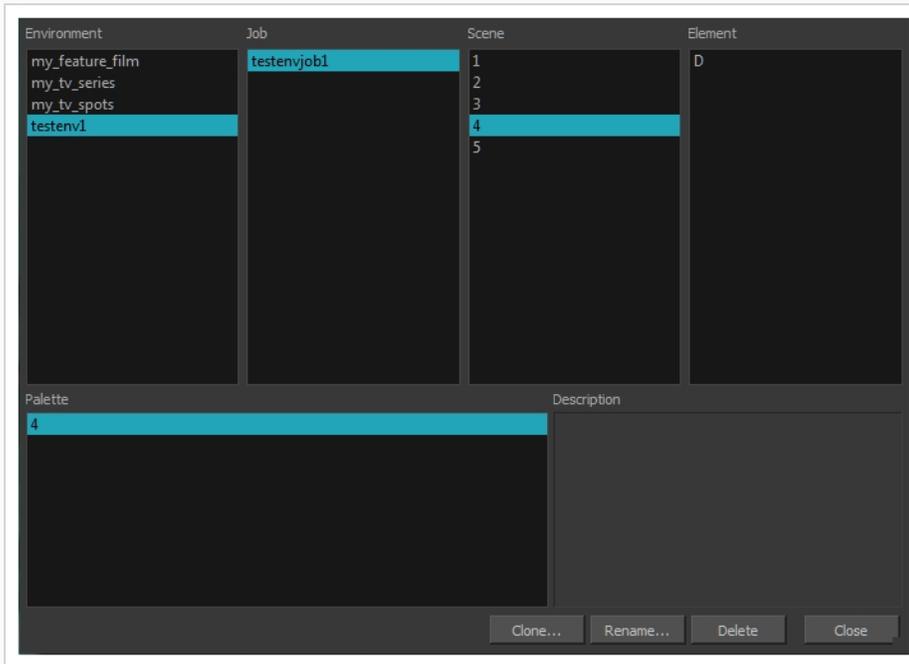


2. Click **Delete**.

   A Warning dialog box opens.
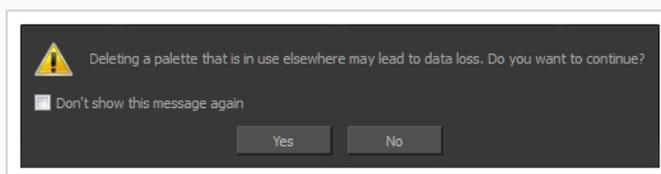


3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.

   > **NOTE**
   >
   > It is not recommended to disable the warning message as deleting a palette cannot be undone.

4. Click **Yes**.

# About Painting

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.

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.



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For paperless animation, the drawings are cleaned up directly in Harmony, so there is generally no dirt to clean, only painting and inking.

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 *About Palettes* on page 408.



Di-Gata Defenders © Nelvana Limited, Corus® Entertainment
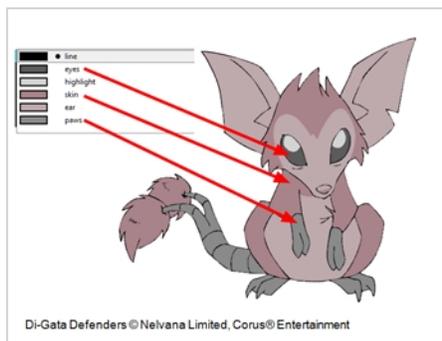
# About Colour Models

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—see *Painting Drawings* on page 467.
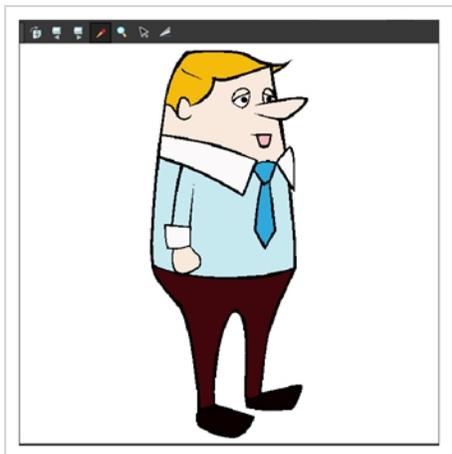


Once a drawing is loaded in the Model view, you can use the Model view Dropper to select a colour from the model and use it to paint in your Camera or Drawing view without having to pick the colour from the colour palette.

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.

# Loading Colour Models

T-ANIMPA-004-005

You can load any TVG drawings in your Model view. To avoid browsing for models every single time you work on your scene, you can store default models in your scene and load those.

## How to load a colour model from the Timeline or Xsheet view

1. In the Timeline or Xsheet view, select a drawing (*.tvg).
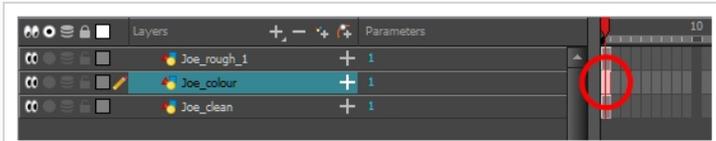


2. Bring the model into the Model view by doing one of the following:

   - 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 for Harmony Server.

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. Paste the copied models in the `models` folder you created.

4. 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.
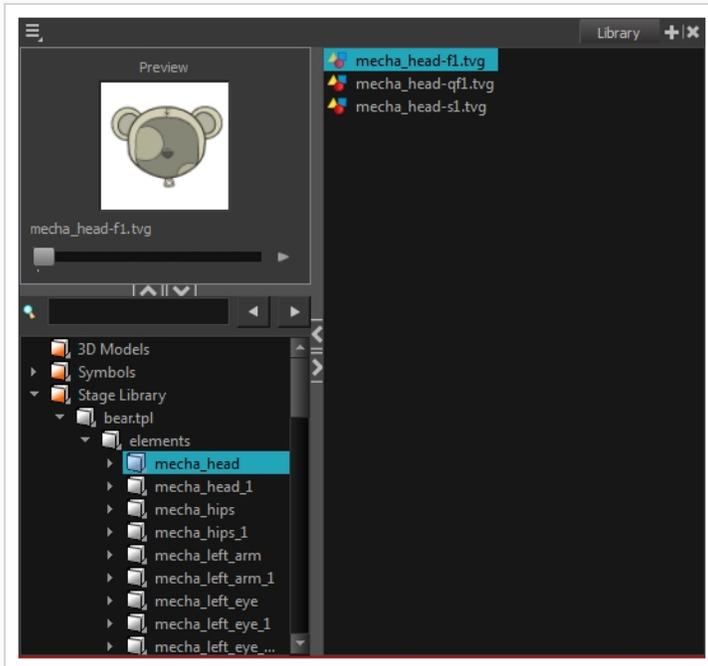
4. In the Library view's right side, select the TVG drawing to import and drag it into the Model view.

## 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.



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.
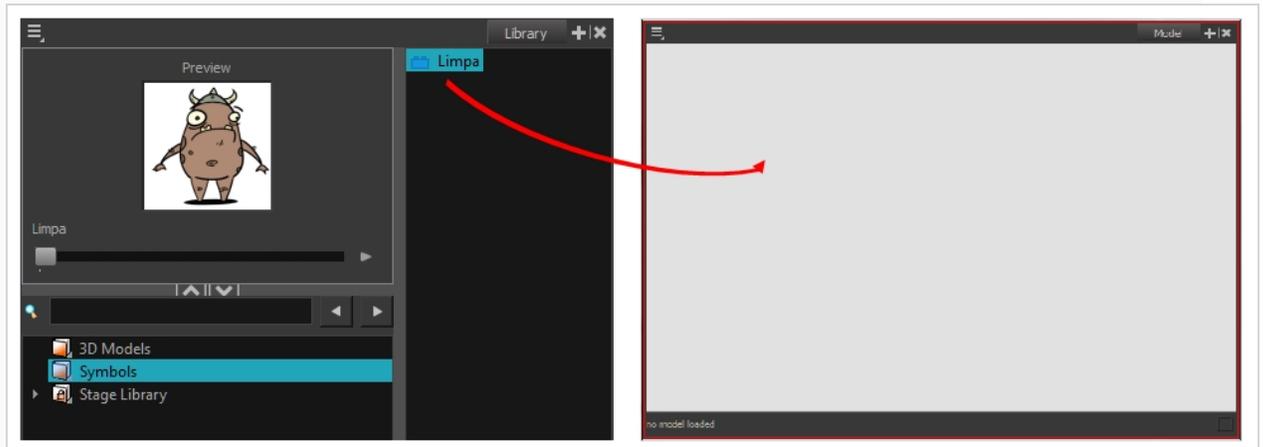


3. Use the Previous Model ⊟ and Next Model ⊟ buttons in the Model View toolbar to view all the drawings contained in the template. This can often be the front, profile, and 3/4 views of a character.

# Clearing Colour Models

You can remove colour models from the Model view.

### How to clear a colour model

- In the Model View menu, select **Clear Model** or press Del.

# Flipping Between Models

T-LAY-002-001

Once your models are loaded in the Model view, you can flip through them using a keyboard shortcut or toolbar buttons.

**How to flip between models**

1. Do one of the following:

   - In the Model View toolbar, click the Next Model ▶ or Previous Model ◀ buttons.

   - From the Model View menu, select **Next Model** or **Previous Model**.

   - Press F and G.

   The previous or next model appears in the Model view.

# Copying Colour Models

You can copy pieces or the entire colour model to paste in your scene,

### How to copy the entire model from the Model view

1. In the Model View toolbar, select the Select ⬉ tool.

2. In the Model view, select your model.
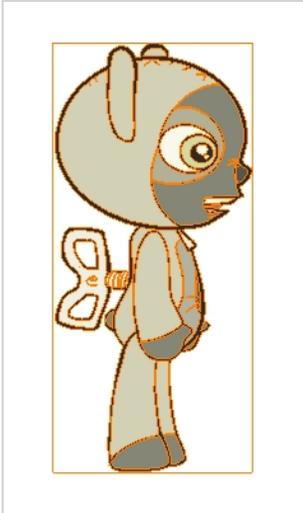
   

3. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (macOS).

4. In the Timeline view, make sure you have the correct layer and frame selected.

5. 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 (macOS).

   The model appears in the selected view.

### How to copy part of the model from the Model view

1. In the Model View toolbar, select the Cutter ✎ tool or press Alt + T.

2. In the Model view, use the Cutter tool to create a selection around the part of your model that you want to copy.
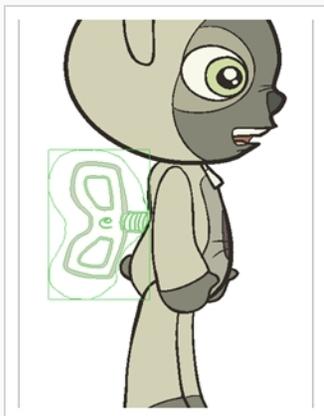
3. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (macOS).

4. In the Timeline view, make sure you have the correct layer and frame selected.

5. 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 (macOS).

   The model appears in the selected view.

# About Dirt Cleanup

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.



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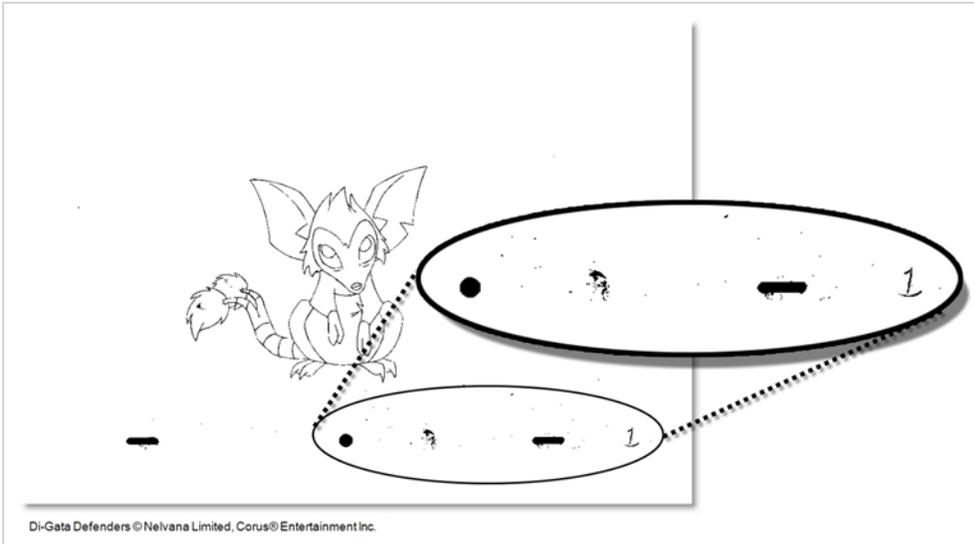
If there are some marks that cannot be removed with the automated tools, you can erase them with the Eraser tool or select them with the Select tool and then delete them. It's always safer to select and delete them than to erase them, so you do not overlook anything.

# Removing Dirt

T-INK-002-002

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.

### 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.
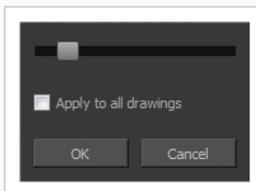


2. Increase the Remove Dirt value by moving the slider to the right.

3. Select the **Apply to All Drawings** option if you want to apply the operation to all drawings in the layer.



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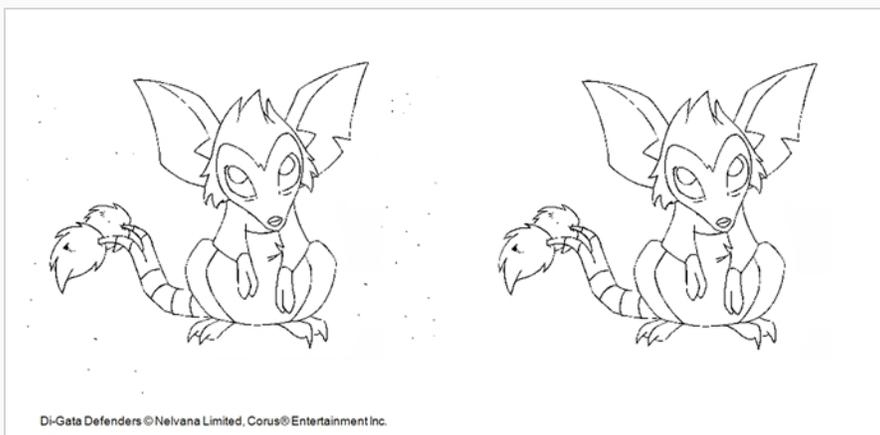
# Removing Dirt Outside the Selection

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.

### 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.



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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 the Art Inside the 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 Hair

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.
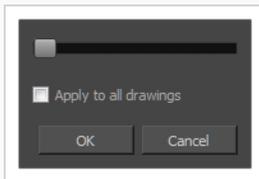
   

4. Move the slider to the right to increase the number and length of hairs to be selected.

5. Select the **Apply to All Drawings** option if you want to apply the operation to all the drawings in the layer.
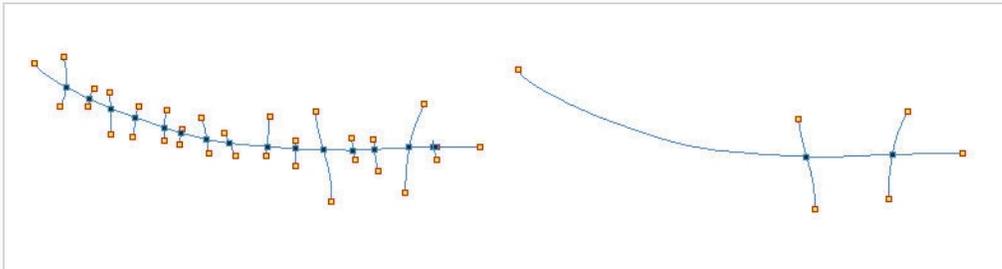
   

6. Click **OK**.

# Painting Drawings

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.

> **NOTE**
>
> To learn more about the Paint tool options, see the Reference guide .

## How to paint drawings

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.


    In the Tool Properties view or Tools toolbar, you can select additional painting modes.

    - The Paint 🪣 mode paints everything it touches, including empty and filled zones.

        

    - The Paint Unpainted 🪣 mode paints only empty zones. Any line or filled zone will remain unchanged.
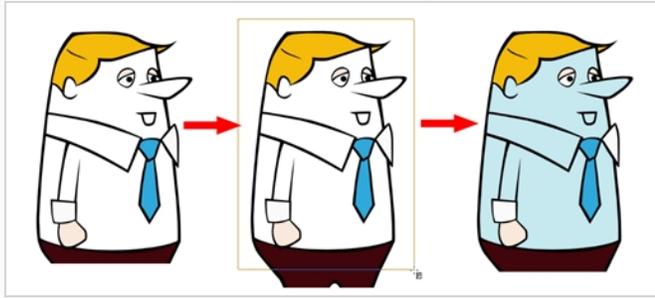
- The Repaint 🎨 mode paints everything it touches except empty zones. Any zone that is not painted will remain intact.
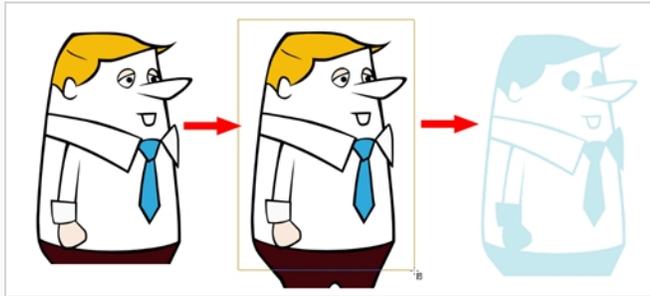


- The Unpaint 🎨 mode unpaints everything it touches, including empty and filled zones.
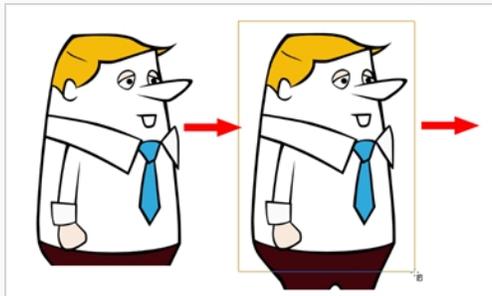


3. In the Colour view, select a colour.



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.



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# Repainting

You can use the Paint tool to click on the zones to repaint. If you click in an empty zone, it will fill the area.

You can repaint lines, zones, and brush strokes using the Repaint tool. The repaint pencil lines more efficiently, see *Inking Lines* on page 484. The Repaint tool does not fill empty zones, even if they are closed.

If you imported and vectorized drawings, 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 entire drawing, only the relevant segment—see *Creating Break Triangles* on page 479.
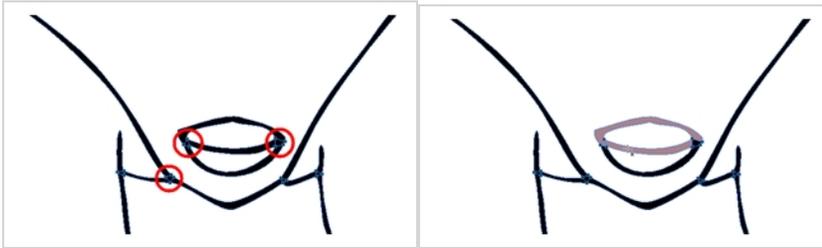


The Brush tool can be used to repaint specific segments. The Brush tool's Repaint Brush mode is used to paint a section by manually painting over the lines. This is useful when the vectorization triangles are not placed as you would like or you simply need to repaint a section of a segment. It is also 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's regular mode, the Repaint Brush mode flattens automatically. The brush strokes are not added one on top of each other.

> **NOTE**
>
> To avoid repainting specific colours, see Protecting Colours

## How to access the Repaint Tool

1. In the Tools toolbar, select the Repaint 🖌 tool. You can also find the option in the Tool Properties view when the Paint tool is selected.

2. In the Camera or Drawing view, click on the zones to repaint. You can also make a lasso or marquee selection around several zones.

### How to enable the Repaint Brush mode

1. In the Tools toolbar, select the Brush 🖌 tool.

2. In the Tool Properties view, click the Repaint Brush 🖌 button.

3. In the Camera or Drawing view, draw on the zones to repaint.

# Repainting a 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. You can also click on the colour swatch in the colour palette to automatically repaint your selection.
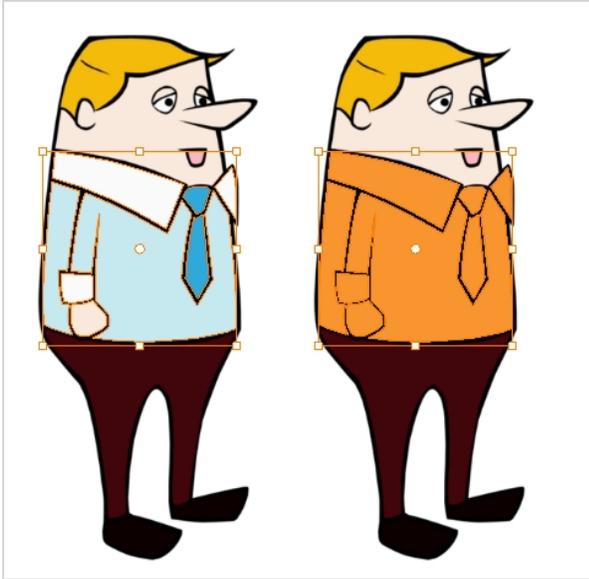


The Repaint Selection On All Drawings command is used to repaint any art inside a selection on all the drawings contained within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.
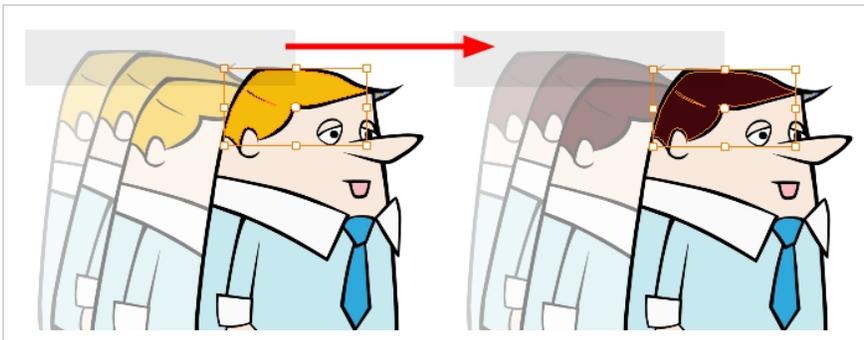


> 📝 **NOTE**
>
> To avoid repainting specific colours, see Protecting Colours

**How to repaint a selection**

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

2. In the Camera or Drawing view, select the zones to repaint.

3. To repaint the selection on all drawings, enable the Permanent Selection  option in the Select tool Tool Properties view.

4. Do one of the following:

    - From the top menu, Camera or Drawing view menu, select **Drawing > Paint > Repaint Selection** or **Repaint Selection on All Drawings**.

# Repainting Outside a 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.
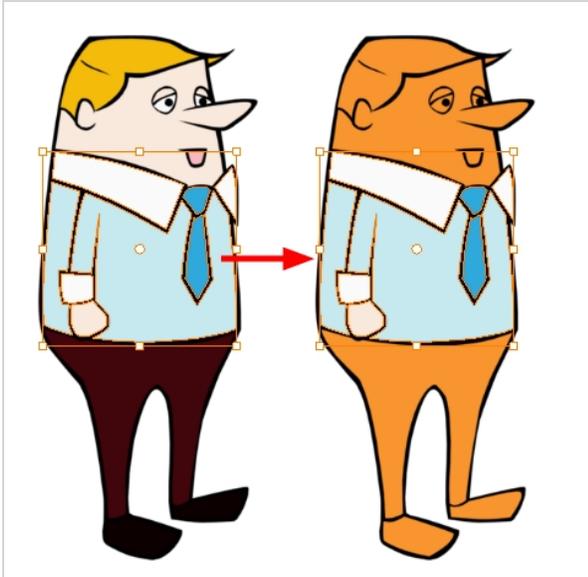


The Repaint Outside Selection On All Drawings command is used to repaint any art outside a selection on all the drawings contained within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool 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.
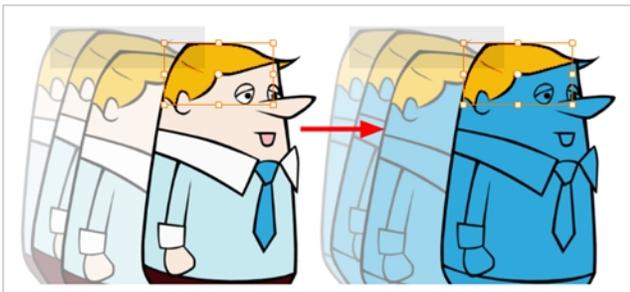


> **NOTE**
>
> To avoid repainting specific colours, see Protecting Colours

## How to repaint outside a selection

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

2. In the Camera or Drawing view, select the zones you do not want to repaint.

3. To repaint outside the selection on all drawings, enable the Permanent Selection ⬚ option in the Select tool Tool Properties view.

4. Do one of the following:

   - From the top menu, Camera or Drawing view menu, select **Drawing > Paint > Repaint Outside Selection** or **Repaint Outside Selection on All Drawings**.

# Unpainting a 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.
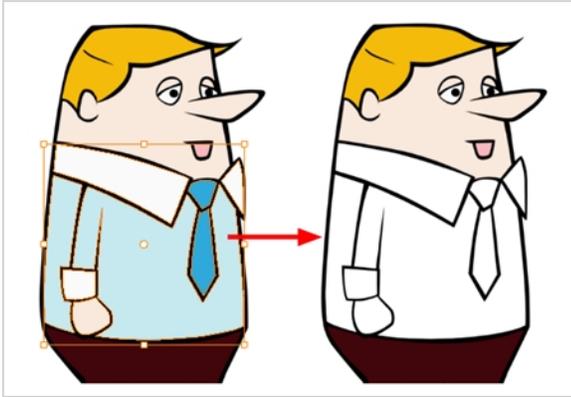


The Unpaint Selection on All Drawings command is used to unpaint all art contained inside a selection on all the drawings within the same layer.

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.
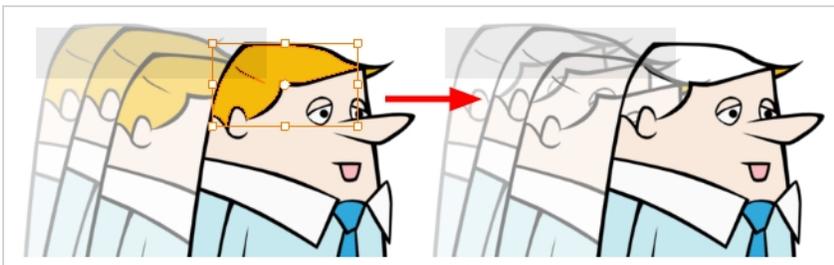


**How to unpaint a selection**

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

2. In the Camera or Drawing view, select the zones to unpaint.

3. To unpaint the selection on all drawings, enable the Permanent Selection option in the Select tool Tool Properties view.

4. Do one of the following:

   - From the top menu, Camera or Drawing view menu, select **Drawing > Paint > Unpaint Selection** or **Unpaint Selection on All Drawings**.

# Unpainting Outside a 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.
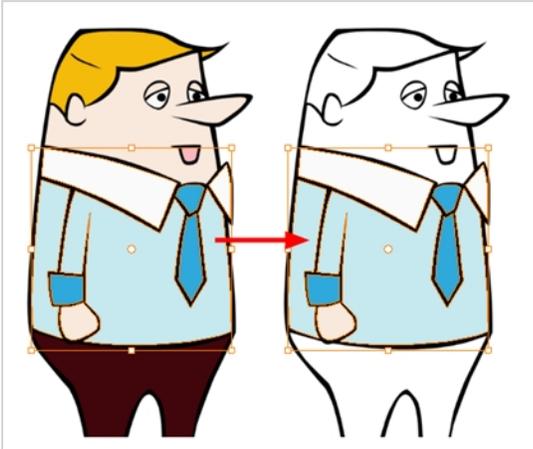


The Unpaint Outside Selection on All Drawings command is used to unpaint all art outside a selection on all the drawings within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.
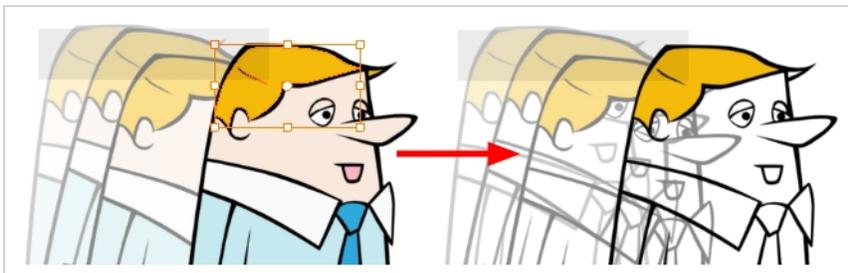


### How to unpaint outside a selection

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

2. In the Camera or Drawing view, select the zones you don't want to unpaint.

3. To unpaint the selection on all drawings, enable the Permanent Selection ⧉ option in the Select tool Tool Properties view.

4. Do one of the following:

    - From the top menu, Camera or Drawing view menu, select **Drawing > Paint > Unpaint Selection** or **Unpaint Selection on All Drawings**.

# Selecting Strokes with the Current Colour

You can select zones painted with a specific colour swatch.

**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.
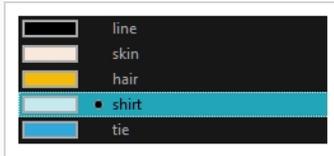


2. Do one of the following:

   - Select **Drawing > Select Strokes With Current Colour**.

   - Press Ctrl + Shift + A (Windows/Linux) or ⌘ + Shift + A (macOS).

# Creating Break Triangles

T-ANIMPA-011-005

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 line intersections. These intersections are the probable locations where colour line breaks naturally 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.
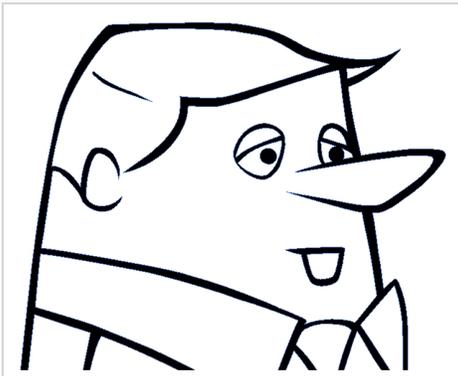
   

2. Select **Drawing > Create Breaking Triangles**. If your brush strokes are not flattened, they will be flattened automatically before the breaking occurs.

   

3. Use the Repaint tool 🖌 to paint the outline of different colour zones with different colours.

# 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.
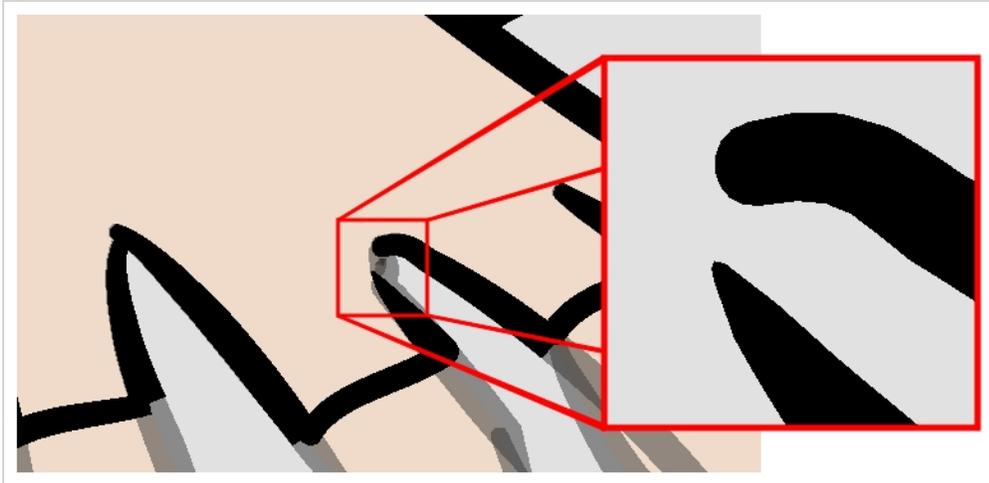


**How to close gaps**

1. Select **View > Show > Show Strokes** or press K to see a preview of the result.

2. In the Tools toolbar, select the Close Gaps ⬦ tool.

3. In the Camera or Drawing view, trace a line near the gap to be closed. Your strokes will be invisible.

4. Enable the Auto-Flatten ⬦ option in the Tool Properties view if you want your strokes to be flattened with your artwork. They will cut overlapping drawing strokes in two pieces.

   The gap automatically closes.
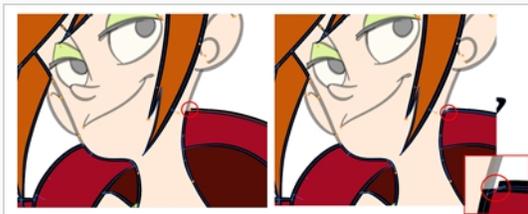
   

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# Picking a Colour with the Dropper Tool

T-ANIMPA-011-002

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.
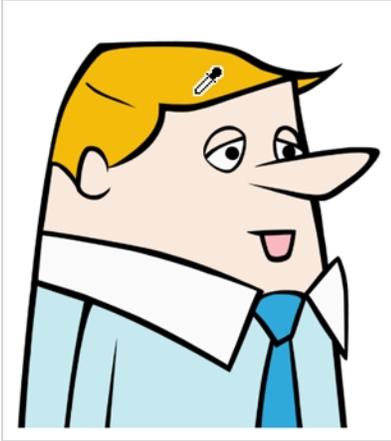


> **NOTE**
>
> To learn more about the Dropper tool options, see the Reference guide .

### 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.

# Inking Lines

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.
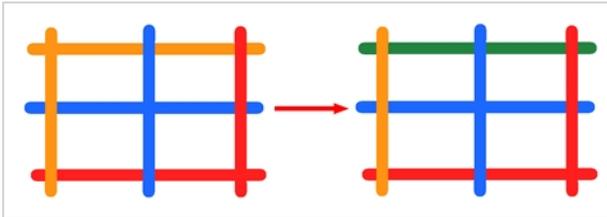


However, if you select the Ink tool instead and click on the same pencil line, only the segment that you clicked on between two intersections will be painted.
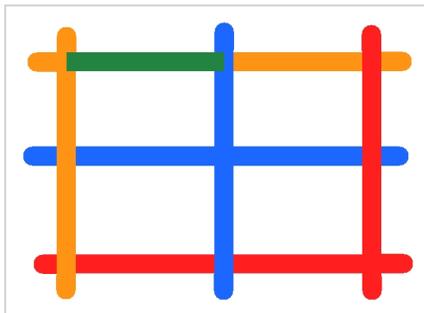


Painting and inking can be used in combination depending on what you need to paint. If you need to ink a character's outline in black, it might be easier to use the Paint tool. If you need to paint the outline of a character's neck with a tan colour and its shirt outline blue and both the neck and shirt belong to the same continuous outline, then the Ink tool might prove more useful.

> **NOTE**
>
> Unless you are repainting all the lines in an 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.

> **NOTE**
>
> To avoid repainting specific colours, see Protecting Colours

> **NOTE**
>
> To learn more about the Ink tool options, see the Reference guide .

## How to use the Ink tool

1. In the Tools toolbar, select the Ink ✒ tool located in the Paint tool drop-down menu.

2. In the Drawing or Camera view, click on the pencil lines to repaint.

   - The newly inked segment is always moved on top of all other pencil strokes, even if it was behind all other pencil strokes before it was inked. To reverse that behaviour, disable the Raise ⬚ option in the Tool Properties view.
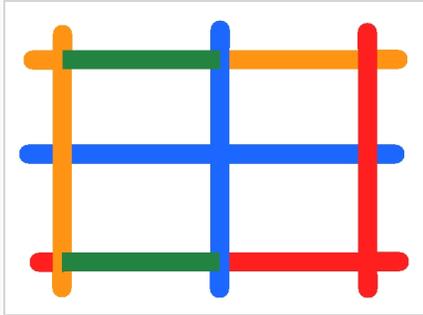
   - Hold down Alt while clicking a segment to do the opposite option from the Raise mode current state. The inked segment will be sent to the back or forward, even if it was in front or behind all other segments to begin with.
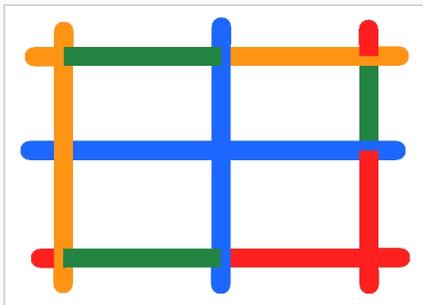
**Authors**

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# Verifying Painted Zones

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 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 (macOS).

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.
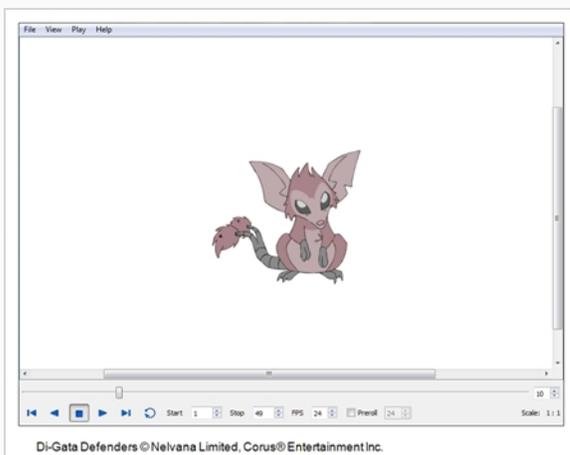


5.  Play your drawings.
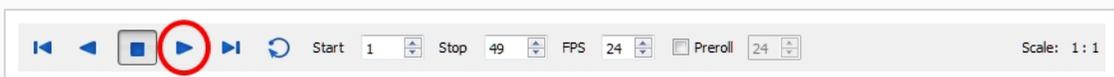
6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.



## 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.

3. 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.
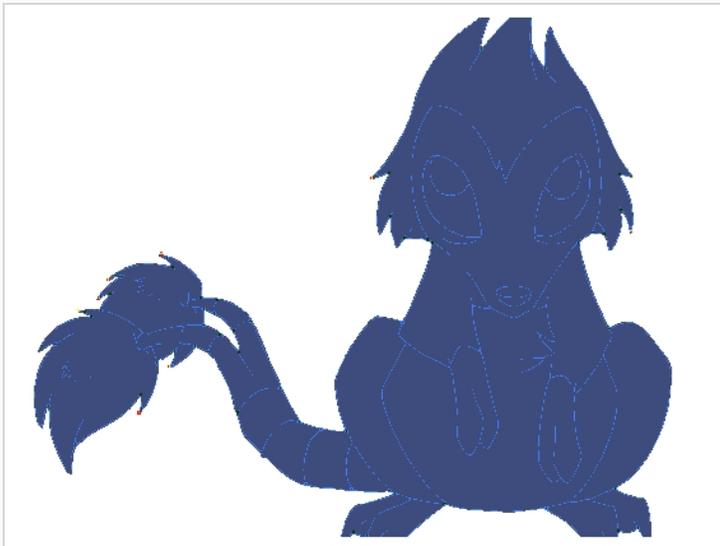
# About the Edit Gradient and Texture Tool

T-HFND-006-019

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 you want the Brush 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.

# Using the Edit Gradient and Texture Tool

T-HFND-006-019A

You can use the Edit Gradient/Texture tool to reposition a texture or gradient within a painted zone.

**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 Inc.

   A blue selection frame surrounds the selected gradient or texture.

   

   Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

Texture was scaled down and skewed

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.
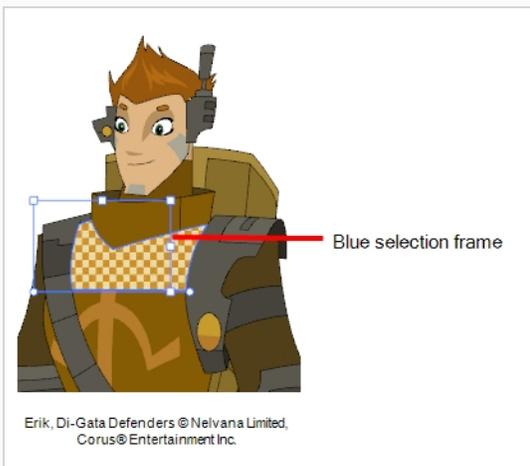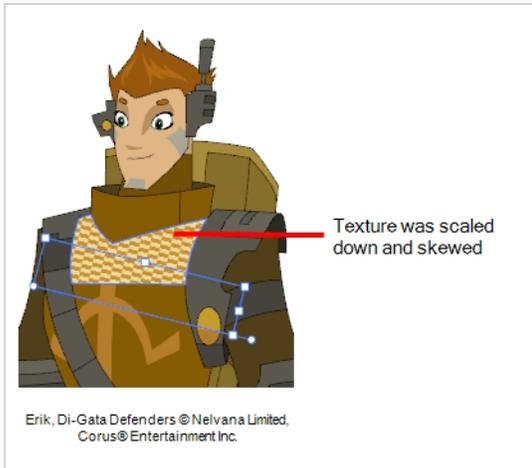
3. Edit the gradient or texture by adjusting the control handles around the selection frame.

# Storing the Gradient and Texture Settings

You can store the position, scale, and angle of a selected gradient or texture to reuse it in other painting zones.

**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.

# Pasting a Stored Gradient or Texture

You can apply the gradient and texture settings previously stored to paint zones with the same gradient or texture, in the same position, scale and angle.

**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.

# Editing Pencil Line Textures with the Edit Gradient/Texture Tool

You can use the Edit Gradient/Texture tool to tweak the way a texture or gradient is applied onto a pencil line.

**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.
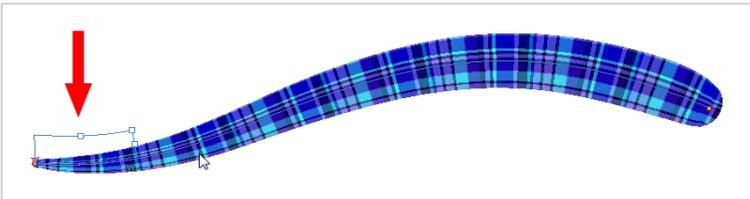




3. The editor controls delineate a single tile in the texture. For gradients, this is less applicable. Pull on the top of the editor controls to stretch the tiled texture throughout the length of the stroke.

   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.
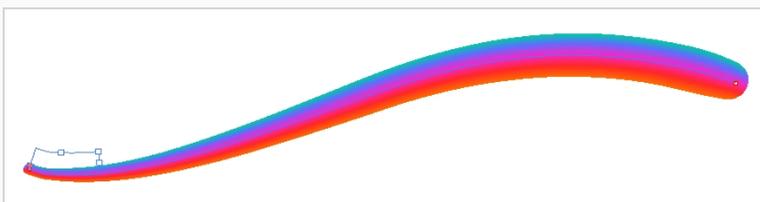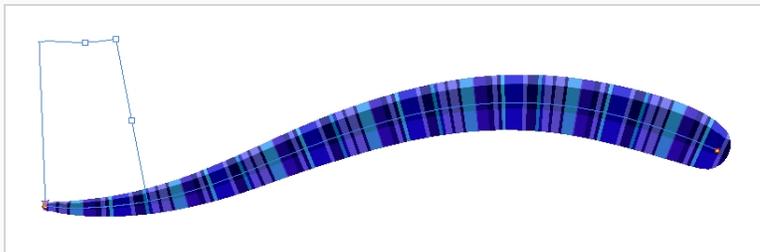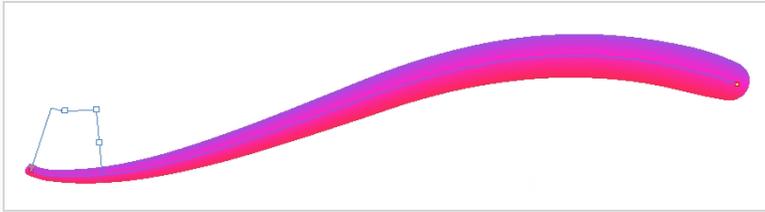
4. Drag the editor control perpendicular to the stroke. You will feel it glide along the strokes central vector line. This is another way to resize the texture tile. Instead of stretching or shrinking it vertically, this motion stretches or shrinks it vertically. As gradients are parallel to the pencil line's central vector, stretching them vertically gives no visual result.
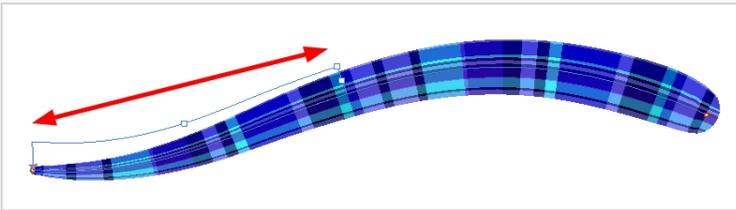


## How to use Edit Gradient/Texture tool to edit a pencil line with both a texture and a gradient

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.
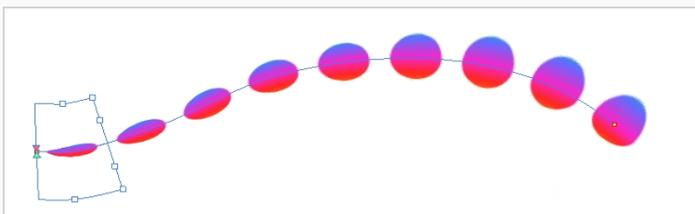


3. Use the top editor controls edit the gradient.
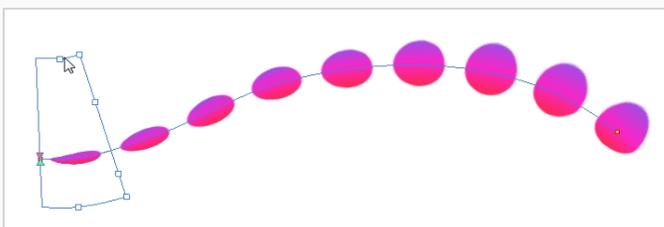
4.  Use the bottom controls edit the "brush" texture.
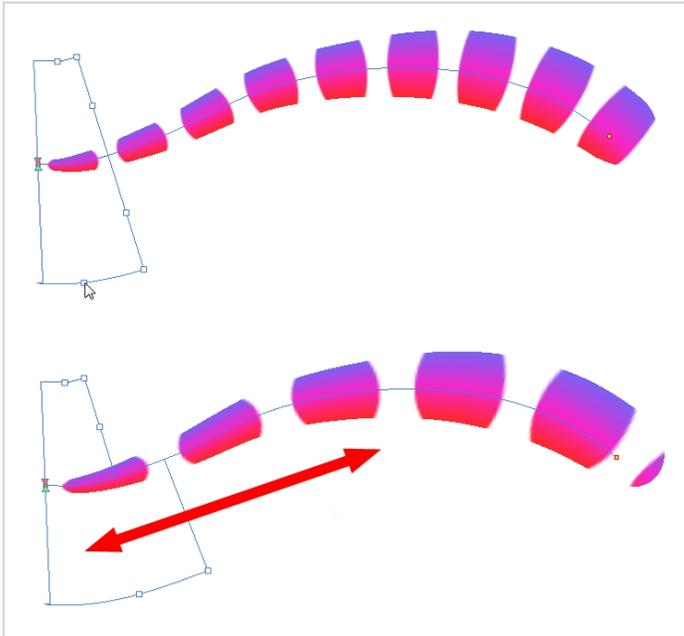
# Chapter 5: Paperless Animation

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.

> **NOTE**
>
> When you draw on an empty cell, Harmony automatically creates a drawing that spans over a single frame in that cell. You can adjust that drawing's timing as needed afterward. However, it is possible to create, name and set the timing of each drawing before creating your animation, which can help organize your workflow. For more information, see _Timing_ on page 557.

# Creating a Rough Animation

T-LAY-003-005

The first step to create paperless animation is the rough construction, which is the skeleton of your animation. You would usually start by animating the most important part of a character's action. For example, to animate a walk cycle, you will start with the torso motion and the legs. Secondary animation such as the head, arms and clothes can be added afterward.



For a satisfactory animation, start by animating the main action with quick, rough sketches, then add the details when you're satisfied with the movement. If you start animating all the details right away, you will lose a lot of time if you have to make corrections, and your animation is likely to look rigid.

## How to create a rough animation

1. In the top row of the Timeline view, click on Show All Thumbnails ⬚ to enable Thumbnail mode.
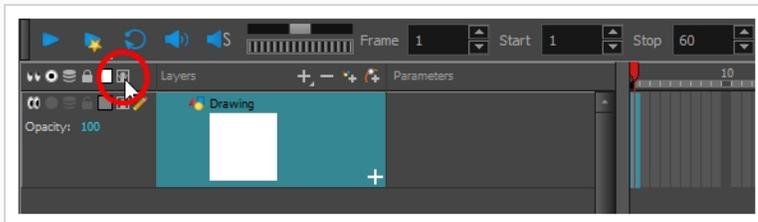


2. Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS) to open the Preferences dialog box.

3. Select the **Exposure Sheet** tab.

4. Select the **Use Current Frame as Drawing Name** option. When this preference is enabled, each new drawing will be named by the frame number they are created on.

5. In the Tools toolbar, select the Brush 🖌 tool or press Alt + B.

6. 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 make the clean up process easier as your clean dark lines will contrast

with your light sketch lines.
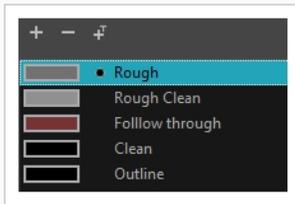


7. In the Timeline or Xsheet view, select the cell where you want your first drawing to appear.

8. In the Camera or Drawing view, draw the first key drawing.



As soon as you draw your first stroke, a drawing is automatically created in the cell you selected.
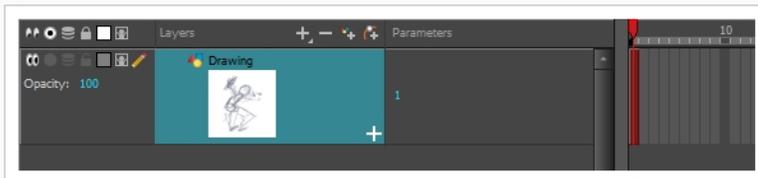


9. Increase the Timeline view's zoom level until you see the thumbnails inside the cells by doing one of the following:

- Drag the Timeline Zoom  slider to the right.

- Click on the Timeline view's tab, then press 2 repeatedly.

- Move the mouse cursor in the Timeline view, then hold Ctrl (Windows/Linux) or ⌘ (macOS) and roll the mouse wheel up.
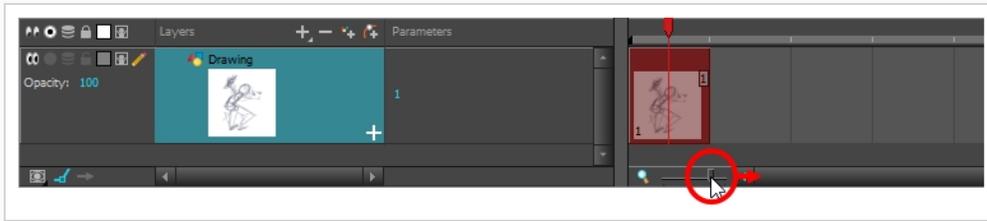
10. With your first cell still selected, do one of the following to mark your drawing as a key drawing. This will help you stay organized.

   - Enable the Mark Drawing toolbar by selecting **Windows > Toolbar > Mark Drawing** from the top menu, then click on the Mark Selected Drawings as Key button.

   - Enable the Xsheet toolbar by focusing on the Xsheet, then selecting **Windows > Toolbar > Xsheet** from the top menu. Then, click on the Mark as Key Drawing button.

   - In the Timeline view menu, select **Drawings > Mark Drawing As > Key Drawing**.
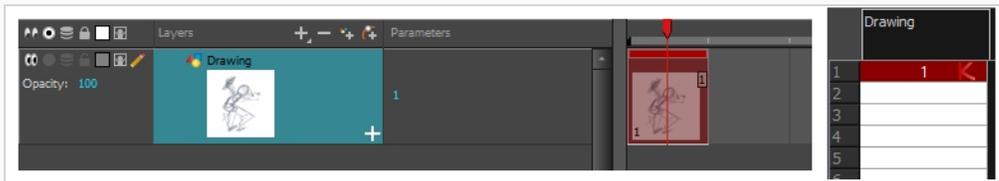


11. In the Timeline or Xsheet view, select the cell where your next key drawing will appear.



12. In the Tools toolbar, click the Onion Skin button. This will display the previous and next drawings in a light colour in the Camera or Drawing view, behind your current drawing, so that you can use them as references to draw new drawings with accuracy. This can be useful to draw breakdown poses between two key poses, or to add an in-between drawing between two other drawings.

13. Ensure the onion skin displays your first key drawing, so that you can base your second key drawing on it. To do this, do one of the following:

   - In the Timeline view, drag the blue onion skin markers to extend the number of past and future drawings to display as onion skin.

- In the Camera View or Drawing View toolbar, use the Onion Skin Add One Previous Drawing ⬆, Onion Skin Reduce One Previous Drawing ⬇, Onion Skin Reduce One Next Drawing 🟢 and Onion Skin Add One Next Drawing 🟢 buttons to adjust the span of the onion skin frame by frame.

> **NOTE**
>
> When in the Drawing view, you can use the Onion Skin toolbar to make onion skin display only specific types of drawings, such as key drawings or breakdowns. Keep in mind that this does not work in the Camera view.

14. Create a new empty drawing by doing one of the following:

    - In the Timeline or Xsheet toolbar, click on the Create Empty Drawing ⊠ button.

    - Press Alt + Shift + R.

15. In the Camera or Drawing view, draw your second key drawing.
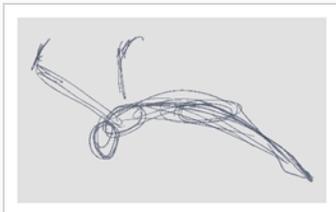




16. In the Xsheet or Timeline view, identify the drawing as a key drawing.
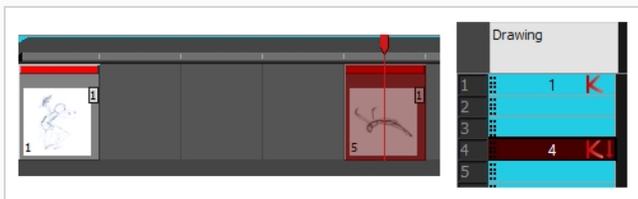
17. In the Timeline or Xsheet view, select a cell between the two key drawings. Using the onion skin markers, ensure the onion skin covers both your first and last drawings.
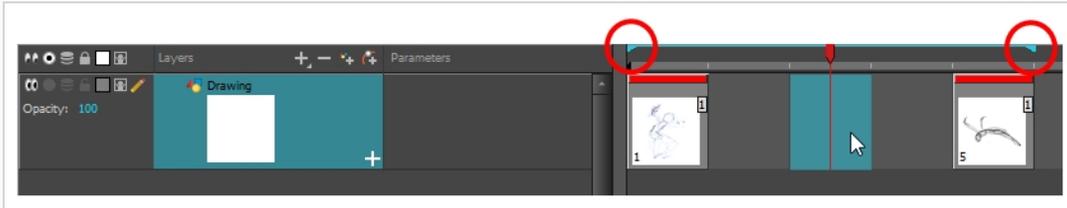


18. Create a new empty drawing by doing one of the following:

    - In the Timeline or Xsheet toolbar, click on the Create Empty Drawing ⊠ button.

    - Press Alt + Shift + R.

19. In the Camera or Drawing view, draw your new pose.



20. In the Timeline or Xsheet view, select a new cell and repeat the previous steps for each new drawing.

> **NOTE**
>
> When working with overlay layers in the Camera view, you can enable the Current Drawing on Top ≧ option to make the layer you're working on appear over other layers.

# Creating the Tie Down 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.
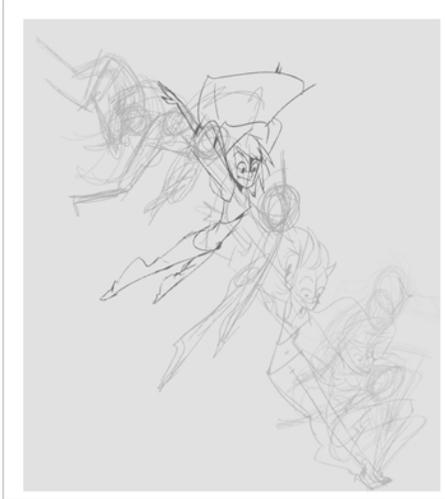


If your primary and secondary animation were done as a rough drawing, it is now time to put your drawing on model, also known as tie down. This means that you have to review your animation and ensure that every single detail is on model and there is no volume distortion. You can do this directly on the original sketch layer or on a new layer.
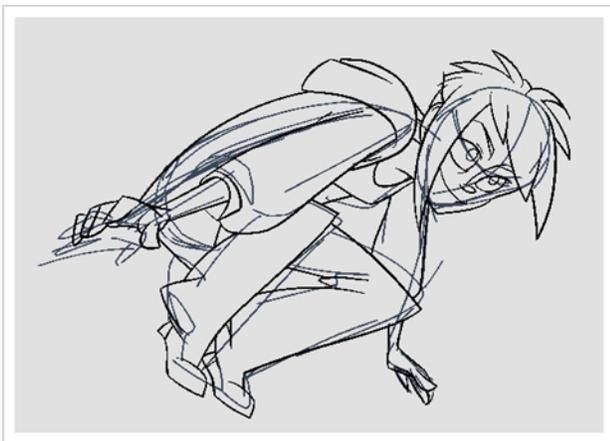


If you want to keep your rough animation as it is to avoid any mistakes, you can add an extra drawing element and use the Light Table feature to draw over the first drawing element. This technique can also be used if you want to reuse your rough animation for other characters. For example, if you have 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.
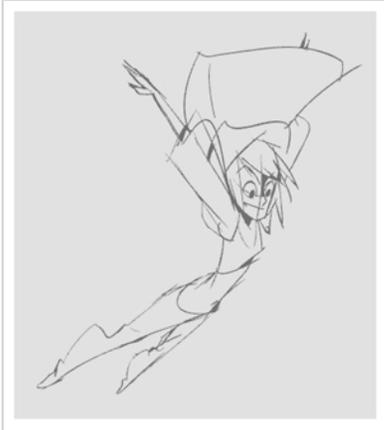


5. Do one of the following:

   - 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.
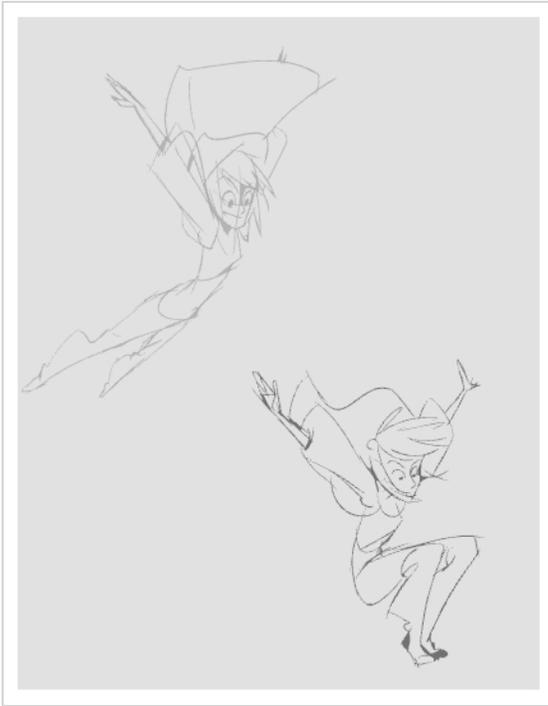
9.  Use the Flip and Easy Flipping toolbars to review your animation—see the Flip and Easy Flipping toolbars in the Reference guide.



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 Special** or Ctrl + B (Windows/Linux) or ⌘ + B (macOS).

4.  Choose **Never create drawing files** from the options to paste the timing but not the drawing files.
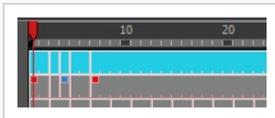


5.  If you are working in the Drawing view, in the Drawing View toolbar, enable the Light Table.

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.
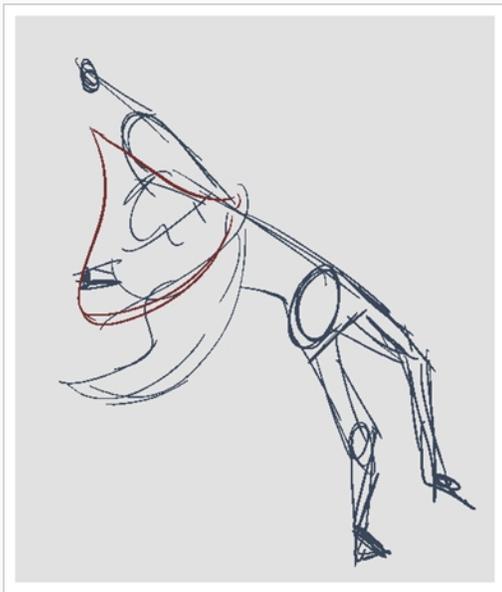


10. Do one of the following:

   ‣ 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 the Reference guide .



15. You can also use the Playback toolbar to play the animation in real time.

# Cleaning Animation

T-HFND-006-010

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 clean drawing. This is the equivalent of adding a sheet of paper and tracing the rough using the animation disk. This allows you to keep the roughs and the cleans intact. You only need to lock the rough layer to prevent it from appearing in the scene.

If you plan on tracing your animation in the Drawing view, use the light table to display all the layers in your project.

### How to trace animation in a new layer

1. In the Layer toolbar, click the Add Drawing Layer button and add a new layer.

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, use the Onion Skin Add One Previous Drawing 🔴, Onion Skin Reduce One Previous Drawing 🔴, Onion Skin Reduce One Next Drawing 🟢 and Onion Skin Add One Next Drawing 🟢 buttons to adjust the span of the onion skin frame by frame.

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.
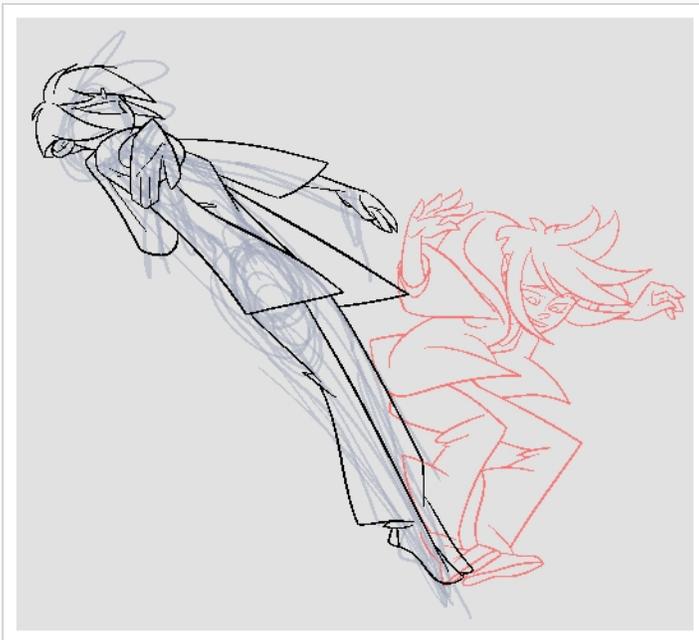
12. Repeat the previous steps for each drawing.

# Paperless Animation 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.

Harmony has many useful advanced features such as the Flipping toolbar, enhanced onion skin, extra drawing layers, and automated matte generation.

# Displaying Drawing Thumbnails in the Timeline View

In the Timeline view, it is possible to preview the drawings in your scene by enabling the display of thumbnails for your drawing layers. You can display the thumbnail for all drawing layers or for individual drawing layers. This allows you to preview the drawing in the current frame as well as drawings exposed in every frame of your scene, which can be useful for managing your drawings and for adjusting their timing.
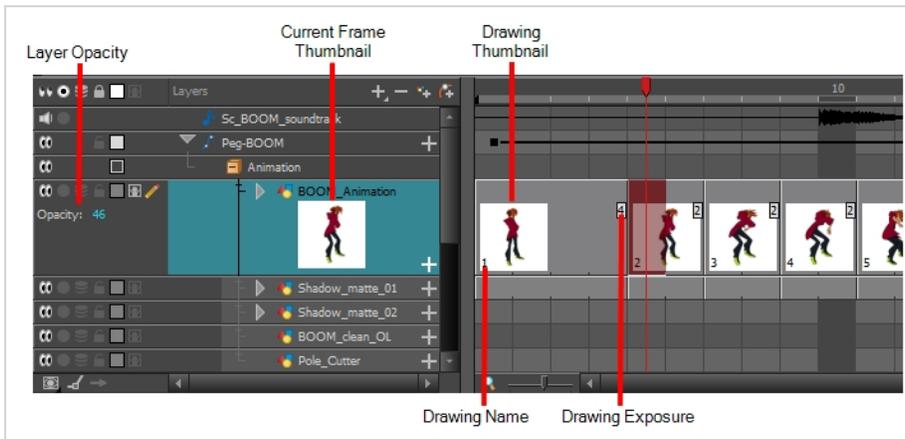


You can enable Thumbnails for all drawing layers simultaneously or for individual drawing layers. When thumbnails are displayed for a layer, the Timeline view also displays the name of each drawing as well as the amount of frames on which each drawing is exposed for that layer. Enabling thumbnails on a layer also gives access to that layer's Opacity parameter in the left panel of the Timeline view.

## How to display or hide thumbnails for all drawing layers

1. In the Layers toolbar of the Timeline view, click on the Show/Hide All Thumbnails 🏃 button
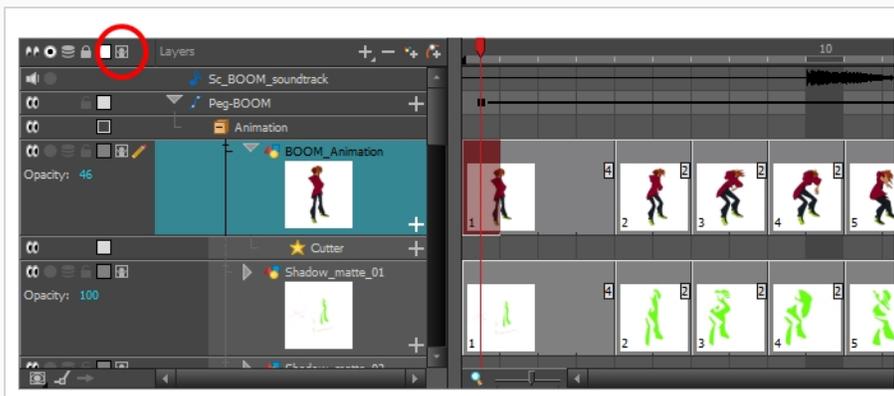
### How to display or hide thumbnails for a specific drawing layer

1. Do one of the following:

    - In the Timeline view, left of the layer's name, click on the Show/Hide Thumbnails 🐵 button.

    - In the Timeline view, select the layer and press T.
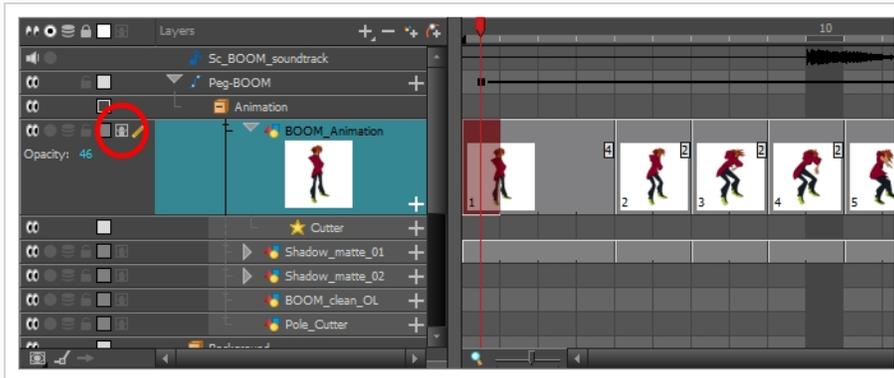


Even when thumbnails are displayed for a layer, it is likely that you won't be able to see the full thumbnails for individual drawings that are exposed over 1 or 2 frames because, by default, frames are not large enough to display their thumbnails. To make the frames larger so that thumbnails have enough horizontal space to be displayed, you must zoom in on the Timeline view.

### How to zoom in on the Timeline view.

1. Set the focus on the Timeline view, for example by clicking on the Timeline view tab.

2. Do one of the following:

    - Drag the Timeline Zoom  slider to the right.

    - Click on the Timeline view's tab, then press 2 repeatedly.

    - Move the mouse cursor in the Timeline view, then hold Ctrl (Windows/Linux) or ⌘ (macOS) and roll the mouse wheel up.

> **TIP**
>
> If you animate mostly on twos or threes, you can adjust the Timeline zoom to fully display the thumbnails of drawings exposed over two or three frames, or you can zoom in enough to display the thumbnails of drawings exposed over a single frame, depending on your preference.
>
> 
>
> Zoom adjusted to double exposure drawings          Zoom adjusted to single exposure drawings

> **TIP**
>
> To reset the Timeline Zoom to its default zoom level, click on the Reset Zoom 🔍 icon left of the Timeline Zoom slider.

> **NOTE**
>
> When zoomed in on the Timeline view, you can tweak the exposure of your drawing by dragging the edges of the drawings with your mouse cursor. This is especially useful when displaying thumbnails as you can visually adjust the timing of your animation. For more information, see About Rippling and Overwriting the Exposure in the Timeline View.

# About the Onion Skin

The Onion Skin tool lets 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.
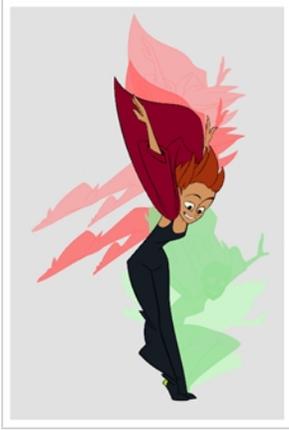
# Enabling the Onion Skin

T-ANIMPA-006-008

You can enable the onion skin to see your previous and next drawings as reference,

> **NOTE**
>
> You can modify the onion skin display in the Preferences panel.

**How to enable the onion skin**

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.
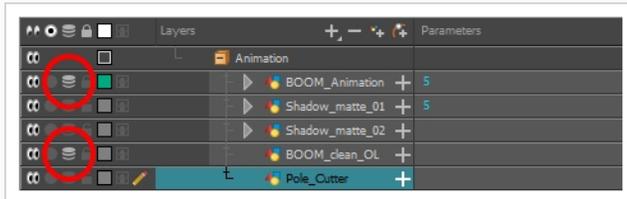
     

   - In the Tools toolbar, click the Onion Skin 🍩 button.

   - 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.
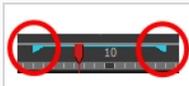
# Displaying Marked Drawings in the Onion Skin

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 *About Marked Drawings on page 521*



### 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.
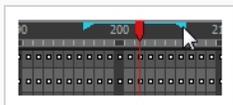


4. In the Camera View or Drawing View toolbar, use the Onion Skin Add One Previous Drawing 🥞, Onion Skin Reduce One Previous Drawing 🥞, Onion Skin Reduce One Next Drawing 🥬 and Onion Skin Add One Next Drawing 🥬 buttons to adjust the span of the onion skin frame by frame.

5. In the Onion Skin toolbar, enable the markers you want to see in your Onion Skin preview.

# Displaying the Onion Skin in the Other Layers

T-LAY-003-006

You may need to see the onion skin for the other layers previous and next drawing. The Light Table option in the Onion Skin toolbar allows you to do that.

## 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.
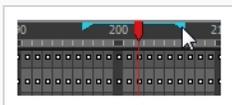
5. In the Camera View or Drawing View toolbar, use the Onion Skin Add One Previous Drawing , Onion Skin Reduce One Previous Drawing , Onion Skin Reduce One Next Drawing and Onion Skin Add One Next Drawing buttons to adjust the span of the onion skin frame by frame.

6. In the Onion Skin toolbar, enable the Enable Onion Skin in Other Elements option.
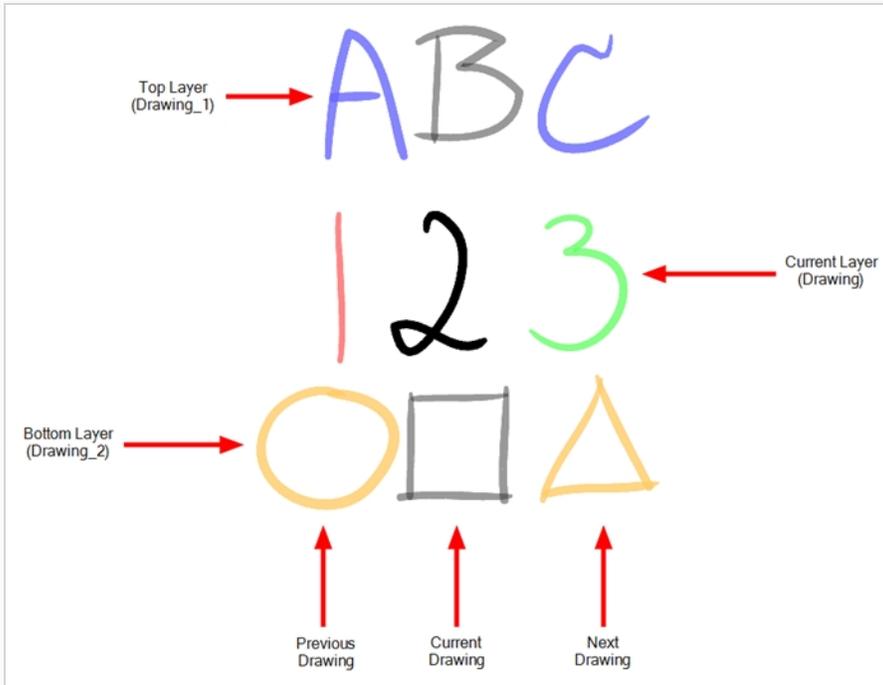
- The current layer is displayed by default in shades of green and red.

- 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 the default onion skin display colours in the Preferences dialog box.

# About Marked Drawings

T-HFND-006-004

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. In the Xsheet view, you can identify drawings as Key, Breakdown or In-between.

## About the 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.
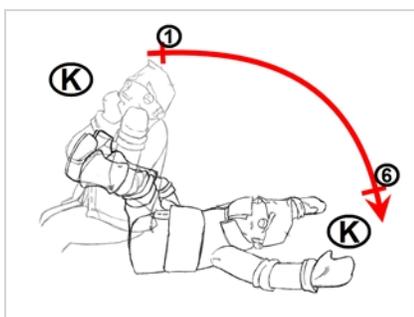


## About the Breakdown Drawing

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.
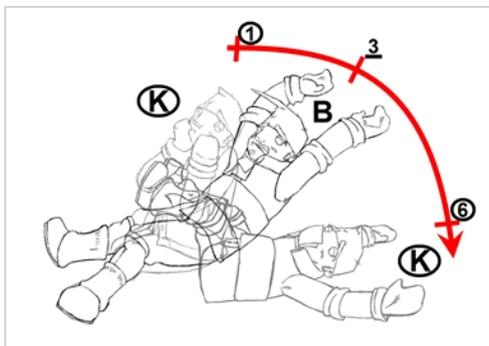


The breakdown drawing is then used to indicate secondary poses, also called the *follow-through*. These actions can be a big stomach jiggle as somebody jumps, a cloak floating behind somebody that is running, or arms moving after the main body action. These moves will generally have a different timing 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.

# Marking Drawings

T-HFND-006-004A

You can mark your drawings as Key, Breakdown, or other custom marks.

### 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 𝓑 or Mark as In-between Drawing 𝓘 . 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 **K** icon appears in the cell.

   - If you selected Mark as Breakdown Drawing, a **B** 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.

# Creating Custom Markers

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.
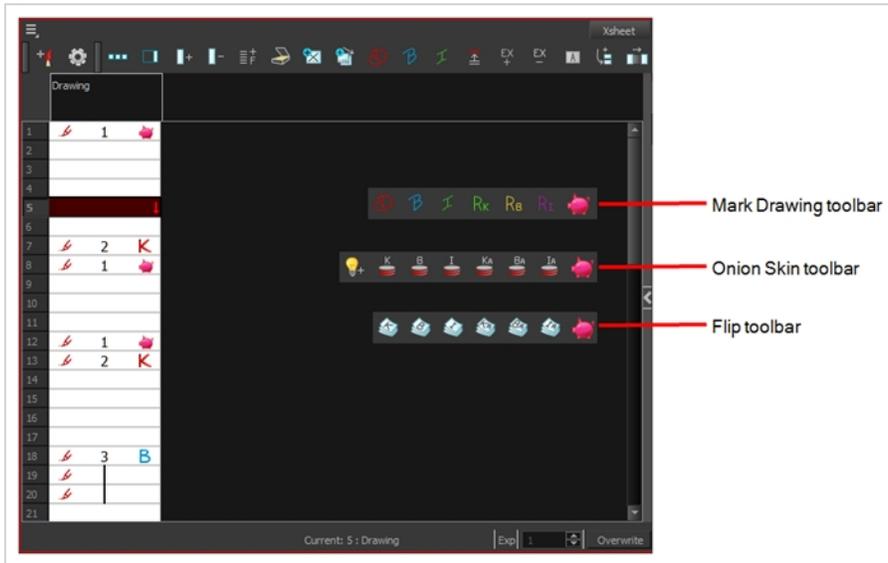


> **NOTE**
>
> You can create custom shortcuts for the Drawing Identification options in the Preferences dialog box.

**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.

   - **Windows**:

- Toon Boom Harmony Premium: C:\Users\[user_ name]\AppData\Roaming\Toon Boom Animation\Toon Boom Harmony\full-1200-pref\drawingTypes.d

- Toon Boom Harmony Advanced: C:\Users\[user_ name]\AppData\Roaming\Toon Boom Animation\Toon Boom StageAdvanced\full-1200-pref\drawingTypes.d

- **macOS**:

  On macOS, the Library folder is a hidden folder. To display the display the folder, told down the Alt key.

  - Toon Boom Harmony Premium: /Users/[user_ name]/Library/Preferences/Toon Boom Animation/Toon Boom Harmony/full-1200-pref/drawingTypes.d

  - Toon Boom Harmony Advanced: /Users/[user_ name]/Library/Preferences/Toon Boom Animation/Toon Boom Stage Advanced/full-1200-pref/drawingTypes.d

- **GNU/Linux**:

  - /home/user_name/Toon Boom Animation/Toon Boom Harmony/full-1200-pref/drawingTypes.d

  - /home/user_name/Toon Boom Animation/Toon Boom StageAdvanced/full-1200-pref/drawingTypes.d

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 15.0 Advanced**
> - macOS: **Applications > Toon Boom Harmony 15.0 Advanced > resources > drawingTypes.d**
> - GNU/Linux: /usr/local/ToonBoomAnimation/harmony_12/lnx86_ 64/bin/StageAdvanced/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.

# About the Drawing Desk

You can work on a portion of an animation sequence or specific 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.

This can be useful went you need to reposition drawings, use the Shift and Trace feature, paint multiple drawings at once, or apply the same transformation to drawings for different layers—see *About Shift and Trace* on page 532.

The Drawing Desk is only available in the Drawing view.

# Adding Drawings to the Drawing Desk

*T-ANIMPA-008-004*

You can send drawings your selected in the Xsheet view to the drawing desk. You can also send new drawings to an existing set in the Drawing Desk.

### 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 ⌘ (macOS) 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.
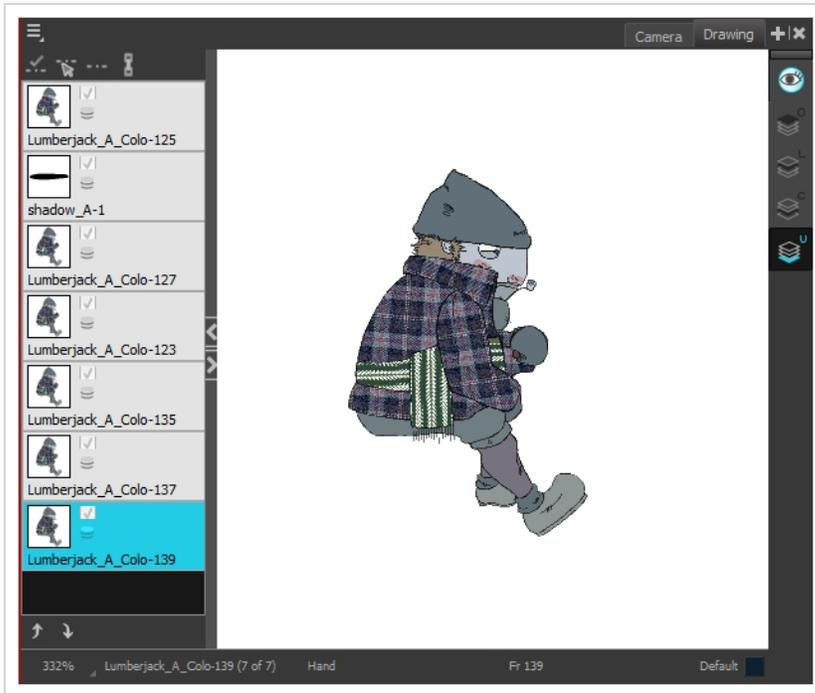
> **NOTE**
>
> The drawing desk is by default on the left side of the Drawing view. You can change its positioning in the Preferences dialog box.

3. If the drawing desk side panel is hidden, click the Arrow button, located on the left 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.

# Modifying Thumbnails in the Drawing Desk

For your convenience you can modify the way the thumbnails are displayed in the Drawing Desk.

### 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

1. In the drawing desk, select the thumbnail.

2. 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.

# About 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.

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.

# Enabling Shift and Trace

You need to send drawings to the Drawing Desk and enable the Shift and Trace option to be able to use it—see *About the Drawing Desk* on page 528.

### 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 Paperless Animation Tools.

3. Send the selected drawings to the drawing desk—see *About the Drawing Desk* on page 528.
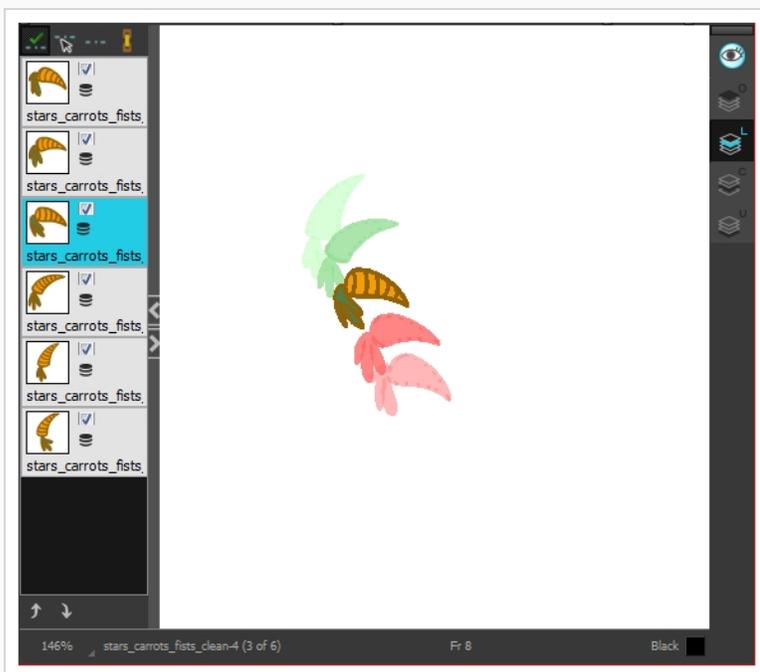


4. In the Drawing Desk toolbar, click the Shift and Trace Enable ✅ button.

   Registration marks appear at the bottom of your drawings.

# Shifting Drawings

T-ANIMPA-008-006

Once the Shift and Trace option is enabled, you can use the controls to shift the drawings. This does not modify your original 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.
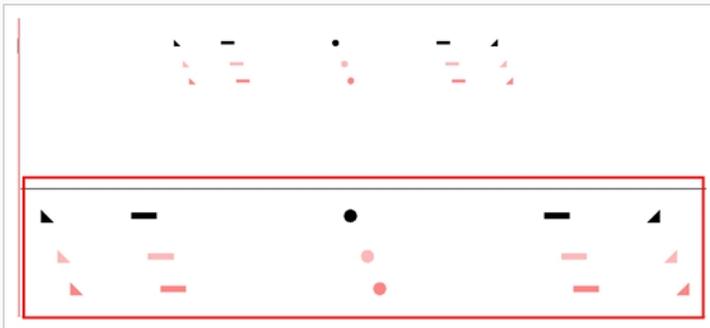
   

2. In the Drawing view, transform the drawing as needed, positioning it between your two key poses.

   - To reposition, click and drag the drawing to a new area.
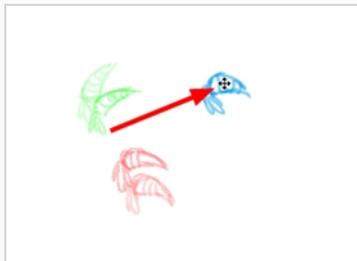
     

   - To rotate from the centre peg, click the flat peg hole and rotate.

- To scale, pull or push on the triangle control.
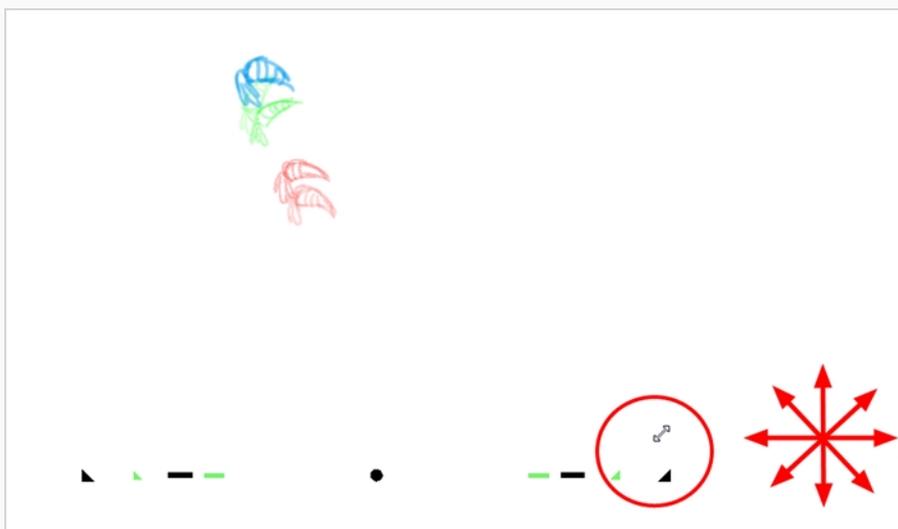


- To show the pivot point, hold Alt. The pivot point is in the middle of your current drawing view. To rotate from the pivot point, hold Alt and rotate.
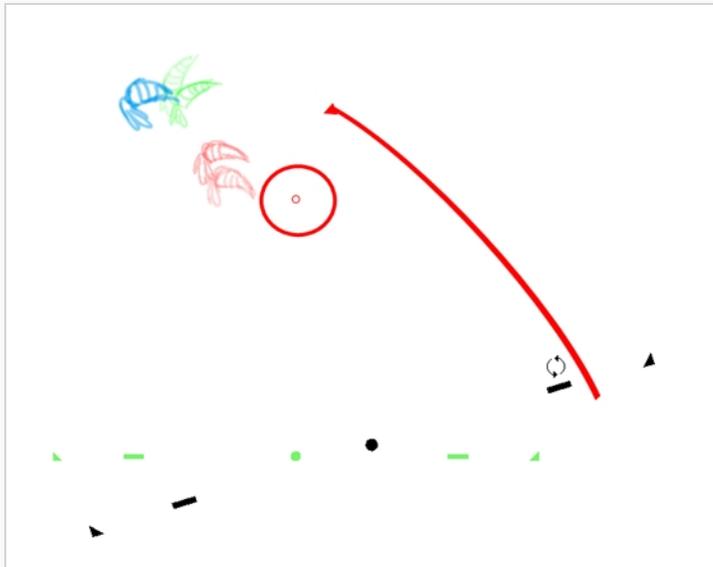
- To scale from the pivot point, hold Shift and move your cursor.



- 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.
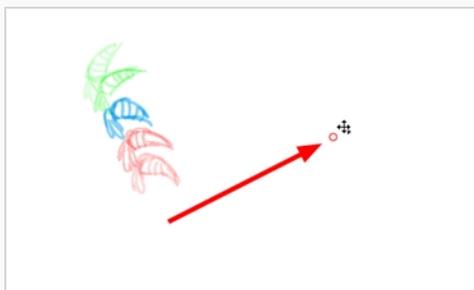


3. To select another drawing and reposition it, hold down Ctrl (Windows/Linux) or ⌘ (macOS).
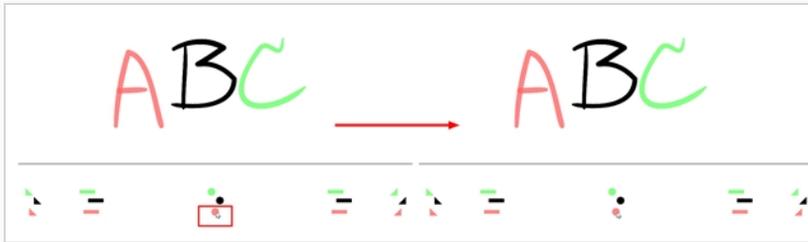
4. If necessary, click the Shift and Trace Reset --- button to reset the position of the modified drawing.

# Tracing Drawings

You can trace your new drawings once you shifted the reference artwork.

## How to trace

1. In the drawing desk, select the drawing into which you want to trace.
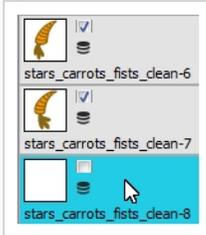
2. Select the check box next to the drawing you want to allow to be temporarily transformed. By default, all drawings are enabled for Shift and Trace operations.
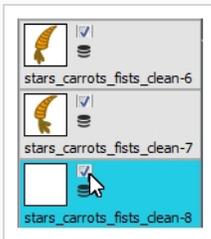
3. Select the drawing you want to move.
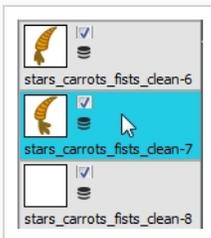
4. If you want to trace more than one drawing at the same time, you can link them together. In the drawing desk, select several drawings and click the Link Drawings ⦚ button to lock their position together—see Tracing Drawings.

5. In the Tools toolbar, select a drawing tool.

6. In the Drawing view, trace your drawing.
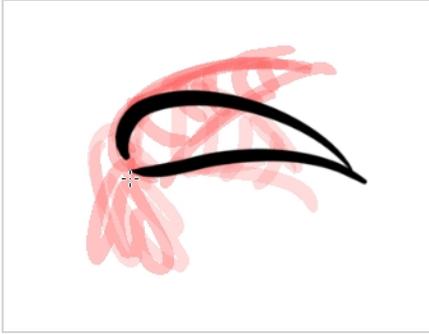
# Linking Drawings in the Drawing Desk

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.

### How to link your shift and trace drawings

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 ⌘ (macOS) 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.
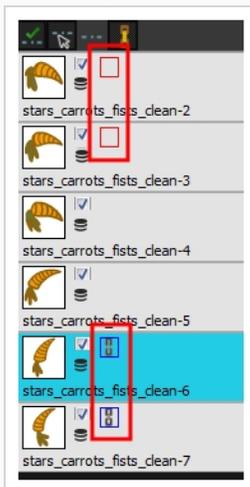


4. Shift your linked drawings.
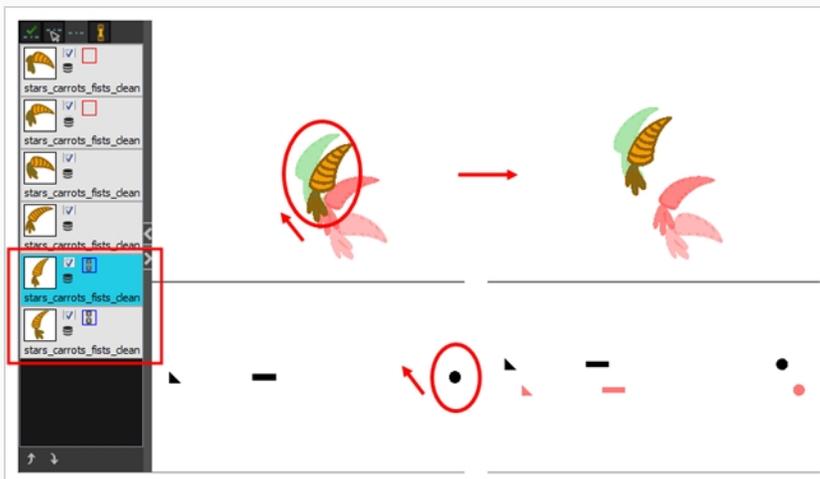
5. To unlink your drawings, select one of the linked drawings and click the Link Drawing 🔗 button again to disable it.

6. You can shift your drawings independently.
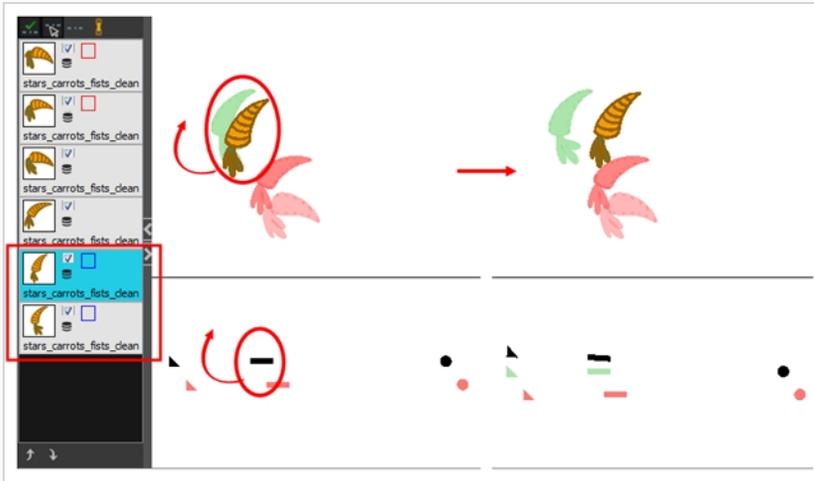


7. To unlink your drawings, select one of the linked drawings and click the Link Drawing 🔗 button again to disable it.

# Enabling the Drawing Desk Onion Skin

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.

**How to enable and disable individual onion skin drawings**

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's 🥞 colour changes .

# About 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 <u>About Art Layers</u> on <u>page 543</u>.



Toon Boom Harmony drawings include two layers in Advanced Art mode.

- <u>Line Art</u> on page 544
- <u>Colour Art</u> on page 544
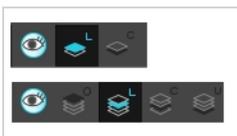


Each layer can be used for separate hand-drawn animation tasks, letting you organize your work and facilitate creation and revision.

## Overlay

The Overlay layer can serve multiple purposes:

- Highlights and tones
- Annotations and corrections
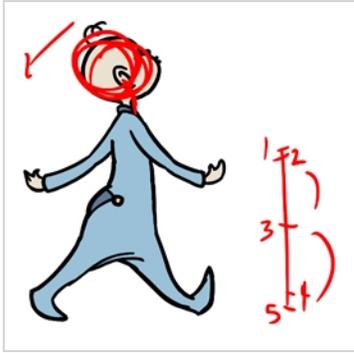
- Sketching

    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.
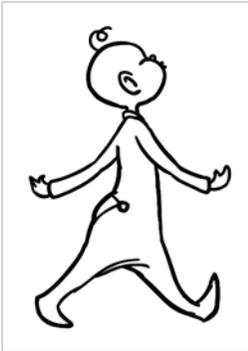


# Colour Art

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.
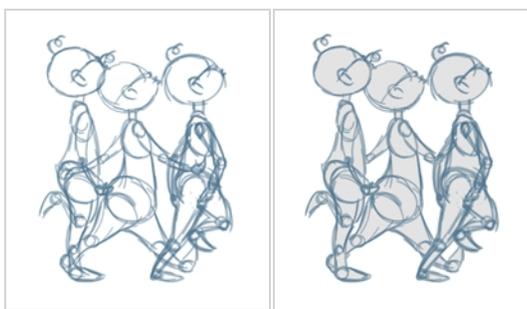


# Underlay

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.



# Separated Lines and Colours

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 layers recommendations based on the selected animation workflow.

| WORKFLOW: | MODE: | STROKE CREATION: |
|---|---|---|
| Traditional | Line Art | Only lines |
| | Colour Art | Created when vectorizing |
| Paperless | Line Art | Only lines |
| | Colour Art | Created after all the drawings are drawn |
| Cut-Out | Line Art | All lines and colours |
| | Colour Art | Not Used |
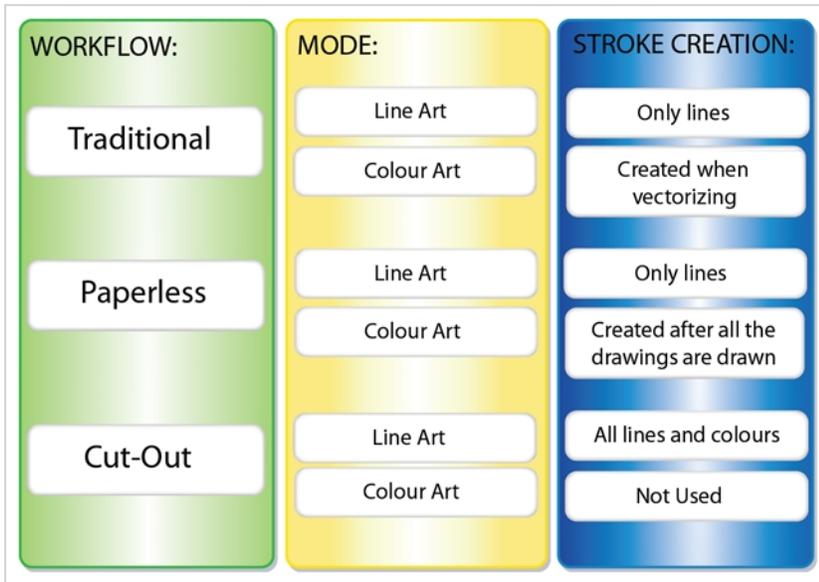
When a traditional drawing is scanned, strokes are automatically created in the Colour Art from the Line Art when drawings are vectorized unless you specified otherwise.

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.

> **NOTE**
>
> Make sure to select the Advanced Art Mode in the Preferences dialog box to use this feature.

# Enabling Overlay and Underlay Art Layers

T-LAY-002-004

By default, the Overlay and Underlay art layers are disabled to simplyify the workflow. You can enable the support of those additional art layers in the Preferences panel.

**How to enable the Support Overlay and Underlay Arts option**

1. Select **Edit > Preferences** ( Windows/Linux ) or **Harmony Advanced > Preferences** ( macOS ).

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**.

# Switching Between Art Layers

You can use the Art Layers toolbar and keyboard shortcuts to switch between art layers.

## How to switch between drawing layers

1.  In the Art Layer toolbar, click the Line Art ◆ˡ or Colour Art ◆ᶜ 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 all 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 selected 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 ◈ᵒ, Line Art ◈ˡ, Colour Art ◈ᶜ or Underlay Art ◈ᵘ buttons to display the appropriate layer—see *How to enable the Support Overlay and Underlay Arts option* on page 547. When switching art layers, you can edit the selected layer without affecting the other one.
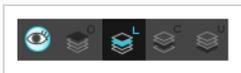
2.  Click the Preview All Enabled Art Layers ◉ button to display all the layers together. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You can view only the selected art layer if you select the Current Drawing on Top ≌ option in the Camera bottom toolbar.

# Creating Colour Art from Line Art

T-RIG-005-000B

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 from the Line Art layer

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.

4. 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.

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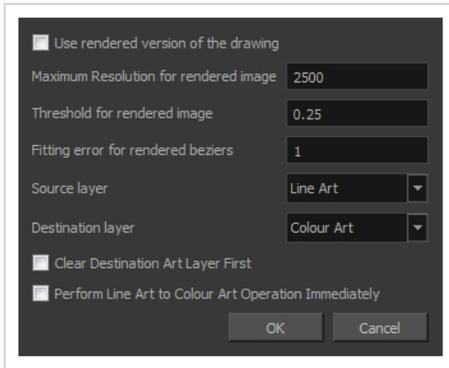
| Parameter | Description |
|---|---|
| Use rendered version of the drawing | Renders the drawing and vectorize it to calculate the position of the centreline that will produce the colour art stroke. |
| Maximum Resolution for rendered image | The size of the rendered image. |
| Threshold for rendered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

# Generating a Matte

T-ANIMPA-006-013

You can quickly generate a matte to be displayed behind your rough animation so you don't see the background through the drawings. It can be generated in any art layer.

### 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.
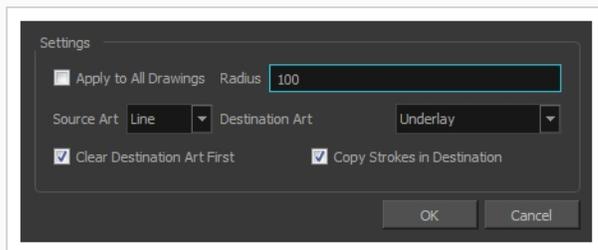
   

4. If you want to create a matte for all the drawings included in your layer, select the **Apply to All Drawings** option.

5. Depending on how precise or rough your line is, increase or decrease the radius value. Use a lower 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
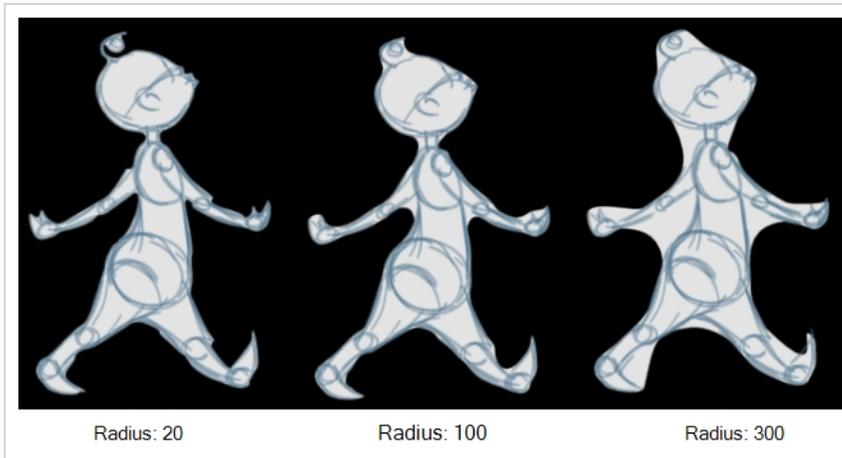
6. In the Source Art menu, select the layer from which you want the matte created: **Line ArtColour Art**.

7. In the Destination Art menu, select the layer on which you want the matte to be created: **Line ArtColour Art**.

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**.

# Flipping Animation

T-ANIMPA-006-010

Using the Easy Flipping toolbar, you can rapidly flip through drawings in the Drawing view, just as you would with paper drawings in traditional animation.

### How to use the Easy Flipping toolbar

1. Switch to the Drawing view.

2. In the top menu, select **Windows > Toolbars > Easy Flipping** to enable the Easy Flipping toolbar.
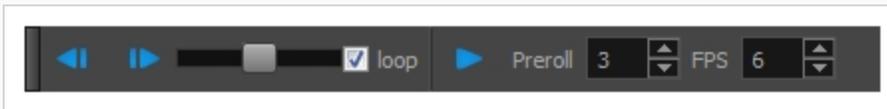
3. In the Easy Flipping toolbar, click the Previous ◀ or Next ▶ button to see the previous or next drawing of your animation.

4. To display drawings in the first frame after you reach the last frame of your animation, select the **Loop** option.

5. Move the slider to the right to flip forward and to the left to flip backward through your drawings.
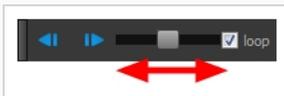
   The further you move the slider to the left or right, the faster the drawings will flip.

6. In the Preroll field, enter the amount of drawings to automatically flip through before and after the current drawing.

7. In the FPS field, enter the speed at which you would like to automatically flip through your drawings, in frames per second.

8. Click on the Easy Flip button ▶ to automatically flip through the drawings based on the Preroll and FPS settings.

By default, the Flipping toolbar will flip through all drawings in the range specified in its Preroll field. Optionally, you can use the Flip toolbar to only flip through certain types of drawings, such as key drawings or breakdowns, provided that you marked these drawings as such prior—see About Marked Drawings.

## How to use the Flip toolbar

1. In the top menu, select **Windows > Toolbars > Flip**.



2. Click on the corresponding button for each type of drawing you wish you flip through:

| Icon | Drawing Type |
|------|-------------|
|  | Key Drawing |
|  | Breakdown |
|  | In-between (Unmarked drawings) |
|  | Retake-Key |
|  | Retake-Breakdown |
|  | Retake-In-between |

The Easy Flipping toolbar will only flip through drawings marked with the enabled drawing types.
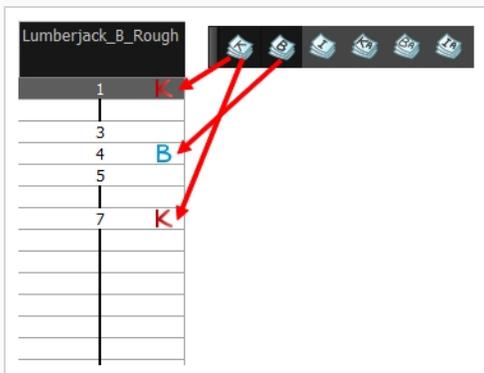
> **NOTE**
>
> If no drawing types are selected in the Flip toolbar, the Easy Flipping toolbar will flip through all drawing types.

# Previewing and Playing Drawings

It is a good idea to preview your drawings to check your animation's 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 (macOS).

3. In the Xsheet view, select the range of drawings or the whole column to preview.

4. Open the Xsheet view menu ≡ and select **View > Preview Selected Drawings**.

   The Harmony Play application opens and loads the selected drawings.

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: 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.
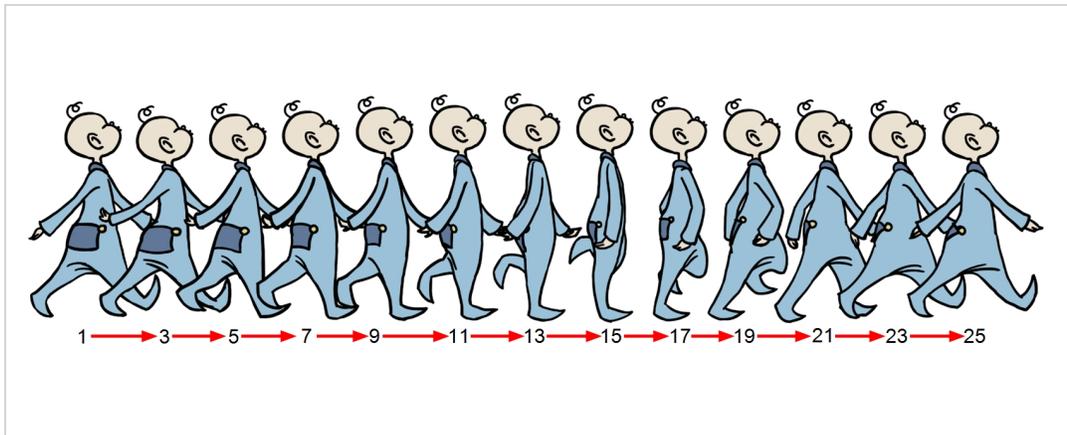


In a traditional workflow, the person in charge of the digital exposure sheet reproduces the paper exposure sheet created by the animator. In a paperless workflow, the animator creates and manages their own exposure sheet directly in Harmony without the need for reproduction.

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.

# About Scene Length

In Harmony, the length of each scene is determined by the amount of frames it contains. You can calculate the amount of frames your scene requires based on the amount of time it should span over with the formula, in which **l** is the scene's length, **s** is the amount of seconds your scene requires, and **fps** is the scene's frame rate.

    l = s × fps

Likewise, a scene's length in seconds can be calculated with the reverse formula:

    s = l ÷ fps

By default, scenes created in Harmony are 60 frames in length. At 24 frames per second, this makes a scene of 2½ seconds in length. You should set your scene's length based on how much time you plan for it to require after creating your scene so you can plan your animation based on the scene's length. However, it is possible to adjust your scene's length at any time. You can also insert or remove frames at any point in your scene.

# Setting the Scene Length

You can set the scene length by entering its exact amount of frames or by adjusting its length using the scene length bracket in the Timeline view.

## How to set the scene's length in frames

1. Select **Scene > Scene Length.**

   The Set Scene Length dialog box opens.
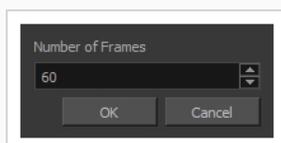
   

2. In the Number of Frames field, enter the number of frames needed.

## How to modify the scene length in the Timeline view

1. In the ruler of the Timeline view, click and drag the red scene length bracket | and move it to the left to shorten the scene or to the right to extend the scene.
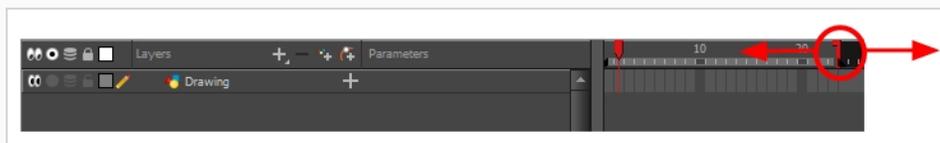
# Adding Frames in the Middle of a Scene

You can add frames to your scene before or after the currently selected frame(s). All of your scene's animation before or after the selection will be offset by the amount of frames you added.

**How to add frames to the middle of a scene**

1. In the Timeline or Xsheet view, select a frame or a range of frames.

   

   

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 (Windows/Linux) or ⌘ + G (macOS) to add frames before the selection, or Ctrl + H to add frames after the selection.

   The Add Frames dialog box opens.
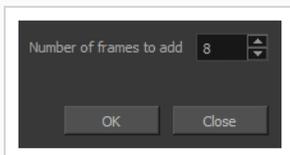
   

3. In the **Number of Frames to Add** field, enter the amount of frames to add to the scene.

4. Click **OK**.

Two frames were added before
selected frame

# Adding Frames at the Beginning of a Scene

You can add frames at the beginning of your scene using the Add Frames at Start dialog. All of your scene's animation will be offset by the amount of frames you added.

**How to add frames at the start or end of a scene**

1. In the top menu, select **Scene > Frames > Add Frames at Start**.

   The Add Frames dialog box opens.
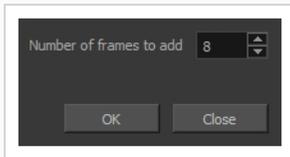
   

2. In the Number of Frames to Add field, enter the number of frames needed in the scene.

3. Click OK.

# Adding Frames at the End of a Scene

You can add a set amount of frames at the end of your scene using the Add Frames at End dialog.

> **NOTE**
>
> You can also extend your scene's length by entering its total length or by manipulating the scene length bracket in the Timeline view—see _Setting the Scene Length_ on page 559.

**How to add frames at the start or end of a scene**

1. In the top menu, select **Scene > Frames > Add Frames at End**.

   The Add Frames dialog box opens.
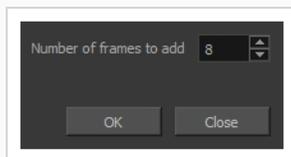
   

2. In the **Number of Frames to Add** field, enter the number of frames to add to the scene.

3. Click OK.

# Removing Frames from a Scene

It is possible to remove frames from your scene. Your scene will be shortened by the amount of selected frames, and all the animation after the selection will move back to close the gap.

**How to remove a frame or a range of frames 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 Del to delete the selection.

   - Click the Remove Frames ☰F button. To remove several frame selections, click the button repeatedly.

   If you selected a range of frames, the Warning dialog box may open.
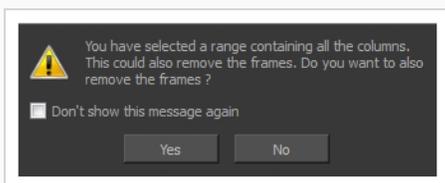
3. To complete the operation:

- 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.

# About Layers and Columns

Before filling in any values or setting any timing or exposure, you need to create drawing elements. Each drawing element is represented as a vertical column in the Xsheet view and a horizontal 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.

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 and is in fact, linked to the drawing element. Its purpose is to contain all the drawings related to this element (layer, column). 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.

Drawings are exposed in cells/frames and linked to the drawings saved in the layer's directory. When you remove a drawing from a cell/frame, it is not displayed, but still exists in the directory.

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 exposures of drawing "1" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.
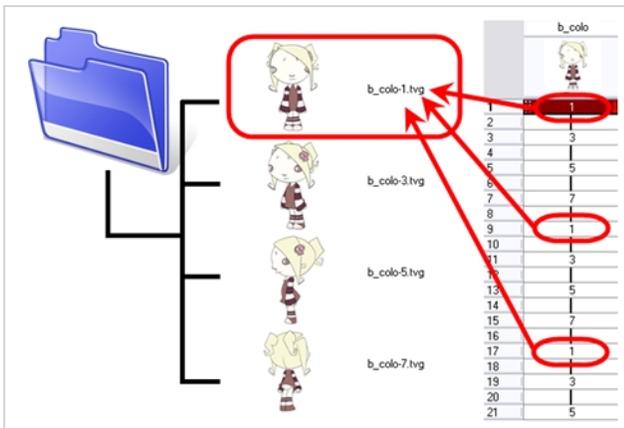


> **NOTE**
>
> There are different element types available, such as sound and expression. A sound element contains sound files. Expressions, Beziers, 3D path, Quadmaps and Pegs are for motion purposes during the compositing step. It's not necessary to create these types to create your exposure sheet.

You can add drawing elements from the Timeline view, Xsheet view, and the Scene menu.

# Layer and Column Types

A column is also known as a layer. There are several types of layers you can add in the Timeline and Xsheet 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.

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 the Timeline view.

You can drag and drop other layers onto a Group layer and then collapse the Group layer to hide these other layers from view.

# 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 Layers and Columns

There are different ways to add a drawing elements (layers and columns) 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.

When you add an element, it will appear as a column in the Xsheet view, a layer in the Timeline view.

# Adding Layers in the Timeline View

T-LAY-001-007

Drawing elements are more commonly known as layers in the Timeline view. Create them using the following procedure:

## 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 (macOS).

   The Add Drawing Layer window opens.
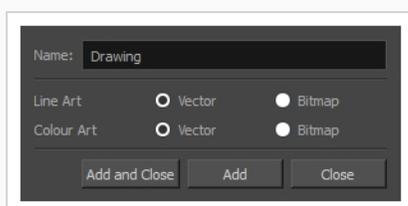
   

2. In the Name field, name your new layer.

2. Set the Line Art and Colour Art options to **Vector** to get a vector layer or to **Bitmap** to have a bitmap layer.

3. 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.

# Adding Layers from the Top Menu

Another way to add layers to the Timeline view is through the top menu.

### 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.
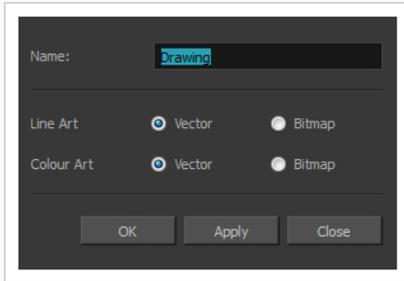
   

2. In the Name field, type a relevant element name and click **OK**.

   The new drawing element appears in your scene.

# Adding Columns from the Xsheet View

Drawing elements in the Xsheet view are more commonly known as columns. You can add columns using the following procedure:

### 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.
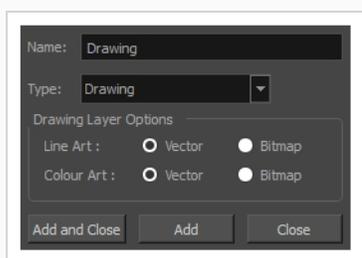
2. In the Name field, type a relevant element name.
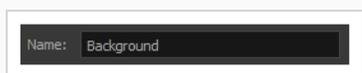
3. In the Type field, select **Drawing**.
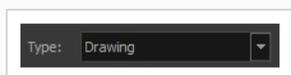
4. To complete the operation:

    - Click **Add and Close** to add your new layers and close the dialog box.

    - Click **Add** 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 567.

# Using the Advanced Add Column Dialog Box

**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 **Harmony Advanced > Preferences (macOS**) 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.
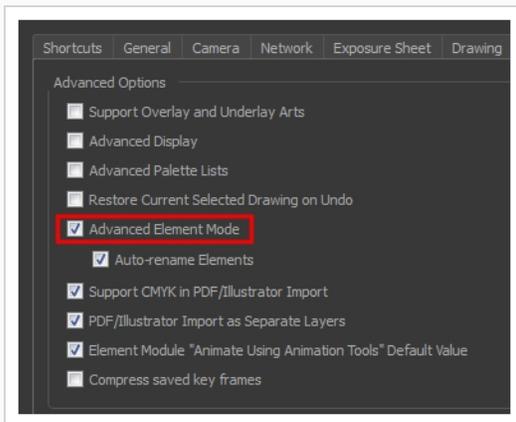


3. Click **OK**.

4. In the Xsheet menu, select **Columns > Add Column** or press Shift + C.

   The Add Column dialog box opens.
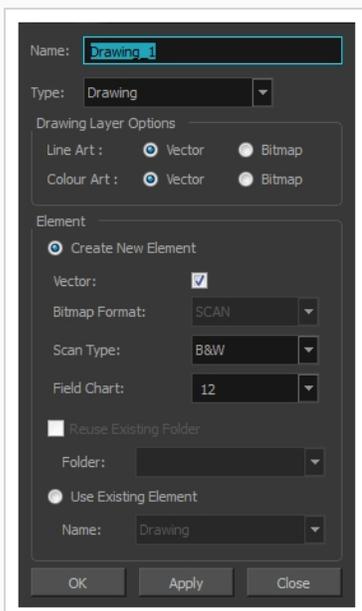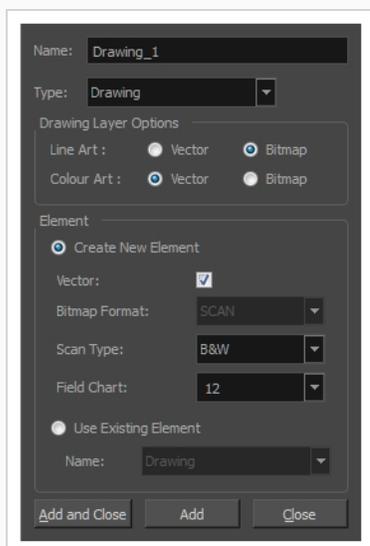
5.  In the Name field, type the new column's name.

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.

    - **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** 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.
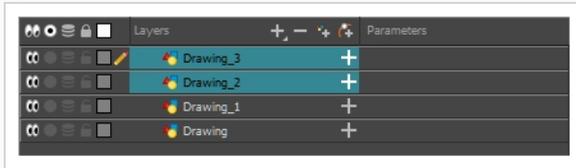


2. Do one of the following:

   - 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.
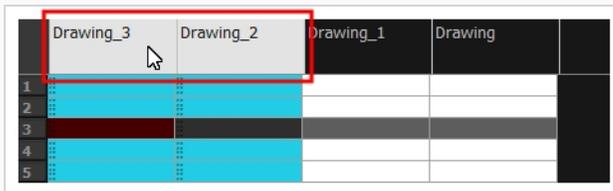


2. Do one of the following

   - Right-click on the selection and select **Delete Columns**.

   - In the Xsheet toolbar, click the Delete Columns ▯– button.

   - Press Del.

     The Confirm Delete dialog box opens.
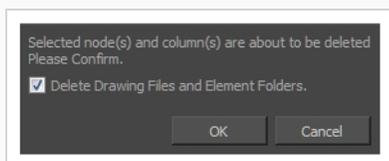
- Select the **Delete Drawing Files and Element Folder** option if you want to delete the drawings and folders linked to the selected column.

3. To complete the operation:

   - Click **OK** to delete the selected layers.

   - Click **Cancel** to cancel the operation.

   The Warning dialog box may open.
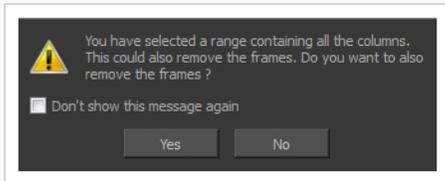
   

4. Do one of the following:

   - 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.

# Renaming Layers and Columns

Once you add layers and columns to your project, you can modify their names.

### 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.
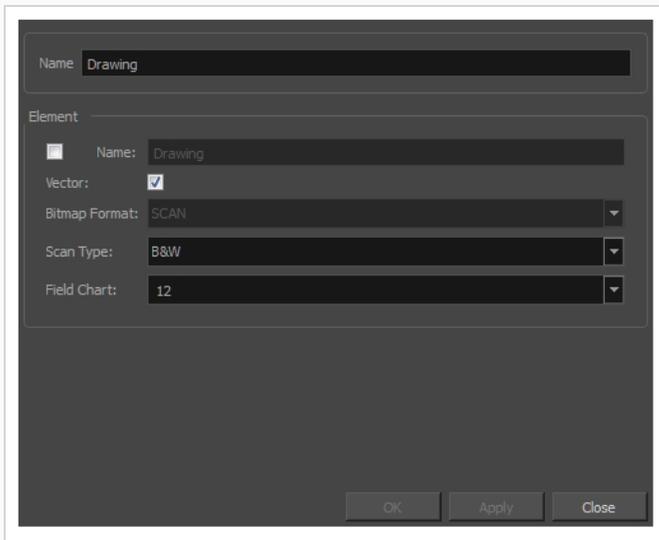
2. In the Name field, rename the column.

3. Click **OK**.

# About 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.

# Expanding and Collapsing Layers and Columns

To simplify the look of the Timeline or Xsheet view, you can expand and collapse some of the layers and columns. If 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 [image] 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 (macOS).
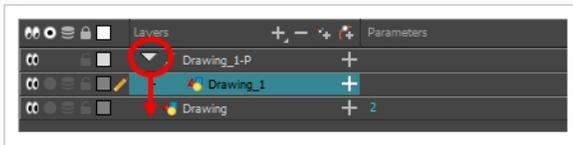


## How to collapse or expand all layers in the Timeline view

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 ⚏s or Expand Selection ⚏s 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 > Collapse All** or **Expand 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 and Hiding Layers and Columns

As you work in the Drawing, Camera or Xsheet view, some layers or columns may be in the way, such as those that were used as references. You can hide these layers to make your work area less cluttered and easier to navigate.

# Showing and Hiding Layers

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:
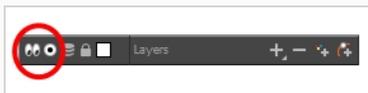
   

   - Enable/Disable All 👀 button to show or hide all layers.

     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).

### How to show and hide layer types in the Timeline view

1. From the Timeline menu, select **View > Show > Show Manager**.

   The Show Manager dialog box opens.
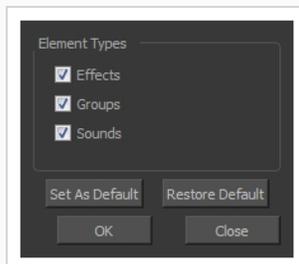
   

2. Select the types of layers you want to display and deselect the ones you want to turn off.

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.

   In the Timeline view, you can hide or show certain types of layers such as Effect.

# 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 and 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).
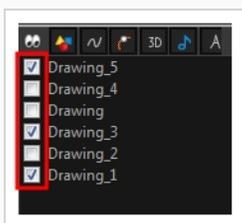
# Showing Hidden Columns

In order to save visual space in the Xsheet view, columns can be hidden from view. The hidden layer's presence is indicated by a thicker grey line between columns.

### How to show hidden columns in the Xsheet view

1. In the Xsheet view, do one of the following:

   - Click the thick grey line that represents a hidden column.

   - Right-click on the column header and select **Show Hidden Columns**.

   - Press Alt + Shift + H.
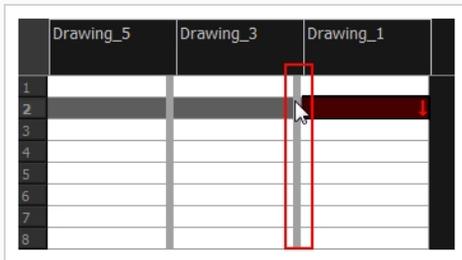
   

   The Show Hidden Columns dialog box opens.
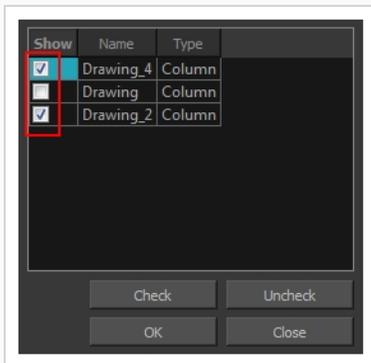
   

2. In the Show column, select the hidden columns you want to display in the Xsheet view.

   - Click **Check** to select all the selected columns.

   - Click **Uncheck** to deselect all selected columns.

# Showing All Columns

In order to save visual space in the Xsheet view, columns can be hidden from view. You can bring all the hidden columns back into view all at once.

**How to show all columns**

- In the Xsheet menu, select **View > Unhide All Columns**.

# Showing and Hiding Column Types

You can hide specific column types from view, in order to work more easily with one aspect of your project. For example, you could hide all the Drawing columns in the Xsheet, so that you could work more easily with your 3D Path Columns.

### How to show and hide column types using the Column List

1. In the Column List section, click the button corresponding to the column type you want to show or hide.
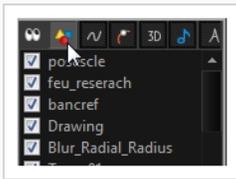


| Column Type | Action |
|---|---|
|  | Show/Hide All Columns |
|  | Show/Hide Drawing Columns |
|  | Show/Hide Function Columns |
|  | Show/Hide 3D Path Columns |
| 3D | Show/Hide 3D Rotation Columns |
|  | Show/Hide Sound Columns |
| A | Show/Hide Annotation Columns |

### How to show and hide column types using the Column Types Manager

1. In the Xsheet view, select **View > Column Types Manager**.

   The Column Types dialog box opens.
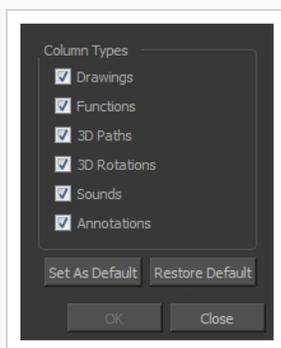
2. Select the types of columns you want to display and disable the ones you want to hide.

Click **Set As Default** if you want to make these new settings the default ones used each time you start Harmony.

Click **Restore Default** if you want to return the settings to their defaults.

# Customizing the Column Appearance

In Harmony, you can customize 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 change the appearance of an empty cell

1. From the Xsheet menu, select **View > Empty Cells > With an "X"** or **Blank**.
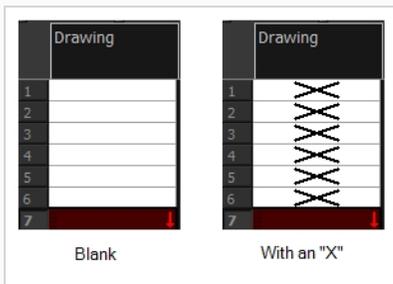


## How to modify row units

1. From the Xsheet menu, select **View > Row Units > Frames** or **Feet**.
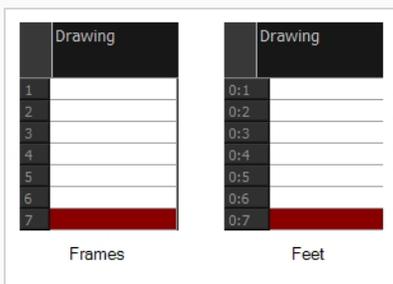


## How to modify the look of a held exposure

1. In the Xsheet menu, select **View > Held Exposures > Line** or **Value**.

## How to modify column width

1. In the Xsheet view, select a column.

2. From the Xsheet menu, select **View > Set Columns Width**.

   The Xsheet Column Width dialog box opens.
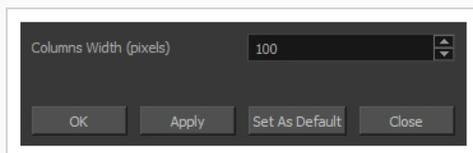


3. In the Column Width field, enter the desired width in pixels.

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**.

# Displaying 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 Layer and Column Colours

To easily identify elements in the Timeline or Xsheet view, you can change the colour of layers and columns.

### 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 toolbar 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**.

# About Scene Markers

T-ANIMPA-005-010

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.

# Creating Scene Markers on Current Frames

Change the colour of the area above a frame by setting a scene marker. This will allow you to find the frame more rapidly when quickly scanning the Timeline.

### 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 Marker Colour dialog box and select a colour for the scene marker. Click **OK**.
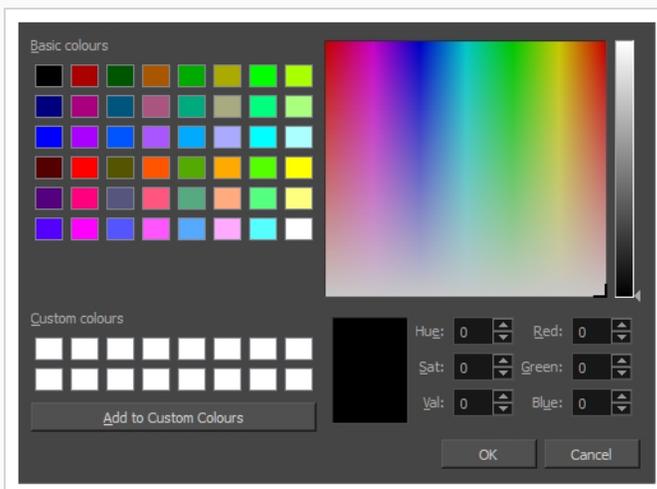
4. In the Note field, enter descriptive or title text and click **OK**. This text will appear in the tooltip when you hover your mouse over the scene marker.
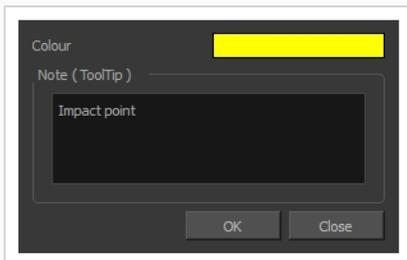


In the Timeline view, the scene marker is displayed at the current frame.

5. Hover over the scene marker to display its tooltip.
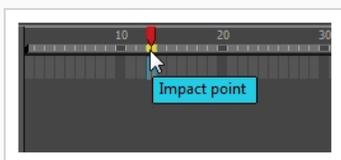
# Creating Scene Markers on Frame Ranges

Change the colour of the area above a frame range by setting a scene marker. This will allow you to find the range more rapidly when quickly scanning the Timeline.

### How to create a scene marker on a frame range

1. In the frame counter area, select the frame range you want to mark.
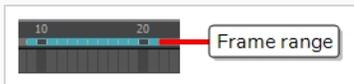
   

2. Right-click and select **Create Scene Marker**.

   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 Marker Colour dialog box and select a colour for the scene marker. Click **OK**.
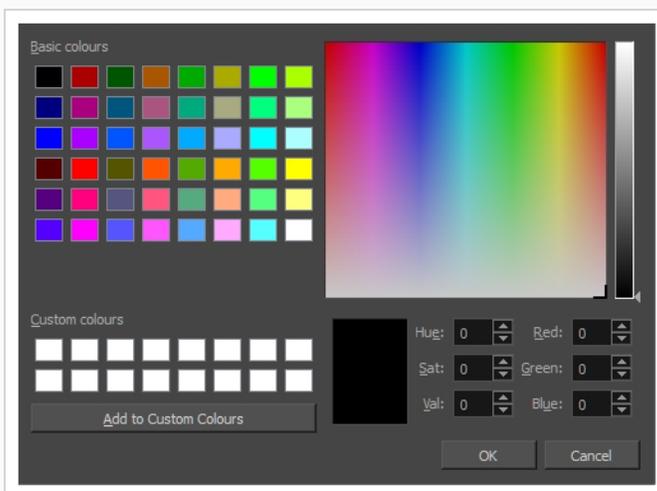
   

4. In the Note field, enter descriptive or title text and click **OK**. This text will appear in the tooltip when you hover your mouse over the scene marker.

In the Timeline view, the scene marker is displayed over the selected frame counters.

5. Hover over the scene marker to display its tooltip.

# Editing Scene Markers

You can modify the colour of a scene marker or edit the note attached to it.

### How to edit a scene marker

1. In the frame counter area, select the entire scene marker.

> **NOTE**
>
> It's important to select the *entire* length of the scene marker, otherwise the Timeline Scene Marker dialog box will not open for editing.
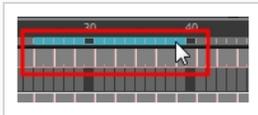


2. Right-click and select **Scene Markers > Edit Scene Marker**.

   The Timeline Scene Marker dialog box opens.
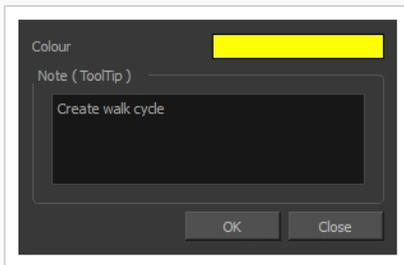


3. Make your changes.

4. Click **OK**.

# Deleting Scene Markers

If you deem it no longer necessary to have a frame or a range of frames marked, you can delete the scene marker.

**How to delete a scene marker**

1. In the frame counter area, select at least one frame in the scene marker you want to delete.
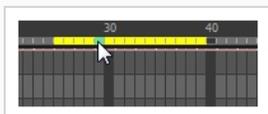
   

2. Right-click and select **Scene Markers > Delete Scene Marker**.

# 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 lets you 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.
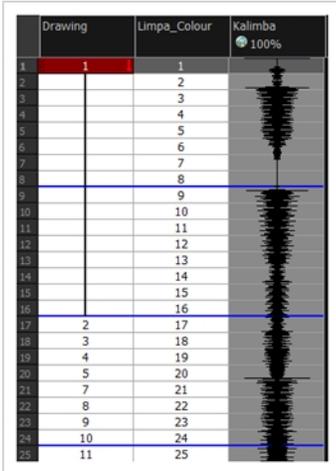


### How to set the tempo markers

1. In the Xsheet menu, select **View > Set Tempo Marker.**

   The Tempo Marker dialog box opens.
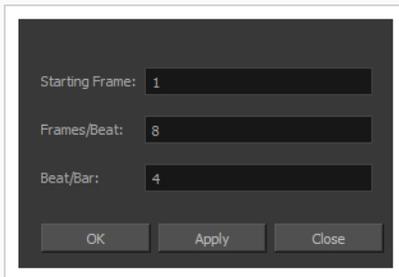
   

2. Reproduce the tempo and beat value of your music or sound for the Xsheet view marker display.

   ‣ **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**.

# Reordering Layers and Columns

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.

### 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.
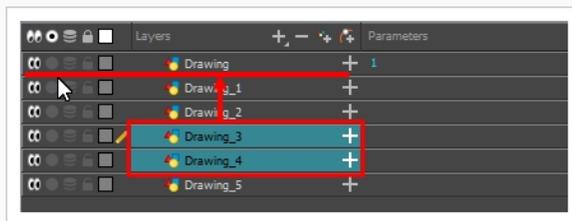


### How to reorder columns in the Xsheet view

1. In the Xsheet view, click on the column's header with the middle mouse button.

2. Drag the column to its new position.
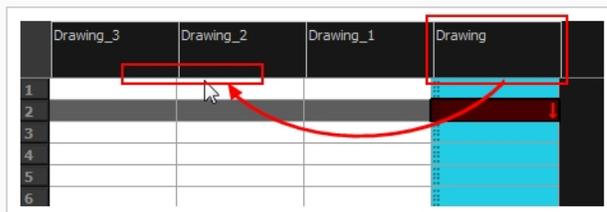
# Navigating Layers and Columns

Once a cell is selected in the Timeline or Xsheet view, you can navigate between the drawings, frames, and layers. Displays the previous drawing, next drawing, previous layer or next layer. 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,and frames and columns**

1. In the Timeline or Xsheet view, select a cell.
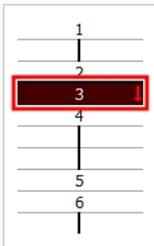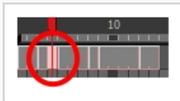




2. Once the cell is selected, you can navigate between:

- **Previous and next layers**: From the top menu, select **Drawing > Previous Layer** and **Next Layer** or press H and J.
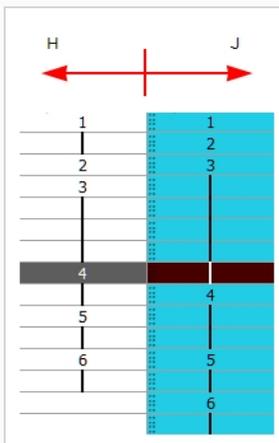


- **Previous and next drawings**: From the top menu, select **Drawing > Previous Drawing**

and **Next Drawing** or press F and G..
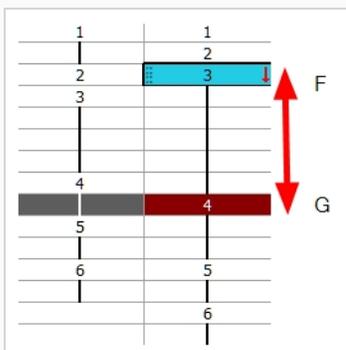


- **Previous and next frames**: From the top menu, select **Play > Previous Frame** and **Next Frame** or press comma (,) and period (.).
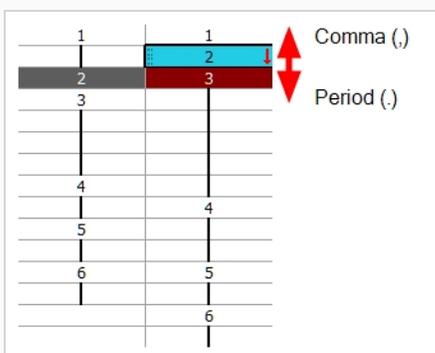
# Duplicating Layers and Columns

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 to duplicate.
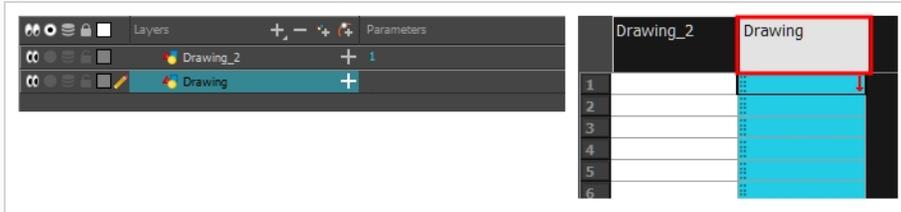


2. Do one of the following:

   - (Xsheet) Right-click on the column and select **Duplicate Selected Columns**.

   - (Xsheet) In the Xsheet menu, select **Drawings > Duplicate Drawings**.

   - (Timeline) Right-click on the layer and select **Duplicate Selected Layers**.

   - (Timeline) In the Timeline menu, select **Layers > Duplicate Selected Layers**.

   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 to clone.
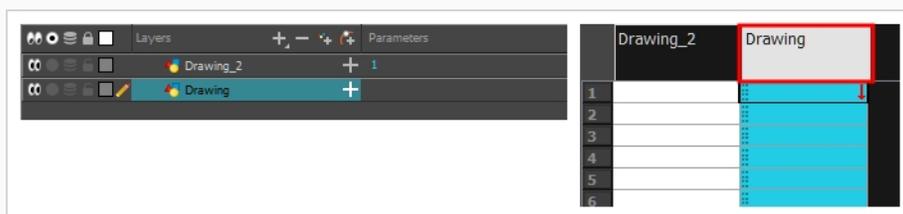


2. Do one of the following:

   - 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**.

   - From the Xsheet menu, select **Columns: Clone Selected Columns: Drawings Only**.

   The new cloned layer or column appears.

# About Sync Layers

Use the Sync Layer feature when you need drawings to be separated on different layers, but to have the same timing, such as with the front and back of a shirt collar. The drawing exposures of synced layers not only update automatically, but their drawing substitutions correspond as well, as long as the drawings are labeled properly.



When using certain drawing tools, such at the Select, Cutter and Reposition All Drawings tools, you can enable the Apply to Synced Drawings option while you work. To learn more about this option—see the Reference .

# Syncing Two Layers

The Sync Layer feature allows for drawings to be separated on different layers, but to have the same timing.

## How to sync two layers

1. In the Timeline view, right-click on the drawing layer you would like to sync with another layer.
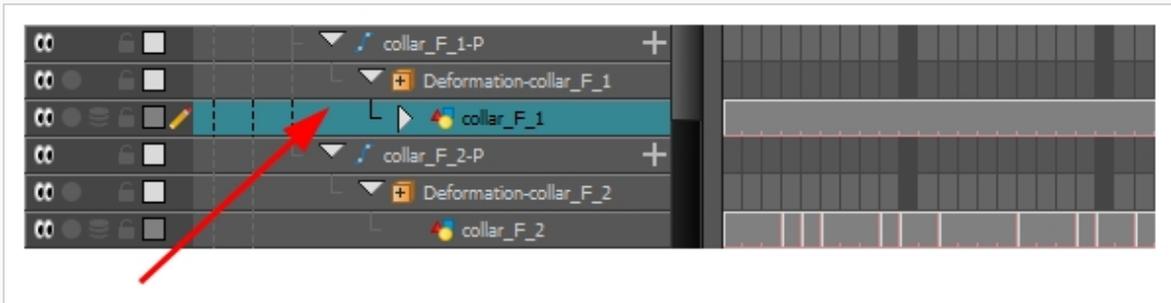


2. From the right-click menu, select **Sync Layers With**.

   The Convert to Synced Drawing Layer dialog box opens.
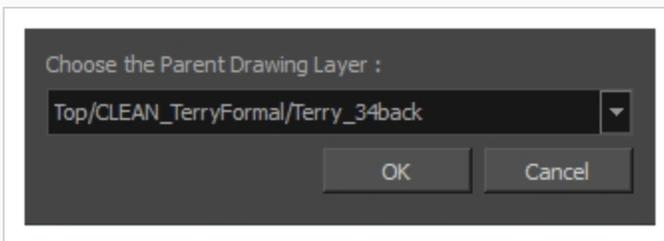


3. From the drop-down list, select a parent drawing layer to sync with the currently selected layer.

4. Click OK.

   In the Timeline view, when you click on either of the two synced layers, the other will display the link icon.
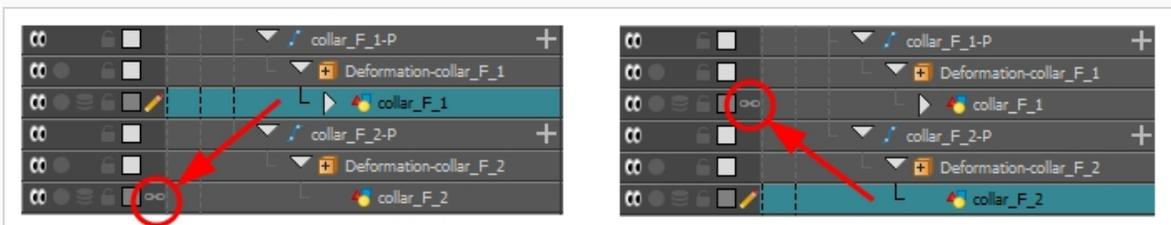


   In the right side of the Timeline view, the child layer will update to the parent layer's timing.
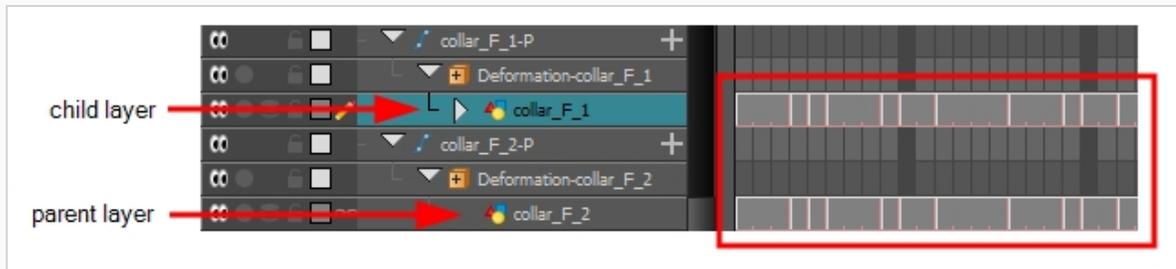
5. In the Timeline or Xsheet view, change the drawing exposure or substitute drawings in either of the two layers.

The other synced layer immediately updates to the same timing.

# Syncing Multiple Layers

You may want to sync more than two layers. However, once a layer is synced, the Sync Layers menu option becomes disabled for that layer. In order to sync a layer to a layer that has already been synced, you need to use the Sync Layers command on the yet unsynced layer.

### How to sync multiple layers

1. In the Timeline view, right-click on the drawing layer you would like to sync with an already synced pair.



2. From the right-click menu, select **Sync Layers With**.

   The Convert to Synced Drawing Layer dialog box opens.
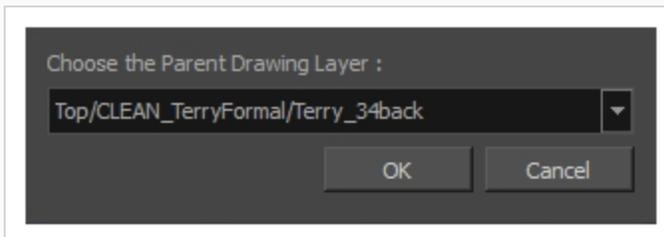


3. From the drop-down list, select the parent drawing layer you would like to sync with the currently selected layer. This should be a drawing layer already synced with another drawing layer. You can select either the parent or the child from that linked pair; they both appear in the drop-down list.

4. Click OK.

   In the Timeline view, when you click on any of the synced layers, the others will display the link icon.
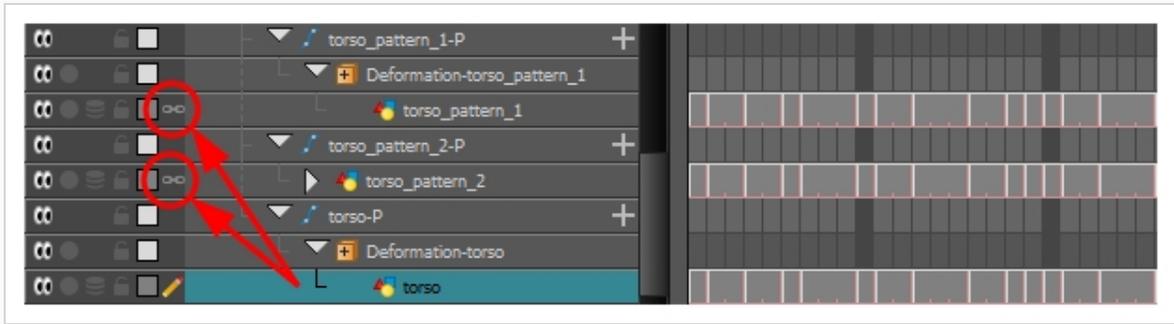
In the right side of the Timeline view, the child layer will update to the parent layer's timing.
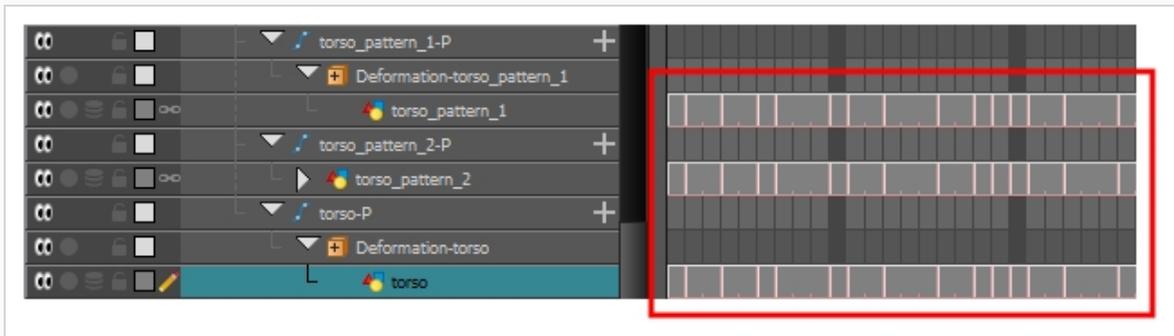


5. In the Timeline or Xsheet view, change the drawing exposure or substitute drawings in any of the synced layers.

The other synced layers immediately update to the same timing.

# Creating Synced Layers

Create a new drawing layer to be synced immediately with an existing drawing layer.

## How to create a new synced layer

1. In the Timeline view, right-click on the drawing layer you would like to sync with another layer.



2. From the right-click menu, select **Add Synced Drawing Layer**.

   The Add Synced Drawing Layer dialog box opens.
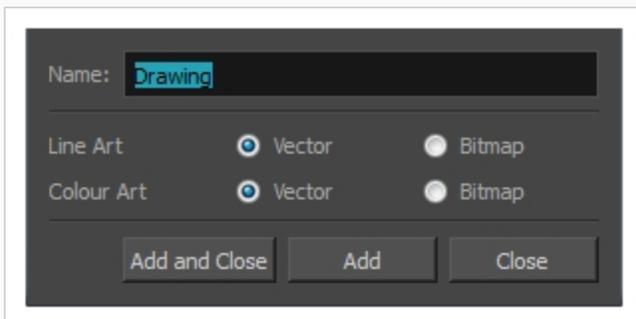


3. In the Add Synced Drawing Layer dialog box, add a single or multiple drawing layers.

4. When you are finished, click Close.

   In the Timeline view, when you click on any of the synced layers, the others will display the link icon.



   In the right side of the Timeline view, the child layer will update to the parent layer's timing.
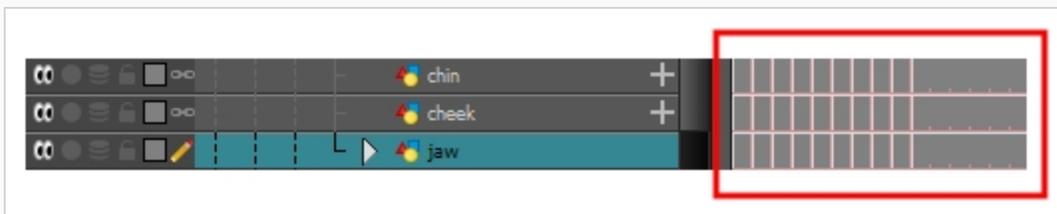
# Selecting All Synced Layers

You can select all the drawing layers that are linked to the selected drawing layer, in the Timeline view.

### How to select all synced layers

1. In the Timeline view, select a layer that is synced to at least one or more layer.

2. In the view menu ≡, select **Edit > Select Synced Layers**.

   In the Timeline view, all the layers synced to the selected layer become highlighted.
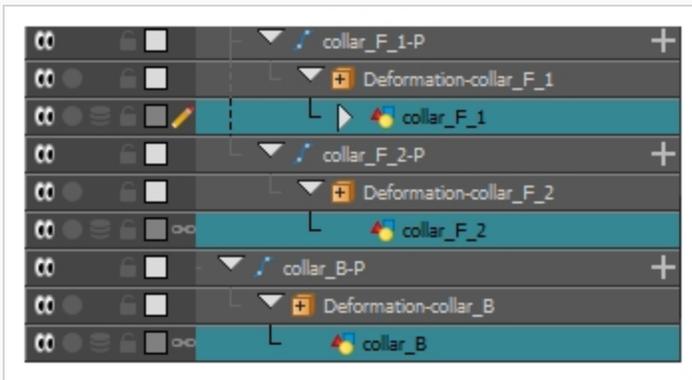
# Unsyncing Layers

Once layers have been synced, they can just as easily be unsynced.

**How to unsync layers**

1. In the Timeline view, right-click on the child layer of a synced pairing.

2. From the right-click menu, select **Unsync Layer**.

   The parent layer is unsynced and the link icons disappears.

> **NOTE**
>
> If this menu item is disabled, then the selected layer is either the parent layer or a layer that is already unsynced.

# About Annotation Columns

T-ANIMPA-005-001

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.
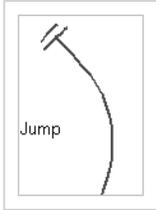
# Adding Annotation Columns

Add annotation columns to mark actions, corrections or other information related to your animation.

## 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.
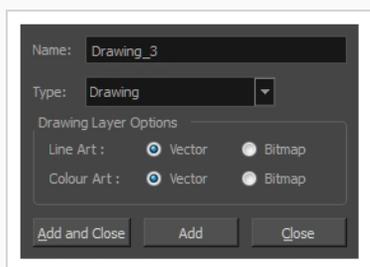
    

2.  In the Name field, type in an appropriate name.

3.  From the Type list, select **Annotation** and click OK.

    The new column appears.

# Drawing in Annotation Columns

In the annotation column, you can draw sketches and ideas that will be useful in producing your animation.

### 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.
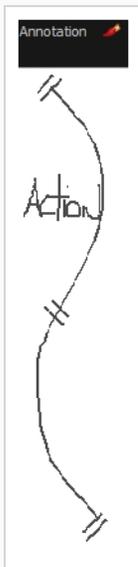
# Typing in Annotation Columns

T-ANIMPA-005-004

In the annotation column, you can type in your notes and relevant information 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 .

### How to type in an annotation column

1. Do one of the following:

   - In the selected cell, press Ctrl (Windows/Linux) or ⌘ (macOS).

   - In the selected cell, hold down Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (macOS).
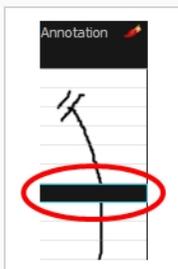
   

2. In the selected cell, type the desired text.
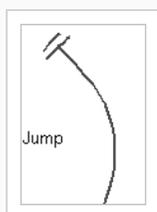
# Erasing in Annotation Columns

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.

---

**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.
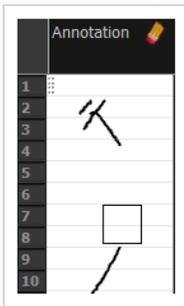


> 📝 **NOTE**
>
> When using a pen on a tablet, you MUST flip your pen to the eraser side for the eraser to work.

# Modifying Annotation Column Pen Options

You can change the pen size and colour when you draw in the annotation column.

## How to modify 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**.
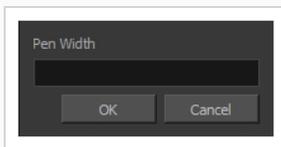


## How to modify the pen colour

1. In the Xsheet menu, select **Annotation > Change Pen Colour**.

    The Select Colour dialog box opens.
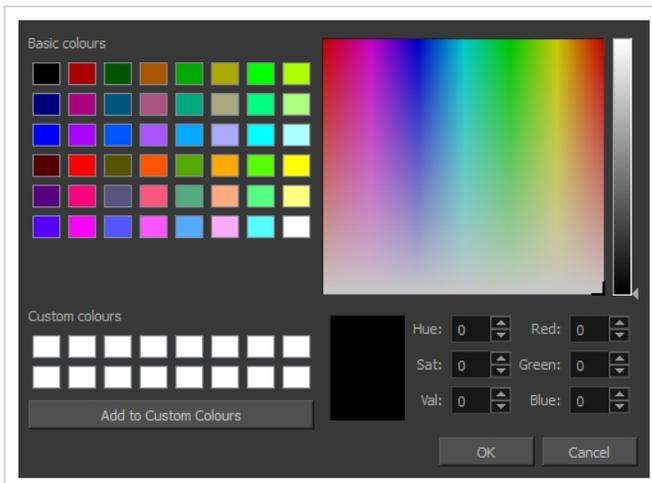


2. Choose a new colour.

3. Click **OK**.

# Showing and Hiding Annotation Column Tick Marks

T-ANIMPA-005-007

When working with the annotation columns, it is useful to display tick marks on odd-numbered frames.



Tick marks in Annotation column

To display the tick marks, you must run a short script.

## 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.

# Importing Annotation Files

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 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.
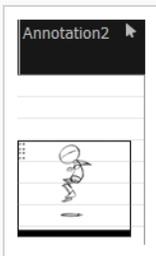
# Using the Element Manager

The Element Manager window lets you Opens the Element Manager window where you can 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. See xref Reference > Windows > Element Manager.

### How to use the Element Manager

- From the top menu, select **Scene > Element Manager**.—see the Reference guide .
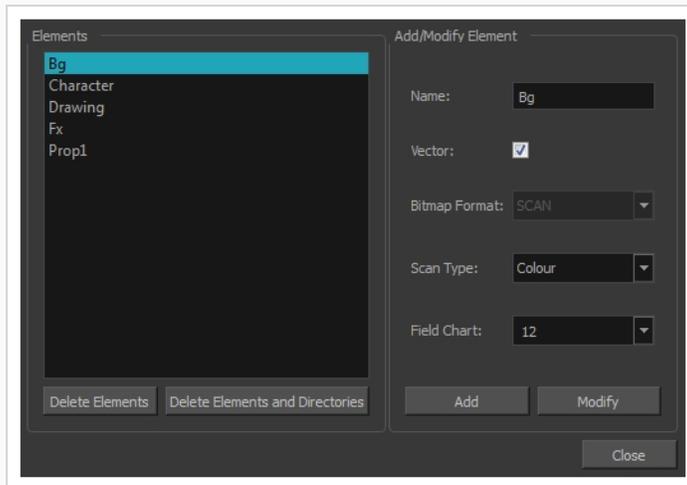
# Displaying Layer and Column Properties

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.

   The properties display—see Element/Drawing Node in the Reference guide .
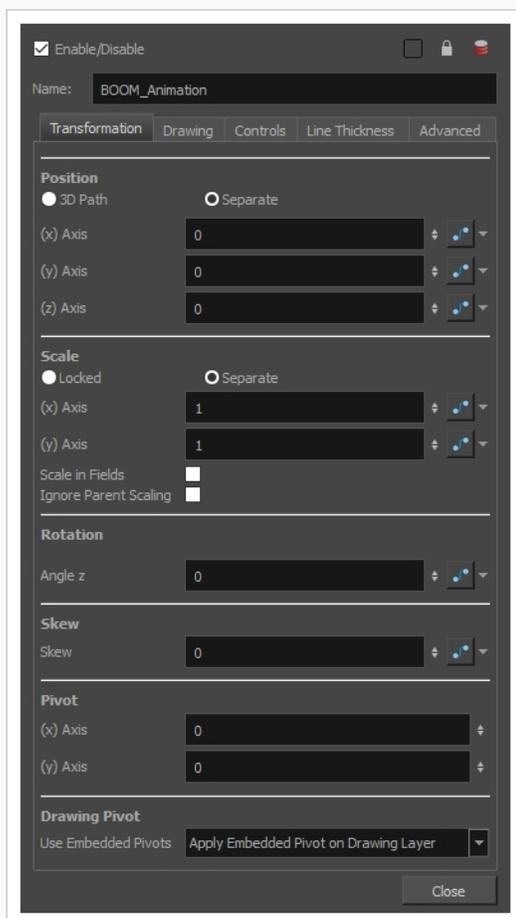
## How to display a column's properties in the Xsheet view

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.
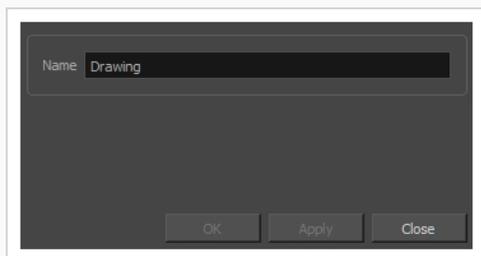
   

2. (Optional) To view additional properties, select **Edit > Preferences** from the top menu.

3. In the Preferences dialog box, select the **Advanced** tab, then select the **Advanced Element Mode** option.
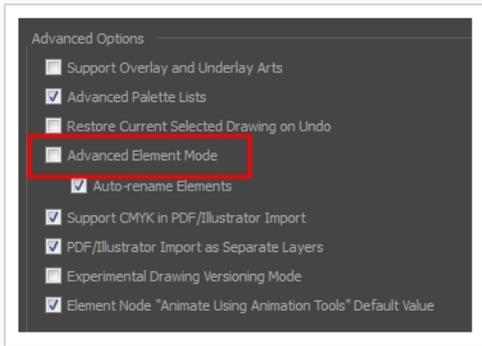


4. In the Xsheet view, double-click on a column header.

Additional properties for the column are displayed.
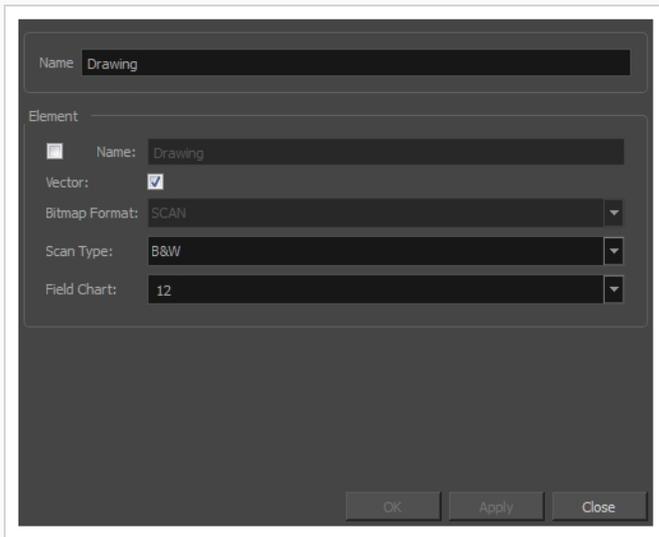
# About Exposure

T-HFND-006-006

In Harmony, exposure is the term used for the link between a cell, which is a single frame in a drawing layer, and a drawing.

This concept comes from traditional animation. When drawings were finished and ready to be added to the animation, they would be placed under a camera, and taking one snapshot of the drawing would equate to one exposure. Hence, exposure is an important concept for planning out the drawings required for your action, as well as the timing in which they will be displayed as your scene plays out. It is especially important when drawings are used several times in a scene, which is a common practice to save on production time and costs, as you can re-use a drawing by exposing it over multiple frames.

In traditional animation, it is typical to plan a scene by filling the exposure sheet with the exposure before creating the animation. An exposure sheet is made of cells, which represent frames, spread across columns, representing drawing layers, and the exposure is planned by filling each cell with the identification numbers for the drawings you plan your scene's action to require. This allows animators to figure out the timing of their scene's actions and to allocate the amount of drawings each action will require before they start drawing, removing decision making from the animation process.

In Harmony, you can achieve this process by using the Xsheet view, which is very similar to a traditional animation exposure sheet. You can fill each cell in your scene's drawing layers with the number of the drawings you plan to create, at the frames at which you intend to expose them, and set the exposure of each drawing to the amount of frames you intend them to take.

Filling a cell with a drawing identifier allows Harmony to keep track of which frames should display which drawings. For example, if you fill cell 1 and 2 of the drawing layer A with the number 5, then start drawing in cell 1 or 2, Harmony will create the drawing A-5, which will display in layer A when at frame 1 or 2 of your scene. Otherwise, if you start drawing inside an empty cell, Harmony will automatically create a drawing and assign it an available drawing number.

# About Creating Exposure

In traditional and paperless animation, it is useful to plan your scene by creating its exposure before creating the drawings. The most basic method of creating a scene's exposure is by manually entering the name (typically a number) of each drawing in each cell of each column in your scene using the Xsheet view. However, Harmony has many tools allowing you to streamline the exposure filling process. If you plan to animate on twos or threes, Harmony can automatically expose each drawing added to your exposure sheet over the preferred amount of frames. You can also fill a range of cells with the same drawing, a number sequence, a cycle, or even random drawing numbers.

# Typing Exposures

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 to 9, a to z) and the 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.
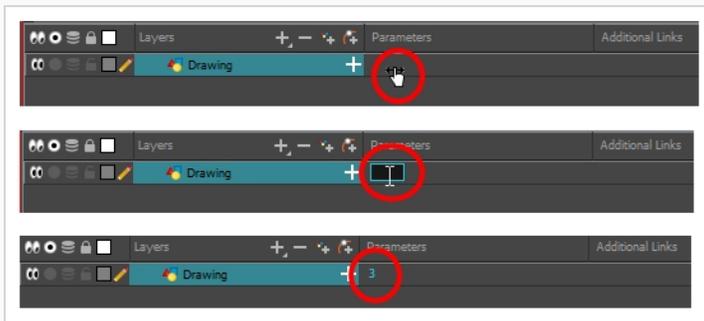


2. Press Enter/Return to validate the value.

### How to type a value in the Xsheet view

1. In an Xsheet column, double-click on a cell.
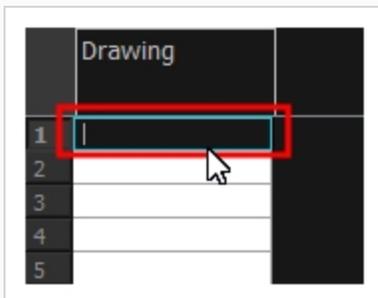


2. Type a value or drawing name in the cell.
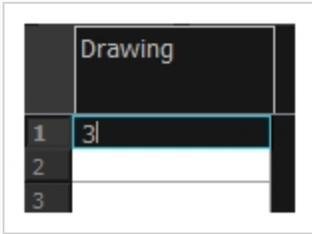
3. Press Enter/Return to move to the next cell.
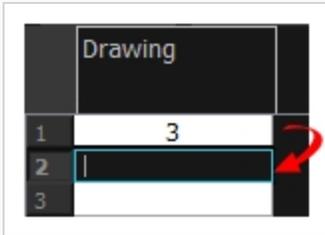


4. Press Esc to exit the typing mode.
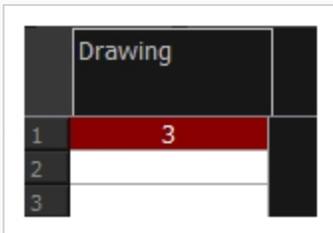
# Setting the Exposure Hold

Drawings in an animation project are often exposed for more than one frame to save on production costs. In western animation, each drawing is usually exposed on two frames, and in Japanese animation, each drawing is usually exposed on three frames. In both cases, exceptions can be made for quick or detailed actions that require precise timing.

In the industry, this type of exposure is known as *animation in double or triple frames*, or *animation on twos or on threes*.

To save time when creating your scene's exposure, you can configure the Xsheet to *hold* the exposure. This will make every new exposure you type into the Xsheet exposed for the preferred amount of frames. After you enter the exposure for a cell, the selected cell will be after this exposure's hold, allowing you to quickly fill a column with exposure while respecting the selected hold.

## How to hold an exposure

1. Do one of the following:

   - In the Xsheet menu, select **Exposure > Hold Exposure > Hold *the desired amount of cells***.

   - From the top menu, select **Animation > Cell > Hold Exposure > Hold *the desired amount of cells***.

   - Right-click on the Xsheet and select **Exposure > Hold Exposure > Hold *the desired amount of cells***.

2. Type a value or drawing name in the cell.

3. 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.

# Toggling Between Inserting and Overwriting Exposure

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 the Overwrite and Insert modes

1. Do one of the following:

   ‣ In the bottom-right corner of the Xsheet view, click **Overwrite/Insert**.

   ‣ Press I.
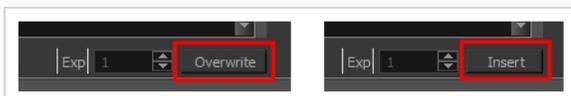
# Filling a Selection with a Specific Exposure

You can fill a selection with the same drawing using the Fill Selection dialog box. You can fill a selection of a single drawing, several drawings or even several columns.

**How to fill a selection with a specific exposure**

1. In the Timeline or Xsheet view, select a cell range.
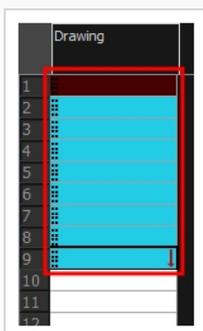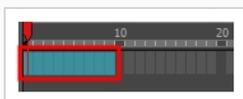
2. Do one of the following:

    - From the top menu, select **Animation > Cell > Fill Selection**.

    - In the Xsheet toolbar, click the Fill Selection ⊞ button. Note that you may have to add this button to your toolbar by right-clicking on it and selecting **Customize**.

    - Press Ctrl + T (Windows/Linux) or ⌘ + T (macOS)).

    The Fill Selection dialog box opens.
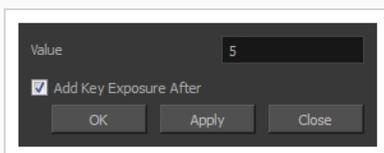
3. In the Value field, type the desired value.

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**.
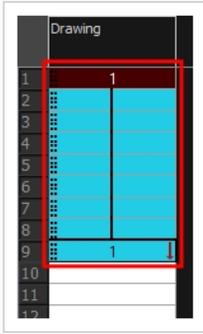
# Creating an Exposure Sequence

You can quickly create a sequence with a gesture by holding the Shift key while extending an exposure, or use the Sequence Fill dialog box to create a custom sequence within your selection. While the former is faster, the latter allows you to determine your sequence's hold and increment, to create a backward sequence or to configure it in multiple other ways.

**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.
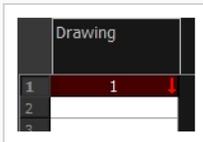


3. Hold down the Shift key. Make sure a plus sign (+) appears.

4. Pull down the selection box to the desired frame.
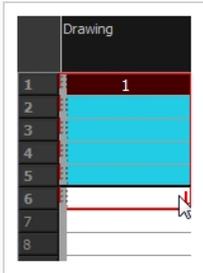


> 📝 **NOTE**
>
> The red selection box must be visible when releasing the cursor. If not, the action is considered cancelled.

5. First release the Shift key, then release the mouse button.
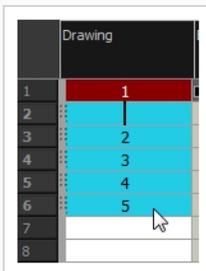
### How to fill a selection with a sequence

1. In the Timeline or Xsheet view, select a cell range.
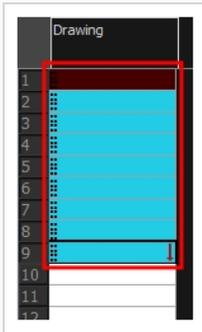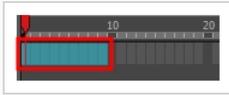
2. Do one of the following:

   - 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 (macOS)).

   The Sequence Fill dialog box opens.
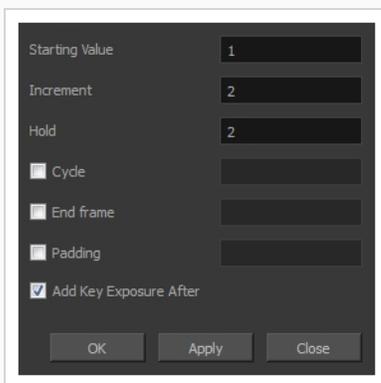
3. In the Starting Value field, type the first number in the sequence.

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**.

# Creating an Exposure Cycle

Once you have entered a series of drawings and exposures, you can create cycles out of them in several ways. This can be useful for example if you want to make or use a looping character's walking animation, referred to as a *walk cycle*.

When you create cycle, each instance of each cycled drawing is linked to the same drawing file. This means that if you change a drawing for the first instance of the cycle, it will update for every other instance of the cycle.

> **NOTE**
>
> You can also copy and paste drawings and keyframes into cycles—see *Pasting Cycles* on page 689.

## How to create a cycle

1. In the Timeline view, select the cell range to loop.

   

2. 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.
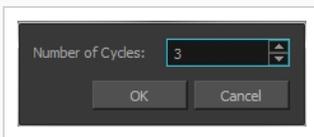
   

3. Enter the number of cycles you want, including the current selection.

# Filling a Selection with Random Exposure

You can Lets you 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.
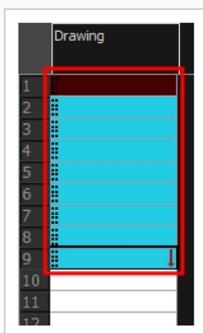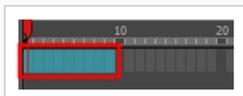
2. Do one of the following:

   - Select **Animation > Cell > Fill Cells Randomly**.

   - Right-click on the selection and select **Exposure > Fill Cells Randomly**.

   - In the Xsheet view, click the Fill Cells Randomly $\frac{2}{7}$ button. Note that you may have to add this button to your toolbar by right-clicking on it and selecting **Customize**.

   The Fill Cells Randomly dialog box opens.
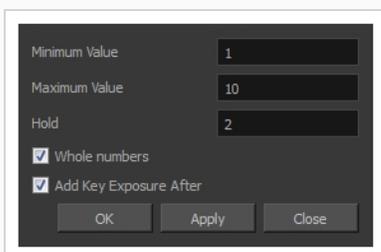
3. In the Minimum Value field, enter the lowest acceptable value.

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**.

# Inserting Blank Cells

You can place an empty cell between other cells.

> **NOTE**
>
> Inserting a blank cell never overwrites existing cells, even if the Xsheet view is set to Overwrite mode. This is because overwriting existing cells with blank cells would replicate the behavior of deleting exposure.

### How to insert a blank cell

1. In the Timeline or Xsheet view, select the cell in which you want to insert a blank cell.
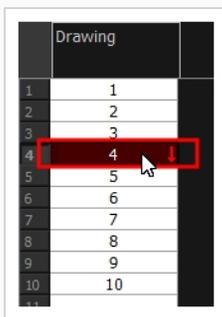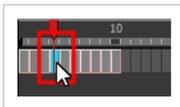




2. Do one of the following:

   - In the top menu, select **Animation > Cell > Insert Blank Cell**.

   - Right-click and select **Exposure > Insert Blank Cell**.

   - In the Timeline or Xsheet toolbar, click the Insert Blank Cell button. Note that you may have to add this button to your toolbar by right-clicking on it and selecting **Customize**.

   - Press Shift + J.

   A blank cell is inserted.
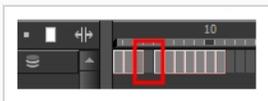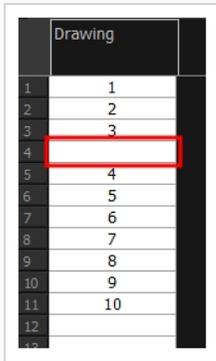
# Filling Empty Cells

You can automatically fill gaps between exposures using the Fill Empty Cells command. This will extend the exposure of cell exposed right before the gap until the end of the gap.

### How to fill empty cells

1. In the Timeline or Xsheet view, select a cell range.
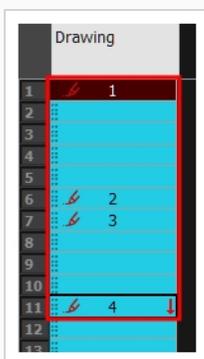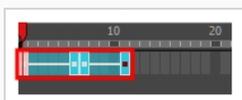
2. Do one of the following:

   - 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.
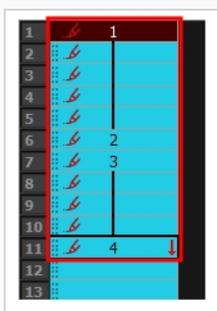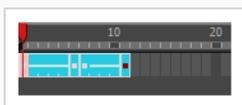
   Each drawing in the selection is exposed in the range of empty cells that follow it.

# Toggling Extending Previous Drawing Exposure

T-HFND-006-005

With the Extend Exposure of Previous Drawing preference enabled, you can configure Harmony to automatically extend a previous drawing's exposure when creating a new drawing, automatically filling the gaps as you create drawings.
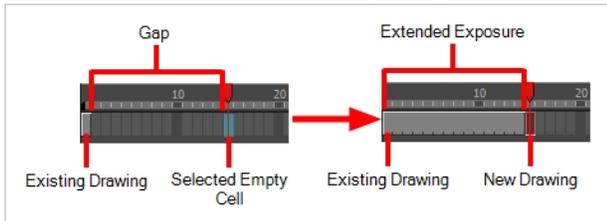


This preference is enabled by default. If you disable it, gaps between previous drawings and new drawing will not be automatically filled:
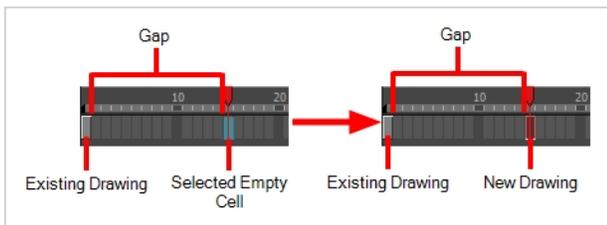


### How to enable or disable the Extend Exposure of Previous Drawing preference

1. Open the Preferences dialog box by doing one of the following:

   - Select **Edit > Preferences**.

   - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

   The Preferences dialog box opens.

2. Select the **Exposure Sheet** tab.
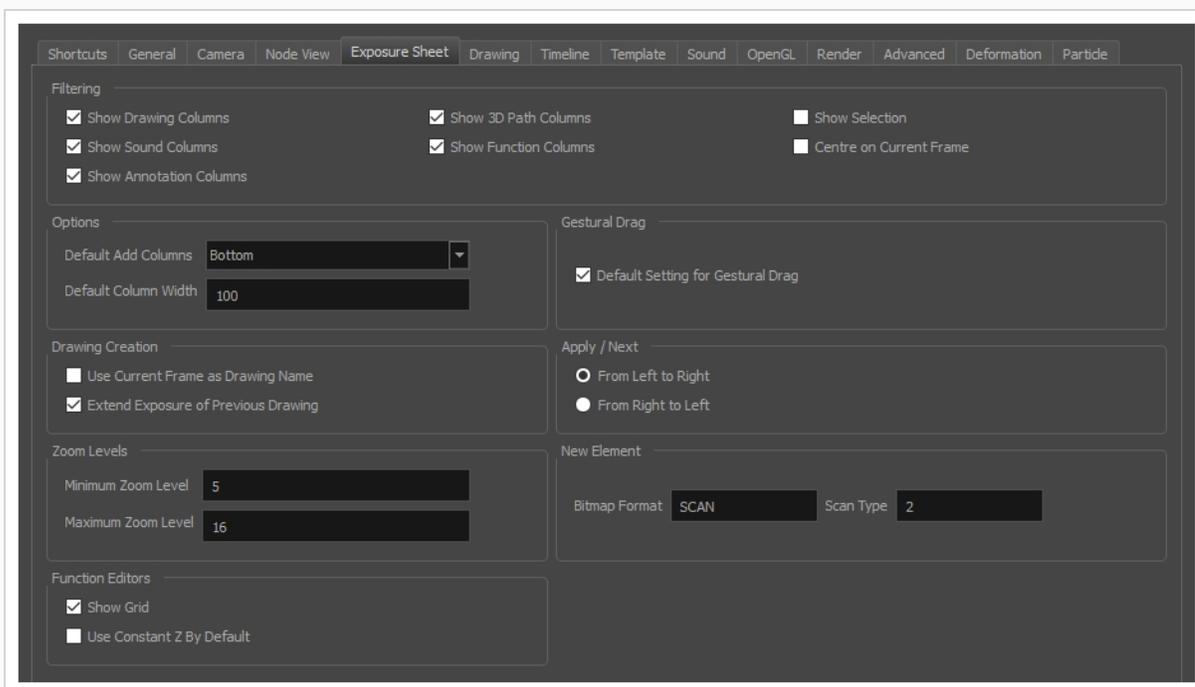
3. In the Drawing Creation section, check or uncheck the **Extend Exposure of Previous Drawing** option.
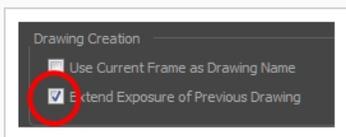


4. Click **OK**.

# About Adjusting Exposure

The exposure of drawings in a scene often needs to be adjusted as you flesh out your animation and your scene's action starts taking form. Your scene's action may require more or less drawings than initially planned, or some drawings may need to be exposed for longer or shorter times than expected. There are many ways to adjust your scene's exposure, giving you the flexibility to quickly make changes and test them so you can fine-tune your animation.

# Increasing Exposures

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.

### How to increase exposure

1. In the Timeline or Xsheet view, select a cell.
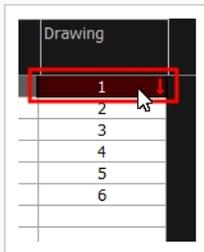




2. Do one of the following:

   - Press +.

   - At the bottom-right corner of the Xsheet view, set the number of cells over which the drawing will be exposed.
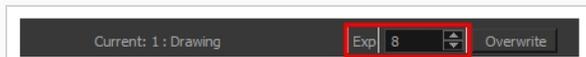
   

   - In the Xsheet toolbar, click the Increase Exposure ᴱˣ button.

   - Right-click and select **Exposure > Increase Exposure**.

   - From the top menu, select **Animation > Cell > Increase Exposure**.

# Decreasing Exposures

Decreasing the exposure removes one exposure from a selected cell and pulls any cells following it to the beginning of selection. You can do this for one cell or a range.

## How to decrease a single exposure

1. In the Timeline or Xsheet view, select a cell.

2. Do one of the following:

- Press -.

- At the bottom-right corner of the Xsheet view, set the number of cells over which the drawing will be exposed.

- In the Xsheet toolbar, click the Decrease Exposure $^{EX}$ button.

- Right-click and select **Exposure > Decrease Exposure**.

- From the top menu, select **Animation > Cell > Decrease Exposure**.

## How to decrease a range of exposures

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.

# Extending Single Exposures

Extending the exposure lets you select a cell and extend it to the desired frame.

### How to extend an exposure in the Timeline view

1. In the Timeline view, select the cell you want to extend.

2. Do one of the following:

   - Right-click and select **Extend Exposure**.

   - In the Timeline View menu, select **Exposure > Extend Exposure**.

   - Select **Animation > Cell > Extend Exposure**.

   - Press **F5**.

3. In the Extend Exposure dialog box, enter the frame number to extend your cell to.

4. Indicate if you want to insert the new frames before the following exposure or overwrite it. If you select insert, any following exposure will be moved down. If you select Overwrite, the following exposure will be erased and replaced by the drawing being extended.
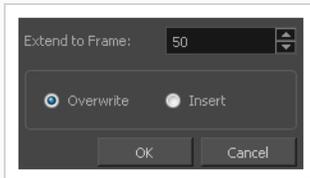


> **NOTE**
>
> You can also select the last cell where you want to extend your drawing to (such as the last cell of the layer), right-click and select **Extend Exposure**. You will not be prompted the dialog box.

### How to extend an 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.
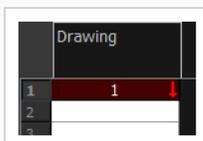
2. Pull down the selected cell to the desired frame.

> **NOTE**
>
> The red selection box must be visible when releasing the cursor. If not, the action is considered cancelled.
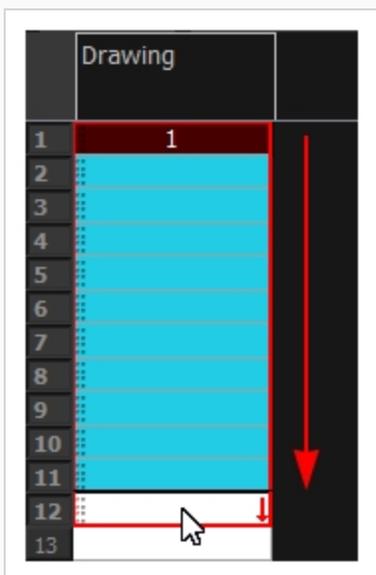


## How to extend an exposure from the top menu

1. Select a cell and 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.

# 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.
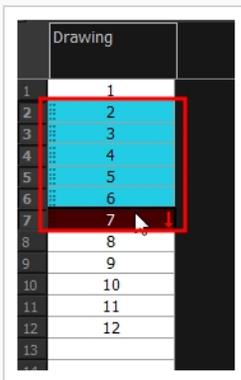
2. Do one of the following:

    - 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 $\overset{EX}{1}$ $\overset{EX}{2}$ $\overset{EX}{3}$ $\overset{EX}{...}$ buttons. Note that you may have to add this button to your toolbar by right-clicking on it and selecting **Customize**.

    - 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**.
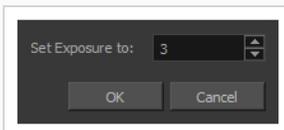
    The new timing is displayed in the Xsheet view.

# Deleting Exposures

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:

    - Press Del.

    - Right-click and select **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 $\frac{EX}{\times}$ button (you may have to customize the toolbar to display it).

# Moving 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.
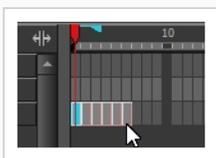
   

2. Drag the cells to the new location.
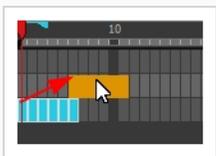
   

3. Drop the selection by doing one of the following:

   - Drop by simply releasing the mouse or pen.
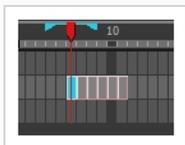
     

   - Hold Ctrl (Windows/Linux) or ⌘ (macOS) while dropping the selection to copy the cells. The original cells will not be moved.
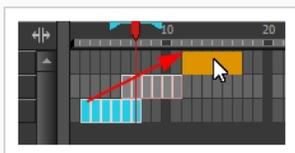
     

   - Press Shift while dropping the selection to insert them between existing frames.
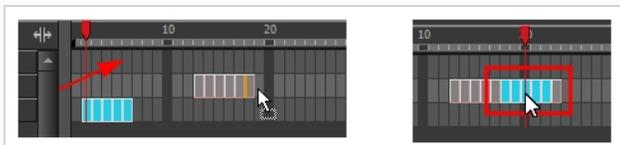
**How to drag a cell to another location in the Xsheet view**

1. In the Xsheet view, select one or more cells.
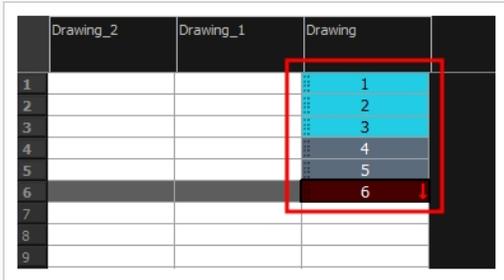


2. In the Xsheet view, position the pointer over the small dotted area ⁞ on the left side of the selected cells.
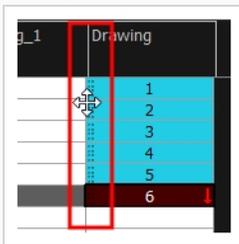


3. Drag the selection to any other cell in the same column or in another column.



4. Do one of the following:

   ‣ Drop the selection to overwrite the existing cells.

- Hold down Ctrl (Windows/Linux) or ⌘ (macOS) 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 **Gestural Drag Mode**.

   ‣ From the Xsheet menu, select **Edit > Gestural Drag Mode**

‣ In the Xsheet toolbar, click the Toggle Gestural Drag Mode ↓ button (you may have to customize the toolbar to display it).
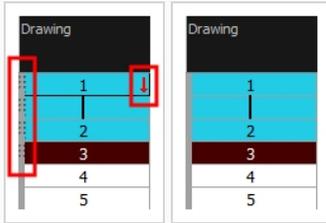
The dragging pad disappears on selected cells when the Gestural Drag mode is off.

# Enabling or Disabling Overwriting Exposures and Keyframes During Drag and Drop

You can change the way the Timeline behaves when you drag and drop a selection of keyframes or drawings with the Overwrite Exposure and Keyframes during Drag and Drop preference. When this preference is enabled, dragging and dropping drawings and keyframes in the Timeline view will overwrite the drawings and keyframes between the selection and the destination, as if the selection "wiped" everything on the way to the destination. This behavior is more similar to the one observed when manipulating keyframes in Adobe Animate. If disabled, dragging and dropping a selection in the timeline will simply remove the keyframes and drawings from the source, and overwrite the destination with them, leaving anything else unaffected.

You can set this mode in two places: the Timeline toolbar and the Preferences dialog box.

### How to enable or disable overwriting exposure and keyframes in the Preferences dialog

1. From the top menu, open the **Edit (Windows/Linux) or Harmony Advanced (macOS)** menu and select **Preferences**. In the **Timeline** tab, check or uncheck the **Overwrite Exposures and Keyframes During Drag and Drop** option, then click **OK**.

2. Open the **Timeline** tab.

3. In the **Paste / Drag & Drop** panel, check or uncheck the **Overwrite Exposures and Keyframes During Drag and Drop** option.
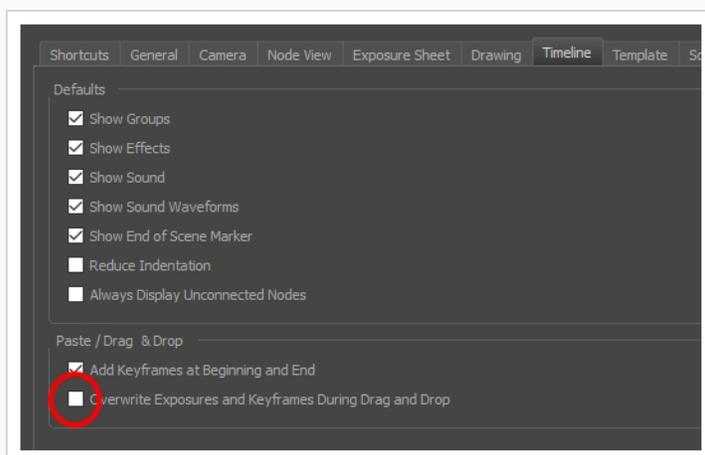


4. Click **OK**.

### How to enable or disable overwriting exposure and keyframes in the Timeline view

1. In the Timeline toolbar, click the Toggle Override Exposure and Keyframe During Drag and Drop ⬛ button. Note that you may have to add this button to your toolbar by right-clicking on it and

selecting **Customize**.

# About Rippling and Overwriting the Exposure in the Timeline View

By default, you can only use your mouse to drag and drop frames in the Timeline view. However, if you zoom in sufficiently, you are able to tweak the exposure of each drawing by clicking and dragging the junction between two drawings.

Just like in some video editing software, when tweaking the duration of a drawing by dragging its side, you can decide whether to *ripple* or *overwrite* subsequent frames. This is determined by whether you grab the edge of the drawing by the left or the right side of said edge.



Grab this handle to ripple drawings      Grab this handle to overwrite drawings
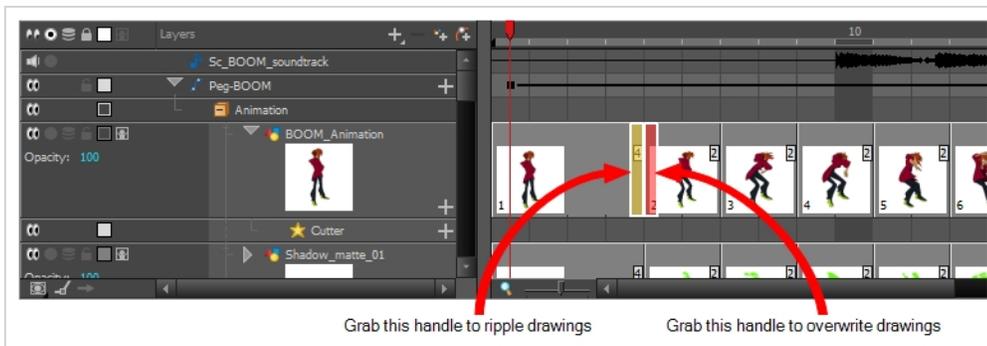
Although not required, this functionality is especially useful when displaying thumbnails in the Timeline view, as you can preview the exposed drawings as you modify their exposure. As a reference, tweaking exposure in the timeline is only possible when you zoom in on the timeline at least close enough to fully view the thumbnails of drawings exposed on two frames. For more information, see *Displaying Drawing Thumbnails in the Timeline View* on page 512.

# Changing Exposure and Rippling Drawings in the Timeline View

If you zoom in on the Timeline view, you can change the exposure of individual drawings by grabbing their right edge with the mouse cursor. If your mouse cursor is just left of the drawing's right edge, a yellow highlight will appear. This means dragging the drawing's edge will adjust its exposure and ripple the ensuing drawings.

### How to extend a drawing's exposure and ripple ensuing drawings in the Timeline view

1. In the Timeline view, enable thumbnails display for your drawing layer by doing one of the following:

   - Left of the layer's name in the Layers list, click on the Show Thumbnails 🔲 icon.

   - Select the drawing layer and press T.

   - Left of the Layers list header, click on the Show All Thumbnails 🔲 icon.

   > **NOTE**
   >
   > Displaying thumbnails is not required for tweaking exposure in the Timeline view, but it is very useful.

2. Zoom in on the Timeline view at least enough to fully display the thumbnails of drawings exposed on twos, by doing one of the following:

   - Drag the Timeline Zoom 🔲 slider to the right.

   - Click on the Timeline view's tab, then press 2 repeatedly.

   - Move the mouse cursor in the Timeline view, then hold Ctrl (Windows/Linux) or ⌘ (macOS) and roll the mouse wheel up.

   

   The Timeline view is zoomed in enough to display a thumbnail for a drawing exposed over two frames.

3. Move the mouse cursor just left of the right edge of the drawing of which you want to change the exposure.

4.  Click and drag the right edge of the drawing to change its exposure.

    If you move the edge to the right, the drawing's exposure is extended, and all the drawings exposed after this drawing are moved forward.
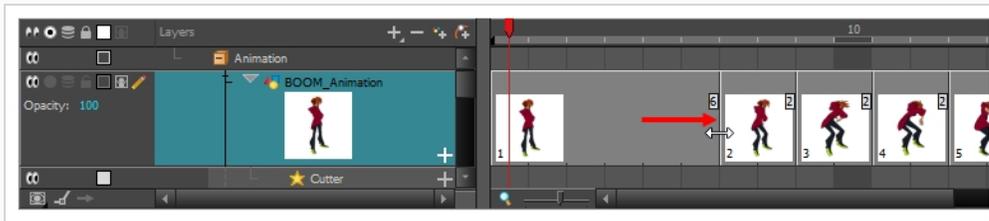
    

    If you move the edge to the left, the drawing's exposure is reduced, and all the drawings exposed after this drawing are moved backward.
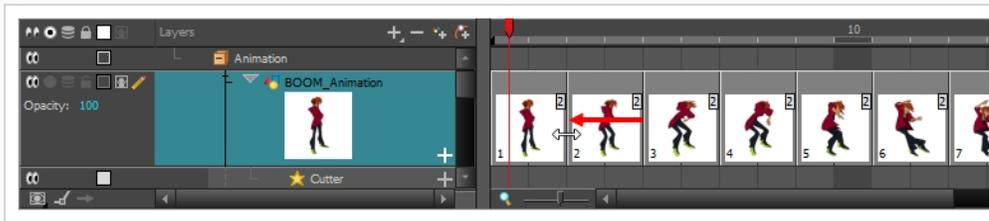
    

> **NOTE**
>
> You can drag the edge further left and completely remove the drawing, making subsequent drawings overwrite it.
>
>
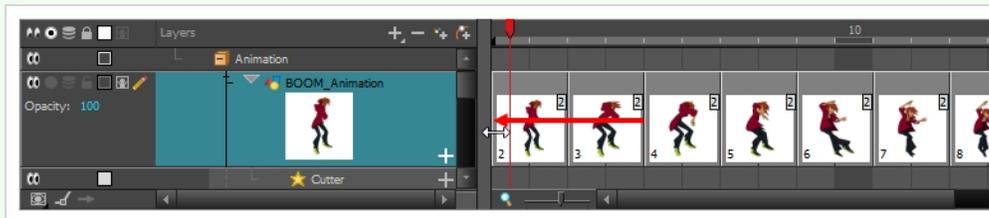
# Changing Exposure and Overwriting Drawings in the Timeline View

If you zoom in on the Timeline view, you can change the exposure of individual drawings by grabbing their right edge with the mouse cursor. If your mouse cursor is just right of the drawing's right edge, a red highlight will appear. This means dragging the drawing's edge will adjust its exposure and overwrite ensuing drawings.

### How to extend a drawing's exposure and ripple ensuing drawings in the Timeline view

1. In the Timeline view, enable thumbnails display for your drawing layer by doing one of the following:

    - Left of the layer's name in the Layers list, click on the Show Thumbnails 👤 icon.

    - Select the drawing layer and press T.

    - Left of the Layers list header, click on the Show All Thumbnails 👤 icon.

    > **NOTE**
    >
    > Displaying thumbnails is not required for tweaking exposure in the Timeline view, but it is very useful.

2. Zoom in on the Timeline view at least enough to fully display the thumbnails of drawings exposed on twos, by doing one of the following:

    - Drag the Timeline Zoom 🔍———┃—— slider to the right.

    - Click on the Timeline view's tab, then press 2 repeatedly.

    - Move the mouse cursor in the Timeline view, then hold Ctrl (Windows/Linux) or ⌘ (macOS) and roll the mouse wheel up.

    

    The Timeline view is zoomed in enough to display a thumbnail for a drawing exposed over two frames.

3. Move the mouse cursor just left of the right edge of the drawing of which you want to change the exposure.

4. Click and drag the right edge of the drawing to change its exposure.

If you move the edge to the right, the drawing's exposure is extended, and all the drawing right after is overwritten.
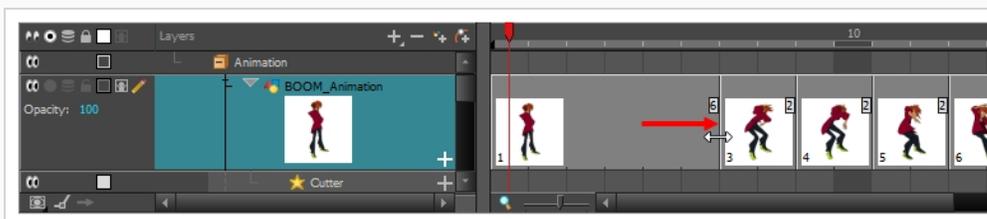


If you move the edge to the left, the drawing's exposure is reduced, and all the drawing right after is exposed over it.
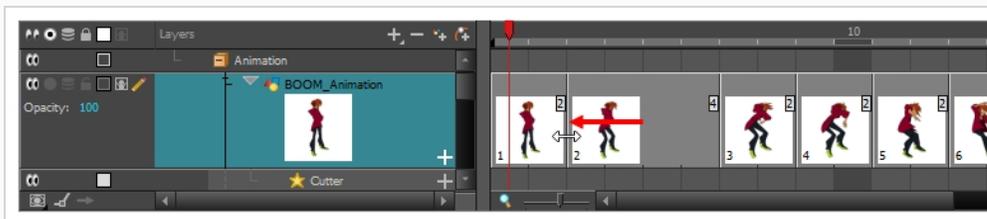


**NOTE**

You can drag the edge further left and completely remove the drawing, making the drawing right after overwrite it.
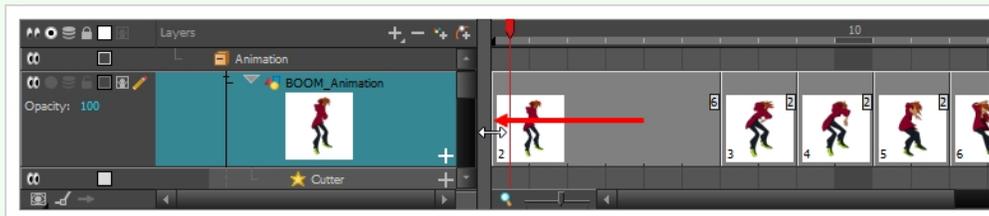
# About Key Exposures

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).



### 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).

# Toggling Pasting Key Exposures

When copy and pasting drawings, by default, key exposures that were in the copied selection are also pasted. You can choose to omit key exposures when pasting drawings by using the Paste Special dialog box or by modifying the currently selected paste preset.

**How ignore or enforce key exposures when copying and pasting drawings using Paste Special**

1. In the Timeline or Xsheet view, select the drawings you want to copy.

2. Do one of the following:

   - Press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

   - Right-click on the selection and select on **Copy cells from the Timeline/Xsheet**.

   - From the top menu, select **Edit > Copy cells from the Timeline/Xsheet**.

3. In the Timeline or Xsheet view, select the cell where you want to paste your selection.

4. Do one of the following:

   - Press Ctrl + B (Windows/Linux) or ⌘ + B (macOS).

   - Right-click on the destination and select **Paste Special**.

   - From the top menu, select **Edit > Paste Special**.

   The Paste Special dialog box opens.
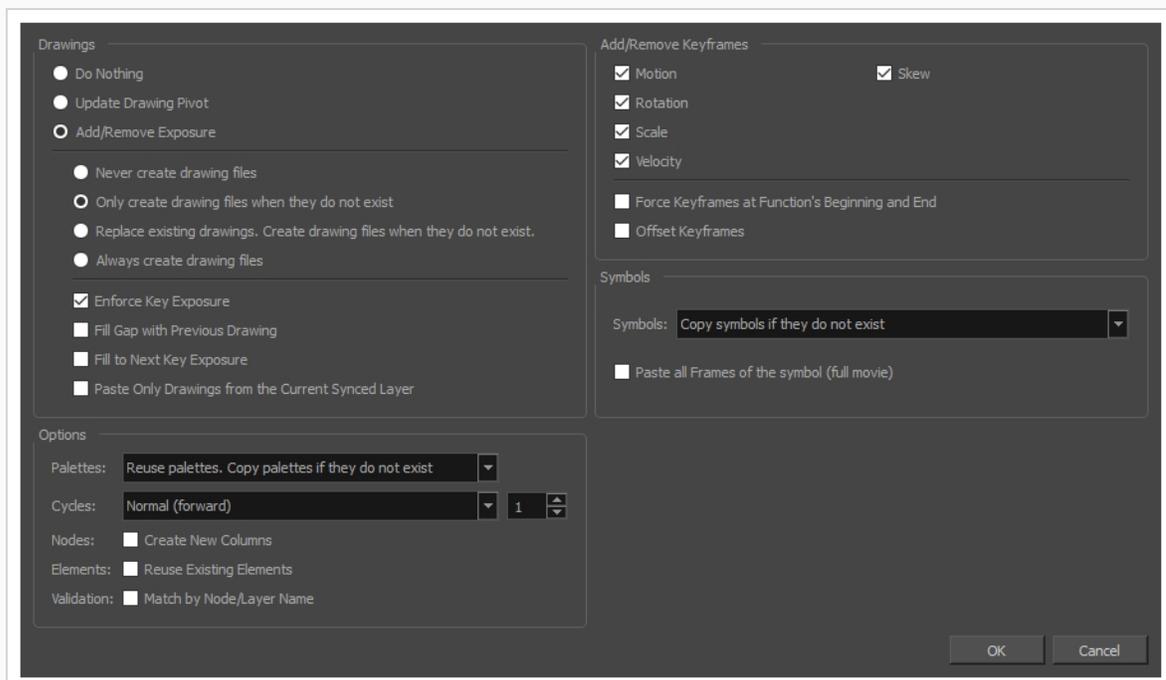
5. Check or uncheck the **Enforce Key Exposure** optiojn, depending on whether or not you want to paste key exposures.

6. Click **OK**.

## How ignore or enforce key exposures when copying and pasting drawings using Paste Presets

1. In the Timeline or Xsheet view, select the drawings you want to copy.

2. Do one of the following:

   - Press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

   - Right-click on the selection and select on **Copy cells from the Timeline/Xsheet**.

   - From the top menu, select **Edit > Copy cells from the Timeline/Xsheet**.

3. In the Timeline or Xsheet view, select the cell where you want to paste your selection.

4. In the Timeline view toolbar, check whether the All Drawings Attribute ▣ , Keyframes Only ▪ or Exposures Only ▢ paste preset is selected.

5. From the Timeline menu, select **Edit > Modify Paste Presets > the active paste preset**.

   The Edit Exposure Paste Preset dialog box opens.
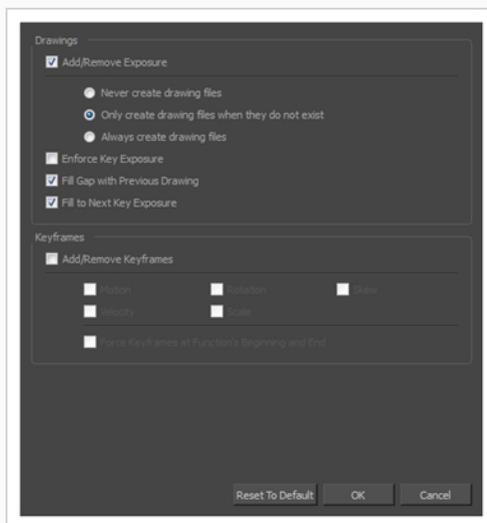


6. Check or uncheck the **Enforce Key Exposure** option, depending on whether or not you want to paste key exposures.

7. Click **OK**.

8. Do one of the following:

- Press Ctrl + V (Windows/Linux) or ⌘ + V (macOS)

- Right-click on the destination and select **Paste Cells in Timeline/Paste**.

- From the top menu, select **Edit > Paste Cells in Timeline/Paste**.

# About 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.

# Creating Empty Drawings

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.

# Renaming Drawings

T-HFND-005-003

To rename a drawing, you need to select the drawing cell and use the Rename Drawing command.

You can also rename a series of drawings relative to their frame position, which is useful in hand-drawn animation.

## How to rename a drawing

1. In the Timeline or Xsheet view, select the drawing to rename.
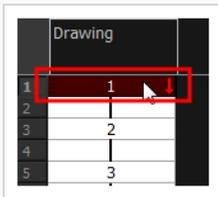
2. Do one of the following:

   - Right-click and select **Drawings > Rename Drawing**.

   - In the Timeline toolbar, click the Rename Drawing ⒶI button (you may have to customize the toolbar to display it).

   - Press Ctrl + D (Windows/Linux) or ⌘ + D (macOS).

   The Rename Drawing dialog box opens.
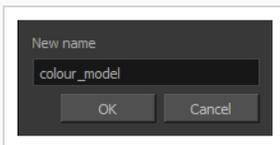
3. In the New Name field, type in the new drawing name.

## 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.
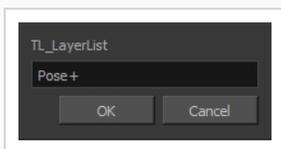
    

3.  In the Prefix to Add field, type the prefix to add before the drawing name.

## How to rename drawings by their frame position

1.  In the Timeline or Xsheet view, select the drawing sequence to rename.
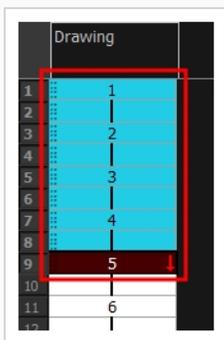
    

2.  Select **Drawing > Rename by Frame**.
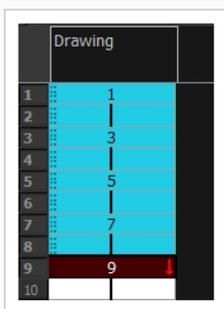
# Deleting Drawings

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.
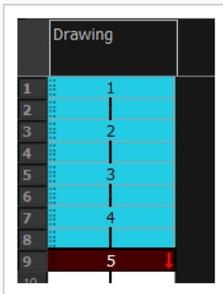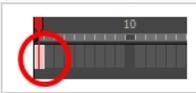




2. Do one of the following:

   ‣ From the top menu, select **Drawing > Delete Selected Drawings**.

   ‣ Right-click and select **Drawings > Delete Selected Drawings**.

# Duplicating a Drawing

T-LAY-003-004

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.
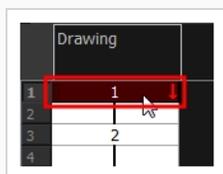
2. Do one of the following:

   - 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.
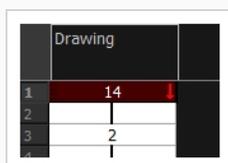
# Copying and Pasting Drawings

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:

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 (macOS).
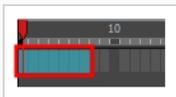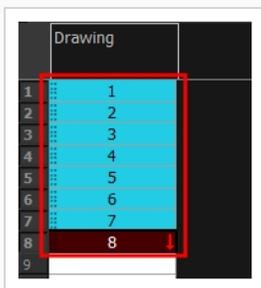
2. In the Timeline or Xsheet view, select the cell where you want your pasted selection to start.
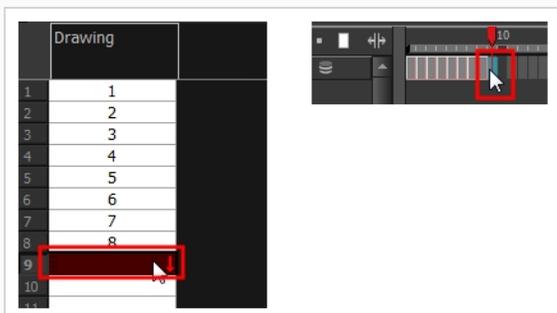


3. Do one of the following:

- 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 (macOS).

The Paste Special dialog box opens.
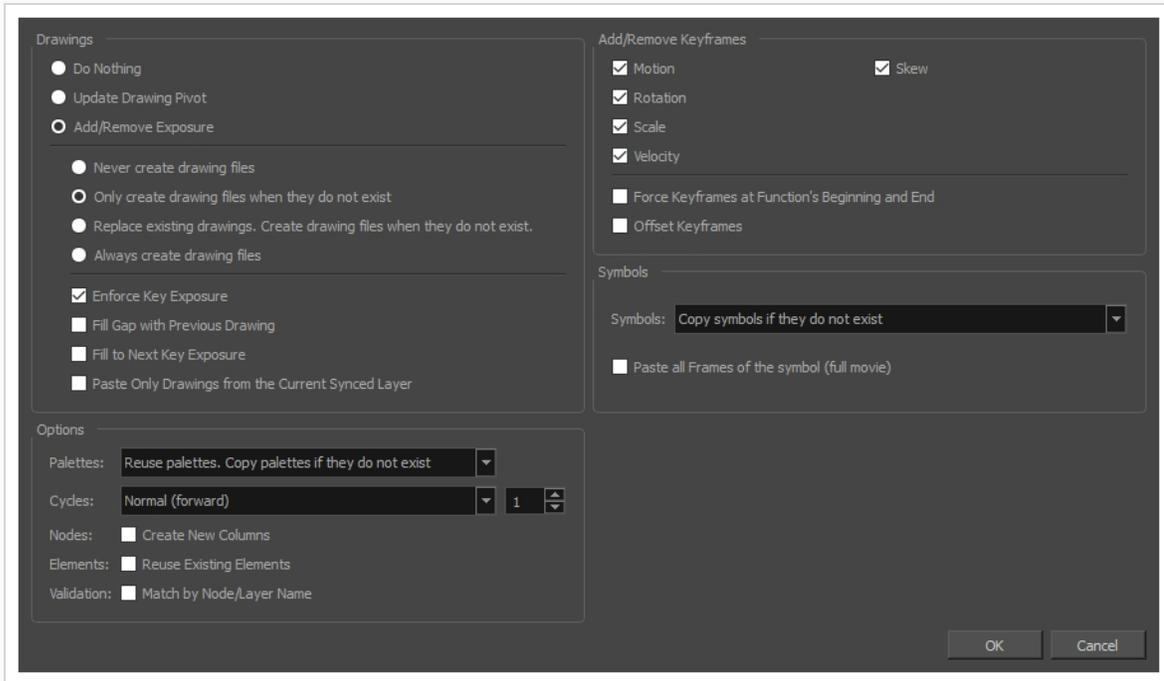
4. Select the **Basic** tab.

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 (macOS).

# Pasting Reversed

Once you've copied an animated sequence, you can paste back its drawings in the reverse order.

> **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 (macOS).

### How to paste a reversed cycle

1. In the Timeline or Xsheet view, select the cell range to paste in reverse order.
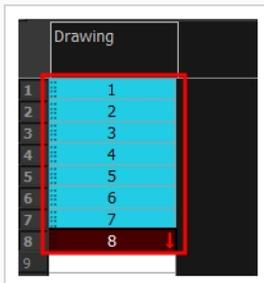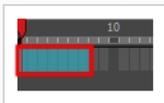
   

   

2. From the top menu, select **Edit > Copy Cell from Timeline** or **Xsheet** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

3. In the Timeline or Xsheet view, select the cell where you want your cycles to start.
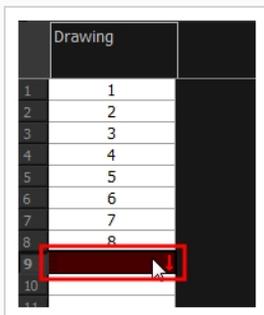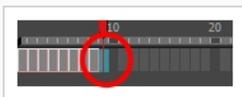
   

   

4. Do one of the following:

   - From the top menu, select **Edit > Paste Reverse**.

- Right-click and select **Paste Reverse**.

- Press Ctrl + . (Windows/Linux) or ⌘ + . (macOS).

# Pasting Cycles

Once you have created a cycle from an animated sequence, you can paste it anywhere, for as many times as you like and in any direction that you choose.

## How to paste a cycle

1. In the Timeline or Xsheet view, select the cell range to loop.
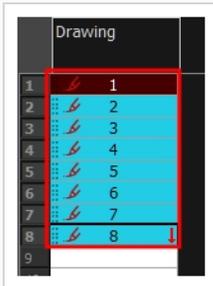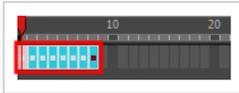




2. From the top menu, select **Edit > Copy Cell from Timeline** or **Xsheet** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

3. In the Timeline or Xsheet view, select the cell where you want your cycles to start.
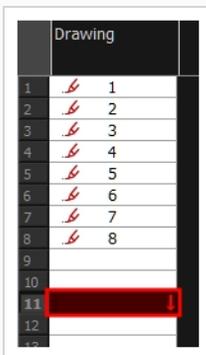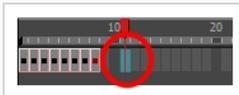




4. Do one of the following:

   - From the top menu, select **Edit > Paste Cycle**.

   - Right-click and select **Paste Cycle**.

   - Press Ctrl + / (Windows/Linux) or ⌘ + / (macOS).

   The Paste Cycle dialog box opens.
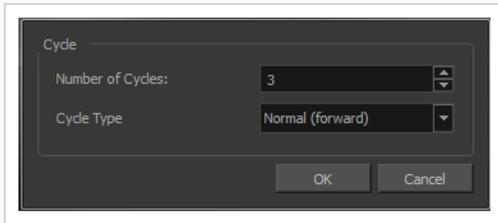
5. Do one of the following:

   - 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.

6. 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.

7. Click **OK**.

> **NOTE**
>
> You can also paste cycles using the Paste Special dialog instead of the Paste Cycle dialog. The Paste Special dialog gives you access to the same options along with many other options. To access the Paste Special dialog, do one of the following:
>
> - Press Ctrl + B (Windows/Linux) or ⌘ + B (macOS).
>
> - Right-click on the destination and select **Paste Special**.
>
> - From the top menu, select **Edit > Paste Special**.

# 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.
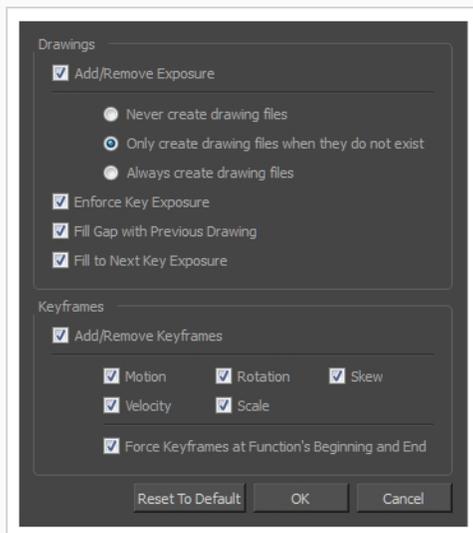
    

2. Refer to the following table and edit the presets as desired.

| Parameter | Description |
|---|---|
| Drawings | |
| Add/Remove Exposure | **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. |

# 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.

# Merging Selected Drawings

You can merge drawings from adjacent layers or columns. The merged drawings will appear in the lower layer or left-most column of the two layers or columns selected.

**How to merge selected drawings**

1. In the Xsheet view, select the drawings to merge.
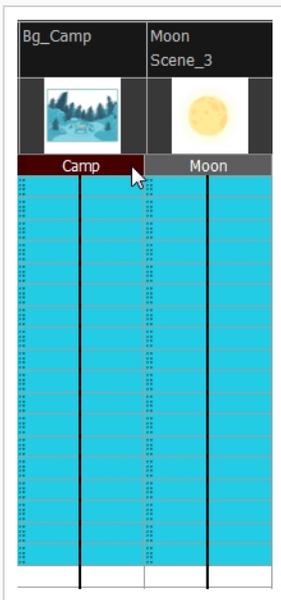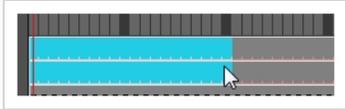




2. Do one of the following:

   ‣ In the Xsheet menu, select **Columns> Merge Selected Drawings**.

   ‣ In the Timeline menu, select **Layers > Merge Selected Drawings**.
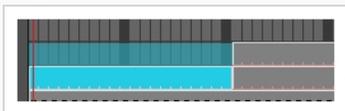
3. Do one of the following:

   ‣ 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.

# Merging All Drawings

You can merge all the drawings in two layers or columns.

## How to merge all the drawings in two 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.
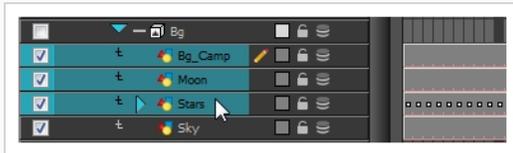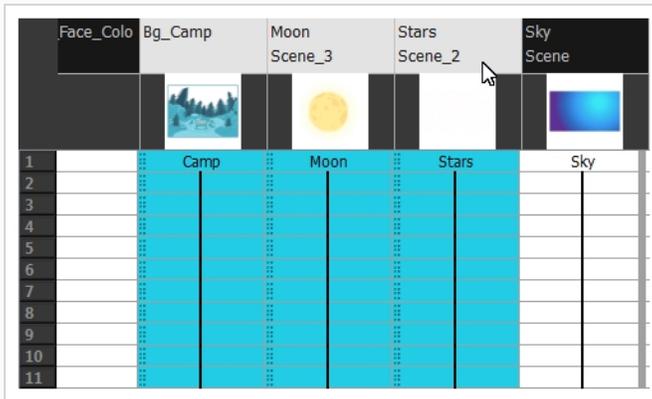
    ‣ In the top menu, select **Edit > Merge**.

    ‣ In the Xsheet menu, select **Columns > Merge Selected Columns.**

    ‣ In the Timeline menu, select **Layers > Merge Selected Layers**.
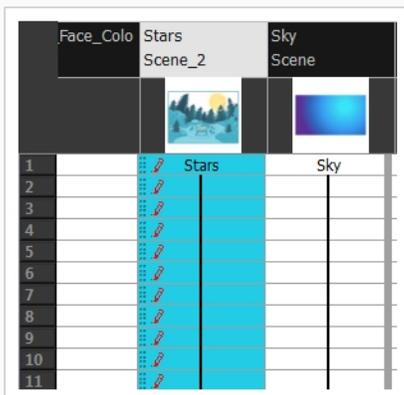
In the Xsheet view, the right-most column will contain the merged drawings and the other columns will be deleted. In the Timeline view, the bottom timeline layer will contain the merged drawings from all layers and the other layers will be deleted. Drawings are not deleted and are still accessible.

# 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.
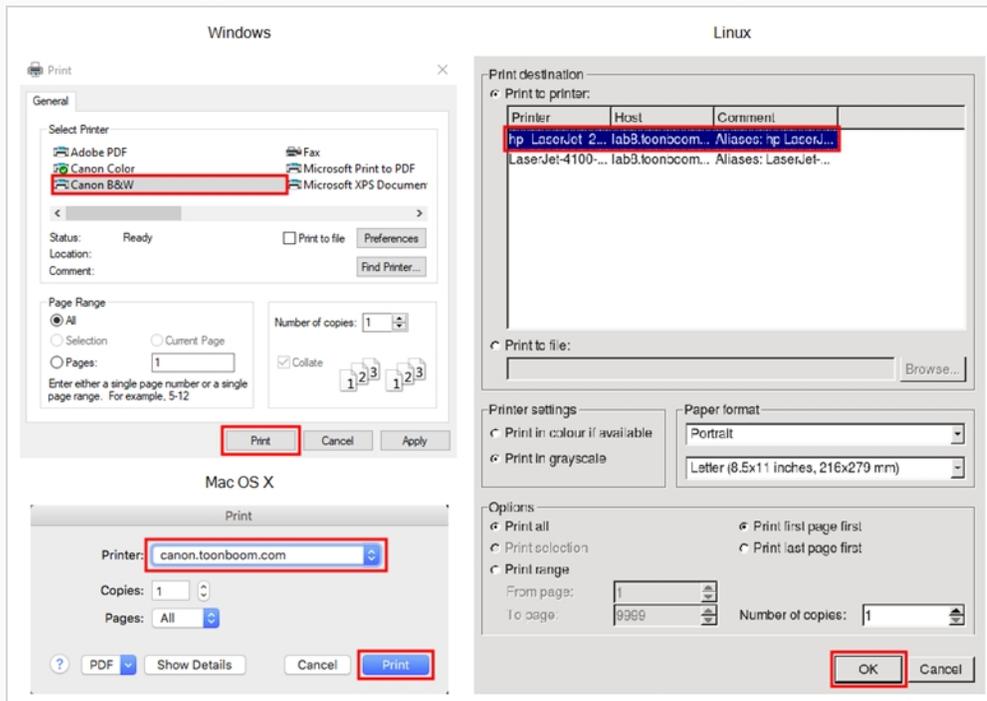
   

2. To set up your print:

   - **Windows**: In the Select Printer section, select your printer and adjust the rest of the printing settings.

   - **GNU/Linux**: In the Print Destination section, select your printer and adjust the rest of the printing settings.

   - **macOS**: 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 **macOS**: Click **Print**.

- **GNU/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 | |

# Chapter 7: Morphing
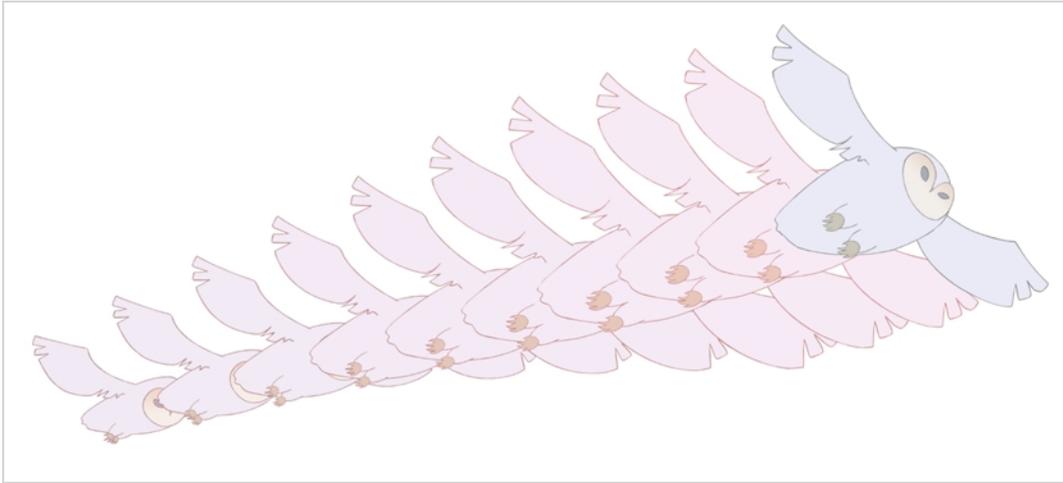


Hand-drawn animation requires you to spend a lot of time tracing in-between drawings. Harmony's morphing feature can help speed up the process. This powerful feature automatically creates computer-generated drawings between your vector drawings to save time and increase productivity. You can easily modify the timing and velocity (ease in and ease out) of a morphing animation.

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.

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.

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!

# About 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.
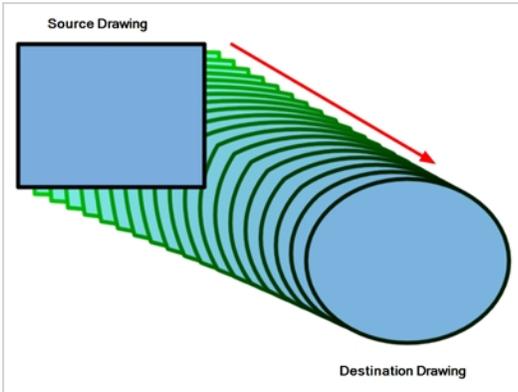


Morphing works between similar shapes, which are drawings that have the same palette, colours and number of shapes. You can even change any shape into another one, as long as the source and destination keep the same colours, number of lines and number of shapes.

# About 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.

Here are a few tips about creating morphing sequences:

- When learning about morphing, it is recommended that you use the Brush tool. You can use the Pencil line for simple closed shapes.

- 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.

- Flatten your drawing before starting a morphing sequence.

- 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.

- 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.

- 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.

- If a zone inside a larger zone on the source drawing ends up outside on the destination drawing, the morphing will fail.

- 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.

# About the Closest Similar Shape Rule

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).
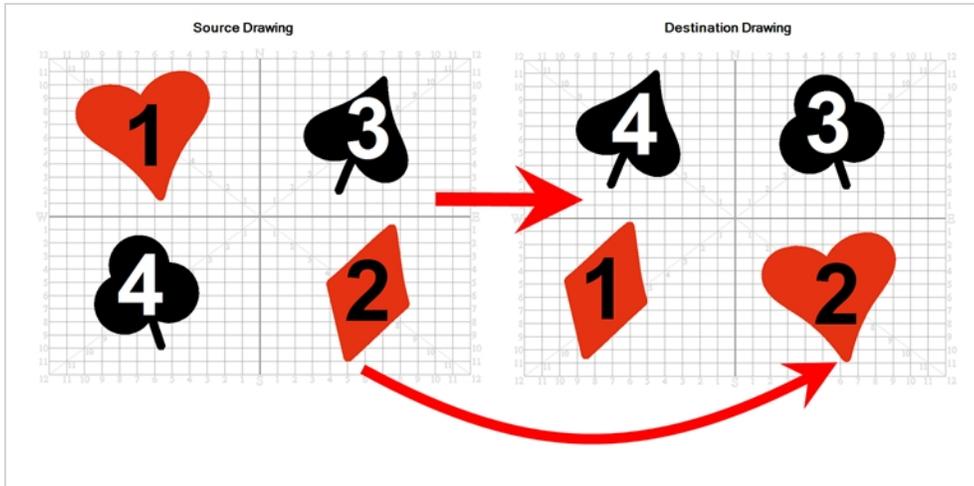


In the example above, the red heart shape (1) will morph with the closest shape using the same colour swatch. It will morph with the red diamond shape (1) in the next drawing. The red diamond shape (2) in the source drawing will morph with the red heart shape (2) located in the same area in the destination 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.

# About the Pencil Line to Pencil Line Rule

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).
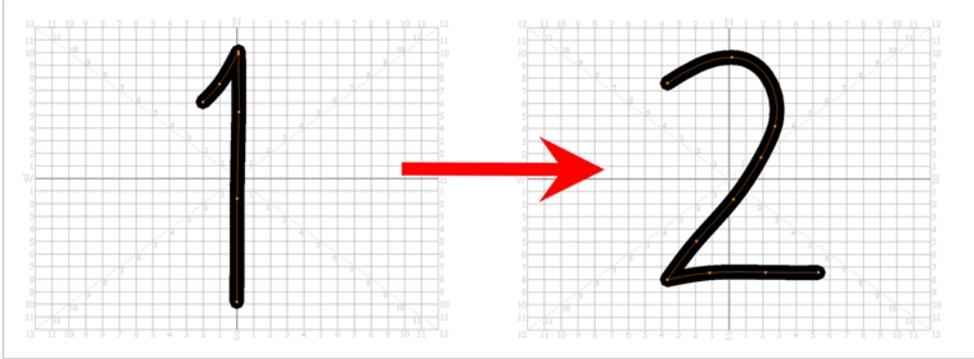


A pencil line will never morph with a brush stroke.
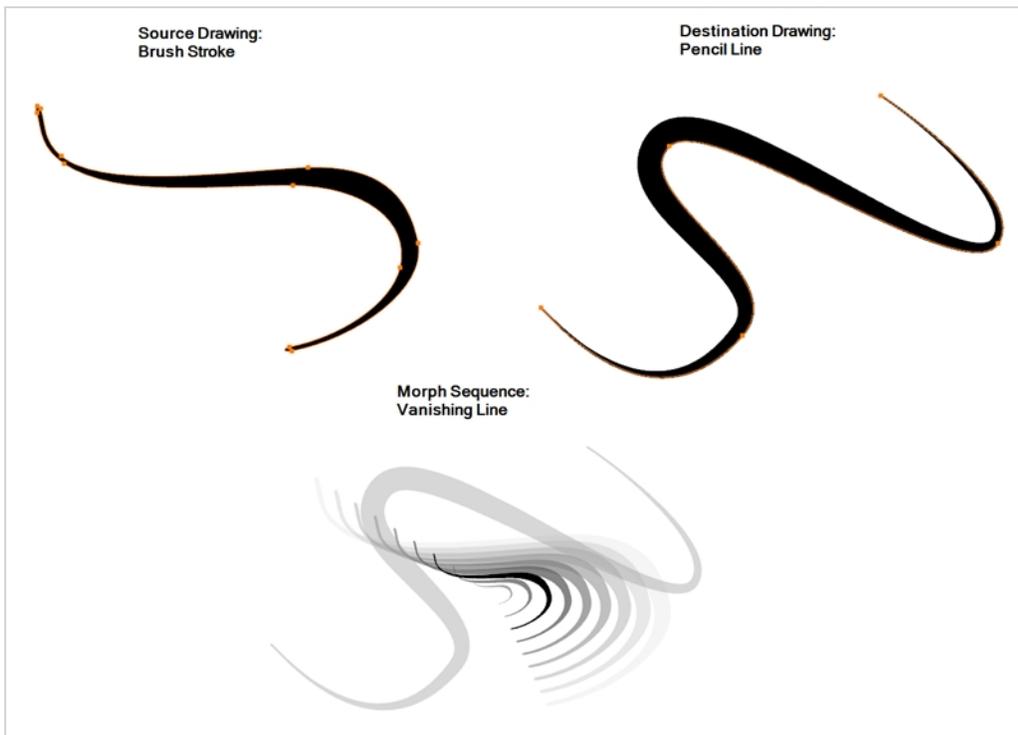


Pencil lines with thickness are supported in morphing sequences. The thickness will morph according to the thickest and thinnest areas in the source and destination drawings.
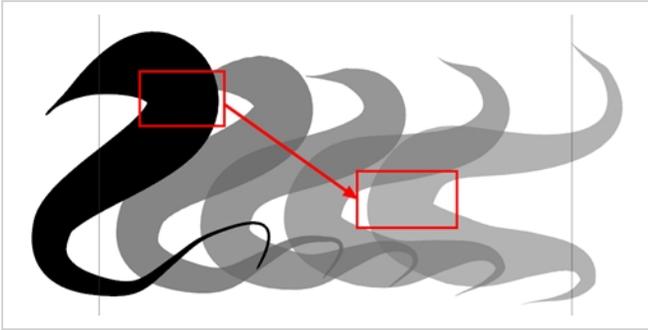
Pencil lines with textures are not supported in a morphing sequence. During the morphing, the texture will disappear and show without pencil line opacity texture.



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.
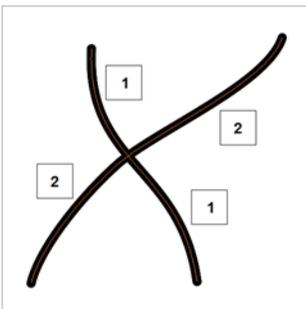
# About the Fill Shape to Fill Shape Rule

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.



Contour points on both
outline and fill
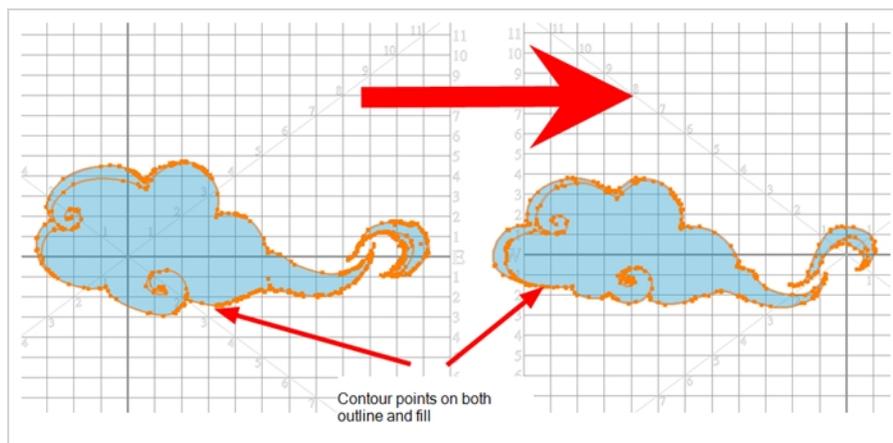
# About the Same Colour Swatch Rule

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.
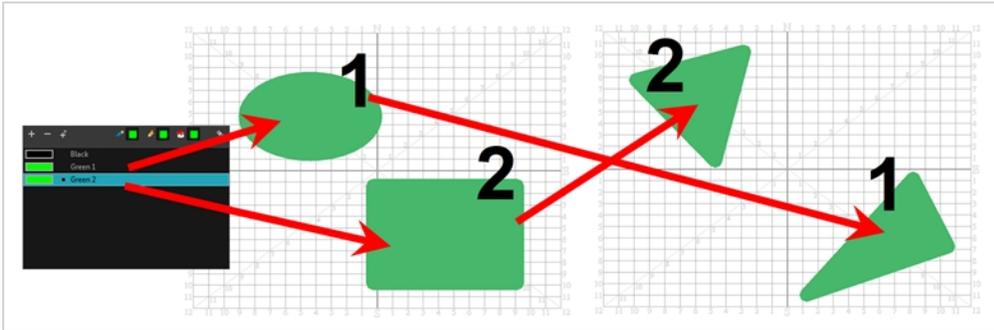
# About the Vanishing and Appearing Rule

If a colour zone does not find a match in the first or the second drawing, it will progressively appear or disappear.
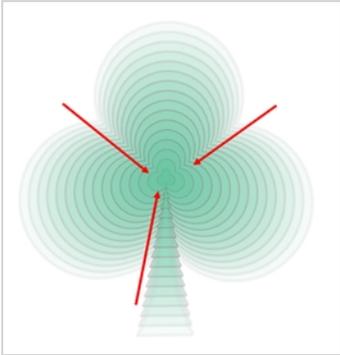
# About the Colour Art and Line Art Rule

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 Morphing

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.
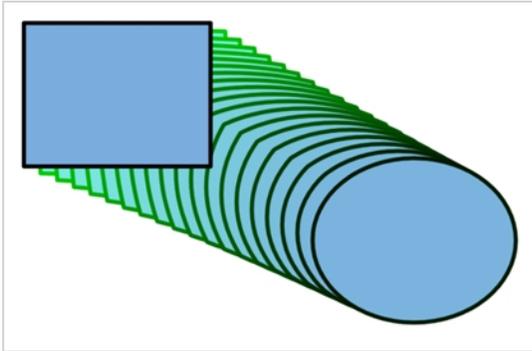


> **NOTE**
>
> As you create and adjust your morphing sequences, you will often use the Tool Properties view. Using this view allows you to do things such as toggle between your key drawings, adjust the easing or select a hint type.

### How to 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.

   > **NOTE**
   >
   > When drawing a rectangle or an ellipsis, you can hold down the Shift key to

> draw your shape with equal dimensions, so as to make a square or a circle instead. You can also hold down the Alt key to draw the shape from its center rather than from its corner.

6. Paint your rectangle using the Paint tool.
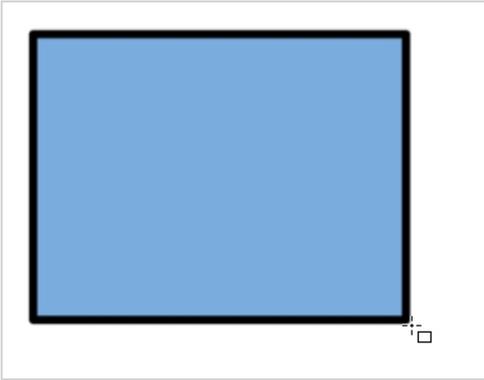


7. In the Xsheet or Timeline view, select the cell on which you want your morphing sequence to end.
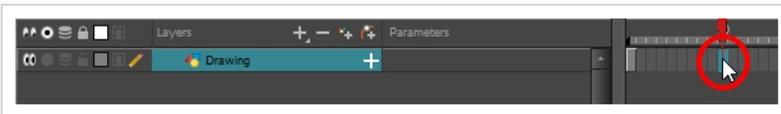


8. Do one of the following:

   - In the Tools toolbar, select the Ellipse ○ tool.

   - Press Alt + =.

9. Draw and paint the ellipse with the same outline and fill colours as the rectangle.
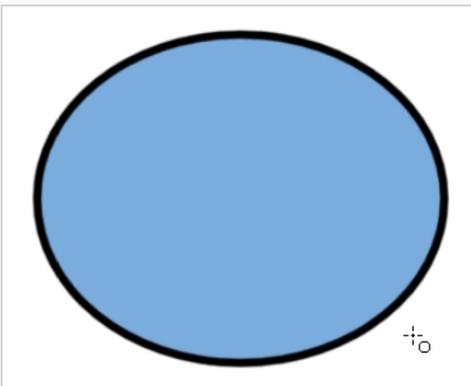


10. In the Xsheet or Timeline view, select the range of frames going from your first drawing to your second drawing, including the frames containing the drawings.
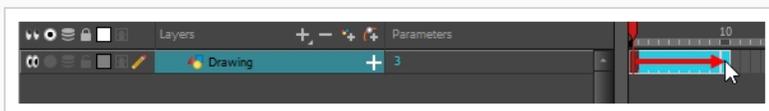
11. Do one of the following:

    - 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 going from the first key drawing to the second key drawing appear, indicating that computer-generated inbetweens have been created.

# Deleting Morphing

You may want to delete an entire morphing sequence in order to redo a sequence from scratch.

**How to delete a 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**.

   - From the Xsheet or Timeline view menu, select **Morphing > Delete Morphing**.

   - right-click on your sequence and select **Morphing > Delete Morphing**.

   The entire sequence between the two keyframes is removed.

# About Morphing Velocity and Timing

Once you have set up a morphing sequence, you can control its velocity and timing.

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.
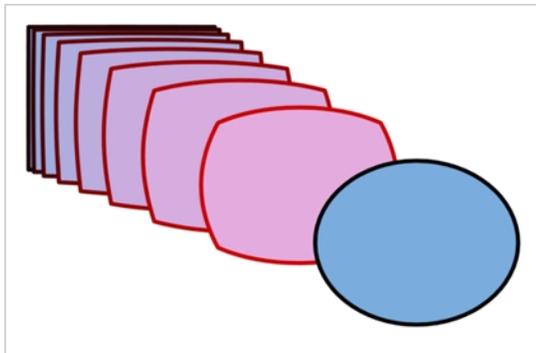


If you have several morphing sequences on a single layer, you may find it easier to adjust their velocities on one function curve rather than several separate ones. Having all of your velocity parameters in one place is more efficient and easier to modify.

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.

# Adjusting the Morphing Velocity

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 adjust the velocity in the Tool Properties view

1. In the Tools toolbar, select the Morphing 🖐 tool or press F3.

2. In the Timeline view, click on a frame in the morphing sequence you want to adjust.

3. In the Tool Properties view, increase and decrease the Ease In and Ease Out value to adjust the sequence's velocity.

# Adjusting the Morphing Timing

If you did not place your source and destination drawings on the correct frames you may need to extend or shrink the sequence length.

**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.
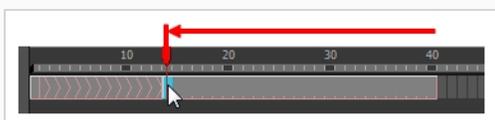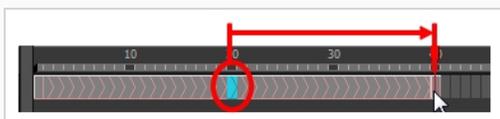
# About Morphing Hints

Harmony's Morphing tool allows you to control your morphing sequence in many ways. One of those ways is to place hints to ensure Harmony morphs your drawings the way you intended.
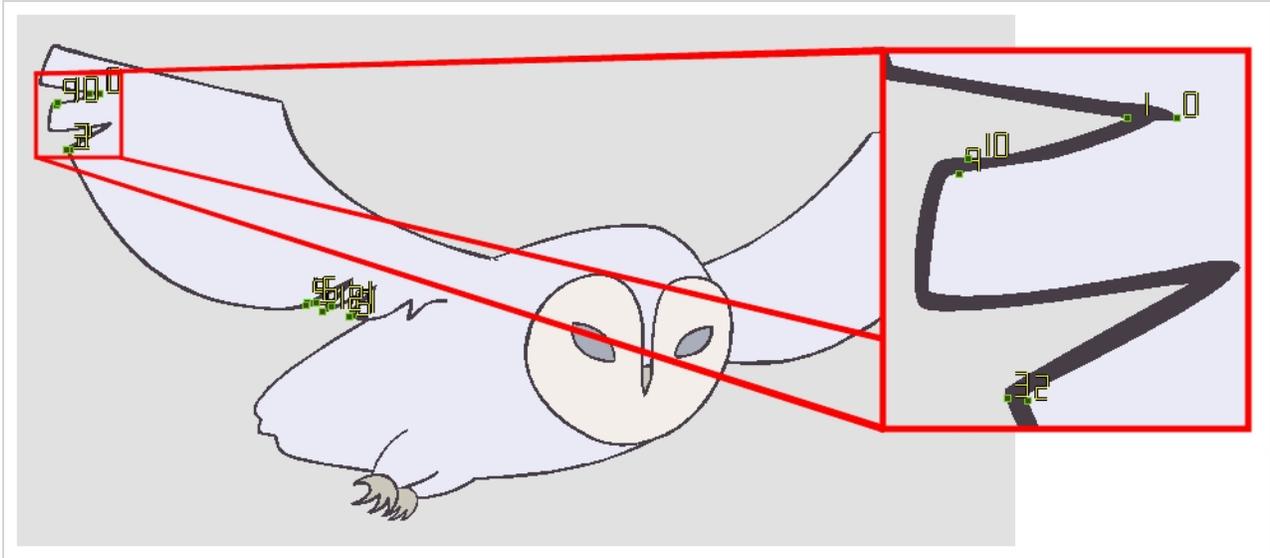


Hints are points that are placed in both the source and destination drawings to associate zones and lines between the two drawings. They are used to fix errors in the way Harmony morphs drawings, such as a line that is not following the colour fill zone, or when a part of your source drawing doesn't morph into its corresponding part of the destination drawing. By default, Harmony will associate a corner or a point in the source drawing with the nearest corner or point in the destination drawing. Hence, hints quickly become necessary if the shape being morphed or its movement is complex.

Hints always exist on both the source and destination drawing. When you create a hint on either drawing in a morph, a corresponding hint will automatically appear on the other drawing. The same principle applies if you delete a hint.

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.
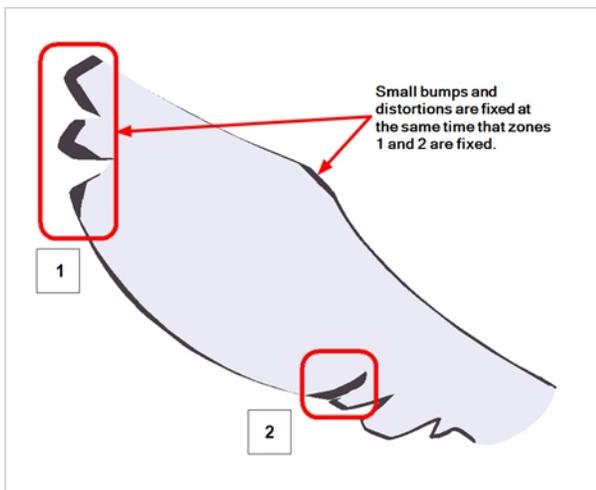
Do not add too many hints, this is a common mistake when morphing, it takes some practice to learn how to correctly use and place hints.

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.
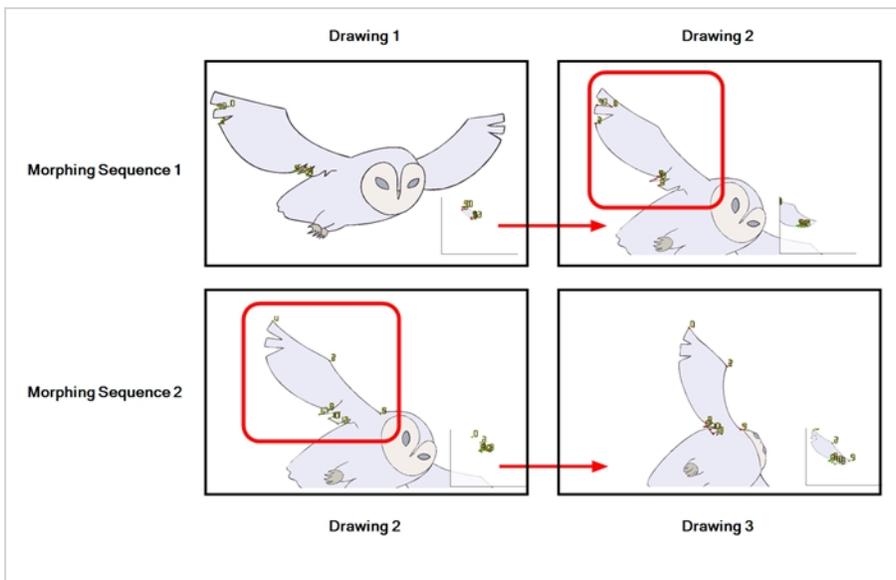


> **NOTE**
>
> Each morphing sequence has its own set of parameters and hints. This means that Drawing 2 will have a set of hints for the first sequence and another set for the second sequence. The two sets of hints will not show at the same time. Each set of hints that appears always corresponds to the morphing sequence you are working on.

# About Hint Types

To correct morphing distortions, Harmony has different types of hints available for controlling different types of problems.

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.

Hint points in the source drawing are green and red in the destination drawing.
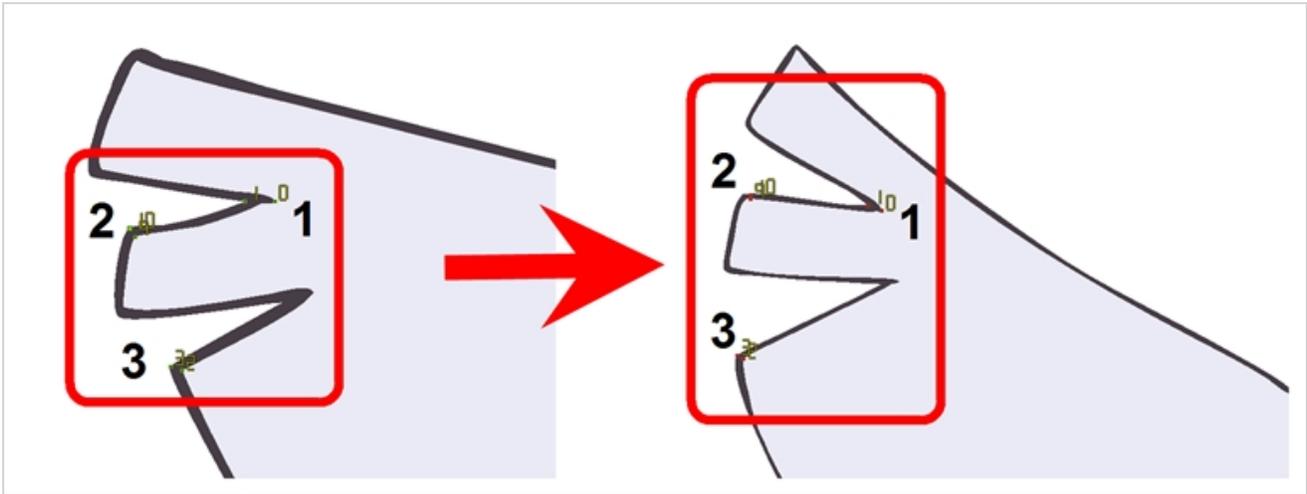
# About Contour Hints

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.

# About Zone Hints

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.
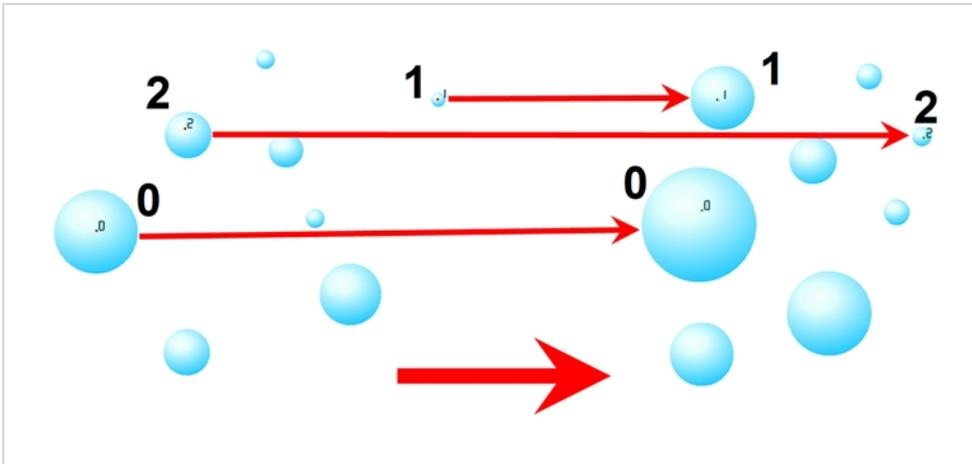
# About Pencil Hints

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.
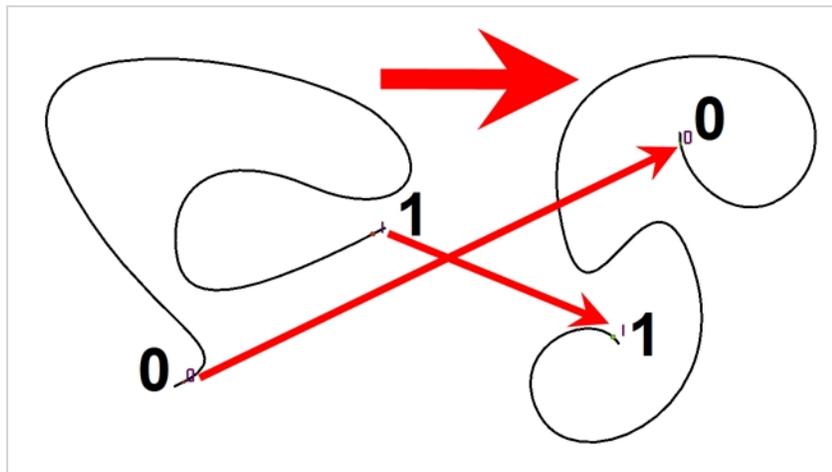
# About Vanishing Point Hints

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.
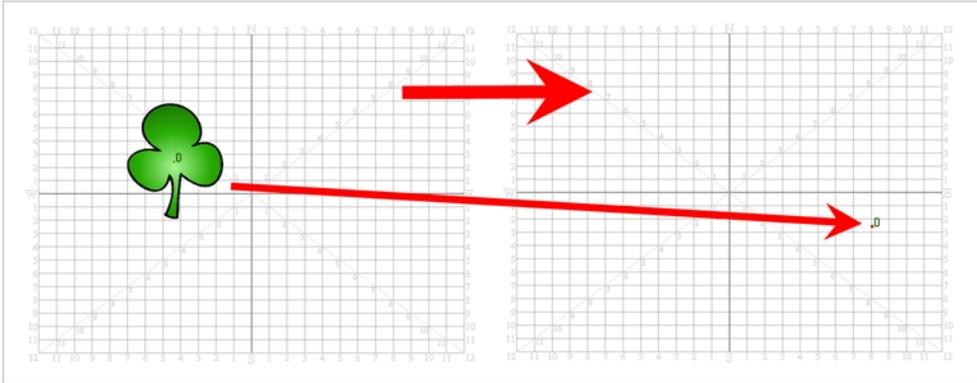
# About Appearing Point Hints

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.
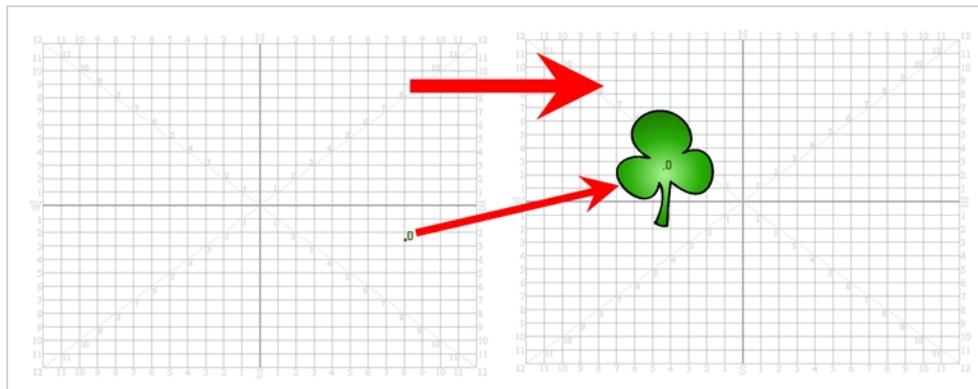
# Adding and Deleting Morphing Hints

Using the Morphing tool you can use hints to correct the morphing sequence.

**How to add and hints**

1. In the Timeline or Xsheet view, select the source 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.
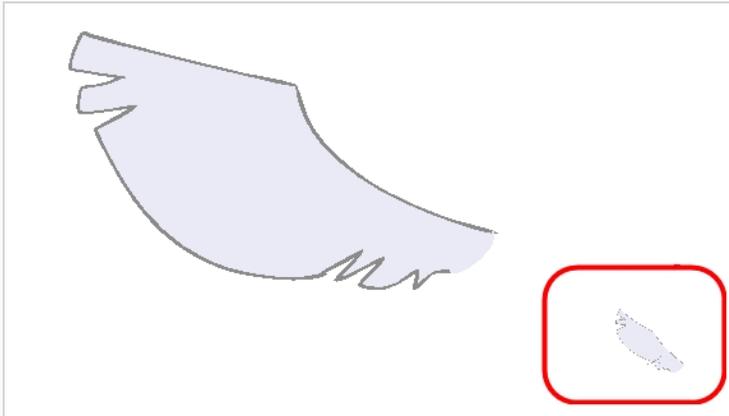
   

3. In the Tool Properties view, select the type of hint you want to use.
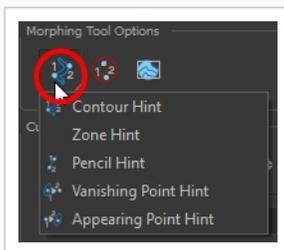
   

   - Select Contour Hint to correct a brush line or colour zone's contour (Contour vector). Contour Hint points will behave similar to Pencil Hint points when used on a pencil line. Note that you obtain better results using the Pencil Hint point on pencil line rather than Contour Hint points.

   - 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.
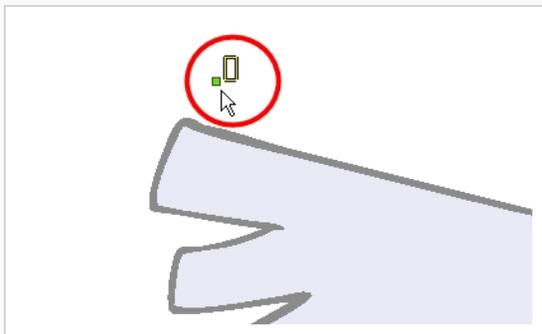
5. Select the hint's point and move it to its correct position.
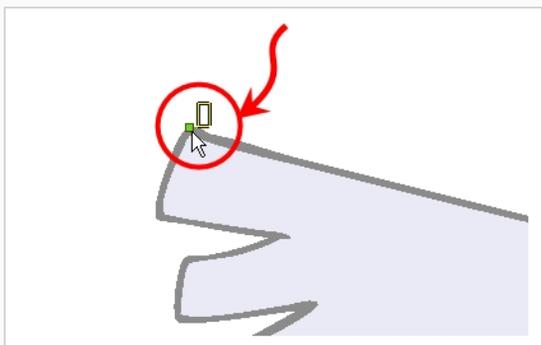


6. In the Timeline or Xsheet view, select your destination drawing.

7. Find and move the corresponding hint's point to the matching part of your destination drawing.
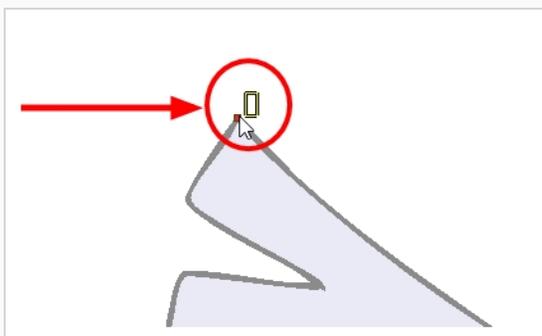


8. In the Playback toolbar, press the Play ▶ button to see the result.

## How to delete hints

1. Select one or many hints.

2. Press Del.
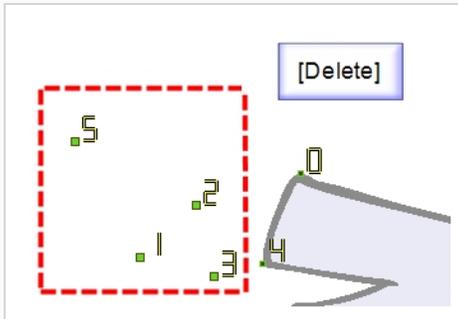
> **NOTE**
>
> To delete all of the hint points at once, press Shift + Del.

# Copying Hint Points

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.
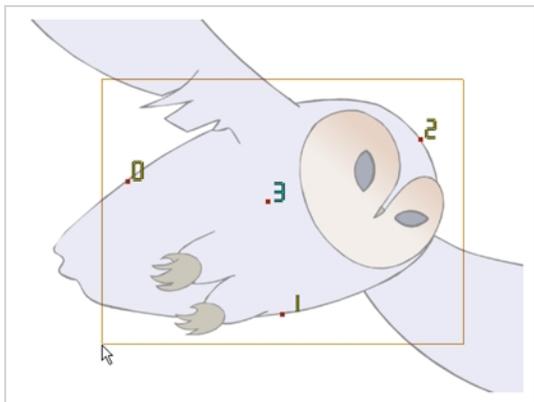


### How to copy a drawing and its hints

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 (macOS).

4. In the Timeline view, select the cell where the new drawing will be.
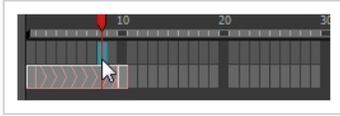


5. In the Drawing view, paste your selection.

6. Do one of the following:

   - In the top menu, select **Edit > Paste** .

   - Press Ctrl + V (Windows/Linux) or ⌘ + V (macOS).



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.
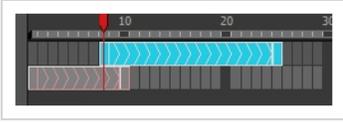
10. Do one of the following:

    - In the Tools toolbar, select the Morphing  tool.

    - Press F3.

11. In the Drawing or Camera view, position your hint points.

# About 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 *About Hint Types* on page 720

An important aspect of morphing is to identify possible problem zones in order to fix them and avoid potentially frustrating situations.
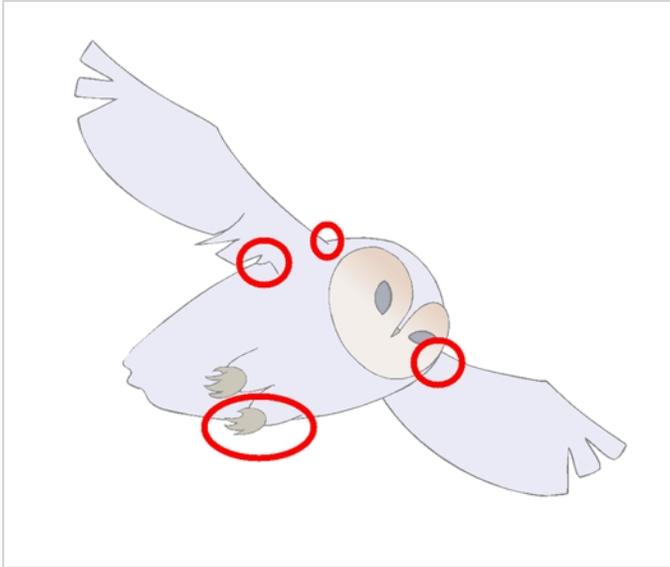


Simple details that look easy to morph can sometimes be more challenging than they may initially appear to be. For example, you may find that the nose becomes an issue when performing a head rotation. As explained earlier, the drawings need to be similar in their number of shapes. Generally, on a head 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.
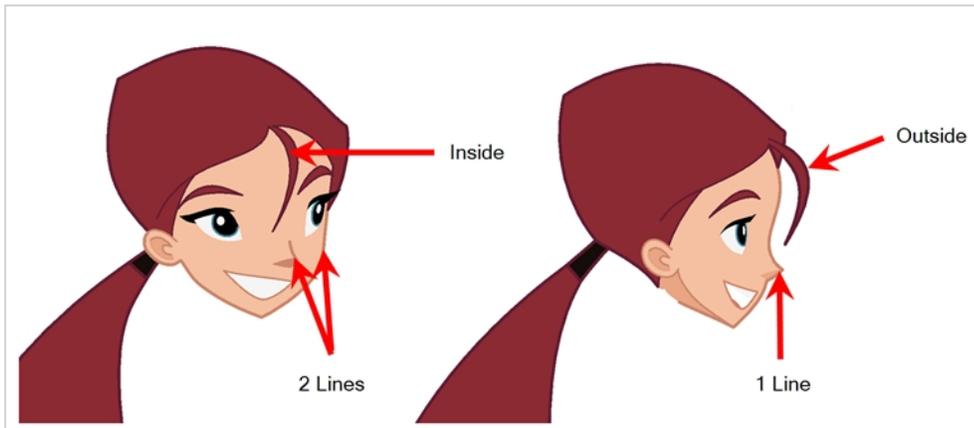
Any shape that is contained inside another one and has to morph out of that shape will be problematic for the same reasons as the nose is. At some point during the morphing sequence, the shape contained inside the face will merge with the face outline, and then become a separate shape again.

Morphing 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.

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.
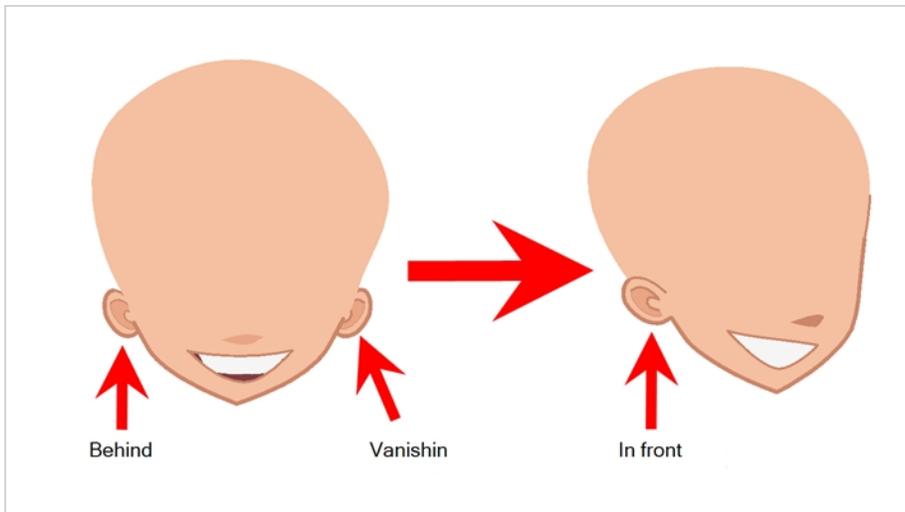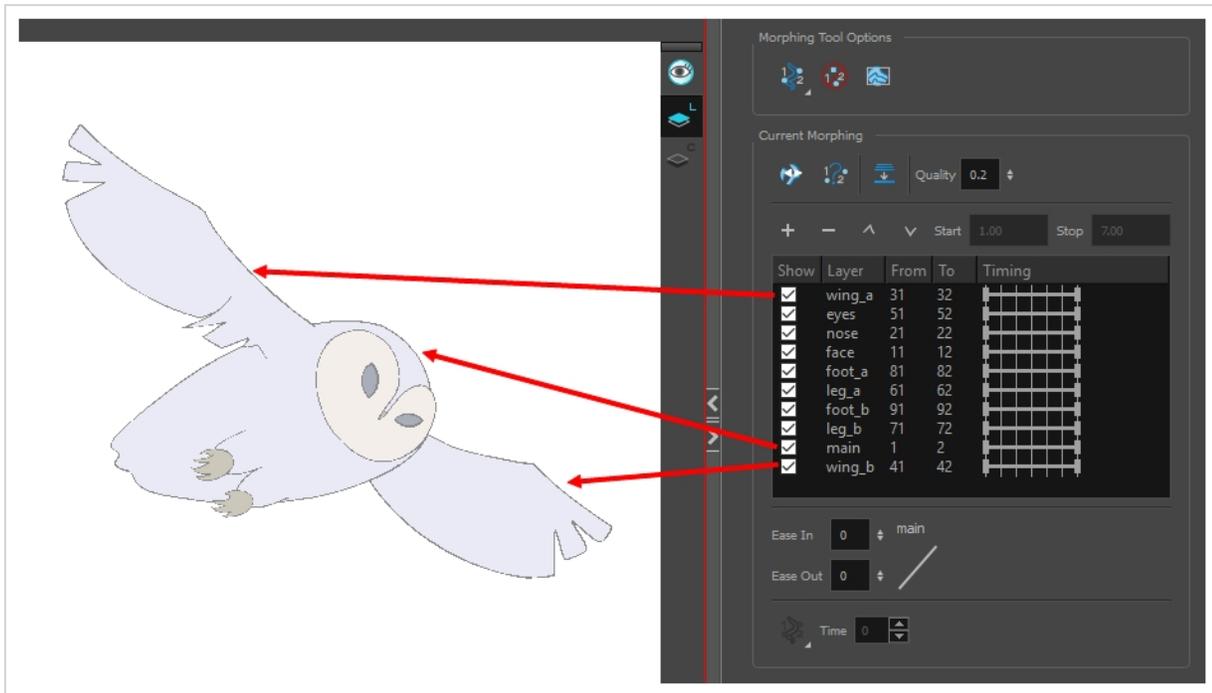
> **NOTE**
>
> Use a naming convention for each morphing layer such as ear_1, ear_2 or head_1, head_2. You can also use the numbers 1 to 9 for the first layer, 10 to 19 for the second one, 20 to 29 for the third one and so one. This technique is useful if you plan to do more than one morphing sequence 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.

# Creating Morphing with Morphing Layers

You can create morphing sequences on separated layers using morphing layers.

## 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.
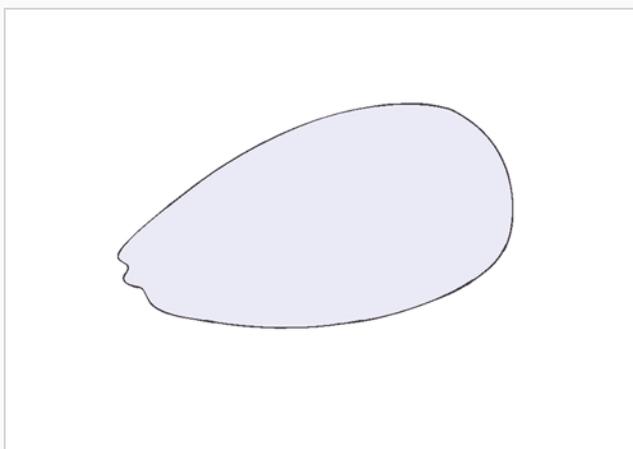
   

3. In the Timeline view, select the destination cell.

4. Enable and extend the Onion Skin.

   

5. In the destination cell, draw the second drawing.
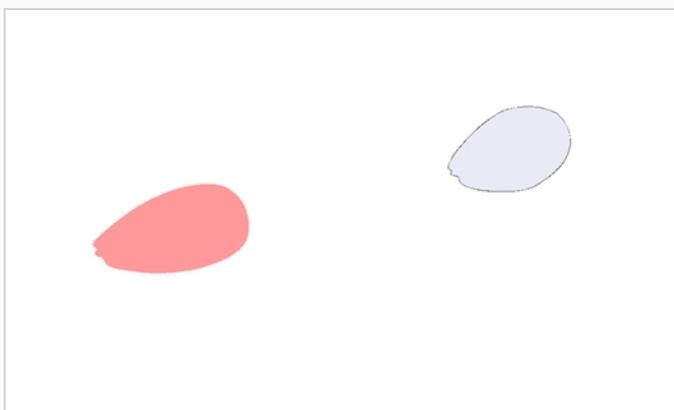
6.  In the Timeline view, select the in-between cells.

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. 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.
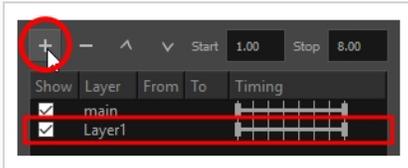
    

10. Double-click on the new layer's name and name it appropriately.

11. Press Enter/Return.
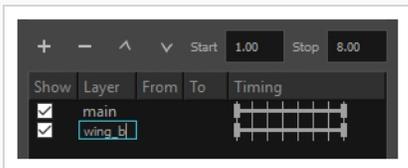
    

12. Use the Up ∧ and Down ∨ arrow buttons to move the new layer above or below the `Main` layer.

    -   If placed above the `Main` layer, it will be displayed in front. If it is placed below, it will be displayed behind.

    

736
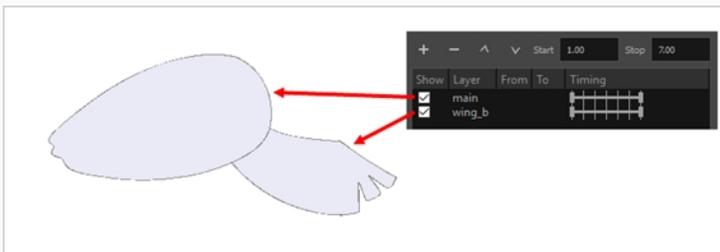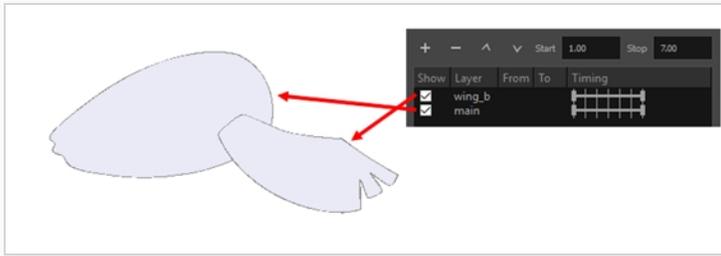
13. To create new drawings, double-click on the blank area under the **From** section to create the source drawing and the **To** section for the destination drawing and type a different value than the ones used for the main layer.

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.
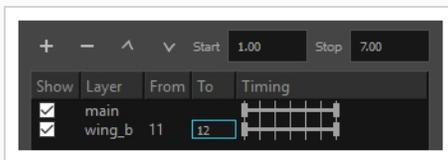


15. Click on the new source drawing to start drawing the new part. (Make sure that you are working on the proper drawing by verifying the name in the Camera or Drawing view's bottom left corner.)
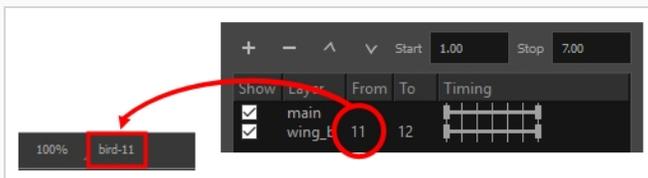


16. In the Camera or Drawing view, draw the source drawing.
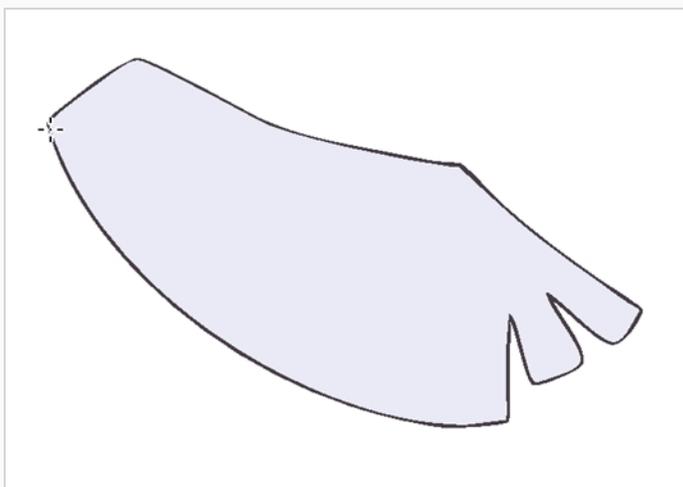
17. Once the source drawing is done, use the Morphing Tool Properties view and click on the destination drawing's name and draw it in the Camera or Drawing view.

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.
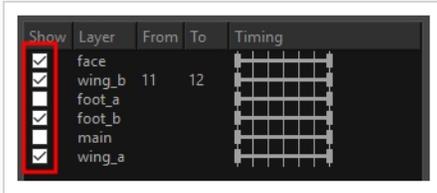


20. If you want to change the layer duration, click on the layer and change the start and stop numbers.
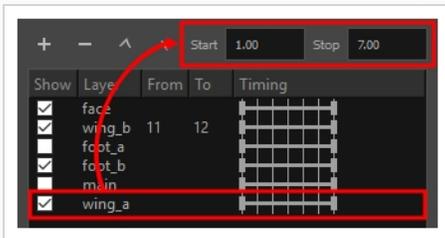


The length indicator changes according to the new values.

# About Morphing Key Drawings

Once you have a morphing sequence, you can add a morphing key drawing.
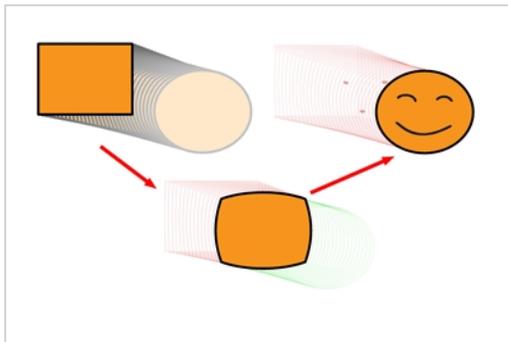


A morphing key drawing allows you to insert extra details into a morphing sequence. For example, during a morphing sequence you may need to insert a detail such as teeth or a mouth; this is easy to do when you use a morphing key drawing. Instead of creating an entirely new drawing, convert a computer generated in-between to a morphing key drawing and add your extra details to it and the next key drawing.

# Inserting Morphing Key Drawings

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 keyframe.
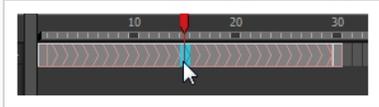


2. Do one of the following:

   - 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.
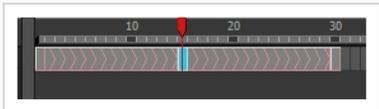


3. In the Drawing or Camera view, draw your new details on the morphing key drawing.

4. In the Playback toolbar, press the Play ▶ button to see the result.

# About Transparency Morphs

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.
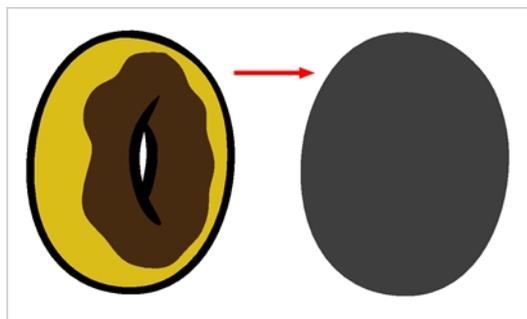


Once the general morphing shape is analyzed, the system will carry on analyzing the interior details such as colour zones and holes.
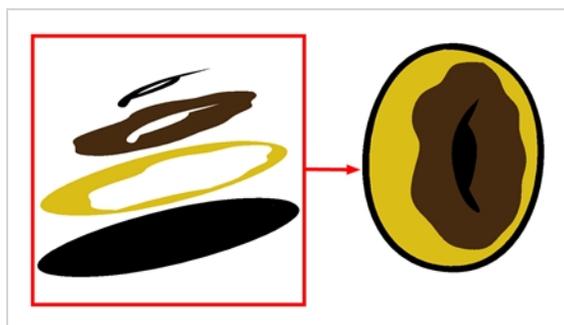


As you can see, because the hole was placed on top after the main shape was morphed, the centre is filled with an opaque brown colour. In order to avoid opaque holes, you have to paint the zone with a transparent colour so that you can control it and flatten the transparency to cut a hole through the 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.

# Morphing Transparencies

You can use invisible colours to morph holes and transparencies.

## 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**.
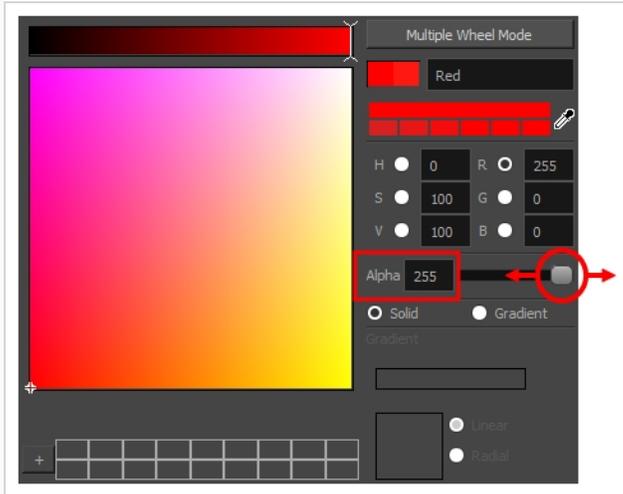


2. Paint both holes on the source and destination drawings.
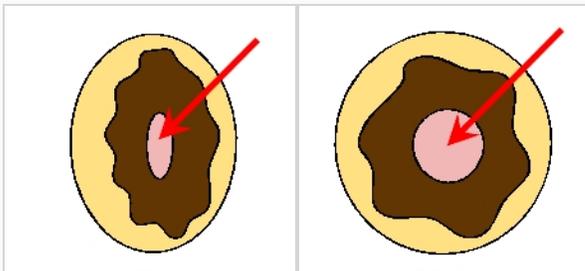


3. In the Timeline or Xsheet view, click on a cell in your morphing sequence.
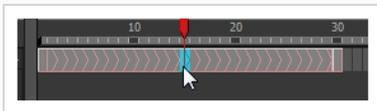


4. Do one of the following:

   - In the Tools toolbar, select the Morphing ✪ tool.

   - Press F3.

5. In the Tool Properties view, enable the Flatten ≞ button.
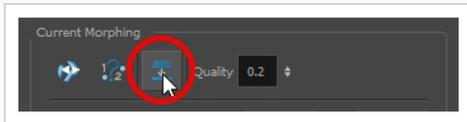
A hole appears in the shape.
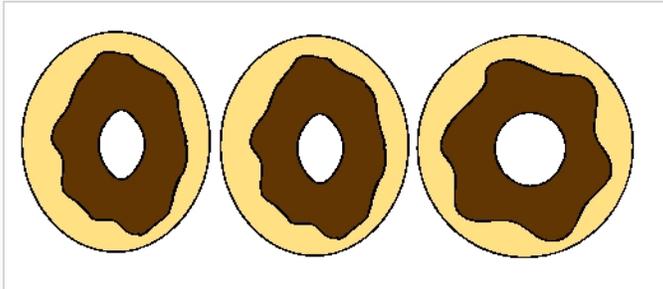
# About Morphing Quality

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.
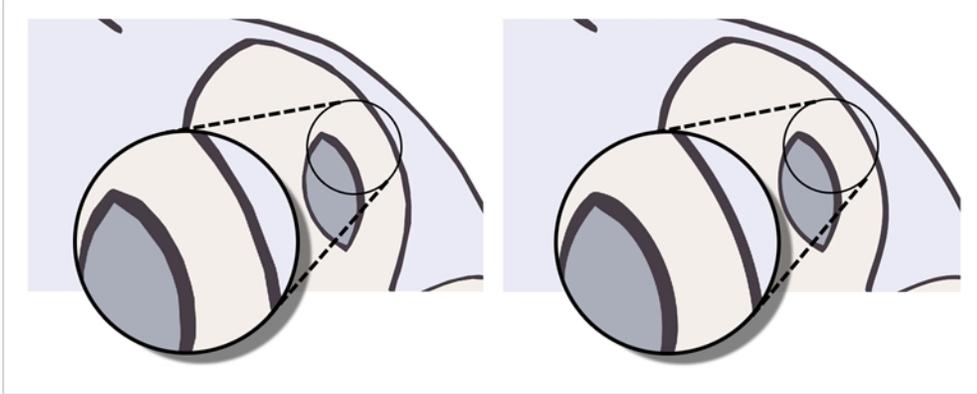


When morphing in Toon Boom Harmony, there is a preference you can set to help you set the default quality of morphing sequences. Refer to the Preferences Guide for complete descriptions.

# Setting the Morphing Quality Level

Increase the morphing quality to smooth out morphed lines.

**How to set a morphing sequence's quality level**

1. In the Timeline or Xsheet view, click on a cell in your morphing sequence.
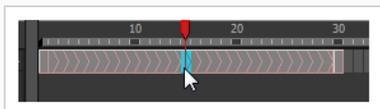
   

2. Do one of the following:

   - In the Tools toolbar, select the Morphing  tool.

   - Press F3.

3. In the Tool Properties view, adjust the Quality level.
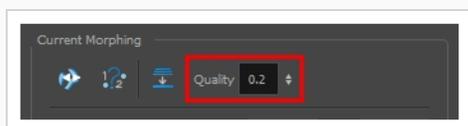
# Converting Morphing Animations to Drawings

Harmony lets 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.
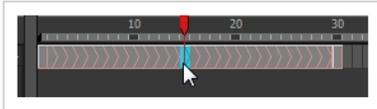


2. Do one of the following:

   - 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.
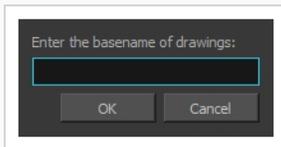


3. Type the drawing basename you want to give to your new drawings. In this case, you could type **circle**.

4. Click OK.
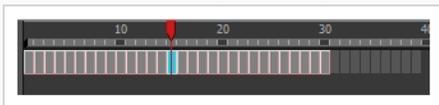
# Chapter 8: Rigging

Harmony is a great tool for building characters. You can use different techniques and features to break down your puppets.

This chapter will guide you through all the steps to create a complete simple rig. Harmony allows you to create very advanced puppets using deformations, hierarchies and z ordering. As you practice and get familiar with those concepts, you will be able to develop more complex rigs and combine various advanced features.
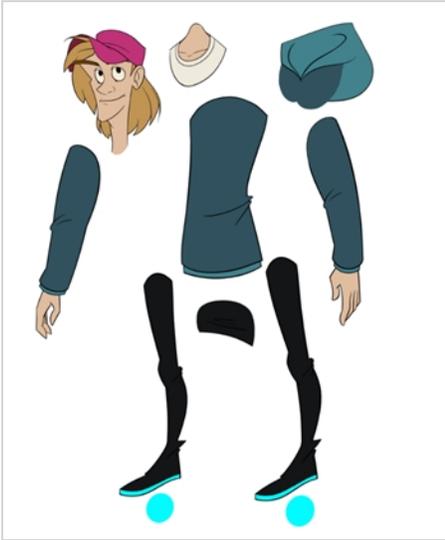


For more great options and features to create powerful rigs, refer to Deformations on page 947.

# About Rig Types

T-RIG-001-001

A rig is the process in which you will take apart the multiple pieces of your character and then reattach them together to get them to move individually. Harmony provides you with a multitude of tools to help you build characters. From the simplest of rigs, to a fully rotating character. There are about as many ways to rig a character as there are individuals who make them. The complexity of the rig is often determined by the level of animation to be achieved.
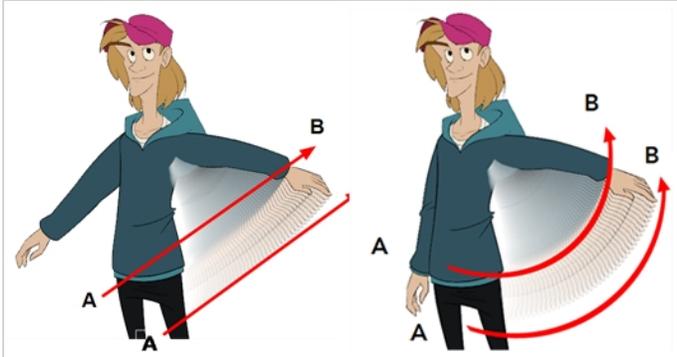
# About Simple Rigs

T-RIG-001-002

Simple rigging is very fast and easy to do. It is built as follows:

- All the body parts are independent

- All the timeline layers are attached to a master peg layer (trajectory layer)

The advantage of using this technique is that you are free to move any part around without being influenced by a parent layer.



However, since the parts are not parented to each other, the parts will move from point A to point B along a straight trajectory. The hand will not follow the arm's rotation. You will have to set more keyframes for the hand to move along a curved path.
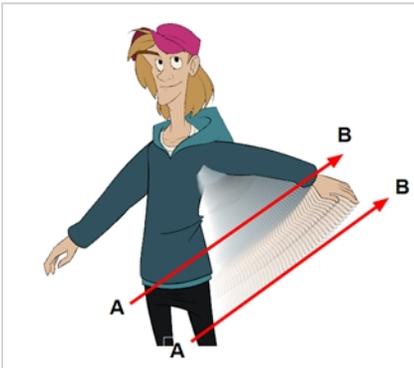
# About Drawing Hierarchy Rigs

T-RIG-001-003

When you want one part to follow another part, such as the forearm following the arm, you can attach the layers one to the other. For example, you can attach the forearm layer to the arm layer without having to encapsulate the forearm into the arm layer. They will still be parented, but you can access the forearm directly without having to enter the arm layer.
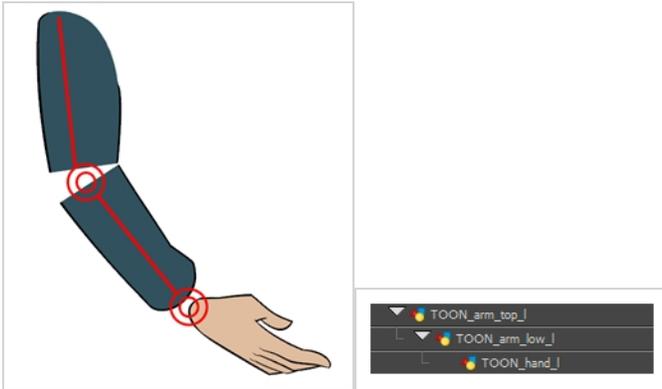


The advantage of parenting layers is that the child layers will follow the parent smoothly without having to select them or create a series of keyframes.
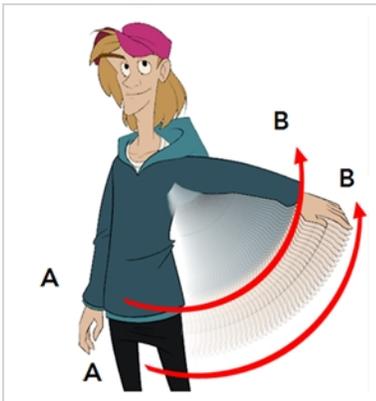


The disadvantage of parenting layers is that you are not able to move the parent independently of its children, since the child layers receive all the transformation information from their parent.
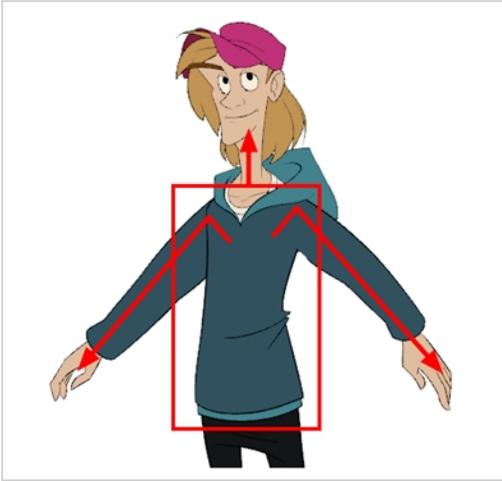
Parenting layers, such as the arms and legs, and allowing the torso and hips to be independent from them is often a good solution.

> **NOTE**
>
> To attach one layer to another, you must drag the desired layer onto the other one in the Timeline view.
>
> Harmony offers powerful techniques to create hierarchies between your layers without having to encapsulate layers into each other. These techniques are a great improvement over the less efficient and time consuming method of creating parenting between your layers by inserting symbols into other symbols. Therefore, rigging with symbols inside symbols is **NOT** recommended.

# About Peg Hierarchy Rigs

T-RIG-001-004

Peg layer are useful when you are doing more advanced puppet rigging. Peg layers are trajectory layers that do not contain drawings. They are motion paths that you can use to control your entire puppet or advanced hierarchies.

Parenting a drawing layer to a peg layer allows you to divide your motions on two separate levels. You can scale a body part up the chain of pegs directly on the drawing layer. This way, you do not affect any child layers that could be attached to that part.

Then, you can perform your translation and rotation on the peg layer so all the parts attached to that peg layer follow the same trajectory.
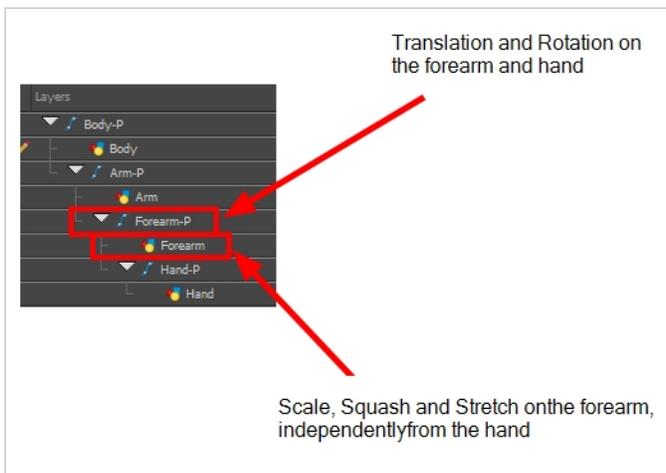
# About Scene Setup for Rigging

Planning your rig is an essential step in avoiding missteps at later stages. Once a rig has moved on to the animation level, it becomes more difficult to fix potential blunders, since updating the rig scene doesn't have repercussions on rigs outside of that scene. These different topics will help you avoid such mistakes.

# About Models

To begin breaking down your puppet, you must first import your character into a new project. You can also draw your character directly in the scene.



You can import your character in several different formats:

- Library template—see [Library](#)

- Bitmap image or picture

- External vector format

# Model Alignment

When setting the character model in your scene, we recommend that you to center it in the Camera view and scale it to fit inside the safe area frame.
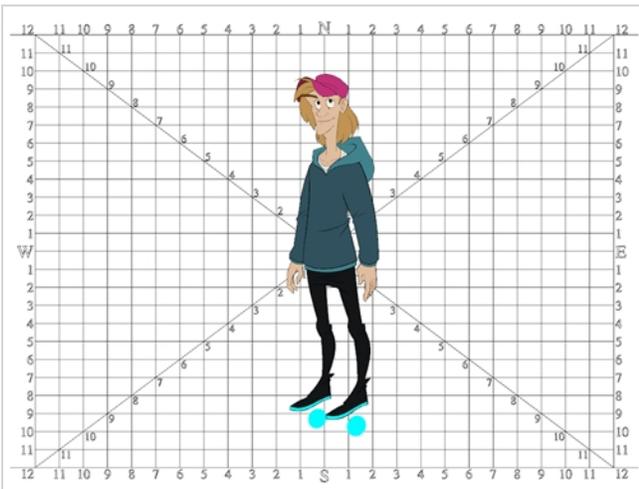
If you have several views of your character, place each view in a separate cell and center them one on top of another. This will facilitate the break down process and ensure that all of your puppets are aligned and the same size.
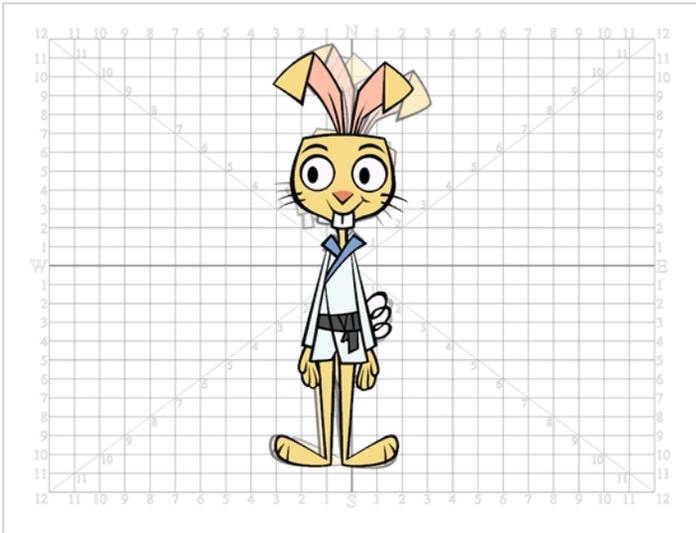


# Photo Puppets

If you are creating a cut-out puppet out of photos, break down the different parts in a bitmap editing software. Then, import your parts and vectorize them as textured images.

A good way to set and import your bitmap parts is to organize them in a multilayered PSD file.

In Adobe Photoshop, organize your file so that all your layers are "grouped" into individual folders, or that all the elements you want to import as a single layer in Harmony are grouped together in their own folder. Any layer that is not in a folder group, by itself or otherwise, will not be imported.
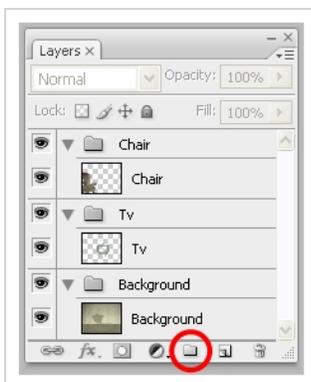
# About Size Relation

Understanding the relative size of every character and prop is important for maintaining consistency and structure throughout your project.

A production may contain many characters and props. It is not unusual for these to have been created by different people. If there is no size control implemented, the characters and elements created by different artists can vary greatly in size. When this occurs, the characters that are put 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 a prop is scaled down, the outline will get increasingly thinner. By the time the element is scaled to its proper size, the outline may be so thin that the difference between one character's outline and another's will not look very good.

# Line Up

A line up consists of copying and pasting all of your character designs into the same drawing and then scaling them so they are in proportion with each other. 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.
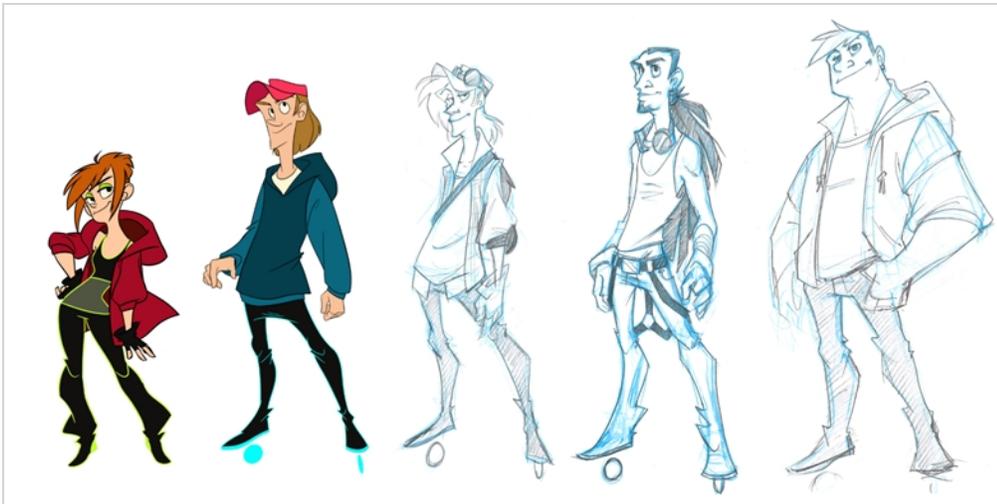


For the prop design, it is recommended that you paste one of the main character's hands or even the full body beside the prop. This enables the animator to know what size to draw or set the prop.

In your character design scene, it is a good idea to create a layer 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 break down scene, the size relation should be correct.

# Field Chart

The field chart in Harmony is a tool that is very useful when setting the height of characters and props. You can display the field chart using the Show Grid option in the Camera and Drawing views.
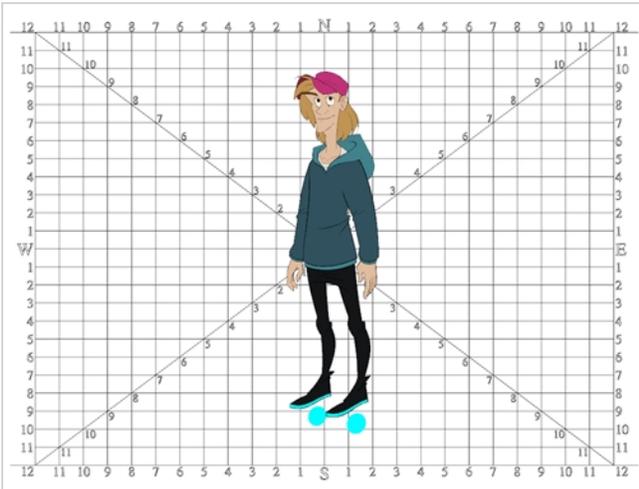
**How to display the field chart**

1.  Do one of the following:

    ‣ From the top menu, select **View > Grid > Show Grid**.

    ‣ Press Ctrl + ' (Windows/Linux) or ⌘ + ' (macOS).

    ‣ Click the Show Grid ⊞ button in the Camera View and Drawing View toolbars.

# Brush Size

There are a variety of pens and brushes in Harmony and you can also create and save your own. It is a good idea to create and save pens with precise sizes and parameters to trace and design your models and break downs—see *About the Brush Tool* on page 131.

# Setting Preferences for Rigging

Before you start adding layers to your puppets, make sure the Default Separate Position for Elements and the Default Separate Position for Pegs preferences are enabled.

With the Default Separate Position preferences selected, when you create new layers, their X, Y and Z axes are independent from each other.

By default, the Default Separate Position for Elements preference is enabled. For cut-out animation, you want to have three independent axes so you can control them individually.

When you lock the three positions together, each time you add a keyframe, it is added on all three positions at the same time.
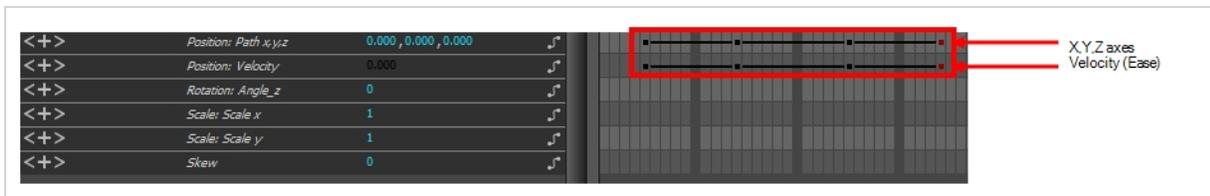


When you separate the three positions and add a keyframe on one axis, it is not added on the other two. This gives you more freedom when animating with motion keyframes and nudging parts forward and backward over time.
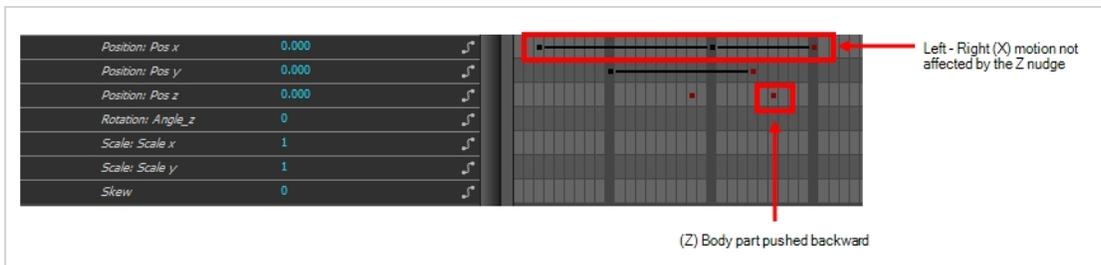


### How to set the Default Separate Position options

1. Do one of the following:

   - Windows/Linux: Select **Edit > Preferences**.

   - macOS: Select **Harmony Advanced > Preferences**.

   - Press Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

2. In the Preferences dialog box, select the **General** tab.

3. In the Settings section, select the **Default Separate Position for Elements** and the **Default Separate Position for Pegs** options.

4. Click **OK**.

# About Naming Conventions

When working on a production, it is critical to keep work well organized with a naming convention chart before starting the project. When dealing with thousands of characters, pieces and puppets, it is easy to get lost. Proper naming of both drawing layers and drawing substitutions is essential to keeping your workflow consistent throughout your project.

# Naming Drawing Layers

It is highly recommended that you incorporate a naming convention for the layers. This will be very convenient in later steps.

One common practice is to add one or two letters for the character/prop name, so that we don't make it too long. You can then add the name of the part that you've separated. It is recommended to add an indicator of the position of your character's symetrical pieces to keep track of which part you are selecting. Common practice is to add either "F" or "B" (for front and back view) or "R" or "L" (for right or left). Avoid using spaces in between the words and opt for an underscore instead.

- Character Orcus's right arm =

  OR_arm_F

  or

  OR_arm_R.



**Pink: Front or Right**

**Blue: Back or Left**

In the event that you've forgotten to add a prefix or suffix to your character's drawing layers, you can add them after your layers have been created.

**How to add a prefix or suffix to a series of layers**

1. In the Timeline view, select all the layers to rename or press Ctrl + A (Windows/Linux) or ⌘ + A (macOS).
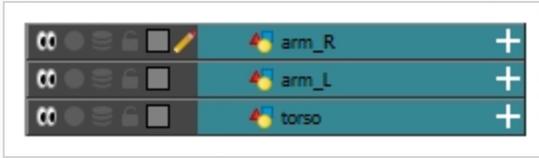
2. In the Scripting toolbar, click the Add Prefix or Suffix Script button. If the Scripting toolbar is not visible, you can display it by selecting **Windows > Toolbars > Scripting** from the top menu. If the Add Prefix or Suffix Script button is not visible in the Scripting toolbar.

   The Add Prefix or Suffix dialog box opens.

3. Select the **Prefix** or **Suffix** option depending on what you want to add to the layers' name.

4. Type the prefix or suffix information to be added to the layer's name.
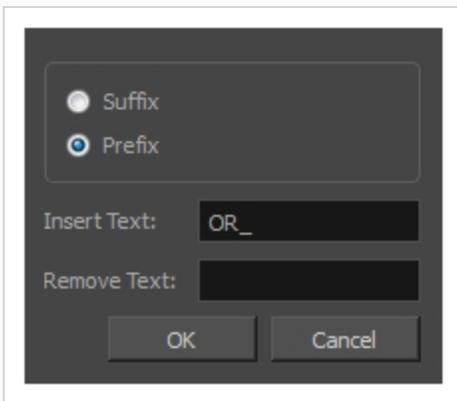


5. Click **OK**.

6. The defined prefix or suffix is added to the selected layers.



## How to remove a prefix of suffix to a series of layers

1. In the Timeline view, select all the layers to rename or press Ctrl + A (Windows/Linux) or ⌘ + A (macOS).
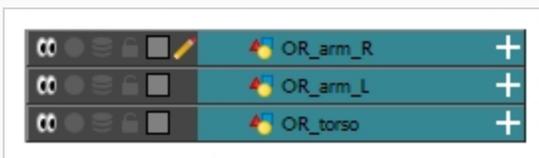
2. In the Scripting toolbar, click the Add Prefix or Suffix Script ⏣ button. If the Scripting toolbar is not visible, you can display it by selecting **Windows > Toolbars > Scripting** from the top menu. If the Add Prefix or Suffix Script ⏣ button is not visible in the Scripting toolbar, see the Scripting guide

   The Add Prefix or Suffix dialog box opens.

3. Select the **Prefix** or **Suffix** option depending on what you want remove from the layers' name.

4. Type the prefix or suffix information to be deleted from the layer's name.
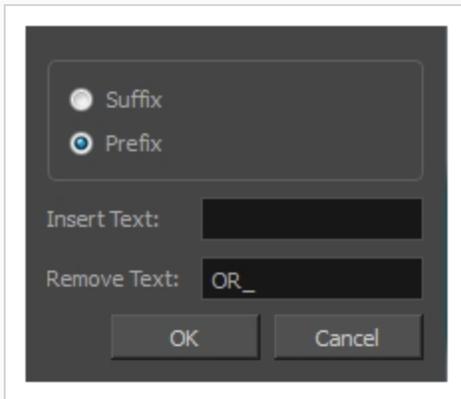


5. Click **OK**.

6. The defined prefix or suffix is removed from the selected layers.

# Naming Drawings Substitutions

We recommend that you use a naming convention for your drawings. Especially if you combine all the angles of a character in the same breakdown scene, it is a good idea to identify each angle used.



Before breaking down the characters for your production, we recommend that you create a drawing name convention that represents the angle used. For example, use "f" for front, "s" for side, "q" for three-quarter so that the drawing name looks like this: f1, f2, f3, s1, s2, etc. This will be quite useful during animation and drawing substitution. Since drawings are displayed in alphabetical and numerical order, all the drawings for the front view will be together, then all the drawings for the three quarter view, and so on.

Keep in mind that in the drawing substitution library, drawings will show in alphabetical order. If you want them positioned in a certain order, make sure you name them accordingly.

## How to add a prefix to one or more drawings

1. In the Timeline view, select the drawing range to rename.
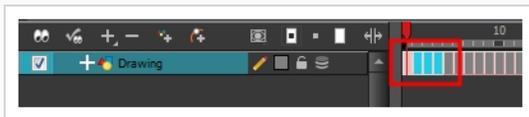


2. Do one of the following:

   ‣ Right-click on the selection and select **Drawings > Rename Drawing with Prefix**.

   ‣ From the top menu, select **Drawing > Rename Drawing with Prefix**.

   The Rename Drawing with Prefix dialog box opens.
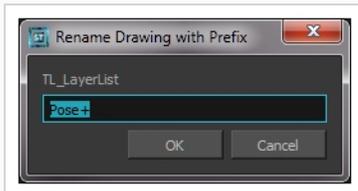
3.  Type the characters you want to add before the current drawing name.

4.  Click **OK**.
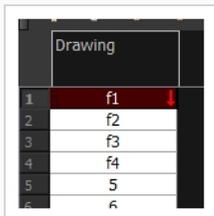


| | NOTE |
|---|---|
| | To rename a drawing, select the drawing and use the Rename Drawing option. Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X). or . **Do not double-click on the frame** and write a new name, as this will create a new drawing and hide your actual one. Note that the hidden drawing has not been deleted and is still located within the element folder. Simply retype the name and it will reappear. |

# About Character Breakdown

T-RIG-001-006

Now that you have imported or designed your model, the next step is to analyze it. This is to determine what parts will be broken apart and how they will be divided. Will the hair be separated into one, two or three sections? Will the hand be separated from the sleeve? To determine what is best for your character, observe the model in the Camera or Drawing view.
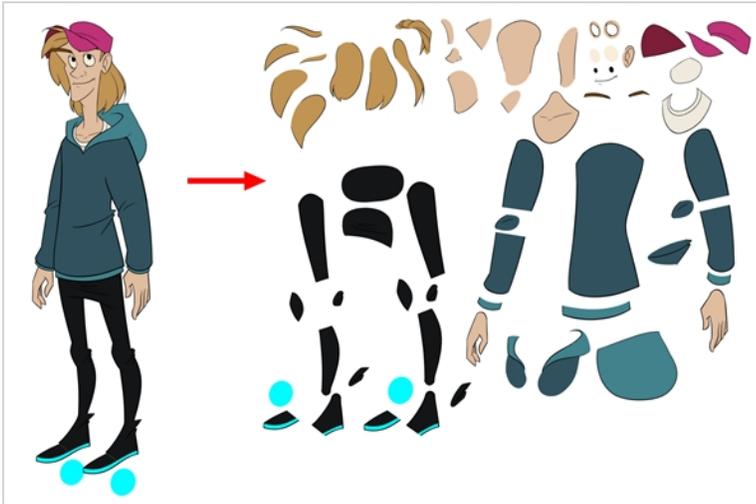


# Eyelids and Pupils

For increased flexibility when animating the eyes, you can split them into three layers: the eyeball, the pupil and the eyelid. The eyelid layer is used for the blink and to cut the pupil when it gets too close to the side of the eyeball. For a more advanced break down, the two eyes are separated on their own individual three-layer sets.
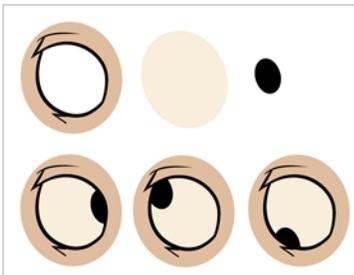


# Separating the Mouth Elements and Jaw

To get a greater level of flexibility, you can separate the jaw from the head. You can also separate the mouth shape, teeth, tongue and interior one from another.
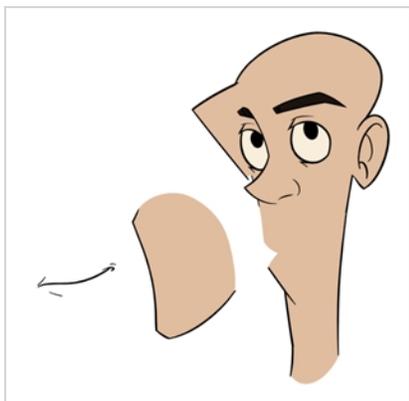
## Keeping Fingers Attached to the Hand

To avoid needlessly complicating the break down, the fingers are not usually separated from the hand. The full hand is a single layer with a bank of different hands stored inside. This technique is easy to work with and produces a less mechanical effect.
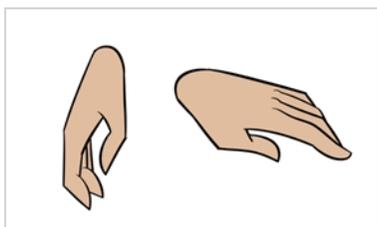


## Flipping Logos

You can separate logos and letters that appear on a character or a prop. This allows you to flip and reuse a character's puppet.
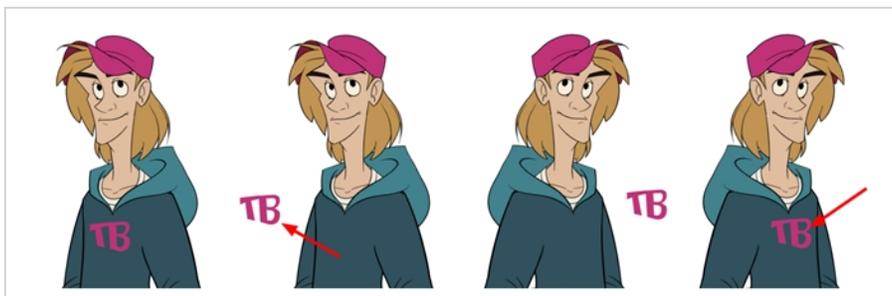


## Complete and Overlapping Pieces

For a better result with animated parts, it is important to understand that they must be properly overlapping and complete. A common mistake is to trace the part just as it appears on the model.

Head and Neck Pieces with Overlap

Normal Position

Head Tilt with Overlap

Head Tilt without Overlap
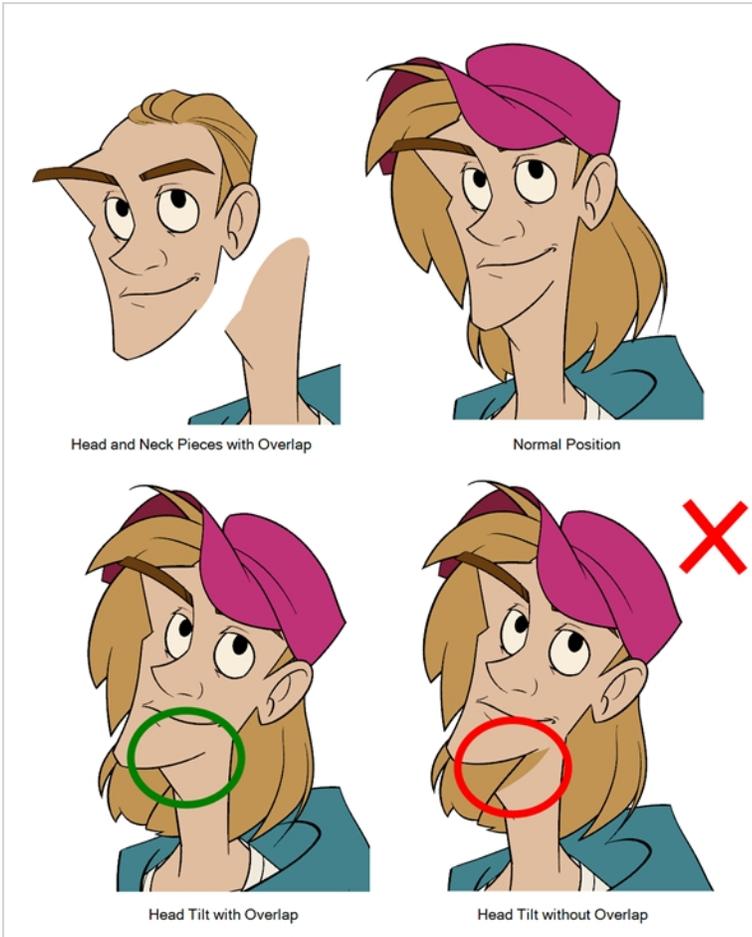
# Tracing the Model

The main breakdown technique shown here is to trace your model.

## How to break down a character by tracing

1. In the Timeline view, add a new drawing layer for each body part to separate. You can press Ctrl + R (Windows/Linux) or ⌘ + R (macOS)—see .
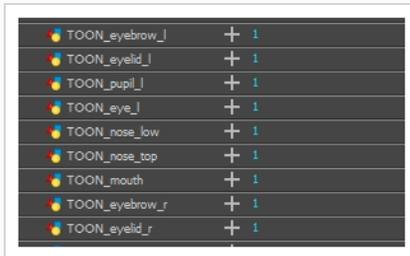
   

2. In the Timeline view, select the layer's first cell in which you want to draw the part.
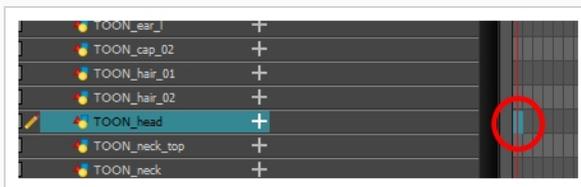
   

3. In the Tools toolbar, select the drawing tool of your choice. There are two commonly used methods to drawing the parts of a cut-out character model:

   - Using the Pencil ✏ tool, then smoothing your lines with the Smooth Editor 📌 tool

   - Using the Polyline ⊊ tool. This method allows you to draw with great precision, but may take more time.

   These methods ensure each part is made with as few points as possible, so that they are easy to manipulate, modify or redraw.

4. In the Colour view, select a colour swatch. If you haven't created a palette for your character yet, see
   .

5. If you prefer working in the Drawing view, do one of the following to display the other layers in washed out colours:

   - In the Drawing view toolbar, lick the Light Table 💡 button.

   - Press Shift + L.

6. In the Camera or Drawing view, draw the new part.
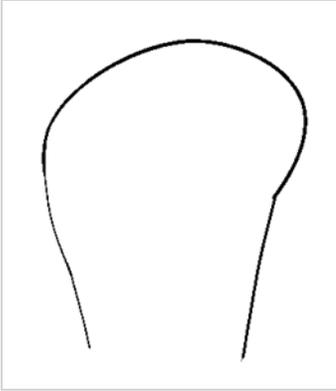
7. If you want to close an open shape without drawing a visible outline, you can draw an invisible line using the Stroke 💬 tool.
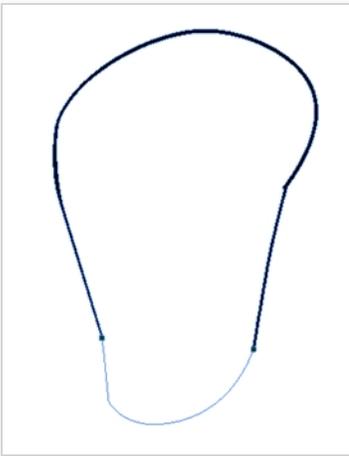


> **NOTE**
>
> By default, your strokes are not visible. To see the strokes in your drawing, select **View > Show > Show Strokes** from the top menu or press K.

8. In the Tools toolbar, select the Paint 🪣 or Paint Unpainted 🪣 tool to colour your drawing.

9. In the Colour view, create the desired fill colour if it's not already in your palette, then select it.

10. In the Camera or Drawing view, paint your drawing.
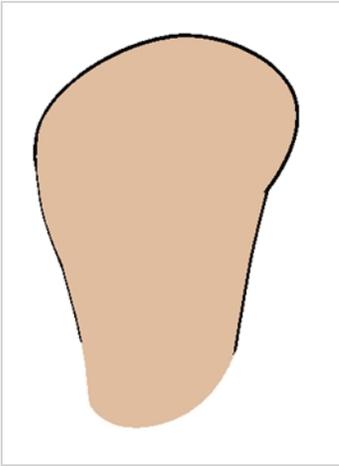
11. In the Tools toolbar, select the Select ↖ tool. Select your drawing and flatten the lines by clicking the Flatten ☰ button in the Tool Properties view.

12. If your lines are composed of several pencil strokes, you might want to combine them into one single smooth pencil line. Using the Select tool, select the pencil lines to be merged and in the Tool Properties view, click the Merge Pencil Lines ✂ button.
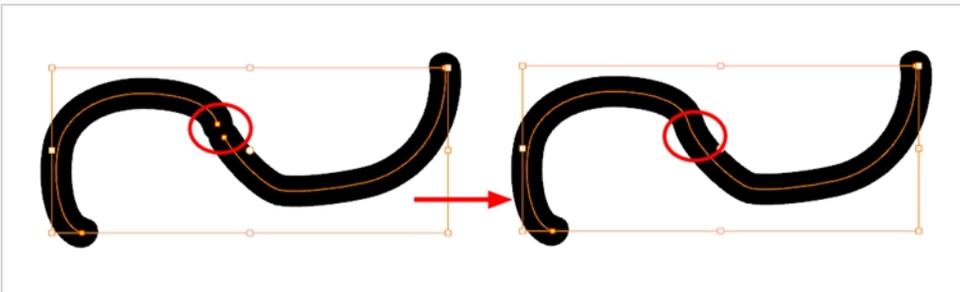


13. Repeat the entire process for every body part that you wish to make animatable.

# About Cutting the Character into Pieces

If you do not want to redraw all the artwork for your character, you can use the cut away technique where, with the Cutter tool, you select and send pieces of the model on a new layer.
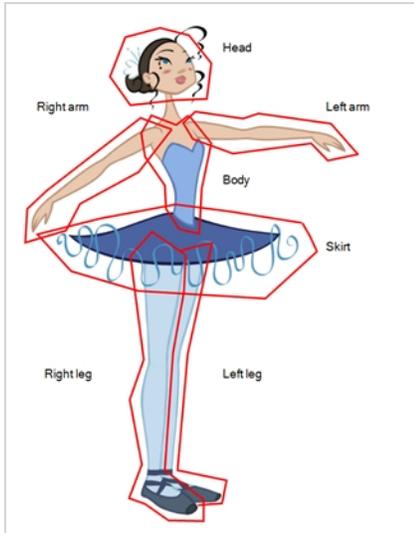


The first step in breaking down your character is to do a rough cut down of the main parts, such as the body, arms, legs and head. Using the Create Drawing from Drawing Selection feature lets you automatically create layers and copy your selection in it.

# Breaking Down the Main Parts

To break down the main body parts, you will use the Create Drawing From Drawing Selection feature.

Breaks a character into its main body parts. There is no need to create any layers prior to this process. Make sure your model is well centered and sized in the Camera view.

You do not need to make clean cuts around your parts; a rough one is sufficient as long as it includes all the artwork of the part you want to break down. You will clean the extra bits and pieces later.

Using the Cutter tool, you can roughly cut the main sections, and then use the Select tool to select precise lines and colour zones.

### How to break down the main parts

1. In the Timeline view, select the cell of the model that corresponds to the first view to break down.



2. In the Tools toolbar, select the Cutter ✐ tool.

    - If you prefer to use the Select tool, choose the Select ⬉ tool from the Tools toolbar or press Alt + S.

    - In the Tool Properties view, you can switch to the Lasso ⌇ selection mode.

3. In the Camera view, create a selection around the first part to break down. If you click on a zone, the Cutter tool will select the zone. It will end the selection at the first point of intersection that it meets.
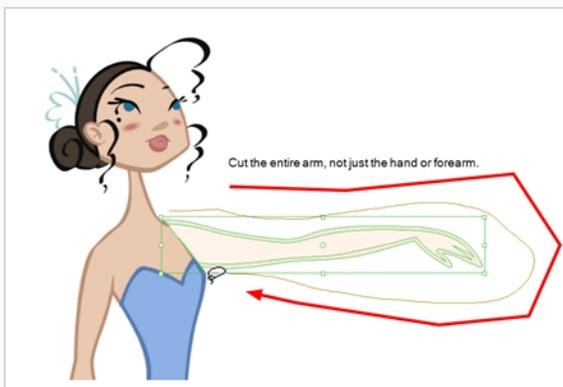


    ‣ Hold down Shift to create a new lasso selection around another zone and add it to your previous selection.
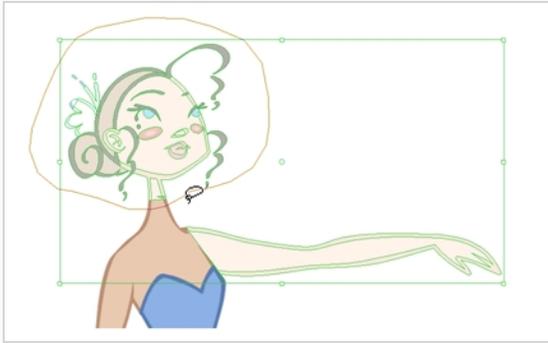
4. From the top menu, select **Edit > Create Drawing From Drawing Selection** or press F9 (Windows/Linux) or ⌘ + F9 (macOS).

   The Create Drawing From Drawing Selection dialog box opens.



5. In the Layer Name field, type the name of the layer you want to create following the naming convention you established previously.

6. Deselect the **Cut Artwork From Source** option to keep the selected artwork on your original drawing. You do not want to cut the artwork from the colour model.

7. Click **OK**.

   The new layer is created and your selection is copied in it. The drawing is created in the same frame number as the cell it was taken from.
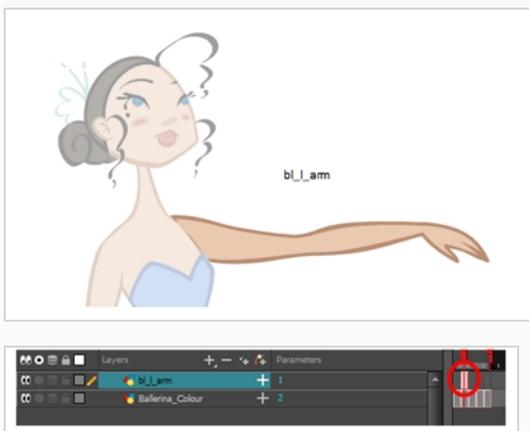


8. Repeat the previous steps for each main body part.
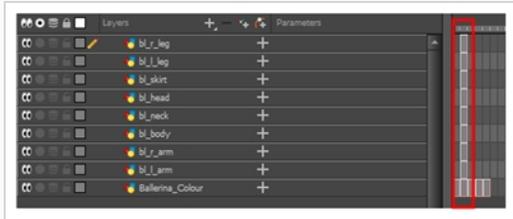
# Breaking Down Secondary Parts

You should now have a layer for each main part of the character for the first view to break down. You are now ready to break down those main pieces into smaller ones.

Breaking down the secondary parts is similar to the main part break down process except that this time you will cut away the artwork from the layer it has been selected from.
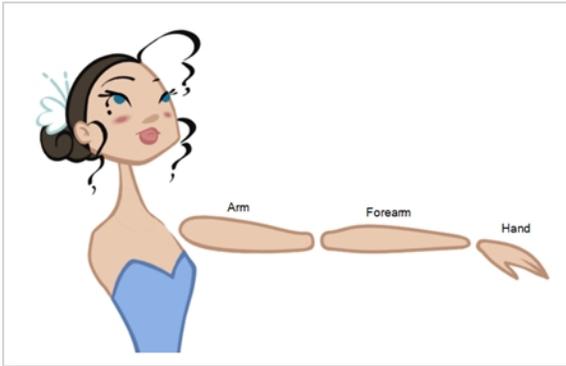


### How to break down the secondary parts

1. In the Timeline view, lock your model layer by clicking its Lock 🔓 button.
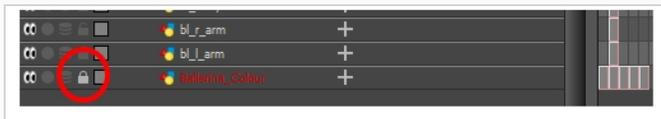
   

2. In the Timeline view, select the cell that corresponds to the main part you want to break down.

   

3. In the Tools toolbar, select the Cutter ✎ tool.

   ‣ If you prefer to use the Select tool, choose the Select ↖ tool from the Tools toolbar or press Alt + S.

4. In the Camera view, create a selection around the part to break down.

Cut the forearm from the arm layer
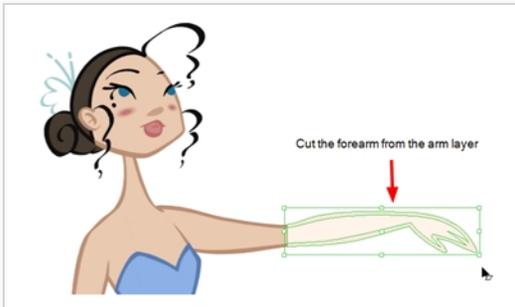
‣ If you click on a zone, the Cutter ✎ tool will select the zone and end the selection at the first point of intersection that it meets. Click on the line with the Cutter tool to select it up to the next intersection.
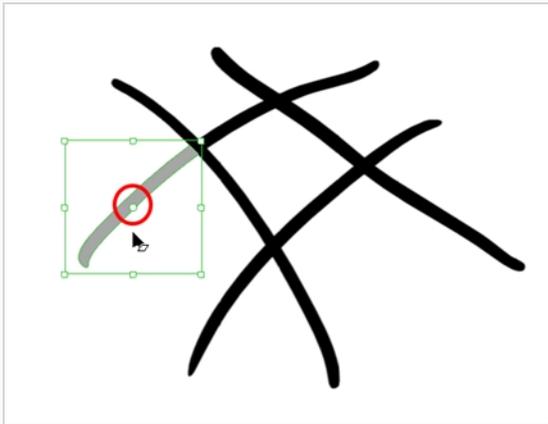


5. From the top menu, select **Edit > Create Drawing From Drawing Selection** or press F9 (Windows/Linux) or ⌘ + F9 (macOS).

   The Create Drawing From Drawing Selection dialog box opens.
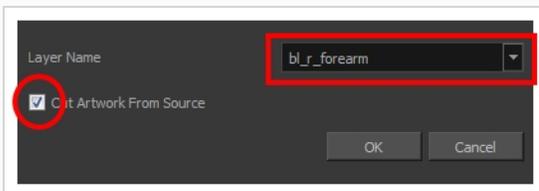


6. In the Layer Name field, type the name of the layer you want to create following the naming convention you established previously.

7. Select the **Cut Artwork From Source** option to remove the selected artwork from your original drawing. In this case, you want to cut the artwork from the colour model.

8. Click **OK**.

The new layer is created and your selection is copied in it. The drawing is created in the same frame number as the cell it was taken from.
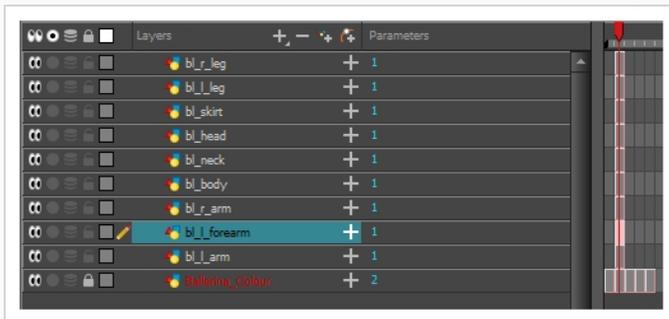




9. Repeat the previous steps for each body part.
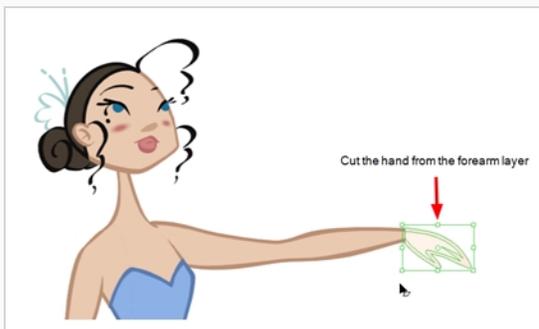
> **NOTE**
>
> If you forgot to add some artwork to a layer you previously created, you can always add it later.
>
> In the Camera view, select the artwork to send to the existing layer. Open the Create Drawing from Drawing Selection dialog box by pressing F9 (Windows/Linux) or ⌘ + F9 (macOS). In the dialog box, select an existing layer from the list instead of typing a new name. Click **OK** to add the artwork to the existing drawing in the layer you selected.
>
>
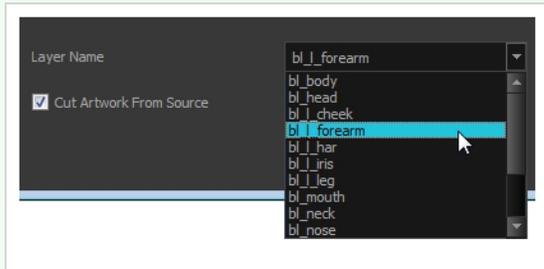
# Breaking Down Other Views

If your character model has more than one view, now is the time to break them down.

The process is very similar to breaking down the first view. You have two choices:

- Breaking down the new view in a new set of layers

- Breaking down the new views in the same existing layers
  If your layers are not in the correct order, you can reorder them later. Simply add the part that you are breaking down to the layer you previously created for the same body part.

Start by breaking down the main pieces, as you did before. The secondary parts will be broken down later on.

Repeat the following steps for each extra view you need to break down.

### How to break down the other views

1. In the Timeline view, selected the model's cell corresponding to the view to break down. Don't forget to unlock the layer.
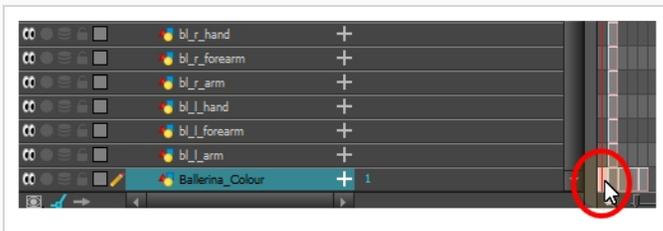
   

2. In the Tools toolbar, select the Cutter ✎ tool.

- If you prefer to use the Select tool, in the Tools toolbar select the Select ➤ tool or press Alt + S.

2. In the Camera view, create a selection around the first part to break down.
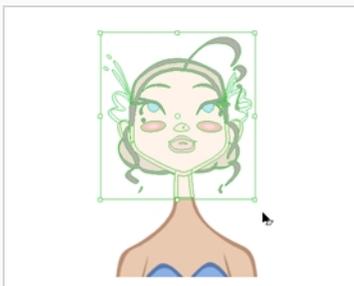
   

3. From the top menu, select **Edit > Create Drawing From Drawing Selection** or press F9 (Windows/Linux) or ⌘ + F9 (macOS).

   The Create Drawing From Drawing Selection dialog box opens.
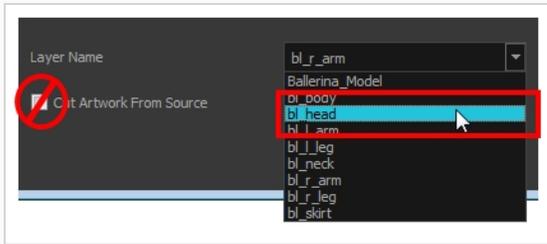
4. In the Layer Name field, select the corresponding layer from the list if you want to use the same layers or type a new name if you want to create a new layer.

5. Deselect the **Cut Artwork From Source** option to keep the selected artwork on your original drawing. You do not want to cut the artwork from the colour model.

6. Click **OK**.

   The artwork is inserted into the existing layer. The drawing is created in the same frame number as the cell it was taken from. It is not incorporated in the other view's drawings.
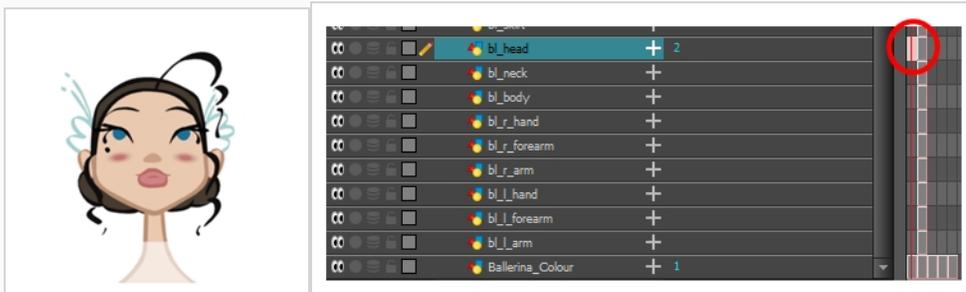


7. Repeat step 1 to 7 for each main body part.

# Breaking Down Secondary Parts in the Extra Views

To break down the secondary parts for your extra views, follow the exact same process as you did for the first view you broke down, but you will incorporate the new parts in the existing layers—see *Breaking Down Other Views* on page 781.

Each view can have its own set of layers in the Timeline view, therefore each view does not necessarily need to have the same layer structure.

Here is an example of how your timeline should look at this stage:

# Completing Parts and Articulations

Now that all the layers are created and the parts are basically broken down, it is time to clean up the parts and complete the articulation.



# Cleaning the Parts

You will need to use a series of drawing tools to clean the parts:

- Brush tool
- Eraser tool
- Select tool
- Cutter tool
- Contour Editor tool
- Paint tool
- Close Gap tool

**How to clean your drawings**

1. In the Tools toolbar, select the drawing tool you need to fix your drawings.
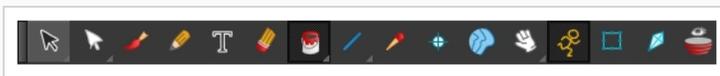


2. In the Timeline view, select the cell containing the drawing to fix.

3. In the Camera view, delete the extra bits using the Select ⬉ or Cutter ✎ tool. You can also use the Eraser ✐ tool.
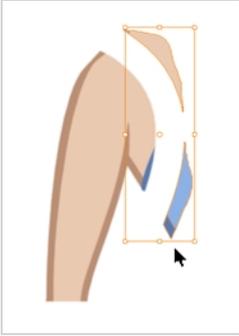
4. Draw the missing lines using the Brush ✏ tool. If you use the Brush tool, it is recommended that you enable the Auto-Flatten 🔁 option in the Tool Properties view.
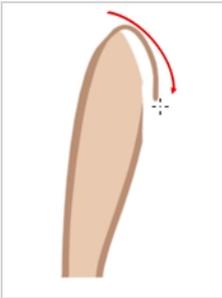


5. Using the Paint 🎨 tool, paint the gaps. You can close some gaps with invisible lines using the Close Gap ◇ tool or press Alt + C.
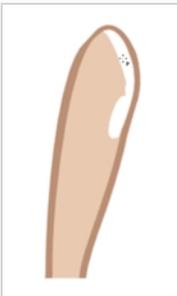


6. Reshape your lines using the Contour Editor ▷ tool or press Alt + Q.
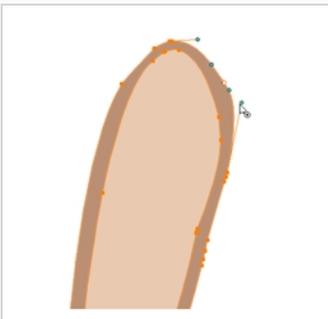
7. Using the Select ➤ tool, select the entire drawing and click the Flatten ⯮ button in the Tool Properties view to flatten your drawings.

8. From the top menu, select **View > Show > Show Strokes** to display the invisible lines that could be present in your drawing or press K.
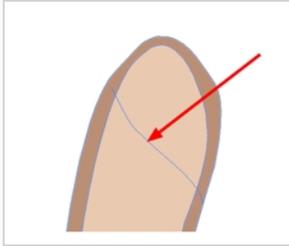


9. From the top menu, select **Drawing > Optimize > Remove Extra Strokes** to remove any unnecessary invisible lines in the drawing.

10. Repeat this entire process for each drawing to fix.

# Distributing to Layers

When breaking down a character, you can distribute each selected art stroke to a new layer.

Each stroke you select in the Camera view is automatically placed on a new layer. One layer per stroke.

If one part of your puppet is composed of several strokes, you must group them before distributing them onto new layers.

> **NOTE**
>
> You cannot distribute layers in the Drawing view; it must be done in the Camera view.

### How to distribute to layers

1. In the Tools toolbar, click the Select ↖ tool.

2. In the Camera view, select the art strokes you want to distribute to different layers.

3. From the top menu, select **Drawing > Distribute to Layers** or click the Distribute to Layers 📇 button in the Tool Properties view.

    Drawing layers are created in the Timeline view, each corresponding to the different strokes or groups of strokes selected. Each stroke or group of strokes is distributed into each new Drawing layer. The selected strokes in the original drawing layer are removed.
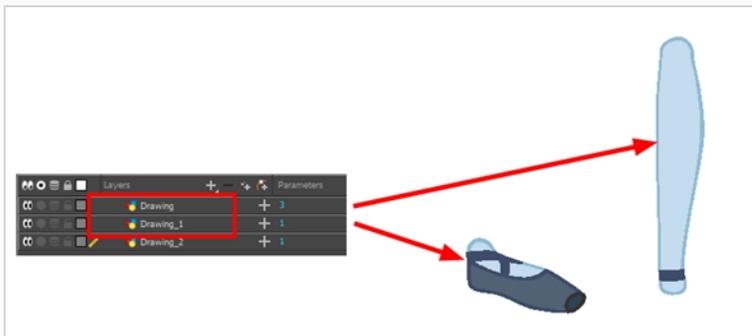
# About Articulations

Once your pieces are traced, you can go ahead and complete the articulations.

Articulations are an important aspect of any cut-out break down because without them, a puppet cannot move properly and will not look good.

If you are using deformations to animate the limbs, your articulations don't need to overlap. The deformer effect will create the joint for you.
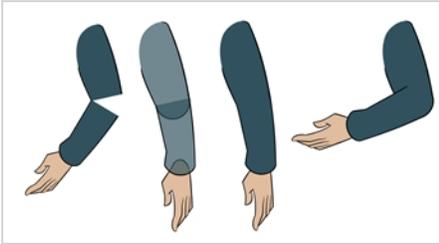
# Creating Classical Articulations

Classical articulation is the most popular technique for basic characters. It is quite simple and produces excellent results, but it's not the most efficient method. In many instances, it causes limitations and extra drawing corrections. For example, there may be a gap in the articulation if the part is bent too far. Joint design is usually a circle; the overlapping part cannot be sent behind without showing the joint.

Classical articulation is done by erasing a part of the line from the overlay layer, leaving the colour overlapping the bottom layer. You can use this technique for all the articulations on your puppet.

### How to create a classical articulation

1.  In the Timeline view, select the cell containing the part to modify (piece located behind), such as the upper arm.
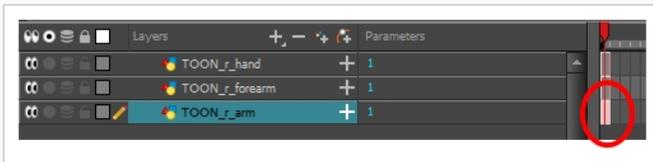
    

2.  In the Tools toolbar, select the Pencil ✏, Polyline ⌇, Ellipse ○, Cutter ✎, or Contour Editor ⃕ tool.

3.  In the Colour view, select an outline colour.

4.  In the Drawing or Camera view, use your drawing tool to make sure the joint overlaps the other part in a half-circle shape.
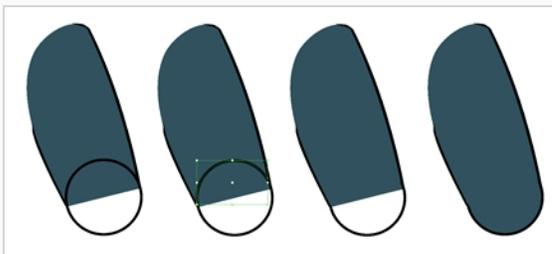
    

    If you are working in the Drawing view, click the Light Table 💡 button in the Drawing toolbar or press Shift + L.

5.  From the top menu, select **View > Show > Show Strokes** or press K to display the invisible lines that may be present in your drawing.

6.  In the Drawing or Camera view, select all the strokes in your drawing.

7.  In the Tools Properties view, click the Flatten ⊻ button.

8.  In the Drawing or Camera view, select all the strokes in your drawing.

9. In the top menu, select **Drawing > Optimize > Remove Extra Strokes** to remove any unnecessary, invisible lines in your drawing.

10. Repeat the previous steps for the other articulations.

11. In the Timeline view, select the cell of the part that will be on top of the joint.
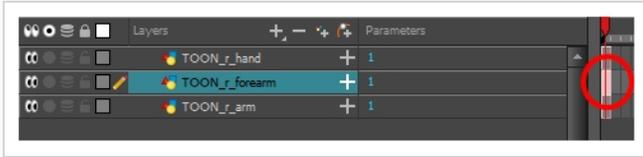


> **NOTE**
>
> When placing rotation pivots later on, make sure they are positioned at the centre of the articulation.

# About Ordering Layers

T-HFND-005-005

At this point, it is possible that your character's pieces may show up in the wrong order.
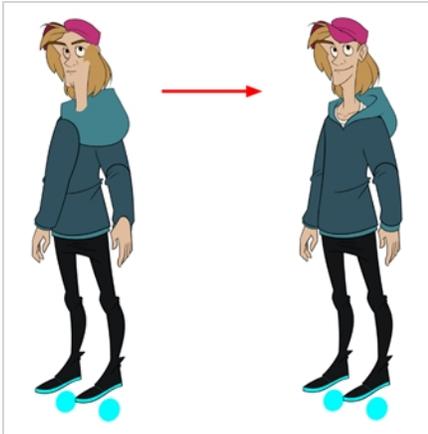


There are several ways to fix this. First, you can reorder your layers by dragging them to a higher or lower level in the Timeline view. The top layer is displayed in front of the others and the bottom one is displayed behind. Second, you can use the Z-axis nudging (forward and backward) if you have extra views included in the same layers (front, three-quarter, back, etc.).

# Ordering Layers in the Timeline View

T-HFND-005-006

In the Timeline view, the layer positioned at the top will be displayed in front and the ones below will be displayed behind. If you have multiple views, you should order your layers based on the most common view, which is generally the three-quarter front.

## How to order layers

1. In the Timeline view, drag a layer to reorder it and drop it between other layers.
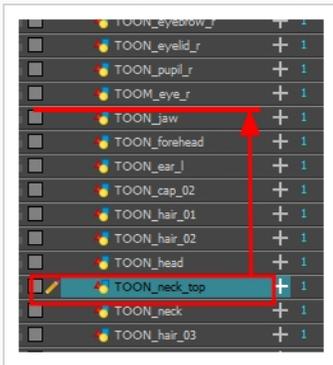


If you drop it on a layer, it will create a parent hierarchy, so make sure to drop it between layers.

# About Z Nudging

T-HFND-005-008

If you created a hierarchy on your arms, legs or other body parts, it is possible that you will want a part, such as the hand, to appear in front of its parent. Yet, if you move the hand layer above the arm layer, you will break the hierarchy. To reorder a layer rigged in a hierarchy, nudge it backwards or forwards on the z-axis.
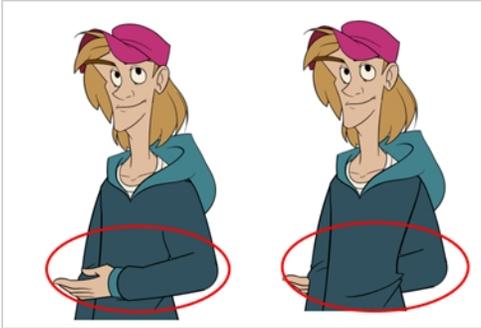


> **NOTE**
>
> You will do the same for the layers that are not in the right order on the extra views. Do not place the drawing on another layer. You want to keep all your drawings of the body parts in the same layers like a box containing all of the hands or all of the shoes.

Harmony allows you to move your elements in three dimensions:

- Up and down (Y-axis)

- Left and right (X-axis)

- Backwards and forwards (Z-axis)

# Nudging Layers

In the same way you create multiplane backgrounds (depth), you can perform a micro nudge of the part to be reordered and see it in front of the other elements, even if its layer is actually behind the other ones in the Timeline view. The forward-backward position can also be animated over time.

**How to nudge layers backwards and forwards**

1. In the Tools toolbar, select the Transform ⬚ tool. Make sure to enable the Animate 🏃 mode.

2. In the Camera view, select the element you want to reorder. Make sure the focus (red outline) is around the Camera view before selecting the element.

3. To move the element forward, press Alt + Up Arrow and to move the element backward, press Alt + Down Arrow.
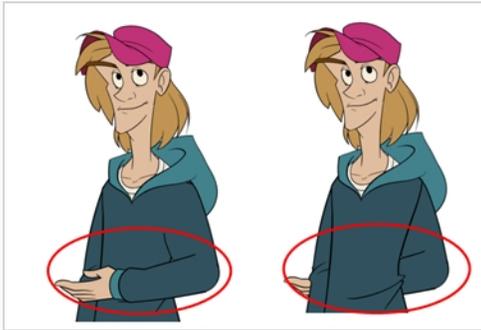
# About Pivots

Even with a complex hierarchy, a rig is useless without positioning the proper pivot points. This will allow the puppet's pieces to rotate correctly. The arm needs to rotate from the shoulder and stay attached to the torso, so its pivot point needs to be positioned accordingly. A good way to achieve this is to position the pivot point exactly in the center of the articulation.

The initial position of the pivot point is always at the center of the scene. Sometimes there will not be an obvious place of rotation to place the pivot point, but it's a good idea to reposition the pivot to the best transformation point. For instance, the master peg, which generally controls the entire rig, is often best positioned between the character's feet.

# About Permanent Pivots

This is a permanent pivot, sometime referred to as peg pivot, that is applied to the entire drawing or peg layer. If you modify its position, it will be changed for the entire layer, modifying the animation, scale and rotation interpolation. The permanent pivot is set using the Rotate, Translate or Scale tool. The Transform tool will only move that pivot temporarily for positioning purposes, but the animation interpolation will be done from the original permanent pivot's position. The Transform tool is designed to move the pivot temporarily during the animation process. It also permits you to select multiple pegs and apply a common temporary pivot.

To permanently move a peg pivot, use the Rotate or Scale tool. You can also directly type the values in the Layer Properties window in the Pivot section's (x) Axis and (y) Axis fields.

In the Layer Properties window, in the Drawing Pivot section, select the **Don't Use Embedded Pivot** option to use the permanent pivot.

For a simple character rig, it is recommended to set the Peg pivot (even on drawing layers) using the Rotate tool.

# Setting Permanent Pivots

T-RIG-006-004

In this section, we'll take a look at one of the options we have for setting pivots. The permanent pivot allows you to push your rigs to great lengths without having to worry about repositioning your pivot once it is set.

### How to set the pivots with the Rotate tool

1. In the Advanced Animation toolbar, select the Rotate ⟳ tool.

2. In the Camera or Timeline view, select the layer whose pivot you want to set. In the Camera view, you can also hold down Ctrl (Windows/Linux) or ⌘ (macOS) and click on the piece whose pivot you want to set.

3. In the Camera view, drag the blue pivot to reposition it.



4. Repeat the previous steps for all the pieces, including the eyes, nose and mouth. If you are unsure as where to place the pivot, put it in the center of the selected piece or group of pieces.

> **NOTE**
> If you added other pegs to your rig, you must set their pivot using the same method.

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# Setting Multiple Permanent Pivots

You can simultaneously set the position of pivots for several drawing layers or pegs that you would like to rotate and scale from the same point of origin,

### How to set pivots on multiple pegs

1. Select the multiple pegs or drawing layers from either the node view or timeline view.

2. Select any Advanced Animation tool, such as the ⟳ Rotate tool.

3. Reposition your pivot using the Advanced Animation tool

> **NOTE**
>
> Never use the Transform tool to permanently position pivots. The Transform tool only temporarily repositions it to accommodate your transformation, usually during the animation process.

# About Drawing Pivots

T-RIG-006-003

The Drawing pivot is contained within each drawing. In one layer, each drawing can have its own pivot. If you have many different views of a character within one layer, the pivot positions can be different and the animation will adjust to the pivot. The Drawing pivot can also be referred to as *embedded pivot*. If you are not mixing different views within the same layers or are using pegs to animate your layers, it is recommended to use the permanent pivot.

You can set a different pivot for each one of your drawings. For example, if you have a series of drawings from different views, they are not likely to rotate from the same location. In that case, you can set a different pivot for these drawings by using the Drawing Pivot ⊕ tool.
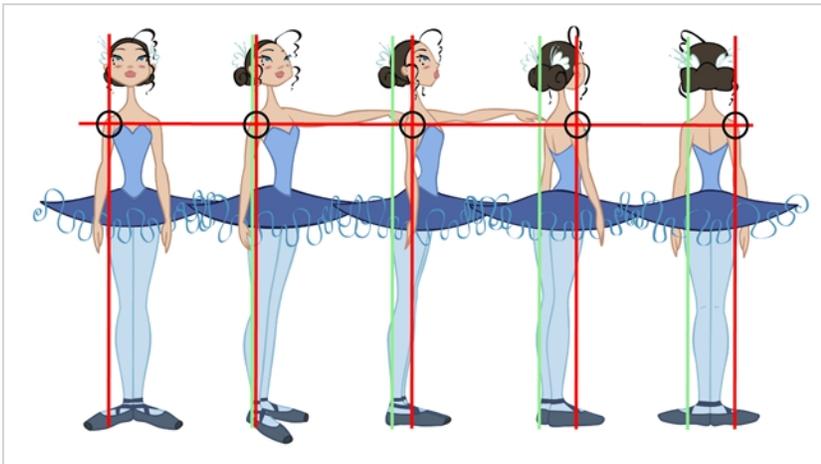


In the Layer Properties window, in the Drawing Pivot section, select the **Apply Embedded Pivot on Drawing Layer** option to use the drawing pivot directly on the drawing layer. If you want to apply the drawing pivot to a parent peg to force the peg to follow the drawing pivot variations, enable the **Apply Embedded Pivot on Parent Peg** option.

# Setting Multiple Drawing Pivots

If you are using the drawing pivots rather than the Rotate tool pivot and if some elements need the same drawing pivot, such as all of the three-quarter hands, you can select all of these hands cells and set the pivot all at once. If your pivot is already correctly set on your first drawing, copy and paste that pivot onto the other drawings in the Timeline or Xsheet view.
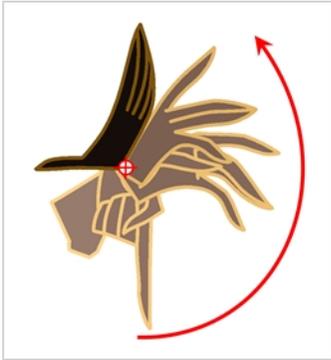


You must have the same drawing pivots on the extra parts from the same angle. If you substitute a drawing while the part is rotating, the animation risks popping out of place if the pivot is uneven.

### How set the drawing pivot of a frame range

1. In the Drawing or Camera view, set the first drawing pivot of the series. For example, set it on hand-1.
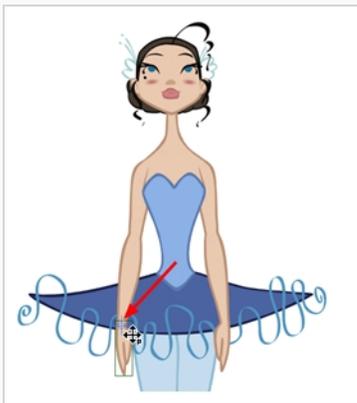


2. In the Timeline view, select the cell that contains the correct pivot.

3. From the top menu, select **Edit > Copy**.

4. In the Timeline view, select the cell range that requires the same pivot.



5. From the top menu, select **Edit > Paste Special** or press Ctrl + B (Windows/Linux) or ⌘ + B (macOS).

   The Paste Special dialog box opens.



6. In the Paste Special dialog box, select the Advanced tab.

7. In the Drawings section, select the **Update Drawing Pivot** option.

8. Click **OK**.

> **NOTE**
>
> You can also copy and paste the pivot from one drawing to another using the keyboard shortcuts Ctrl + C and Ctrl + V (Windows/Linux) or ⌘ + C and ⌘ + V (macOS) when the drawing pivot tool is active and the focus is around the Camera view.

# About Symbol Pivot

The Symbol pivot is similar to the Drawing pivot. Each symbol cell can have its own pivot and act the same as the Drawing pivot. The Symbol pivot can also be referred to as *embedded pivot*. Inside a symbol, each drawing can have its own pivot. If you are not mixing different views within the same layers or are using pegs to animate your layers, it is recommended to use the Peg pivot.

# Setting Symbol Pivots

If you want the puppet's pieces to rotate correctly, you must set the pivot points onto the articulations. You can set the pivots using the Rotate tool which sets it for the entire layer or you can set the pivots directly on your symbol and have a different pivot for each symbol cell. By default, when you create symbols, the symbol pivot is located at the centre of your drawing. You will need to move it onto the shoulder or elbow.

You will set the pivot on the symbol's cells, not directly on the drawings. To set your pivots, you must be at the top level of your character building scene and not inside the symbols.

By default, when you set the pivot onto a symbol, all the cells use the same pivot. If you need different pivots for different cells, refer to the following procedure.

Do the following steps for each layer in the Timeline view.

## How to set the pivots on a symbol

1. In the Tools toolbar, select the Drawing Pivot ⊕ tool or select **Drawing > Tools > Drawing Pivot**.

2. In the Camera or Timeline view, select the symbol on which you want to set a pivot.
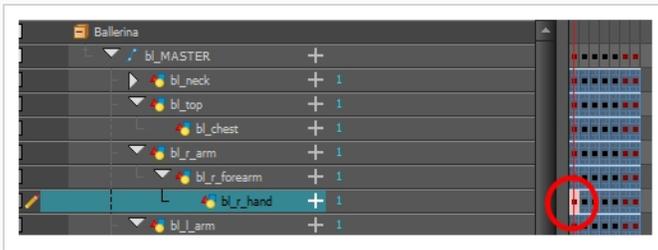
   

3. If you only want to set one pivot for your symbol, in the Tool Properties view, select the Set the Pivot for Symbol on All Frames ⊕ button.
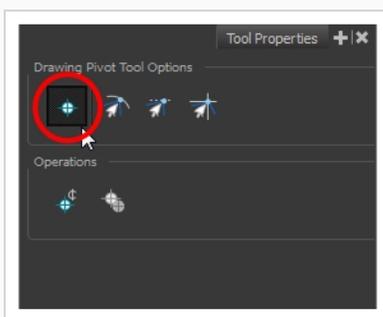
   

   - Deselect this button if you want to set a series of different pivots for your symbol's cells.

4. In the Camera view, click where you want the pivot to be. You can also drag the pivot marker to the desired location.

5. If you want to set a different pivot for another drawing or symbol cell, select the drawing or cell and in the Camera view, set the new pivot.
   Make sure the Set the Pivot for Symbol on All Frames button is deselected.

# Adding Pegs

Pegs are a special type of layer that do not contain any drawing. They are used strictly to offset and transform drawings that are under their hierarchy, without transforming the drawings directly.

When rigging or setting up a scene, it is recommended to add parent pegs for each of your drawing layers. This allows you to keep animation keyframes and drawings on separate layers, making it easier to work on the position and exposure of your drawing layers independently in the Timeline view. It also makes it easier to create a hierarchy of which body parts can be animated together and independently.
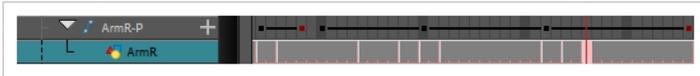


If you want to animate only on pegs, you can activate the Peg selection mode of the Transform tool in the Tool Properties view. You can also disable animating drawing layers, so that only pegs can be animated.

> **NOTE**
>
> It is also possible to make a drawing layer the parent of another drawing layer. Just like the way animating a peg animates its children layers, animating a drawing layer with children will also animate its children layers. Both layers will still appear in the animation.

### How to create parent pegs for your layers in the Timeline view

1. In the Timeline view, select all the layers.
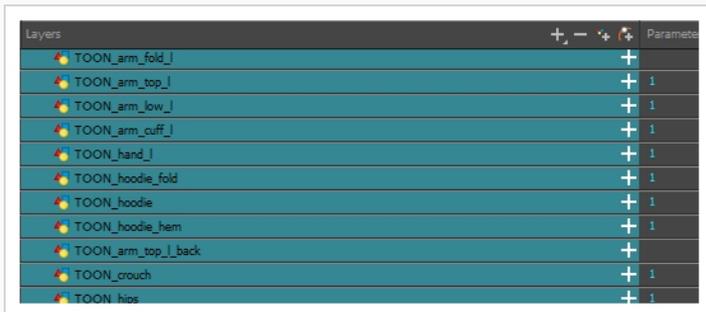


2. In the Timeline Layer toolbar, click the Add Peg 🐾 button to add a parent peg to all selected layers.
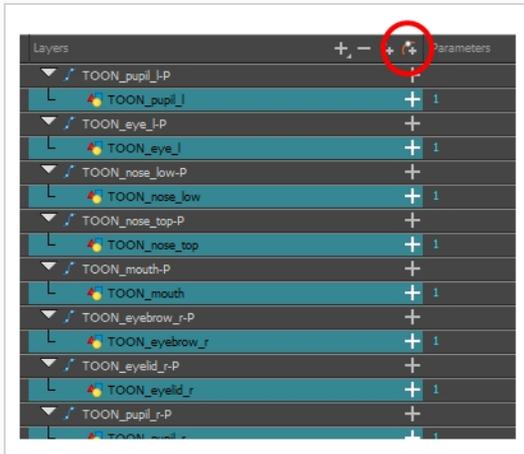
# Disabling Animation on Drawing Layers

By default, a drawing layer can be animated, but Harmony lets you disable this feature. Being able to switch your drawings so they can no longer be animated without a peg has certain advantages. It means that you can access the drawing substitution feature for this drawing layer, while being able to create keyframes on its parent peg. This feature is also available for backward compatibility when bringing in templates created in older versions of Harmony, so as not to lose their offset keyframes or drawing substitution keyframes.

When selecting the element in the Camera view, the actual drawing layer is selected, but the motion you will create will automatically be transposed to the peg layer. You cannot animate (add keyframes) directly onto the drawing layer if the option is disabled. You will still be able to perform certain offset movements in the Transformation tab of the Layer Properties, but not using any of the animation tools in the Tools toolbar.

There are two ways to disable animation on drawing layers, via the Layer Properties window and the Preferences dialog box. When you disable animation in the Layer Properties window, it affects only the selected layer and not any others.

If you prefer this style of animation and want every drawing element that you create to not be animated, you can disable the Element Node "Animate Using Animation Tools" Default Value preference. This will disable the Animate Using Animation Tools option on all the new layers you will create from that point on so you don't have to do this through the Layers Properties window for every layer. It is recommended to disable this preference before starting a new character rig.

## How to disable animation on a single layer

1. In the Timeline view, double-click on a layer.

   The Layer Properties dialog opens.

2. Open the **Controls** tab.

3. Uncheck the **Animate Using Animation Tools** option.

   Notice that the layer functions are no longer available in the Timeline view.
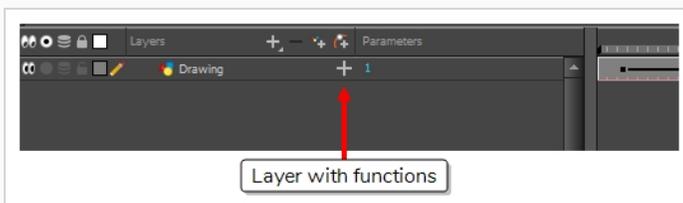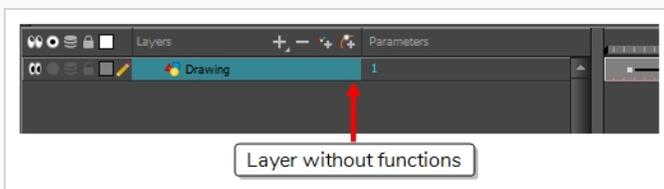
### How to disable animation for several drawing layers

1. Do the following to add the Set Properties on Many Layers script to your Timeline toolbar:

    a. Right-click on the Timeline toolbar and select **Customize**.

       The Toolbar Manager dialog will appear.

    b. In the Available Tools list, Scroll down to the ⛁ **TB_Set_properties_on_many_Layers in TB_Set_properties_on_many_Layers.js** function.

    c. Click on the ▷ Add the selected tool to the toolbar button.

    d. Click on the **OK** button.

2. In the Timeline view, select all the layers for which you want to disable animation.

3. In the Timeline toolbar, click on Set Properties on Many Layers ⛁ button.

   The Set Properties on Many Layers dialog appears.



4. Under **Animate Using Animation Tools**, select **Off**.

5. Click on the **OK** button.

### How to disable animation for all new drawing layers

1. In the top menu, select **Edit (Windows/Linux) or Harmony Advanced (macOS) > Preferences**.

   The Preferences dialog opens.

2. Select the **Advanced** tab.

3. Uncheck the **Element Node "Animate Using Animation Tools" Default Value** option.

4. Click on the **OK** button.

# Creating Hierarchies

Harmony lets you build your rig in an elaborate hierarchy, allowing you to set which parts of your rig should influence other limbs, and how they can move independently. For example, when rigging a simple character's arm, you can make the forearm layer a child of the arm layer, and the hand layer a child of the forearm layer. This way, if the character moves their forearm, the hand will follow, and if they move their arm, the forearm and hand will follow.
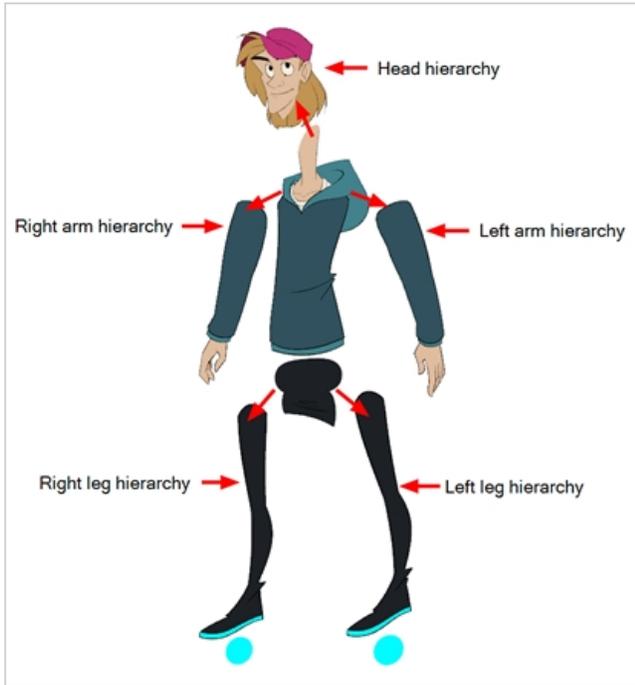


When building a basic character rig, you should at least have a hierarchy for each arm and each leg. You can make a hierarchy going from the torso, the neck and the head, and rig the arms to the torso, and you can rig the legs to the hips. This would make a hierarchy like this:
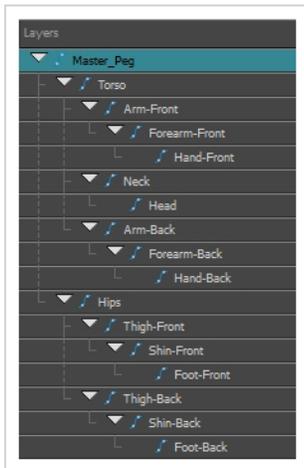
### How to create a hierarchy in the Timeline view

1. In the left area of the Timeline view, select the layer which you want to make a child layer.

2. Drag the child and drop it over the layer which you want to make the parent layer. Make sure you are not dropping the child layer between two layers.

3. Repeat until you've created a hierarchy that rigs all of your character's parts, with a master peg at the root. While rigging, if you want several layers to have a common parent, but no existing part of your rig can serve as that parent, create a new peg and nest those layers under that peg.
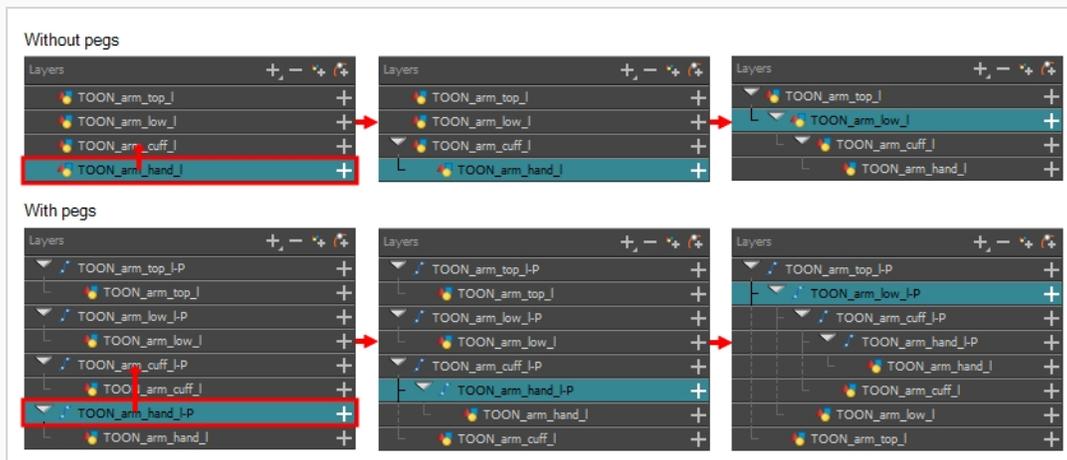


> **NOTE**
>
> In the Timeline view, you can unparent layers by holding down Shift, dragging the selected parent away from the child layer and dropping it somewhere else in the list.

When rigging, keep in mind that the order of the layers in the Timeline view affects the order in which they are rendered. Layers on top of the list will be rendered over layers at the bottom of the list. Should you need to change a layer's order while animating, you can nudge this layer's position on the Z-axis to override the layer order and force it to appear beneath or over other layers.

### How to nudge a layer on the Z-axis

1. In the Tools toolbar, select the Transform 🔲 tool.

2. In the Timeline, Node or Camera view, select the layer you want to nudge.

3. If you selected the layer from the Timeline or Node view, click on the Camera view tab to set the focus on the Camera view.

4. Do one of the following:

- To nudge the layer forward, press Alt + Down Arrow.

- To nudge the layer backward, press Alt + Up Arrow.

# Adding the Master Peg

Your character rig should always have a master peg which connects to all of its parts. The master peg allows you to manipulate the entire rig from a single layer, without having to manipulate each individual part. This is useful for positioning and scaling your character relative to the scene, as well as to animate your character's trajectory when it has to move between areas of the scene.
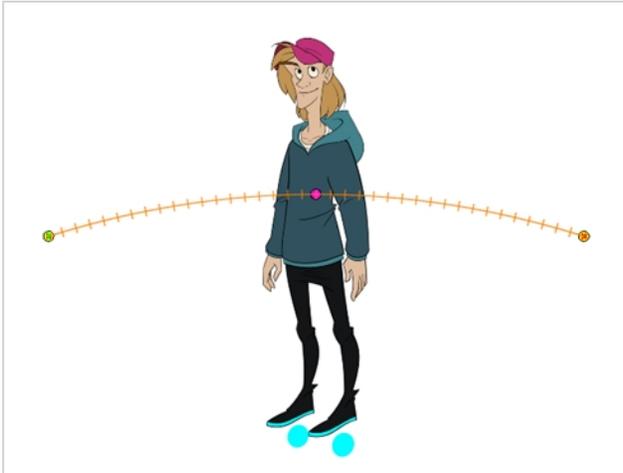


### How to add a master peg in the Timeline view

1. In the Timeline view, select the top layer.

2. In the Timeline view, click on the Add Peg ⌖ button.

   A new peg is added to the timeline as a parent of the selected layer.

3. Name the new peg `Master` plus the character's name.

4. In the Timeline view, select all the layers you want to attach to your new peg. Remember that your top layer is already a child of the peg, so don't include it in your selection.

5. Drag your selection **ON** to the peg layer to parent all your character's pieces to the peg. If your layers are added above the already parented layers, move that parented layer back on top of the layer stack.
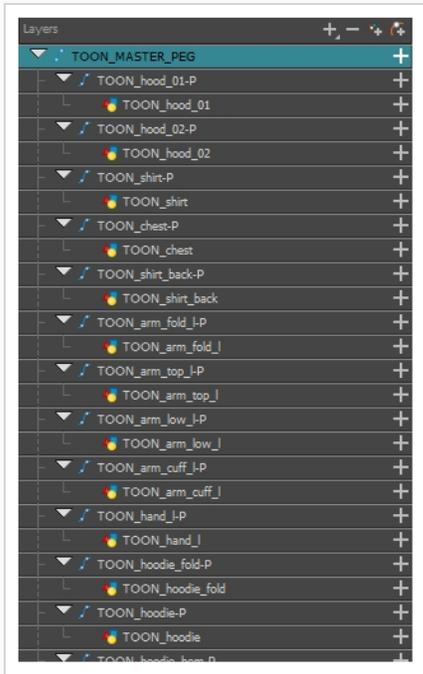
# Invert-Cutting

When rigging a character, there may be instances when you want to have the ability to move a particular piece to give the illusion of a rotation or move the pupil within the white of an eye without having the extra bit of the drawing sticking out of the character or eyeball. To do so, you can use masks to cut anything you don't want to be visible.
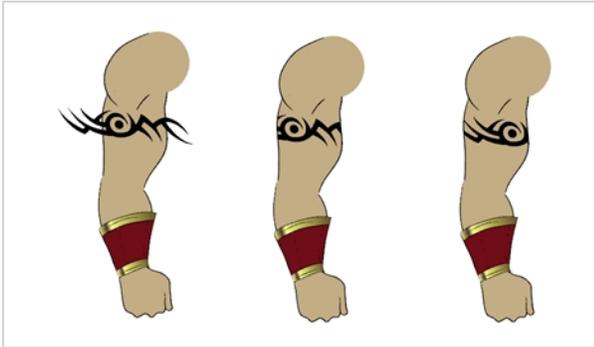


## How to mask an object in the Timeline view

1. In the Timeline view, make sure the keyframe is added on the object that will be masking the piece to cut.



2. Select the layer that will act as the mask.

3. In the Timeline view, right-click on the layer and select **Clone Selected Layers: Drawings and Timing**.



4. Select the layer to be masked.

5. In the Layer toolbar, click the Add Layer button and select **Effects > Cutter**.
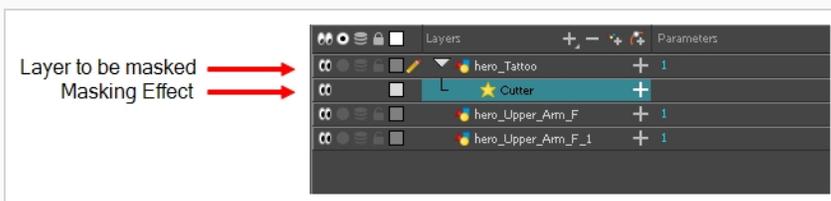
6. Click the Expand Parameters ➕ button to display the Cutter properties.
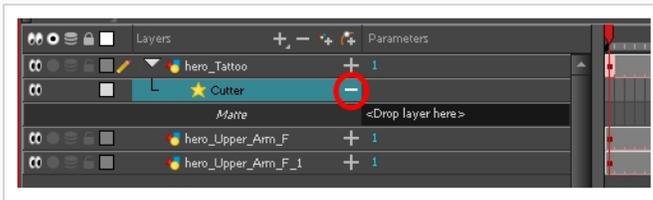


7. Drag the cloned layer **ONTO** the Matte parameter connection area.

   The masking layer name appears in the Matte parameter area and the masking layer is repositionned above the effect.
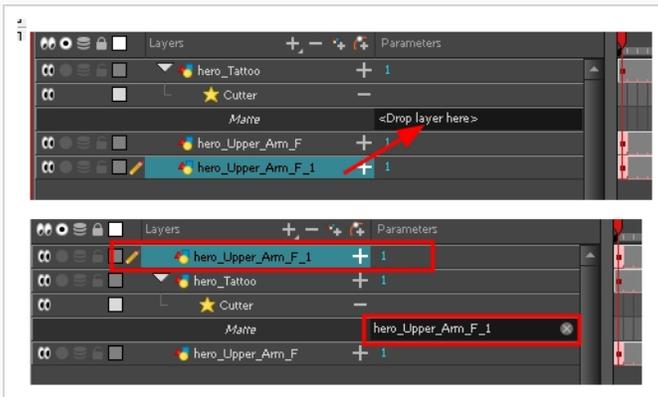


   The masking layer is no longer visible in the Camera view. You can see that the masking layer is connected to the Cutter effect by clicking the Show/Hide Additional Links ➡ button to display the Additional Links section.
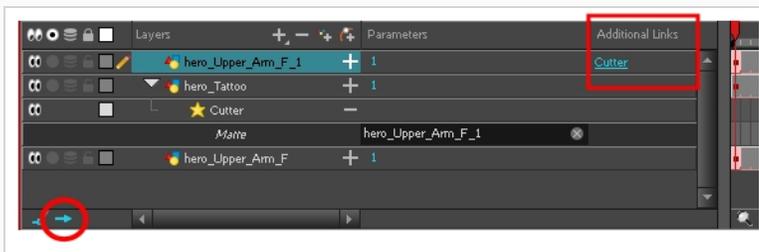


8. Your masking effect is most likely inverted and what you want to cut is probably showing. Double-click on the Mask layer to open the Layer Properties window. In the Layer Properties window, enable the **Inverted** option.
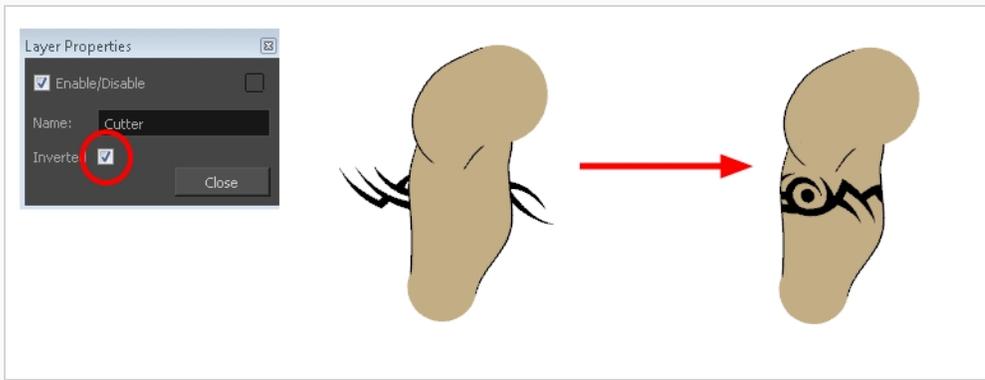
9. In the Tools toolbar, select the Transform ⬚ tool and move the cut object within the masking zone.
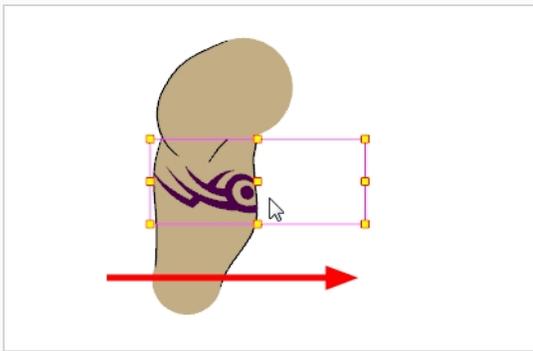
# Grouping Rigs

Once your rigging is completed, you must group the puppet's skeleton to help organize the often large and complex networks. This way, once you have imported two or three characters into the scene, three Group nodes will be displayed instead of all the rigging connections of three puppets.
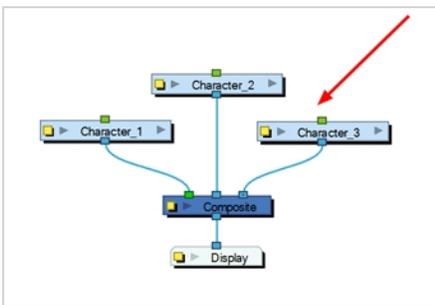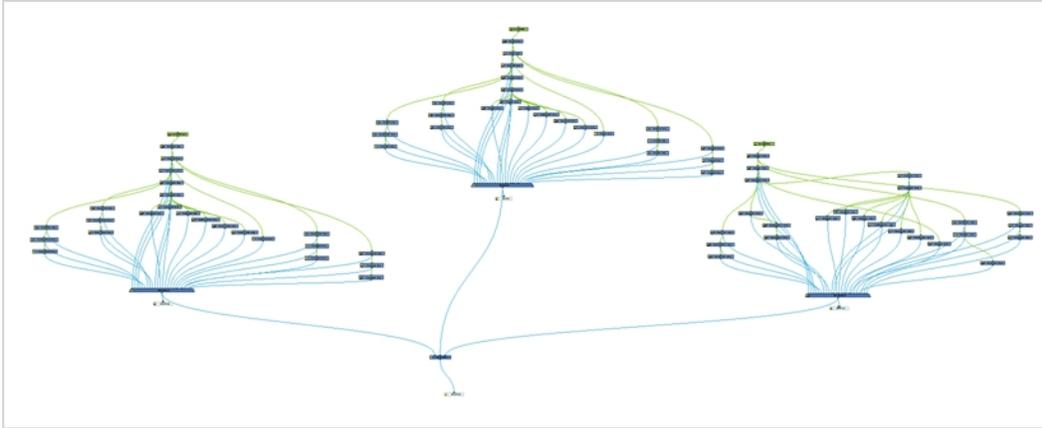




## How to group nodes

1. In the Node view, select all your nodes.

2. In the top menu, select **Edit > Group > Group Selected Layers** or press Ctrl + G (Windows/Linux) or ⌘ + G (macOS).

   Your nodes are grouped.

3. Click on the Group node's right arrow to enter the group.
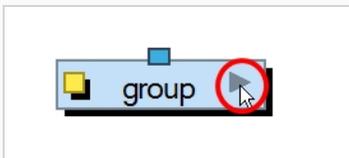
   

4. If you do not have a Multi-Port Out node inside your group, in the Node Library view, select the **Group** category and select a **Multi-Port Out** node.
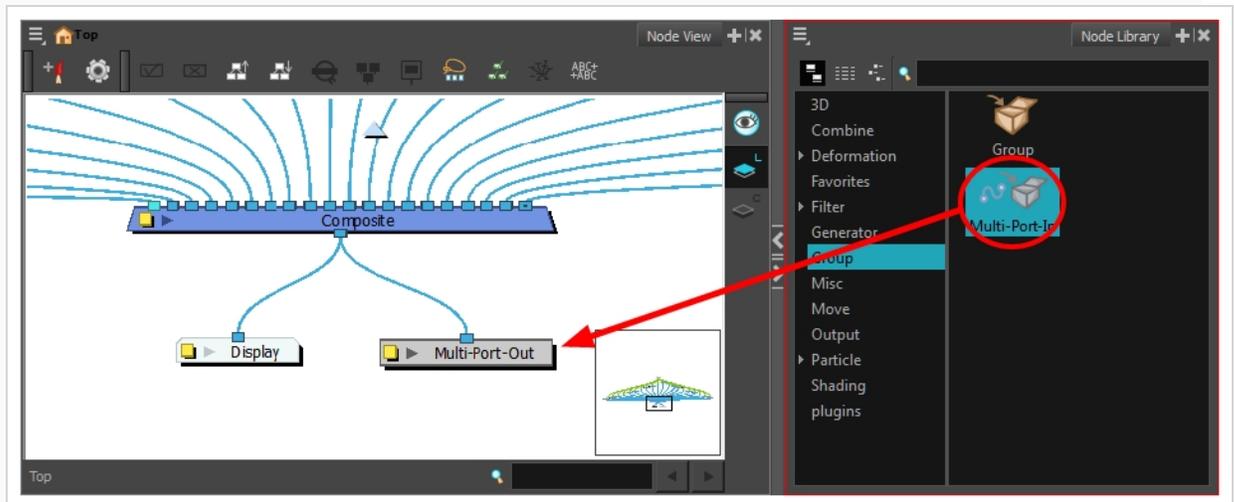
5.  Drag the Multi-Port-Out node to the Node view.

6.  Connect the Composite node's output port into the Multi-Port Out node.

    An output port is created on your Group node.

7.  In the bottom-left corner of the Node view, click **Top** to return to the network's root. You should now see an output port on your Group node.
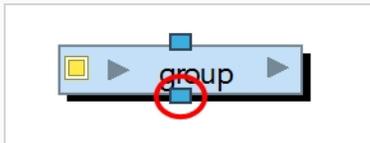


8.  Click on the Group's Properties button to open the Layer Properties window.
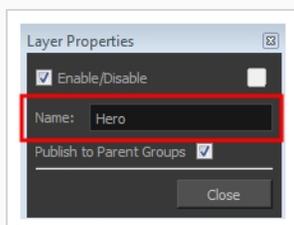


9.  In the Layer Properties window, rename the Group node with your character's name.

10. Click **Close**.
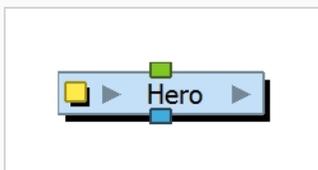
# Creating Keyframes

Once all your drawings are ordered and your master peg is added, you need to insert keyframes on each cell to create all of the function curves and block your pose in place.

## How to create the keyframes

1. In the Timeline view, collapse the master peg by clicking the Expand ▽ arrow.
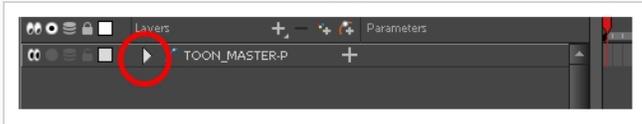
   

2. In the Timeline view, select the first cell.
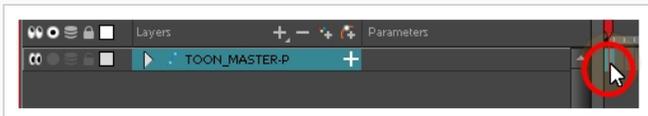
   

3. Do one of the following:

   - From the top menu, select **Insert > Keyframe**.

   - In the Timeline View toolbar, click the Add Keyframe ⬩KF button.

   - Press F6.

   > **NOTE**
   >
   > If you use the F6 shortcut when working Flash keyboard shortcuts flavour, this not only creates a keyframe but also duplicates a drawing.

# About Pose Copier

The pose copier is a scrip that can be added to your Scripting toolbar. The goal of the Pose Copier is to facilitate the reuse of poses from a master template by taking information from it and pasting it at the desired frame. It does not create new information outside of what is contained in the template.
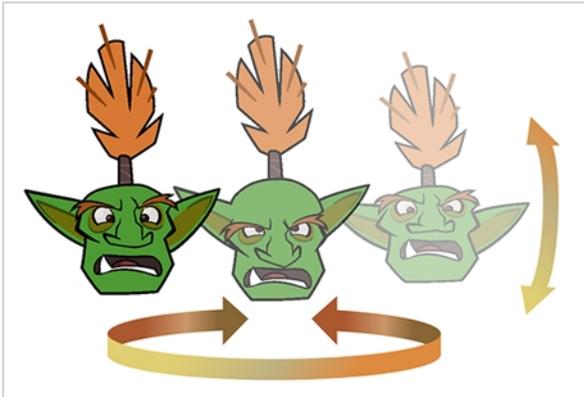


In order for the Pose Copier to work, templates need to be set up properly to maximize the compatibility of the script. It is recommended to keep only the frames that will be needed. Empty or unused frames may appear within the sliders.

For a simple use of the script, create a template of the part that you wish to use with the pose copier. It could be the entire character, the head, the lip sync or any other part. It is recommended to template groups as opposed to scattered individual nodes. To maximize compatibility, keep the hierarchy of your template identical to the hierarchy of your rig.

You can also create an advanced setup to select specific frames using guide layers—see *About Guide Layers* on page 823.

> **NOTE**
>
> To learn more about the Pose Copier dialog box, see the Reference guide

# Adding the Pose Copier Script to the Scripting Toolbar

To use the Pose Copier, you need to add the script to the Scripting toolbar.

### How to add the Pose Copier script to your Scripting toolbar

1. Select **Windows > Toolbars > Scripting** to display the Scripting toolbar.

2. In the Scripting toolbar, press the Manage Scripts $f_\downarrow$ button to open the Scripts Manager.

3. In the Files section, select the **TB_Pose_Copier.js** script file.

4. In the Functions section, select **TB_Pose_Copier** function.

5. Press the Add Script to Toolbar $\triangleright$ button to send it to the Scripting toolbar.

6. Press OK to close the Script Manager.

# About Guide Layers

The guide layers are ordinary drawing layers named in a way that will associate them with the 3 sliders of the pose copier. These layers will need to be incorporated inside the template for the sliders to work when activating the pose copier script.

You need to create three drawing layers for the three sliders to work. These will need to be named accordingly including a dash character. Suffixes may be added after the dash for additional information as seen in the example above.

- **slv-** for the vertical layer that will be used for the tilt
- **slh-** for the horizontal layer which will be used for the turn
- **slx-** for the second horizontal layer that will be used for the lipsync

In those guide layers, you will need to create empty drawing cells. These frames will represent the different slider positions to which you will have access in the pose copier. The guide layer frames need to match the character's frames if they are to show an accurate view of the information that will be pasted.



In the example above, the slh (horizontal) slider contains 5 frames. The horizontal sliders are read in alphabetical order from left to right. You can add numbers to display them in the desired order.

- 1front
- 2quarter-front
- 3side
- 4quarter-back
- 5back

The slv (vertical) slider contains 3 frames. The vertical slider works in alphabetical order from the way down and moving up, hence the numerical prefix.

- 1down
- 2mid
- 3up

The slx (expression) slider contains 5 frames. Each of these frames holds different combinations which will be used for the different sliders to access the frames of the template.

- A
- B
- C
- D
- E

For example, setting the slh (horizontal) slider to 1front, the slv (vertical) slider to 3down and the slx (expression) slider to B will display a front pose, looking down, using the B mouth.
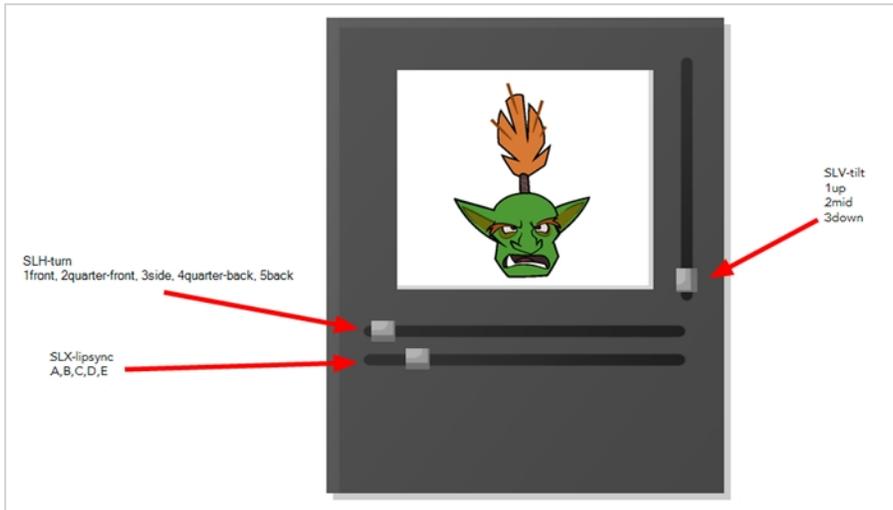


> **NOTE**
>
> To learn more about the Pose Copier dialog box, see the Reference guide

# Creating a Pose Copier Template

T-RIG3-007-005

The pose copier template is a regular template of assets that will be used to copy and paste information from the template over to a scene. Guide layers may be used inside of the pose copier template as additional efficiency tools for selecting your pose.

### How to create a Pose Copier template

1. In the Node view or in the leftmost section of the Timeline view, select the nodes intended to make the template.

   If you have created guide layer nodes, make sure to include them in the selection as well.

2. Copy the selection using one of the following:

   ‣ Press **Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X)**.

   ‣ From the top menu, select **Edit > Copy**.

3. In the Library view, select a folder to store the template.

4. If a library folder is locked, right-click and select **Right to Modify**.

5. With the folder selected, paste the selection into the folder using one of the following:

   ‣ Press **Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X)**.

   ‣ From the top menu, select **Edit > Paste**.

6. In the Rename dialog box, give the new template a name.

   To rename a template once it is created, right-click on the symbol and select **Rename**.

7. Click **OK**.

8. Right-click on the template and select **Generate Thumbnails**.

   You will see a preview of your template in the Drawing Substitution area of your Library view. The thumbnails are the images used inside the Pose Copier, therefore it is essential to do this before using the Pose Copier the script. Once this step is completed, the thumbnails are stored within the template. You will not need to do this again unless you recreate your template.

# Pasting Poses Using the Pose Copier

Once the templates have been created and set up properly, it is easy to paste a variety of poses from one or multiple templates onto a still character awaiting posing.
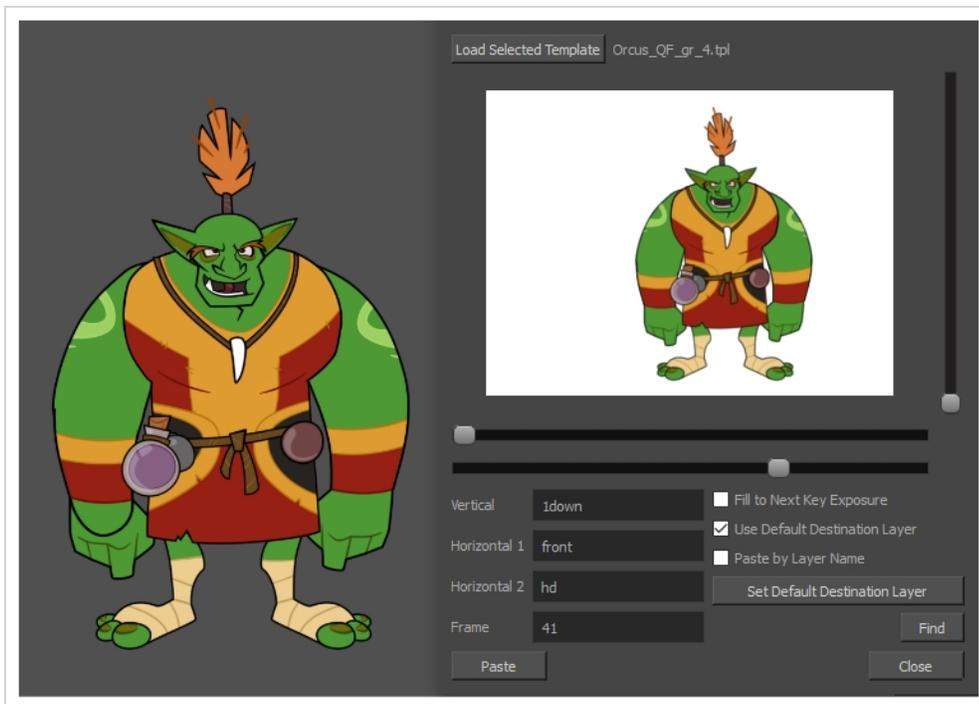


Depending on how the template has been set up, a different destination has to be set up in order for the pasting to take place.

## How to Set the Default Destination with the Pose Copier script.

1. In the Library view, select the template you want to copy poses from.

2. If it was not done previously, right-click on the template and select **Generate Thumbnails**.

   The thumbnails are generated and showing in the Drawing Substitution View.

3. With the template still selected, run the **TB_Pose_Copier** script by clicking on it in the Scripting toolbar—see .

   The Pose Copier dialog box opens.

4. From the timeline, select the destination of the pasted keyframes by selecting the node or topmost node of your hierarchy for the selected template.

5. With the destination highlighted in the timeline, (see below table for setting the proper

destination) press the **Set Default Destination Module** button from the Pose Copier dialog box.

Once selected, this information will remain saved within the template.

| Selecting the Destination Layer | | |
|---|---|---|
| **Type of template** | **Paste by Layer Name Option** | **Default Destination** |
| Grouped Nodes | Enabled | Set it on the same group as the templated group or any node above it in the hierarchy. If a node inside that group is selected, pasting will not take place. |
| | Disabled | Select the same group as the one templated. |
| Nodes | Enabled | Select any node in the hierarchy as the default position. |
| | Disabled | Unless you've only templated a single node, it is preferable to turn on the Paste By Layer Name option. |

## How to Paste Poses With the Pose Copier Script

1. Do one of the following:

   - Set Default Destination to the designated layer and enable the Use Default Destination Module option.

   - Manually select the layer for the destination of the pasting.

2. Select a pose using the different sliders—see *About Guide Layers* on page 823.

3. Click Paste to apply it on your character at the currently selected frame.

# Creating a Master Controller Through Scripting

The following topics will introduce you to scripting for a Master Controller and provide examples of how to handle basic use cases. However, before going through this section, you should know that:

- This documentation alone is not enough to be able to create a Master Controller through scripting. Such a task should only be taken by someone with sufficient experience in scripting or programming.

- This is an introduction guide, not a reference. To obtain a list of all the modules, properties and methods related to the Master Controller, you must refer to the Master Controller Node section of the Harmony scripting API reference.

# Chapter 9: Cut-out Animation

Harmony provides some great tools for rigging and animating cut-out character models. You can make simple rigs or give your characters flexible capabilities using peg hierarchies, groups, cutters, and deformers, among other things. You can create basic animations with the Transform tool, or more advanced animation with Deformers. Harmony also supports advanced onion skin and image swapping features to help you animate efficiently and quickly.

# About Animating with the Transform Tool

The Transform tool is the main tool to use when working with a cut-out character. The Transform tool has many useful functions:
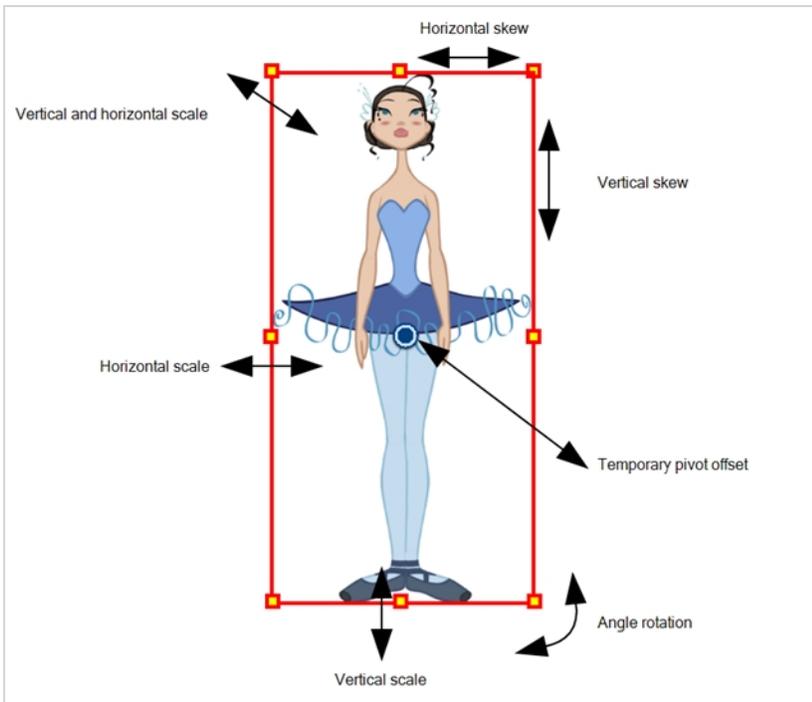


Using the individual Rotate, Translate, Scale and Skew tools is not recommended, as they move each piece from their own pivot point. They are compositing tools. The Transform tool creates a global selection, so when many parts are selected, you can move them as one unit. The Transform tool is highly recommended for cut-out animation.

When animating with the Transform tool, make sure to select the right selection mode. In this example, make sure that the Peg Selection 🖈 Mode is disabled in the Tool Properties view or it will limit the selection in the Camera view to pegs only.

Rotate tool                    Transform tool
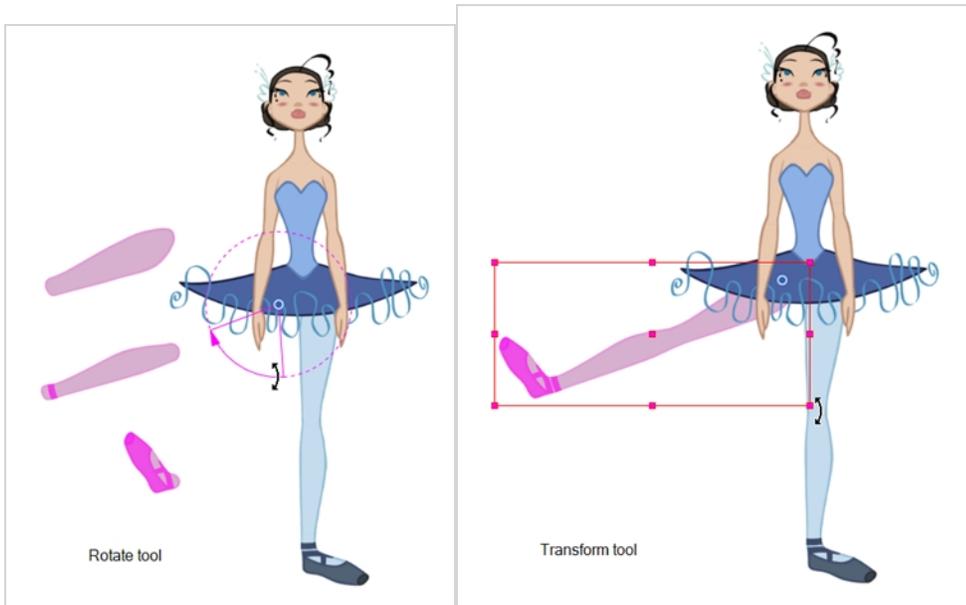
If there are hierarchy connections in the cut-out character, the Transform tool will also be used as the Forward Kinematics equivalent.

The Transform tool can be used on any kind of rigging.

When many parts are selected with the Transform tool, the first selected part's pivot will be used as the global selection's pivot. This pivot can be moved temporarily for the animation. When you offset the pivot, the permanent pivot is displayed as a ghost.

> **NOTE**
>
> The interpolation of the animation poses is always calculated from each individual part's permanent pivot. If there's a parent peg on a limb, make sure to select it instead of making a selection of each part to avoid setting individual keyframes.

# Animating with the Transform Tool

The Transform tool allows you to move, rotate, scale and skew a selection or multi-selection.

## How to animate using the Transform tool

1. In the Tools toolbar, click the Transform ⬚ tool or press Shift + T.

2. In the Transform Tool Properties view, make sure the Peg Selection 🖱 mode is deselected.

3. In the Timeline view, go to the frame on which you want to set the first position.

4. In the Timeline toolbar, click the Add Keyframe ⬆KF button or press F6. It is recommended to add a keyframe before moving the character. Moving a character's part without setting a keyframe will create keyframes only on certain parameters of the animation. You could run into issues later on when setting poses between existing ones. Creating a keyframe on all layers and parameters will ensure your pose is set and will not be modified by other poses later on.

5. In the Camera view, select the element to animate and move it.
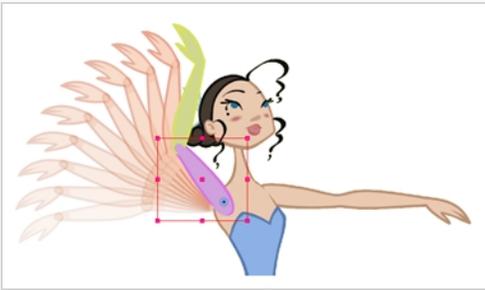


6. In the Timeline view, go to the frame where you want to set the next position.
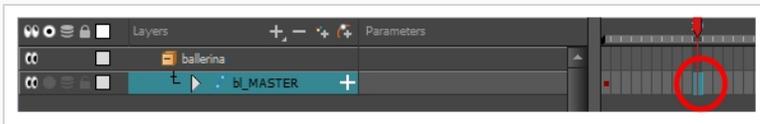


7. In the Timeline toolbar, click the Add Keyframe ⬆KF button or press F6.

8. In the Camera view, animate the character.

# Resetting Transformations

With the Reset command, you can return a selected element to its initial position and scale values, depending on which tool is active. For example, if the Rotate ⟳ tool is active, the transformation angle will be reset to 0 and if the Transform ⬚ tool is active, then all transformation values will be reset.

The Reset All option Resets all transformations on the current frame in a selected layer. Your keyframe will remain, but all the values will return to the starting value. All transformations are reset regardless of the tool you're using.

The Reset All Except Z option resets Resets all transformations on the current frame except the Z position. This is useful when doing cut-out animation. Cut-out puppets often have a particular Z ordering for the different views of a character. You might want to reset the transformation, but not necessarily the Z position.

> **NOTE**
>
> When using the Transform tool to select elements in the Camera view, always make sure the Peg Selection Mode option in the Tool Properties view is disabled or it will limit the selection to peg only.

### How to reset the transformation on the current frame

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset** or press R. This will reset the current frame if keyframes were created.

   The selected layer(s) return to their original position.

### How to reset all transformations on the current frame

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset All** or press Shift + R.

   The selected layer(s) return to their original position.

### How to reset all transformation values except Z

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset All Except Z**.

   All values except for those set on the Z axis are reset.

## How to completely reset the layers' parameters

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Timeline or Camera view, select one or more drawing layers to reset.

3. Do one of the following:

   - Right-click the selected layers and select **Clear All Values**. This will remove all keyframes and reset all values for the entire layer.

   - In the Timeline View menu, select **Layers > Clear All Values**. This will remove all keyframes and reset all values for the entire layer.

   The selected layers return to their original position.

# About Hierarchy Navigation

If there is a layer hierarchy in the puppet you built, use the keyboard shortcuts to travel up and down the parent-child chain. You can navigate between the children of the same parent. You can also easily center on your selection in the Timeline view.

# Navigating Layers

Navigate between the layers in the Timeline view, using keyboard shortcuts or the Animation menu. This way of navigating only works for unparented layers or the children of a parent layer. If you are navigating between unparented layers, parent layers can be selected, but their children will be skipped. If you start on a parented layer (child), only the other children of the same parent will be available for selection.

**How move up and down the layer stack**

1. In the Tools toolbar, select the Transform ⬚ tool.

2. In the Camera or Timeline view, select an unparented layer or child layer of a parent with several children.



3. From the top menu, select:

   - **Animation > Select Previous Sibling** or press / to select the previous child layer.

   - **Animation Select Next Sibling** or press ? to select the next child layer.
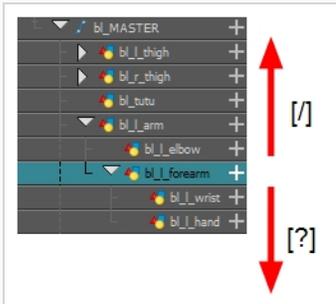
# Selecting Parent and Children

When animating, large movements that are made at the root (parent) of a chain cause secondary movements throughout the rest (children) of the chain. For example, when you rotate the arm of a character from the shoulder, the forearm and hand will follow. However, in order to make the movement appear natural and graceful, the forearm and hand should not move at the same speed or angle. As a result, animators often need to move up and down a chain, intermittently selecting parent and children, in order to make both large and fine movements.

**How to select the parent or child of the selected layer**

1. In the Tools toolbar, select the Transform ⬚ tool.

2. In the Transform Tool Properties view, make sure the Peg Selection 🖈 mode is deselected.

3. In the Camera or Timeline view, select a layer or object attached to a hierarchy.
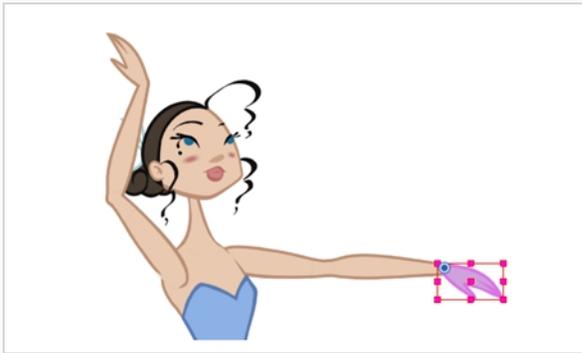


4. Do one of the following:

   - Select **Animation > Select Parent** or press B to select the parent layer.

   - Select **Animation > Select Child** or press Shift + B to select the child layer.

   - Select **Animation > Select Children** to select all child layers at the same time.
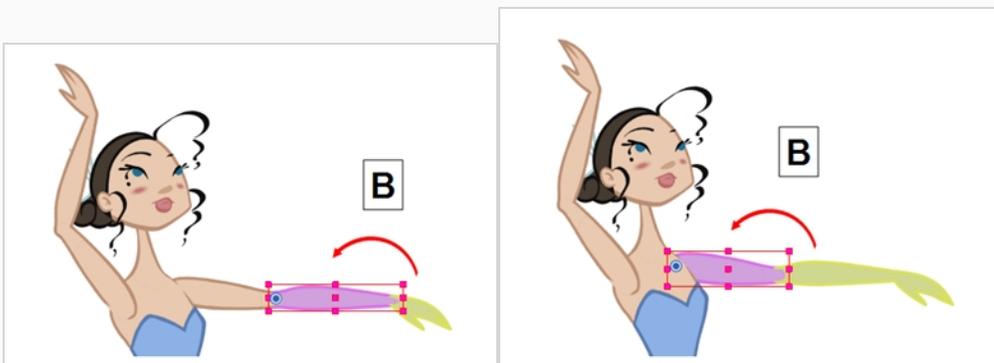
# Centering on Selections

When you have many layers in the Timeline view, you may find it hard to locate which one is selected. You can use the Centre on Selection feature to display the selected object's layer in the Timeline view.

**How to center on the selected layer in the Timeline view**

1. In the Camera view, select a layer.

2. Do one of the following:

   - From the Timeline view menu, select **View > Centre on Selection** or press O.

   - In the Timeline view toolbar, click the Centre on Selection ⊖ button.

# About Keyframes

Keyframes are the building blocks of Cut-out animation. Unlike Traditional animation, where every pose is drawn, Cut-out animation uses keyframes to mark major poses (key poses) and lets the software create all the poses in between.

In Harmony, you can create two kinds of keyframes: Motion and Stop-Motion. Motion keyframes behave like the description above; they allow for the automatic creation of drawings between two keyframed poses. Stop-Motion keyframes do not allow for interpolation between keyframes. They are often used to block poses, somewhat similar to what you would see in Traditional Animation.

# Creating Motion Keyframes

After you have created the key poses, you can animate the in-between poses yourself or let Harmony do it using motion keyframes. When you use motion keyframes, the drawings gradually move to the next position instead of staying on the spot until the next keyframe.
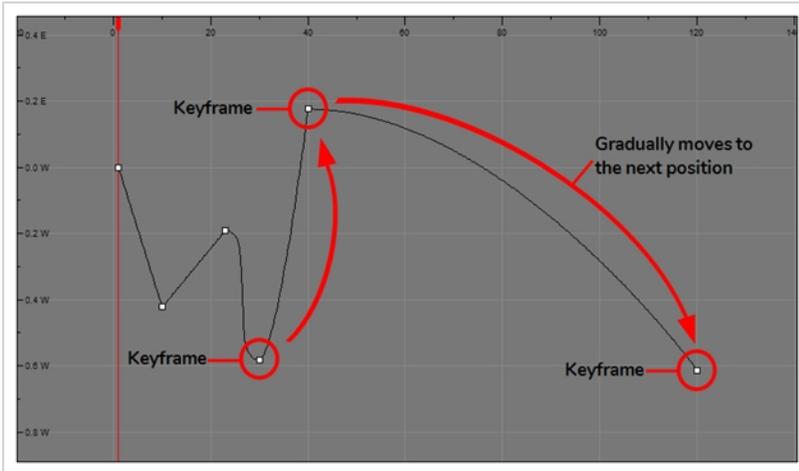


## How to create motion keyframes

1. In the top menu, make sure the **Animation > Stop-Motion Keyframe** option is disabled.

2. In the Timeline view, select the cell on which you want to add a keyframe.

   

3. Do one of the following:

   - Right-click on the selection and select **Insert Keyframe**.

   - Click the Add Keyframe ![KF] button in the Timeline toolbar.

   - Press F6.

   - In the Camera view, if the Animate mode is enabled, as soon as you move the selected element, a keyframe will be automatically created on the current frame.

**How to convert a stop-motion keyframe into a motion keyframe**

1. In the Timeline view, select the stop-motion keyframes to convert into motion keyframes.
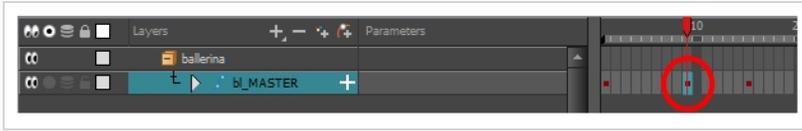


2. Do one of the following:

    - Right-click on the selection and select **Set Motion Keyframe**.

    - Click the Motion Keyframe ⟋ button in the Timeline View toolbar.

    - Press Ctrl + K (Windows/Linux) or ⌘ + K (macOS).
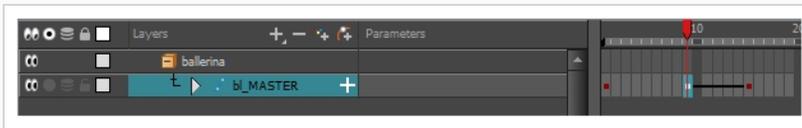
# Creating Stop-motion Keyframes

To start animating your character, start by doing your key poses. In fact, most of your time will be spent doing key poses. It is better to work with stop-motion keyframes so Harmony does not automatically create the interpolation between your keyframes.

When using stop-motion keyframes, also known as *step keyframes*, the segment between two keyframes is constant. There is no animation generated by the computer between the poses. The drawing remains in position until the next keyframe, then moves to its new position.
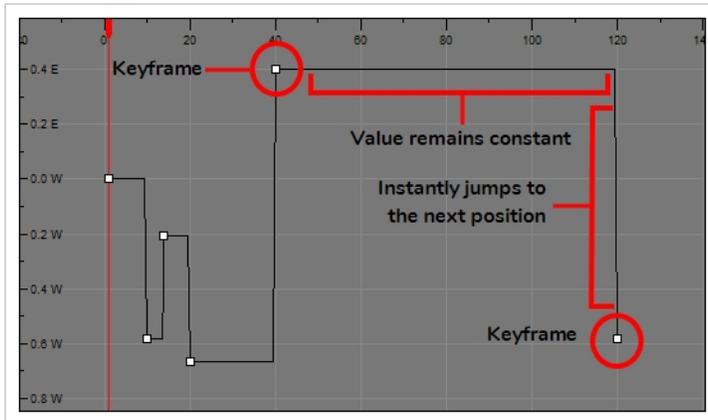


## How to create stop-motion keyframes

1. In the top menu, make sure the **Animation > Stop-motion Keyframe** option is selected.

2. In the Timeline view, select the cell on which you want to add a keyframe.
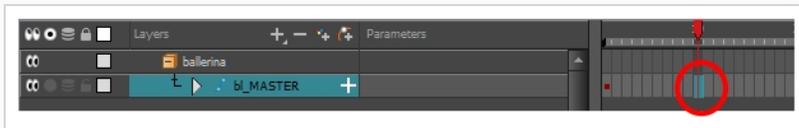


3. Do one of the following:

   - Right-click and select **Insert Keyframe**.

   - In the Timeline toolbar, click the Add Keyframe ⊕KF button.

   - Press F6.

   - In the Camera view, if the Animate mode is enabled, as soon as you move the selected element, a keyframe is automatically created on the current frame.
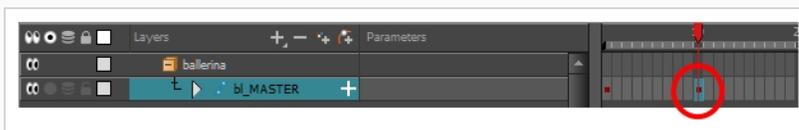
**How to convert a motion keyframe into a stop-motion keyframe**

1. In the Timeline view, select the motion keyframes to convert into stop-motion keyframes or press S.
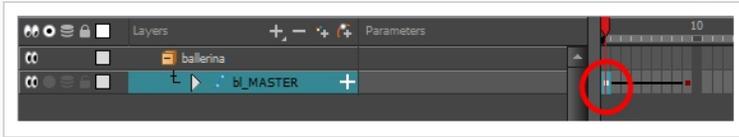


2. Do one of the following:

   - Right-click and select **Set Stop-Motion Keyframes**.

   - In the Timeline toolbar, click the Stop-Motion Keyframe ⊷ button.

   - Press Ctrl + L (Windows/Linux) or ⌘ + L (macOS).
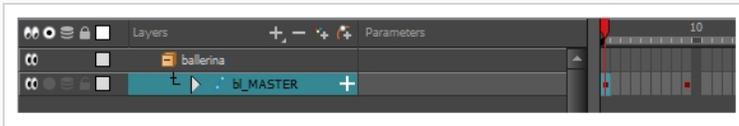
# About Swapping Drawings

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Cut-out animation is not only about moving parts around. It's also about swapping drawings to give the animation a more traditional animation look. You can add as many new drawings as you want in your scene and use them in your current animation. You can also add new drawings to the library and use them in other scenes. But before starting to swap drawings, 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.

When you want to swap drawings, you can do so in the Timeline or Library view. In the Timeline view, the Parameters area is where you can select a drawing to swap. In the Library view, the Drawing Substitution window lets you see the drawings before selecting one for swapping. In this view, you are actually selecting drawings in your scene layers, not drawings in the Library.

> **NOTE**
>
> Keep in mind that when you swap a drawing, its entire exposure is replaced up to the next drawing exposure.
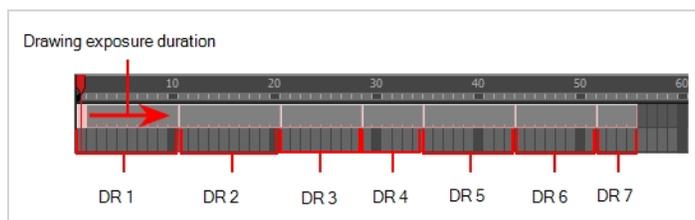
# Swapping Drawings in the Timeline View

When selecting a certain frame range to be swapped, the behaviour of the Timeline and Library views is different. If you are using the Parameters area of the Timeline view to select a drawing to replace a selected frame range, the new drawing will replace the frame range and continue until the next key exposure. In the following example, drawing 2 (DR2) is replaced by a new drawing, starting at the beginning of the selected frame range and ending at the next key exposure.



Selected frame range is replaced by a drawing selected from the Parameters area of the Timeline view. The exposure starts at the beginning of the frame range and continues until the next key exposure.
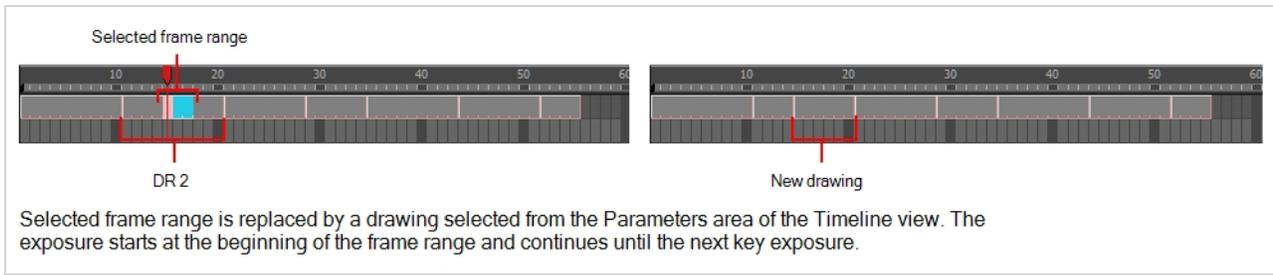
## How to swap a drawing in the Timeline view

1. In the Timeline view's right side, select the cell containing the drawing or symbol cell to swap.
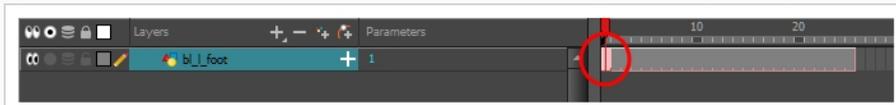


2. In the Drawing Substitution field, position the pointer over the value and drag left or right to change the cell or drawing exposed for another one. You can also type in the drawing name or symbol's cell number if you know it.



Drawing Substitution field
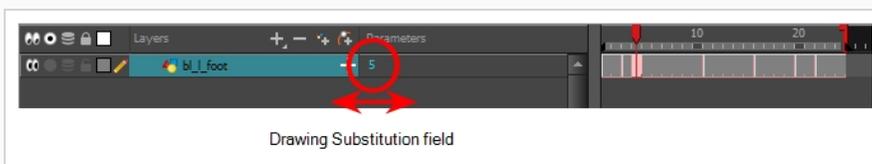
# Swapping Drawings in the Library View

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When selecting a certain frame range to be swapped, the behaviour of the Timeline and Library views is different. If you use the Drawing Substitution window in the Library view to select a drawing, the drawing is split in two and the exposure before and after the frame range remain the same. In the following example, drawing 2 (DR 2) is split in two and the selected frame range is filled with a new drawing.



Selected frame range is replaced by a drawing selected from the Library view. The drawing is split in two. The exposure remains the same before and after the new drawing.
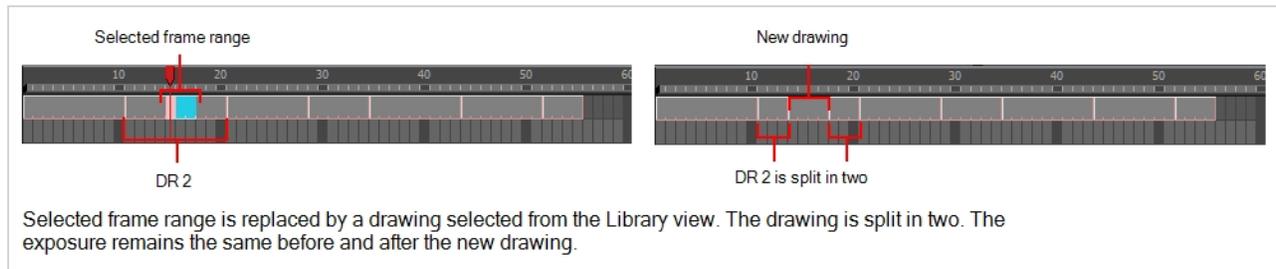
## How to swap images in the Library view

1. In the Tools toolbar, select the Transform ⬚ tool.

2. In the Transform Tool Properties view, make sure the Peg Selection ⬚ button is deselected.

3. In the Camera view, use the Transform ⬚ tool to select a part of the drawing to swap.

> 📝 **NOTE**
>
> You can swap the frames in symbols or the drawings in a layer. However, you cannot swap one symbol for another.



4. In the Timeline view, select the cell range in which you want to swap the drawing.
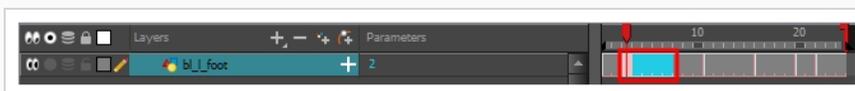
5.  In the Library view, go to the Drawing Substitution window.



6.  Scroll through the symbol's frames or drawings by doing one of the following:

    ‣   From the top menu, select **Animation > Substitute Drawing Previous** or **Substitute Drawing Next**.

    ‣   Drag the slider left or right.

    ‣   Press +.



The drawing or symbol's cell on the current frame is replaced.

# Adding Key Exposures

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).



## 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.

# About Eases

To add ease in and ease out on motion paths, you can display the function curve and modify the Bezier or Ease curve. To apply an ease to multiple functions and keyframes, use the Set Ease for Multiple Parameters feature and set the amount desired.
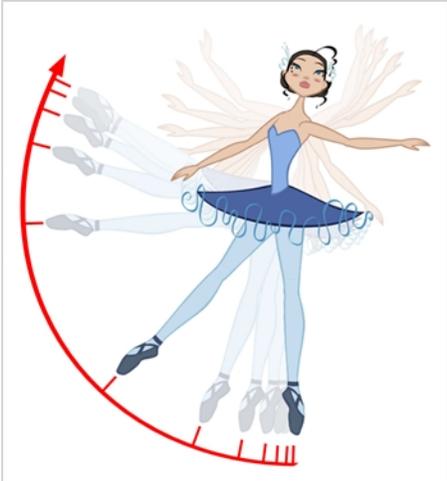


The velocity, or ease, is used on motion keyframes. The velocity must be adjusted directly on the function curve in the Function view or Function editor. When a keyframe is selected, easing values appear in the right handle and left handle fields, as well as the Bezier handle or Ease wheel controls on each selected keyframe. You can pull on them to adjust the ease in and ease out, or type values in the fields.

If there are several functions whose velocity you want to adjust at the same time, such as the hand, forearm and arm of a cut-out character, you can apply the same velocity parameters to all the selected keyframes in one frame.

# Setting Eases for Multiple Parameters

You can adjust eases for multiple parameters at once.

### How to set ease on multiple parameters

1. In the Timeline view, collapse your character model's hierarchy.

2. Select one of your animation keyframes. Since your model's hierarchy is collapsed, this selects the keyframe on every layer simultaneously.
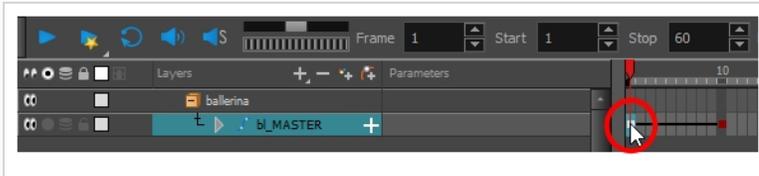


3. Do one of the following:

   - In the Timeline view, right-click and select **Set Ease For Multiple Parameters**.

   - In the Timeline toolbar, you can click the Set Ease For Multiple Parameters button.

   The Set Ease For Multiple Parameters dialog box opens.
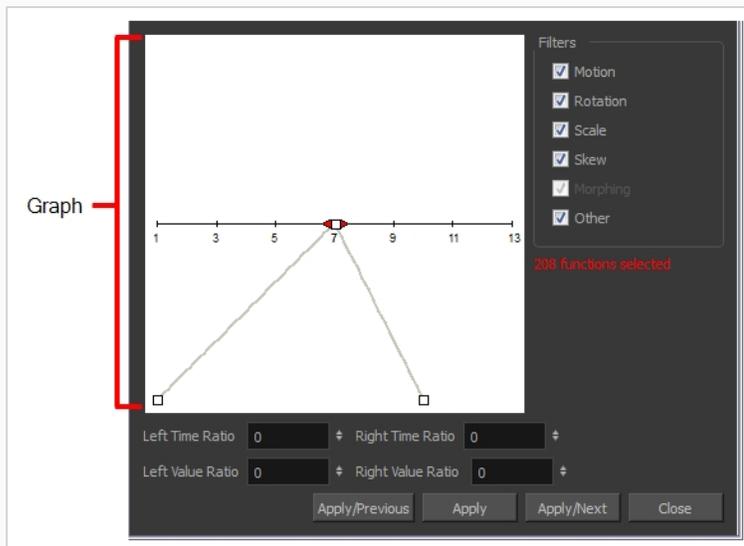


4. In the graph, pull on the Bezier handle to adjust the velocity for all the selected functions.
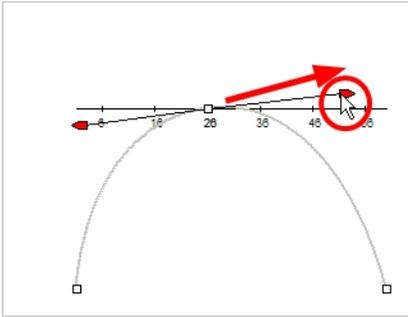
5. To apply these easing parameters to a certain type of function only, such as Rotation or Scale, in the Filters section, deselect the function types you do not want to affect.

- **Motion**: Applies the easing parameters to the selected Position X, Position Y, Position Z and 3D Path functions

- **Rotation**: Applies the easing parameters to the selected Angle functions.

- **Scale**: Applies the easing parameters to the selected Scale functions.

- **Skew**: Applies the easing parameters to the selected Skew functions.

- **Morphing**: Applies the easing parameters to the selected Morphing Velocity functions. Note that it is applied to the Morphing Velocity function in the Layer Properties window, not to the basic Morphing ease in the Tool Properties view.

- **Other**: Applies the easing parameters to all the other selected functions, such as all functions created to animate effect parameters.

6. You can also adjust the easing by typing values in the Time Ratio and Value Ratio fields. The values are calculated in percentage.

- In the Left Time Ratio and Right Time Ratio fields, type the percentage value corresponding to the length of time you want the easing to last. The value must be between 0% and 100%.

- In the Left Value Ratio and Right Value Ratio fields, type the percentage value of how strong you want the easing out. The value must be between 0% and 100%.

- If your Time Ratio and Value Ratio values are equal, you will have a linear motion.

7. Click one of the following buttons:

- **Apply/Previous**: Applies the easing parameters to the selected keyframes and then selects the previous keyframe in the timeline.

- **Apply**: Applies the easing parameters to the selected keyframes.

- **Apply/Next**: Applies the easing parameters to the selected keyframes and then selects the next keyframe in the timeline.

- **Close**: Closes the dialog box. If you did not apply the modifications, they will be cancelled.

> **NOTE**
>
> If a range containing multiple keyframes is selected, only the first selected keyframe will be affected by the Seat Ease for Multiple Parameters functionality.

# Using the Onion Skin in Cut-out Animation

When animating cut-out characters, it is useful to see the previous and next frames on the animation. However, it can sometimes be confusing to see the onion skin for every part of the character. You will often only want to see the onion skin on a single part or a few parts, such as the arm that is currently being animated.



While animating in the Camera view, there is a series of different onion skin options. You can enable these options in the menu or manually in the Timeline view using the layer's Show Onion Skin 🗄 button. Only selected layers will be displayed in the onion skin preview; you can change the display options when you use the onion skin.

### How to use the onion skin

1. In the Tools toolbar, click the Onion Skin 🥫 button or press Alt + O.

2. In the Tools toolbar, click the Transform ⬚ tool or press Shift + T.

3. In the Camera view, select one or more elements.

4. Select **View > Onion Skin** and one of the following commands:

   - **Add to Onion Skin:** Adds a series of selected elements to the onion skin preview.

   - **Remove From Onion Skin:** Removes a series of selected elements from the onion skin preview.

   - **Remove Unselected from Onion Skin:** Removes all elements except the ones selected from the onion skin preview.

   - **Add All to Onion Skin:** Adds all of the scene's elements to the onion skin preview.

   - **Remove All from Onion Skin:** Removes all of the scene's elements from the onion skin preview.

## Add to Onion Skin

The Add to Onion Skin command adds a series of selected elements to the onion skin preview. The keyboard shortcut is Shift + S.
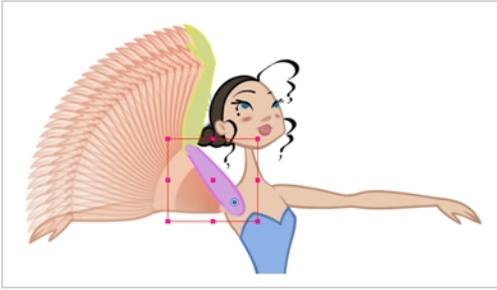
## Remove from Onion Skin

The Remove From Onion Skin command removes a series of selected elements from the onion skin preview.
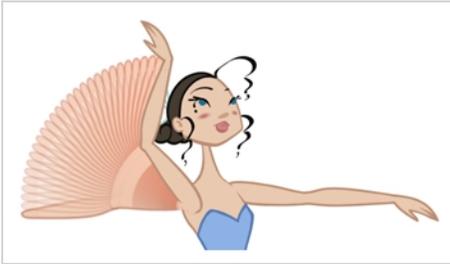


## Remove Unselected from Onion Skin

The Remove Unselected from Onion Skin command removes all elements except the ones selected from the onion skin preview.
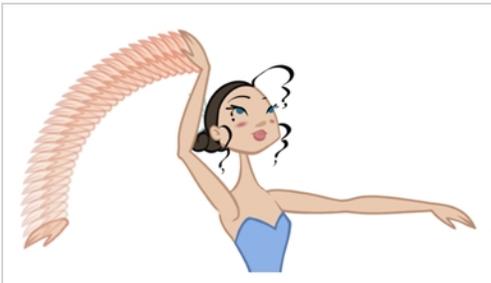


## Add All to Onion Skin

The Add All to Onion Skin command adds all scene elements to the onion skin preview. The keyboard shortcut is Alt + Shift + O.
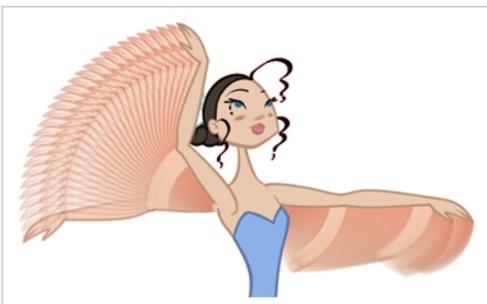
# Remove All from Onion Skin

The Remove All Onion Skin command removes all scene elements from the onion skin preview. The keyboard shortcut is Ctrl + Shift + O (Windows/Linux) or ⌘ + Shift + O (macOS).
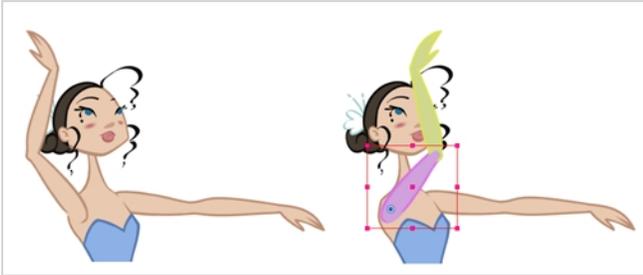
# Using the Outline Mode

Use the Outline mode to temporarily convert all the drawings on a layer to outlines. You can still select and manipulate the drawings in this mode. Select a drawing by selecting its outline. The fill is not taken into account when making selections in this mode.



## Toggling drawings to outlines

1. In the Timeline view, click once on the Change Track Colour button of a layer to toggle all drawings of that layer to outlines, in the Camera view.
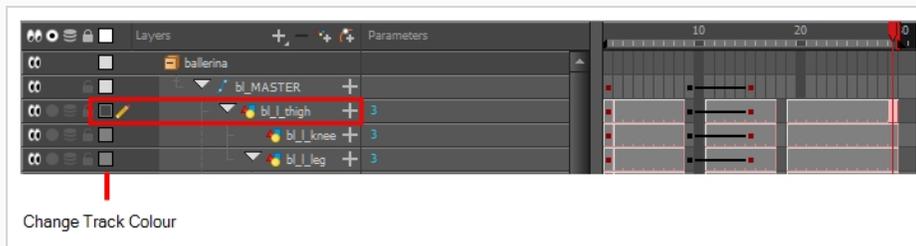
## Changing the outline colour

1. In the Timeline view, double-click on the Change Track Colour button of a layer to open the Select Colour dialog box.



Change Track Colour
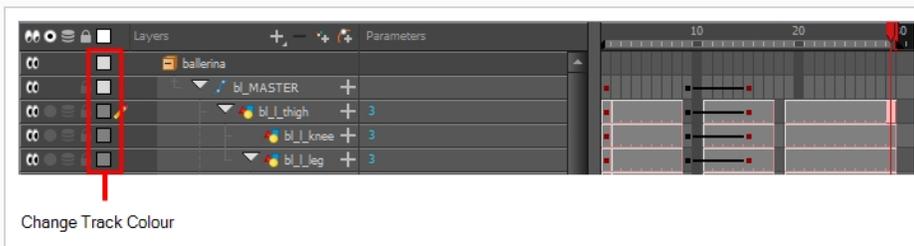
2. In the Select Colour window, select a new colour for your outlines.

3. Click Ok.
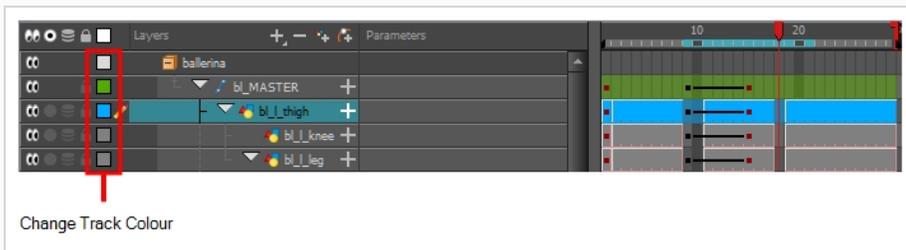


The colour swatch and frames of the selected layer take on the new colour.

4. In the Timeline view, click once on the change track colour of a layer to toggle all drawings of that layer to outlines, in the Camera view.

The outlines of the layer's drawings appear in the selected colour.

# Flipping Through Poses

When animating, it is useful to flip through poses to see the flow of your animation without going through each frame in the Timeline view. Harmony lets you flip between the selected element's keyframes.

## How to flip through poses

1.  In the Camera or Timeline view, select a layer that contains the poses you want to view.
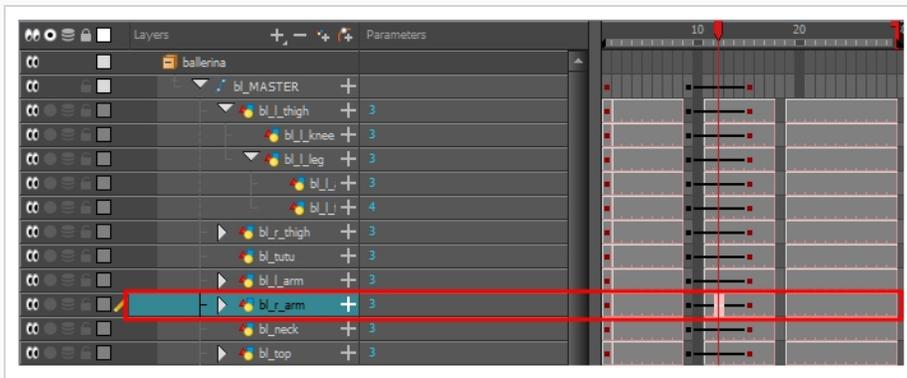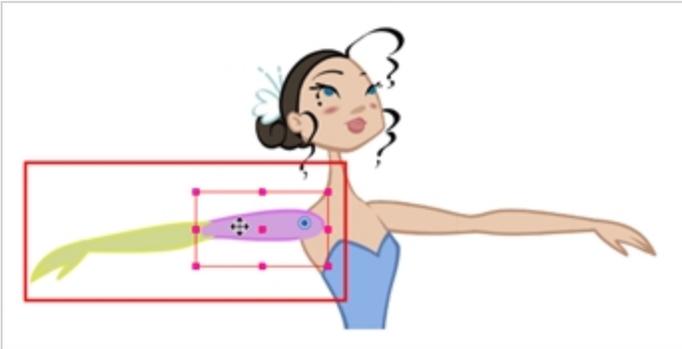
    

2.  Do one of the following:

    - From the top menu, select **Animation > Go to Previous Keyframe** or **Go to Next Keyframe**

    - Press semicolon (;) and single quote (').

# Flipping Parts

If you want to flip a part, a limb or a whole puppet, use the Transform tool and the Flip Horizontal and Flip Vertical options. If the Scaling parameter is not set to Separate Scale, the flip is not applied to the selection.

### How to flip a selection

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Tool Properties view, make sure the Peg Selection Mode 🔧 is disabled.

3. In the Camera view, select the parts to be flipped.
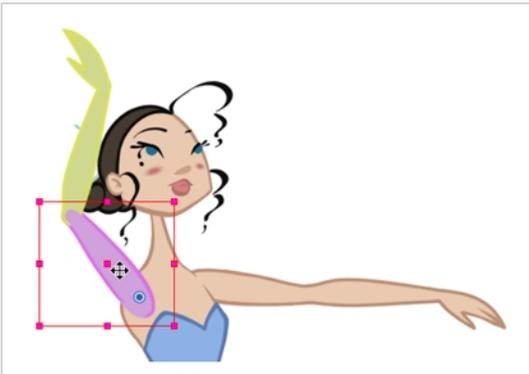
4. In the Tool Properties view, click the Flip Horizontal ⟷ or Flip Vertical ⤵ option or press 4 or 5 respectively.
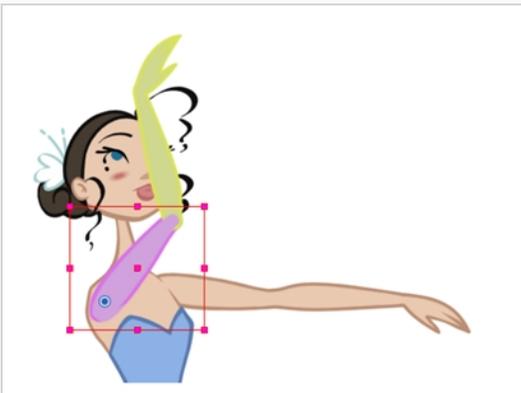
# Animating Lip-Sync

Adding a lip-sync to your animation is essential to making your characters seem alive. However, it is also a particularly tedious part of the animation process.



To solve this problem, Harmony provides an automatic lip-sync detection feature. This feature analyzes the content of a sound track in your scene and associates each phoneme it detects with one of the mouth shapes in the following mouth chart, which is a standard mouth chart in the animation industry.



> **NOTE**
>
> The letters assigned to these mouth shapes are standard identifiers, they do **NOT** correspond to the sound they are meant to produce.

This is an approximation of the English phonemes each mouth shape can be used to represent:

- **A**: m, b, p, h
- **B**: s, d, j, i, k, t
- **C**: e, a
- **D**: A, E
- **E**: o
- **F**: u, oo
- **G**: f, ph
- **X**: Silence, undetermined sound

When performing automatic lip-sync detection, Harmony does not create mouth drawings. It simply fills the drawing column of your character's mouth layer with the generated lip-sync, by inserting the letter associated with the right mouth shape into each cell of the column. Therefore, for the automatic lip-sync detection to work, your character's mouth layer should already contain a mouth drawing for each drawing in the mouth chart, and these drawings should be named by their corresponding letter.

## How to generate a sound detection for lip-sync using the Layer Properties view

1. In the Timeline or Xsheet view, select the sound layer.

   The options for that layer will appear in the Layer Properties view.

2. In the Layer Properties, click **Detect**.

   

   Harmony analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.

3. Click the **Map** button to open the Lip-Sync Mapping dialog box.

   

4. From the Destination Layer menu, select the layer that contains the mouth positions for the character's voice track.

> **NOTE**
>
> If the selected layer contains symbols, you can map the lip-sync using drawings located directly on the layer or use the symbol's frames. In the Symbol Layer field select **Don't Use Any Symbol** if you want to use the drawings or select the desired symbol from the drop-down menu.

5. In the Mapping section, type the drawing name or Symbol frames in the field to the right of the phoneme it represents. If your drawings are already named with the phoneme letters, you can skip this step.

6. Click **OK**.

7. In the Playback toolbar, enable the Enable Sound ◀s option.

8. Press the Play ▶ button in the Playback toolbar to see and hear the results in the Camera view

You can manually create the lip-syncing for your scene by selecting which mouth drawing should be exposed at each frame of your character's dialogue. For this process, you will be using the Sound Scrubbing functionality, which plays the part of your sound track at the current frame whenever you move your Timeline cursor, allowing you to identify which phonemes you should match your character's mouth to. You will also be using drawing substitution to change which mouth drawing is exposed at every frame.

### How to animate lip-sync using the Timeline view

1. In the Playback toolbar, enable the **Sound Scrubbing** ◀s button.

2. In the Timeline view, drag the red playhead along the sound layer waveform.

3. When you reach a frame where a mouth position should go, for example, an open mouth with rounded lips for an "oh" sound, click on that frame on your mouth shapes layer.

4. In the Parameters section, staying on your mouth shapes layer, place your cursor on top of the drawing name (often a letter) until it changes to the swapping 🖑 pointer.

5. Pull the cursor to see the list of mouth shape names and choose the one you want. The current drawing automatically changes to the new selection.

## How to animate lip-sync using the Library view

1. In the Playback toolbar, click the Sound Scrubbing ◀S button.

2. In the Timeline view, drag the red playhead along the waveform of your sound layer.

3. When you reach a frame where a mouth position should go, for example, an open mouth with rounded lips for an "oh" sound, click on that frame on your mouth shapes layer.

4. In the Drawing Substitution window of the Library view, drag the slider to choose a mouth shape. The current drawing is swapped for the one in the preview window.

# Ordering in Z-Depth

The layer ordering system in Harmony saves time and simplifies your work. There is no need to create a new layer or copy and paste artwork into other layers to change the order. The Z-axis (forward/backward) allows you to create a multiplane and move elements closer or farther from the camera. This allows you to move the puppet's pieces in front of or behind other ones without physically changing the layer position.



Harmony provides you with a shortcut to move the piece with a micro nudge on the Z-axis. A keyframe is created where different Z values can be entered. This allows the piece to move forward and backwards in space without requiring you to change the drawing's original position or break the layer hierarchy. This also means that the layer ordering is maintained throughout the scene. You can combine animation assets so Harmony can interpolate them.
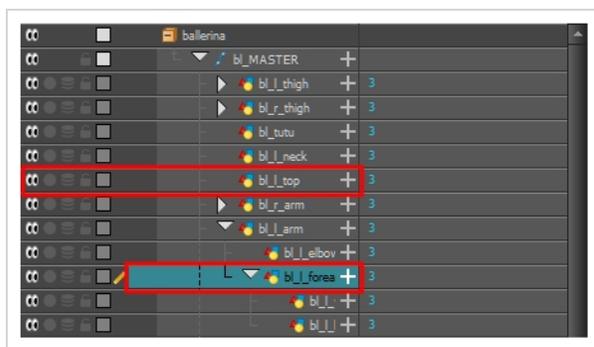


### How to nudge elements on the Z-axis

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Tools toolbar, click the Animate ⚘ button.

3. In the Camera view, select the part to be repositioned and hold down the Alt key.

4. Using the Up Arrow or Down Arrow arrow keys, nudge the part until it moves to the desired position.
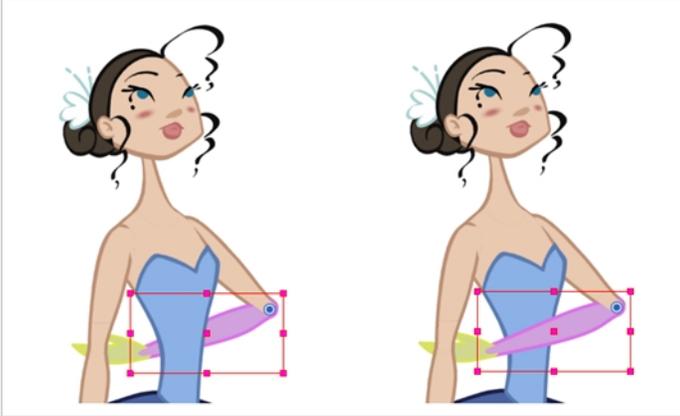
# Creating Cycles

You can create cycles from a portion of your animation or completely reverse the flow of your animation.

## How to create an animation cycle

1. In the Xsheet or Timeline view, select the cell range and keyframes to loop.



2. From the top menu, select **Edit > Copy Cells From the Timeline**.

3. In the Xsheet or Timeline view, select the cell where you want your cycles to start.
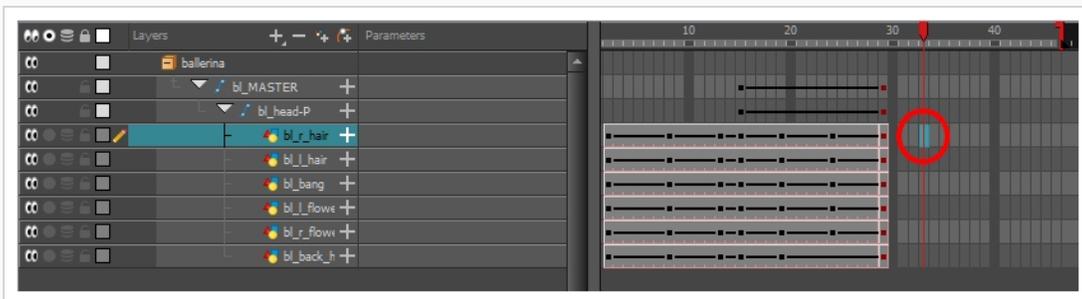


4. From the top menu, select one of the following:

   - **Edit > Paste Cycle**

   - Press Ctrl + / (Windows/Linux) or ⌘ + / (macOS).

The Paste Special dialog box opens.
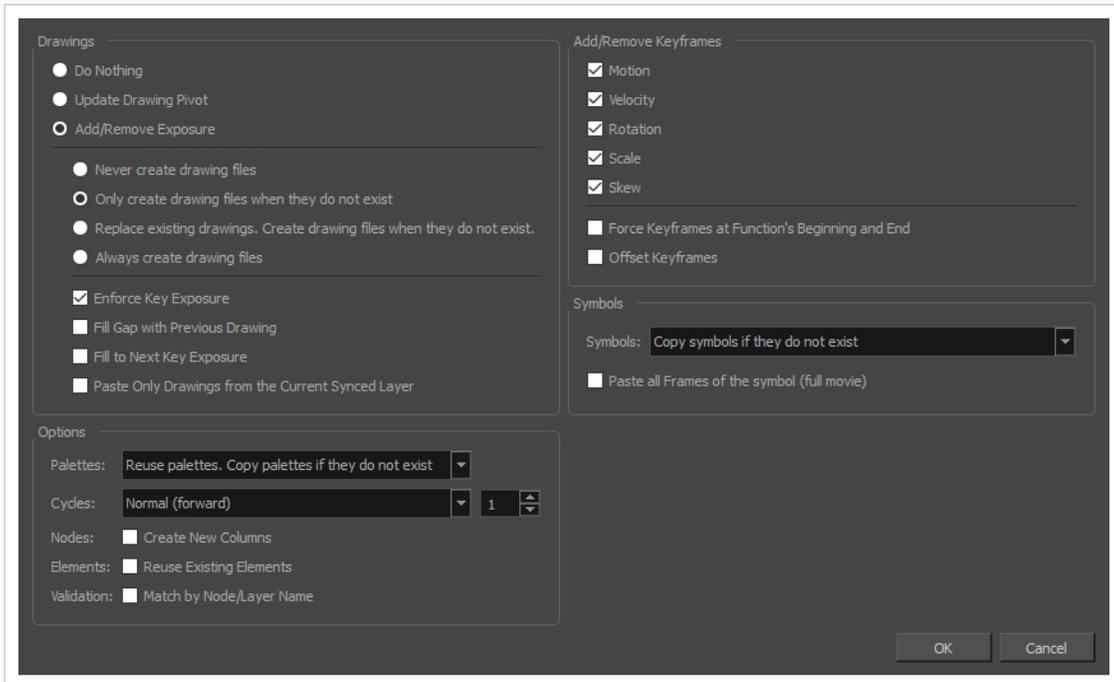


5. In the **Cycles** drop-down, select the type of cycle to paste:

- **Normal (forward)**: Pastes the selection as is, starting with the first cell and ending with the last.

- **Reverse**: Pastes the selection reversed, beginning with the last cell and ending with the first.

- **Forward -> Reverse**: Pastes the selection as a yo-yo, starting with the first cell, going to the last cell and ending with the first cell.

- **Reverse -> Forward**: Pastes the selection as a reversed yo-yo, starting with the last cell, going to the first one and ending with the last cell.
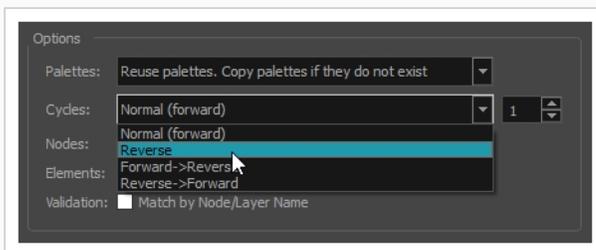
1. In the Number of Cycles field, enter the number of cycles to paste.
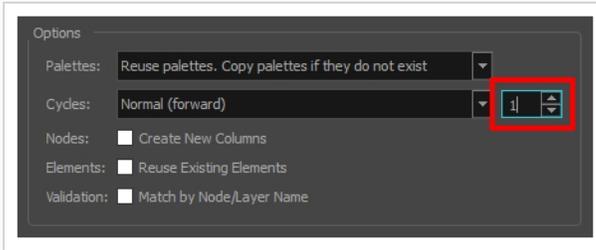


2. Click **OK**.
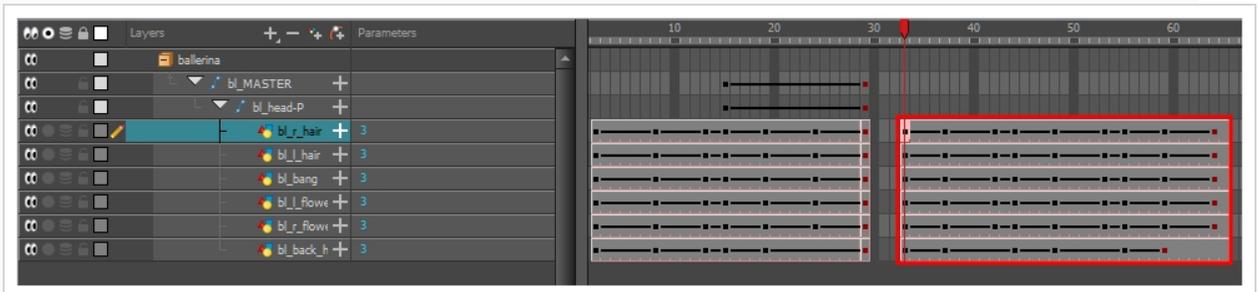


## How to create a reverse animation cycle

1. In the Xsheet or Timeline view, select the cell range and keyframes to paste inverted.



2. From the top menu, select **Edit > Copy**.

3. In the Xsheet or  Timeline view, select the cell where you want the cycles to start.
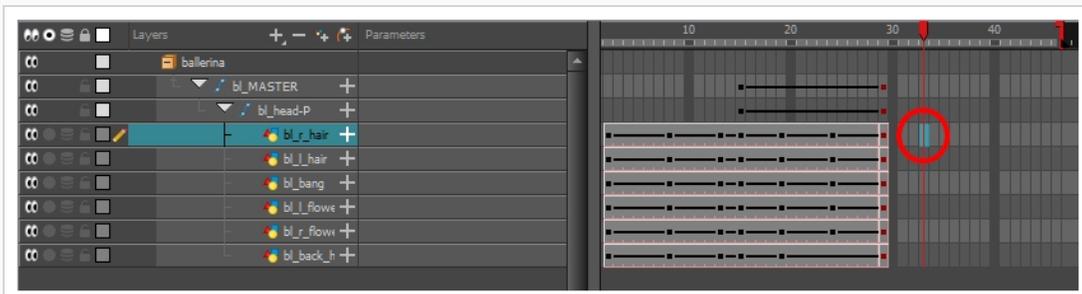
4. From the top menu, select **Edit > Paste Reverse** or press Ctrl + . (Windows/Linux) or ⌘ + . (macOS).
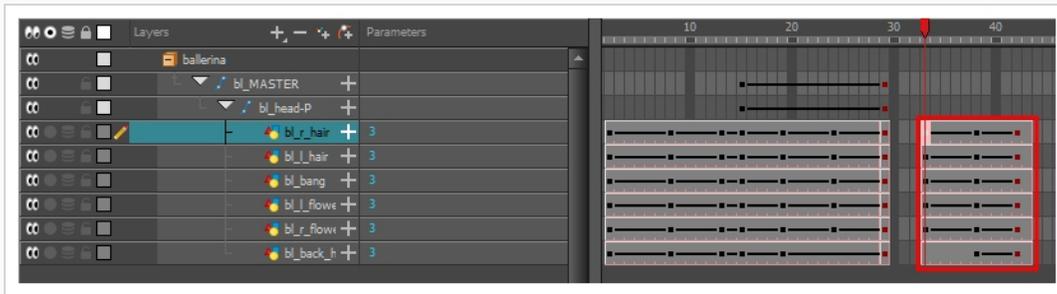
# Chapter 10: Motion Paths
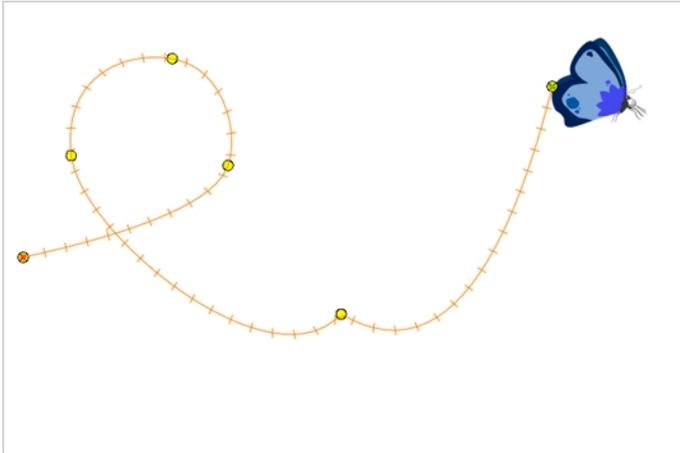


With Harmony, you can animate layers using computer-generated trajectories, create multiplane camera moves and camera shakes, adjust the easing, shape your paths with control points and much more.

Before animating the position of your layers, you need to create motion paths which are trajectories on which you can attach drawing objects. Using keyframes, you can then record key positions along the trajectory.

Harmony's wide range of features let you produce simple and advanced motions and trajectories. By creating a simple motion, you will learn the basics of animating a layer.

There are two ways to create motion paths: animated drawing layers and pegs. They each have different purposes.

# About Pegs

A Peg layer is a trajectory that contains no drawings on which you can hook your drawings.
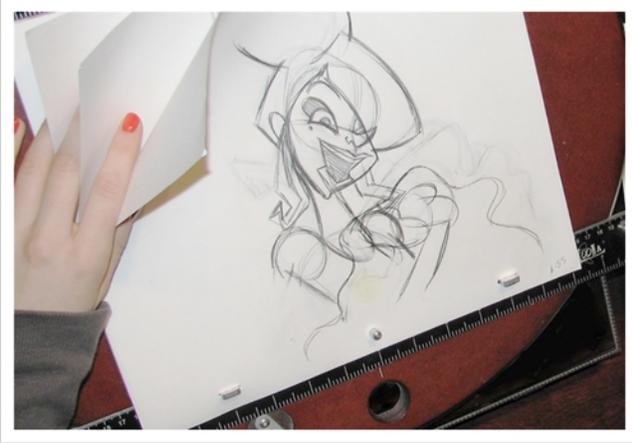


Pegs have been used for a long time in the traditional animation process, mainly for registration purposes. Peg holes at the bottom or top of the animation paper are used to keep all the sheets even and at the same registration.

There are three peg holes in regular animation paper. The centre peg hole is round while the left and right ones are oval shaped. The oval peg holes are located on each side of the page, four inches away from the centre peg hole.

To keep the drawings together, the animator uses a peg bar. This peg bar has three pins that correspond to the shape and location of the peg holes. Peg bars are normally found at the bottom and top of animation discs.

Before digital compositing, the peg bars were also used to move layers on the camera stand to create pans and camera moves. They were the equivalent of digital trajectories. Harmony makes use of these concepts to create animation and camera motion.

A peg is composed of many customizable parameters. These parameters are:

- X, Y and Z positions (3D Path or Separate Positions)

- Angle (rotation)

- Skew

- X and Y Scales
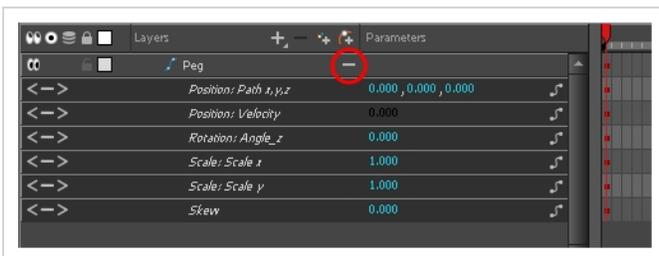
You can control a peg's trajectory the same way as the animated drawing layer.

A peg layer is mainly used to control a series of drawing layers, such as clouds, a school of fish or a flock of birds. You can attach them to a peg layer and make them follow a trajectory as a single unit. This makes trajectory modifications much easier and faster. When building a puppet, most of the time you will add a master peg to control your puppet as one object.

# Adding Pegs

T-ANIMCO-001-001

You can add peg to your Timeline view and parent the layers to animate to it.

## How to add a peg in the Timeline view

1. In the Timeline view, select the layer on which you want to attach a peg.

2. Do one of the following:

   - From the Timeline view layers toolbar, click the Add Peg button.

   - From the Timeline view menu, select **Insert > Peg**.

   - From the top menu, select **Insert > Peg**.

   - Right-click on the selected layer, then select **Insert > Peg**.

   - Press Ctrl + P (Windows/Linux) or ⌘ + P (macOS).

   The layer that was originally selected becomes a child of the new parent Peg layer. The new Peg layer automatically takes the name of its child layer, with the addition of the suffix -P.

   The indentation of the layer, along with the "L" indicates hierarchy and that the layer is attached to the Peg layer. This relationship is called a parent-child relationship.

3. If you intend to add multiple pegs or if the layer name that was added to the peg does not accurately represent the content of the Peg layer, you can rename it. Click the layer name and type in a new name. Or double-click the layer and type a new name into the dialog box.

4. If you did not create your peg layer directly above the layer you intended on parenting it to, then drag the layer you want to attach to the peg and drop it directly below the Peg layer. The indentation of the layer below the Peg layer indicates whether it was correctly attached or not.

- You can unparent layers by holding down Shift and dragging the selected parents away from the child layer. Drop your selected between other layers.

# Enabling Peg Selection Mode

In the Tool Properties view, the Peg Selection Mode ⬚ lets you automatically select the peg layers in the Camera view instead of the drawing layers. If you animate with pegs instead of animating the drawing layers directly, enable the Peg Selection Mode to avoid having to select in the Timeline view or use the Select Parent Skipping Effects command.

### How to enable the Peg Selection Mode

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Tool Properties view, click the Peg Selection Mode ⬚ button.

3. In the Camera view, select an element parented to a peg.
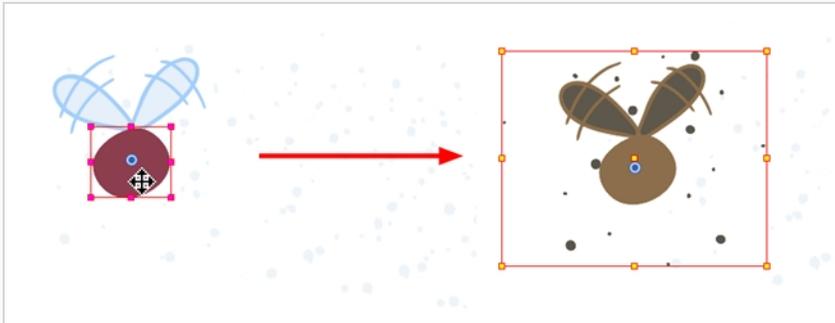
# About Drawing Layers

T-ANIMCO-001-002

You can create a motion path directly on layers (animated layers).
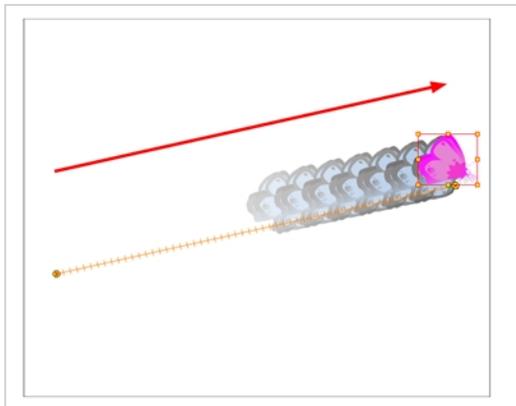


You can control and define a trajectory using several different parameters, including:

- X, Y and Z positions (3D Path or Separate Positions)

- Angle (rotation)

- Skew

- X and Y Scales

Harmony keeps track of the animation by storing each parameter of each layer in their own function curve. When you add a keyframe to a layer, a keyframe is created on each of these functions, and transformations done on a layer via the Camera view are translated into coordinates which are then stored in those functions. It is possible to edit these functions individually using the Function view, but that is rarely necessary, as Harmony provides easy-to-use tools for visually controlling trajectories and timing in the Camera and Timeline views.
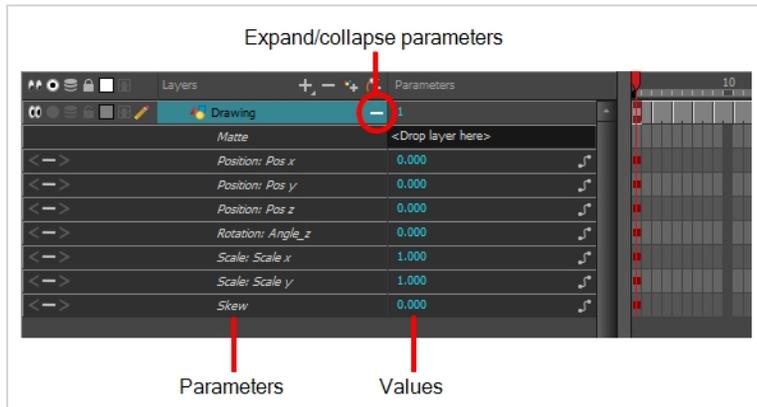


If you do not want to animate a drawing layer, you can turn off its animation parameter. To do so, simply select the layer and in the Layer Properties view, deselect the Animate Using Animation Tools option on the Controls tab. If your layer was already animated, then your keyframes will appear dimmed so you can easily identify them as ones that cannot be modified. To modify keyframes, select the Animate Using Animation Tools options.
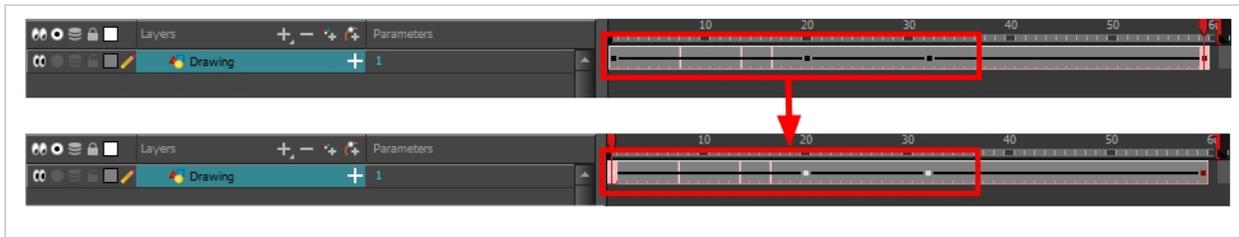
# Disabling Layer Animation

By default, you can animate a drawing layer using the same parameters as a peg, but you can choose not to do so by turning off this feature. This allows you to switch your drawing layers so they can no longer be animated without a peg, which has certain advantages. In cut-out animation, it's easier to separate drawing exposure and keyframes to change the timing and rearrange keyframe position in the Timeline view. This also works for backward compatibility when bringing in templates created in older versions of Harmony so as not to lose their offset keyframes or drawing substitution keyframes.

### How to disable animation on a drawing layer

1. In the Timeline view, double-click the layer on which you want to set the parameter.

   The Layer Properties editor opens.

2. In the Controls tab, deselect the **Animate Using Animation Tools** option.

# About Layer Parameters

T-HFND-009-008

A layer is composed of many customizable parameters, such as the X, Y and Z positions, angle (rotation), skew and scales. Each parameter has its own function which is a mathematical formula expressing the relationship between position values. You can view each function on a graph as a simple curve, such as the one below.
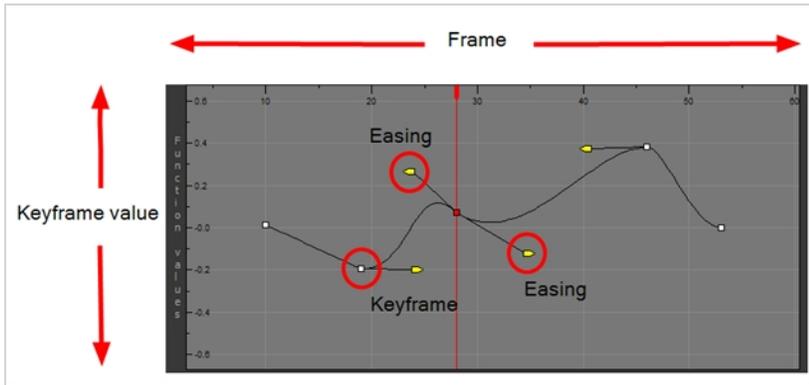


There are several options available for setting up function parameters:

- Locked Positions (3D Path)

- Separate Positions

- Locked Scales

- Separate Scales
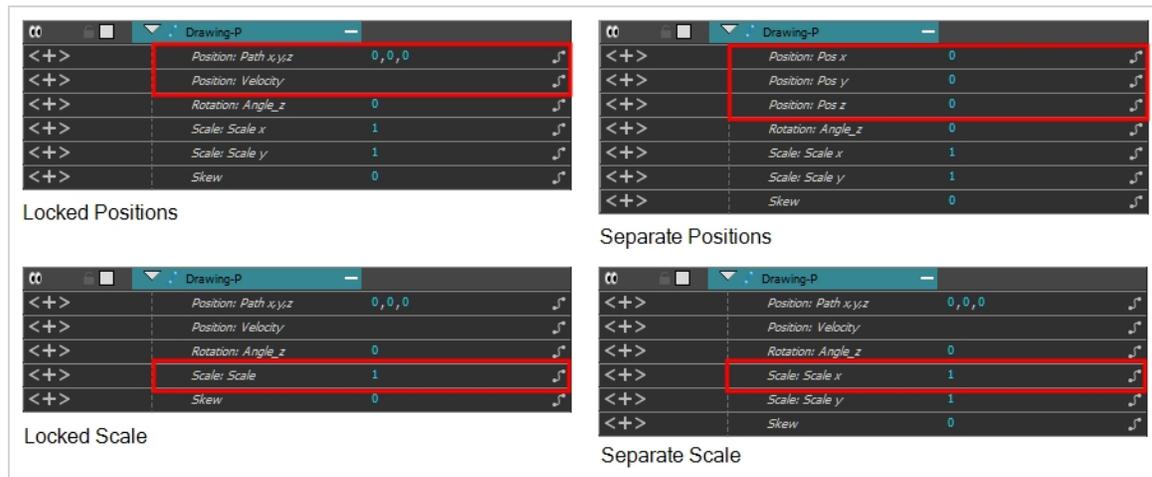


You must select 3D Path, Separate Positions, Separate Scale, or Locked Scale before starting the animation. When you lock or unlock parameters, this does not convert the functions from one to the other, but creates new ones.

In a 3D Path, the X, Y and Z curves are locked together and controlled by a single velocity function. When you add a keyframe, it is added on all three trajectories at once, as is the velocity. This is very useful for long, smooth trajectories.
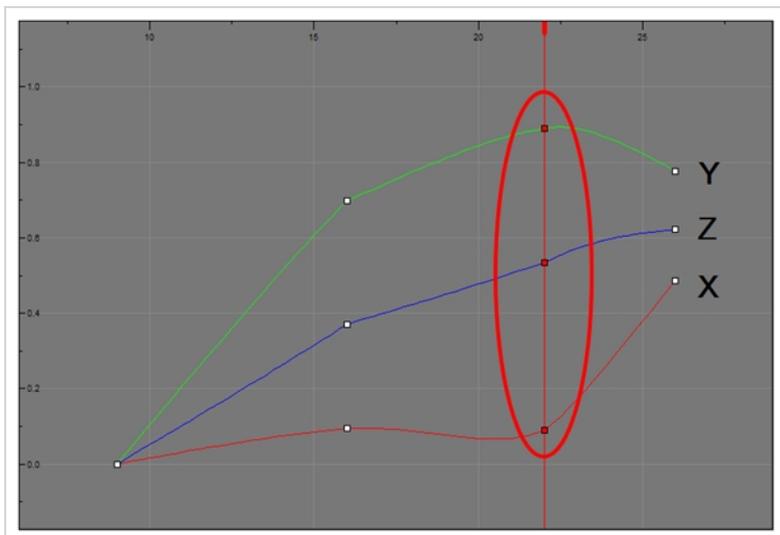
When using a 3D path, the X, Y and Z functions work together using the same keyframes. This allows for the velocity to control the curve and create a smooth trajectory. Even if a function does not have any variation on its curve (for example, all keyframes are at zero), the velocity might add a slight motion to ensure a smooth trajectory. This can cause elements that are very close to each other on the Z-axis to pop in front of one another. This is why in cut-out animation it is recommended to use separate position settings. But if you work with 3D path, you can use the Constant Z feature to avoid this from happening.

The Constant Z feature is used when creating motion keyframes. The Z function will use stop-motion keyframes and will not be interpolated, which can be very useful for cut-out animation. The Constant Z feature only works with 3D paths.

When the Separate Positions option is used, the X, Y and Z curves are independent and have velocity controls directly on their function curve. This is useful when you want to set keyframes on one of the curves without affecting the others.
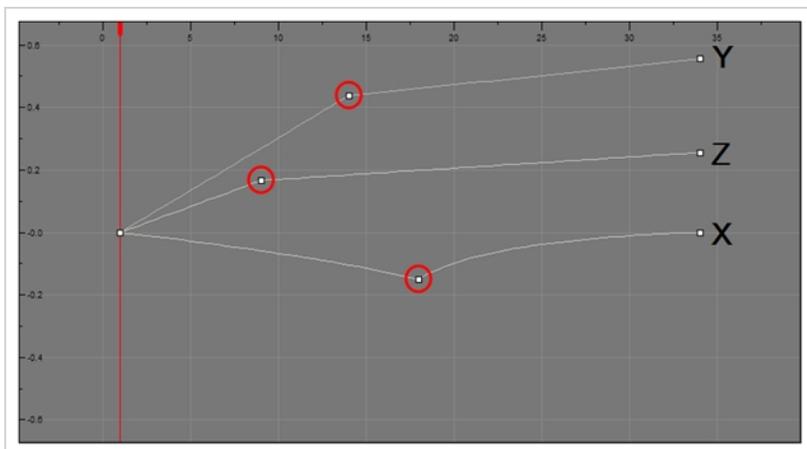


When using the Scale parameter, you can use a single function curve to control both the vertical and horizontal scale, or two separate scales. When using a single function curve, the values are the same for the X (horizontal) and Y (vertical) axes for uniform size changes without distortion. However, if you separate the scale functions, you can squash, stretch and skew your elements.

# Displaying Layer Parameters

You can easily display the parameters for each layer in the Timeline view.

## How to display the layer parameters in the Timeline view

1. Do one of the following:

    - In the Timeline's left side, click a layer's Expand ✚ button.

    - In the Timeline view menu, select **View > Show Functions**.

    - Press Alt + F.



Layer parameters are displayed
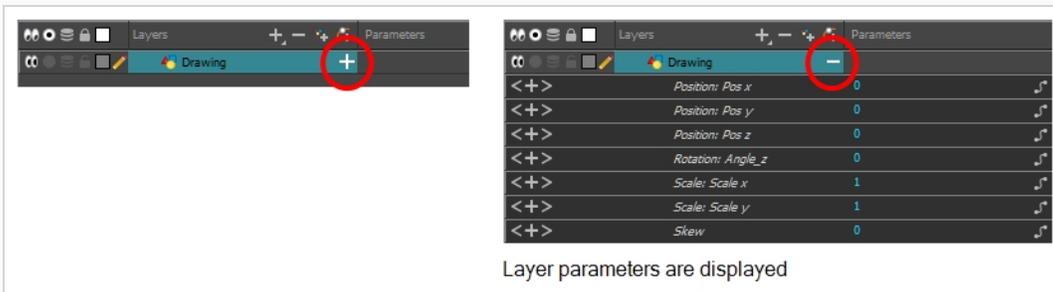
# Setting Layer Parameters

T-ANIMCO-001-003

You can modify the layer parameters to different types of function and linking some of them together.

## How to set the layer parameters

1. In the Timeline view, double-click on the layer on which you want to set the parameter. You can also see the parameters in the Layer Properties window when you select the layer in the Timeline view.

   The Layer Properties window opens.
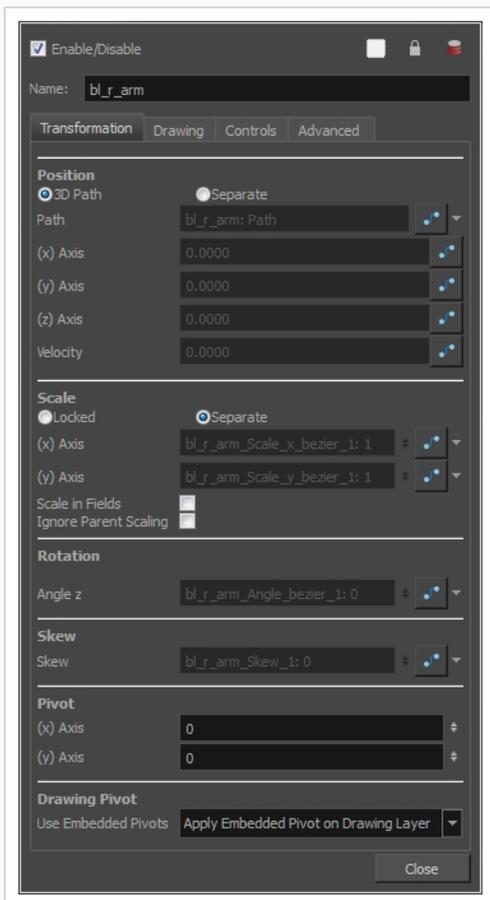
   

2. Select the **Transformation** tab.

3. In the Position section, select the **3D Path** or **Separate** option.

4. In the Scale section, select the **Locked** or **Separate** option.

5. Click **Close**.

# Enabling Constant Z

You can also enable the Constant Z option directly in the Function view for specific functions.

## How to enable the Constant Z option

1. In the Timeline view, expand the layer on which you want to set the Constant Z feature. Note that you must select the **3D Path** option for the layer.

2. Double-click on one of the position functions to open the Function editor.

3. In the Function editor, select the Constant Z button.
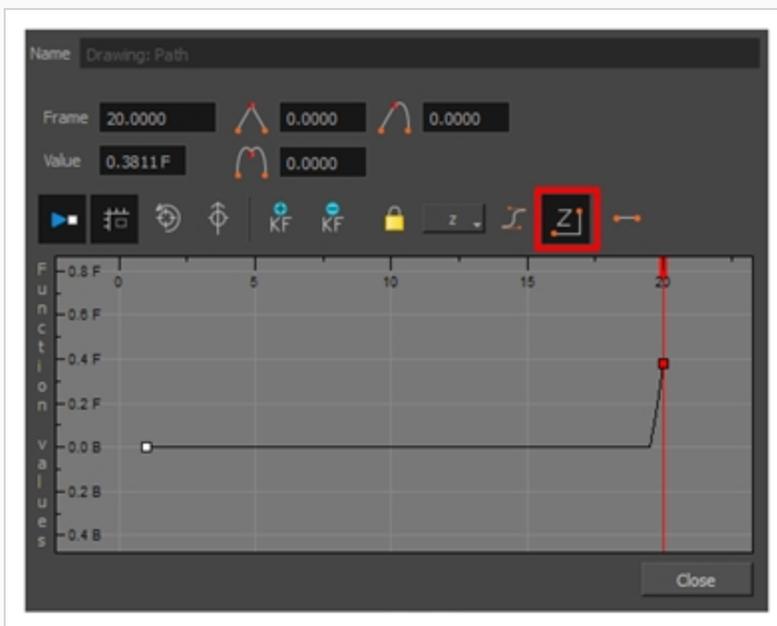
# About Keyframes

T-HFND-009-005

Interpolation is the computer-generated motion between two keyframes. Some animators and compositors like to create their own in-betweens, while others like to have the computer do it. Harmony has stop-motion (no interpolation) and motion keyframes (computer-generated interpolation).

In stop-motion keyframes, there is no computer-generated motion between two keyframes. The segment is constant or flat. The drawing remains still until the playback reaches the next keyframe, then the drawing pops to its new location.
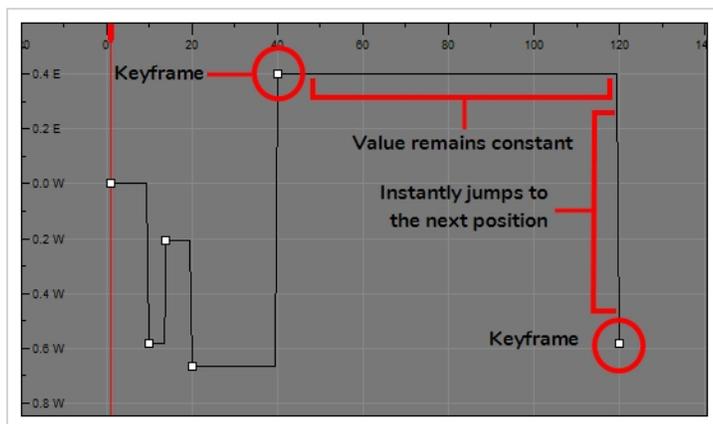


With motion keyframes, Harmony generates the interpolation between the keyframes. This means that a value for each frame between the keyframes is calculated by Harmony to progress from the value of the previous keyframe to the value of the next keyframe.
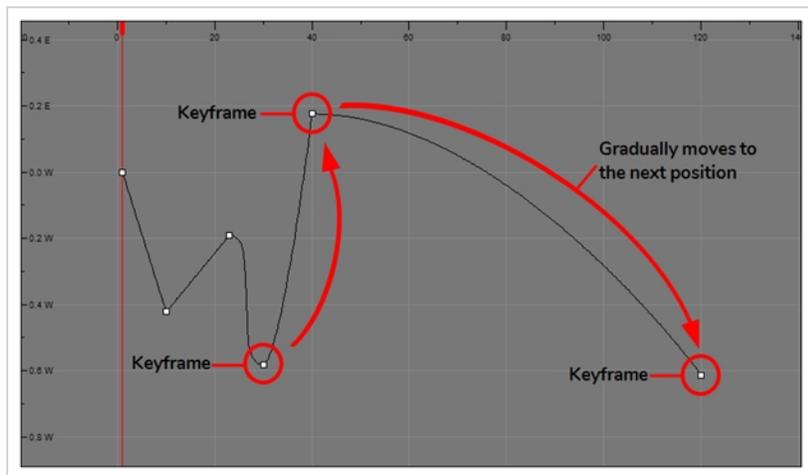
# Enabling the Animate Mode

The Animate mode records the position, rotation, scale, skew, etc. of objects as keyframes in the Timeline view. Turn off the Animate mode to reposition objects for the entire scene. When the Animate mode is disabled, keyframes are not created when an object's parameters change.

When positioning elements, make sure the Animate Mode is turned off, or it will create a keyframe on your drawing layer. The animate mode is used to animate layers over time.



**How to turn the Animate mode on or off**

1. In the Tools toolbar, click the Animate ✦ button or select **Animation > Animate**.

# About Keyframe Creation

There are several different ways you can create keyframes. You can add a coordinate keyframe, position keyframe or a keyframe along with your drawing duplication.

You can create a keyframe without a drawing. This adds new coordinate points but the drawing in the layer stays the same. At the same time, you may also want to duplicate your drawing if you need to modify it and do not want to modify the original.

You can also add a position keyframe instead of a regular keyframe. When you do this, keyframes will only be added on the X, Y and Z parameters of the selected layer. Keyframes are not added on the Angle, Scale and Skew parameters.

# Creating Keyframes in the Timeline View

You can add keyframes in the Timeline view to multiple layers, a single layer or a specific parameter.

## How to create keyframes in the Timeline view

1.  In the Timeline view, select the cell on which you want to add a keyframe.

    

2.  Add a keyframe by doing one of the following:

    - From the top menu, select **Insert > Keyframe**.

    - Right-click on the selection and select **Insert Keyframe**.

    - Press F6.

    - In the Timeline View toolbar, click the Add Keyframe KF button.

    If the Animate mode is enabled in the Camera view, a keyframe is automatically created on the current frame.
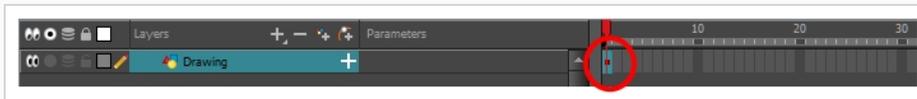
    

## How to add a keyframe for a specific parameter

1.  On the right side of the Drawing layer, press the + to expose the different functions of that drawing.

2.  On the right side of the Timeline view, select a cell on the layer's function that you want to animate.
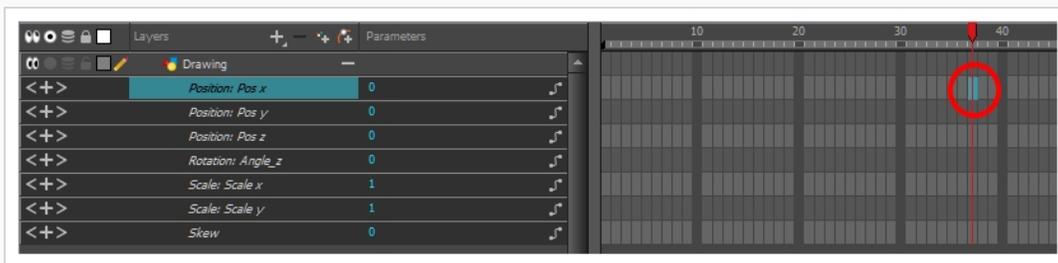
    

3.  Do one of the following:

    - Right-click the selected cell and select **Insert Keyframe**.

- Press F6.

- In the Timeline View menu, select **Motion > Insert Keyframe**.

- In the Timeline View toolbar, click the Add Keyframe ⊕KF button.

## How to create a keyframe and duplicate the drawing at the same time

1. In the Timeline view, select the cell containing the drawing you want to duplicate and add a keyframe.



2. Do one of the following:

   - From the top menu, select **Insert > Keyframe and Duplicate Drawing**.

   - Right-click on the selection and select **Insert Keyframe and Duplicate Drawing**.

   - Press F6.

   A keyframe and a duplicate of the drawing is created. The duplicated drawing sits on top of the original drawing.



## How to add a Position keyframe

1. In the Timeline view, select the cell on which you want to add a position keyframe.



2. From the top menu, select **Insert > Position Keyframe**.

# Creating Keyframes in the Function View

You can add keyframe directly on the graph using the Function view.

## How to add or delete keyframes in the Function editor

1. In the Timeline view, open the drawing or layer's parameters by clicking the Expand ╬ button or press Alt + F.
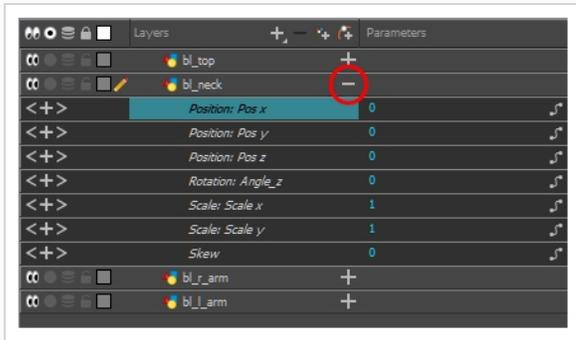


2. Double-click on the parameter layer name to open the Function editor window or click once on the parameter layer to display it in the Function view's left sidebar. If you are using the Function view, you must click on the function name from the sidebar list to view it in the graph display region.

3. In the Function editor, do one of the following:

   • In the graph section, click on the frame where you want to make changes.

   • In the Frame field, enter the frame number.

   In the graph display area, the red playhead moves to that frame number.

4. In the Function editor, click the Add Keyframe ⊕ button.
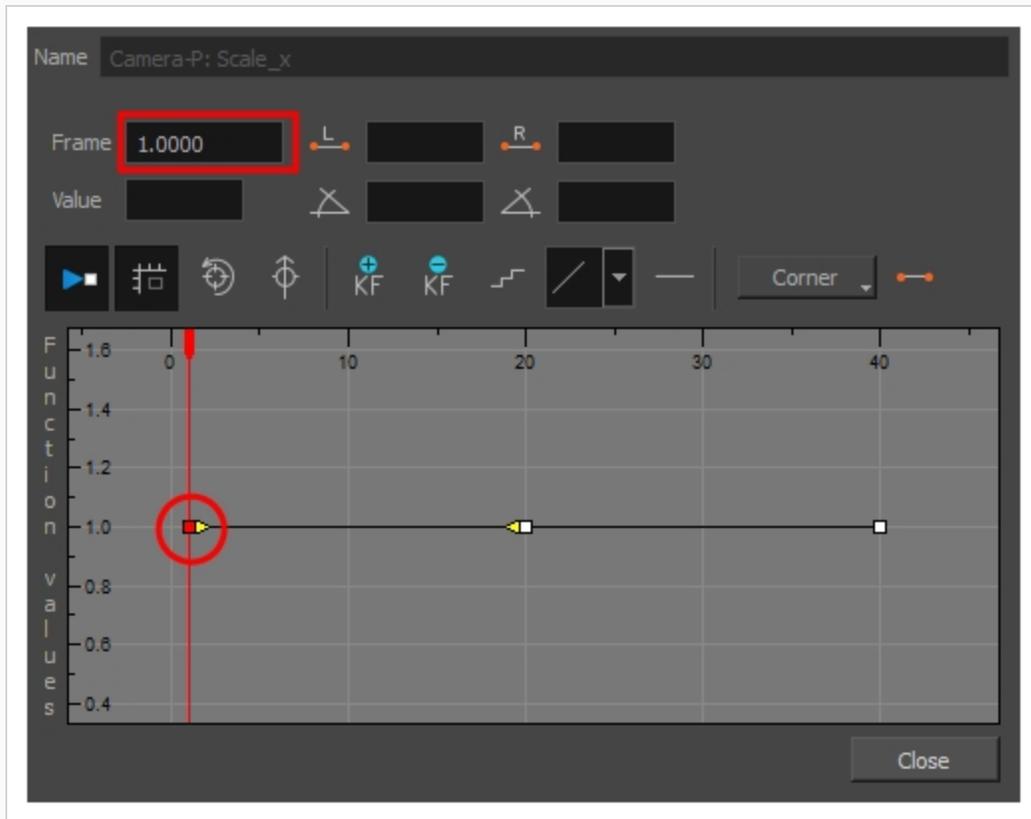
5. Click on the newly created keyframe and drag it up to increase the value of the function or down to decrease the value. Depending on the selected function, this could increase or decrease the width of the object (scale_x) or change the object's vertical position (position_y). Pull on the handles to create non-linear transition speeds between keyframes.

6. If you do not like the changes you just made, select and delete the new keyframe by pressing Del or clicking the and Delete keyframe  button.

   You can delete an existing keyframe by using the same process.

# Creating Keyframes in the Xsheet View

If you prefer working with the Xsheet view, you can also create keyframes and type values in the Xsheet view.

To edit a function column in the Xsheet view, you must first display the Functions section of the Xsheet view and then select the layer you want to modify. If you double-click on a function column's header, you will display the corresponding function curve in the Function editor.

### How to add a keyframe in the Xsheet view

1. In the Xsheet view, click the Expand button located on the right side of the main section to show the Functions section.

    

1. In the Timeline view, select the layer that contains the parameters to modify.

    The columns appear in the Xsheet view if function curves were previously created by adding keyframes in the Xsheet view or Layer Properties window. Otherwise, the columns do not appear.

    

2. In the Xsheet view, go to the function column on which you want to add a keyframe.

3. Double-click on the cell on which you want to add a keyframe and type a numeric value.

4. Press Enter/Return to continue to the next cell.

5. Press Esc to exit the typing mode.

## How to convert a cell into a keyframe

1. In the Xsheet view, go to the function column on which you want to add a keyframe.

2. Select the cell to convert.

3. Right-click on the cell and select **Set Selection As Keyframe** or press F6.

4. To remove a keyframe, select the keyframe, right-click on the cell and select **Clear Keyframe in Selection** or press F7.

# Deleting Keyframes

You can delete keyframes independently from drawing exposure.

> **NOTE**
>
> If you select a keyframe in the Timeline view and press the Del key, you will also delete the drawing exposure. To only delete the keyframe, you must use the Delete Keyframe command.

**How to delete a keyframe**

1. In the Timeline view, select a keyframe and do one of the following:

    - Right-click and select **Delete Keyframes**.

    - In the Timeline view menu, select **Motion > Delete Keyframes**.

    - From the top menu, select **Animation > Delete Keyframe**.

    - Press F7.

    - In the Timeline View toolbar, click on the Delete Keyframes ⬚ button.

    - Use the Transform ⬚ tool to select a keyframe to delete from the trajectory in the Camera view and press Del.

# Animating with Keyframes

T-ANIMCO-001-005

You can animate a layer or a peg by creating keyframes and moving your drawings in the Camera view.

## How to animate a layer or a peg

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. If your layer has a parent peg and you want to animate the drawing layer directly, make sure the Peg Selection Mode ⬚ is disabled in the Tool Properties view.

3. In the Tools toolbar, enable the Animate ⬚ mode. This allows the Transform tool to affect the position and size of a layer at the current keyframe only, whereas it would otherwise affect the layer's position and size throughout the whole scene.

4. In the Timeline view, go to the first frame.
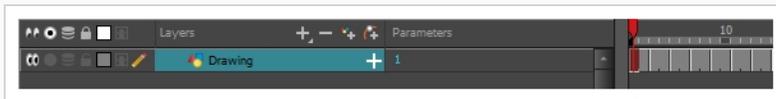
   

5. From the top menu, select **Animation** and make sure the **Stop-Motion Keyframe** option is unchecked. This will make it so Harmony automatically creates the animation between the animation keyframes you create.

6. Select the cell where you want to create your first keyframe

7. To create your first keyframe, do one of the following:

   - In the Timeline toolbar, click the Add Keyframe ⬚ button.

   - Right-click and select **Add Keyframe.**

   - Press F6.

   A keyframe is created on the first frame of the Timeline view.
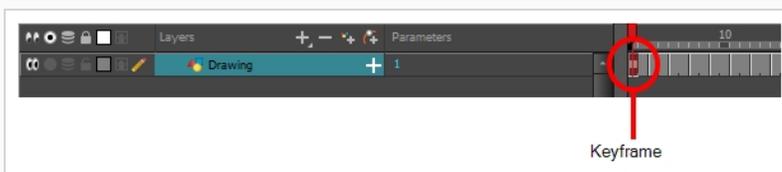
   

   Keyframe

8. In the Camera view, select the element to animate and move it to its first position.
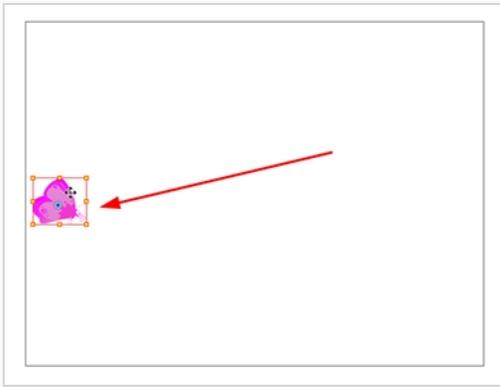
9. In the Timeline view, go to the frame on which you want to set the second position.
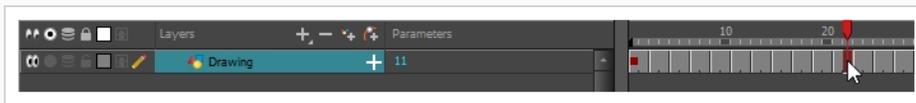


10. Select the cell where you want to create your second keyframe. right-click on the selection and select **Insert Keyframe**.

The second keyframe appears in the Timeline view, along with a line going from your first keyframe to your second keyframe. This indicates that every frame in-between will be animated by Harmony.
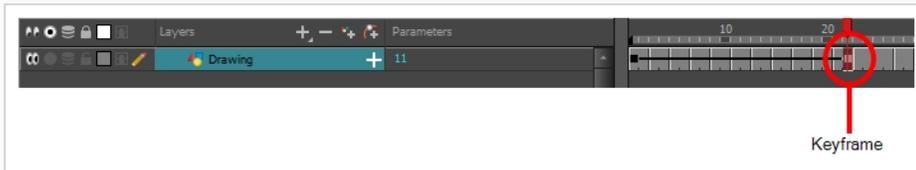


11. In the Camera view, move the element to its second position.
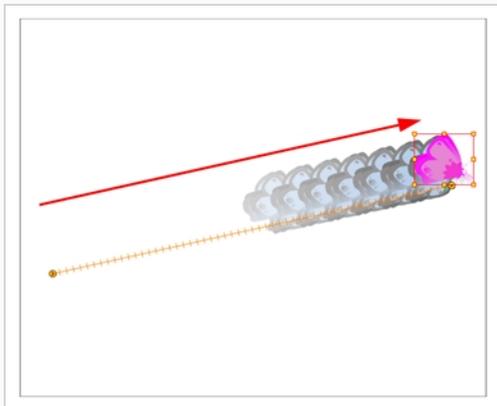


12. In the Timeline view, select the first frame to rewind to the beginning of your animation.

13. In the Playback toolbar, click on the Play ▶ button to preview your animation.

**NOTE**

If you animate layers on the Z axis, you may want to preview your animations from the Top, Side or Perspective views during playback. However, playback is disabled by default in those view. To enable them, from the top menu, select **Play > Enable Playback > Top View**, **Side View** or **Perspective View**.

# Changing Keyframe Values

Once a keyframe is added, beside moving the image in the Camera view, you can change its value by typing it in the Timeline and Function views.

### How to change the keyframe values in the Timeline view

1. In the Timeline view, open the drawing or layer's parameters by clicking the Expand ╬ button or press Alt + F.
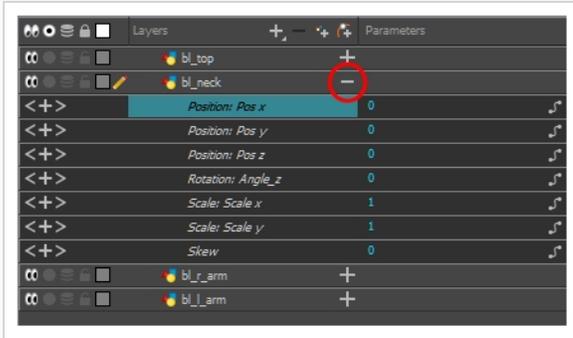


2. Select the parameter for which you want to create a function curve.

3. Place the cursor over the blue number value of the parameter and do one of the following:

    - Wait until the cursor changes to a white hand with a two-way arrow and then drag the hand left to decrease the value or right to increase the value.



    - Double-click on the blue number and enter a value in the field.

### How to change a keyframe value in the Function editor

1. In the Timeline view, open the peg element's parameters by clicking the Plus ╬ sign next the peg layer's name.
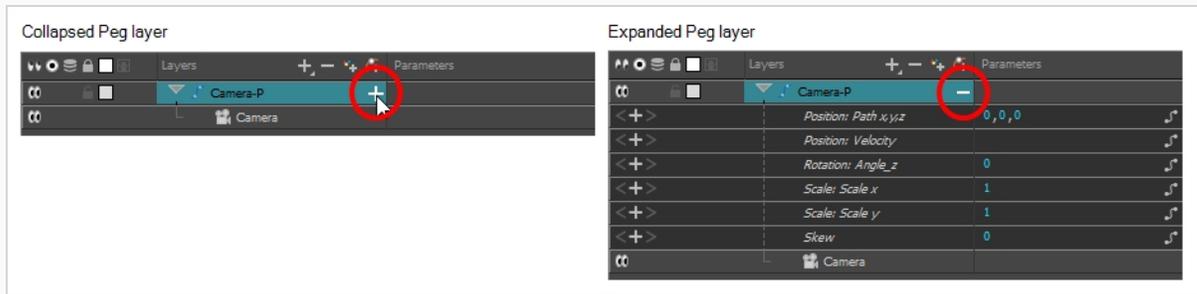
2. Double-click on the parameter layer name to open the Editor window or click once on the parameter layer to display it in the Function view.

3. In the graph of the Function editor, select a white keyframe.

   The keyframe turns red and displays a pointed yellow handle.

4. In the Value field, enter a value. You can also drag the keyframe up or down in the graph.
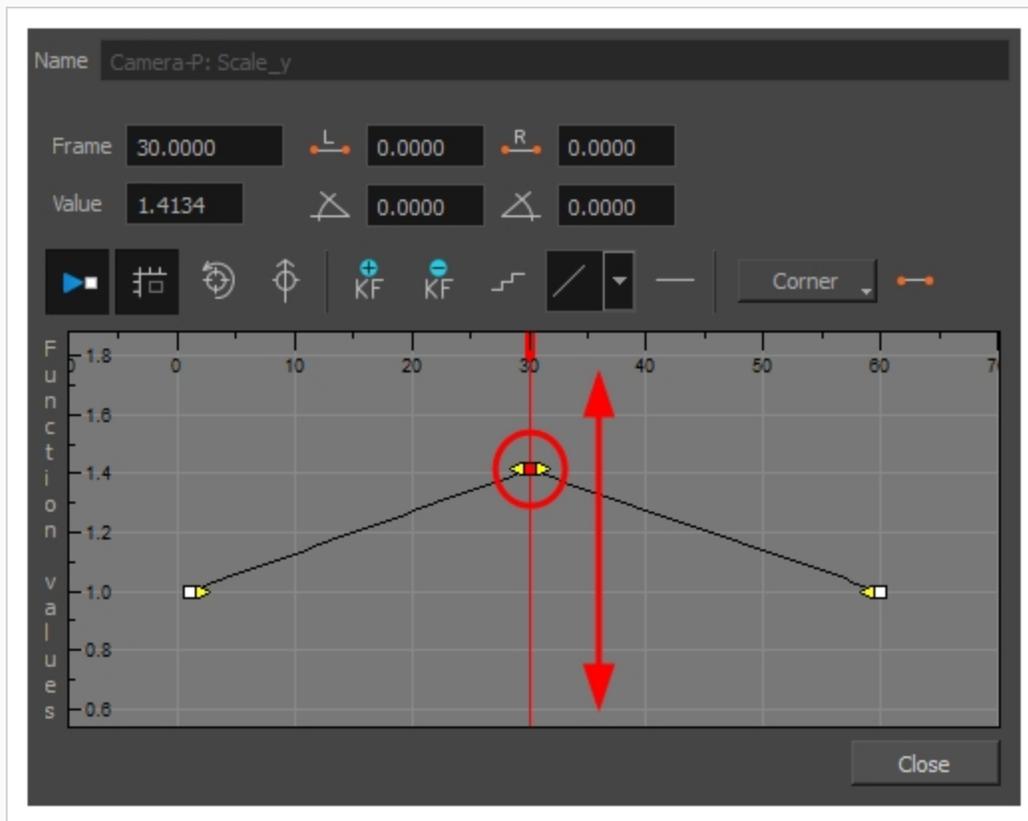


5. Press Enter/Return or click the Play ▶ button to view the changes made in the Camera view.

6. Keep adjusting the values until you are satisfied with the results.

7. Click **Close**.

# Switching Keyframe Types

You can switch a keyframe from stop-motion to motion at any time in the Timeline view and Function Editor.

## How to switch between motion and stop-motion in the Timeline view

1. On the right side of the Timeline view, select one or more keyframes to modify.

   

2. Switch between motion and stop-motion by doing one of the following:

   - Right-click on the selected keyframes and select **Set Motion Keyframes** or **Set Stop-Motion Keyframes**.

   - Press Ctrl + K (Windows/Linux) or ⌘ + K (macOS) for motion keyframes and Ctrl + L (Windows/Linux) or ⌘ + L (macOS) for stop-motion keyframes.

   - In the Timeline View toolbar, click the Motion Keyframe ⟋ or Stop-Motion Keyframe ⊶ button.

## How to switch between motion and stop-motion keyframes in the Function view

1. Open the Function view.

2. In the Timeline view, double-click on the layer that contains the keyframes you want to convert.

   The Layer Properties window opens.
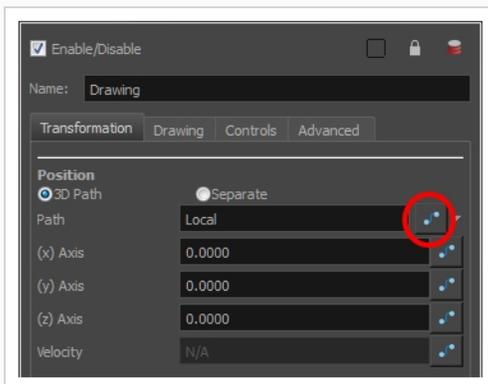
   

3. Do one of the following:

   - In the Transformation tab, click the Function Editor

🎵 button.

- In the Timeline view, click the Expand Function ╋ button or press Alt + F and double-click on the function to edit.
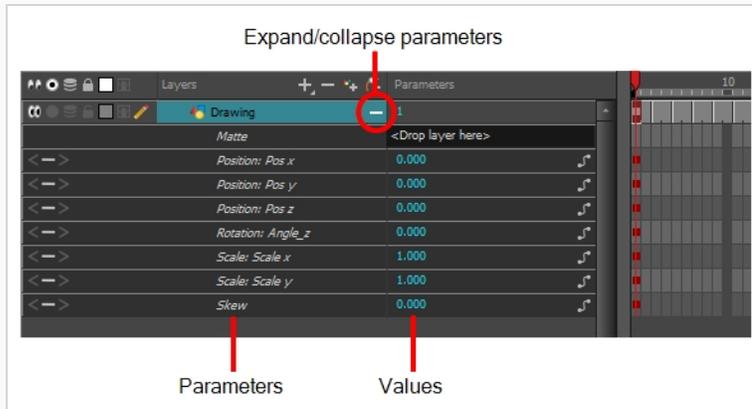


4. On the function curve, select one or more keyframes to modify.
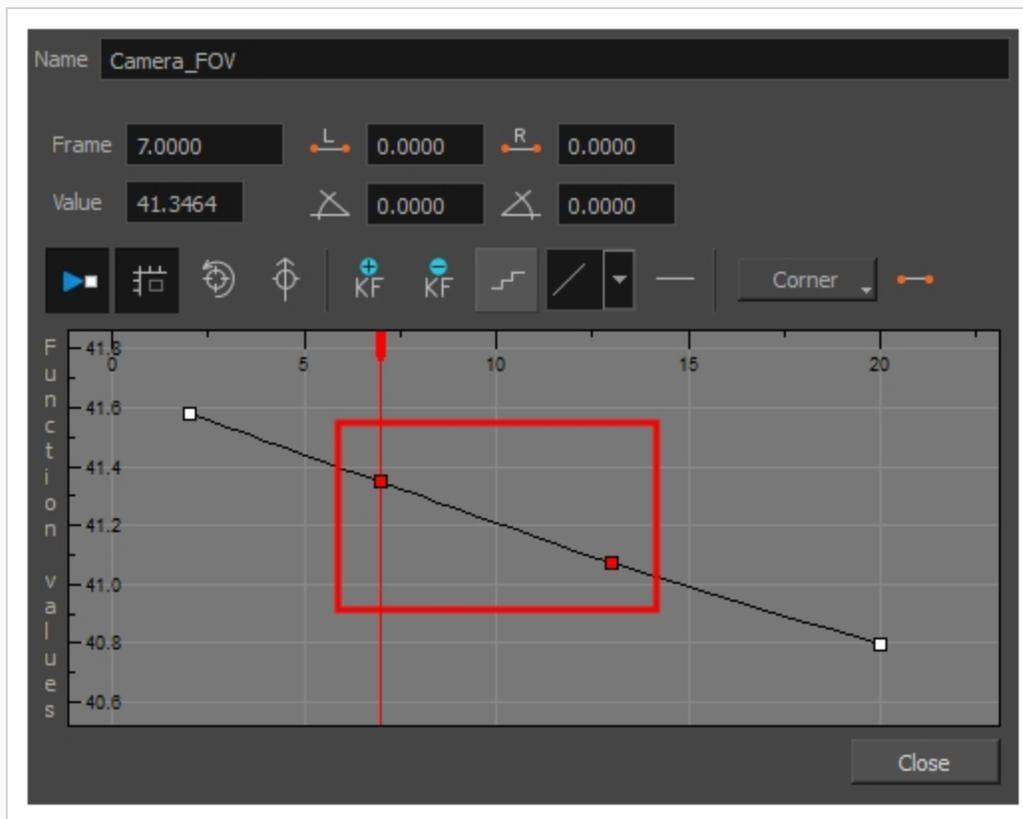


5. Select or deselect the Stop-motion Keyframe •→• button to set a stop-motion or motion keyframe.
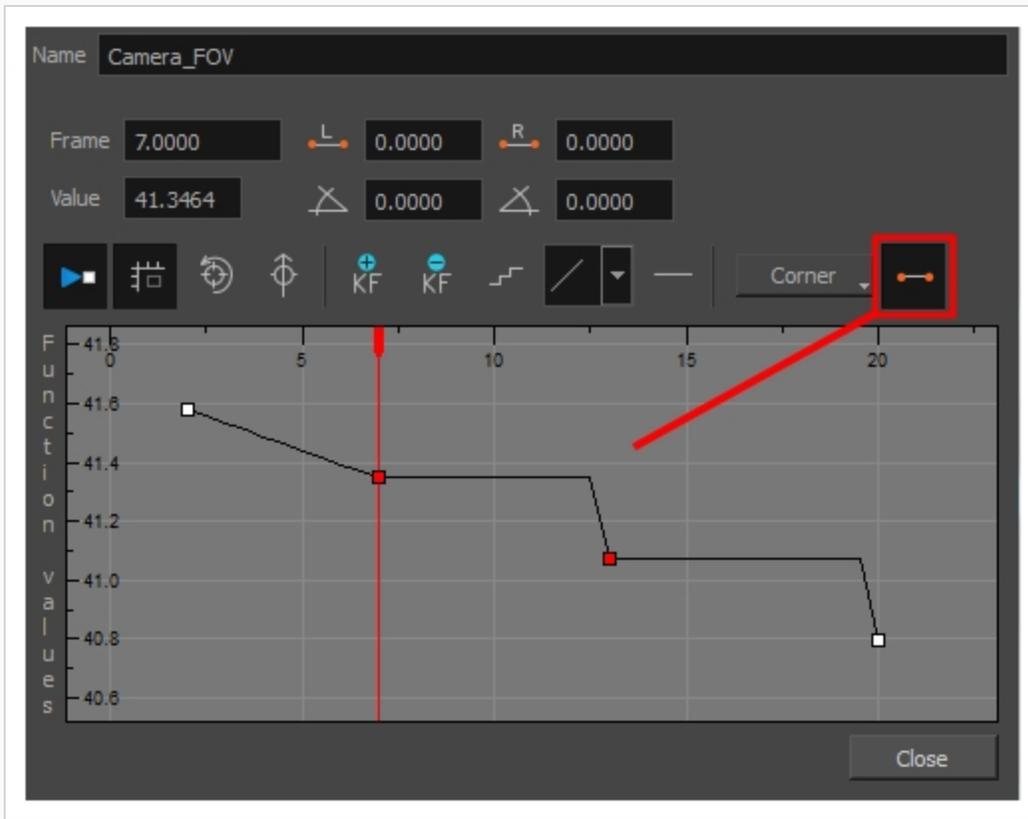
# Changing Stop-motion Keyframe Colour

To easily identify stop-motion keyframes in the Timeline view, you can customize the colour In the Preferences dialog box.



Stop-motion keyframe colour
customized to orange
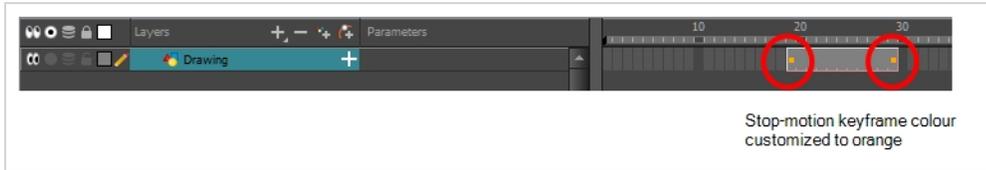
## How to set the stop-motion keyframe colour

1. Open the Preferences dialog box by pressing Ctrl + U (Windows/Linux) or ⌘ + U (macOS).

2. Select the **General** tab.

3. In the Colours section, click **Edit Colours**.

4. In the Colours dialog box, select the **Xsheet and Timeline** tab.

5. In the Timeline section, click the **Stop Motion Keyframe** swatch.

6. In the Select Colour window, select a new colour and close the windows.

# Jumping to Keyframes

You can jump between the selected layer's keyframes in the Timeline view.

### How to jump to keyframes

1. In the Camera or Timeline view, select the layer that contains the keyframes you want to flip through.
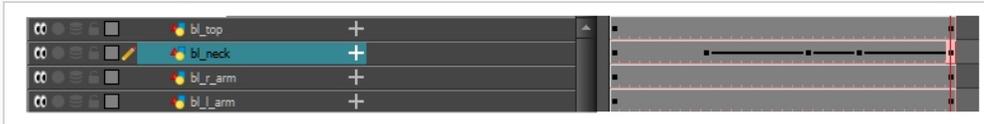


2. From the top menu, select **Animation > Go to Previous Keyframe** or **Go to Next Keyframe** or press semicolon (;) and single quote (').

# About Controls

T-HFND-009-010

Camera moves and motion paths can become quite advanced, especially with moves through 3D space. Harmony provides tools to view your camera's path and make adjustments to it from both a 2D and 3D perspective.

You can display the trajectory of a motion path when you select an object from any view it can be selected in.

A motion path is easy to manipulate. One important concept to understand is that a trajectory contains both keyframes and control points. Both can be used to shape a path; each have their own behaviour, however only keyframes appear in the Timeline view.

- **Keyframes** have a transformation value and a position in space at a given frame. Keyframes are locked in time.

- **Control points** have a position but no fixed frame or timing. It is mainly used to deform a trajectory. There are no velocity handles available on a control point. The velocity segments are set between keyframes only, making curves and trajectories much smoother. Control points can only be added on a 3D path.

You can set the default Continuity, Bias and Tension parameters in the Preferences panel.

**Continuity**: Controls the smoothness of a transition between the segments joined by a point.



A Continuity of -1 sharpens the transition on both sides of the control point.

A Continuity of +1 rounds out the transition, creating a gentle curve on both sides of the control point.
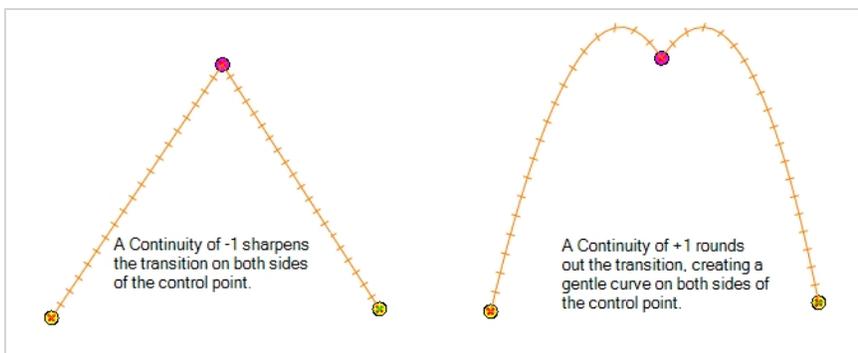
**Tension**: Controls how sharply the path bends as it passes through a control point or keyframe.



A Tension of -1 increases the curve on both sides of the control point.

A Tension of +1 sharpens the curve on both sides of the control point.
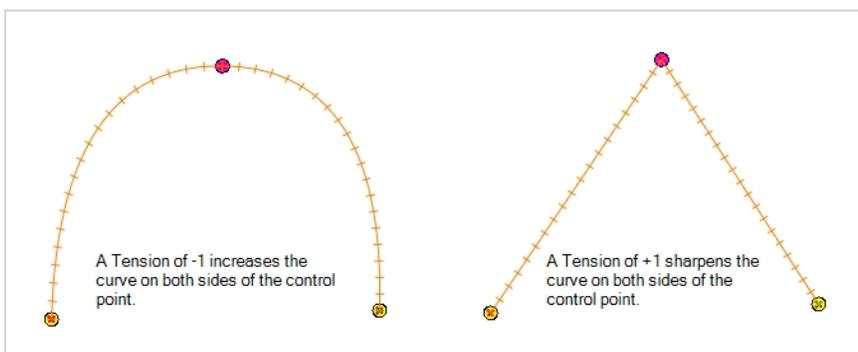
**Bias**: Controls the slope of the path so it flows towards one side of the motion point or the other.

A Bias of -1 favours the left side of the control point.

A Bias of +1 favours the right side of the control point.
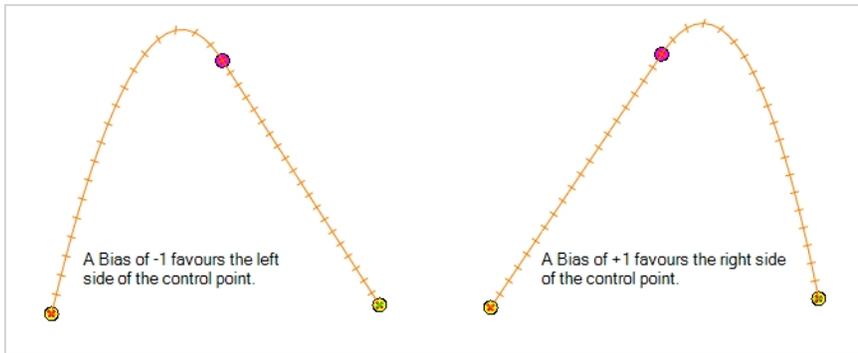
# Displaying Controls

T-HFND-009-011

You can display a layer's controls to adjust a trajectory or other parameters such as a gradient's position or deformation settings.

### How to display the layer's controls

1. Verify that the Camera view (click its tab) is selected and that the layer whose trajectory you want to display is selected in the Timeline view.
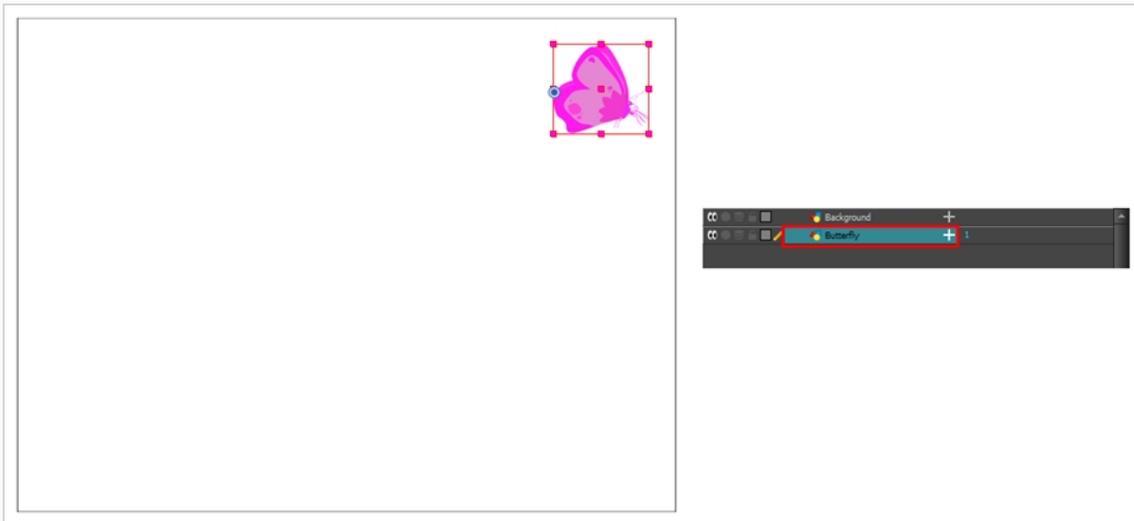
   

2. From the top menu, select **View > Show > Control** or press Shift + F11 or in the Camera view toolbar, click on the Show Control ⚡ button.
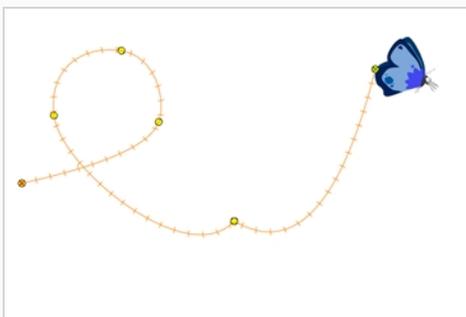
   

   > **NOTE**
   >
   > If nothing appears in the Camera view, you may not have animated or selected the layer.

# Adding Control Points

You can add control points on 3D Path trajectories. You need to display the layer's controls in the Camera view.

### How to add a control point on a trajectory

1. In the Timeline or Camera view, select the peg or layer on which you want to add a control point.

2. If the selected element's trajectory is not displayed, select **View > Show > Control** from the top menu or press Shift + F11.

   The trajectory appears in the Camera, Top, Side and Perspective views.
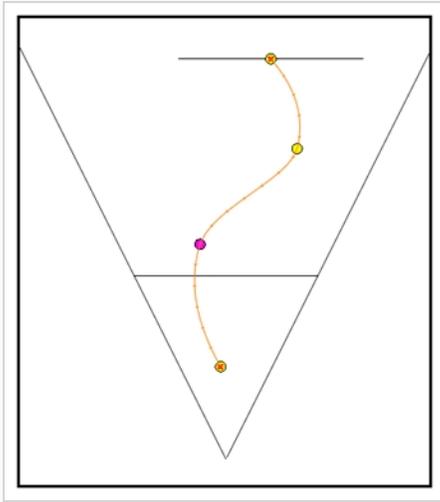
   

3. Add control points on a 3D path trajectory by placing the cursor where you want to add the point and press P once. If you hold the key down, control points will be added continuously until you release the key.

   A control point is added to the trajectory.
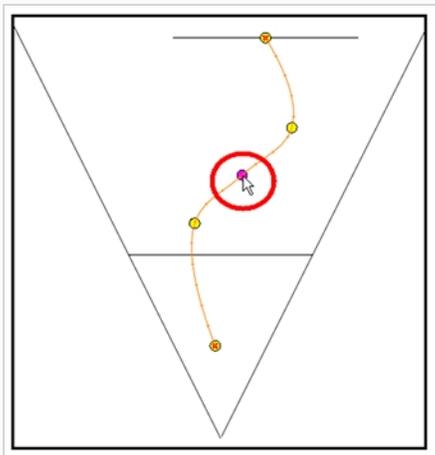
# Toggling Point Types

You can convert a control point into a keyframe and a keyframe into a control point. The position and other values will remain in both cases, only the frame will change. A control point is not locked in time.

### How to switch between keyframe and control point

1. In the Camera view, use the Transform ⬚ tool select a point to convert.

2. To convert the point:

   - From the top menu, select **Animation > Lock in Time**.

   - In the Function view or Function Editor, select the keyframe to convert and click the Lock in Time 🔒 button.
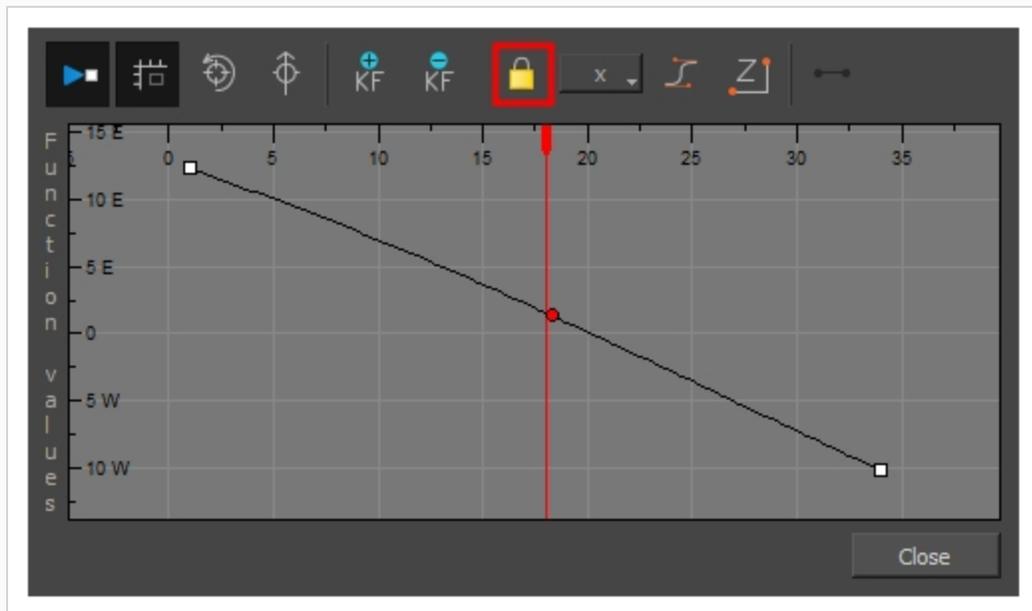


   - Press Alt + L.

# Adjusting Tension, Bias, and Continuity

You can adjust the shape of the curve passing through a point by modifying the bias, tension, and continuity settings. You can also set preferred settings as default.

**How to adjust the control point preferences**

1. From the top menu, select **Edit > Preferences** (Windows) or **Harmony Advanced > Preferences** (macOS).

   The Preferences dialog box opens.

2. Select the **Camera** tab and adjust the parameters in the Control Points section.
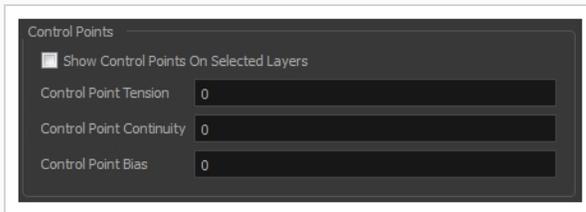
# Converting Angled and Curved Corners

When you select a control point on a path, you can switch between a rounded or angled corner by using the Linear/Curve command.

**How convert an angled or curved corner**

1. In the Timeline view, double-click the layer that contains the point you want to convert.

   The Layer Properties window opens.

2. On the Transformation tab, select the **3D Path** option.

3. In the Tools toolbar, select the Transform $\square$ tool or press Shift + T.

4. In the Camera view, select the point to convert.

5. From the top menu, select **Animation > Linear Motion**.
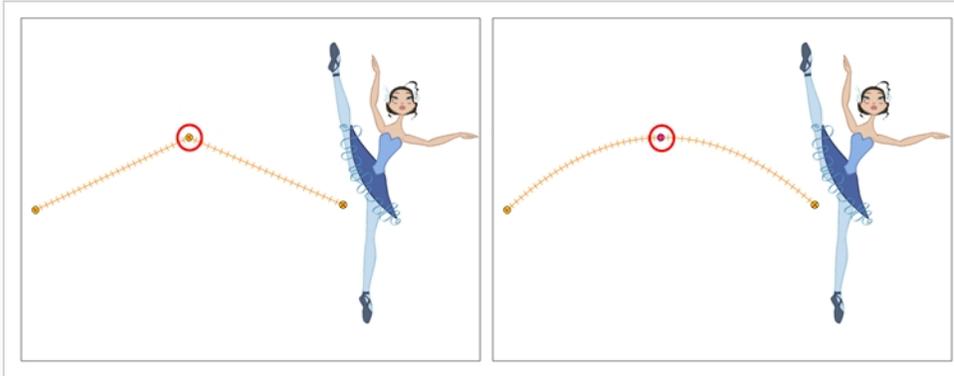
# Offsetting Trajectories

By offsetting a trajectory, you Lets you reposition the visual trajectory without offsetting or modifying your animation. By default, the trajectory is located at 0,0,0 fields. If your elements were drawn in a different location than the centre of the drawing area, it will look like the trajectory is not aligned with your drawing. Also, if you have several elements attached to one trajectory, you might want your trajectory to be at a different location to represent the group's motion better.

### How to offset a trajectory

1. In the Animation Tools toolbar, select the Spline Offset ⭗ tool or press Alt + 8.

2. In the Camera, Top, Side or Timeline view, select the layer whose trajectory you want to offset.

3. From the top menu, select **View > Show > Control** to display the trajectory. If you do not display the trajectory, any transformation done using the Spline Offset tool will be ignored.
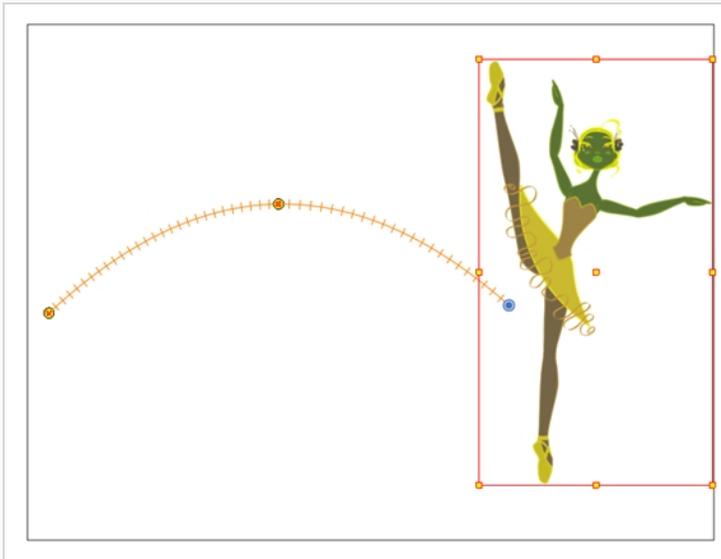


4. In the Camera view, drag the trajectory to the proper position. You can move it on the X and Y axes, but also on the Z-axis using the Top and Side views.

Trajectory is moved downwards
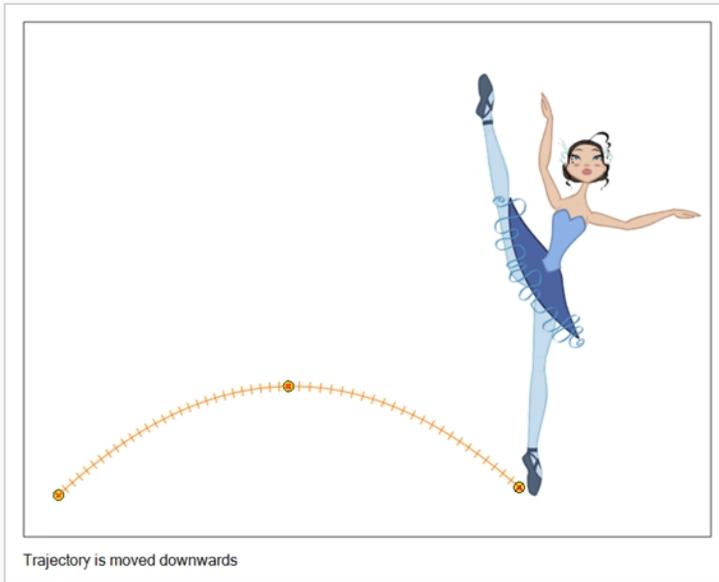
# About Functions

By default, when a drawing layer or peg is added to a scene, no function curves are created. You will generally create the ones you need to avoid being overloaded with too many functions you might not use.

When you select an element in the Camera view and move it around, it will automatically create the corresponding function curves. If you need to create certain functions manually, you can always do it through the Layer Properties view or editor. You can then share it with other layer parameters or set keyframes directly on the function curve instead of doing it in the Timeline or Camera view.

You can also link a layer's parameter to an existing function curve or attach several parameters to the same function curve. For example, if you have an aircraft performing loops between clouds, you may want the camera to follow the aircraft's motion path. If you attach the camera to the aircraft's layer, the camera will also loop, but this may produce undesirable results and even induce a feeling of motion sickness as you watch the final animation. Instead, you can share the X, Y and Z positions of the aircraft with the camera's peg layer, but ignore the angle, scale and skew.

By default, all function curves can only be used and modified using their original parameter. If you want another layer or parameter to use the same function curve, you must share it.

There are two ways to share a function:

- Share Functions command
- Layer Properties editor

When you create a function curve in the Layer Properties view or editor, there are several choices available:

| Parameter | Description |
| --- | --- |
| Create 3D Path | Creates a new 3D Path Column set |
| Create Bezier | Creates a new Bezier curve |
| Local | Disconnects the parameter from any function and changes it to shared. |
| 3D Path | Displays the list of every shared 3D Path function available |
| Bezier | Displays the list of every shared Bezier curve available |
| Velobased | Displays the list of every shared velocity based curve available |
| 3D Rotation | Displays the list of every shared 3D Rotation function available |
| Connected | Displays the list of every shared connected function curve |

| Unconnected | Displays the list of every shared unconnected function curve |
|---|---|
| All | Displays the list of every shared function curve |

You have the choice of creating a new function curve or linking it to a shared function. This way, you can have two or more parameters following the same function.

Depending on your favourite working method, you can create different types of function curves to suit your needs, including:

- Bezier function

- Velobased function

When you create a function to control a parameter over time (Scale, X, Y, Z, Rotate), you can use a Bezier function.



Bezier function
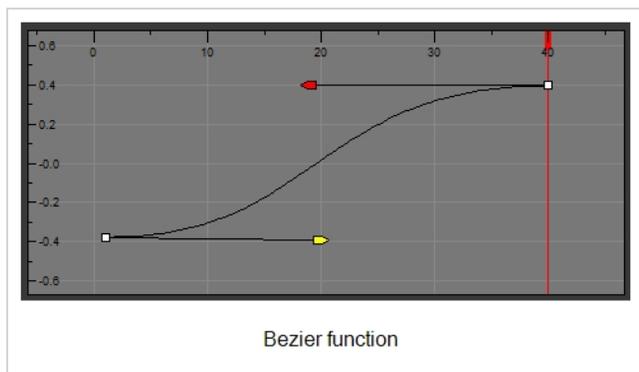
These function editors present different ways of editing the values over time. The shape of the created graph indicates the velocity of the function, regardless of the chosen editor. The type of function that you choose is largely based on your working preference.

You can also create Velobased functions for certain effects, like changes in rotation or size over time. When you do this, the Velobased functions are linked to the velocity of a 3D path. You cannot change the shape of a Velobased function to control its velocity.

With Velobased functions, you can link changes in rotation or scaling to the velocity of a 3D path. This makes it possible for changes in rotation or scaling to progress at the same speed as changes to the position of an element.
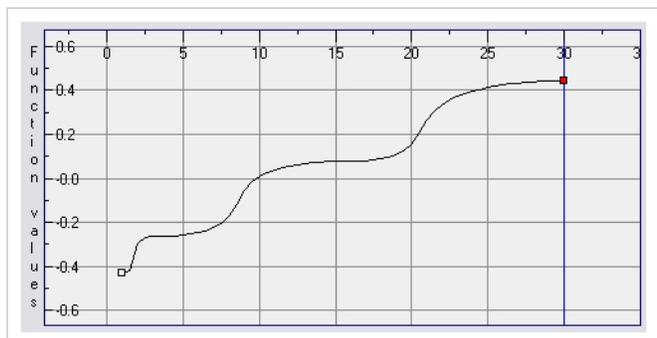
You can convert a Bezier functions so you can edit it using the controls offered by that type of function.

# Creating Functions

You can create function curves in several different ways. You cannot create function curves directly in the Xsheet view. You must do this in the Layer Properties window or the Timeline view.

### How to create the function curve in the Timeline view

1. In the Timeline view, expand the layer's parameters.

2. Click the Function button and, in the drop-down menu, select **Create Bezier**.
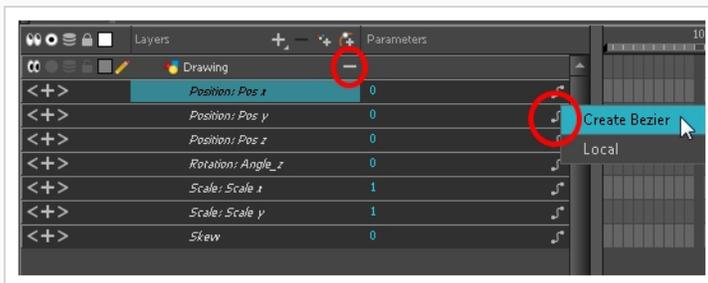


### How to create function curves using the Layer Properties view

1. In the Timeline view, double-click on the layer you want to create function curves for.

   The Layer Properties Editor opens.
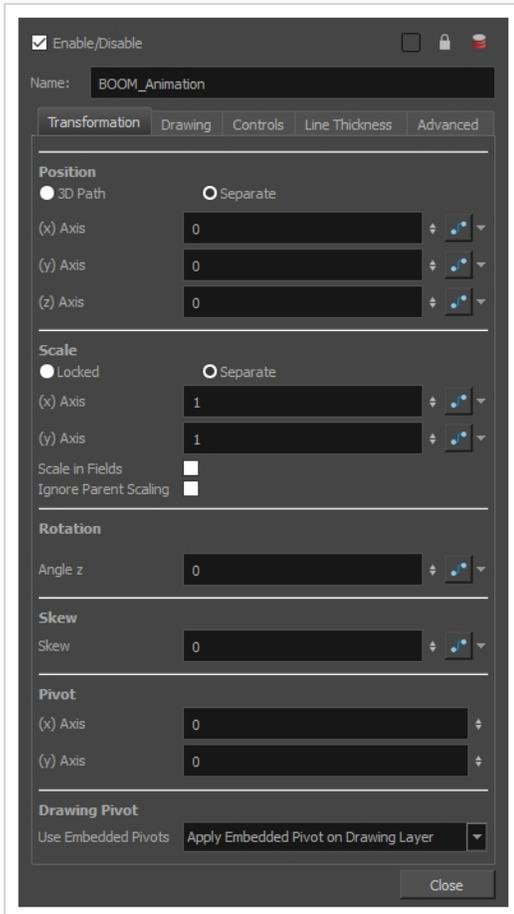
2.  In the Transformation tab, click the Function Arrow button beside the local function information.

3.  Create a 3D Path, Bezier, or Velobased curve.



    You can click the Function 🎵 button to open the Function editor.

# Sharing Functions

You can connect two or more functions to a shared function. If that shared function is modified, then the linked functions will vary accordingly.

## How to share a function using the Layer Properties editor

1. In the Timeline view, double-click on the layer that contains the function to share.

   

   The Layer Properties window displays.

2. In the Transformation tab, click the Arrow button beside the function you want to share and select **Local**.
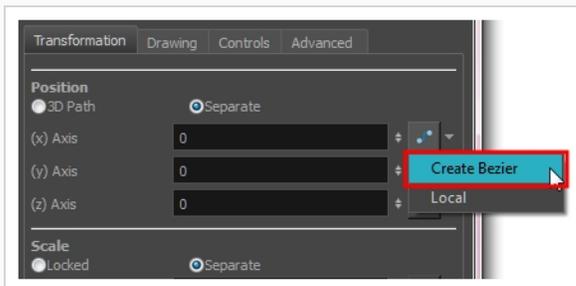
   

   The function is shared with the other layers and parameters.

   Shared functions are visible in the main section of the Xsheet view.

| | Drawing_Pos_x_ | Drawing_Pos_y | Drawing_Pos_z | Drawing_Angle_ | Drawing |
|---|---|---|---|---|---|
| 1 | ☐ 0.000 | ☐ 0.000 | ☐ 0.000 | | 1 |
| 2 | -0.021 | | 0.072 | | |
| 3 | -0.050 | | 0.148 | | |
| 4 | -0.092 | | 0.225 | | |
| 5 | -0.156 | | 0.303 | | |
| 6 | -0.248 | | ■ 0.381 | | |
| 7 | ■ -0.375 | | 0.370 | | |
| 8 | -0.284 | | 0.359 | | |
| 9 | -0.195 | | 0.347 | | |
| 10 | -0.110 | | 0.336 | | |
| 11 | -0.032 | | 0.325 | | |
| 12 | 0.038 | | 0.314 | | |
| 13 | 0.098 | | 0.303 | | |
| 14 | 0.146 | | 0.291 | | |
| 15 | ■ 0.187 | | 0.280 | | |
| 16 | 0.177 | | 0.269 | | |
| 17 | 0.166 | | 0.258 | | |
| 18 | 0.156 | | 0.247 | | |
| 19 | 0.145 | | 0.235 | | |
| 20 | 0.135 | | 0.224 | | |
| 21 | 0.125 | | 0.213 | | |
| 22 | 0.114 | | 0.202 | | |
| 23 | 0.104 | | 0.191 | | |
| 24 | 0.093 | | 0.179 | | |
| 25 | 0.083 | | 0.168 | | |
| 26 | 0.072 | 0.000 | 0.157 | | 1 |
| 27 | 0.062 | 0.000 | 0.146 | | 1 |

3. From the same menu in which you chose the Bezier option (in our example), select the function you just shared and attach it to your parameter.
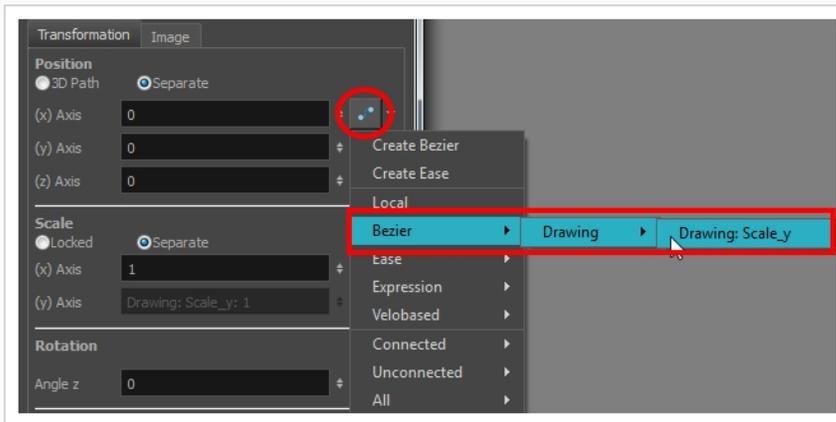


4. In the Timeline view, open the Layer Properties editor of the other layer that contains the parameters you want to link to the shared function.

5. In the Layer Properties editor or view, attach the parameter to the shared function the same way you did for the first layer.

   The two parameters are both linked to the same function curve and follow the same path. If you modify the curve, both parameters will update.

# About Copying Motions

In the Timeline view, you can easily drag keyframes to change the animation timing, delete them, cycle them and even copy them.

As you animate, you will find that you reuse many positions, drawings, and keys. However, you may only want to paste the drawings or just the keys or maybe everything. There are different paste options available in the Timeline view which give you maximum flexibility when reusing and pasting.

Note that these modes also apply when you drag instead of copying and pasting.

There are three different modes for pasting your selection:

- ▪ **Paste Mode: All Drawing Attributes**: Pastes the drawing exposure and keyframes.

- ▫ **Paste Mode: Keyframes Only**: Pastes only the keyframes.

- ▢ **Paste Mode: Exposures Only**: Pastes only the drawing exposure.

When you have position keyframes set in your drawing layer and you want to move them around when moving your drawing's timing, you can use the Paste Special feature to only move selected keyframes.

You can also use the Paste Cycle and Paste Reverse feature to cycle your selection including keyframes and drawings.

If you want to cycle a portion of your animation, you can use the Paste Cycle command. You can also use the Paste Reverse command to completely reverse the flow of your animation.

# Using Timeline Paste Modes

Use can copy and paste or drag and drop keyframes and drawings in the Timeline view using various modes.

## How to paste a selection using different modes

1.  In the Timeline view, select the cells you want to copy and paste.
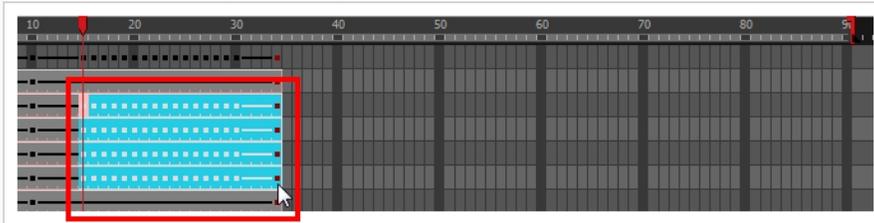
    

2.  In the Timeline toolbar, click the desired Paste ▣ ▪ ▢ mode button.

3.  From the top menu, select **Edit > Copy Cells from the Timeline** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

4.  In the Timeline view's right side, select the cell on which you want to paste your selection.
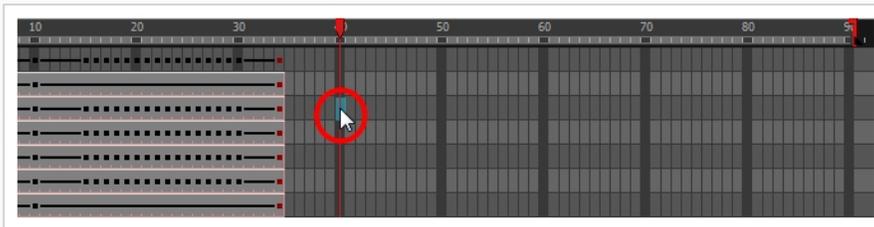
    

5.  Select **Edit > Paste Cells in the Timeline** or press Ctrl + V (Windows/Linux) or ⌘ + V (macOS).

    **Paste Mode**: All Drawing Attributes
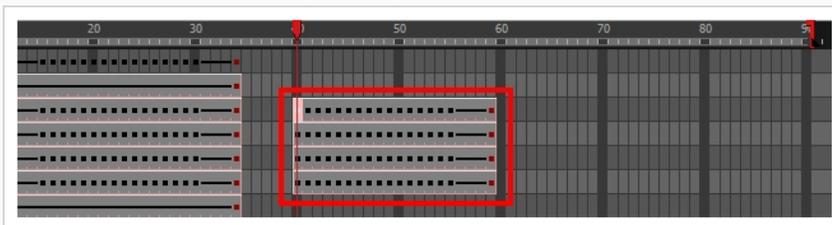
    

    **Paste Mode**: Keyframes Only
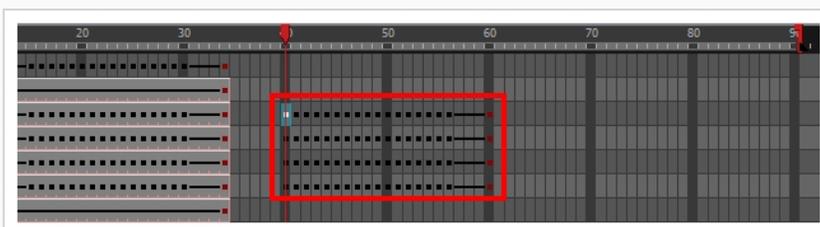
**Paste Mode**: Exposures Only
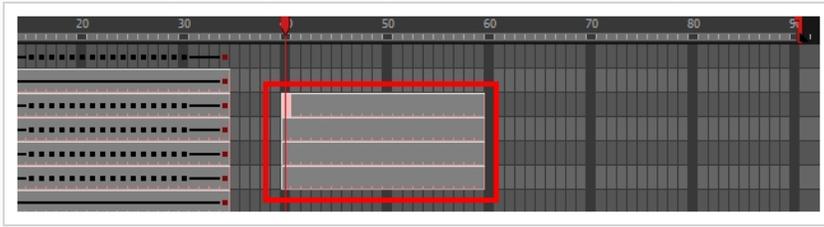
# Using Paste Special

You can copy drawing exposures and keyframes and paste only a portion of your selection using Paste Special.

### How to copy and paste a motion using Paste Special

1. In the Timeline view, select the keyframes to copy and paste. If you want to move the keyframes, go to step 3.



2. From the top menu, select **Edit > Copy Cells from the Timeline** or press Ctrl + C (Windows/Linux) or ⌘ + C (macOS).

3. Edit your selection by doing the following:

   - To paste the selection, in the Timeline view, select the first cell on which you want to paste your keyframes and from the top menu, select **Edit > Paste Special** or press Ctrl + B (Windows/Linux) or ⌘ + B (macOS).

   - To move the selection, in the Timeline view, drag the selection and hold down Alt. Drop the selection where you need it and release the hot key.



   The Paste Special window opens.

4. Set the Drawing, Pegs and Functions, and Cycles parameters.

5. Click **OK**.
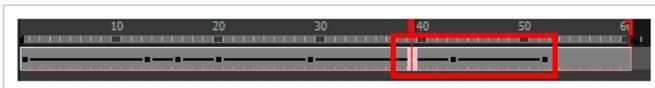
# Cycling Animations

You can copy and cycle a section of your animation or your entire animation.

## How to cycle an animation

1. In the Xsheet or Timeline view, select the cell range and keyframes to loop.

2. From the top menu, select **Edit > Copy Cells from the Xsheet/Timeline**.

3. In the Xsheet or Timeline view, select the cell on which you want the cycles to start.
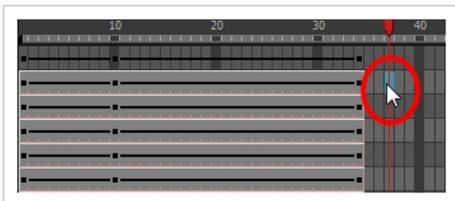


4. From the top menu, select **Edit > Paste Cycle** or press Ctrl + / (Windows/Linux) or ⌘ + / (macOS).

   The Paste Cycle dialog box opens.
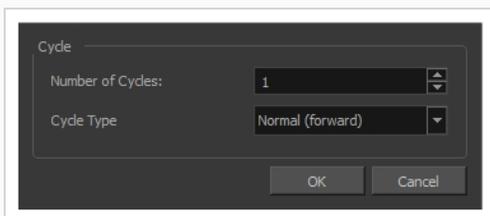


5. In the Number of Cycles field, increase or decrease the number of cycles you want to paste.

6. In the Cycle Type, select the type of cycle to paste.
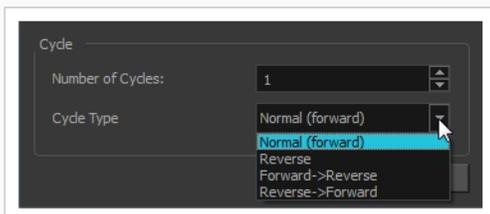


   - **Normal (forward)**: Pastes your selection as it is, starting with the first cell and ending with the last.

   - **Reverse**: Pastes your selection reversed, starting with the last cell and ending with the first.

   - **Forward > Reverse**: Pastes your selection as a yo-yo, starting with the first cell, going to the last one and ending with the first cell.

- **Reverse > Forward**: Pastes your selection as a reversed yo-yo, starting with the last cell, going to the first one and ending with the last cell.

# Pasting Reverse Motions

You can paste your animation reversed from its original flow.

### How to reverse the animation flow

1. In the Xsheet or Timeline view, select the cell range and keyframes to paste inverted.
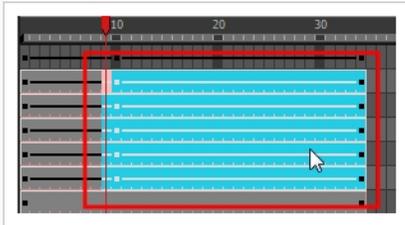


2. From the top menu, select **Edit > Copy**.

3. In the Xsheet or Timeline view, select the cell on which you want the cycles to start.

4. From the top menu, select **Edit > Paste Reverse** or press Ctrl + . (Windows/Linux) or ⌘ + . (macOS).
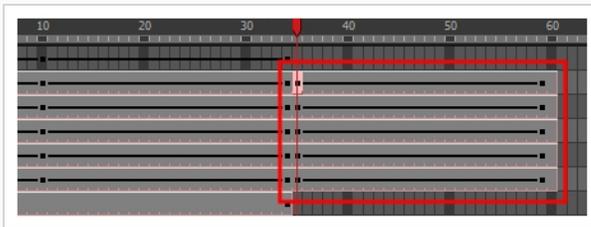
# About Velocity

To add ease in and ease out on motion paths, you can display the function curve and modify the Bezier or Ease curve. To apply ease to multiple functions and keyframes, you can use the Set Ease For Multiple Parameters script and set the amount.

The Velocity, or ease, is used on motion keyframes. The Velocity must be adjusted directly on the function curve in the Function view or Function editor. When a keyframe is selected, easing values appear in the right handle and left handle fields, as well as Bezier handle or Ease wheel controls on each selected keyframe. Pull on them to adjust the ease in and ease out, or type values in the fields.

You can reshape the velocity function using Bezier controls.
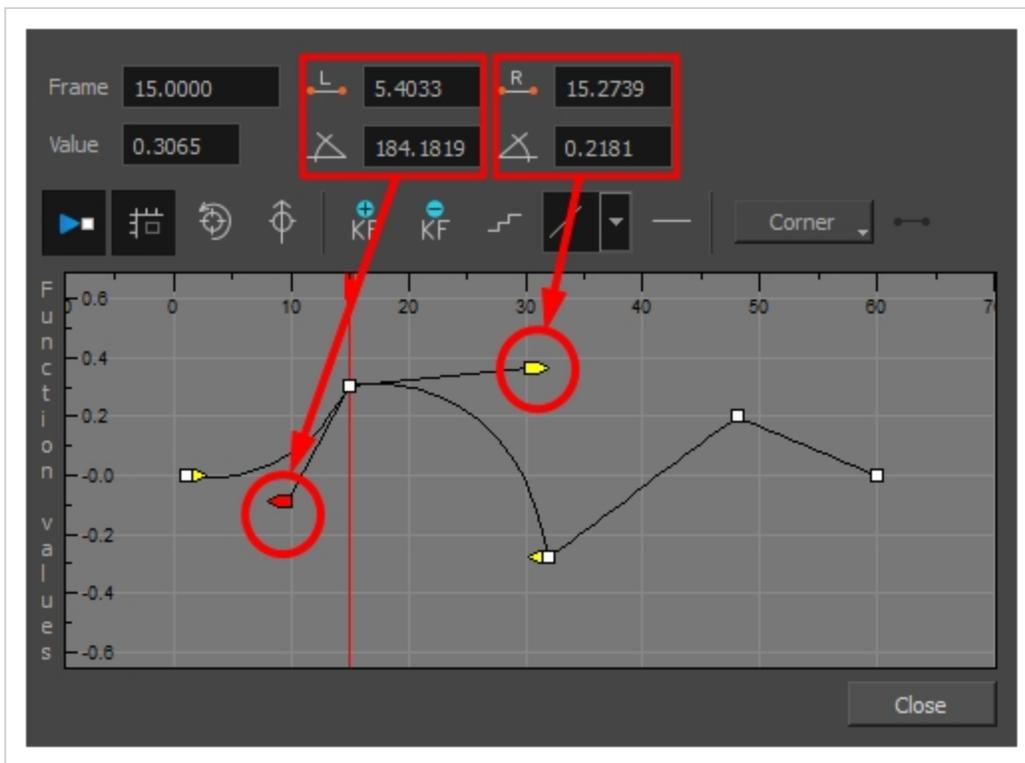


If you have several functions whose velocity you want to adjust at the same time, you can use the Set Ease for Multiple Parameters dialog box. It allows you to apply the same velocity parameters to all the selected keyframes in the same frame.

# Displaying Velocity Curves

You can display a parameter's function curve and adjust the easing with the relevant controls.

## How to display the velocity curve

1. In the Timeline view, click the Expand <sub>+</sub> button on a layer or press Alt + F.

   The layer's functions are displayed.
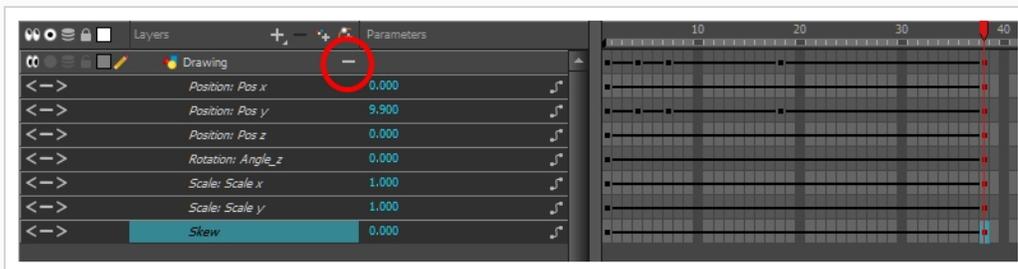
   

2. Double-click the desired function. Note that 3D Paths have a specific velocity curve controlling the X, Y, and Z axis together. You need to click on the `Position:Velocity` layer.

   

   The Function Editor opens as the Bezier Editor.
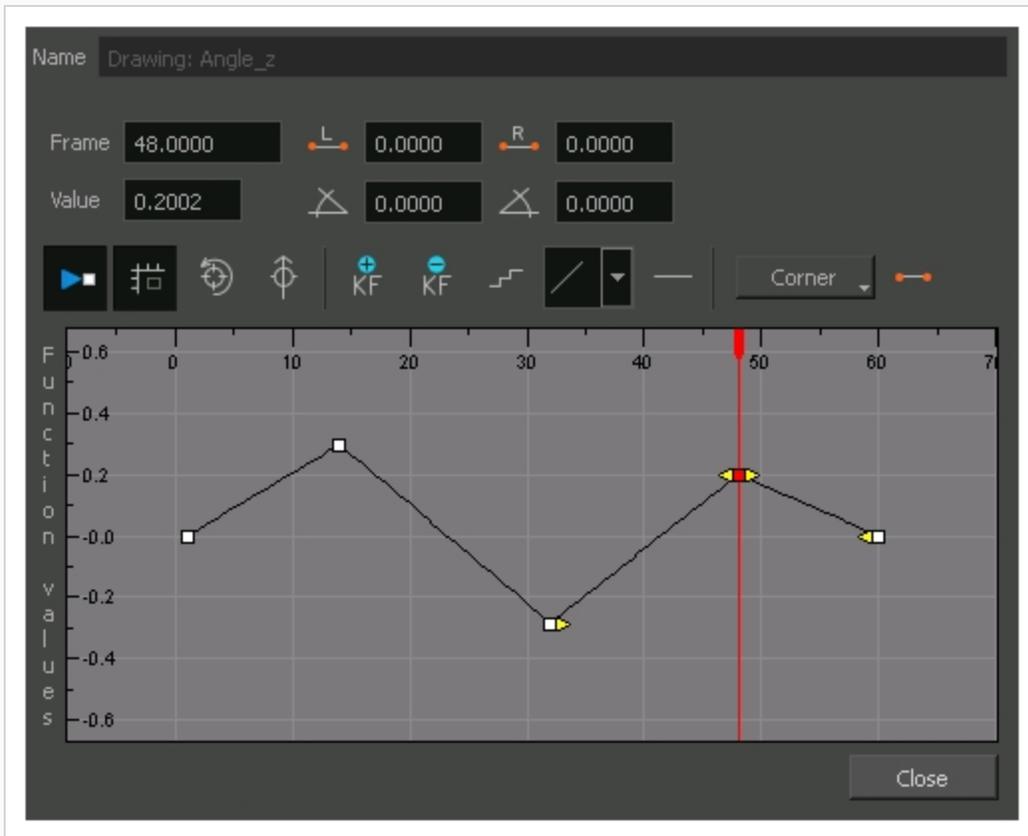
The editor will not be displayed if the function does not already exist.

# Adjusting Bezier Curve Velocity

You can reshape a Bezier curve velocity using the Function view controls.

### How to adjust a Bezier curve velocity

1. In the Function view, select a keyframe.

2. Drag the controls to modify the shape of the curve.

   You can reshape the function using the Bézier controls.
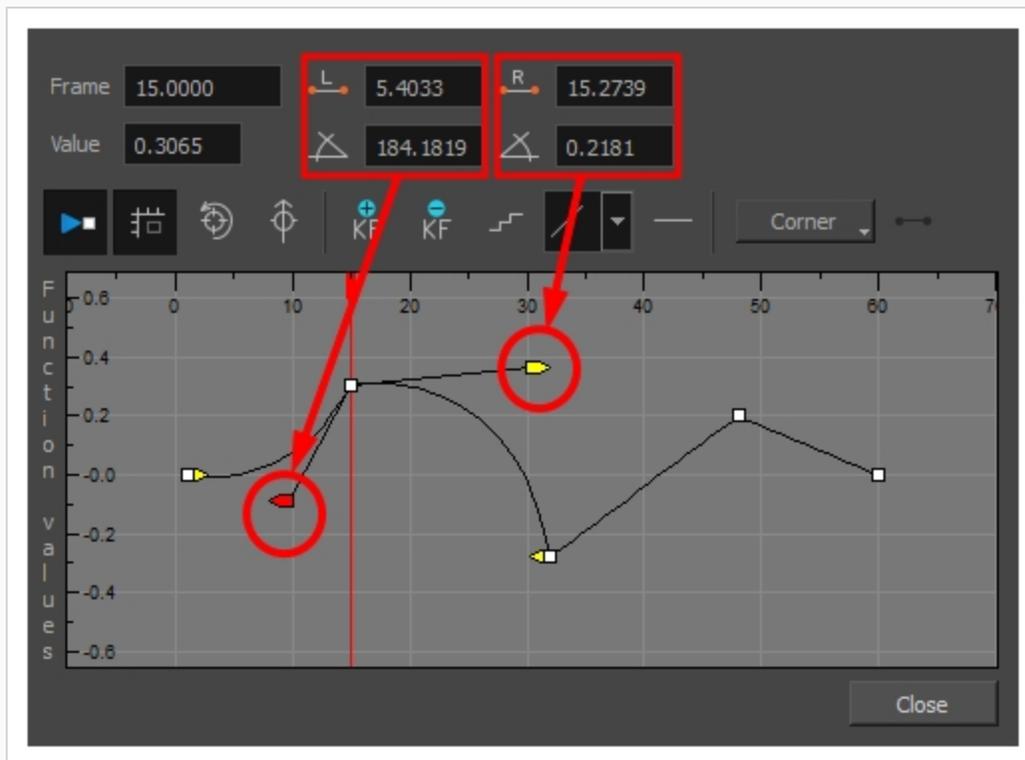


3. The Continuity options influence how you can move the handles:

   - **Straight**: Lets you move the handles together, maintaining the same angle to the point.

   - **Corner**: Lets you move the handles independently.

   - **Smooth**: Lets you move the handles together, maintaining the same distance and angle to the point.

# Creating Stepped Velocity

You can create a stepped curve to hold the same value over a selected number of frames. This works well when you are animating drawings on 2s, for example, and you want to hold the same value for a function over those two frames.

### How to create a step velocity

1. Click the Hold Value Editor ⌐ button.

   The Hold Value editor opens.
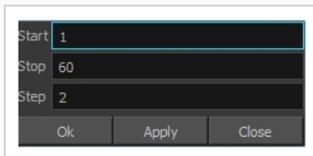
   

2. In the Hold Value Editor, enter the following values:

   - **Start**: The starting frame for the effect.

   - **Stop**: The last frame for the effect.

   - **Step**: The number of frames to hold the value.

   The function curve is updated based on the values you entered.
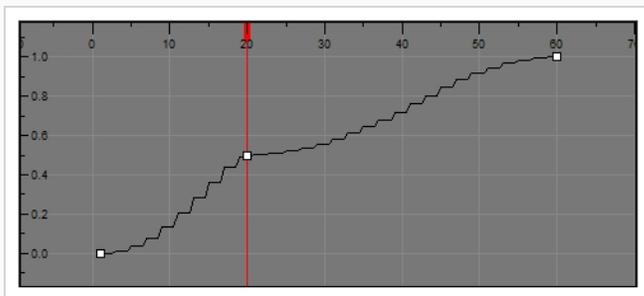
   

   You can reshape the curve to create a linear velocity, so the values are interpolated (tweened) consistently between keyframes. That is, there is no acceleration in the effect.

### How to create a step velocity for multiple parameters

1. Add the Scripting toolbar to your interface:

- Go to the top menu and select **Windows > Toolbars > Scripting**.

- right-click on the empty space near the top of the interface and from the quick-access menu selecting **Scripting**.

- right-click on the empty space near the top of a view and from the quick-access menu selecting **Scripting**.

2. In the Scripting toolbar, click on the Manage Scripts $f_{\downarrow}$ button to open the Scripts Manager window.

3. In the Scripts Manager, in the Files section, select the file **TB_CreateStepsOn.js**.

   The functions associated with that file appear in the Functions section.

4. In the Functions section, select **TB_CreateStepsOn**.

   The Add script to toolbar ▷ button becomes active.
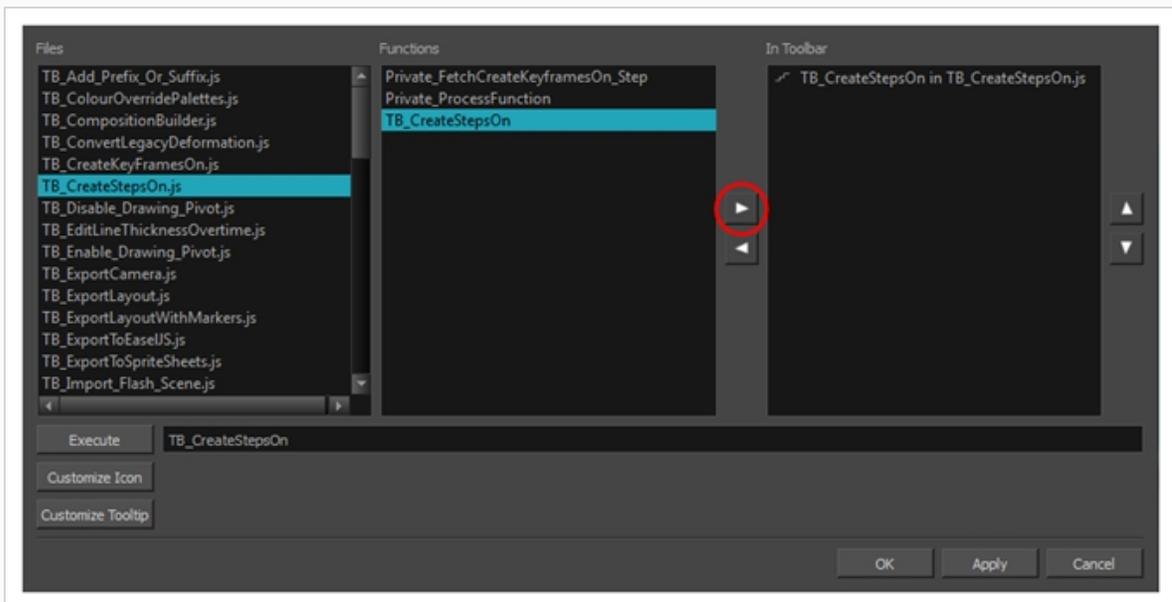


5. Click on the Add script to toolbar ▷ button.

   The TB_CreateStepsOn script ⌐ button is added to the Scripting toolbar.

6. Click **Apply**.

7. Click **OK**.

8. In the Timeline view, select the layer whose parameter values you would like to hold.

9. In the Scripting toolbar, click on the TB_CreateStepsOn script ⌐ button.

   The Create Function Step On dialog box appears.
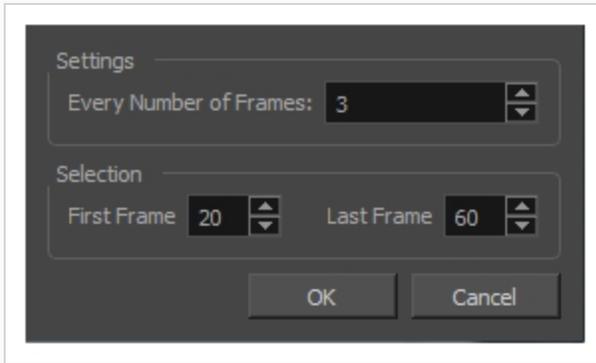
10. In the Settings section, enter the hold value by changing the number in the Every Number of Frames field.

11. In the Selection section, enter the first and last frame numbers to define the selection range.

> **NOTE**
>
> The playhead location determines the lowest value you can enter for the first frame, when defining the selection range. You need to move the playhead to frame one if you would like to set frame one as the lowest possible starting value.

12. Click OK.

13. In the Timeline view, expand the layer properties of the selected layer by clicking on its plus ➕ button.



14. Double-click on a parameter layer to open its Bezier Editor. If that parameter was animated, the 3 frame hold from frame 20 to 60 was applied.
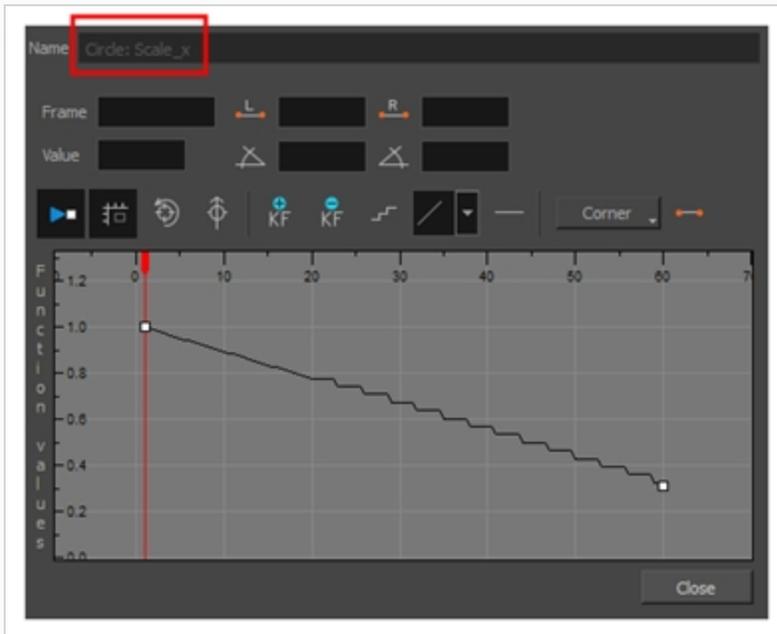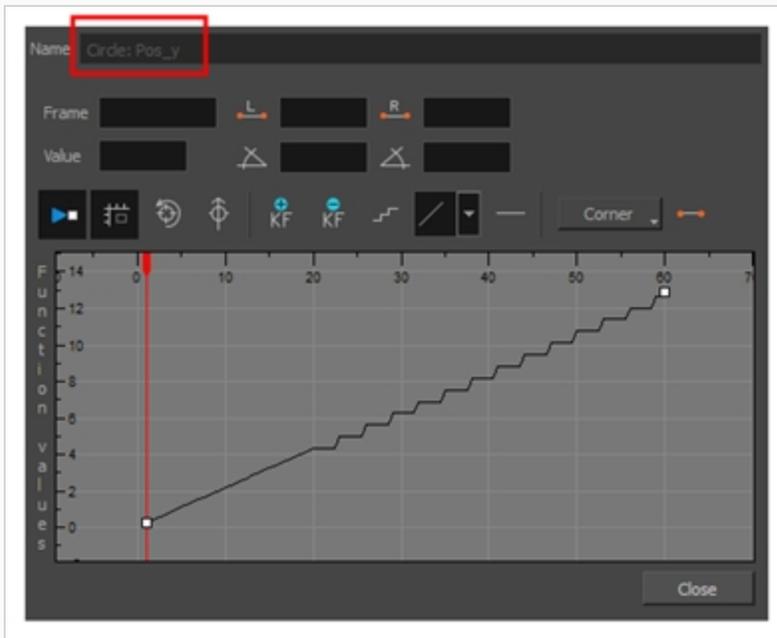
15. In the Bezier Editor, click on any of the keyframes to bring up the bezier point handles and use them to reshape the velocity curve for that parameter.
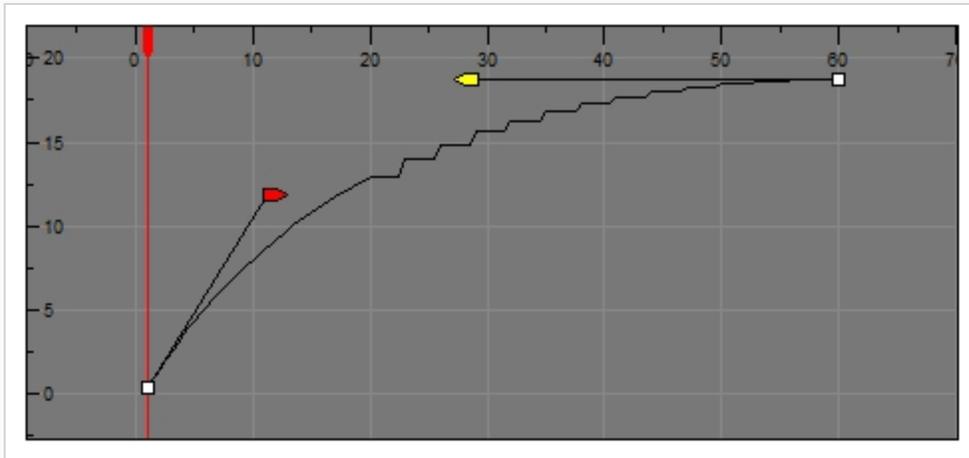
This means that multiple parameters can have the same stepped velocity, but have different ease-in ease-out curves defining that velocity.

# Adjusting Velocity in the Timeline View

If you would rather avoid playing with graphs and function curves, you can adjust the velocity in the Timeline view.

## How to set the ease in the Timeline view
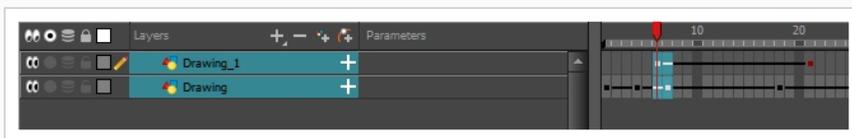
1. In the Timeline view, select a keyframe on one or more layers.



> **NOTE**
>
> Only the first selected keyframe will be considered when using the Set Ease For Multiple Parameter function. If many keyframes are selected on the same layer, the ease values will be applied only on the first keyframe and the rest will be ignored.

2. In the Timeline toolbar, select an option from the Set Ease Type menu.
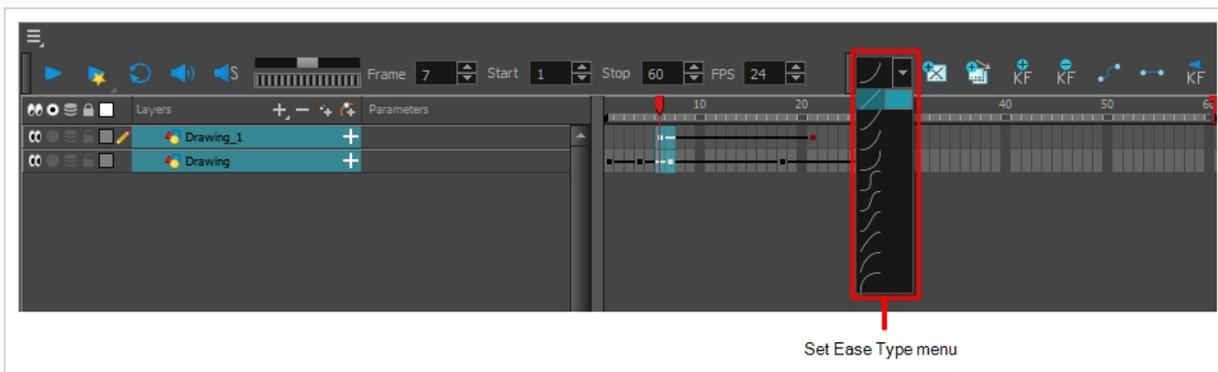


Set Ease Type menu

> **NOTE**
>
> **TIP**: Optimize your workflow by adding the Apply Ease to Selection ⟋ button to the Timeline toolbar. This lets you quickly reapply the ease type without going through the Set Ease Type menu each time. To add the button to the toolbar, right-click on the toolbar area of the Timeline view and select **Customize**.

# Setting Ease on Multiple Parameters

T-HFND-009-013

You can adjust the velocity on multiple parameters at a same frame for consistency.

### How to set the ease on multiple parameters
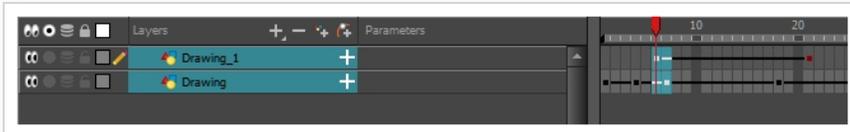
1. In the Timeline view, select a keyframe on one or more layers.



> **NOTE**
>
> Only the first selected keyframe will be considered when using the Set Ease For Multiple Parameter function. If many keyframes are selected on the same layer, the ease values will be applied only on the first keyframe and the rest will be ignored.

2. Do one of the following:

   - In the Timeline view, right-click and select **Set Ease For Multiple Parameters**.

   - In the Timeline toolbar, click the Set Ease For Multiple Parameters ⇶ button.

   The Set Ease For Multiple Parameters dialog box opens.
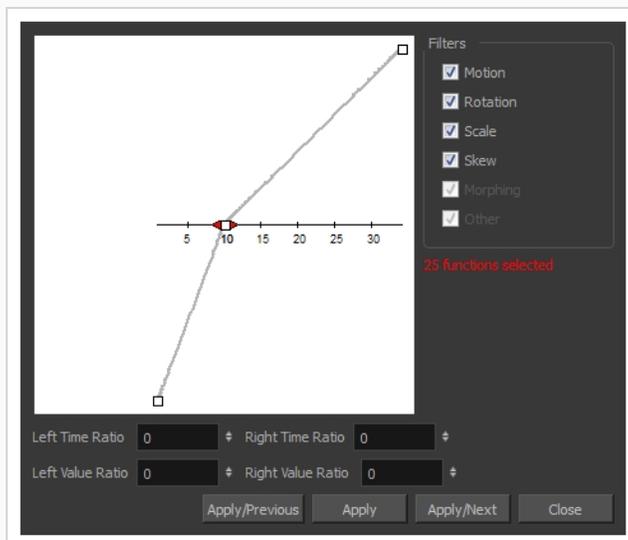


3. In the graph, adjust the Bezier handles to change the velocity for all the selected functions.
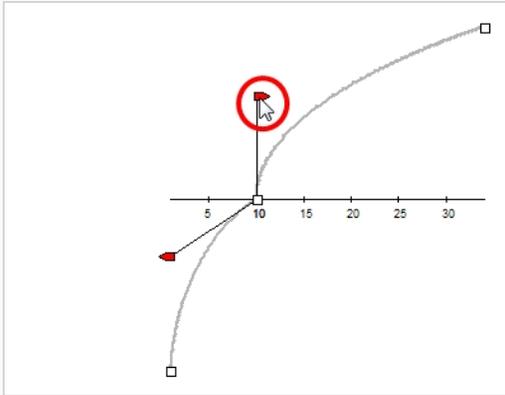
4. In the Filters section, you can apply the easing parameters to a specific type of function only, such as Rotation or Scale. Deselect the function types you do not want to affect.

- **Motion**: Applies the easing parameters to the selected Position X, Position Y, Position Z and 3D Path functions.

- **Rotation**: Applies the easing parameters to the selected Angle functions.

- **Scale**: Applies the easing parameters to the selected Scale functions.

- **Skew**: Applies the easing parameters to the selected Skew functions.

- **Morphing**: Applies the easing parameters to the selected Morphing Velocity functions. Note that it applies to the Morphing velocity function found in the Layer Properties window, not the basic morphing ease in the Tool Properties view.

- **Other**: Applies the easing parameters to all the other the selected functions, such as all functions created to animate effect parameters.

5. You can also adjust the easing by typing values in the Time and Value Ratio fields. The values are calculated in percentage.

- In the Left Time Ratio and Right Time Ratio fields, type the percentage value corresponding to the length of time you want the easing to last. Stay between 0% and 100%. If you go beyond 100%, your motion will overshoot.

- In the Left Value Ratio and Right Value Ratio fields, type the percentage value of how strong you want the easing out to be. Stay between 0% and 100%. If you go beyond 100%, your motion will overshoot.

- If your Time Ratio and Value Ratio values are equal, you will have a linear motion.

6. Once done, click one of the following:

- **Apply/Previous**: Applies the easing parameters to the selected keyframes and then selects the previous keyframe in the timeline.

- **Apply**: Applies the easing parameters to the selected keyframes.

- **Apply/Next**: Applies the easing parameters to the selected keyframes and then selects the next keyframe in the timeline.

- **Close**: Close the dialog box. If you did not apply the modifications, they will be cancelled.

# About Animation Resources

As you are animating, you might find that you are constantly selecting the same elements from your scene, in order to progressively move and manipulate them. You can create a preset for almost any selection or group selection in your scene, in order to speed up the animating process.

# Chapter 11: Deformations

Deformations let you animate bitmap or vector-based graphics, including gradients and textures. Deformations act as a skeleton with limbs and articulations you can bend, reshape, and curve. You can deform a character made out of one, or many, drawing or image layers and make it move as if it were a cut-out puppet.

A deformation skeleton is composed of deformation nodes, which are the various pieces (here represented as layers or nodes) required to articulate or deform your drawings, such as a series of bones or game bones.

# About Deformation Types

The 4 types of deformers are: Bone, Game Bone, Curve and Envelope. Each type has its own advantages and limitations and need to be rigged and handled in different ways.

# About Bone Deformations

T-RIG-007-002

The Bone deformation allows you to create a bone-like structure in which each part is solid, but with articulations that are flexible. This is mostly useful for animating a character's limbs, such as the arms or legs, or other parts that can be articulated such as torsos or fingers. For example, a Bone deformation can be used to articulate an arm that is made of a single drawing, so that the upper arm and forearm can be moved independently, without having to draw the upper arm and the forearm on different layers. Harmony will deform the drawing to make it look articulated. The different parts of a Bone deformation can be rotated around their joint, extended and shortened, giving you the same capabilities as animating articulations on different layers, without having to worry about parts detaching, pivot points, or clipping outlines.
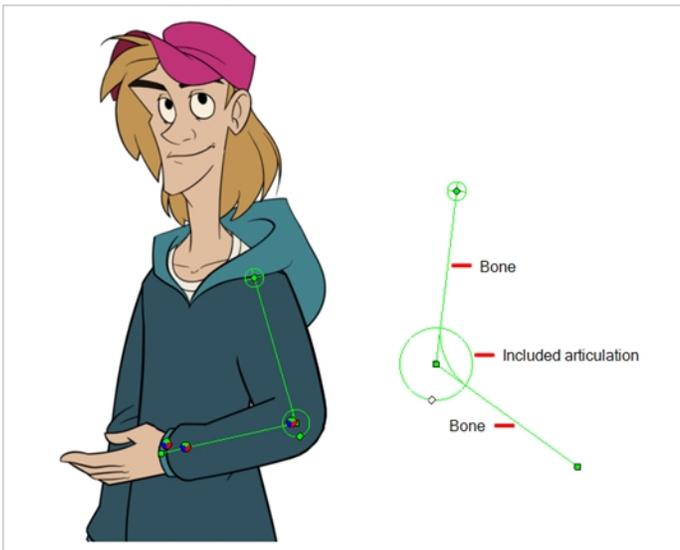
# About Game Bone Deformations

T-RIG-007-003

The Game Bone deformation is very similar to the Bone deformation. It allows you to create a bone-like structure in which each part is solid, but with articulations that are flexible. This is mostly useful for animating a character's limbs, such as the arms or legs, or other parts that can be articulated such as torsos or fingers. For example, a Game Bone deformation can be used to articulate an arm that is made of a single drawing, so that the upper arm and forearm can be moved independently, without having to draw the upper arm and the forearm on different layers. Harmony will deform the drawing to make it look articulated. The different parts of a Game Bone deformation can be rotated around their joint, extended and shortened, giving you the same capabilities as animating articulations on different layers, without having to worry about parts detaching, pivot points, or clipping outlines.

The Game Bone deformation is different from the Bone deformation in which it is optimized for game engines such as Unity. Hence, it is usually only used for game development and not in animated productions. The difference between the Bone and Game Bone deformations is that Game Bone deformations do not have a Bias property. The articulation folds also look slightly more rounded.
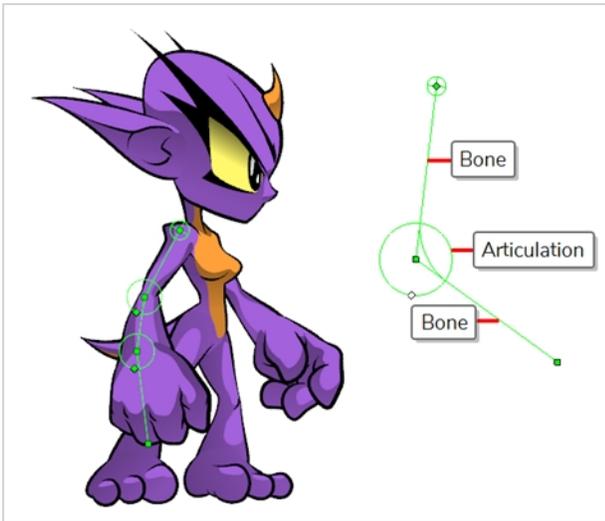
# About Chain Creation

Using the Rigging tool, you can quickly create a basic deformation rig.

As you create your chains, the controls will be showing. However, whenever you close your project, the deformation controls display is turned off. When you reopen the project, you can display all controls or only some of them—see *Displaying Selected Deformation Controls* on page 974.

# Selecting Elements for Deformation

Deformation groups are added to your scene's hierarchy in different places, depending on whether a drawing or peg element is selected.

## How to select the element on which to create a deformer

A deformer affects all the layers under its hierarchy. When you create a new deformer using the rigging tool, it is automatically created as a parent of the selected layer, and will affect the selected layer and all its children. Hence, it's important to select the right layer before attempting to create a deformer.

For example, if you wish to create a deformer for an arm, and the arm is broken into several layers, you could rig the arm in a hierarchy where the upper arm is the root, the forearm is the upper arm's child and the hand is the forearm's child. Then, if you create your deformer on the upper arm, it will be created as a parent of the upper arm, and will hence affect the whole arm.



You can also group several layers under a peg, and create your deformer with this peg selected. When you create a deformer on a peg, the deformer is created as a child of the peg, but as a parent of all of this peg's children. This is because a peg is likely to be more useful over a deformer than under. If you move layers that are under a deformer, they will exit the intended deformation zone, and may appear severely warped and distorted. Hence, it's better to create deformations under pegs as much as possible, and pegs under deformers should only be animated if the deformer is left untouched. Since the deformer will be created as a parent of all the peg's children, it will affect all the layers under the peg.

# Creating Bone Deformation Chains

You can easily create bone deformation chains on parts of your rig using the Rigging tool.

### How to create a  Bone  deformation chain

1. Make sure the right element for the creation of your deformation chain is selected—see *Selecting Elements for Deformation* on page 952.

2. Once your element is selected, select the  Rigging tool in the Deformation toolbar

3. In the **Tool Properties** view, click on the  **Bone** button to enable Bone mode.

4. Place the cursor at the root of your drawing or drawing hierarchy, click once and release. For example, if you're creating a deformer for a whole arm, click on the shoulder joint.

5. Move your cursor at the location where you want your first bone to finish and your second bone to start, and click again. An articulation control point will automatically be inserted between each bone you create.

6. Move your cursor where you want the next articulation to be and click to create the next point.

   Observe that, as you create a new point, the previous point now has a circle around it. This is the radius of the articulation, which allows you to determine how much of the drawing should be part of the articulation. Every point in a bone deformer, except for the first and the last one, has a radius setting.

7. Click and hold the previous articulation's radius manipulator and adjust the articulation's radius so that it covers the limb.



8. Repeat this until you are finished creating the Bone chain. Make sure you build each articulation in the right order going from the root to the extremity.

# Creating Game Bone Deformation Chains

If you are working on a character that is meant to be exported as a game asset for use in Unity, and you want to use deformations to animate your character, you must use Game Bone deformations. These deformations replicate the type of deformation supported by Unity and can be exported to Unity as they are, without having to bake the deformations into drawings first.

### How to create a Game Bone deformation chain

1. Make sure the right element for the creation of your deformation chain is selected—see *Selecting Elements for Deformation* on page 952.

2. Once your element is selected, select the ↑T **Rigging** tool in the Deformation toolbar

3. In the **Tool Properties** view, click on 🎮 **Game Bone** to enable Game Bone mode.

4. Place the cursor at the root of your drawing or drawing hierarchy, click once and release. For example, if you're creating a deformer for a whole arm, click on the shoulder joint.



5. Move your cursor at the location where you want your first bone to finish and your second bone to start, and click again. An articulation control point will automatically be inserted between each bone you create.



6. Move your cursor where you want the next articulation to be and click to create the next point.

Observe that, as you create a new point, the previous point now has a circle around it. This is the radius of the articulation, which allows you to determine how much of the drawing should be part of the articulation. Every point in a bone deformer, except for the first and the last one, has a radius setting.

7. Click and hold the previous articulation's radius manipulator and adjust the articulation's radius so that it covers the limb.



8. Repeat this until you are finished creating the Bone chain. Make sure you build each articulation in the right order going from the root to the extremity.

# Creating a Split Deformation Chain

It is possible to create a deformation chain that splits into multiple branches, allowing to rig complex drawings with multiple extremities using a single deformation chain.

When creating a split deformation chain, a Deformation Composite layer is automatically added to your rig. This deformation composite connects all the branches of the split deformation chain to the drawing it deforms. You can see which deformation layers are connected to the Deformation Composite in the Additional Links column of the Timeline view,.
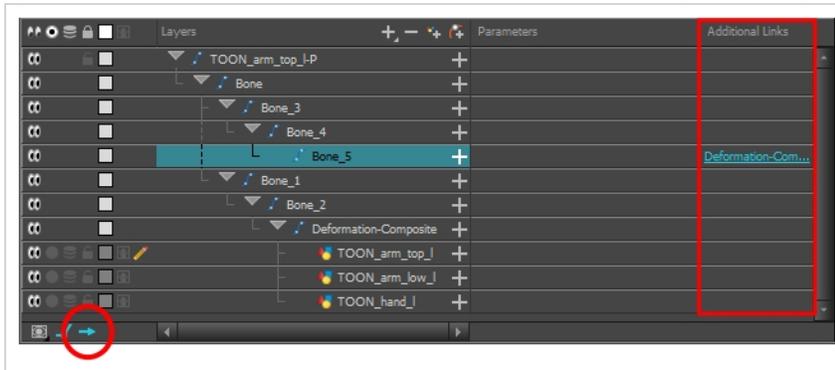


### How to create a split deformation chain

1. Select the drawing layer or the deformation chain to which you want to add a branch.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ⚘ button to display the deformer controls in the Camera view. This also hides all the deformer controls that were displayed.

3. Select the Rigging ⫯T tool.

   The deformation chain turns from green to red. A green chain indicates that you're animating the deformation. A red chain indicates that you're modifying the rig.

4. In the deformation chain, select the point from which you want the new deformation branch to start.

5. Place the cursor where you want your new branch's first point to be and click. A new chain is created.

6. Create the remainder of your chain's points as you would create a regular deformation.
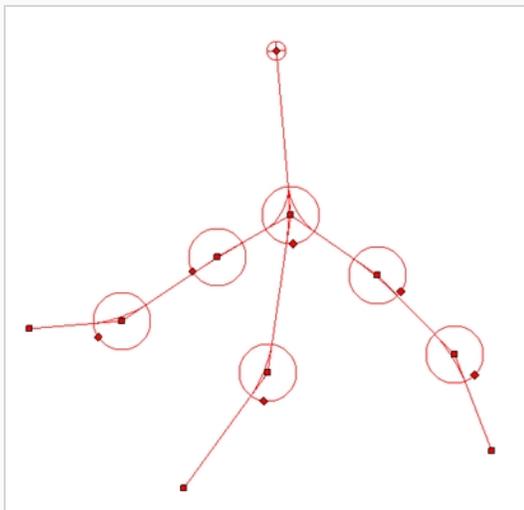
> **NOTE**
>
> When using the Rigging tool, you can select which existing deformation point you want the next deformation point you create to branch from at any time by selecting a point in the Camera view. When you create a deformation point, it is always linked to the currently selected point, if any. Creating a point automatically selects it, which is why deformations are built in a single chain by default.

# Setting Rest Positions for Bone and Game Bones

Every deformation rig needs to have a set resting position. The resting position is important as it acts as a 0 point for all the transformations that will be made to the drawing when animating. The resting position is also where we can see what parts of the drawing are assigned to which bone or articulation.

### How to set up Bone and Game Bone deformation chains

1. In the Timeline view, select the deformation nodes you want to set.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ✂ button to display the deformer controls in the Camera view. This also hides all the deformer controls that were displayed.

3. In the Deformation toolbar, click the Rigging ⫟ tool.

    The chain turns from green to red. A green chain indicates the puppet is in animation mode. A red chain indicates the puppet is in a resting position. Make sure your chain is red.

    

4. In the Camera view, set up the deformation chain.

    - Rotate the first bone to change the angle of the chain.
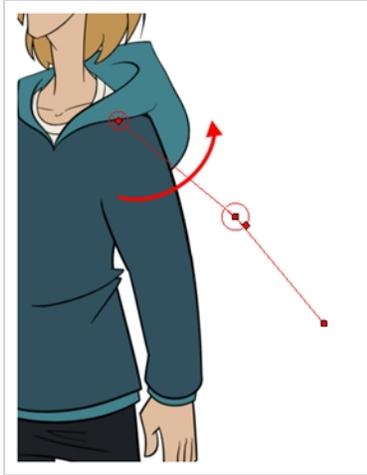
- Use the root control to reposition (offset) the entire chain.
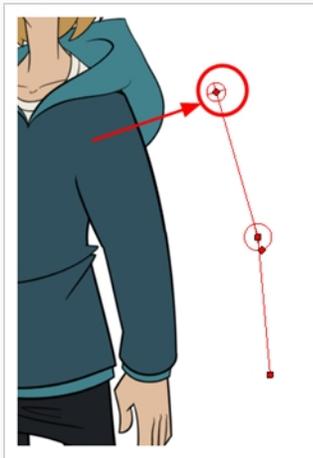


- Use the control points to reposition the articulations. This will elongate, shorten or change the direction of the bone and offset the subsequent children.
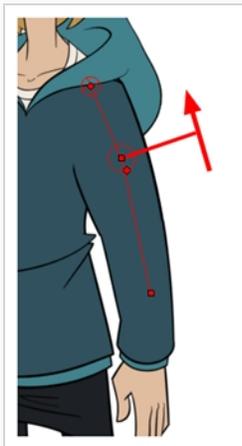
- Use the articulation's control (square) to change the size of the articulation. For quality purposes, it is recommended to have an articulation which fits the diameter of the part it controls.
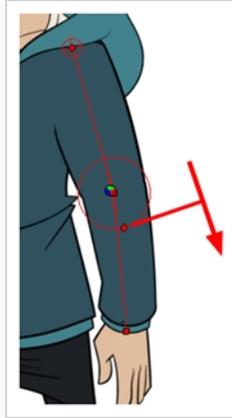


5. Repeat until all the articulations and bones of the chain are correctly aligned to the element to which it is linked. You can also set additional parameters in the Layer Properties window—see the Reference guide .

6. With the deformation nodes still selected, in the Deformation toolbar, click the Reset Current Keyframe 🔄 button. This will set the current resting position as the current frame one.

7. Use the Transform ⬚ tool. For optimal results, make sure the size of the articulation is approximately the same size as the drawing.

### How to add an articulation to an existing Bone or Game Bone deformation

1. Select the drawing layer or the deformation chain to which you want to add an articulation.

2. In the Deformation toolbar, click the Show the Selected Deformation Chain and Hide All Others ⊕ button to display the deformer controls in the Camera view. This also hides all the deformer controls that were displayed.

3. Select the Rigging ⫝̸ tool.

   The deformation chain turns from green to red. A green chain indicates that you're animating the deformation. A red chain indicates that you're modifying the rig.

4. Move your cursor over the bone segment, where you want to add an articulation.

5. Hold Alt and click.
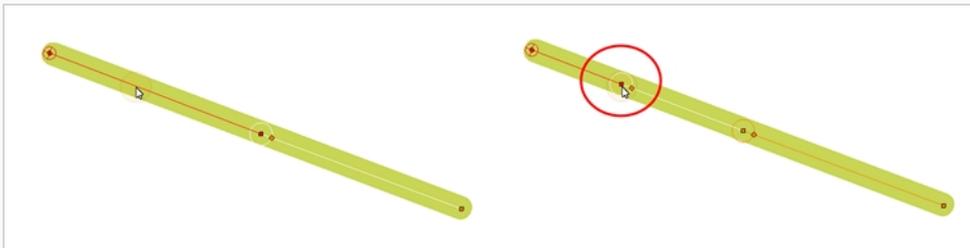
# Selecting Region of Influence Types

There are four types of region of influence:

- **Zero:** This creates no influence around the deformer.

- **Infinite**: This is the default option. The influence goes all the way to the image boundaries or until it intersects with another zone of influence. When working on a cut-out puppet built on several element layers, the best choice is to keep the default Infinite option as the zone of influence type. In the following examples, the zones of influence are explained through deformation chains on a single bitmap image. It's also recommended to keep the regions of influence to Infinite when using Envelope deformers.

- **Elliptic**: This creates a region of influence following the deformer. Its size is based on a radius value. When you set up the shape of your Elliptic zone of influence, you should be as accurate as possible and make sure that only the element you want to follow the deformation is included inside the zone.

- **Shaped**: This creates a custom region of influence around the deformer that can be adjusted using control points and Bezier handles. When you set up the boundaries of your Shaped zone of influence, you should be as accurate as possible and make sure that only the elements that you want to follow the deformation are included inside the zone.

  When you have an Elliptic zone of influence selected in the Node view, you can convert it to a Shaped zone using the Convert Elliptic Zone of Influence to Shape option.

### How to select a region of influence type

1. In the Timeline view, select the deformation nodes you want to set the region of influence for—see *Displaying Selected Deformation Controls* on page 974.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ⚇ button to display the deformer of the selected piece.

3. In the Layer Properties window, in the Region of Influence tab, set the Influence Type:

   - Zero

   - Infinite

   - Elliptic

   - Shaped

# Setting Up Elliptic Regions of Influence

An elliptical region of influence is suited for regular shapes. Modify its parameters to refine the region boundaries.

## How to set up the Elliptic region of influence

1. In the Timeline view, select the deformation nodes you want to set the region of influence for—see *Displaying Selected Deformation Controls* on page 974.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ⚭ button to display the deformer of the selected piece.

3. In the Layer Properties window, in the Region of Influence tab, set the Influence type to **Elliptic**.
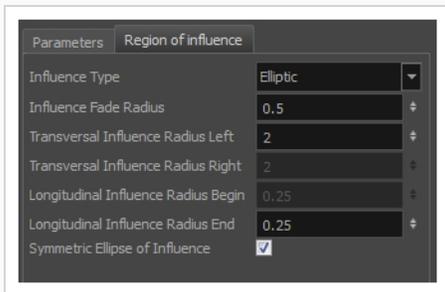


4. Set up the ellipse shape by adding values to the various fields:

| | |
|---|---|
| Influence Fade Radius | This defines the size of the fade area around the actual region of influence's boundaries. |
| Transversal Influence Radius Left | When the Symmetric Ellipse of Influence option is enabled, this field controls the Left and Right transversal radius values. When disabled, it controls the size of the left transversal radius. By default, this value is set to 2.  |
| Transversal Influence Radius Right | When the Symmetric Ellipse of Influence option is enabled, this field becomes inactive. The Left Transversal radius value is automatically applied to the Right Transversal. When the Symmetric Ellipse of Influence option is disabled, it controls the size of the Right Transversal radius. By default, this value |

| | is set to 2. |
|---|---|
| |  |
| Longitudinal Influence Radius Begin | When the Symmetric Ellipse of Influence option is enabled, this field becomes inactive. The End Longitudinal value is automatically applied to the Begin Longitudinal value. When the Symmetric Ellipse of Influence option is disabled, it controls the size of the Begin Longitudinal radius. By default, this value is set to 0.25.<br><br> |
| Longitudinal Influence Radius End | When the Symmetric Ellipse of Influence option is enabled, this field controls both the Begin and End Longitudinal radius values. When this option is disabled, it controls the size of the End Longitudinal radius. By default, this value is set to 0.25.<br><br> |
| Symmetric Ellipse Influence | Enabled by default. The shape of the ellipse will be symmetrical on both the transversal and longitudinal radii. In this case, use the Transversal Influence Radius Left field to set the transversal radius value and use the Longitudinal Influence Radius End field to set the longitudinal radius value. The two other fields will remain unused unless you disable the Symmetric Ellipse Influence option. In that case, you can set up different radius sizes for the four radii directions. |
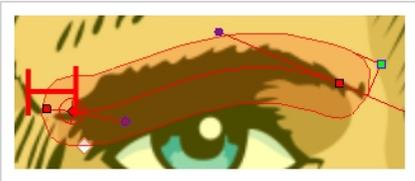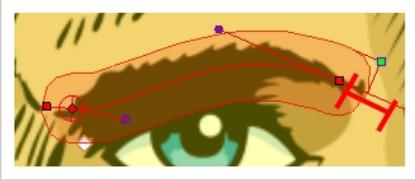
5. You can also modify the elliptic shape in the Camera view using the Rigging ⫚ tool.

- If the Symmetric Ellipse of Influence option is enabled, one control point will be available in the Camera view. Drag this point in any direction to increase or decrease the size of the Zone. Dragging it left/right will modify both longitudinal radius sizes. Dragging it up/down will modify both transversal radius sizes.
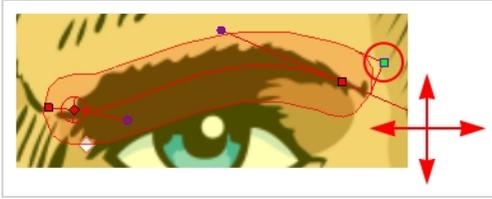


- If the Symmetric Ellipse of Influence is disabled, two control points will be available in the Camera view. Drag the top-corner point left/right to modify the end longitudinal radius size and up/down to modify the left transversal radius size. Drag the bottom-corner control point left/right to modify the beginning longitudinal radius size and up/down to modify the right transversal radius size.
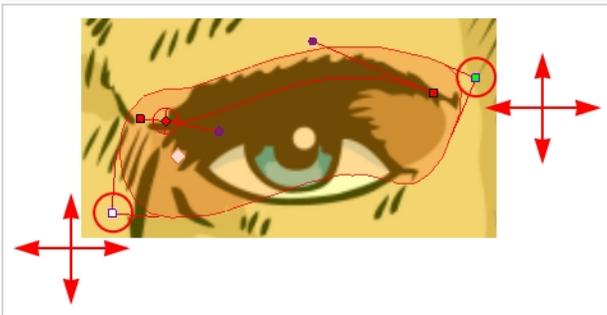
# Setting Up Shaped Regions of Influence

A Shaped region of influence is suited for irregular forms. Modify the region parameters to refine the shape's boundaries.

**How to set up the Shaped zone of influence**

1. In the Timeline view, select the deformation nodes you want to set the region of influence for—see *Displaying Selected Deformation Controls* on page 974.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ⚲ button to display the deformer of the selected piece.

   If you selected the Shaped option in the Layer Properties window or in the Rigging tool properties, the zone of influence will be square. This square has control points on all four corners and each control point as two control levers. If you converted an Elliptic zone to a shape, the zone will have more control points and handles.
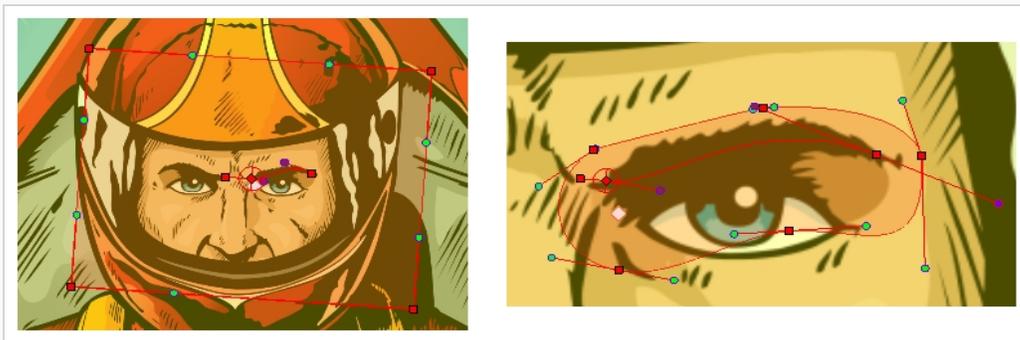
   

3. In the Layer Properties window, in the Region of Influence tab, set the Influence type to **Shaped**.
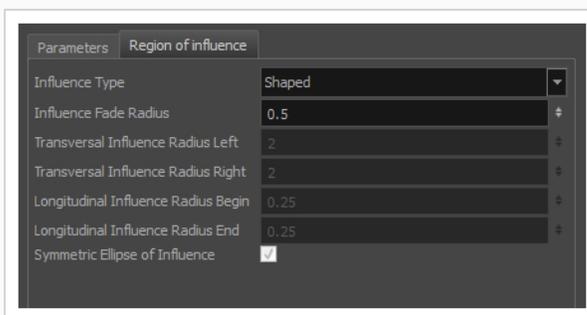
   

   All radius options are disabled except the Influence Fade Radius option—see *Setting Up Shaped Regions of Influence* on page 967.

   - In the Camera view, use the Rigging tool and drag a control point to redefine its position and shape.
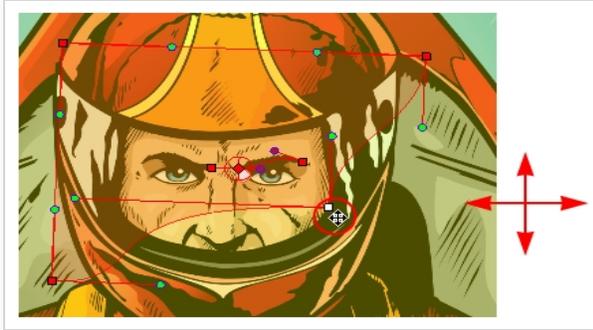
- Click and drag the control lever handle to modify the corners and redefine the shape.
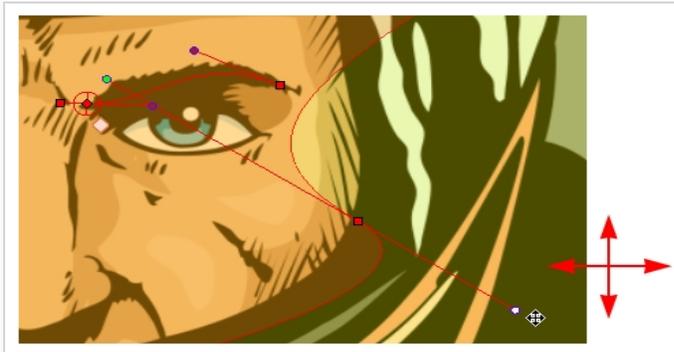


- Hold Alt down while dragging the control lever handle to move one handle at a time.
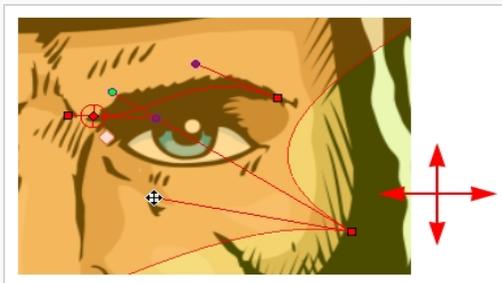
# Converting Elliptic Regions of Influence into Shapes

After you have tried tweaking an elliptical region of influence, you may find that you need to convert the ellipse into a shape, in order to create a more precise region. Instead of losing all the tweaks you have made, you can use the elliptical region you have created as a base for a Shaped region of influence.

**How to convert an Elliptic zone of influence to a shape**

1. In the Timeline view, select the deformation nodes you want to set the region of influence for—see *Displaying Selected Deformation Controls* on page 974.

2. In the Deformation toolbar, click the Show Selected Deformers and Hide All Others ⚭ button to display the deformer of the selected piece.
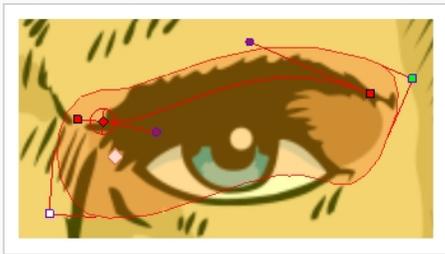


3. In the Tools toolbar, click the Rigging 🛠 button.

4. In the Tool Properties view, in the Operations section, click the Convert Elliptic Zone of Influence to Shape 🫗 button.

   The zone of influence is automatically converted to a shape. The shape is retained and control points appear around the zone, so you can customize the shape.
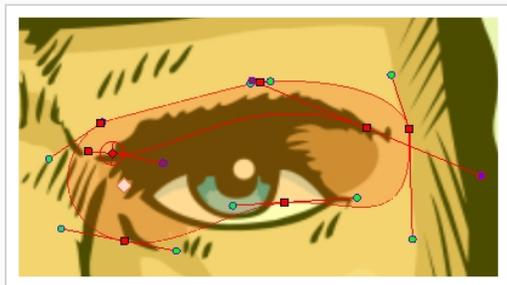
# About Assembly

After you have created all the deformation chains for your character, you will need to assemble these separate body parts into a puppet. Your pieces should be properly overlapping and not set apart.
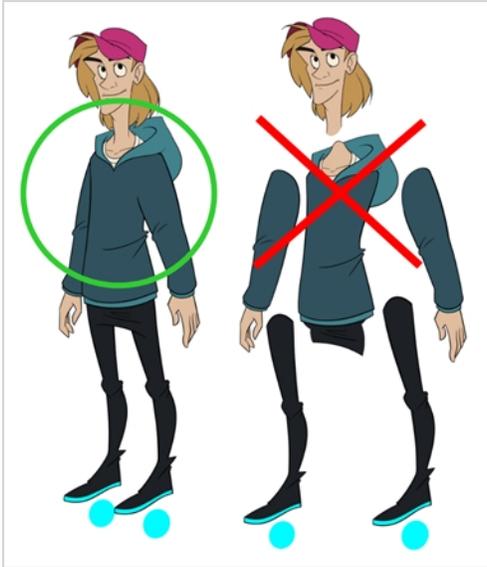


To avoid problems such as having the head stretched by the neck deformers or a hand modified by the body deformers, you can use the Kinematic Output node to assemble your pieces without propagating the deformations down the hierarchy chains.

The Kinematic Output node lets you hook a separate element that you want to be linked to the deformation chain but not be part of the deformation, such as a hand to an arm or an arm to the body. These elements will follow the movement of the chain just like a regular cut-out character hierarchy piece without being influenced by the deformation of the arm. If you don't use the Kinematic Output, the piece's pivot will not follow the deformation.

When building a cut-out puppet with deformations, each part controlled by a deformation chain will automatically rotate from the chain root point, which acts like a pivot. Because it is unlikely that every piece of your character will be rigged with a deformation chain, you must set pivot points for the pieces that are not using deformations—see .
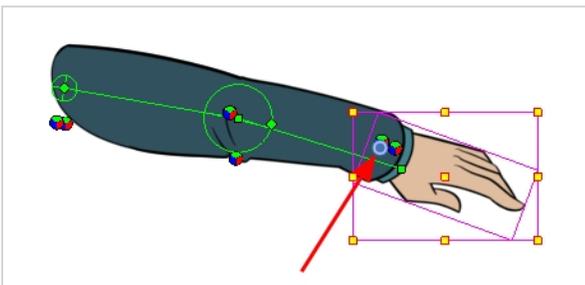


# Assembling Guidelines

When assembling a puppet with deformers, there are some guidelines to keep in mind:

- You cannot parent deformers directly because deformers are not designed to be used on other deformers. To assemble deformers, you must insert a Kinematic Output node.



- Your peg must be placed above the deformer.

# Assembling in the Timeline View

In order to assemble the rigged parts of your character in the Timeline view, you need to use a Kinematic Output layer.

**How to assemble a puppet using the Kinematic Output node in the Timeline view**

1. Select the element to attach to the Kinematic Output node, such as the hand or head peg.
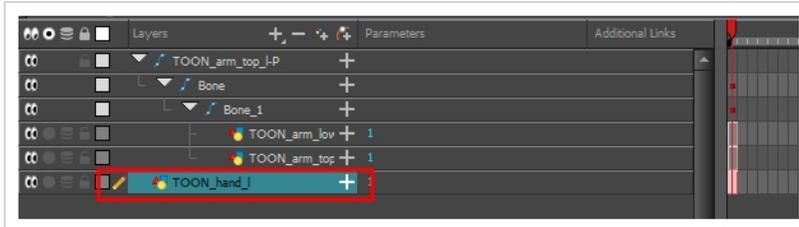


2. From the top menu, select **Insert > Kinematic Output**.

   The node appears in the Timeline view as a parent of your selection.
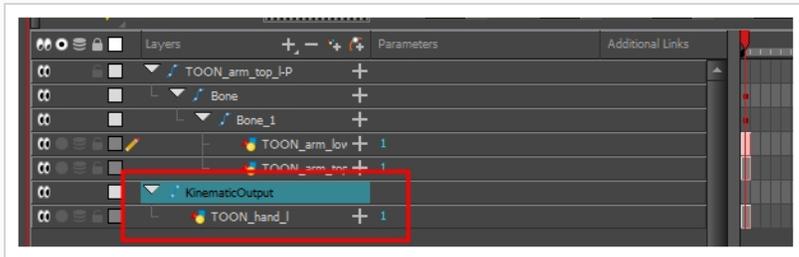


3. In the Timeline view, drag and drop the Kinematic Output layer ONTO the deformation layer you want your limb or piece to follow. For example, onto the neck deformer if you want your head to follow it without being deformed or onto the arm deformer if you want your hand to follow.
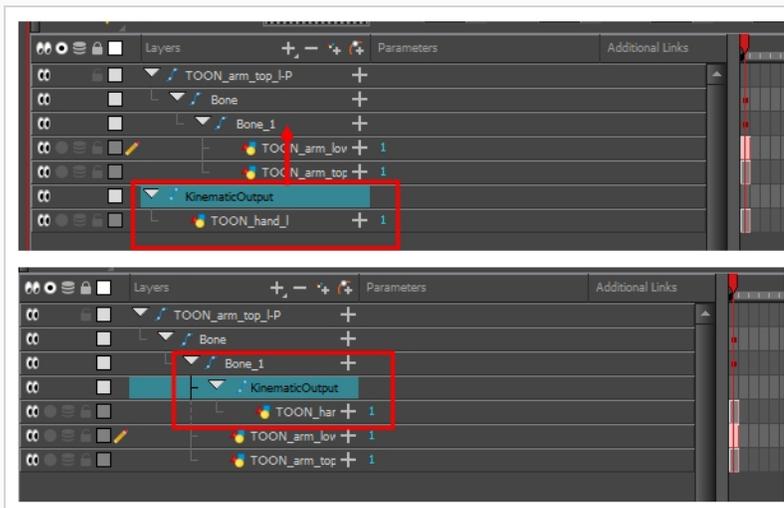
- If your pieces are no longer ordered properly, use the Z-nudging feature to reorder them—see *About Ordering Layers* on page 791.

- It's good practice to rename the Kinematic Output layer to reflect which deformer it is assigned to as the Timeline view can become very large and layers can be positioned far apart. Select the Kinematic Output node and in the Layer Properties window, rename the node. You can also double-click on the layer's name.
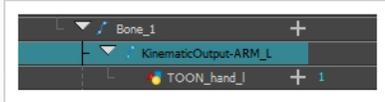
# Displaying Selected Deformation Controls

Harmony lets you control which deformers are displayed in the Camera view independently from the current selection. When you create a deformation chain, its deformation controls are displayed in the Camera view. However, if you select an existing deformer or a layer that's connected to existing deformers, its deformation controls won't display right away. Likewise, deselecting a deformation chain will not hide its deformation controls. Before you can animate or modify an existing deformation chain, you must manually display it.

### How to display deformation controls

1. Do one of the following:

   - In the Camera or Timeline view, select one of the drawing elements linked to the deformation chain you want to display.

   - In the Timeline view, select any part of the deformation chain you want to display.

2. In the Deformation toolbar, click the Show the Selected Deformation Chain and Hide All Others button.

   The selected deformation controls appear in the Camera view and all the others are hidden.

> **NOTE**
>
> The Show the Selected Deformation Chain and Hide All Others button will display all deformation chains that are in the hierarchy of the selection. For example, if the master peg of a character model is selected, all of its deformation chains will be displayed. Likewise, if multiple layers linked with different deformation chains are selected, all of their deformation chains will be displayed.

# Hiding Deformation Controls

If you no longer want to animate or modify deformers, you can hide the deformation controls so that they no longer clutter the Camera view.

**How to hide deformation controls**

1. Do one of the following:

   - Click in the negative space of the Camera view, Timeline view or Node view to discard the current selection, then click on the Show Selected Deformation Chain and Hide All Others ⛫ button in the Deformation toolbar.

   - Select a layer that is not linked to any deformer, then click the Show the Selected Deformation Chain and Hide All Others ⛫ button in the deformation toolbar.

   - In the Camera toolbar, click the Hide All Controls ⚬ button.

   - From the top menu, select **View > Hide All Controls.**

   - Press Shift + C.

# About Deformation Animation

Just like with animating pegs and drawing layers, you can animate your deformers by creating keyframes on their corresponding layers in the Timeline. Animating deformers works exactly like making modifications to a deformer, except it requires using the Transform ⬚ tool instead of the Rigging tool. When the Transform tool is selected, deformation controls in the Camera view display in green, which means they are in animation mode, whereas when the Rigging tool is selected, they display in red, meaning they are in rigging mode.

# Animating Bone and Game Bone Deformers

You can add keyframes to deformers reposition their deformation controls to create animated sequences.

## How to animate Bone and Game Bone deformations

1. In the Timeline view, collapse your character using the Expand/Collapse arrow.



2. Select the first frame of the scene.



3. To ensure your model doesn't disappear after 1 frame, open the Extend Exposure dialog by doing one of the following:

   - Right-click on the first frame in the Timeline and select **Extend Exposure**.

   - Press F5.

4. In the Extend Exposure dialog, type in the amount of frames in your scene and confirm. This will make your model exposed (visible) throughout your whole scene.

5. Now, we will make your character's first pose. First, make sure there is a keyframe on the first frame of every layer of the model. This ensures that when you make the second pose later, your first pose will not be affected. To do this do one of the following:

   - In the Timeline toolbar, click the Add Keyframe  button.

   - Right-click and select **Add Keyframe.**

   - Press F6.

   A keyframe is added on the current frame.
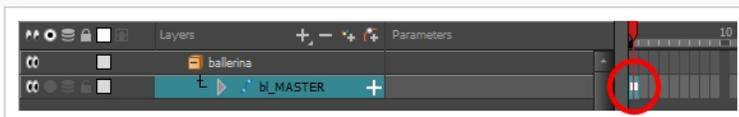


6. In the Tools toolbar, select the Transform  tool or press Shift + T.

7. In the Tools toolbar, enable the Animate  mode. This allows the Transform tool to affect the position and size of a layer at the current keyframe only, whereas it would otherwise affect the layer's position and size throughout the whole scene.

8. Do one of the following:

- In the Camera or Timeline view, select one of the drawing elements linked to the deformation chain you want to display.

- In the Timeline view, select any part of the deformation chain you want to display.

9. In the Deformation toolbar, click the Show the Selected Deformation Chain and Hide All Others button.

   The selected deformation controls appear in the Camera view and all the others are hidden.

10. In the Camera view, do the following:

- Rotate the first bone to rotate the limb.



- Rotate the subsequent bones to bend the limb.



- Use the root control to reposition (offset) the entire chain.

- Use the control points to reposition the articulations. This will elongate, shorten, or change the direction of the bone and offset the subsequent children.
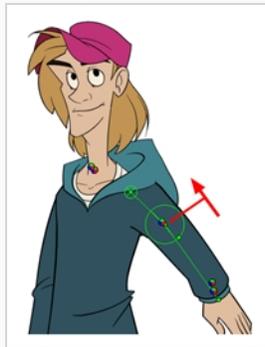


11. In the Timeline view, go to the frame on which you want to set the next key pose.

12. Add a keyframe on the current frame by doing one of the following:

   - In the Timeline toolbar, click the Add Keyframe ⊕KF button.

   - Right-click and select **Add Keyframe.**

   - Press F6.

13. Transform your deformation chain's points to make your new key pose.

14. Repeat the previous steps until your animation is complete.

> **NOTE**
>
> When manipulating the articulation of a Bone or Game Bone deformer, you can hold the Alt key to lock the bone's angle and only shorten or elongate the bone. You can also hold the Ctrl (Windows/Linux) or ⌘ (macOS) key to break the articulation off its chain and make it into a new, separate deformer chain.

**NOTE**

You can also manipulate the deformer by typing values directly in the Layer Properties of the deformation effect nodes.



| Bone layer properties | Game Bone layer properties (no Bias) |

# Resetting a Deformer to its Resting Position

If you need to reset the current pose of the entire chain for the entire scene, you have the possibility to reset the deformation chain to the resting position on the current frame, or on all frames.

### How to reset the position of deformers from the Camera view

1. In the Timeline view, move the playhead to the frame where you want to reset the puppet to the resting position.

2. Do one of the following:

   - In the Camera or Timeline view, select one of the drawing elements linked to the deformation chain you want to display.

   - In the Timeline view, select any part of the deformation chain you want to display.

3. In the Deformation toolbar, click the Show the Selected Deformation Chain and Hide All Others ⚙ button.

   The selected deformation controls appear in the Camera view and all the others are hidden.

4. In the Camera view, select the deformation point you want to reset. To select several deformation point, hold Ctrl and click on each point you want to reset to add them to the selection.

5. In the Deformation toolbar, click on the Reset Current Keyframe ⚙ button to reset the position of the selected chain on the current frame.

### How to reset the position of deformers from the Timeline view

1. In the Timeline view, move the playhead to the frame where you want to reset the puppet to the resting position.

2. In the Timeline view, select the deformationlayer(s) you want to reset.

3. In the Deformation toolbar, click on the Reset Current Keyframe ⚙ button to reset the position of the selected chain on the current frame.

> 💡 **TIP**
>
> To completely reset the position and remove all keyframes on all frames, click on the Reset All Keyframes ⚙ button.

# Disabling Deformation Preview

When adding new drawings while animating, you may need to see the reference drawings as their original resting position as it may be quite difficult to draw on a deformed canvas. You have the possibility to disable deformations in Harmony so that all drawings appear in their resting position.

> **NOTE**
>
> Disabling deformations is only a display mode. Although drawings will not appear deformed in the Camera view, even in Render View mode, they will still be deformed in the rendered images.

**How to enable or disable deformation preview**

1. In the Deformation toolbar, click on the Enable Deformations button to toggle deformation preview.

# Transferring Curve Positions of Legacy Deformations

You can Lets you transfer all of the information from first curve deformer to its parent Offset node. This is useful for a legacy scene created using Curve deformations where the Offset's position has been placed far away from the drawing to make sure it doesn't affect the drawing's deformation. You can bring back the offset and give it the first curve's position. The Envelope deformation lets you animate the offset of each curve separately. The offset no longer needs to be placed far away.
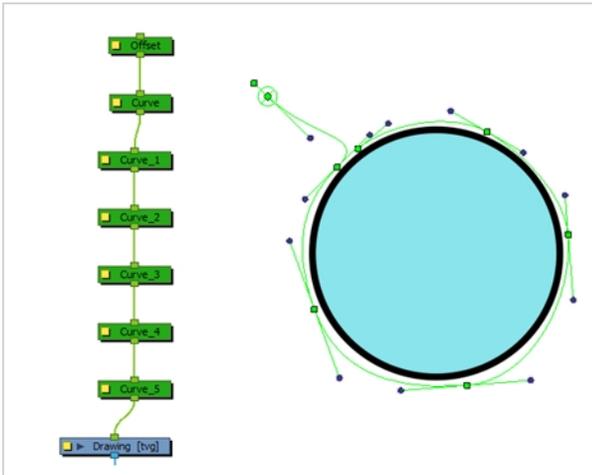


### How to transfer a curve's position to its parent offset

1. In the Node view, select the root Offset and the first curve.
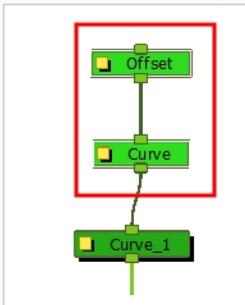


2. From the top menu, select **Animation > Deformation > Set Curves and Offsets Independent from Parent**.

3. In the Node view, select only the first curve node.
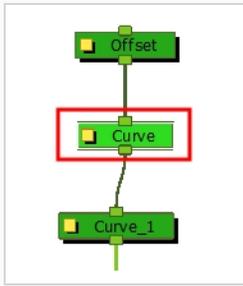
4. From the top menu, select **Animation > Deformation > Transfer Curve Values to Offset**.

   In the Node view, the first Curve node is disabled and the values are transferred to the parent Offset node.
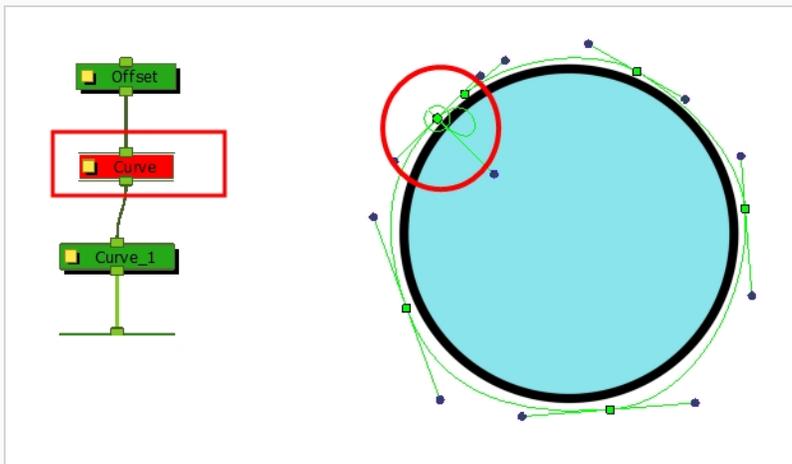
# Converting Legacy Deformation Chains

You can also convert a legacy deformation rig to the new format using a script. You can select which chain you want to transform. Certain legacy nodes will remain in the structure to make sure the integrity of your original puppet is maintained.
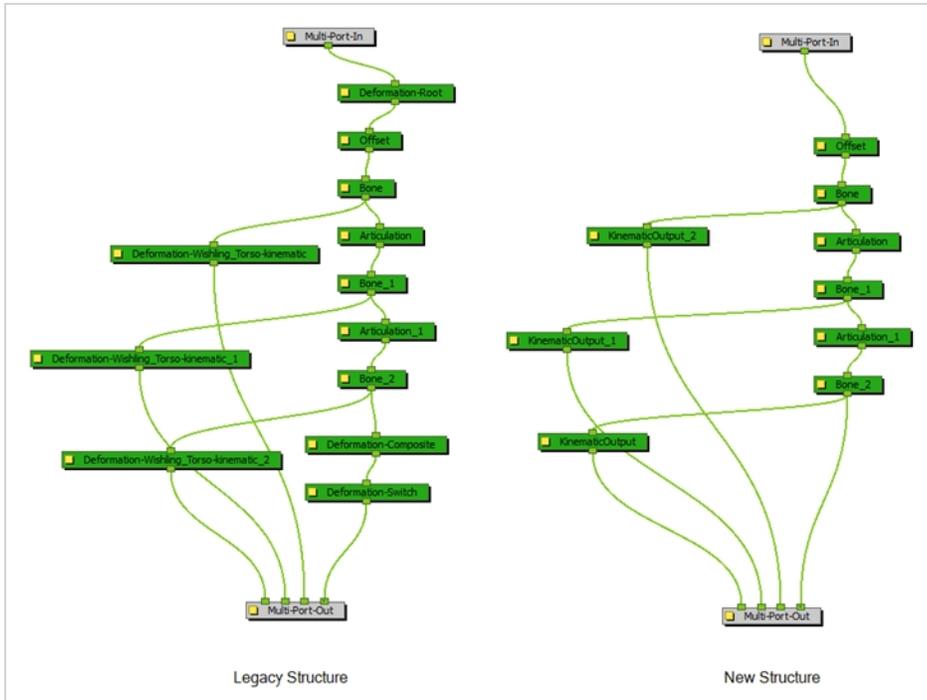


## How to convert legacy deformation chains to the new structure

1. In the Node or Timeline view, select the deformation group containing the chain you want to convert to the new structure.

2. In the Scripting toolbar, click on **TB_ConvertLegacyDeformation**. If the script is not available in the toolbar, you can load it.

   - In the Scripting toolbar, click on Manage Scripts

   - In the Script Manager dialog, in the File column, select the **TB_CovertLegacyDeformation.js** script. If you cannot find the script in the list (most likely due to a software upgrade installation), you can load the script through the Script Editor view from the default resources folder—see Importing Scripts in the Scripting guide.

   - In the Functions column, select **TB_ConvertLegacyDeformation**.

   - Click the Right Arrow button to move the function to the Scripting toolbar.
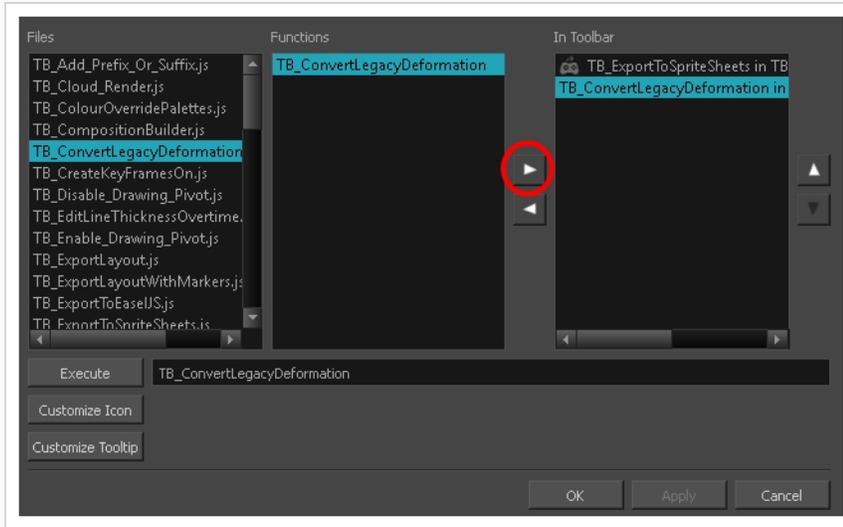
- Click **OK**.

The legacy chain is converted.

# Chapter 12: Staging



Setting up your scene can be compared to building a set for a television show. This is the point when you position each scene element such as the camera frame, the background elements and the characters.

To learn how to position and animate your camera, see Cameras on page 1049.

# About Layer Position



Setting up the scene also involves positioning the different scene elements within the camera frame.

At this time, the elements are set to a static position. See Motion Paths on page 875 to learn how to animate the elements and the camera.

# About the Animate Mode

T-HFND-008-001

The Animate mode records the position, rotation, scale, skew, etc. of objects as keyframes in the Timeline view. Turn off the Animate mode to reposition objects for the entire scene. When the Animate mode is disabled, keyframes are not created when an object's parameters change.

When positioning elements, make sure the Animate Mode is turned off, or it will create a keyframe on your drawing layer. The animate mode is used to animate layers over time.



Animate mode is on.    Animate mode is off.
(Pushed in)

### How to turn the Animate mode on or off

1. In the Tools toolbar, click the Animate 🏃 button or select **Animation > Animate**.

# Selecting Layers

There are different ways to select the layers you want to reposition.

You can select your elements directly in the Camera view using the Transform tool. When using this tool, its properties and options appear in the Tool Properties view. Always make sure that the Peg Selection Mode option in the Tool Properties view is disabled or it will limit the selection to pegs only.

### How to select a layer in the Camera view

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Tool Properties view, make sure that the Peg Selection Mode 🖈 is deselected.

3. In the Camera view, click on the element to be repositioned. You can select more than one element at a time. Hold down Shift while clicking on the elements to be selected.

   The corresponding layers and columns are highlighted in the Timeline and Xsheet views.

### How to select from the Timeline or Xsheet view

- In the Timeline view, click the layer corresponding to the element you want to reposition.

- In the Xsheet view, click the column header corresponding to the element you want to reposition.

   The selected element is highlighted in the Camera view.

### How to select non-adjacent elements in the Timeline or Xsheet view

- In the Timeline view, hold down Ctrl (Windows/Linux) or ⌘ (macOS) and click on any layers that you would like to add to the selection.

- In the Xsheet view, hold down Ctrl (Windows/Linux) or ⌘ (macOS) and click on any columns that you would like to add to the selection.

   The non-adjacent, selected layers and columns are highlighted in the Timeline and Xsheet views.

### How to select all elements within a group in the Timeline view

1. With a group collapsed or expanded, hold down Alt and click on the group in the Timeline view.
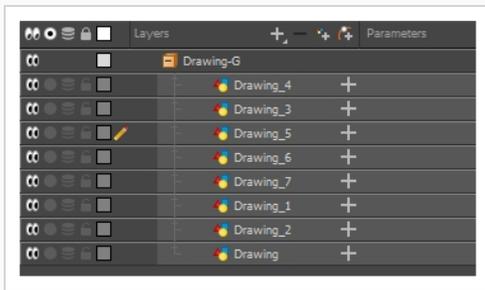
All elements contained within the group are selected.
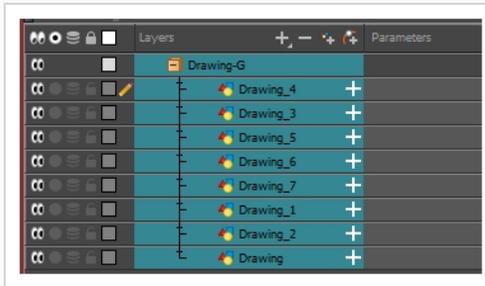
# Setting Bounding Box Styles

You can change the display style of selected elements to a bounding box style. This removes the default overlay highlight and leaves only the bounding box around the selected element.
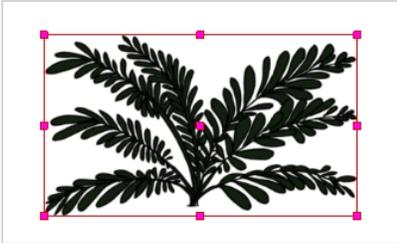


## How to set the bounding box selection style

1. In the Camera view bottom toolbar, click the BBox Selection Style  button.

# Centering on Selections

When you have many layers in the Timeline view, you may find it hard to locate which one is selected. You can use the Centre on Selection feature to display the selected object's layer in the Timeline view.

**How to center on the selected layer in the Timeline view**

1. In the Camera view, select a layer.

2. Do one of the following:

    - From the Timeline view menu, select **View > Centre on Selection** or press O.

    - In the Timeline view toolbar, click the Centre on Selection ⊖ button.

# About the Transform Tool

Using the Transform tool, you can easily reposition, scale, rotate and even skew layers directly in the Camera view.

When positioning a drawing layer using the Transform tool, always make sure the Peg Selection Mode ⚘ is deselected in the Tool Properties view. Otherwise, it will limit the selection to pegs in the Camera view.



The Transform tool can affect the Position, Scale, Rotation, and Skew parameters, but not the Pivot parameter.

The Rotation tool only affects the Rotation and Pivot parameters.
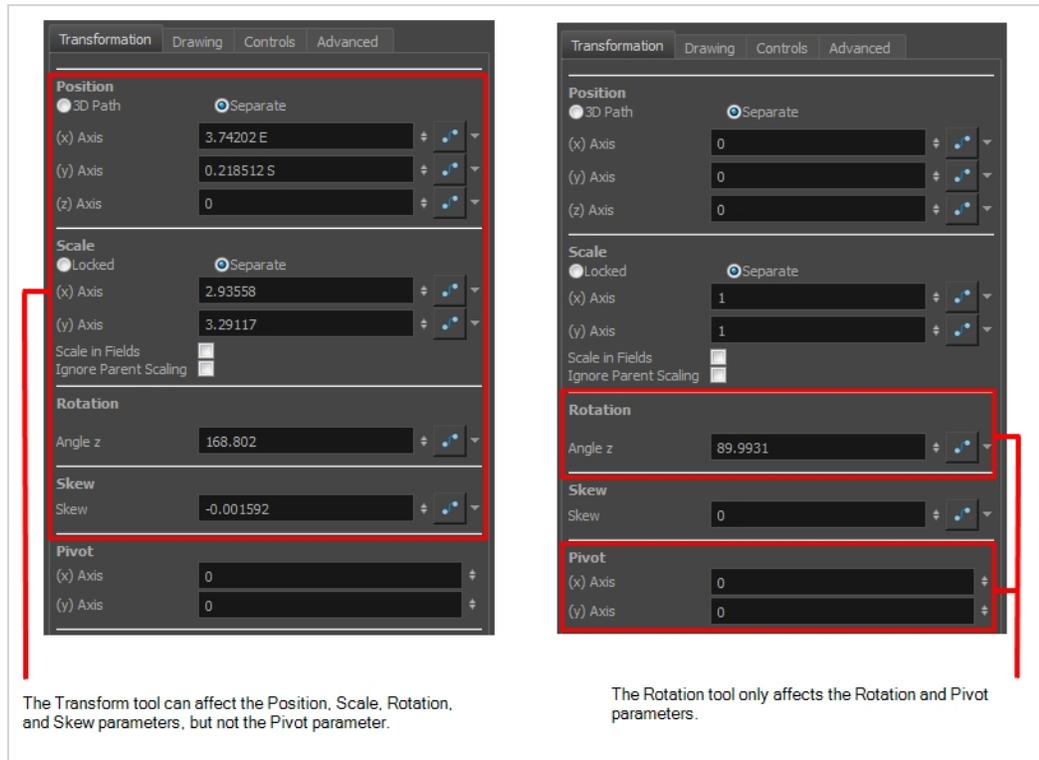
There are two different options you can use when you want to flip your element.

The Flip Horizontal and Flip Vertical options let you flip a drawing layer along the Camera view's horizontal and vertical axis.

Once your drawing layer is rotated, the original horizontal and vertical axes change. The Flip Scale X and Flip Scale Y will perform a flip on your drawing layer following its original axis.

- The Flip Horizontal command flips the layer following the Camera view X-axis.

- The Flip Scale X command uses the original X-axis of the layer and flips the element following it.

The Flip Horizontal command flips your drawing based on its position in the Camera view and its pivot.

Flip Horizontal

Flip Scale X

The Flip Scale X command remembers the original X-axis of the layer and flips the element following it.
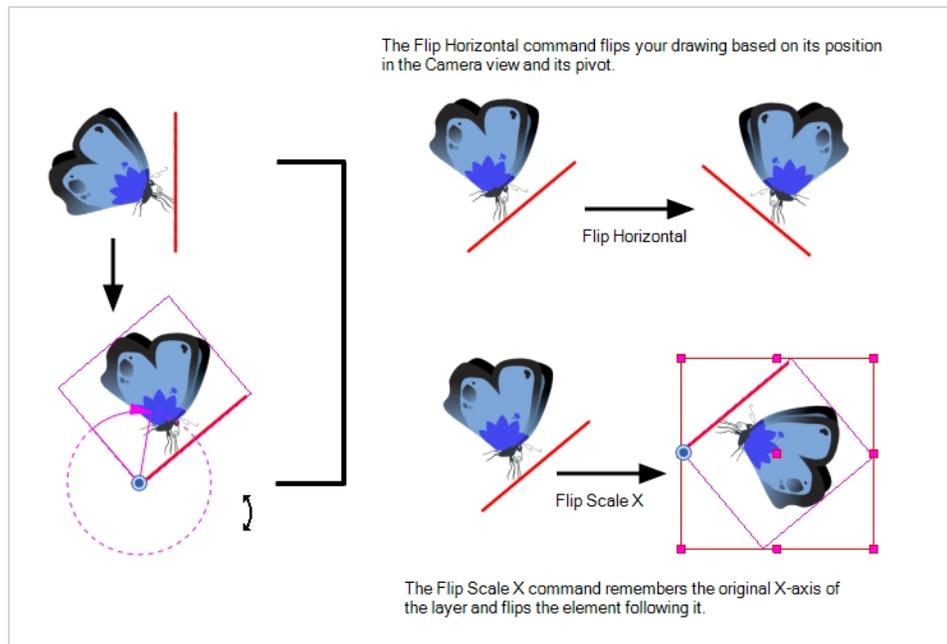
# Repositioning Temporary Pivots with the Transform Tool

Transformations, such as rotation, scale, skew and flip are made relative to the pivot point position. You can temporarily reposition the pivot point for each transformation using the Transform tool. Note that the pivot is only moved temporarily. When animating the position, the interpolation is calculated from the permanent pivot position—see *About Advanced Animation Tools* on page 1002.

### How to temporarily reposition the pivot point

1. In the Tools toolbar, select the Transform ⬚ tool.

2. In the Tool Properties view, make sure the Peg Selection Mode 🐾 is disabled.

3. In the Camera view, select your element.

    The pivot point appears at the center of the scene space (coordinates 0, 0, 0), unless previously repositioned.
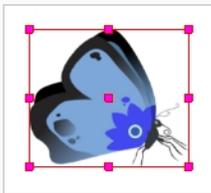
    

4. Click on the pivot point and drag it to a new position.

    This will be the new position of the pivot point for the current transformation. It will remain in this position as long as you do not deselect the drawing. Using the Transform tool to reposition your pivot will temporarily override the existing pivot point position until you complete the current transformation. Then it returns automatically to its original position.

    When you translate the pivot point using the Transform tool, the permanent pivot will appear as a ghost so you know where it is and also from where the animation will be interpolated when you create motion paths. The animation is always interpolated from the original pivot and not the temporary pivot.
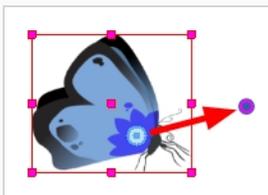
# Panning with the Transform Tool

You can pan (translate) a layer using the Transform tool.

### How to pan a layer using the Transform tool

1. In the Tools toolbar, disable the Animate ⚘ mode.

2. In the Tools toolbar, select the Transform ☐ tool or press Shift + T.

3. In the Tool Properties view, make sure the Peg Selection Mode ⬚ is deselected.

4. In the Camera view, select a drawing layer. If you want to select multiple layers, hold down Shift and click on each layer you wish to select.

5. Drag the selection to a new area.
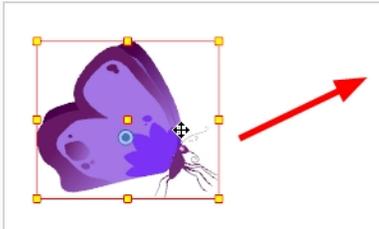
# Rotating with the Transform Tool

You can rotate a layer from its pivot using the Transform tool. You can temporarily reposition the pivot to rotate from a different point.

## How to rotate a layer using the Transform tool

1. In the Tools toolbar, disable the Animate ⚘ mode.

2. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

3. In the Tool Properties view, make sure the Peg Selection Mode 🏹 is deselected.

4. In the Camera view, select a drawing layer. If you want to select multiple layers, hold down Shift and click on each layer you wish to select.

5. Place the pointer outside of a corner of the bounding box, then click and drag to rotate.
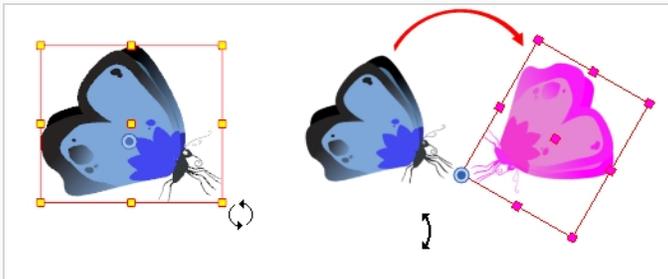


> **NOTE**
>
> You can display a rotation handle on the bounding box when transforming a layer. In the Preferences dialog box, select the Camera tab and then select the **Use Rotation Lever with Transformation Tools** option. This preference is off by default.
>
>
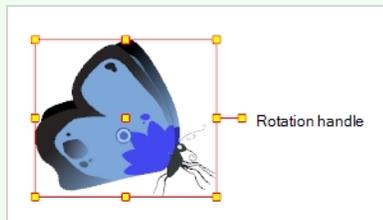
# Scaling with the Transform Tool

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You can scale a layer from its pivot using the Transform tool. You can temporarily reposition the pivot to scale from a different point.

### How to scale a layer using the Transform tool

1. In the Tools toolbar, disable the Animate ⚘ mode.

2. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

3. In the Tool Properties view, make sure the Peg Selection Mode ⬚ is deselected.

4. In the Camera view, select a drawing layer. If you want to select multiple layers, hold down Shift and click on each layer you wish to select.

5. Click an drag the top, side or corner control point.
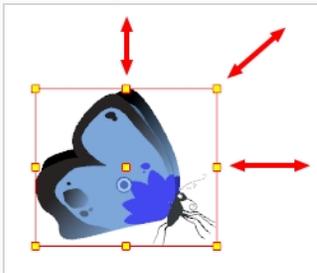


> **NOTE**
>
> When scaling your selection, you can hold down Shift to preserve the proportions between its width and height.

# Skewing with the Transform Tool

You can skew a layer from its pivot using the Transform tool. You can temporarily reposition the pivot to skew from a different point.

## How to skew a layer using the Transform tool

1. In the Tools toolbar, disable the Animate ⚡ mode.

2. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

3. In the Tool Properties view, make sure the Peg Selection Mode ⬚ is deselected.

4. In the Camera view, select a drawing layer. If you want to select multiple layers, hold down Shift and click on each layer you wish to select.

5. Place the pointer on the edge of the selection's bounding box, between two control points and drag sideways or up and down.



Original drawing    Cursor placed between control points and dragged upwards    Cursor placed between control points and dragged sideways
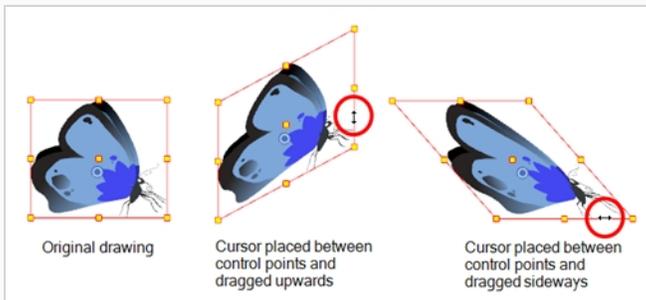
# Flipping with the Transform Tool

T-HFND-008-009

You can flip a layer using the Transform tool. There are two ways to flip.

- The Flip Horizontal command flips the layer following the Camera view X-axis.

- The Flip Scale X command uses the original X-axis of the layer and flips the element following it.

## How to flip a layer

1. In the Tools toolbar, disable the Animate ⚡ mode.

2. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

3. In the Tool Properties view, make sure the Peg Selection Mode ⟋ is deselected.

4. In the Camera view, use the Transform ⬚ tool to select a drawing layer to flip.

5. Do one of the following:

   - From the top menu, select **Animation > Flip > Flip Horizontal** or **Flip Vertical**.

   - In the Tool Properties view, click the Flip Horizontal 𝄃 and the Flip Vertical ⚡ buttons.

   - Press 4 or 5.
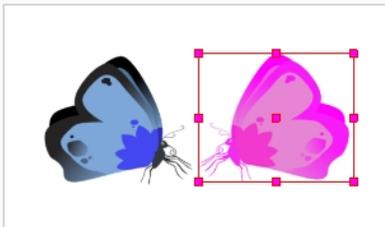


## How to flip an element following its original axis

1. In the Tools toolbar, disable the Animate ⚡ mode.

2. In the Tool Properties view, make sure the Peg Selection Mode ⟋ is deselected.

3. In the Camera view, use the Transform ⬚ tool to select an element that has already been transformed.

4. From the top menu, select **Animation > Flip > Flip Scale X** or **Flip Scale Y**.

# About Advanced Animation Tools

You can also use the advanced animation tools to position your layers. The difference between these tools and the Transform tool is that they modify only one parameter of the position such as the rotation or the scale as the Transform tool adjusts all parameters together.

You can find the advanced animation tools in the Advanced Animation Tools toolbar.
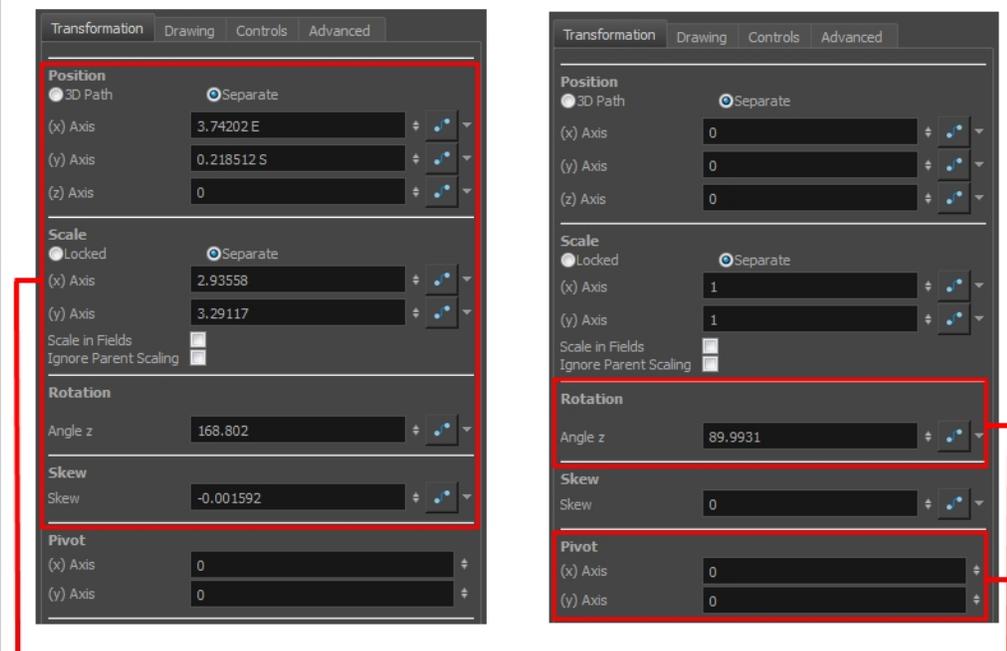


The Transform tool can affect the Position, Scale, Rotation, and Skew parameters, but not the Pivot parameter.

The Rotation tool only affects the Rotation and Pivot parameters.

# Repositioning Permanent Pivots

Transformations made on a drawing layer, such as rotation, scale, skew and flip, are made relative to the position of the drawing's pivot point. While making transformations using the Transform tool, you can drag and drop your selection's pivot. However, this has no permanent effect. It will only temporarily change the pivot's position to help you make transformations at the selected frame, but the actual pivot point of your drawing layer will remain the same. You can reposition a layer's pivot point permanently using the advanced animation tools.

### How to permanently reposition the pivot point

1. In the Advanced Animation toolbar, select the Translate ⬍, Rotate ⟳, Scale ⧉, or Skew ▱ tool.

2. In the Camera view, Ctrl + click (Windows/Linux) or ⌘ + click (macOS) to select your element.

   The pivot point appears in the Camera view.
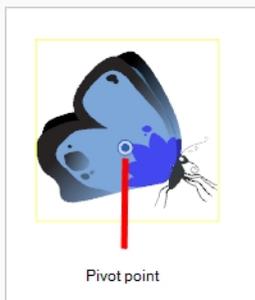
   

   Pivot point

3. Drag the pivot point to a new position.
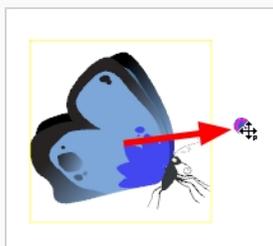
   

   > **NOTE**
   >
   > When you permanently move the pivot point of a layer that is already animated, all the transformations done on the layer on other keyframes will be recalculated according to the new pivot point's position. Therefore, your existing animation will look completely different, except at the current frame. It is recommended to always make sure your pivot point is at its ideal position before you start animating.

# Using the Translate Tool

You can use the Translate tool to pan your elements on the X, Y and Z axes.

### How to use the Translate tool

1. In the Tools toolbar, disable the Animate ⚴ mode.

2. Do one of the following:

   - From the top menu, select **Animation > Tools > Translate**.

   - In the Advanced Animation toolbar, click the Translate ⬌ tool.

   - Press Alt + 2.

3. In the Camera view, Ctrl + click (Windows/Linux) or ⌘ + click (macOS) to select your element.

4. Drag the selection to a new area.
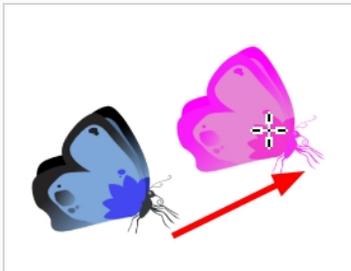
   

   - You can select multiple layers at the same time. Press Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (macOS) on each element to select them.

# Using the Rotate Tool

You can use the Rotate tool to rotate your objects on the x,y and z axis.

**How to use the Rotate tool**

1. In the Tools toolbar, disable the Animate 🏃 mode.

2. Do one of the following:

   - From the top menu, select **Animation > Tools > Rotate**.

   - In the Advanced Animation toolbar, click the Rotate ↻ tool.

   - Press the Alt + 3.

3. In the Camera view, Ctrl + click (Windows/Linux) or ⌘ + click (macOS) to select your element.

4. Rotate the layer.
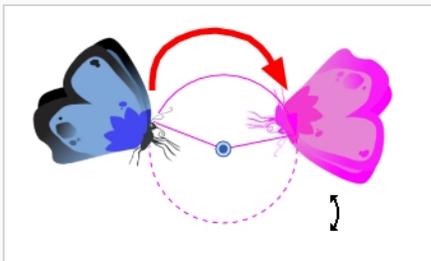


   - You can select multiple layers at the same time. Press Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (macOS) on each element to select them.

# Using the Scale Tool

You scan use the Scale tool to squash, stretch, and resize your elements.

### How to use the Scale tool

1. In the Tools toolbar, disable the Animate ⚙ mode.

2. Do one of the following:

    - From the top menu, select **Animation > Tools > Scale**.

    - In the Advanced Animation toolbar, click the Scale ⊡ tool.

    - Press Alt + 4.

3. In the Camera view, Ctrl + click (Windows/Linux) or ⌘ + click (macOS) to select your element.

4. Pull or push either on the side, top or corner control point. Hold down Shift to lock the selection's ratio when using the corner control points.
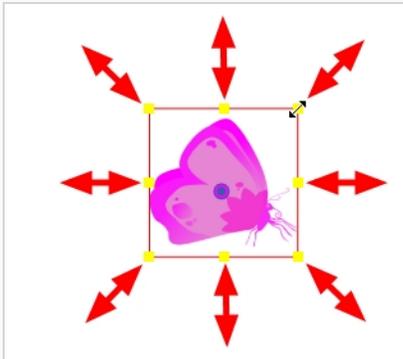
    

    - You can select multiple layers at the same time. Press Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (macOS) on each element to select them.

# Using the Skew Tool

You can use the Skew tool to distort your elements on the x and y axis.

**How to use the Skew tool**

1. In the Tools toolbar, disable the Animate ⚛ mode.

2. Do one of the following:

   - Select **Animation > Tools > Skew**.

   - In the Advanced Animation toolbar, click the Skew ▱ tool.

   - Press Alt + 5.

3. In the Camera view, Ctrl + click (Windows/Linux) or ⌘ + click (macOS) on the element to select it and drag a side of the bounding box up, down or sideways.
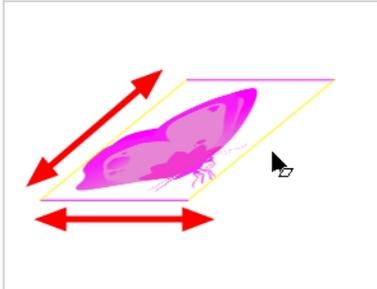
   

   - You can select multiple layers at the same time. Press Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (macOS) on each element to select them.

# About the Layer Properties View

T-HFND-008-011

Each layer has a series of parameters that you can modify to adjust an element's position. You can access these parameters in the Layer Properties view. In this view, you can type in a value instead of moving the object in the Camera view. These values can also be animated over time.

You can also access a layer's parameters in the Timeline view. Click on the Expand Parameters ✚ button.
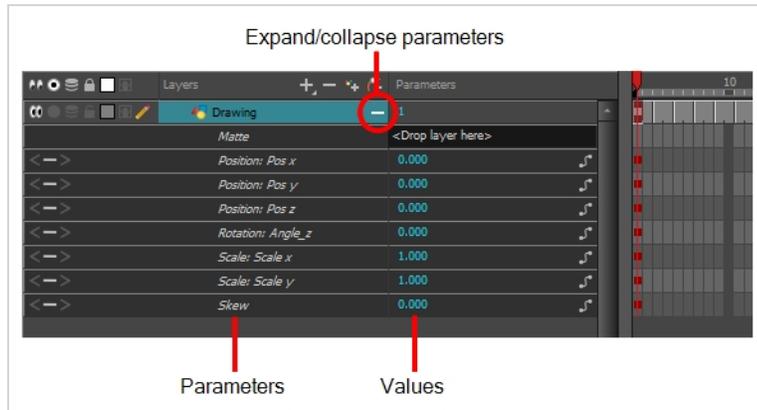


It is important to understand the coordinate values in Harmony, which is based on the origins of animation. In traditional animation, a scene's size and camera motion are calculated in fields. A field has a 4:3 ratio and measures 0.5 inches (12.7 mm) in width. A specific grid has been created for this purpose known as a *field chart*. Harmony uses this unit of measurement as its coordinate system.



A field chart uses the cardinal directions. The X axis is the east-west (left-right) direction, the Y axis is the north-south (up-down) direction and the Z axis is the forward-backward direction.

In Harmony, a drawing's pivot is located at the centre of the field chart, regardless where your drawing has been drawn on the page. Your drawing is the entire sheet of paper, not only the drawing strokes you have drawn on the page. This allows scanned drawings, imported images and paperless drawings to be properly registered together.

If you want to move your drawing in the upper-left region of the camera frame, you would type in something like the following:

- X Axis: -4 or 4W (4 West)

- Y Axis: 5 or 5N (5 North)

If you want to move your drawing in the lower-right region of the camera frame, you would type in something like the following:

- X Axis: 3 or 3E (3 East)

- Y Axis: -2 or 2S (2 South)

# Displaying the Layer Properties View

You can display the Layer Properties view in several ways.

**How to display layer parameters**

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.

    The properties display—see Element/Drawing Node in the Reference guide .
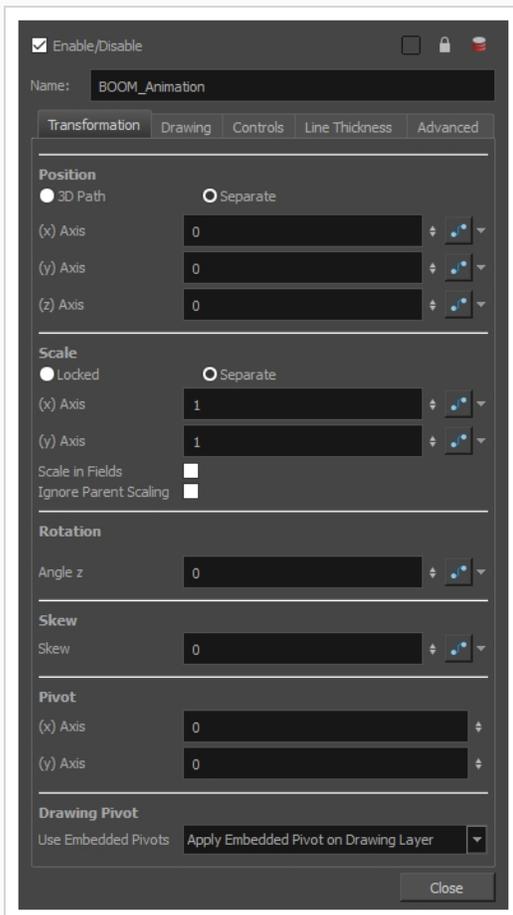
# Positioning Elements with the Layer Properties View

You can type values to position your elements using exact coordinates.

## How to position an element with coordinates

1.  In the Timeline view, select a layer.

2.  In the Position section, select one of the following options:

    - **Separate** to independently edit the different coordinate fields. Continue to step 3.

    - **3D Path** to use a 3D path function when animating your element. Continue to step 4.
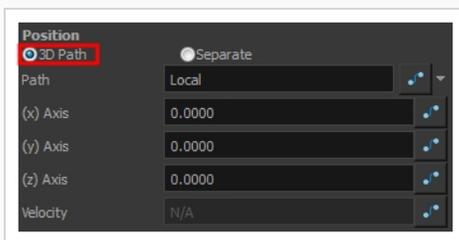
3.  In the (x), (y) and (z) Axis fields, type in a new coordinates corresponding to the desired position—see *About Multiplane* on page 1025.

    As you type in values, the element's position is updated in the Camera view.

4.  Use the Function 🞄 buttons to create function curves and add keyframes to animate the parameter.

5.  In the Scale section, select one of the following options:

    - **Locked** to resizes the element uniformly in three directions.

    - **Separate** to resize the element in any direction without affecting the others.
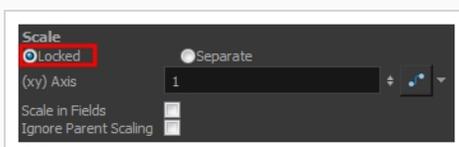
6. In the (x) and (y) Axis fields, type in a new coordinates corresponding to the desired position

7. Use the Function ⌢ buttons to create function curves and add keyframes to animate the parameter.

8. In the Rotation section, Angle z field, type in a degree value for the rotation angle. Note that you can enter values greater than 360 and -360 degrees. If you enter 720, the object will rotate twice.



9. In the Skew field, type in a degree value between -90 to 90 for the skew angle.



10. In the Pivot section, type in the desired coordinate value to reposition the transformation pivot. This will change the permanent position of the pivot.



For detailed information on the Layer Properties parameters, see the Reference guide .

# About Selection Locking

You can prevent correctly positioned layers from being selected in the Camera view by locking them in the Timeline view. This is useful for making a multiple selection inside the Camera view while avoiding to select them. Once a layer has been locked, its locked state will be remembered the next time you open a saved project.

You can perform five types of locking actions on your layers:

- The Lock 🔒 option lets you lock Locks one or a multiple selection of layers.

- The Unlock 🔓 button lets you unlock Unlocks one or a multiple selection of locked layers.

- The Lock All 🔒 option lets you lock Locks all the layers in the Timeline view.

- The Unlock All 🔓 button lets you unlock Unlocks all the layers in the Timeline view.

- The Lock All Others🔒 button lets you lock Locks every layer except the selected ones.

# Locking Layers

You can perform five types of locking actions on your layers. You will still be able to modify locked layers in the Timeline and Layer Properties views, but you will not be able to select them through the Camera view.

## How to lock a layer or a selection of layers

1.  In the Timeline view, select one or more layers.
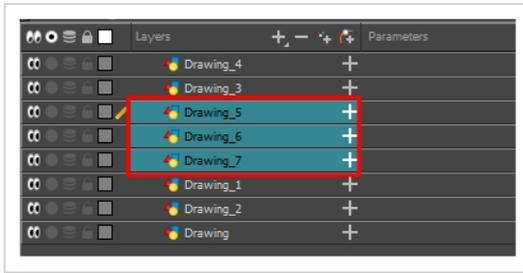
    

2.  Do one of the following:

    - From the top menu, select **Animation > Lock > Lock**.

    - Click one of the selected layer's Lock 🔓 icon.

    - Press Ctrl + Alt + L (Windows/Linux) or ⌘ + Alt + L (macOS).

    All selected layers are locked.
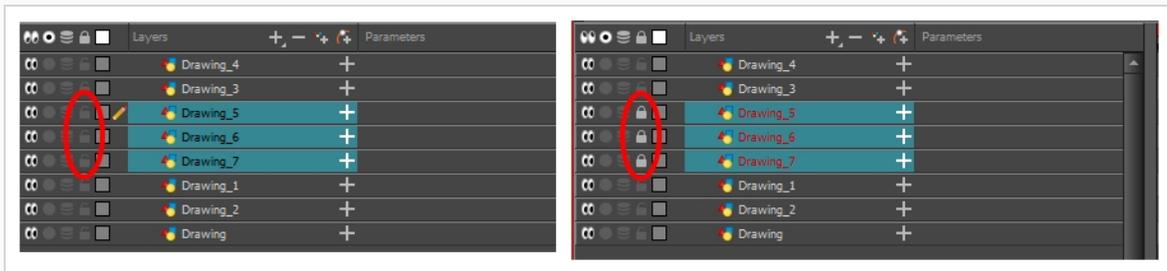
    

## How to unlock a locked layer or a selection of locked layers

1.  In the Timeline view, select one or more locked layers.
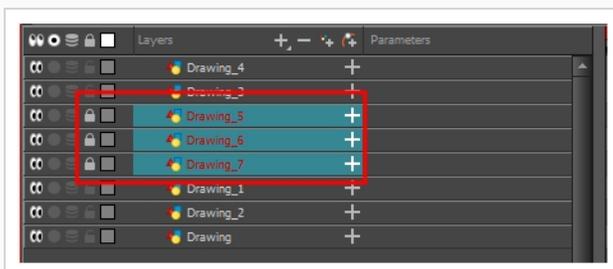
2. Do one of the following:

- From the top menu, select **Animation > Lock > Unlock**.

- Click a selected layer's Lock 🔓 icon.

- Press Ctrl + Shift + K (Windows/Linux) or ⌘ + Shift + K (macOS).

All selected layers are unlocked.
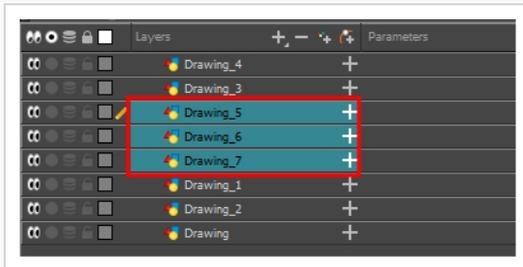


## How to lock all layers

1. Do one of the following:

- From the top menu, select **Animation > Lock > Lock All**.

- In the Timeline view, select all layers and click Lock 🔓 icon of a selected layer.

- Press Ctrl + Shift + L (Windows/Linux) or ⌘ + Shift + L (macOS).

All layers are locked.
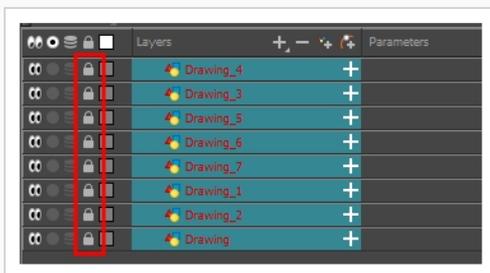


## How to unlock all layers

1. Do one of the following:

- From the top menu, select **Animation > Lock > Unlock All**.

- In the Timeline view, select all layers (locked) and click Lock 🔒 icon of a selected layer.

- Press Ctrl + Alt + Shift + L (Windows/Linux) or ⌘ + Alt + Shift + L (macOS).

All layers are unlocked.
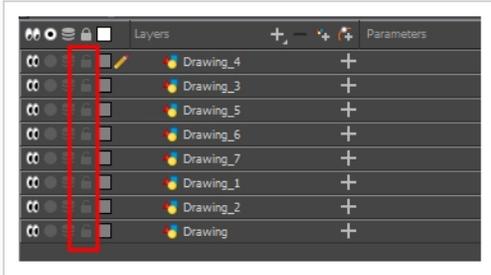


## How to lock all other layers

1. In the Timeline view, select the layers you do not want to lock.
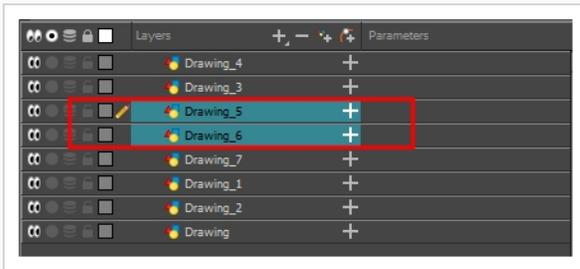


2. Do one of the following:

  - From the top menu, select **Animation > Lock > Lock All Others**.

  - Press Ctrl + Alt + Shift + O (Windows/Linux) or ⌘ + Alt + Shift + O (macOS).

All layers are locked except the selected ones.



## How to display locked drawings as outline

1. In the Camera View bottom toolbar, enabled the Outline Locked Drawings 🔒 option.

2. You can also set this option as a permanent preference. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (**macOS**).

3. In the Preferences dialog box, select the **Camera** tab.

4. In the Tools section, select the **Show Locked Drawings As Outlines** option.

# About Auto-Apply

When you modify a parameter in a property dialog box, Automatically applies changes you make to a property window or dialog box. Harmony applies the modification automatically and displays the result in the Camera view. When working on a heavy scene, it is useful to turn off this option.If you want to always work in Auto-Apply mode, you can deselect the Auto-Apply option in the Preferences dialog box (General tab). Then, each time you start Harmony, the Auto-Apply mode will be off. You must click the Apply button to see any modifications.

When you disable this function, Apply and OK buttons at added at the bottom of the Layer Properties view and any other parameter dialog boxes.

- Click **Apply** to apply the current change.

- Click **OK** to apply the current change and close the Layer Properties.
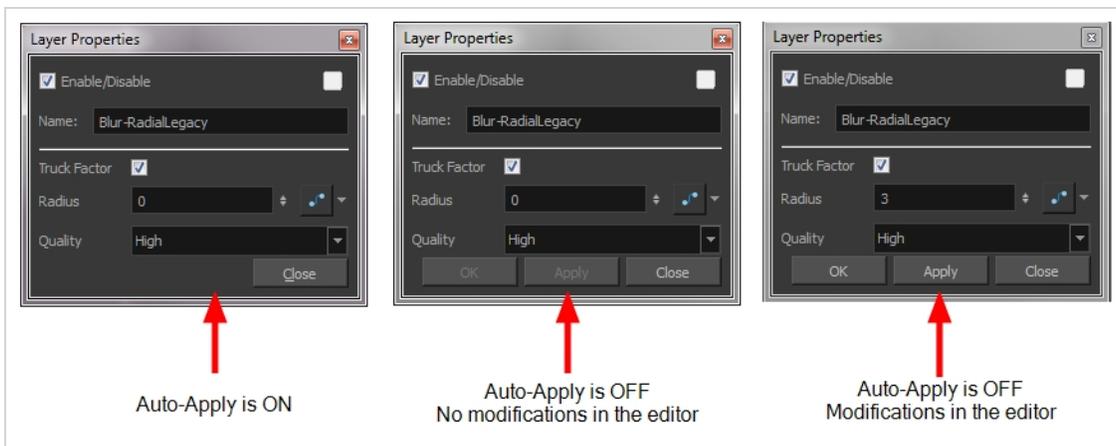
# Setting the Auto-Apply Option

If you want to always work in Auto-Apply mode, you can deselect the Auto-Apply option in the Preferences dialog box (General tab). Then, each time you start Harmony, the Auto-Apply mode will be off. You must click the Apply button to see any modifications.

### How to enable or disable the Auto Apply option

- From the top menu, select **Edit > Auto-Apply**.

### How to enable or disable the Auto-Apply preference

1. In the top menu, select **Edit > Preferences** (Windows/Linux) or **Harmony Advanced > Preferences** (macOS).

   The Preferences dialog box opens.

2. In the Preferences dialog box, select the **General** tab.

3. In the Options section, select or deselect the **Auto Apply** option.

# Resetting Transformations

You can easily reset layers to their original position. With the Reset command, you can return the value of a selected element to the initial value of the active tool. For example, if the Rotate ⟳ tool is active, the transformation angle will be reset to 0 and if the Transform ⬚ tool is active, the all transformation parameters values will be reset.

When selecting elements in the Camera view using the Transform tool, always make sure that the Peg Selection Mode ⟋ is deselected in the Tool Properties view. Otherwise, it will limit the selection to pegs only.

### How to reset the transformation on the current frame

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset** or press R. This will reset the current frame if keyframes were created.

   The selected layer(s) return to their original position.

### How to reset all transformations on the current frame

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset All** or press Shift + R.

   The selected layer(s) return to their original position.

### How to reset all transformation values except Z

1. In the Tools toolbar, select the Transform ⬚ tool or any Advanced Animation ⟳ tool.

2. In the Timeline view or directly in the Camera view, select the drawing layer(s) to reset.

3. From the top menu, select **Animation > Reset All Except Z**.

   All values except for those set on the Z axis are reset.

### How to completely reset the layers' parameters

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

2. In the Timeline or Camera view, select one or more drawing layers to reset.

3. Do one of the following:

   - Right-click the selected layers and select **Clear All Values**. This will remove all keyframes and reset all values for the entire layer.

   - In the Timeline View menu, select **Layers > Clear All Values**. This will remove all keyframes and reset all values for the entire layer.

   The selected layers return to their original position.

# About Opacity and Transparency

Harmony has two ways of adding transparency to your scene:

- The **Opacity** parameter is a parameter each drawing layer. It is set to 100% by default. By lowering it, you can make an individual layer appear more transparent.

- The **Transparency** effect is an effect layer that can be attached to individual layers or to a group. It has a Transparency parameter that is set to 50 by default. The higher it is, the more transparent the layer or group it is attached to will appear.

It is important to know when to use either approach. For example, to make a character composed of several layers transparent, it is preferable to put the character's layers in a group and add a Transparency effect to the group, as reducing the opacity of individual layers will make their overlapping parts visible—see *About Groups on page 1042*.



Reduced opacity on indivudual layers          Transparency effect applied to character rig
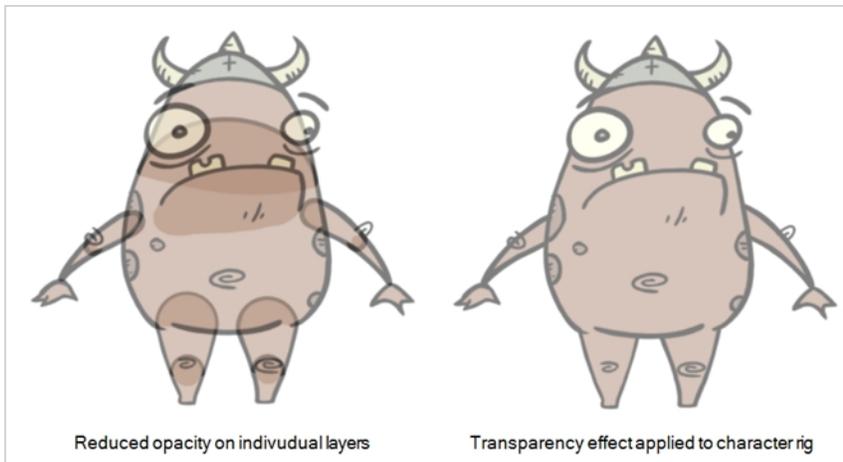
If you need to animate the transparency of elements in your scene, it is possible to animate the opacity of individual layers by creating a function for the layer's opacity parameter, which you can do from the Advanced tab of the Layer Properties view. However, this may be impractical as a layer's opacity parameter cannot be animated in the Timeline view. You can only animate it by opening the Function Editor from the Layer Properties—see *Creating Functions on page 921*.

You can however animate a Transparency effect's parameter in the Timeline view, so this may be a preferable approach even if you only want to animate the transparency for a single layer. To learn how to add and animate an effect, see *Adding Effects Layers on page 1129* and *Animating an Effect on page 1137*.

# Setting the Layer Opacity

If you need specific layers to appear semi-transparent, you can quickly set a drawing layer's opacity parameter directly in the Timeline view.

A drawing layer's opacity parameter will appear in the Timeline view when this drawing layer has thumbnails display enabled:
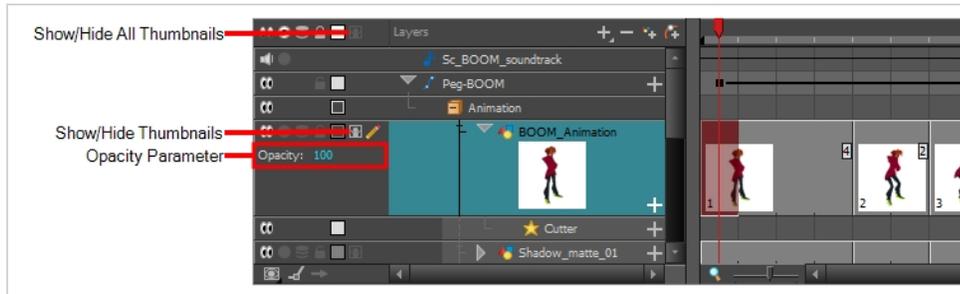


## How to set a drawing layer's opacity

1. In the Timeline view, do one of the following:

   - Left of the layer's name in the Layers list, click on the Show Thumbnails 📷 icon.

   - Select the drawing layer and press T.

   - Left of the Layers list header, click on the Show All Thumbnails 📷 icon.

   The Opacity parameter is displayed left of the drawing layer's thumbnail.
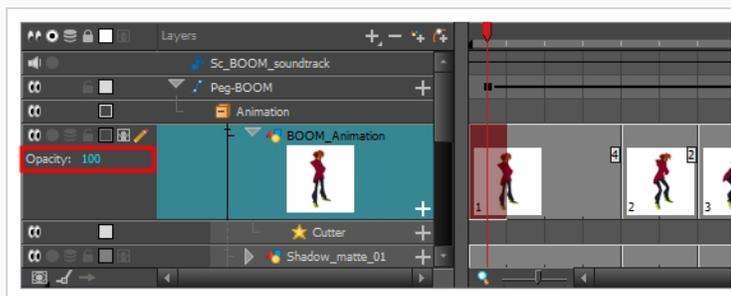
   

2. Do one of the following:

   - Double-click on the value of the Opacity parameter and type in its new value.

   - Click and drag the value of the Opacity parameter to the left to reduce it, or to the right to increase it.
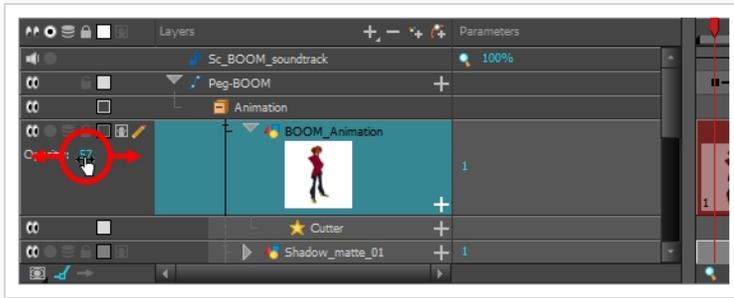
# About Multiplane

One of the most exciting features in Harmony is the multiplane or Z-depth. In the multiplane, you can create backgrounds in several layers, spread them on the Z-axis to add depth, and then move the camera through this environment to create an impressive perspective illusion.



In live action, when the camera moves around in a scene, objects near the camera will appear to move by a greater distance than objects far from the camera. In 2D animation, multiplanes can be used to achieve a similar effect without having to use 3D.

In Harmony, a multiplane can be easily achieved by creating a scene's background over several layers, and positioning them at different depths relative to the camera.

Before creating a multiplane, make sure you have a proper understanding of the environment in which your scene happens. Picture what your scene's background would be like in 3D, then image the camera moving through the space, and how the objects in the picture move at different speeds depending on where they are in relation to the camera lens.

In the following example, the background is made of 6 different layers, each picturing an object that is at a different distance from the camera. On the left, you can see how each object is positioned relative to the camera, as if you were looking at them from the side. On the right, you can see how layers are positioned relative to each other as if you were looking at the scene from a corner. Below, you can see the scene from the camera's point of view.
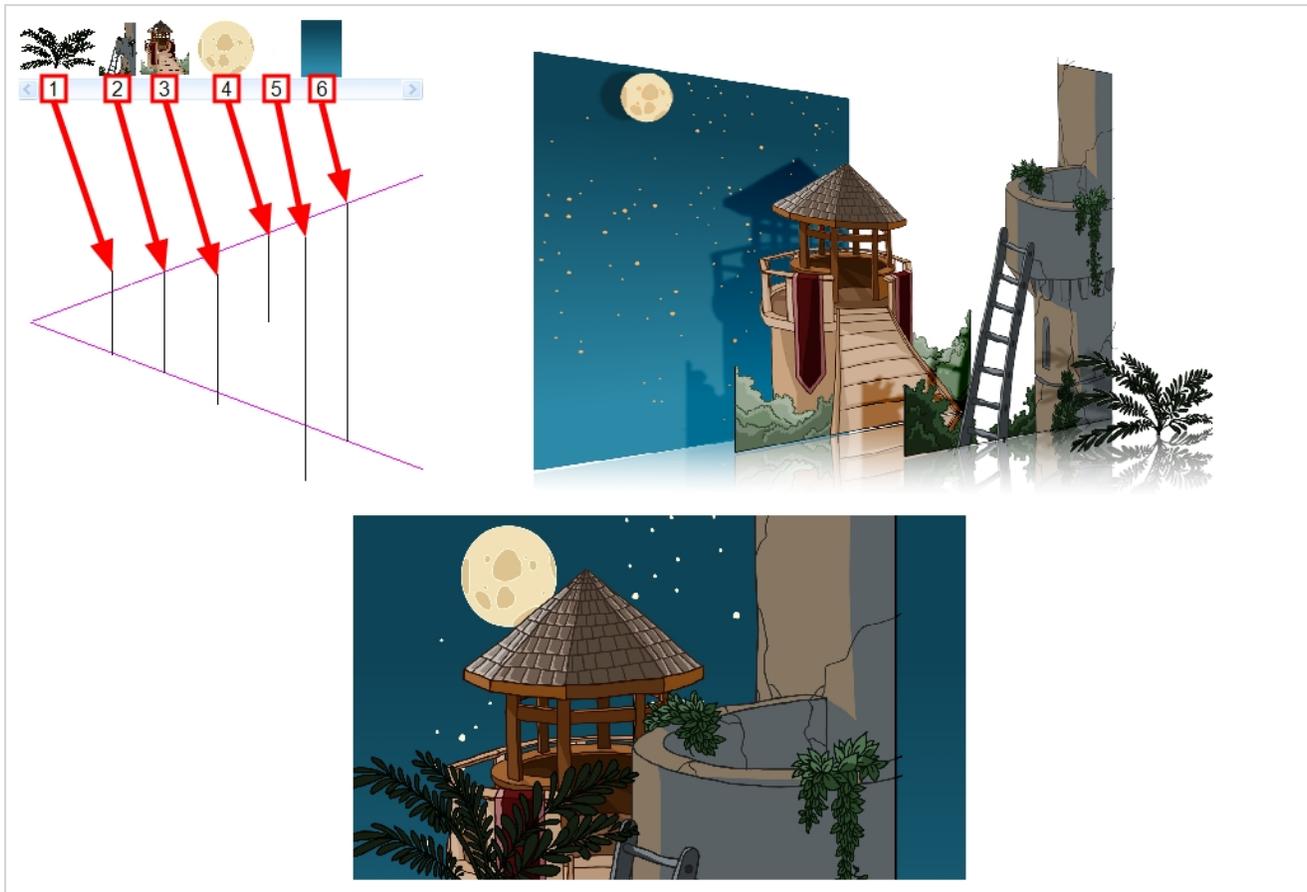
> **NOTE**
>
> When creating a multiplane background, it is important to draw each layer fully. Even if some parts of a background layer is hidden behind a foreground layer in the camera's initial position, panning or zooming the camera may expose parts of background layers that are not initially visible.

In order to move a layer further from or closer to the Camera, you must change its position on the Z-axis. You can do this by moving a layer using the Transform Tool ⬚ in the Side or Top views. You can also move a layer on Z-axis directly from the Camera View by holding Alt and dragging the layer up or down. Positioning your element closer to the camera makes them appear bigger, and moving them further makes them appear smaller. It is also possible to move elements on the Z-axis without affecting their apparent size by using the Maintain Size ⬚ tool in the Advanced Animation toolbar.

It is a good idea to keep a Camera view open to see what your scene looks like while positioning elements in the Top and Side views.
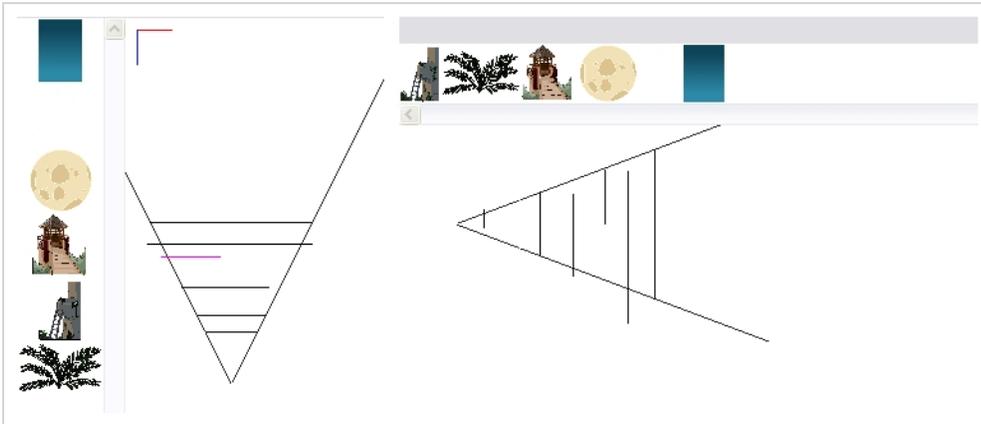
> **NOTE**
>
> Just like with other transformations, transformations on the Z-axis on a parent layer will also affect the apparent position on the Z-axis of its child layers. Therefore, a child layer's apparent position on the Z-axis can be affected by any of its parents.

# Setting Up Multiplanes

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You can setup your elements as a multiplane to create a parallax effect when moving your camera. You simply need to spread and scale the objects on the Z-axis.

### How to rotate a scene in the Perspective view

1. In the Tools toolbar, select the Rotate View ⟳ tool.

2. Click in the view, and drag the cursor around to rotate the view or press and hold Ctrl + Alt (Windows/Linux) or ⌘ + Alt (macOS) and click and drag to rotate the view one axis at a time.

### How to set up a multiplane

> **NOTE**
>
> Before distributing layers along the Z-axis using the Top and Side views, deselect the No Z Dragging option by selecting **Animation > No Z Dragging**. This option is disabled by default.

1. To maintain the visual scale in the Camera view as you move your element, do one of the following:

    - In the Advanced Animation toolbar, select the Maintain Size 📐 tool.

    - From the top menu, select **Animation > Tools > Maintain Size**.

    - Press Alt + 6.

2. In the Side or Top view, select one of the layers in the thumbnails section. You can also select a layer from the Timeline view.

    The selected layer is highlighted in the Top, Side and Camera views.
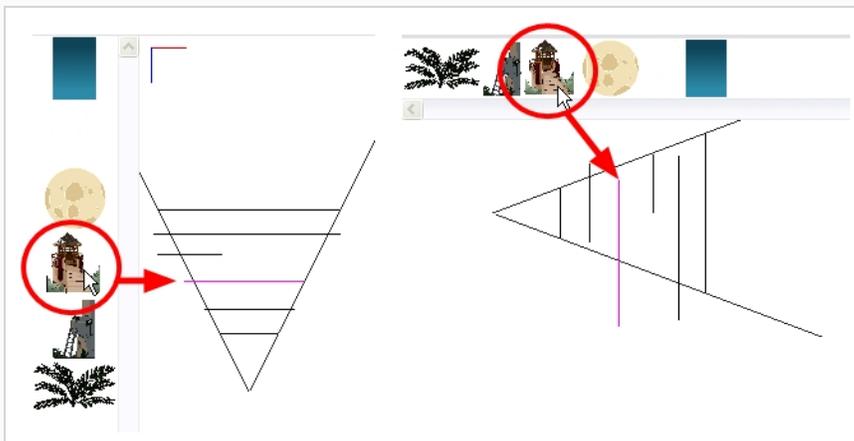
3. Drag the layer to the correct depth position in the camera cone. Your element aspect will remain the same in the Camera view.
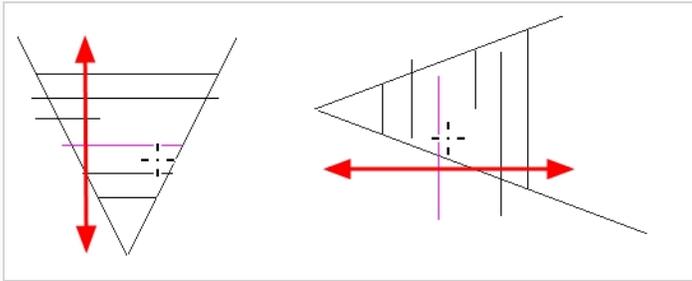


4. For your element to scale up or down in relation to their distance to the camera, do one of the following:

  - In the Tools toolbar, select the Transform ⬚ tool. Make sure the Peg Selection Mode ⬚ option is disabled in the Tool Properties view.

  - In the Advanced Animation toolbar, select the Translate ⬚ tool and select a layer from the thumbnails section of the Top or Side view.

  - Select a layer from the Timeline view.

  The selected layer is highlighted in the camera cone.
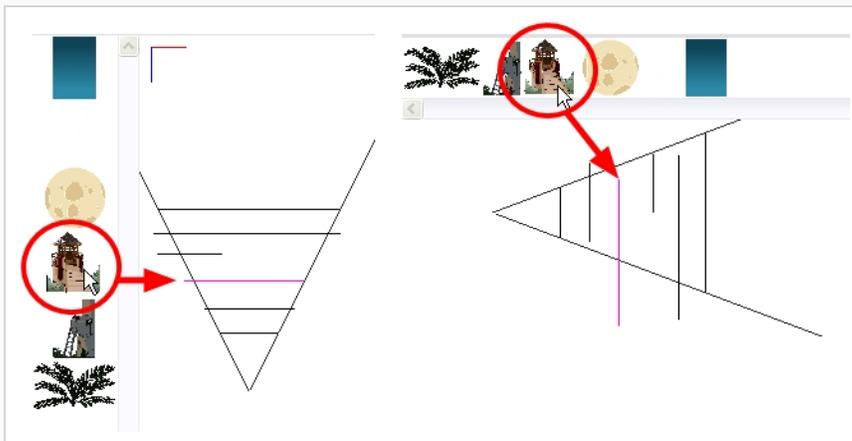


5. In the Top view, drag the element sideways to position it horizontally. Hold Shift while dragging the element to make sure it only moves along the X-axis.

6. In the Side view, drag the selected element up or down to position it vertically. Hold Shift while dragging the element to make sure it only moves along the Y-axis.

# About Clone and Duplicate Layers

At times, you will need to create a large group of characters such as a crowd, school of fish or flock of birds. You can do this by cloning or duplicating a layer. The difference between cloning and duplicating is that a clone uses the same drawings for all layers. A duplicated layer is simply an independent copy.

If you want to maintain the ability to modify drawings and propagate the changes through all layers, you should clone your layer. If you simply want to copy your layers and be able to modify your drawings without affecting the original layer, use the duplicate option.

# About Clone Layers

A cloned layer is linked to the original element directory. If a drawing is modified in the original or cloned layer, both will be updated. However, cloned layers can have different timings.



Cloned layer - Changes to the original layer propagate to the cloned layer.
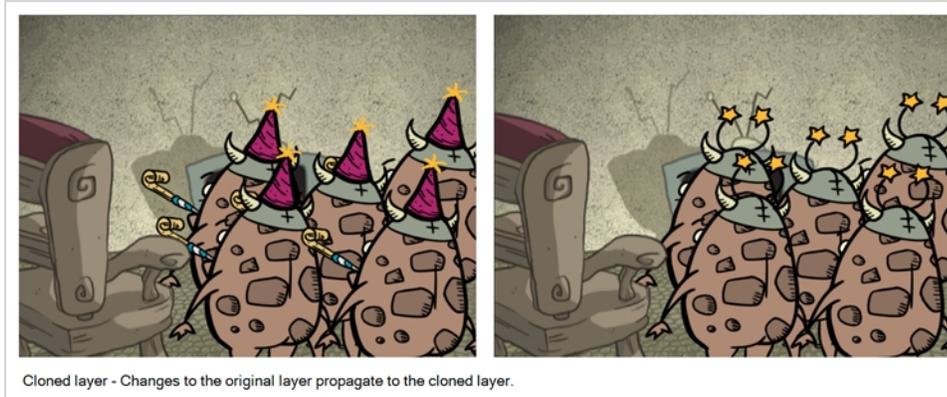
When cloning layers, you have the ability to clone the drawings and the corresponding columns (timing) or only the drawings. If you choose to clone the drawings and timing, your node will be linked to the same element folder, as well as the same drawing and function columns. Therefore, if you change the drawing exposure or keyframe on one layer, all cloned layers will be updated.

You may want to create a large group of characters reusing the same animation, but want to slightly offset the timing so they're not dancing or walking quite on the same beat. For example, if you create a walk-cycle for a soldier and want to use it for an entire army, you may want to have 50 layers with 50 different drawing exposures to produce a slight difference in the timing. If you copy your layers and drawings 50 times over, it will create a heavier scene. It is better to clone the 50 layers with only their drawings without linking to the same timing (function and exposure columns).

# Cloning Layers

You can clone layers in several ways. Cloned layers use the same drawings.

### How to clone a layer

1. In the Timeline, Xsheet view, select a layer to clone. You can select multiple layers.

2. Do one of the following:

   - From the Xsheet menu, select **Columns > Clone Selected Columns: Drawings Only** or **Columns > Clone Selected Columns: Drawings and Timing**.

   - From the top menu, select **Edit > Clone Drawings Only** or **Edit > Clone Drawings and Timing**.

   - From the Timeline menu, select **Layers > Clone Selected Layers: Drawings Only** or **Layers > Clone Selected Layers: Drawings and Timing**.

   - In the Timeline view, right-click on the layers and select **Clone Selected Layers: Drawings Only** or **Clone Selected Layers: Drawings and Timing**.

   The cloned layer appears.
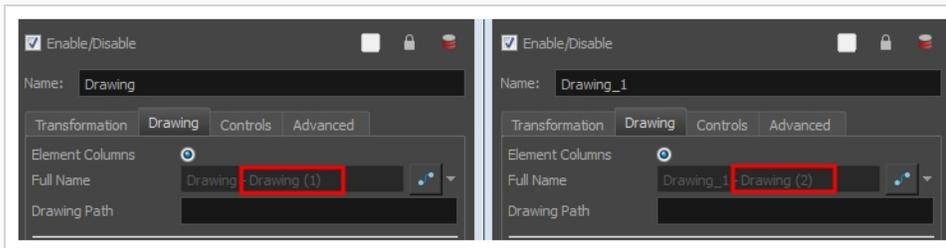
# About Duplicate Layers

You can duplicate a layer to have a copy of the drawings that are independent from the original ones, as well as an independent timing (exposure). When you need the drawings to be modified independently, you will want to duplicate the layer instead of cloning it.



Duplicated layer - Changes to the original layer do not propagate to the duplicated layer.

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# Duplicating Layers

You can easily duplicate layers. Once duplicated, the layers are completely independent. Drawings are also duplicated.

### How to duplicate a layer

1. In the Timeline, Xsheet view, select one or more layers.

2. Do one of the following:

   - In the Timeline menu, select **Layers > Duplicate Selected Layers**.

   - In the Timeline view, right-click on the layers and select **Duplicate Selected Layers**.

   - From the Xsheet menu, select **Columns > Duplicate Selected Layers**.

   - From the top menu, select **Edit > Duplicate**.

   The duplicated layer appears.

# About Timeline View Modes

The View Modes button lets you streamline the process of working with elements in the Timeline view. There are three different view modes you can choose to work in. With each mode you select, certain elements may or may not be visible in the Timeline view. Depending on your workflow, this can be useful for quickly hiding elements when you want to focus on specific ones. To select a view mode, use the drop-down menu in the bottom-left corner of the Timeline view.
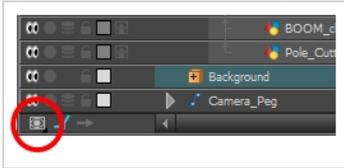


## Normal View Mode

Normal View ⬤ mode is the default Timeline view mode. It shows everything connected to the chosen display. In this mode, anything not connected to the currently set default display will not be shown in the Timeline view. This also means that you cannot add certain elements to the Timeline view, as by default, when added they are not connected to any display or composite node. An example of such an element is a peg.

> **NOTE**
>
> If you prefer to work as you did before, where you see everything in the Timeline whether it is connected to a Display or not, you can change the Always Display Unconnected Nodes setting in the Preferences dialog box, Timeline tab.

## Selection Only Mode

When working in Selection Only ▧ mode, only elements currently selected in the Camera or Node view will be visible in the Timeline. This makes it easier to concentrate on one or a few elements at a time.

## View Tagged Layers

The View Tagged Nodes 🔴 mode lets

you see only elements which have been assigned a Tagged status. An item that has been tagged will appear in the Timeline view with a small asterisk beside its name.
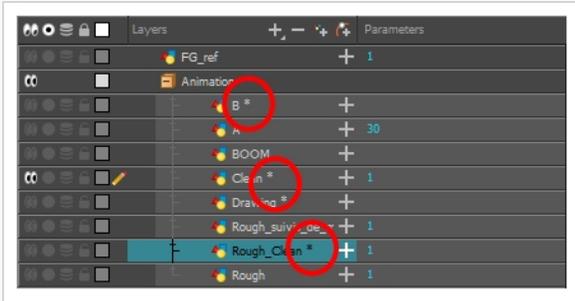
Once your elements are tagged and you have switched over to View Tagged Layers mode, the Timeline view will display only tagged elements. The red bar on the left of the layers indicates you are in this view mode.



Viewing tagged layers in the Timeline view
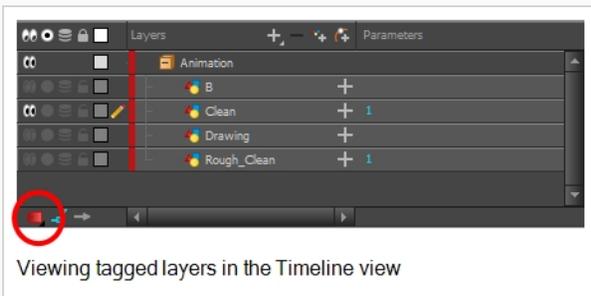
While in this mode, the asterisks are not displayed beside the tagged elements.

# Tagging Layers

You can tag layers to easily visualize them in the Timeline view.

**How to tag or untag elements in the Camera view**

1. In the Camera view, select one or more elements.

2. Right-click and select **Tag** or **Untag**.
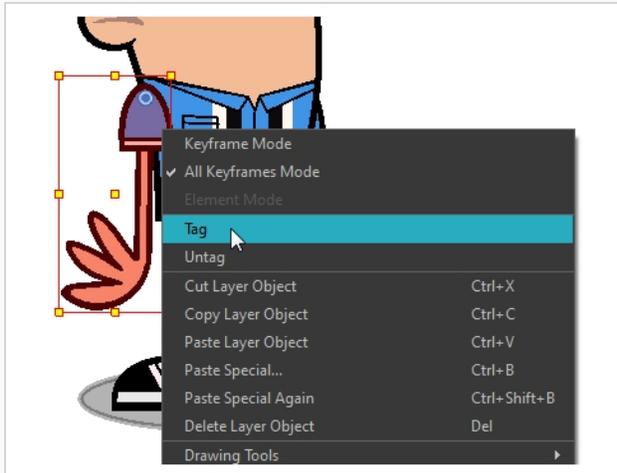


**How to tag or untag elements in the Timeline or Node view**

1. In the Timeline or Node view, select one or more elements.

2. Do one of the following:

- Right-click and select **Tag** and one of the following:

- In the Timeline or Node view menu, select **Edit > Tag** and one of the following:

    - **Timeline Tag**: Tags selected elements in the Timeline or Node views.

    - **Timeline Untag**: Untags selected layer in the Timeline view.

    - **Timeline Untag All**: Untags all tagged elements.

    - **Timeline Untag All Others**: Untags all elements except the selected one.

# Displaying Port Tooltips

You can display any port tooltips by clicking on a port or connecting a cable.

**How to display a port's tooltip**

1. In the Node view, hover the pointer over a port.

   The port's tooltip displays source and destination information.
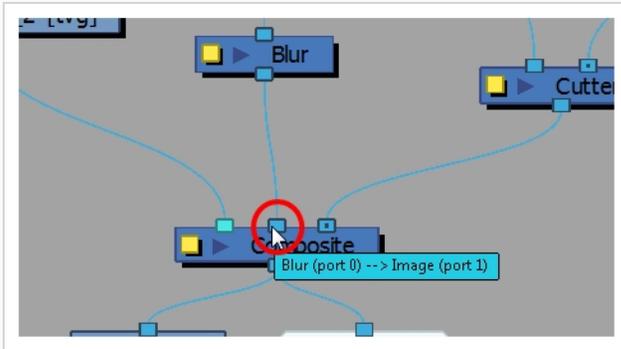
   

2. Click on any port to display the port type label. The label will also display as you connect cables into ports.
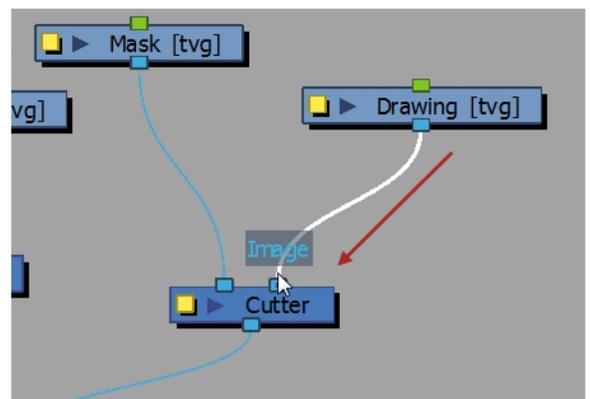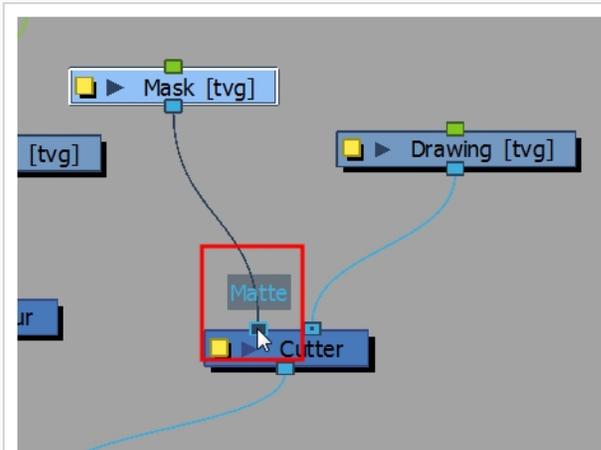
# About Peg Nodes

The Peg nodes control the transformation of elements (position, scale, skewing and rotation) over time. The green ports at the top and bottom of the node indicate that it accepts transformation information which can be passed on (inputs and outputs transformation information).

One peg can be used to control many different nodes or one node can accept more than one peg. In a situation like the latter, one peg might be used to modify the rotation, while the other is used to modify the position of the effect and then animated differently over time.
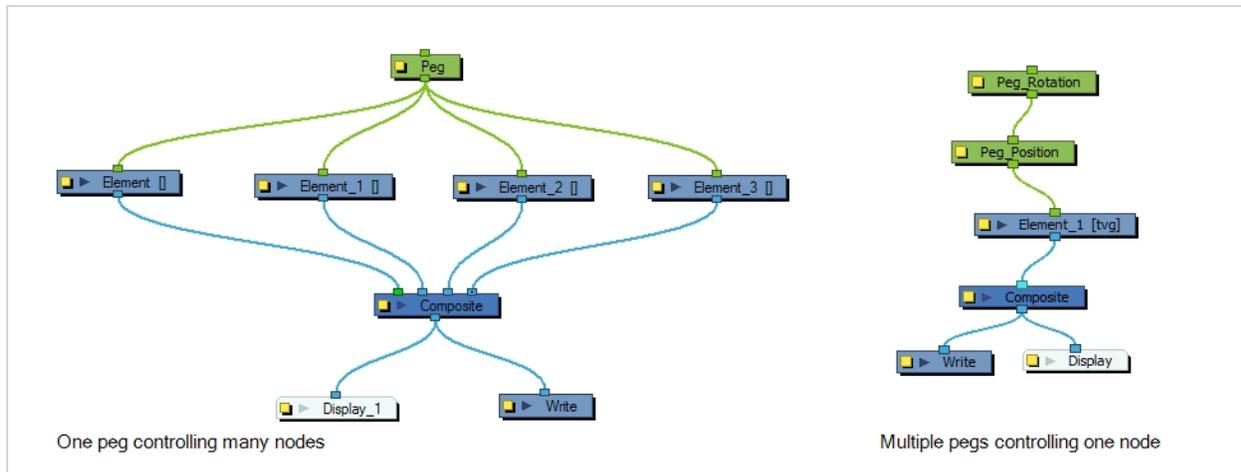
# Connecting and Disconnecting Nodes

You can connect nodes by dragging cables from output ports to input ports. You can disconnect nodes by pulling on the cable connections.

## How to connect nodes

1. In the Node view, do one of the following:

   - Extend a cable from the first node's output port (bottom port) and connect it to the second node's input port (top port).

   - Select the node to connect, hold down the Alt key and drag the node on an existing cable.
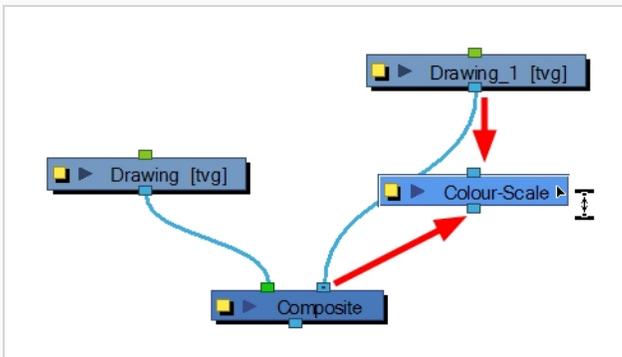
   

   It is possible to create links between nodes in the Node view by clicking on one node and Ctrl-clicking (Windows) or ⌘-clicking (macOS) on a second port.

   Select a node and Ctrl-click (Windows) or ⌘-click (macOS) a port:

   - Click a node and then Ctrl-click (Windows) or ⌘-click (macOS) the input port of a different node. The nodes are linked.

   - Click the output port of a node, and then Ctrl-click (Windows) or ⌘-click (macOS) a different node. The nodes are linked.

   - Click the output port of a node, and then Ctrl-click (Windows) or ⌘-click (macOS) a Composite node. The node is linked to a new input port of the Composite.

   - Click a port of a node and then Ctrl+ Alt-click (Windows) or ⌘+ Alt-click (macOS) port of a Composite node. The selected port replaces the link in the Composite's input port.

   - Click an output port of a node and then Ctrl-click (Windows) or ⌘-click (macOS) the input port of a Group node. The selected output port replaces the link to the group.

   - Click an output port of a node and then Ctrl+ Alt-click (Windows) or ⌘+ Alt-click (macOS) the input port of a Group node. The selected output port links to a new in-port of the group.

> **NOTE**
>
> You can reconnect a node's output port without disconnecting its destination port by dragging the connect from the output port to another output port while holding Ctrl (Windows/Linux) or ⌘ (macOS).

## How to disconnect nodes

1. In the Node view, select the node to disconnect, hold down the Alt key and drag the node away. You can also pull on the connection cable.
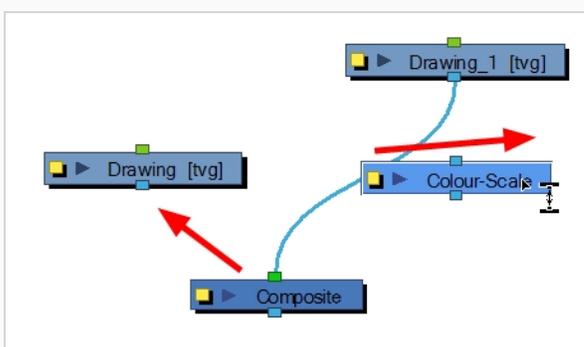
# About Groups

When working with complex rigs, you may want to group layers together to avoid cluttering the Timeline view and keep your layers organized.



Ungrouped layers

Grouped layers (Expanded group)

Grouped layers (Collapsed group)

Groups can also be useful if you need to apply the same effect to several layers at once. For example, if transparency is applied to each individual layer making a character rig, the seams between its body parts will become visible. Instead, grouping all of the rig's layers together, and adding a Transparency effect to the group will make Harmony compose the layers inside the group together before applying the effect.



Transparency effect applied to several
ungrouped layers

Transparency effect applied
to a group of layers
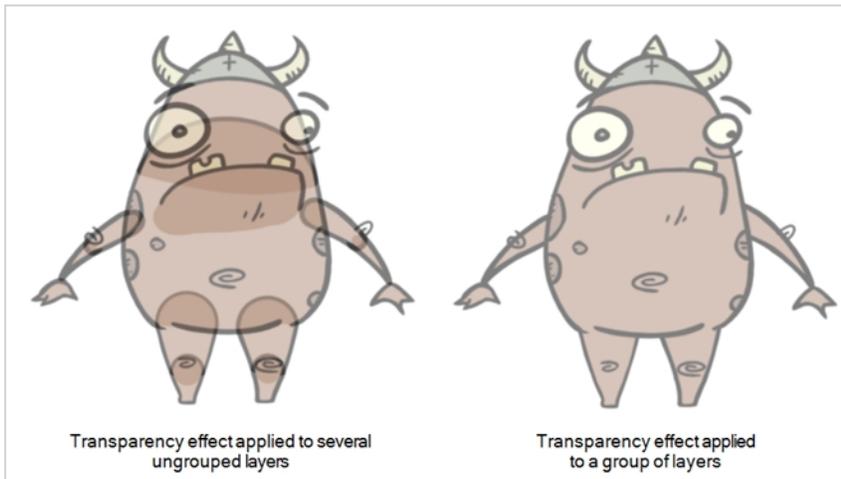
# Grouping Layers

You can group your layers to keep your work organized.

**How to group layers**

1. In the Timeline view, select the elements you want to group.

   Any layers between the selected layers will be automatically grouped as well, so if the stacking order does not matter, move extra layers above or below the layers want to group.

2. Do one of the followings:

   - Right-click on the highlighted layers and select **Group Selection**.

   The layers appear indented under a new Group layer in the Timeline view.

# About Displays

When you open a scene coming from Harmony Premium, it may contain multiple Display nodes allowing you to see isolated portions of the scene.

The Display node is an important node; it is used by the export and views to display your scene, primarily the Camera and Timeline views. By default, a scene's node system always has a Display node which can be used to show your entire scene, a single node or a group of nodes through a Composite or Group node. You might use it to see one single character as you animate it, debug your node system as you create complex effects or export your complete scene or a portion of it.
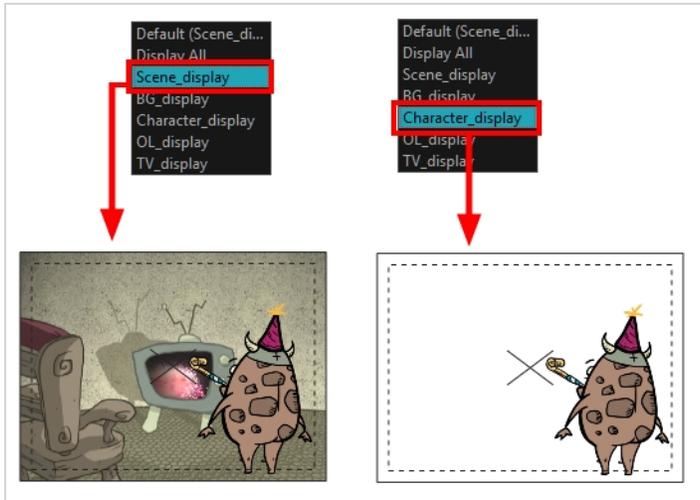


Harmony Advanced doesn't allow you to add Display nodes. The display selection feature is only available for the possible scenario that you need to use a specific Display node created by a Harmony Premium user.

When your scene does not have a Display node, it is automatically set to Display All which uses the Timeline view ordering and shows floating nodes from the Node view. You can also set your scene to use Display All using the Display toolbar.

> **NOTE**
>
> If you try to add a peg or other transformation layer in the Timeline view without having a layer selected, an error message will display. Make sure to change to Display All. The peg layer will be floating in the Node view and will not be visible in the Timeline view. The Timeline view shows only layers that are connected to the Composite node.
>
> If you switch to Display All, you run the risk of not realizing when you have floating nodes that are not connected to your composite. For this reason, it is not recommended to work in Display All mode.

# Changing Global Displays

If you are working on a scene in which several displays were added, you can change which display to view the scene from.

> **NOTE**
>
> Displays can only be added to a scene in Harmony Premium.

**How to set a different Display node as a global display**

1. From the top menu, select **Scene > Default Display** and select a display.

   Each view is updated if set to the Default display option.

# Setting Properties for Many Layers

When working with several layers, you may frequently want to modify a series of settings. Instead of opening the properties for each individual layer, you can set the properties for many layers so you can change a common setting in a single click.

This allows you to modify the following settings:

- 3D Path or Separate mode

- Use Embedded Pivot

- Overlay

- Line Art

- Colour Art

- Underlay

- Animate Using Animation Tools

> **NOTE**
>
> You can add the button to the Timeline View toolbar through the Toolbar Manager. In the Toolbar Manager, you will find the feature in the script section under the name Script: TB_Set_ Properties_on_manu_layers in TB_Set_Properties_on_many_layers.js.

**How to set properties for many layers**

1. In the Timeline view, select all the layers you want to modify at the same time.

2. In the Timeline View toolbar, click the Set Properties for Many Layers ⚚ button. This option is not available by default in the Timeline View toolbar. You must add it through the Customize option. right-click on the toolbar and select Customize. In the Available Tools list, select Script: TB_Set_ Properties_on_many_layers and move it to the Toolbar list.

   The Set Properties for Many Layers dialog box opens.
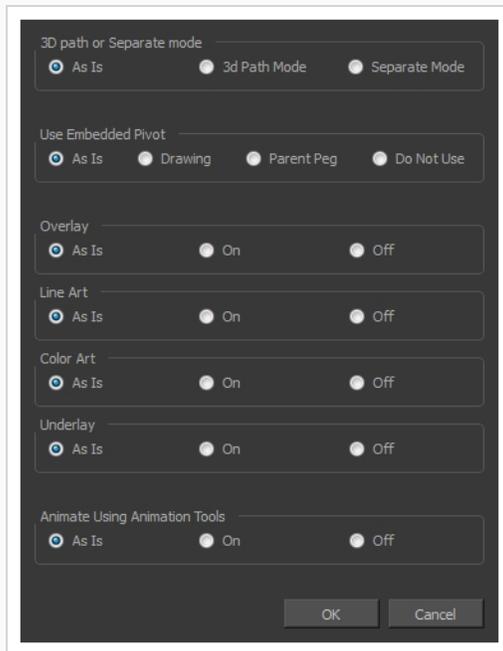
3. Modify the properties. If your nodes have different parameters enabled for a certain setting, leave the **As Is** option selected to avoid modifying it. Each node will keep its original setting. Select any other options for all nodes to change to this parameter regardless of their original setting.

4. Click **OK**.

# Chapter 13: Cameras

Harmony contains a camera that can move along the X, Y, and Z axes. Having the camera move on the Z-axis offers the possibility to create truck in and truck outs, as well as multiplane camera moves. The default camera position is centred and backed up to 12 fields.

It is important to understand the coordinate values in Harmony, which is based on the origins of animation. In traditional animation, a scene's size and camera motion are calculated in fields. A field has a 4:3 ratio and measures 0.5 inches (12.7 mm) in width. A specific grid has been created for this purpose known as a *field chart*. Harmony uses this unit of measurement as its coordinate system.



A field chart uses the cardinal directions. The X axis is the east-west (left-right) direction, the Y axis is the north-south (up-down) direction and the Z axis is the forward-backward direction.

The scene action occurs inside the camera frame, so it's really important to set it up correctly. You can adjust the camera resolution and other parameters in the Scene Settings window.

By default, a scene does not have a camera layer. In order to be able to tweak the camera's angle and position, you must add one to your scene. Although it is possible to have several cameras in the same scene, you can only view your scene using one camera at a time. This can be useful if you are still working on your scene composition and have different camera framing to try out.

The Camera layer is static which means that if you need to animate it, you must put it under a parent peg.
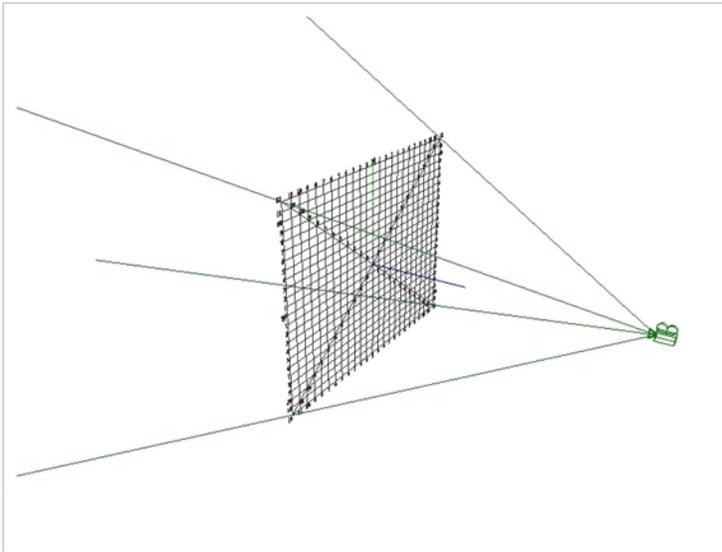
You can reposition your camera frame directly in the Camera view, using the advanced animation tools. Another way to set up your camera frame is to type the coordinates directly in the camera's properties. Doing this positions the camera precisely where you want it to be rather than gauging it visually.

# Adding a Camera

T-HFND-009-002

By default, there is no camera in the scene. The frame visible in the Camera view is only a reference based on your project's resolution. In order to position your camera, you must add one to your scene.

**How to add a camera in the Timeline view or Top menu**

1. Do one of the following:

   - In the Timeline view, click the Add Layer ╋ button and select **Camera.**

   - From the top menu, select **Insert > Camera**.

   A new camera layer is added to the scene and appears in the Timeline view.
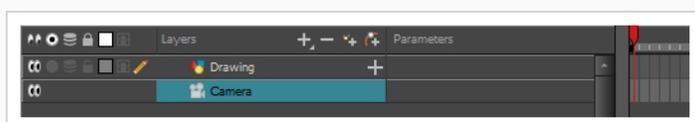
# Selecting the Active Camera

You can add multiple cameras to your scene, but only one can be active at a time. You can select your active camera from the Camera list.

### How to select the active camera from the Camera list

1. From the top menu, select **Scene > Camera > *camera***.

# Positioning the Camera Frame

You can grab the camera frame and move it around in the Camera view. You can also setup the camera position by entering coordinates and values in the Layer Properties view.

### How to reposition the camera frame in the Camera view

1. In the Tools toolbar, disable the Animate ⚛ mode.

2. Do one of the following:

   - From the top menu, select **Animation > Tools > Translate**.

   - In the Advanced Animation toolbar, click the Translate ✛ tool.

   - Press Alt + 2.

3. In the Camera view, click on the camera frame (thin rectangle) to select it. You can also select the camera layer from the Timeline view.

   The selected camera frame is highlighted.
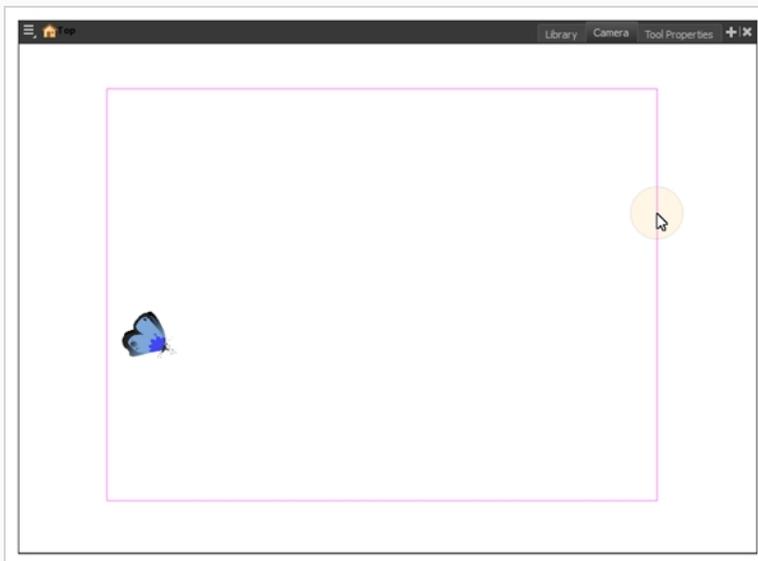
   

4. Drag the camera frame to a new position.
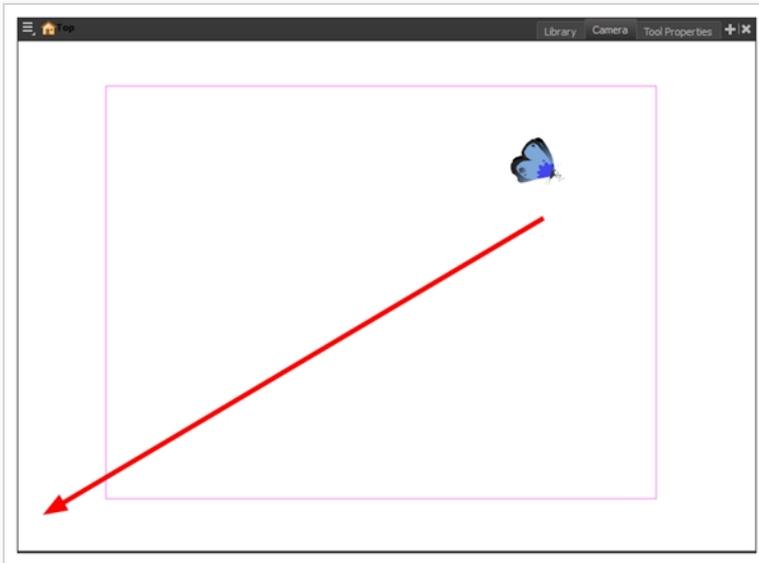
5. To tilt the camera frame, do one of the following to select the Rotate tool:

   - From the top menu, select **Animation > Tools > Rotate**.

   - In the Advanced Animation toolbar, select the Rotate ⟳ tool.

   - Press Alt + 3.

6. In the Camera view, drag to rotate the camera frame until it reaches the desired rotation angle.
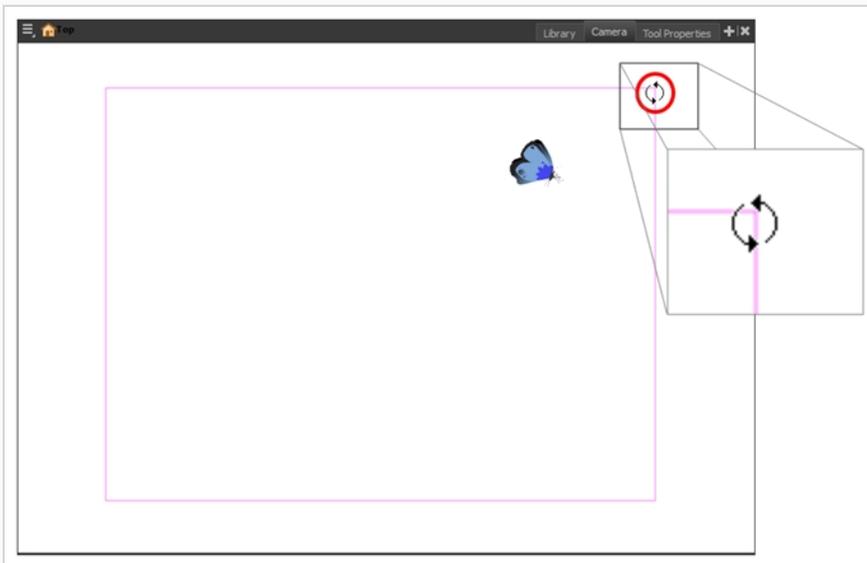


7. To move the camera frame closer to or further away from the scene, do one of the following to select the Scale tool:

   - From the top menu, select **Animation > Tools > Scale**.

- In the Advanced Animation toolbar, select the Rotate ⟲ tool.

- Press Alt + 4.
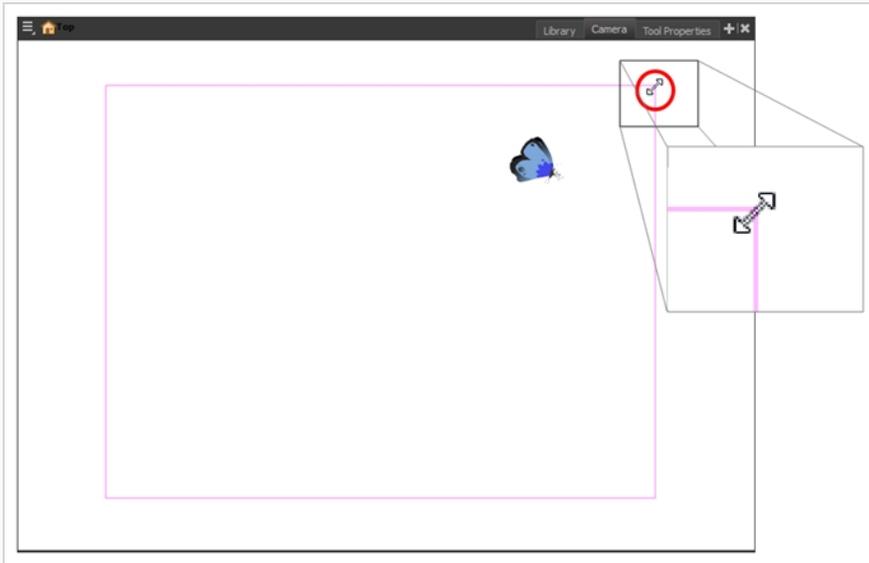


> **NOTE**
>
> The Transform tool can also be used to move the camera, but not to rotate or scale it.

## How to set up the camera frame using the Layer Properties view

1. In the Timeline view, select the camera layer.

2. In the Layer Properties view, adjust the camera's properties.
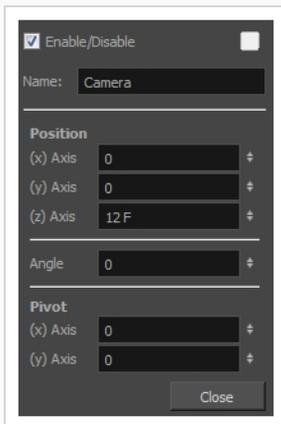


3. Type or use the numeric stepper to adjust the coordinate and angle values—see the Reference guide .

# Resetting the Camera Position

You can easily reset the camera to its original position. Using the Reset command, you can reset the value of the selected element to the initial value of the active tool. For example, if the Rotate tool is active, the transformation angle will be reset to 0 and if the Transform tool is active, then all parameters values will be reset.

### How to reset the camera position

1. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T. If you want to reset a single parameter, select the corresponding Advanced Animation tool, such as the Rotate ⟳ tool.

2. In the Timeline or Camera view, select the camera layer.

3. From the top menu, select **Animation > Reset** or press Shift + R.

   The camera automatically returns to its original position.

# Animating the Camera

T-HFND-009-009

A scene's camera can be manipulated and animated just like any other layer. It is listed in the Timeline view and you can use the same tools and selection modes to offset or animate it. However, the camera layer itself is static, which means it keeps the same position and angle throughout the whole scene. In order to be able to animate the camera, you need to connect it to a peg layer, which can be animated, and which will directly affect the position and angle of the camera.
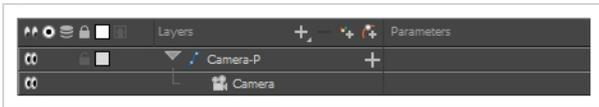


You can animate your camera movements directly in the Camera view. Alternatively, you can use the Side or Top views, which can be especially useful when animating a camera in a multiplane scene, where each layer is positioned at a different distance from the camera.

## How to animate the camera

1. In the Tools toolbar, enable the Animate 🐒 mode.

2. In the Tools toolbar, select the Transform ⬚ tool or press Shift + T.

3. In the Timeline view, select the Camera layer.
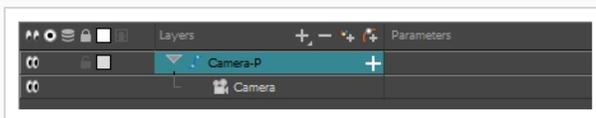


4. From the Layers toolbar, click the Add Peg ⟨⟩ button.

   A Peg layer appears directly above the Camera layer and is automatically attached to it. The new Peg layer takes the name of the camera layer with the suffix -P added to indicate that it is its Peg layer.
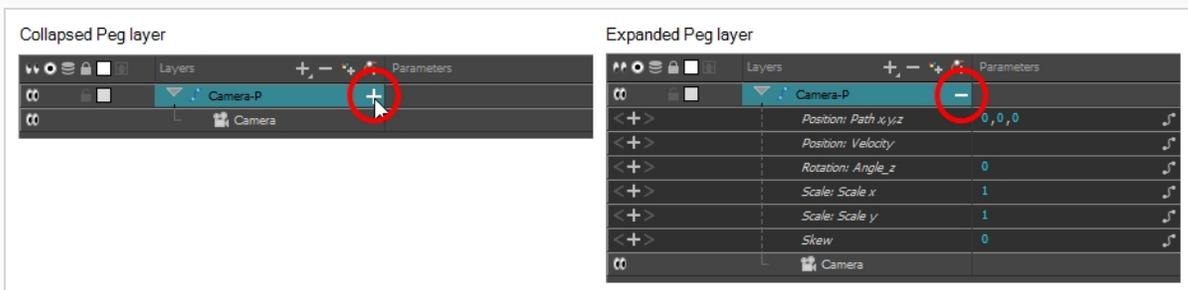


5. On the right side of the Timeline view, on the Camera Peg layer, select the frame at which you want the camera movement to start.

6. Do one of the following to add a keyframe:

   - In the Timeline toolbar, click the Add Keyframe KF button.

   - Right-click and select **Add Keyframe.**

   - Press F6.

   A keyframe appears in that cell. Any frames preceding this keyframe cell will hold the same camera position as this keyframe.



7. Do one of the following to move the camera:

   - In the Camera view, select the Camera, which is now be represented by a thin yellow rectangle with a red highlight, and move it to the desired position.
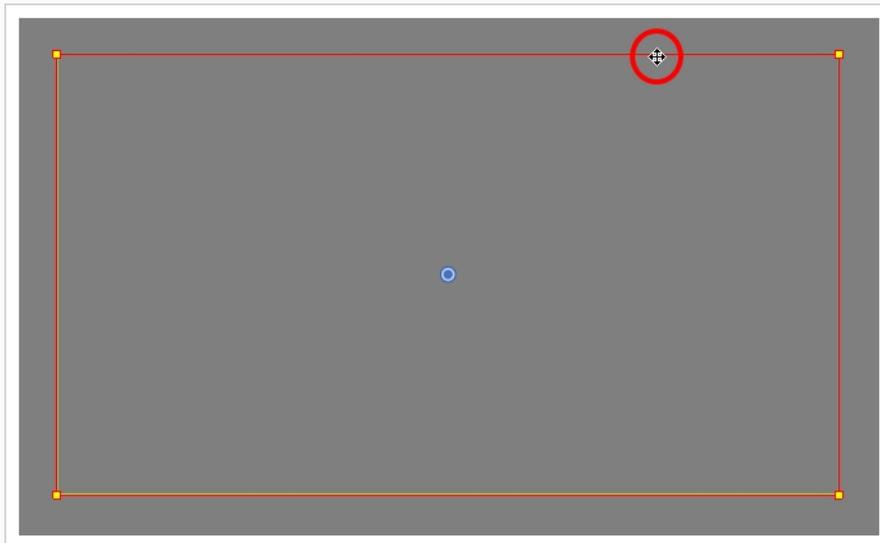


   - In the Top or Side view, select the camera, which is now represented by a large, yellow V-shaped cone, and move it to the desired position.
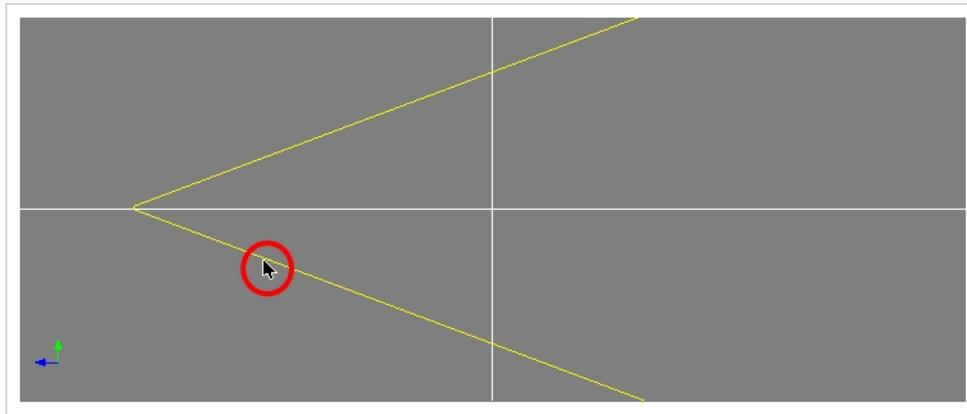
8. On the Timeline view, click on the cell where the camera movement will end.

9. Do one of the following:

   - In the Timeline toolbar, click the Add Keyframe [KF] button.

   - Right-click and select **Add Keyframe.**

   - Press F6.

   A keyframe appears in that cell.



10. Select the camera in the Camera, Top or Side view and move it to the desired position.

11. In the Timeline view, select the first frame to rewind to the beginning of your animation.

12. In the Playback toolbar, click on the Play ▶ button to preview your animation.

# Animating the Line Thickness on Camera Move

As you move the camera in your scene along the Z-axis, notice that, logically, the lines of the elements become thicker the closer the camera gets to the drawing. If you prefer the lines to remain the same size or become thicker at a different speed, you can use the thickness feature to adjust your brush stroke and pencil line thickness. You can modify the size of the lines even if the camera is not animated.

### How to adjust the pencil line thickness of a drawing layer in the Camera view

1. In the Camera view, enable Render View ☀ to see the effects of the pencil line thickness settings.

2. In the Timeline view, double-click on a drawing layer to display the Layer Properties window.

3. Select the **Line Thickness** tab.

4. Ajust the following parameters to have the desired pencil line thickness in the current frame and camera position.



**Adjust Pencil Lines Thickness:** Enables the options below to adjust the line thickness in the rendered image.

**Normal Thickness:** This setting makes the line thickness adjustments take one of two very different behaviors:

- **Enabled:** The line thickness settings are applied to pencil lines in all art layers in the element. This setting should be used if you want to adjust the line thickness of pencil lines.

- **Disabled:** The line thickness settings are applied to all art, whether brush strokes or pencil lines, in the line art layer, so that it fits the desired thickness pattern around art in the colour art layer. This setting should be used for drawings that have their line art on the line art layer and their colour art on the colour art layer, which is typical of traditional and paperless animation productions.

  > ### NOTE
  >
  > When this option is disabled, all artwork in the line art layer that does not surround artwork in the colour art layer will be cropped out.

**Zoom Independent Thickness:** Makes the thickness of pencil lines remain unchanged when the camera zooms in or zooms out.

**Proportional:** The factor by which to adjust line thickness. The original line thickness in the drawing will be multiplied by this value. A value between 0 and 1 can be used to make pencil lines thinner.

**Constant:**  The offset by which to adjust line thickness. This value will be added to the original line thickness in the drawing. A negative number can be entered to make pencil lines thinner.

**Minimum:** The minimum pencil line thickness allowed. Line thickness will not go below this value.

**Maximum:** The maximum pencil line thickness allowed. Line thickness will not go above this value. Set it to 0 to disable maximum line thickness.

5. To start animating the pencil line, create a function on one or more of the **Proportional**, **Constant**, **Minimum** and **Maximum** parameters by clicking on their corresponding Bezier button, depending on which setting(s) would better accommodate the desired effect.

6. Click again on the parameter's Bezier button to open the Function Editor for that function.

7. Use the Function Editor to animate the value of the parameter across the scene.

# Chapter 14: Import

Toon Boom Harmony allows you to import external content as well as being able to draw directly in the software. This means that characters, backgrounds and videos created in other drawing, painting and multimedia programs can be brought in and animated. You can import QuickTime videos, pictures, multilayered .psd files, as well as .ai, .swf, .pdf, and .fla files. You can also scan images and import them as bitmap or vectorize them.



> **NOTE**
>
> For sound import, refer to *Importing Sound* on page 1172.

# About Importing Bitmap Images

T-HFND-007-001

Images can come in many different file formats and are usually saved in a format that retains the original specifications set by the image creator. Some formats can preserve the transparency or transparent layers, while others are not resolution dependent due to their vector nature. Toon Boom Harmony supports the following bitmap image formats: JPEG, BMP, PNG (16 bits per channel RGB and RGBA), TGA, PSD (16 bits per channel), TIFF, SGI, TVG, OMF, PAL, SCAN.



When importing a bitmap image, you must decide how Harmony must process it. You can choose between the following options:

- **Keep as Original Bitmap:** This imports the image exactly as is and ensures that it cannot be modified when working on the scene. This is useful for using backgrounds that were created in different software in your project.

- **Import as Toon Boom Bitmap Drawing:** This imports the image as is, but allows you to edit it using Harmony's bitmap drawing tools.

- **Import as Toon Boom Vector Drawing:** Converts a bitmap into Toon Boom vector art, which can easily be painted and edited using Harmony's vector drawing tools. This can be useful for importing line art scanned or created using a different software.

When importing images, the settings used to import are saved in your user settings.

# Importing Bitmap Images As Original Bitmap

T-HFND-007-002

Importing a bitmap image in its original format ensures it is preserved exactly as is in Harmony. When importing a bitmap image, you have several options available such as where you want to import the file and how to name it.

### How to import a bitmap image in its original format

1. Do one of the following:

   - From the top menu, select **File > Import > Images**.

   - In the File toolbar, click the Import Images ⬚ button.

   - In the Xsheet view, right-click anywhere in the frame area and select **Import > Images**.

   The Import Images dialog box opens.
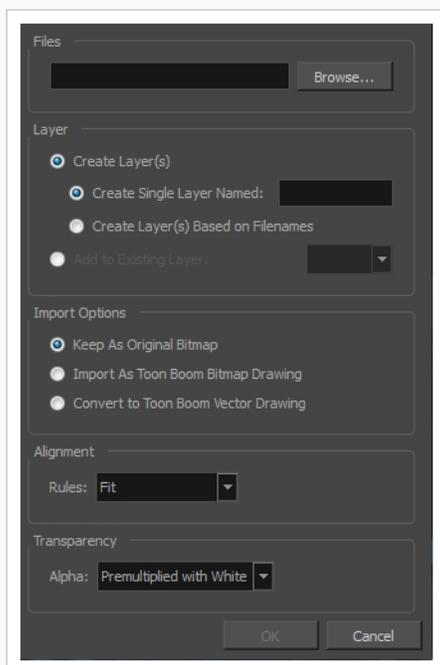
   

2. In the Files section of the Import Images dialog box, click **Browse** to find and select one or more images on your computer.

3. Add the bitmap image to a new layer by selecting the **Create Layer(s)** option and one of the following options:

   - **Create Single Layer Named:** Creates a new layer with the specified name and imports

the images into it.

- **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

- **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if you're importing images as vector drawings, you can only import them into vector drawing layers.

4. In the Vectorization section, make sure the **Vectorize Image** option is unchecked.

5. In the Import Options section, select the **Keep As Original Bitmap** option.

6. In the Alignment section, decide on the size and placement of your image within the camera frame. You can choose between the following options:

| Parameter | Description |
|---|---|
| Fit | Adjusts the image's size to fit completely within the scene's field, both vertically and horizontally, making sure the entire image is visible. <br><br> If the image's orientation is portrait, then it will adjust the image's height to fit the field's height, without affecting the image's aspect ratio: <br><br>  <br><br> If the image orientation is landscape, then it will adjust the image's width to fit the field's width, without affecting the image's aspect ratio: |

| | |
|---|---|
| |  |
| Pan | This has the opposite effect to the fit parameter. The image's smallest dimension will be made to fit the scene frame's matching dimension, and the image's largest dimension will be adjusted proportionally, making the image fill the entire scene field, and bleed past its boundaries it if its aspect ratio does not match the field's aspect ratio. This option can be used to import a panning background image, also referred to as a *pan*.<br><br>If the image's orientation is portrait, it will adjust the image's width to fit the field's width, without affecting its aspect ratio:<br><br><br><br>If the image's orientation is landscape, it will adjust the image's height to fit the field's height, without affecting its aspect ratio: |

| | Scales the image to fit the scene's resolution, making each pixel in the image take one pixel in the scene's field. For example, if the image's dimensions in pixels are half of the scene's resolution in pixels, then the image's dimensions will appear to be half of the scene field's dimensions. |
|---|---|
| Project Resolution | |
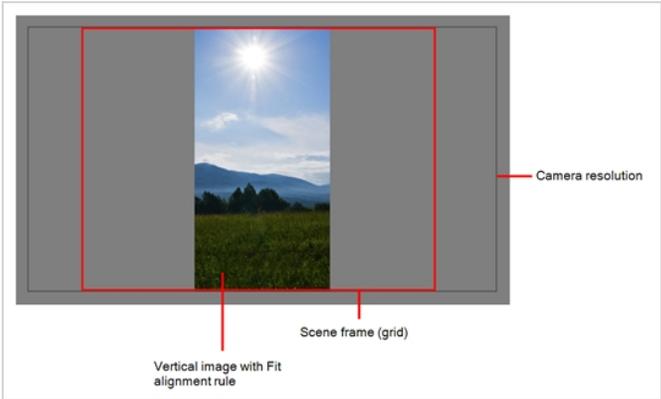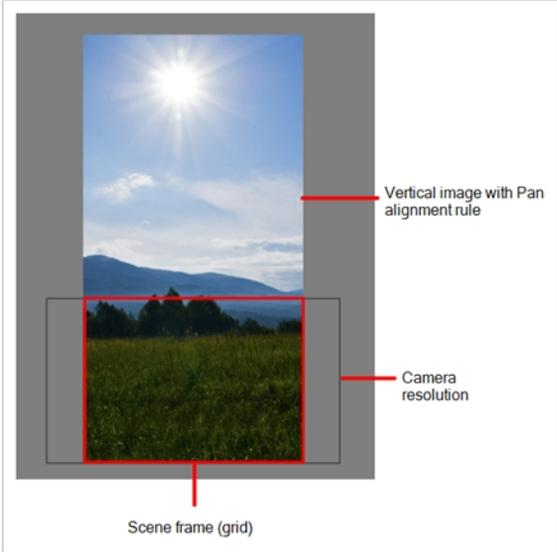
7.  In the Transparency section, decide how the bitmap image will be antialiased, more specifically, the way the pixels along the edge are blended with the other colours. You can choose between the following options:

| Parameter | Description |
|---|---|
| Premultiplied with White | Individual pixels at the edge of an image are blended with white. |
| Premultiplied with Black | Pixels at the edge of an image are blended with black. |
| Straight | Pixels at the edge of an image are blended with black, white and greys. |
| Clamp Colour to Alpha | Premultiplies the colour value with the alpha value. When the colour is clamped to the alpha, the colour value cannot be higher than the alpha value. It calculates the real colour value faster. When the RGB values are multiplied with the alpha value, that is to say, if you have a pixel of value R=247, G=188, B=29 and the alpha is 50% or the image has a 50% transparency, then the actual RGB values that are output would be half of the amounts listed above. |

8.  Click **OK**.

> **NOTE**
>
> By default, bitmap images will display in low resolution in the Camera view so as to avoid affecting playback performance. You can also adjust the display quality of a bitmap image by selecting it with the Transform tool, then opening the Bitmap Image Quality dialog via **View > Bitmap File Quality**. You can also preview your bitmap image in your scene's resolution by activating the Render Preview ❁ mode in the Camera view.

# Adjusting the Bitmap Image Display Quality

T-HFND-007-004

Your original bitmaps are imported as is in your project. In the Camera view, they may appear low quality as a proxy image is displayed in its place to insure fast playback.

If the bitmap images that you imported look blurry or slightly pixelated, you can increase the image proxy display by changing the quality of the preview in the Camera view. It will not affect the final render.

### How to change the bitmap image quality

1. In the Camera view, double-click on the bitmap image to enter its symbol if the image is encapsulated or simply select the bitmap image layer in the Timeline view if it's not.

2. Do one of the following:

   - From the top menu, select **View > Bitmap File Quality.**

   - From the Camera menu, select **View > Bitmap File Quality**.

   - Press Ctrl + Q (Windows/Linux) or ⌘ + Q (macOS).

   The Bitmap Image Quality dialog box opens.
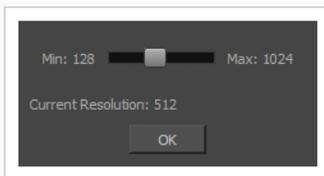


3. Drag the slider to the right to improve the quality.

4. Click **OK**.

5. If you are inside a symbol, go to the top of the Camera view and click **Top** to exit the symbol and return to your scene.

# Importing Bitmap Images As Toon Boom Bitmap

T-HFND-007-002

Importing a bitmap imageas Toon Boom bitmap preserves its original detail, but allows the user to modify them using Harmony's bitmap drawing tools.

### How to import a bitmap image as a Toon Boom bitmap drawing

1. Do one of the following:

   - From the top menu, select **File > Import > Images**.

   - In the File toolbar, click the Import Images 🖼 button.

   - In the Xsheet view, right-click anywhere in the frame area and select **Import > Images**.

   The Import Images dialog box opens.



1. In the Files section of the Import Images dialog box, click **Browse** to select one or more images from your computer.

2. Select the destination for your images:

   - **Create Single Layer Named:** Creates a new layer with the specified name and imports the images into it.

- **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

- **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if you're importing images as vector drawings, you can only import them into vector drawing layers.

2. In the Alignment section, decide on the size and placement of your image within the camera frame. You can choose between the following options:

| Parameter | Description |
|---|---|
| Vertical Fit | Adjusts the image's size so that its height matches the scene's height, without affecting its aspect ratio.<br><br> |
| Horizontal Fit | Adjusts the image's size so that its width matches the scene's width, without affecting its aspect ratio.<br><br> |

| | |
|---|---|
| Actual Size | Imports the image in its actual size, without adjusting its size relative to the scene's resolution. For example, if the image's dimensions in pixels are half of the scene's resolution in pixels, then the image's dimensions will appear to be half of the scene field's dimensions. |
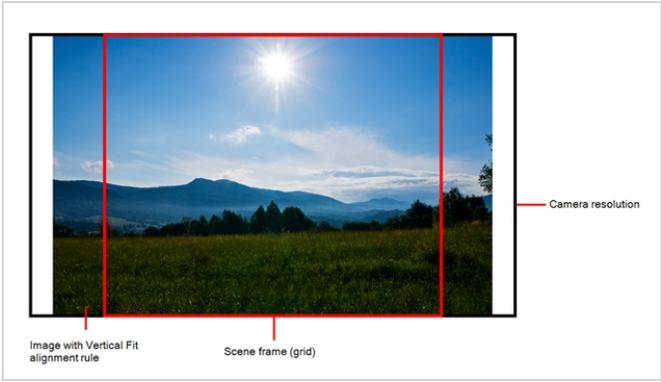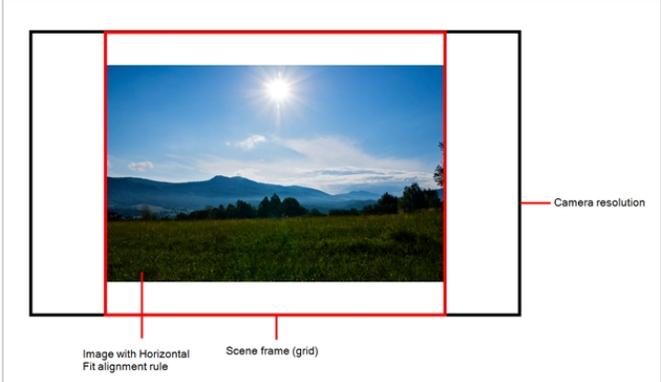
3. In the Transparency section, decide how the bitmap image will be antialiased, more specifically, the way the pixels along the edge are blended with the other colours. You can choose between the following options:

| Parameter | Description |
|---|---|
| Premultiplied with White | Individual pixels at the edge of an image are blended with white. |
| Premultiplied with Black | Pixels at the edge of an image are blended with black. |
| Straight | Pixels at the edge of an image are blended with black, white and greys. |

4. Click **OK**.

# Vectorizing Images on Import

You can import bitmap images as vector drawings, which allows you to edit them using Harmony's vector drawing tools. This is especially useful to convert bitmap line art scanned or created in a different software into vector line art so it can be painted in Harmony.
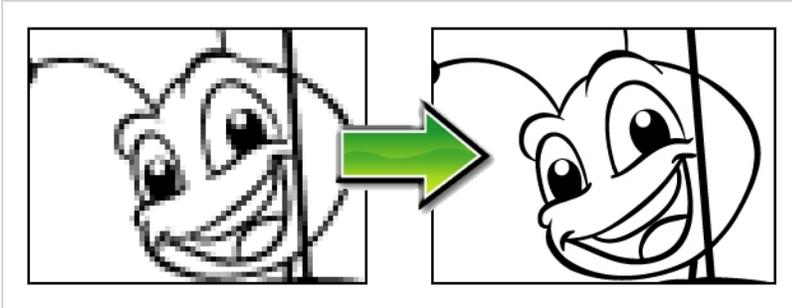


### How to import and vectorize a bitmap image

1. Do one of the following:

   - From the top menu, select **File > Import > Images**.

   - In the File toolbar, click the Import Images ⬚ button.

   - In the Xsheet view, right-click anywhere in the frame area and select **Import > Images**.

   The Import Images dialog box opens.

1. In the Files section of the Import Images dialog box, click **Browse** to select one or more images from your computer.

2. Select the destination for your images:

   - **Create Single Layer Named:** Creates a new layer with the specified name and imports the images into it.

   - **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

   - **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if you're importing images as vector drawings, you can only import them into vector drawing layers.

3. In the Import Options section, select the **Convert to Toon Boom Vector Drawing** option.

4. In the Vectorization section, decide whether you want to import your image in black and white or in greyscale. You can also click the New Preset ✛ button to create a custom vectorization parameter preset.

   ‣ **Black and White**: Vectorizes drawings as a solid black line; creates a 100% vector-based drawing. The outlines of your drawings will be painted with the Vectorized Line colour swatch of your scene's colour palette.

   ‣ **Grey**: Vectorizes your image as a mix of vector contour and greyscale bitmap filling. Lines keep the texture from the scan, and the white of the paper becomes transparent.



Grey preset    Black and white preset
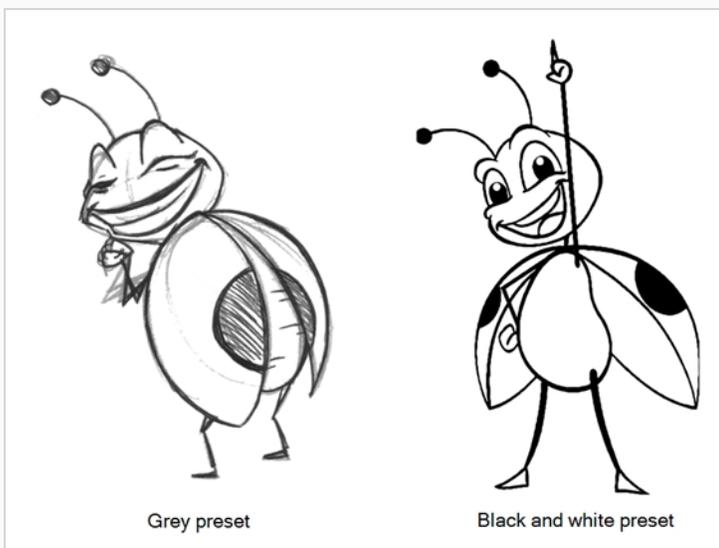
> **NOTE**
>
> You can double-click on any of the presets at any time to open the Vectorization Parameters dialog box to customize your option.

5. Click **OK**.

   Your vectorized images will appear in their selected destination.

# Importing Multi-layer PSD Files

T-HFND-007-003

PSD files (a format exportable exclusively from Adobe Photoshop) are unique in that they are able to retain multiple layers. This is advantageous as the image remains fully editable in terms of any colour correction, effects, masking, transparency, or compositing that were made to the **.psd** file in Adobe Photoshop. Harmony supports 8 and 16 bit files.



> **NOTE**
>
> Note that your **.psd** image file must be set to RGB mode within Adobe Photoshop prior to being imported into Harmony.

### How to import a multi-layer PSD file

1. In Adobe Photoshop, organize your file so that all your layers are "grouped" into individual folders, or that all the elements you want to import as a single layer in Harmony are grouped together in their own folder. Any layer that is not in a folder group, by itself or otherwise, will not be imported.
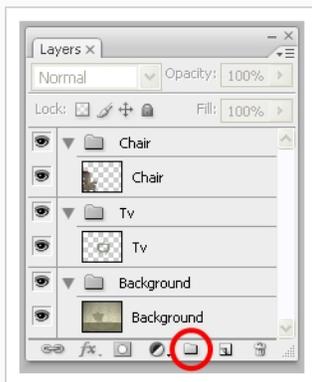
   

2. In Harmony, go to the top menu and select **File > Import > Images** or click the Import Images button.

   The Import Images dialog box opens.

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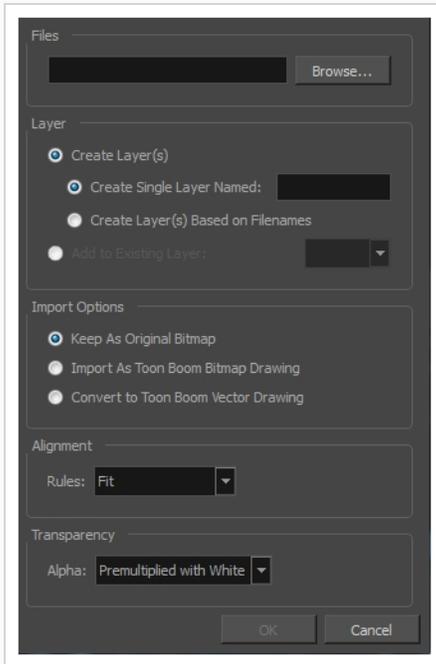


3.  In the Files section, click **Browse** to find and select the **.psd** image on your computer.

4.  In the Layer section, select the **Create Layer(s)** option, then select one of the following options:

    - **Create Single Layer Named:** Creates a new layer with the specified name and imports the images into it.

    - **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

    - **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if you're importing images as vector drawings, you can only import them into vector drawing layers.

5.  Select the **Create Symbol for Imported Items** option if you want the layers to be contained in symbols.

6.  In the Import Options section, select the following option to import your image as its original format.

    - **Keep As Original Bitmap**: Retains an imported image as a bitmap. In the Alignment section, decide on the size and placement of your image within the camera frame. Depending on the Scene Settings (the height and width in pixels that you chose for your project), an image that you import may get scaled to the point where all its individual pixels become visible.

7.  Decide whether to select **Vectorize Imported Items** option.

8. Click **OK**.

   The Multilayer Image Import Settings dialog box opens.
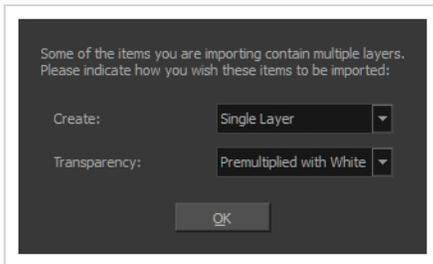
   

9. From the Create menu, select one of the following:

   - **Single Layer**: To import the Camera and Layout layers merged together.

   - **Separated Layers**: To keep your Camera and Layout layers separated.

10. From the Transparency menu, select one of Alpha option.

11. Click **OK**.

    Your image appears as separate layers in the Timeline view, corresponding to the PSD layer group folders.

    > **NOTE**
    >
    > The artwork displayed in every one of your layers as a result of a multilayer PSD file import is linked to the same source image. This means that if you use the **Drawing > Delete Selected Drawings** command to physically delete the drawing from the project folder, the exposed drawing will be deleted in all layers at once. Once deleted from the project folder, the image cannot be retrieved unless you reimport your psd file.

# About Importing Vector Files

T-HFND-007-005

You can import AI (Adobe Illustrator) and PDF files into Toon Boom Harmony to convert your files to the Toon Boom format (TVG) and create a colour palette based on the colour settings of the original file.

When importing AI and PDF files:

- RGB is supported, CMYK is not.

- Gradients and textures are not supported.

- Only legacy versions of Adobe Illustrator are supported. Exported SWFs, including Actionscript 2 and Actionscript 3, cannot be imported.

- When importing an Illustrator or PDF file in Toon Boom Harmony, by default the file will be imported as separate layers. The import will use the Illustrator file's top level groups as separate layer names. However, you can change this behaviour by deselecting the PDF/Illustrator Import as Separate Layers option, to import your file as a single layer .

If a project was started in Adobe Flash and needs a more professional boost, such as camera movements or multiplaning, it can easily be imported into Harmony.

The actual `*.fla` file is not supported in Harmony, so you must export your project from Adobe Flash.

# Importing Adobe Illustrator (.ai) files and Portable Document Files (.pdf)

T-HFND-007-006

You can import vector Adobe Illustrator (`.ai`) files as well as Portable Document Files (`.pdf`) through the Library view and File menu. Make sure to have the rights to modify your Library folder and that the colours in your file are encoded in RGB.

### How to import an .ai or .pdf file

1. In the Library view, right-click on the Stage Advanced Library folder and select **Right to Modify** to unlock the library folder. Make sure the Lock icon disappears from the folder. If not, your library will remain locked and you will not be able to import files.
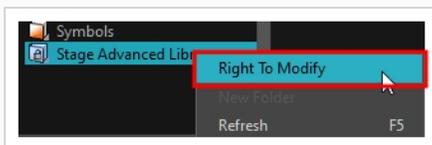
   

2. Do one of the following:

   - In the top menu, select **File > Import > SWF, Illustrator Files to Library**.

   - Right-click on any unlocked folder and select **Import Files**.

   The browser window opens.

3. Find and select your AI or PDF file in the Import Files dialog box and click **Open**.

   The Rename dialog box opens.
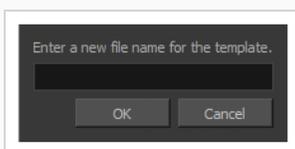
   

4. Type in a name for the new template or keep the name of the original AI or PDF file.

5. Click **OK**.

   A new template folder is created in the Library view.

6. Drag the new template folder from the Library view to the left side of the Timeline view. Wait until the copy cursor  appears before releasing the folder.
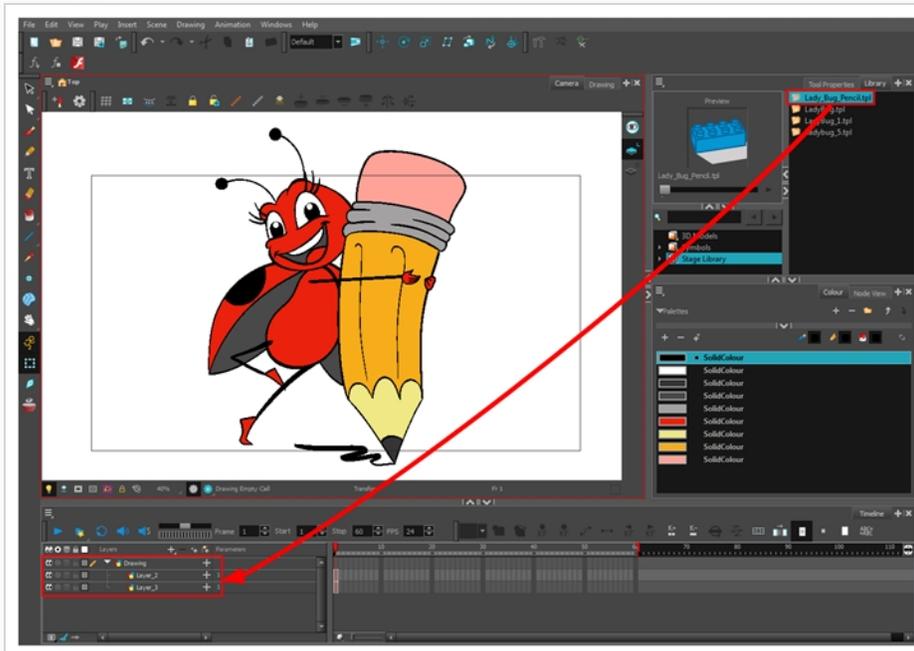
The message window opens.

7. The colour recovery dialog box appears, requesting that a colour recovery should occur. Before clicking the Yes button, you have the option of selecting the **Do Not Ask Again For This Session** option if you plan to import multiple .ai or .pdf files.



The colour palette used to create the .ai or .pdf file is imported and a new palette is created under the imported file's name.

# Importing Flash Movies (.swf)

You can import Flash (`.swf`) files in Harmony exported for any version of Flash Player up to version 14.

> ⚠️ **IMPORTANT**
>
> Some effects are not supported when imported from Flash movies into Harmony.

## How to import a SWF file

1. In the Library view, right-click on the Stage Advanced Library folder and select **Right to Modify** to unlock the library folder. Make sure the Lock icon disappears from the folder. If not, your library will remain locked and you will not be able to import files.

   

2. Do one of the following:

   - In the top menu, select **File > Import > SWF, Illustrator Files to Library**.

   - Right-click on any unlocked folder and select **Import Files**.

   The browser window opens.

3. Find and select your `.swf` file from the Import Files dialog box and click **Open**.

   The Rename dialog box opens.
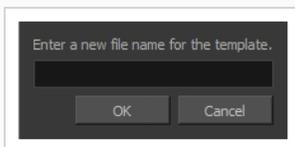
   

4. Type a name for the new template or keep the name of the original `*.swf` file.

5. Click **OK**.

   A new template folder is created in the Library view.

6. Drag the new template folder from the Library view to the left side of the Timeline view. Wait until the copy cursor ⬚ appears before releasing the folder.
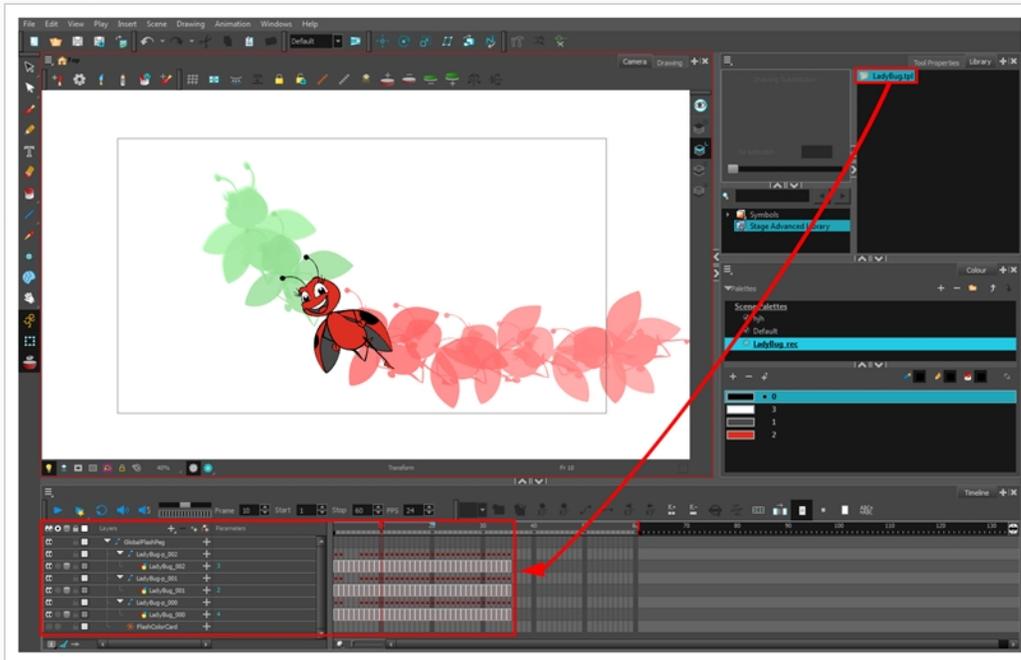
7. The colour recovery dialog box appears, requesting that a colour recovery should occur. Before clicking the Yes button, you have the option of selecting the **Do Not Ask Again For This Session** option. This might be useful if you plan to import multiple `*.swf` files.
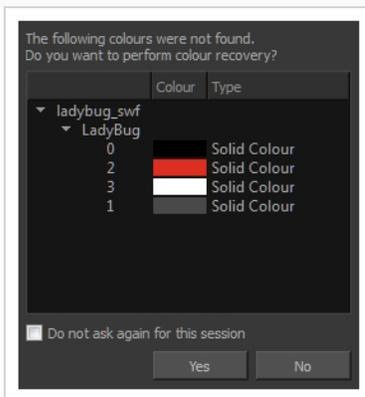


The colour palette used to create the `.ai` or `.pdf` file is imported and a new palette is created under the imported file's name.

> **NOTE**
>
> All the Flash layers are automatically attached to a parent peg called GlobalFlashPeg. DO NOT DELETE THIS PEG. To maintain the look of your movie, it's important not to delete this peg or detach its child layers.

The Adobe Flash file layers appear in the Timeline view. Symbols that were created in Flash become regular drawing layers, but can be reconverted into symbols in Harmony. Symbols within symbols or drawings within symbols collapse into their corresponding parent symbol.

> **NOTE**
>
> Some layers in your .swf movie may be combined in a single layer as a result of optimization enhancements in your movie file. You can easily move these elements back onto separate layers.

In addition, all drawing elements that are dynamically linked to the Toon Boom Harmony file are grouped together in one folder. In our example, this means that when you scroll through the Drawing Substitution preview in the Library view, the different hand, leg, tentacles, antennae, torso and facial positions are all organized together.

# Distributing SWFs to Layers

In some instances, due to an optimization enhancement in the exported SWF file (CS4), some of the layers might be combined as a single layer. If so, you can quickly redistribute these elements onto individual layers again.

## How to distribute to layers

1. In the Tools toolbar, click the Select ⬉ tool.

2. In the Camera view, select the drawing that contains elements you want to redistribute onto individual layers. To select the all the elements of the selected drawing layer, press Ctrl + A (Windows/Linux) or ⌘ + A (macOS).

3. Do one of the following:

   - From the top menu, select **Drawing > Distribute to Layers.**

   - In the Tool Properties view of the Select tool, click the Distribute to Layers ⊞ button.

   The number of drawing layers corresponding to the different grouped elements are created in the Timeline view. The selected elements in the original drawing layer are removed. Each element is distributed onto a new drawing layer.

4. Repeat the process for each drawing that contains elements to redistribute.

# About FLA Import

You can export files from Flash and import them in Harmony to transfer character rigs, props and backgrounds.



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Flash import is available on all three editions of Harmony on Windows and macOS. It is not possible to do so on GNU/Linux versions.

On the Flash side, users can work with these versions:

- Adobe Flash CS5
- Adobe Flash CS5.5
- Adobe Flash CS6
- Adobe Flash CC
- Adobe Flash CC 2014
- Adobe Flash CC 2015

> **NOTE**
>
> Exports from older versions of Flash are not possible.

At the scene level (top timeline), you must have a symbol, such as a movie clip or graphic. Colour shapes, shape lines, drawing objects, groups and bitmaps at the scene level won't be exported. If these elements are present, you will be prompted to perform a clean up of the scene level. For details on importing Flash files, see *Flash Export and Import Guidelines* on page 1105

As part of preparing to import Flash files in Harmony, you must add an extension to Flash using Adobe Extension Manager—see *Installing the Export to Harmony Option* on page 1089.

It is important to use the correct version of Adobe Extension Manager:

- If more than one version of Flash is installed on your computer, be careful where you install the extension. If it's added to Adobe Extension Manager of Flash CS6, the extension will only be added in this version

and not the other.

- If you have a previous version of the extension, you must remove it first and install the latest extension—see *About FLA Import* on page 1087.

Harmony includes a script specially created to import FLA Export packages. You must add this script to your interface in order to use it—see *Displaying the Import Flash Scene Icon* on page 1100.

When you export your FLA files, a folder will be created that contains the **stage.tpl** and **export.json** files, as well as all the **.swf** and **.txt** files in your scene. The **export.json** file is used by a Harmony script to organize and construct the hierarchy from your exported files.

Once the Flash project is successfully imported into Harmony, here's how the hierarchy was constructed:

- Each symbol has its own peg in which all the transformation information is stored.

- The pivot information is stored in the peg's Layer Properties (Pivot fields). The pivot information came from the rotation point of the symbol in Flash.

- Registration point of the symbol in Flash represents the centre of the drawing space in Harmony. Therefore, the position of the drawing inside a symbol will be exactly the same in Stage.
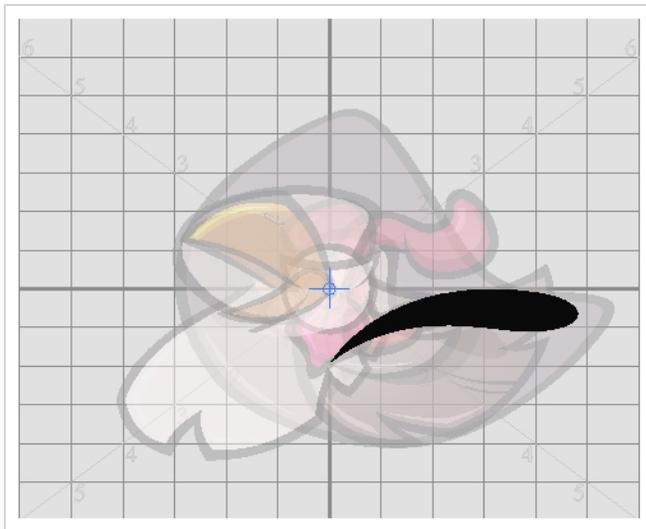


- One colour palette is created for each Flash import. One colour swatch is created per RGB value. If you have more than one zone using the same colour, they will be linked to the same colour swatch.

- If there are masks in your Flash project, they will reconstructed in Harmony using Cutter effects. Harmony is now able to understand when more than one symbol share the same mask in Flash. Each symbol sharing the same mask will be grouped by a composite and connected to the cutter.

# Installing the Export to Harmony Option

The extension is required in order for Flash to export files to Harmony. The extension is called `Export to Harmony.zxp` and is located here:

| OS | Edition | Location |
|---|---|---|
| Windows | Premium | C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony [version] Premium\resources\flash |
| | Advanced | C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony [version] Advanced\resources\flash |
| | Essentials | C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony [version] Essentials\resources\flash |
| macOS | Premium | Applications > Toon Boom Harmony [version] Premium > tba > resources > flash |
| | Advanced | Applications > Toon Boom Harmony [version] Advanced > tba > resources > flash |
| | Essentials | Applications > Toon Boom Harmony [version] Essentials > tba > resources > flash |

> **NOTE**
>
> Before installing the extension, you must remove all Harmony offline and database preferences.

### How to install the Export to Harmony extension

1. Launch Adobe Extension Manager.

2. In the top-right corner of the Adobe Extension Manager, click on **Install**.

   An Open dialog appears.

3. In the Open dialog, browse to and select the **Export to Harmony.zxp** file, then click on Open.

   A message opens informing you that you're about to install the Export to Harmony extension.

4. Click on **Accept**.

   You may see the following message confirming that you want to install the extension. Click **Install**.
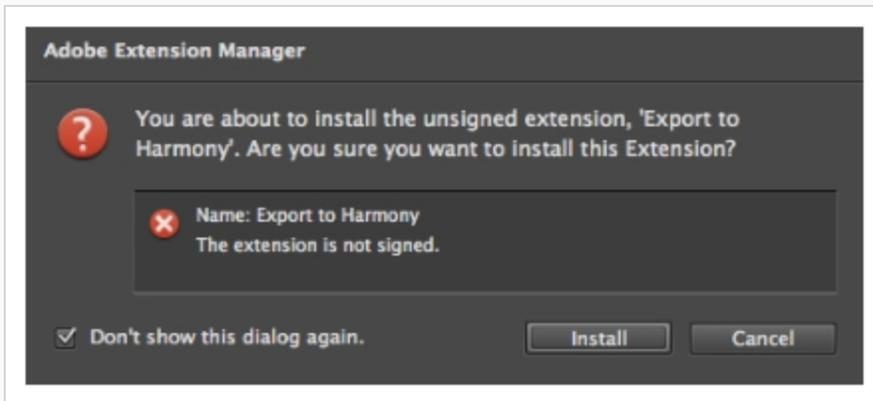
5. In order for the changes to take effect, you must close and restart Adobe Flash.

6. Click **OK**.

### How to remove a previously installed Export to Harmony.zxp extension (if applicable)

1. If open, close Adobe Flash.

2. Start Adobe Extension Manager.

3. From the Products list, select **Adobe Flash**.

   If you have a previous version of the `Export to Harmony.zxp` extension installed, it will be listed in the right pane.

4. Select the extension and click **Remove**.
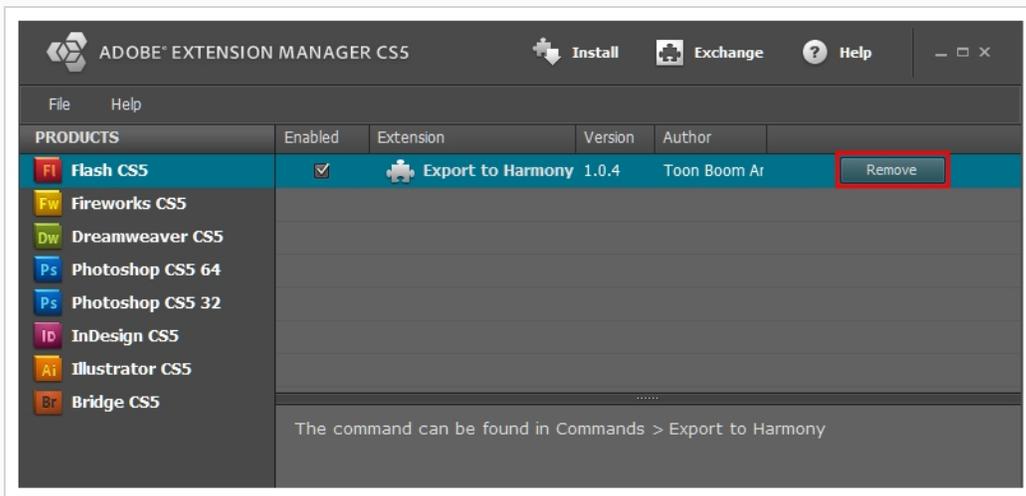


   A message opens asking you to confirm the removal of the extension.

5. Click **Yes**.

Adobe has stopped maintaining and updating their Extension Manager CC, therefore, it has become difficult to install extensions. In order to link an extension from Animate CC, follow the steps below.

### How to install an extension on Windows with Adobe Animate CC version 2015 and higher

1. Ensure the following software is installed:

    - Adobe Creative Cloud

    - Animate CC and Mobile Device Packaging

2. Download the ExManCmd from Adobe's website.

    https://docs.toonboom.com/go/download/ExManCmdWin

3. Unzip the ExManCmd_win.zip package.

4. Put the ExManCmd_win folder in a safe place.

    > **NOTE**
    >
    > The ExManCmd_win folder must not be deleted; this folder is necessary for installing or updating .zxp files.

5. Copy the package containing the plug-in from the Harmony installation folder to your Downloads folder:

    C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony 15.0 Advanced\resources\flash\flashexport.zip

6. Unzip the **flashexport.zip** package.

7. Open the folder containing the unzipped files.

8. Move or copy the **Export to Harmony.zxp** file directly into the ExManCmd_win folder.

9. In the ExManCmd_win folder, hold Shift and right-click to select **Open command window here**.

10. Enter the following command:

    **ExManCmd.exe /install <filename.zxp>**.

11. Press **Enter**.

    If no error message displays, the extension has been installed on your computer and recognized by the Extension Manager CC.
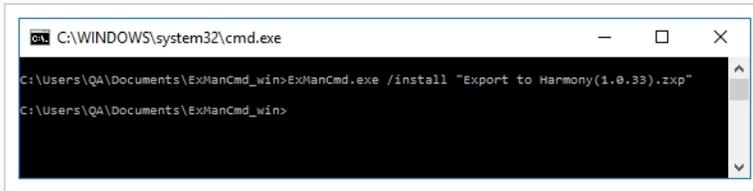
12. Open Animate CC.

13. Access Top Menu > Commands.

    If the Export to Harmony option appears in the Top Menu > Commands list, your installation was successful.
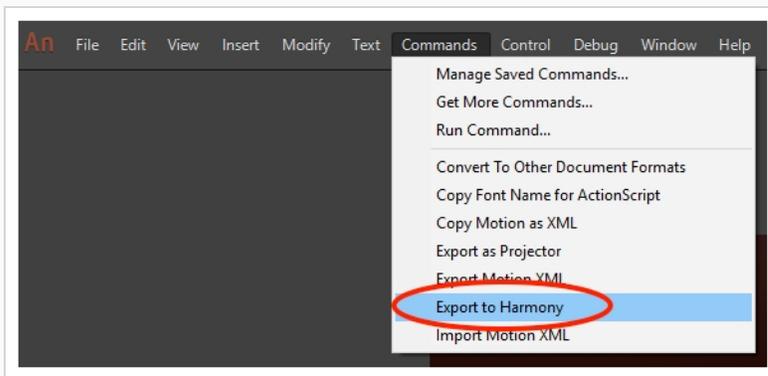


> **NOTE**
>
> If you have a region language other than English (US) installed on your computer, or if you have more than one language installed on your computer, Animate CC may not be able detect in which language folder the extension has been installed. If this occurs, you will not be able to see the Export to Harmony menu option in Top Menu > Commands list. To correct this, proceed to *How to ensure Adobe detects extension files installed on your computer* on page 1092.

## How to ensure Adobe detects extension files installed on your computer

1. Browse to:

   C:\Users\<**UserName**>\AppData\Local\Adobe\Animate <**VersionNumber**>

   If Adobe detects more than one language on your computer, you will see multiple language folders in the path.

For example:
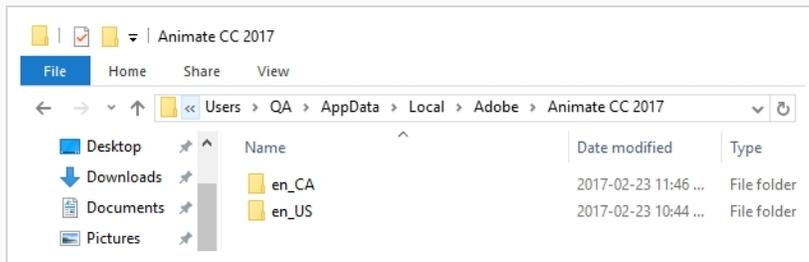


2. Look inside each folder to detect the main language used by Adobe on your computer. To do so, compare the contents of both folders.

For example, inside the en_Ca\Configuration:
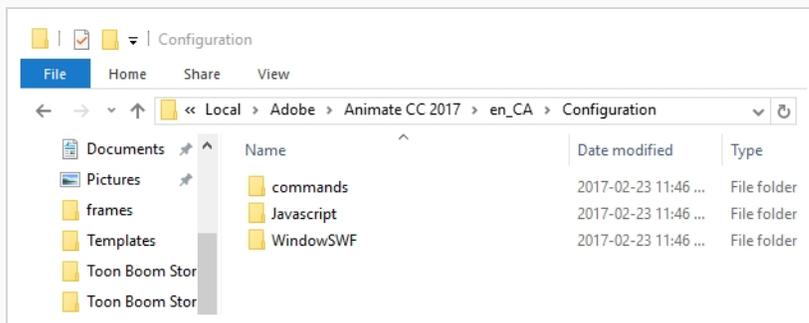


For example, inside the en_US\Configuration:
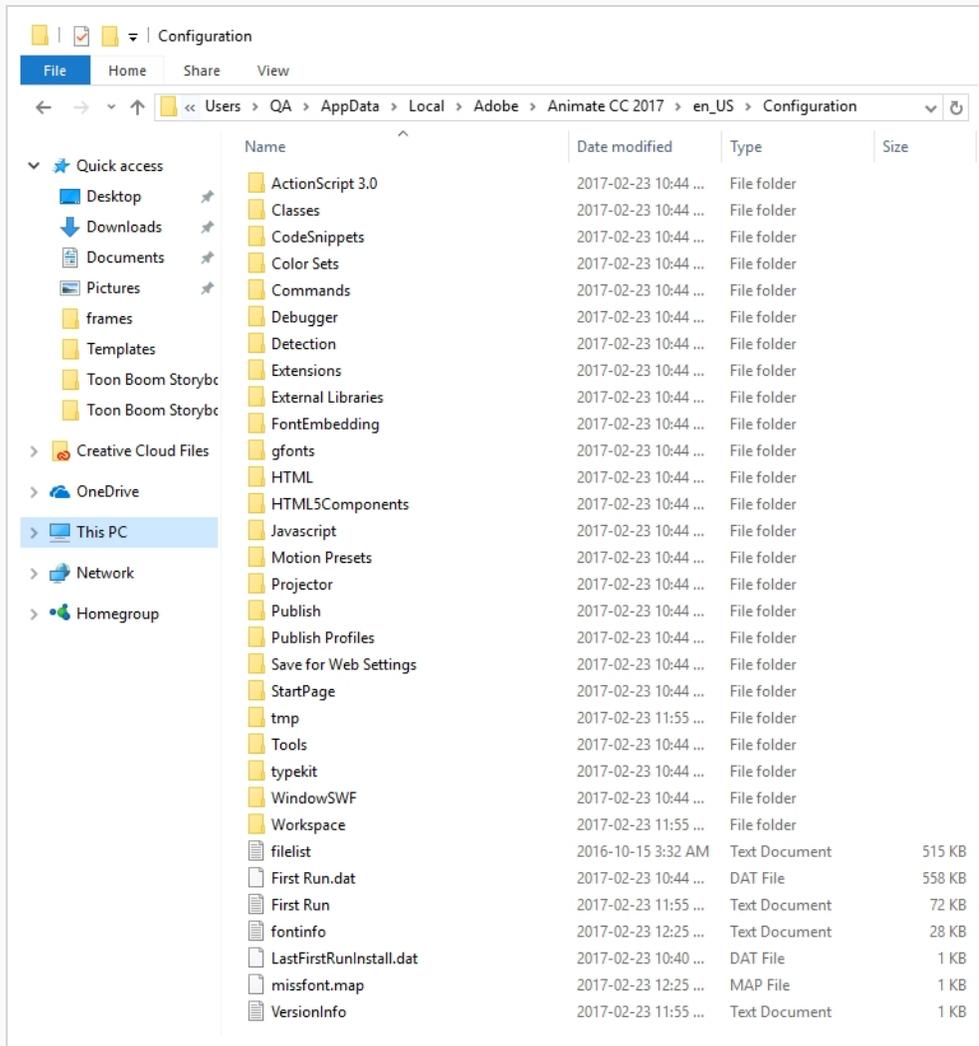
The main folder is the one with more files. In this case, Adobe is using English (US) as the main language. The folder en_CA only contains what was installed with the extension installation: commands, Javascript and WindowSWF.

3. Copy and paste the contents of the commands folder within the sub-language folder, to the commands folder within the main language folder .
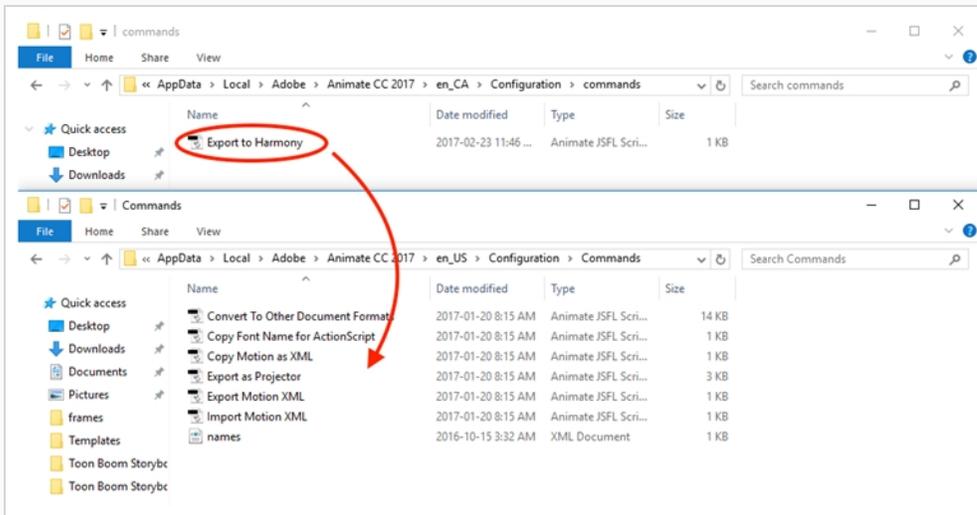
4. Copy and paste the contents of the Javascript folder within the sub-language folder, to the Javascript folder within the main language folder.
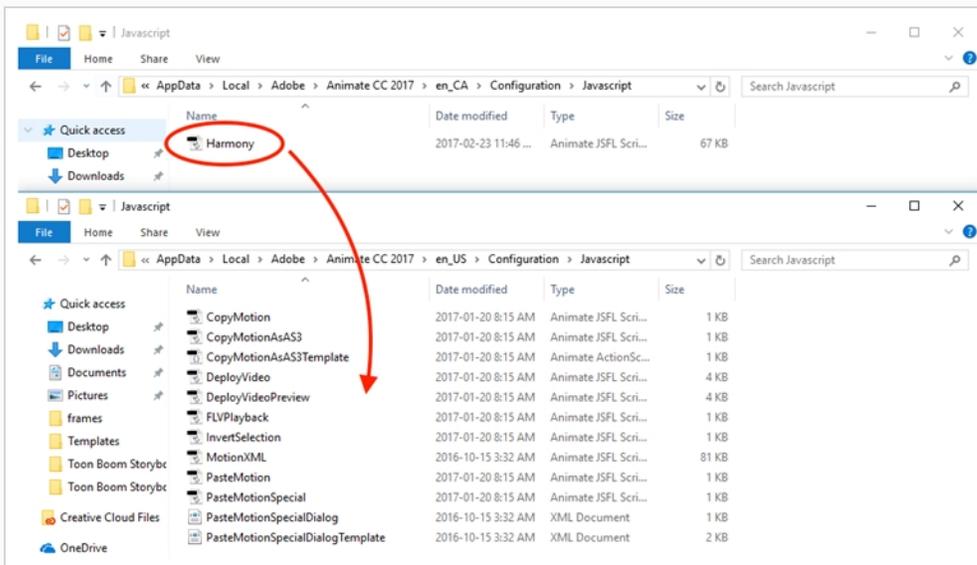


5. Copy and paste the contents of the WindowSWF folder within the sub-language folder, to the WindowSWF folder within the main language folder.
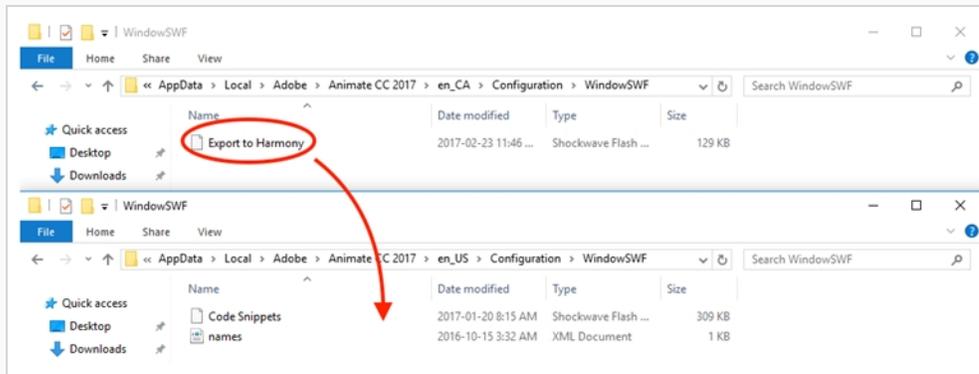
## How to install an extension on macOS with Adobe Animate CC version 2015 and higher

1. Ensure the following software is installed:

   - Adobe Creative Cloud

   - Animate CC and Mobile Device Packaging

2. Download the ExManCmd from Adobe's website.

   https://docs.toonboom.com/go/download/ExManCmdMac

3. Unzip the ExManCmd_mac file.

4. Put the ExManCmd_mac folder in a safe place.

   > 🖎 **NOTE**
   >
   > The ExManCmd_mac folder must not be deleted; this folder is necessary for installing or updating .zxp files.

5. Copy the package containing the plug-in from the Harmony installation folder to your Downloads folder:

   /Applications/Toon Boom Harmony 15.0 Advanced/tba/resources/flash/flashexport.zip

6. Unzip the **flashexport.zip** package.

7. Open the folder containing the unzipped files.

8. Move or copy the **Export to Harmony.zxp** file directly into the ExManCmd_win folder.

9. Drag and drop the .zxp file directly into the ExManCmd_mac folder.

10. In Terminal, go to the folder where the ExManCmd_mac package was extracted.

    For example, if you have put the ExManCmd_mac folder into the Downloads folder:

`cd Dowonloads/ExManCmd_mac/`

11. Enter the following command:

    `Contents/MacOS/ExManCmd --install <filename.zxp>`

12. Press **Enter**.

    If no error message displays, the extension has been installed on your computer and recognized by the Extension Manager CC.



13. Open Animate CC.

14. Access Top Menu > Commands.

    If the Export to Harmony option appears in the Top Menu > Commands list, your installation was successful.
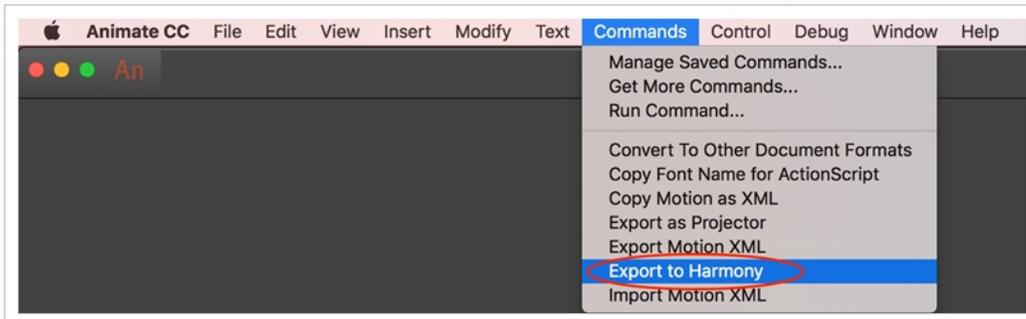
# Exporting FLA Files

## How to export FLA files for Harmony from Adobe Flash

1. Open your `.fla` file in Adobe Flash.

> **NOTE**
>
> In case of a new file, it needs to be saved before continuing the exportation process. If not, the export won't be completed.

2. Return to the scene level.

   Before exporting to Harmony, it is assumed that you are at the scene level even if you're not.

3. Do one of the following:

   - Older versions of Adobe Flash: Select **Window > Other Panels > Export to Harmony**.

   - Adobe Flash CC: **Window > Extensions > Export to Harmony.**

> **NOTE**
>
> This window must be opened once after installing the extension in the extension manager because it creates a drect link to Harmony (even if the window is not used). Afterwards, you do not have to reopen it if there is no need to change the option.

The Export to Harmony window opens from which you can set the resolution of the files as it will appear in Harmony. The default resolution is set to 1920 x 1080, like the HD default resolution value of Harmony. If needed, you can change the compression: Photo (JPG) or Lossless (PNG).



4. Do one of the following:

   - In the Export to Harmony window, click **Export** button.

   - Select **Commands > Export to Harmony**.

The Output tab displays information about the conversions necessary for the export including:

Distributing to layers, breaking apart, the presence of shapes at the scene level, ungrouping all groups to verify if any symbols are hidden inside, breaking drawing objects to transfer them as shapes, drawing substitutions, and so on. Problematic situations will also be mentioned. If nothing appears in the Output tab, then your **.fla** file is clean and does not need any conversions.

The **.txt** files contain the drawing substitution information and at which frame they are exposed. A **.swf** file is created for each symbol in Flash and a **.tpl** file is created of them. The corresponding **export.json** file is also created, which you will need when importing your Flash scene in Harmony. These files are in a folder located at the same location as the **.fla** file. The folder name is the same as the **.fla** file.

> **NOTE**
>
> If a folder with the same name as the **.fla** file already exists, you will be prompted to replace the folder. Be aware that saving Flash projects as **.xfl** files will automatically create a folder with the same name as the **.fla** file. In this case, the folder of the export will be created inside the folder of the **xfl**. If this not what you want, place a copy of the **.fla** in another path on your computer before the export.



Output tab: Information is displayed here during the export process.
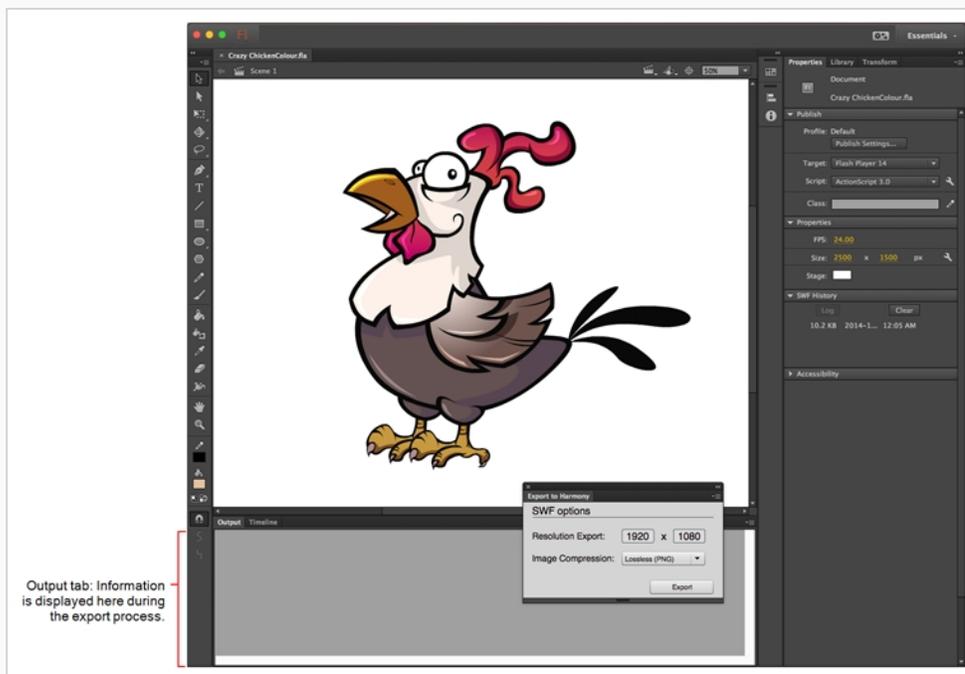
# Displaying the Import Flash Scene Icon

When importing Flash files, the Scripting toolbar must be displayed, which should contain the Import Flash Scene icon. If the icon does not appear in the Scripting toolbar, add it to the toolbar. Note that you will only have to do this once. After that, you can import Flash files whenever needed.



## How to display the Flash Import script icon

1.  From the top menu, select **Windows > Toolbars > Scripting**.

    The Scripting toolbar bars appears below the File toolbar in the upper-left of the Harmony interface.

    

2.  Click the Manage Scripts $f_\downarrow$ button.

    The Scripts Manager opens.
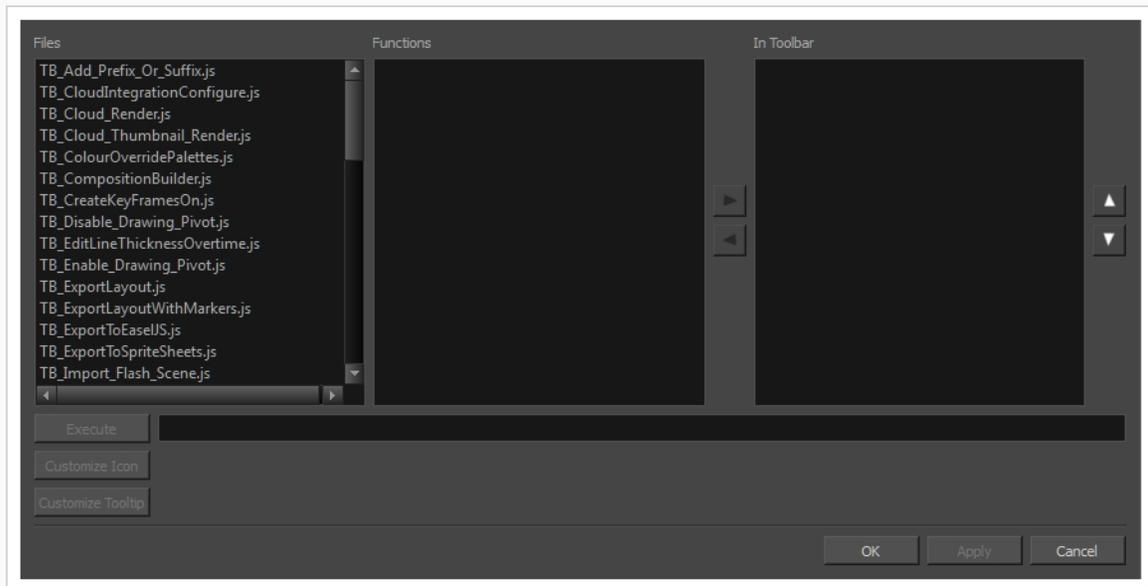
    

3.  From the Files section, select **TB_Import_Flash_Scene.js**.

    On your computer, here is the location of the script file:

    - **Windows**:

        - **Toon Boom Harmony Premium**: C:\Users\[user_name]\AppData\Roaming\Toon

Boom Animation\Toon Boom Harmony\1400-scripts

- **Toon Boom Harmony Advanced**: C:\Users\[user_name]\AppData\Roaming\Toon Boom Animation\Toon Boom Advanced\1400-scripts

- **Toon Boom Harmony Essentials**: C:\Users[\user_name]\AppData\Roaming\Toon Boom Animation\Toon Boom Essentials\1400-scripts

- **macOS**:

  - **Toon Boom Harmony Premium**: /Users/[user_name]/Library/Preferences/Toon Boom Animation/Toon Boom Harmony/1400-scripts

  - **Toon Boom Harmony Advanced**: /Users/[user_name]/Library/Preferences/Toon Boom Animation/Toon Boom Advanced/1400-scripts

  - **Toon Boom Harmony Essentials**: /Users/[user_name]/Library/Preferences/Toon Boom Animation/Toon Boom Essentials/1400-scripts

On macOS, the Library folder is a hidden folder. To display the display the folder, told down the Alt key.

- **Global**: [Server_Name] > USA_DB > scripts

- **Environment**: [Server_Name] > USA_DB > environments > [environment_name]

- **Job**: [Server_Name] > USA_DB > jobs > [job name]

- **User**: [Server_Name] > USA_DB > users > [user_name] > stage > 1400-scripts

5. From the Functions section, select **TB_Import_Flash_Scene** and click the arrow button to move it to the In Toolbar section.
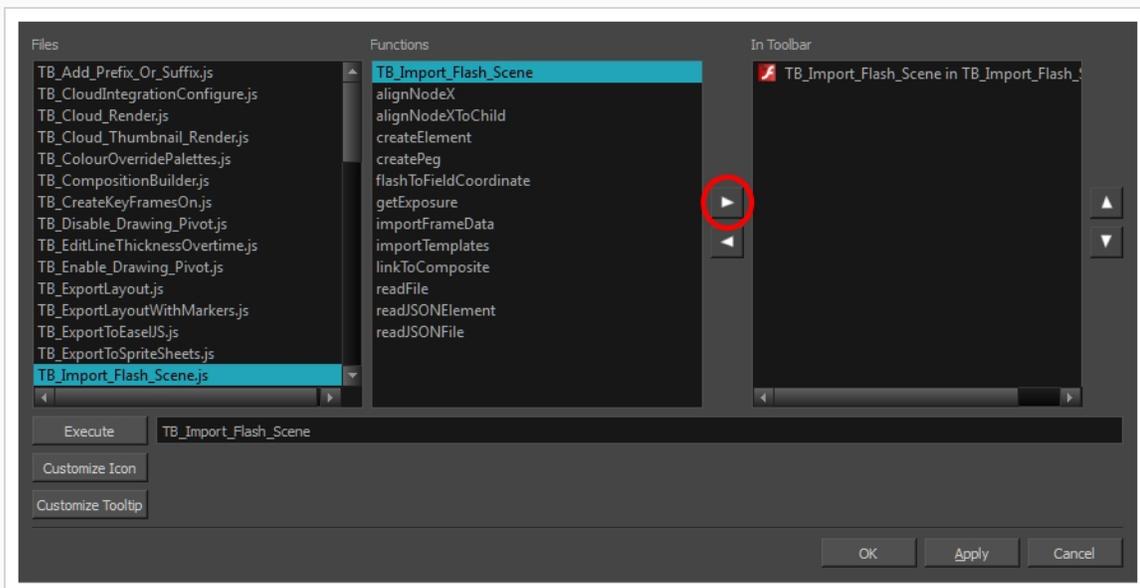
6. Click **OK**.

   The Import Flash icon appears in the Scripting toolbar. Everything is now ready to import Flash scenes.

# Importing FLA Files

Once your extension is installed, your FLA file has been exported and your displayed the FLA import script in your toolbar, you are ready to import your FLA file in Harmony.

**How to import FLA files**

1. In the Scripting toolbar, click the Import Flash ![Flash button] button.

2. In the Import Files dialog box, locate the **export.json** file contained in the folder that was created when you exported your files from Flash.

3. Click **Open**.

   In a few moments, the colour recovery dialog box appears, requesting a colour recovery.
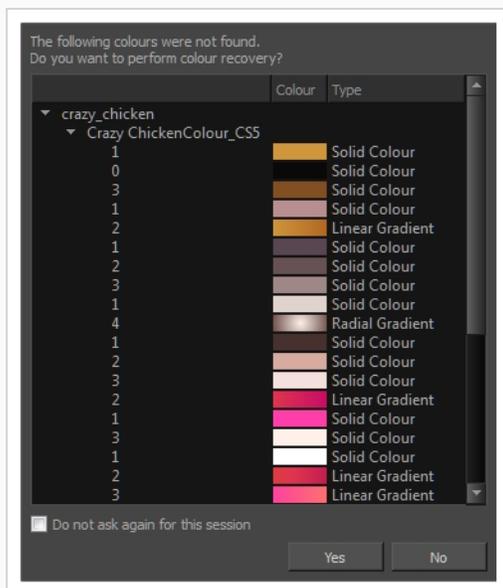


4. Before clicking **Yes**, you have the option of selecting the **Do Not Ask Again For This Session** option.

   In a few moments, the `.fla` files are imported in Harmony.

© 2015 Crazy Chicken by Clémence Dufresne
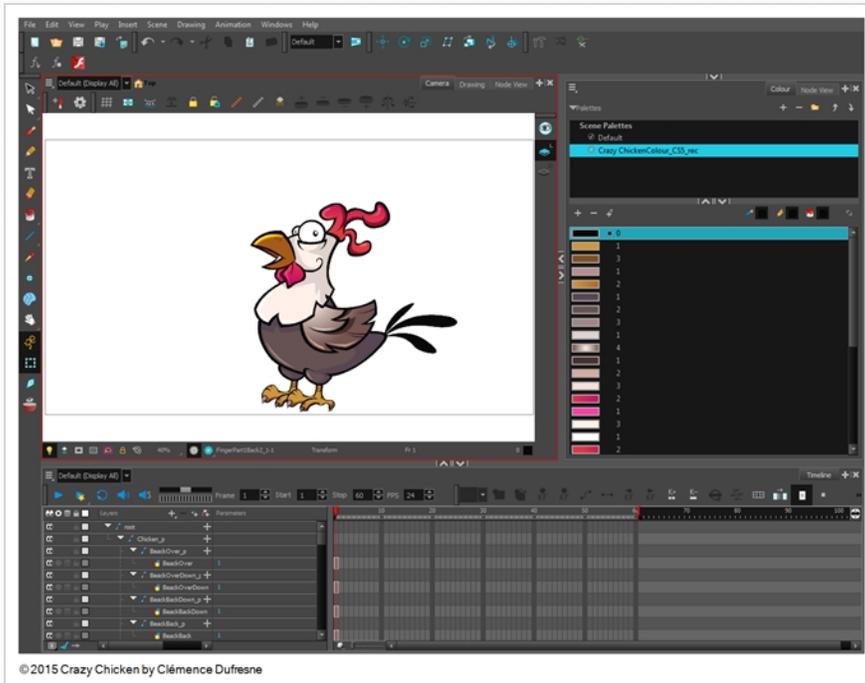
5. In the Node view, press 1 to zoom out of the Node view and see the entire node system.
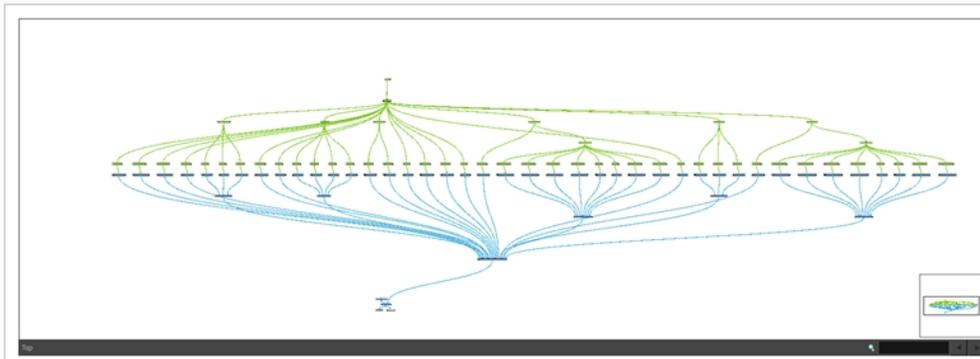
# Flash Export and Import Guidelines

The following points are guidelines for you to create optimal Flash files to export to or import in Harmony.

The following are limitations that apply when importing `.swf` files, whether they were exported specifically for Harmony or just regular Flash Movie files.

## Drawing Features

- The line width will be preserved, whether it's constant or varied with the Width tool.

- Any line caps and line joins other than round will be converted to round line caps and line joins

- The flow of gradients must be set to Extend Color, which is the default flow for gradients. Gradients with a Reflect or Repeat flow will cause the entire symbol in which they're located to be ignored.

## Effects

The following effects will not be imported by Harmony:

- Filters (ie: Adjust Colour, Drop Shadow, Bevel, etc.)

- Colour Effects (ie: Alpha, Advanced, Brightness and Tint)

- Blending (ie: Layer, Darken, Multiply, etc.)

- Render: Cache as Bitmap (Export as Bitmap is supported)

- 3D Rotations

- Component properties

## Bitmap Images

Bitmap images must be either `.jpg` or `.png` format. Symbols that have their Render mode set to Cache as Bitmap will also be imported.

## Flash Export Guidelines

The following are rules to follow when exporting assets from Flash for import in Harmony.

## Scene Root

What can be at the scene root:

- Only symbols. A minimum of one symbol is necessary. It could be a MovieClip or a graphic.

What cannot be used at the scene root:

- Shapes: Colour shapes and line shapes

- Bitmaps

- Drawing objects

- Groups: The group works differently at the scene level. They are understood as shapes at the scene level—see *Flash Export and Import Guidelines* on page 1105.

# Timeline

These features can be used in the Flash file, but will not appear when imported in Harmony.

- Guide layers for references

- Locked layers

- Disabled layers

- Folders in the Timeline view

- Other: Several symbols on the same layer/keyframe. Harmony will spread them over several drawing layers, implicitly performing a *Distribute to Layers* operation in the process.

Not recommended:

- Mixed layers—see *Flash Export and Import Guidelines* on page 1105

- Symbols, shapes, bitmaps and groups in the same layer/keyframe

- Symbols with drawing objects

# Library View

In the Library view, the following will not be exported:

- ActionScript Linkage

- Embedded fonts

# Mixed Layers

Mixed layers are something you must seriously consider before trying to export a Flash project to Harmony. Otherwise, there can be unexpected results or no export at all. In fact, it's best to avoid having mixed layers altogether.

A mixed layer is defined as a layer that has more than one instance of objects at the same keyframe. It could be a mix of symbols and groups; groups and drawing objects; symbols and shapes, and so on. Since Harmony understands symbols better than groups or drawing elements, some information can be lost along the way.

| Parameter | Description |
|---|---|
| **Drawing Objects** | No matter what is inside a drawing object, it will always be understood as a shape. So if a drawing object shares the same layer with a shape, it won't be a real mixed layer, since they are all understood as shapes. |

| | |
|---|---|
| Symbols and Drawing Objects/Shapes on the Same Layer | If there are symbols and drawing objects/shapes sharing the same layer, the symbols will be separated from them and all the drawing objects/shapes will be kept together. Drawing objects and shapes cannot be separated. In Harmony, the symbols will have their own Drawing node and the drawing objects/shapes will share the same Drawing node. Since only symbols can have a name, its name is propagated to the Drawing node and peg.<br><br>Drawing objects and shapes, however, can't do this. Drawing objects and shapes will receive the name of the MovieClip followed by an underscore and an appropriate number. For example, if you have a group inside a symbol called *HEAD*, the group will be named *HEAD_1* if there is already a Drawing node that was created with the same name. |
| **Mixed Instances at the Same Level as a Symbol** | Mixed instances at the same level as a symbol can occur when, at the same level inside a symbol, there is more than one type of element sharing the same timeline at a specific frame. Those elements may be mixed layers.<br><br>Type of problems that can occur if mixed instances are kept:<br><br>• Order of appearance can be lost<br><br>• Some layers can merge together<br><br>• Transparency of shapes can cut other shapes |

# Importing PSD Layouts

T-LAY-006-002

If you exported a Photoshop layout image from a Harmony project using the Export Layout Image function, you can easily import it back into Harmony, simply be sure to import it at the beginning of the project for accurate scene planning.

> **NOTE**
>
> Harmony supports both `.psd` and `.psb` file formats.

## How to import a PSD layout

1. In your Harmony project, select **File > Import > Images**.

   The Import Images dialog box opens.
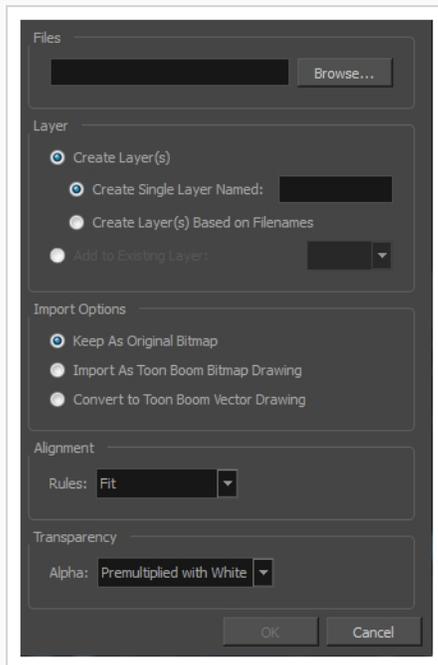
   

2. In the Files section, click **Browse** to find and select the .psd or .psb layout file on your computer. Note that this layout file must have its corresponding .xli file in the same folder.
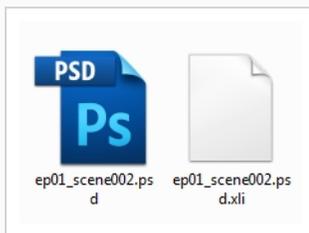
3. Once you have selected the layout file, the Use Position Information Contained in XLI File option appears in the Layer section.

This option is enabled by default. When you import the layout image in your scene, it will be automatically positioned to fit the original layout scene creating an accurate layout guide. You can disable this option if you want the imported layout image to be imported according to the normal behaviour of the import process. The layout image will be incorrectly aligned as it was when it was first created.



4. In the Layer section, select the **Create Layer(s)** option, then select one of the following options:

- **Create Single Layer Named:** Creates a new layer with the specified name and imports the images into it.

- **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

- **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if you're importing images as vector drawings, you can only import them into vector drawing layers.

5. Select the **Create Symbol for Imported Items** option if you want the layers to be contained in symbols.

6. In the Layer section, select the **Create Layer(s)** option, then select one of the following options:

- **Create Single Layer Named:** Creates a new layer with the specified name and imports the images into it.

- **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, if you import three files named a-1.tga, a-2.tga and b-1.tga, this will create two layers, one named "a" and one named "b". Layer "a" will contain the two first images and "b" will contain the third one.

- **Add to Existing Layer:** Imports the images into the specified layer. Note that you can only import into layers that are compatible with your import options. For example, if

you're importing images as vector drawings, you can only import them into vector drawing layers.

7. Select the **Create Symbol for Imported Items** option if you want the layers to be contained in symbols.

8. In the Import Options section, select the following option to import your image as its original format.

   - **Keep As Original Bitmap**: Retains an imported image as a bitmap. In the Alignment section, decide on the size and placement of your image within the camera frame. Depending on the Scene Settings (the height and width in pixels that you chose for your project), an image that you import may get scaled to the point where all its individual pixels become visible.

9. Decide whether to select **Vectorize Imported Items** option.

10. Click **OK**.

   The Multilayer Image Import Settings dialog box opens.
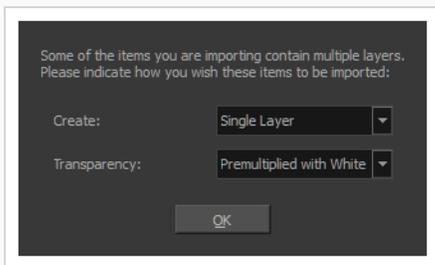
   

11. From the Create menu, select one of the following:

   - **Single Layer**: To import the Camera and Layout layers merged together.

   - **Separated Layers**: To keep your Camera and Layout layers separated.

12. From the Transparency menu, select an alpha option—see the Reference guide .

13. Click **OK**.

   Your image appears as separate layers in the Timeline view, corresponding to the .psd layer group folders `Camera_Set` and `Layout_Set`. You can now use this layout as a guide for scene settings.

# Importing QuickTime Movies

T-ANIMPA-004-002

When creating an animation, it is not unusual to embed moving elements saved as videos within the animation. Toon Boom Harmony allows you to import QuickTime movies into your project.

### How to import a QuickTime movie

1. From the top menu, select **File > Import > Movie**.

2. Browse for the QuickTime movie to import and click **Open**.

   The Import Images dialog box opens.

> **NOTE**
>
> Do not browse for the movie file again. Leave the automatically generated field text as "many files selected".
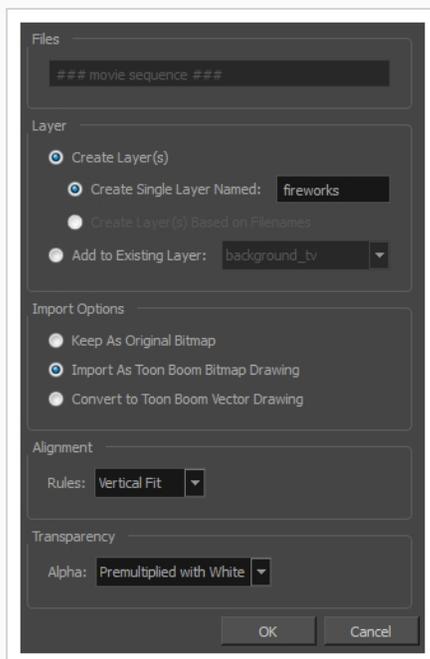


3. Make your decisions for the Layer, Alignment and Transparency sections of this dialog box—see the Reference guide .

4. Click **OK**.

   The QuickTime video appears in the Timeline view as an image sequence. You can scroll through the film frame-by-frame just as you would scroll through your animation drawing-by-drawing.

# About Scanning

Harmony can receive images from any TWAIN device, such as scanners or digital cameras. You can load these images as bitmaps into your scene or convert them into vector-based images that can be edited using Harmony.



You must install a TWAIN driver for your device in order to access its contents. Refer to the manufacturer of your device to get a TWAIN driver. Once all the animation layers are scanned in, you can set the timing in the digital exposure sheet.

Once your traditional animation sequences are completed and cleaned up, you're ready to scan and import them in Harmony. The scanning process is the point where the traditional production becomes digital. It's the moment where you use Harmony to control the project.

# Scanning Images

Toon Boom Harmony can receive images from any TWAIN device such as scanners and digital cameras. These images can either be loaded into your scene as bitmaps or converted into vector- based images that can be edited using Toon Boom Harmony.

If your operating system does not automatically recognize your device after it has been connected, you must install the correct TWAIN drivers in order to access its contents. You can usually download the drivers from the device manufacturer's website.

### How to scan images

1. From the top menu, select **File > Import > From Scanner**.

   The Scan Drawings window opens.
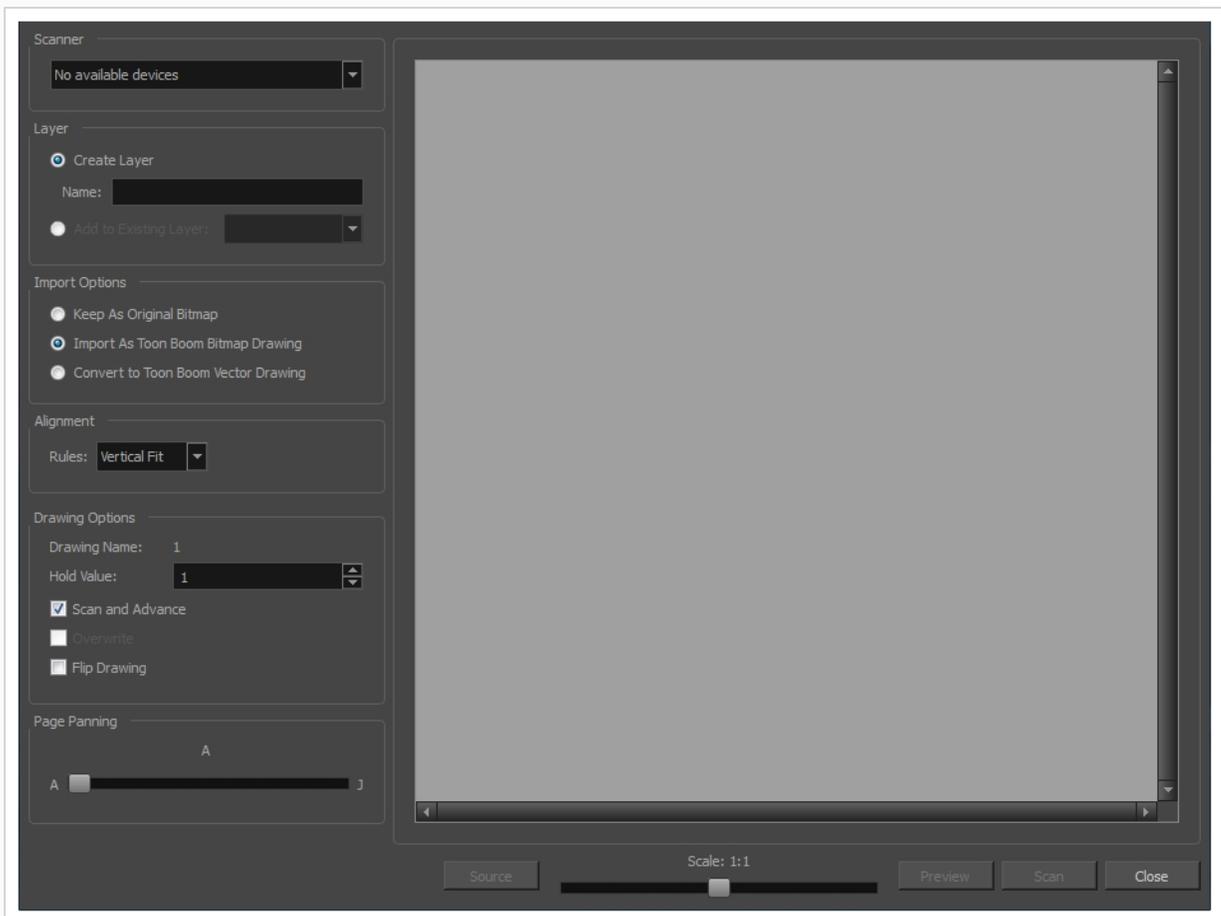
   

2. In the Scan Drawings window, select your scanner or other supported TWAIN device from the Scanner menu. If none are available, check your device to ensure that it's properly connected to your computer. If your device still does not appear in the menu, you may have to shut down and restart the software.

3. In the Layer section, decide if the scanned or imported image will be placed on a new layer or existing layer—see the Reference guide .

4. In the Import Options section, select the type of image you want to create—see the Reference guide .

5. In the Alignment section, decide on the size and placement of your scanned image within the camera frame. Depending on the scene settings (the height and width, in pixels, that you chose for your project), an image that you scan may be scaled to the point where all its individual pixels become visible—see the Reference guide .

6. In the Drawing Options section, set the following options if desired:
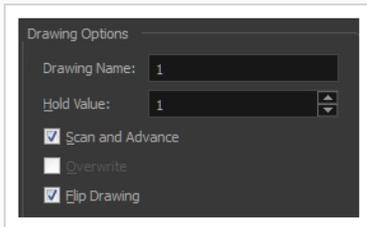


- **Drawing Name**: Name of the drawing to import.

- **Hold Value**: Type the number of frames that the drawing will be exposed.

- **Scan and Advance**: Lets you scan one drawing after another every time you click **Scan.**

- **Flip Drawing**: Mirrors the drawings horizontally and scans it this way.

7. Adjust the **Scale** control and sliders in the Preview Image window until you are satisfied with the view.



8. Click **Scan** to scan your drawing.

9. If you are scanning panoramic drawings, in the Page Panning section, move the slider to the next letter to capture your next frame.



10. If you have more than one drawing, set the next drawing in place and click **Scan** again. Repeat until you have finished scanning all your drawings.

# Vectorizing Scanned Drawings

You can turn scanned images into vector drawings, while maintaining the sketchiness of a pencil line or into vector images with a bitmap fill. Both options can add life to an animation, which straight vectorization with smoothing does not usually afford.
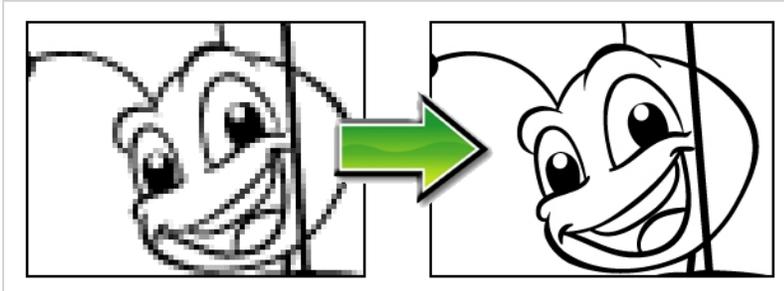


## How to scan and vectorize drawings

1. From the top menu, select **File > Import > From Scanner**.

   The Scan Drawings window opens.
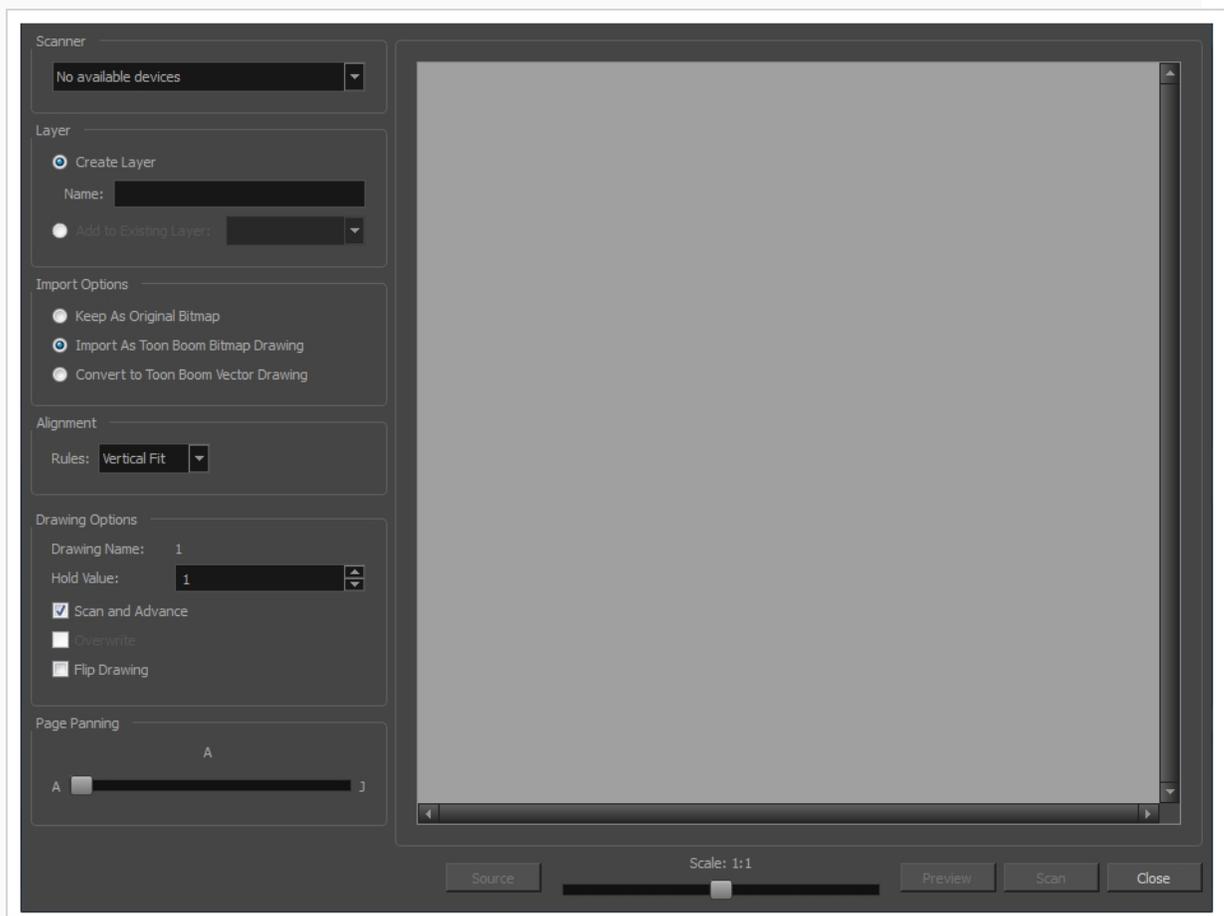
2. Select your scanner from the Scanner list.
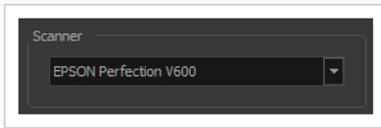


3. Click **Preview** to get a test scan of your drawing.

4. In the Layer section, select one of the following:

   - **Create Layer**: Imports an image into a new layer. Type a name for the layer in the **Name** field.

   - **Add to Existing Layer**: Imports the image into an existing layer. Select a layer from the Layer list.

5. In the Import Options section, select the **Convert to Vector Drawing** option.

6. In the Vectorization section, set the following:
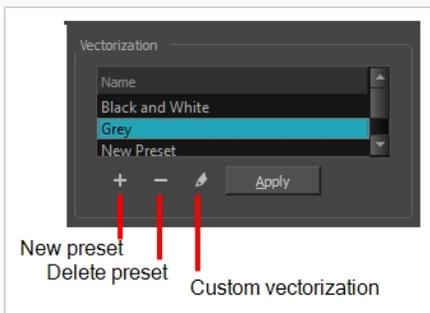


   - **Black and White**: Vectorizes drawings as a solid black line; creates a 100% vector-based drawing. Set the Threshold and Smooth parameters.

   - **Grey**: Vectorizes the image as a mix of vector contour and greyscale bitmap filling. Lines keep the texture from the scan, and the white of the paper becomes transparent.

   - **New Preset**: Lets you create a new preset.

   - **Delete Preset**: Lets you delete any preset in the list.

   - **Custom vectorization**: Lets you set custom vectorization parameters—see _About Custom Vectorization Parameters_ on page 1118.

7. In the Drawing Options section, set the following options if desired:
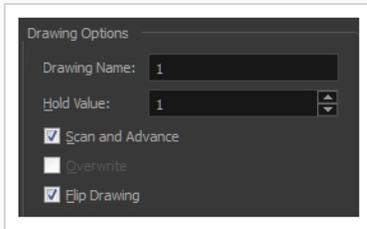
- **Drawing Name**: Name of the drawing to import.

- **Hold Value**: Type the number of frames that the drawing will be exposed.

- **Scan and Advance**: Lets you scan one drawing after another every time you click **Scan.**

- **Overwrite**: Lets you overwrite existing drawings—see _Vectorizing Scanned Drawings on page 1115_.

- **Flip Drawing**: Mirrors the drawings horizontally and scans it this way.

8. Adjust the **Scale** control and the sliders in the Preview Image window until you're satisfied with the view.



9. Click **Scan** to import your drawing.

10. If you are scanning panoramic drawings, in the Page Panning section, move the slider to the next letter to capture your next frame.



11. If you have more than one drawing, set the next drawing in place and click **Scan** again. Repeat until you have finished scanning all your drawings.

# About Custom Vectorization Parameters

You can create your own vectorization settings with Harmony. The vectorization parameters you create can be saved, shared and also inserted into the `VectOptions.conf` file used by the Harmony Scan and Control Center modules when scanning or vectorizing a series of drawings.

You can use an interface to select and test the different options, as well as type in some advanced settings.

The Vectorization Parameters dialog box lets you vectorize pencil drawings, along with any red, blue or green pencil marks you may have used to indicate highlights and shadows. The drawing will be vectorized into pure red, blue, green and black (RGB values), while creating colour art zones wherever lines connect. After painting in your tones and highlights, change your pure RGB colours to transparent (0 Alpha) in the Colour Picker window and watch the indicator colour zone lines disappear.

# Creating Vectorization Styles

With Harmony, you can create custom vectorization parameters that can be saved, reused, shared, or used to set the Harmony Scan module vectorization style list.

You can vectorize drawings using one of the following methods:

- **Black and White**: All the lines become vector based and 100% black. The white areas become completely transparent.

- **Greyscale:** All the lines preserve their initial textured look in grey shades as a bitmap image contained inside a vector frame. The white areas become completely transparent.

- **Four Colours**: With the advanced parameters, you can isolate the red, green, blue, and black lines and turn them into 100% vector lines, preserving their original colours—see the Reference guide .

### How to create or modify the vectorization parameters

1. From the top menu, select **File > Import > From Scanner**.
   You can also open it from any other import option that allows you to customize the vectorization parameters (i.e. from the scanner).

2. In the Scan Drawings window, do the following:

   - In the Layer section, decide on the layer options.

   - In the Import Options section, select the **Convert to Toon Boom Vector Drawing** option

   - Click **Preview**.

3. In the Vectorization section, click the Vectorization Parameters  button.

4. The Vectorization Parameters dialog box opens.

5. Set the different options available in the Vectorization Parameters dialog box—see the Reference guide .
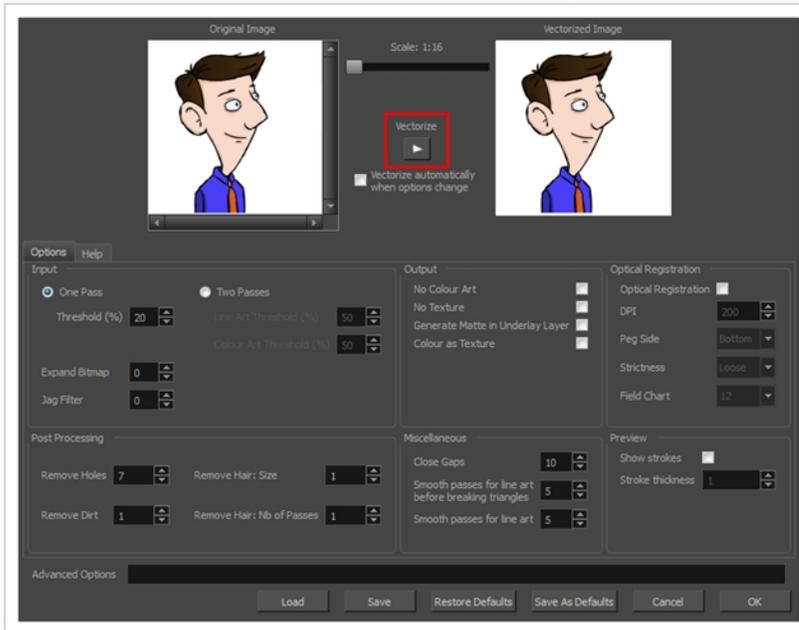
6. Click the **Vectorize** button to update the Vectorized Image preview.

   The vectorized image is just a preview. The actual vectorization happens when you click **OK** in the Import Images dialog box. There are many options to try in the Vectorization Parameters dialog box. These are applied during the vectorization process.

7. To set advanced parameters, read the information on the Help tab, then type in the Advanced Options field at the bottom of the dialog box.

8. To save your vectorization parameters to reuse them later, share them, or use them to set the Harmony Scan module vectorization style list, click **Save**.

9. In the Browser window, name and save the file.
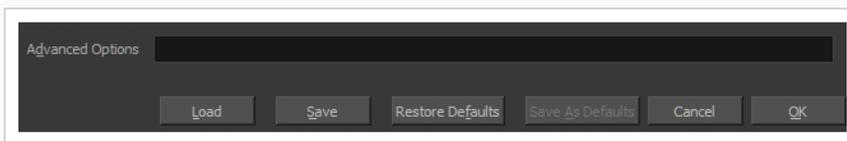


10. To save the current settings as your default settings, click **Save As Default**. To restore the default settings, click **Restore Defaults**.

11. To load a vectorization style, click **Load** and locate the existing **\*.vof** file.

12. Click **OK**.

# Configuring the VectOptions.conf File

Toon Boom Harmony Server uses a file called **VectOptions.conf** to get the vectorization style when batch vectorizing a series of drawings. A series of default styles is available in this file, but you will certainly want to create your own to fit your production style.

## How to set the VectOptions.conf file

1. Launch Configuration Editor:

   - **Windows**: Open the Start menu and, in the Programs list, select **Toon BoomHarmony 15.0 Advanced > Tools > 🅒 Configuration Editor**.

   - **macOS**: In Finder, go to **Applications > Toon BoomHarmony 15.0 Advanced> Tools > 🅒 Configuration Editor**.

   - **GNU/Linux**: In a terminal, type the following command:

     ```
     $ sudo /usr/local/ToonBoomAnimation/harmonyAdvanced_15.0/lnx86_64/bin/ConfigEditor
     ```

   The Configuration Editor window opens.

2. In the bottom section of the window, select the **VectOptions.conf** tab.
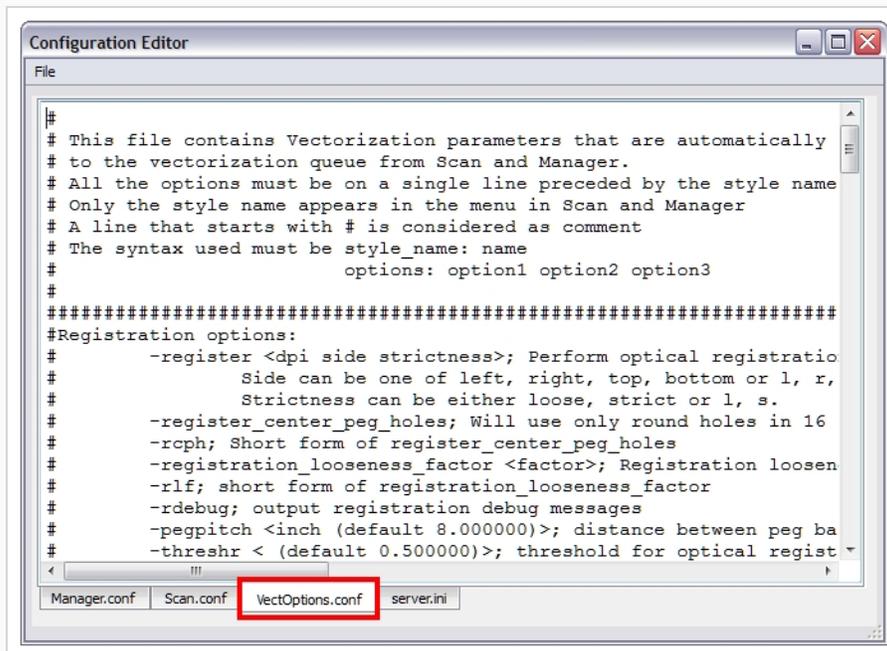


3. Scroll down the VectOptions.conf file to see all the different options available for creating your custom vectorization style. These options are the same as in the Vectorization Parameters dialog box. It is recommended that you create your vectorization style using Harmony and the

Vectorization Parameters window and copy the result parameters in this file—see *About Custom Vectorization Parameters* on page 1118

4. Scroll down toward the bottom of the file to see the default styles. You can modify them or add new ones to the list using the parameters you got using the Vectorization Parameters window. Notice that some of the lines have a "#" sign at the beginning to indicate that the line is a comment and will not appear in the style list. The lines that have no sign at the beginning appear in the style list.
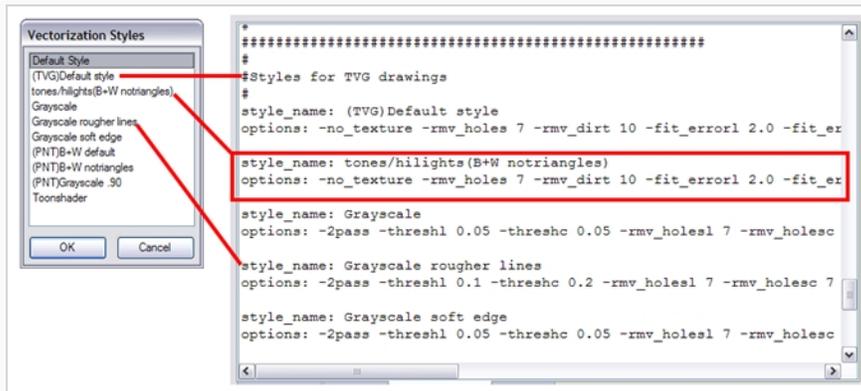


5. To create a new style, type the following below the existing styles:

   `style_name:`

   This should be followed by the name of your new style. For example: `style_name: Black Lines`.

6. Under the style name line, type the following:

   `options:`

7. Copy and paste the information in your *.vof style when saving your settings in the Vectorization Parameters window.

   ‣ To open the *.vof file, use any plain text editor application.
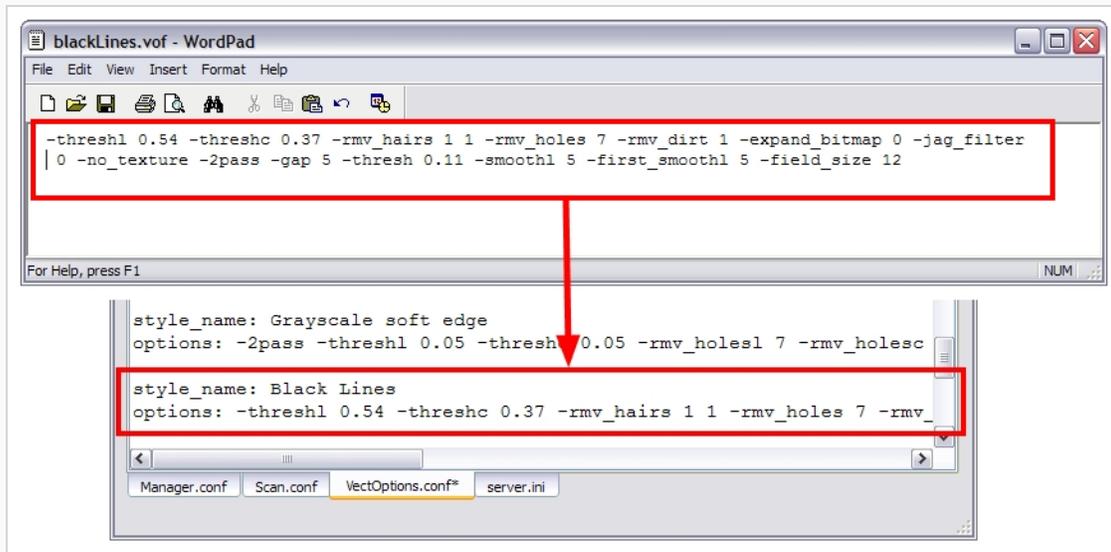
8. In the Configuration Editor's top menu, select **File > Save**.

9. If you have Toon Boom Harmony Scan on your computer, you can start the application and verify that the new style appears in the Vectorization Style list under **Edit > Vectorization Style**.

> **NOTE**
>
> If you are using the batch processing method available with Toon Boom Harmony Server to scan and vectorize drawings, the selected style must be available on all the machines included in the batch processing list.
>
> Refer to the Harmony Server Guide Guide to learn more about setting up and using batch processing.
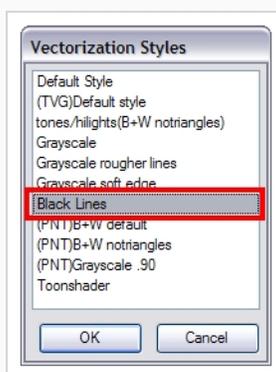
# Overwriting Using Scanned Drawings

At times, it might be more efficient to create a scene and fill in the exposure sheet before scanning. Then you can simply scan your drawings to fill in the necessary cells in the exposure sheet. Note that when you start scanning, the drawings are named sequentially regardless of whether there is an exposure or not in the Xsheet.

### How to overwrite existing drawings

1. In the Xsheet, select the first cell to overwrite.

2. From the top menu, select **File > Import > From Scanner**.

3. In the Scan Drawings window, do the following:

   - **Scanner**: Select your scanner from the list.

   - **Layer**: Select the **Add to Existing Layer** option.

   - **Import Options**: Select the **Convert to Toon Boom Vector Drawing** option.

   - **Vectorization**: Select an appropriate option: Black and White or Grey, or create a new preset.

   - **Drawing Options**: Select the **Overwrite** option.
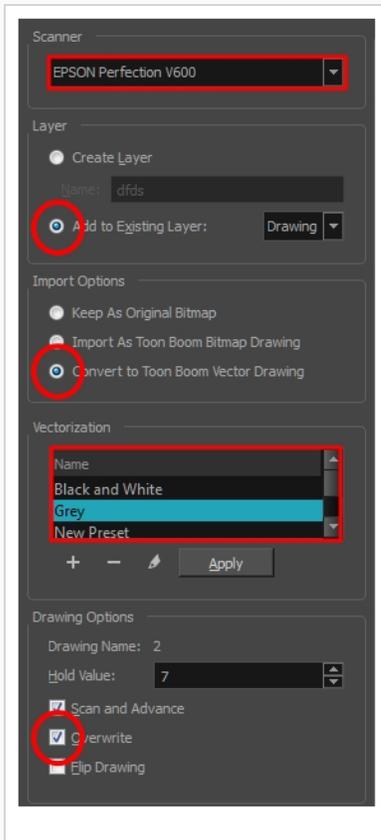
4.  Click **Preview**.

    The scanner window opens.

5.  Make any necessary adjustments to the image before scanning, then click **Preview**.

6.  In the Scan Drawings window, click **Scan**.

    The scanned drawing replaces the selected cell in the Xsheet, filling the entire exposure. The Drawing Options section indicates the name of the cell the drawing overwrote and its exposure value.

# Chapter 15: Effects

When creating a scene, rigging a character or once your animation is finished, you can add effects such as blurs, glows, shadows, colour filters and transparency filters and to enhance your project's quality. Effects change the way layers or groups of layers are rendered in your scene.



Effects are special types of layers that you can add to your scene's structure. For an effect layer to work, it must be connected as the child of a drawing, a group, or another effect. Effects only alter the element that they are connected to. This gives you flexibility in deciding which elements of your scene are affected by an effect.

Some effects need to be linked to another layer, referred to as a *matte* layer, which is used to define the area they should affect.  A good example of this is the Tone effect, which is used to add a shadow of a given shape to a layer. Alone, the Tone effect has no impact on the drawing it is connected to. Once combined with a matte layer, the Tone effect will use the matte's shape to apply a shadow to the drawing. Even if the matte's shape bleeds outside of the drawing's outlines, the shadow will only be applied within the drawing's outlines.
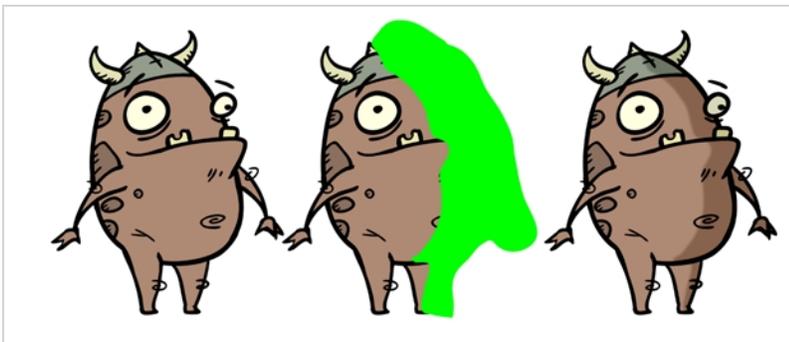
A matte layer is simply a regular drawing layer that is connected to an effect as its matte. The effect takes the shape of the drawing in the matte layer to determine the area of the drawing it affects. The colours and details in the matte layer are ignored by the effect, only its shape is taken in account.

In the Timeline view, an effect must be rigged as the child of the drawing layer or group it is meant to affect.
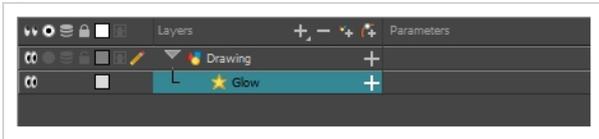


If the effect can use a matte layer, it will have a Matte parameter when you expand its parameters list. You can drag and drop the layer you want to use a matte for your effect onto the Matte parameter of your effect to link them.
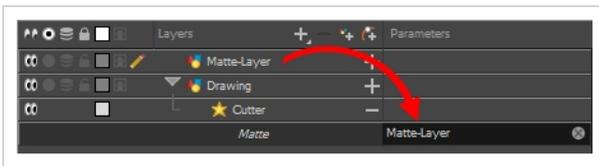


If the effect can use a matte layer, it will have a matte port on its left to which the matte layer can be connected.

Once your effect is connected, you can adjust its parameters by selecting it, then adjusting its parameters using the Layer Properties view. You can also double-click on the layer to open its Layer Properties dialog. If desired, you can even animate the parameters of your effect by converting their values to functions.

# Adding Effects Layers

T-HFND-010-004

In Harmony, you can add effects through the Timeline view, connecting them to your drawing layers and then adjusting the parameters until you achieve the look you want.
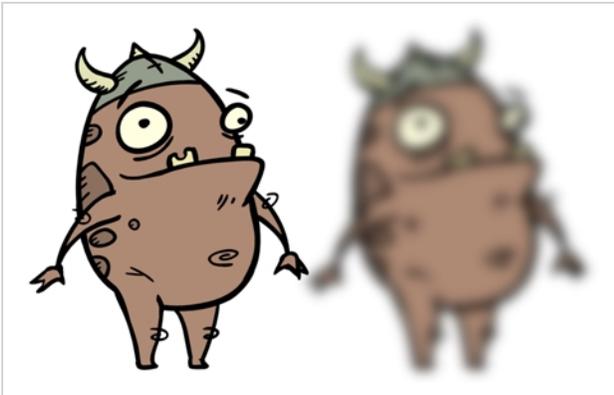


## How to add an effect

1. In the Timeline view, select the layer on which you want to add an effect.

2. Do one of the following:

   - In the top menu, select **Insert > Effects** and select the effect you want to add.

   - In the Layers toolbar above the layer list, click the Add Layers ✛ button, select **Effects** then select the effect you want to add.

   - Right-click on the layer, then select **Insert > Effects** and select the effect you want to add.

   The effect appears in the Timeline view, underneath the selected layer.
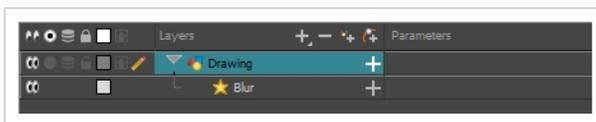
# Connecting Effects

T-HFND-010-006

For an effect to work, it must be connected to a layer or group. The effect will be applied to the image output by the layer or group, and the transformed image will be composited with other elements in the scene.

## How to connect an effect

1. In the Timeline view, select the effect you want to connect.

2. Drag and drop the effect over the layer or group which you want it to affect.



The effect is now a child of the drawing layer.

The effect will become a child of the layer or group on which you dropped it. It will appear right beneath that layer or group, with its icon and name indented towards the right.

# Adding a Matte Drawing to an Effect

Some effects can use, or even require the use of a matte layer. The matte layer is a drawing that determines the area that the effect affects.

For example, a Cutter effect needs to be connected to a matte layer, because it uses the drawing in the matte layer to determine which part of the drawing to cut out. However, a Colour-Scale effect can be used without a matte layer, in which case it will affect the colour of all of the drawing it is connected to, but if it is connected to a matte layer, it will only affect the colours of the part of the drawing that is covered by the matte drawing.

> **TIP**
>
> Drawing layers can also be connected to a matte layer. When a drawing layer has a matte layer, the part of the drawing covered by the matte layer is cut out from that drawing, which is the same as if the drawing was connected to a Cutter effect—see *About Masking and Cutting Parts of Elements in your Scenes* on page 1151.

### How to connect a drawing to an effect's matte connection

1. In the toolbar above the layer list in Timeline view, click on Add Drawing Layer ⁺.

2. In the Add Drawing Layer dialog, give your new drawing layer a relevant name for a matte layer, such as "Matte-Drawing", then click on **Add and Close**.

   

3. In the new matte drawing layer, draw a matte for your effect. Your matte can be a simple shape, but should be filled with a colour, as only parts of the matte that are opaque will be taken in account.

> **NOTE**
>
> Mattes can also have semi-transparent areas. Areas of the drawing that are covered by semi-transparent areas of the matte are partially affected by the effect.

4.  In the Timeline view, locate the effect layer for which you created a matte and click on the Expand ╋ button right of its name.
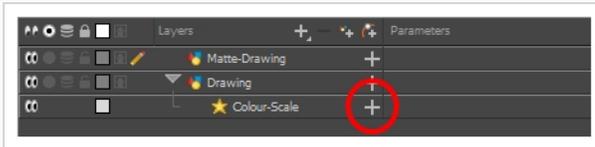


Just below the effect, a list of parameters for the effect appears. If the effect has a matte connection, the first parameter in the list will be **Matte**, and its value will be **<Drop layer here>**.
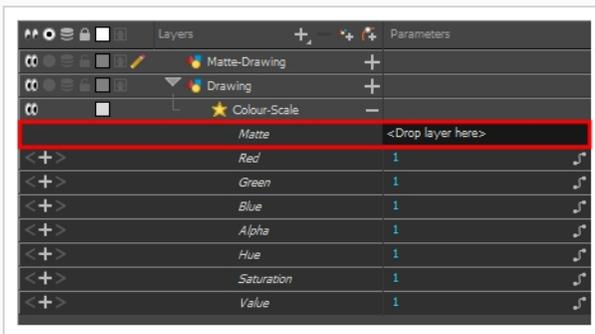


5.  Click and hold on the matte layer, then drag and drop it over **<Drop layer here>**.
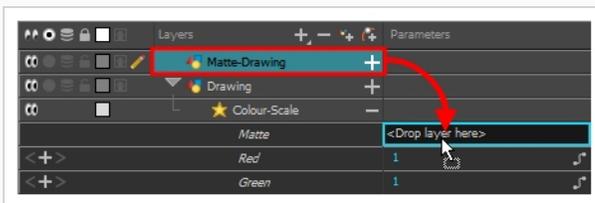


The matte layer will be set as the effect's matte property.
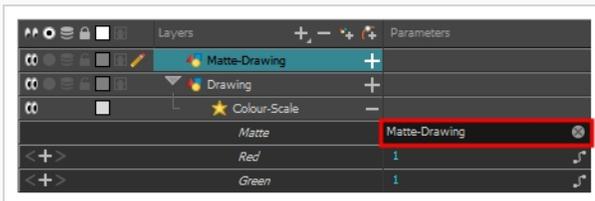
> **NOTES**
>
> - When a drawing layer is used as an effect's matte, the artwork in that layer is not visible in the scene, since it is only used as the effect's matte.
> - If you want to disconnect the effect from the matte, you can click on the Unlink ⊗ button at the right of the Matte parameter to unlink the matte layer from the effect. This will make the matte drawing visible in the scene again.

6. By default, the effect is applied to the matte's opaque areas and the matte's transparent areas are ignored. If you want to invert this effect, which means apply the effect on the matte's transparent areas and ignore the matte's opaque areas, double-click on the layer (but not on its name) to open its Layer Properties dialog.

7. In the Layer Properties dialog of the effect, there should be an **Invert Matte** parameter. If the effect has several tabs in its layer properties, you might have to look through each tab to find this parameter. Check the check box for this parameter to invert the effect of the matte.

> **NOTE**
>
> For Cutter nodes, this parameter is just named **Inverted**.

# Configuring an Effect

Once your effect is connected, you can configure it by changing its layer properties. There are two ways to access a layer's properties:

- By selecting it. Its layer properties will display in the Layer Properties view, which can be added to your workspace.

- By opening its Layer Properties dialog.

> **NOTE**
>
> Most effects do not have a visible effect in the Camera view's default preview mode (OpenGL View ⚙). This preview mode is very fast and is optimized for animation, but not for effects. To preview an effect as you change its parameters, you must set the Camera view's preview mode to Render View ❀, which will update slowly, but will render the effects as they would appear in the final rendered image.

## How to view a layer's properties in the Layer Properties view

1. Do one of the following to display the Layer Properties view:

   - In the top right corner of any existing view, click on the Add View button and select **Layer Properties**.

   - In the top menu, select **Windows > Layer Properties**.

2. In the Timeline view, select the effect layer you want to configure.

   The selected layer's layer properties are now displaying in the Layer Properties view.
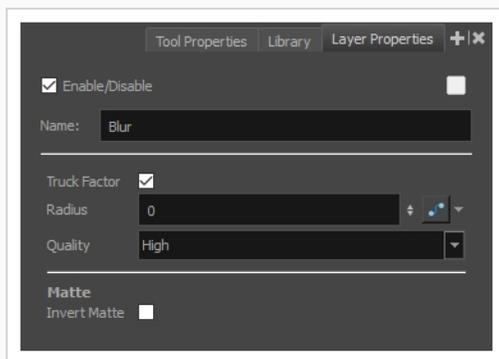
   

## How to open a layer's Layer Properties dialog

1. In the Timeline view, double-click on the effect layer you want to configure, but not on its name.
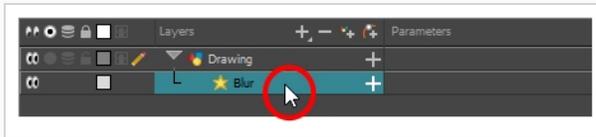
The layer's Layer Properties dialog appears.
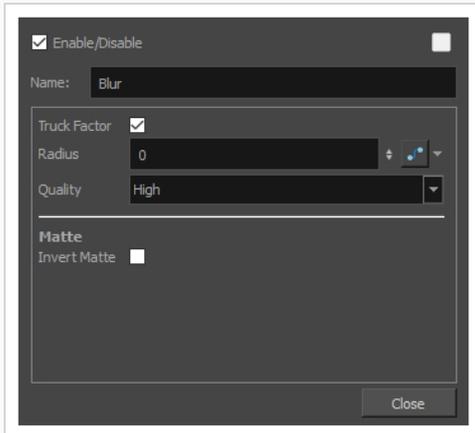


## How to configure an effect

1. In the toolbar under the Camera view, click on the Render View ✿ button to make Harmony render the effects in the Camera view.

   > **TIP**
   >
   > If your scene currently does not have a background, the negative space in your scene will render in black. To circumvent this, you can add a Colour-Card layer underneath all the other layers in your scene by clicking on the Add Layer ✚ button in the toolbar over the layer list and selecting **Colour-Card**.

2. In the Layer Properties view or the Layer Properties dialog, adjust the parameters of the effect until you have the expected results.

   The preview in the Camera view will update every time you make changes, but each change may take a short while before appearing in the Camera view, as the Render Preview mode requires more computing power to update.

> **NOTE**
>
> For more information on how to configure certain effects, refer to *Examples of Effect Usage* on page 1158. For detailed information on the properties of each available effect, see  refer to the Layers section of the Reference guide.

3. Once you are done, you can dismiss the Layer Properties dialog if it was open, and you can set the preview mode of the Camera view back to OpenGL by clicking on the OpenGL View ✿ button in the toolbar at the bottom of the Camera view.

# Animating an Effect

You may need to animate some effects to obtain the expected results. For example, you may want the radius of a Glow effect to slowly increase and decrease to make it pulsate throughout a scene, or you may want the transparency of a Transparency effect to increase from 0% to 100% to make a drawing vanish.

Almost all numerical parameters in an effect can be attached to a *function*. A function allows you to set a parameter to different values at different points in the scene by adding keyframes to it, and setting each keyframes to a specific value. Between keyframes, the value of the parameter will progress from the value of the previous keyframe to the value of the next keyframe. Drawing layers are animated by having their coordinates associated to functions. Likewise, effects can be animated by associating their parameters to functions.

Some effect parameters can be animated directly in the Timeline view, but not all. When you expand an effect's parameters in the Timeline view, some of its parameters may be hidden to avoid cluttering the Timeline view. You can animate those parameters from the Layer Properties view or the Layer Properties dialog, which display all of a layer's parameters.

> **NOTE**
>
> To learn how to preview animated effects, refer to <u>About Effects Preview</u> on page 1147.

### How to animate an effect parameter in the Timeline view

1. In the Timeline view, locate the effect you want to animate, and click on the Expand ✛ button right of its name.
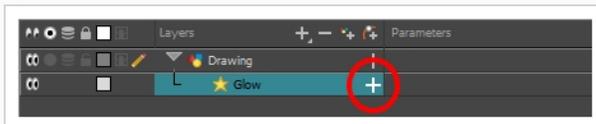
   

   The list of parameters that effect's paramaters that are available in the Timeline view appears.
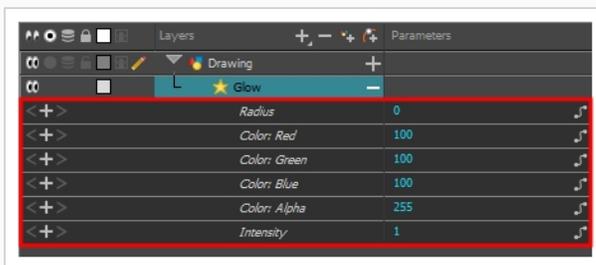
   

2. In the right area of the Timeline view, in the same row as the parameter you want to animate, select the frame where you want to create the first animation keyframe for the effect.
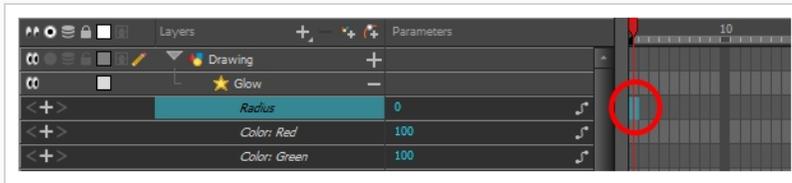
3. Create a keyframe by doing one of the following:

- In the Timeline toolbar, click the Add Keyframe KF button.

- Right-click and select **Add Keyframe.**

- Press F6.
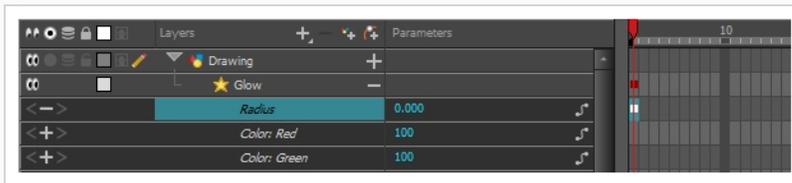


4. In the left area of the Timeline view, under the Parameters column, adjust the value of the parameter for this keyframe by doing one of the following:

- Click and hold on the value of the parameter, then drag it towards the left to reduce its value, or towards the right to increase its value.



- Click on the value of the parameter. A text field will appear. Type in the new value of the parameter, then press Enter.
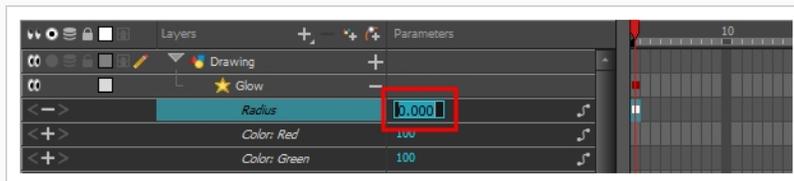


5. In the right area of the Timeline view, click on the frame where you want to create the second animation keyframe for the effect.
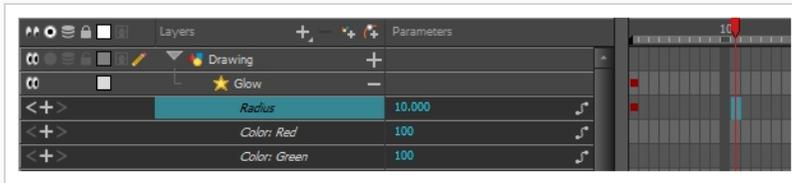
6. Create the second keyframe for your effect's animation by doing one of the following:

    - In the Timeline toolbar, click the Add Keyframe $\begin{smallmatrix}\oplus\\KF\end{smallmatrix}$ button.

    - Right-click and select **Add Keyframe.**

    - Press F6.
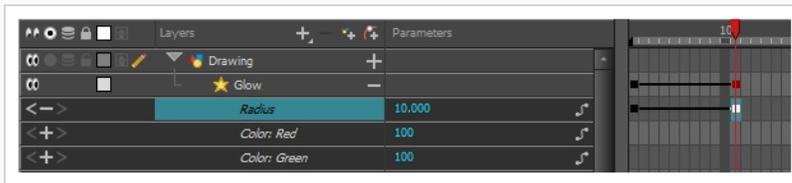


7. In the Parameters column, adjust the value of the parameter at the current keyframe.

8. Repeat the steps to create as many animation keyframe for your effect as needed.

9. To adjust the timing between the keyframes of your animation, select the first keyframe.

10. In the Timeline toolbar, click on the Set Ease for Multiple Parameters $\mathcal{I}_{\overline{\iota}}$ button.

    The Set Ease for Multiple Parameters dialog appear. The function graph in this dialog will be focused on the first keyframe □ in your animation, which should have a Bezier handle ☛ right next to it, pointing to the right.
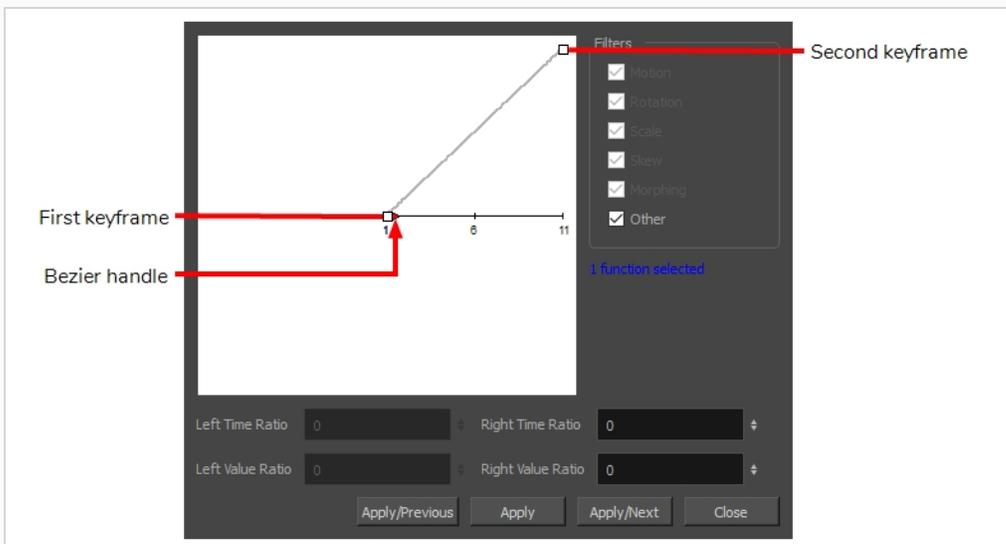
11. Click on the Bezier handle ▸ and drag it towards the right, at any angle, to adjust the ease-in of the animation.
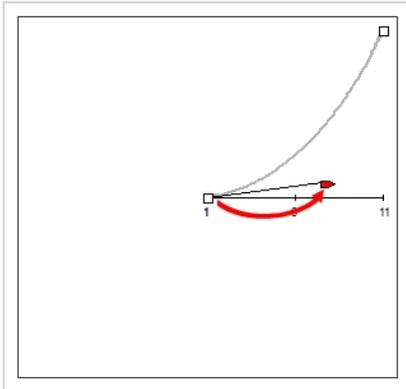


12. Click on **Apply/Next**.

    The Set Ease for Multiple Parameters dialog will focus on the second keyframe. If this is the last keyframe in the animation, it will only have one Bezier handle, pointing towards the left. If there are more animation keyframes after this one, it will have two Bezier handles, one pointing in each direction.
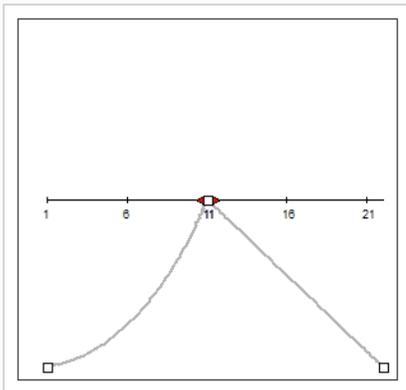


13. Click on the left Bezier handle ◂ and drag it towards the left, at any angle, to adjust the ease-out of the animation between the previous keyframe and the current keyframe.
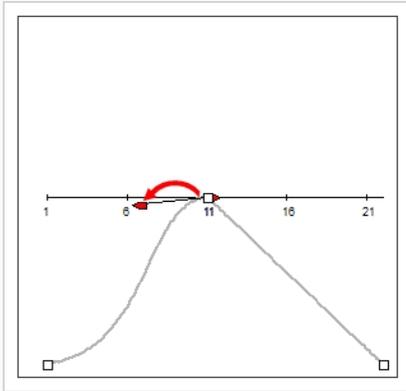
14. If there is a Bezier handle pointing towards the right ◀▶, click on it and drag it towards the right, at any angle, to adjust the ease-in of the animation between the current keyframe and the next keyframe.
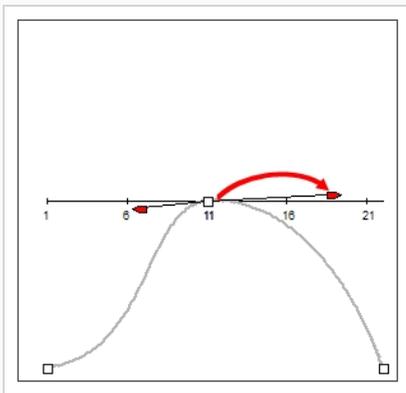


15. Repeat the previous steps until the timing for your animation is adjusted throughout the entire scene.

### How to animate an effect in the Layer Properties dialog

1. Open the effect's Layer Properties by doing one of the following:

   - Add the Layer Properties view to your workspace, then select the effect in the Timeline view.

   - In the Timeline view, double-click on the effect layer, but not on its name.

2. In the effect's layer properties, locate the parameter that you want to animate and click on the Function ⌇ button to its right.
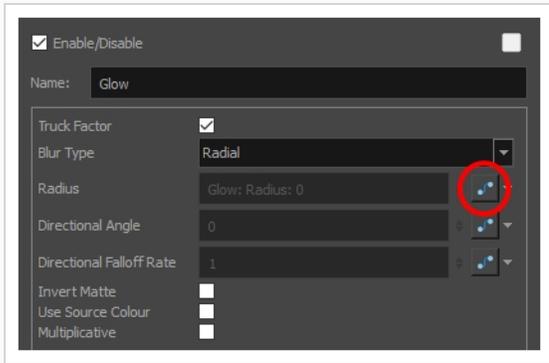
The parameter's input field will be greyed out. This is because you cannot directly edit a parameter once it is attached to a function. The field will indicate the name of the function that was created for it, in this format:

**`Name of layer: Name of function: Value at current frame`**

3.  Click on the parameter's Function button again.

    The Bezier Editor dialog opens.
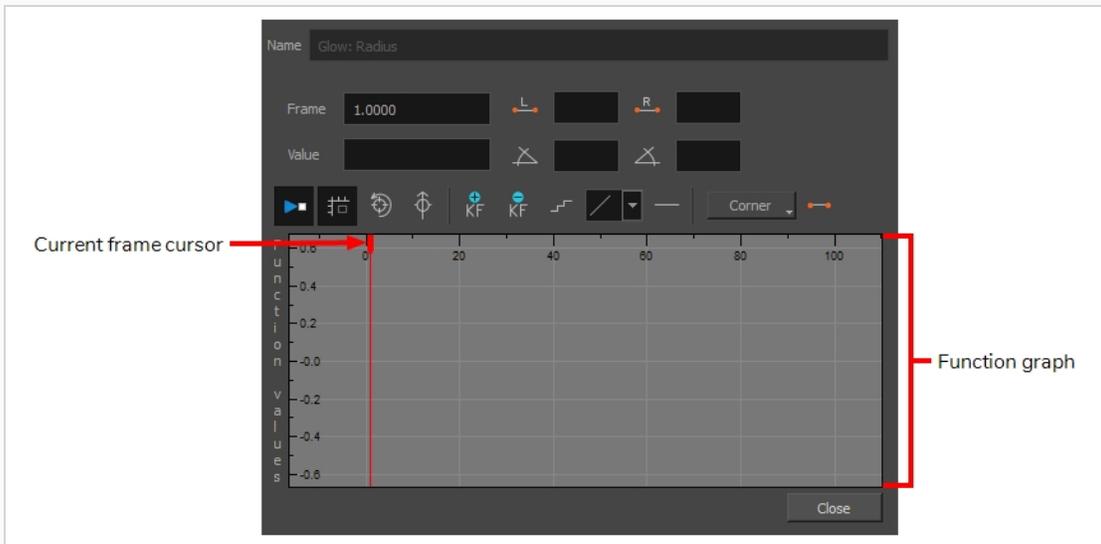


This dialog will allow you to animate the function. The function graph at the bottom is made to represent the values of the function throughout each frame in the scene.

4.  In the function graph, click and drag on the red cursor ❚ to move it to the frame where you want to create your first animation keyframe.
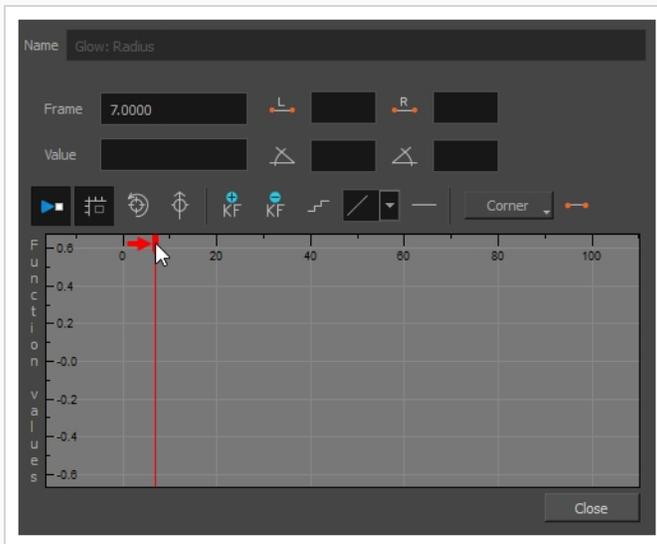
5. Click on the Add Keyframe ⌷⌷ button to create the first animation keyframe for the effect.

   A keyframe □ is created and should be visible in the function graph. If you do not see it, that is because the function graph is not positioned to include the keyframe within its frame. To move the function graph to view the function's keyframe, click on the Reset View ⟳ or Reset View Vertically ⊕ button.
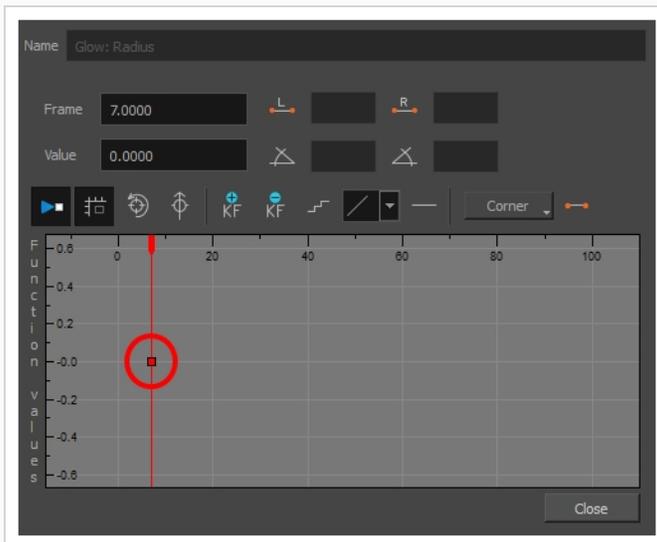


6. Adjust the value of the parameter at the current frame by doing one of the following:

   - In the **Value** field over the function graph, type in the desired value for the parameter.

   - In the function graph, click and drag on the keyframe □ , and move it up to increase its value, or down to decrease it.

> ☀ **TIP**
>
> If you want to set the keyframe to a value that is outside of the function graph's frame, you can press the 1 key to zoom out. You can also press the 2 key to zoom back in.
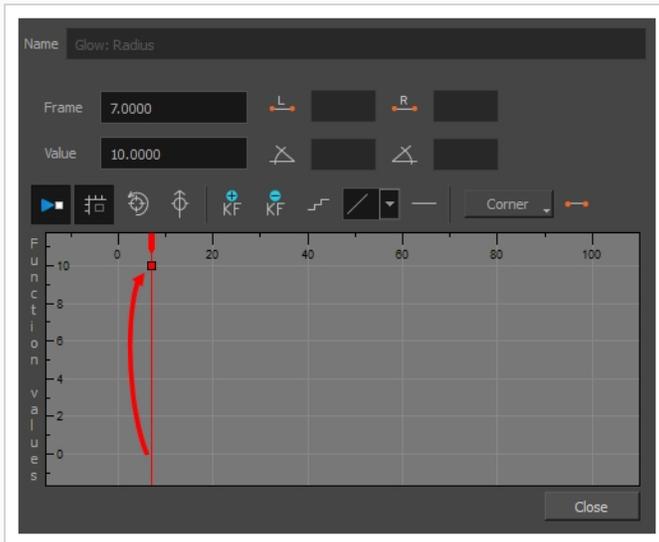


7.  Click and drag on the red cursor to move it to the frame where you want to create your second animation keyframe.
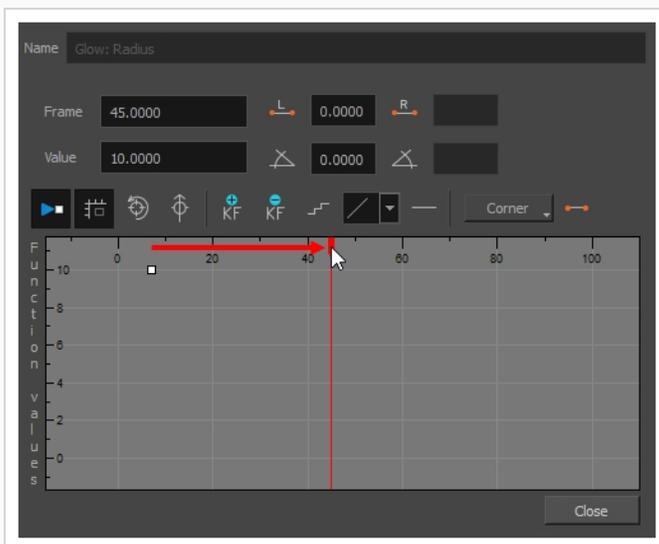


8.  Click on the Add Keyframe ⊕KF button to create the second animation keyframe for the effect.
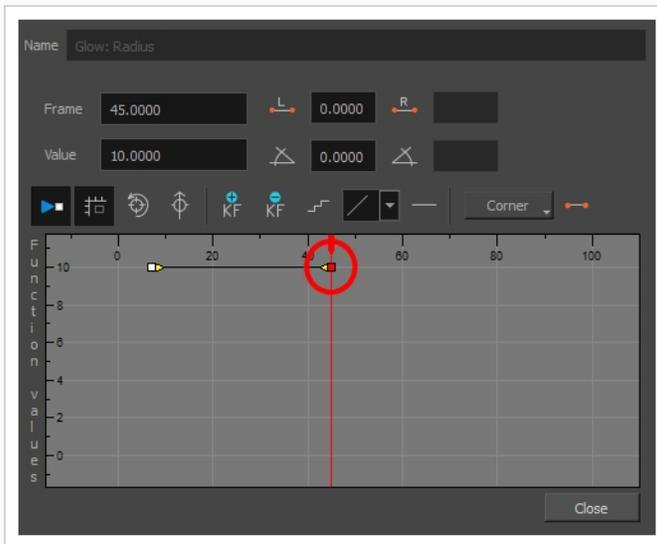
9. Adjust the value of the parameter at the current frame by doing one of the following:

    - In the **Value** field over the function graph, type in the desired value for the parameter.

    - In the function graph, click and drag on the keyframe □ , and move it up to increase its value, or down to decrease it.
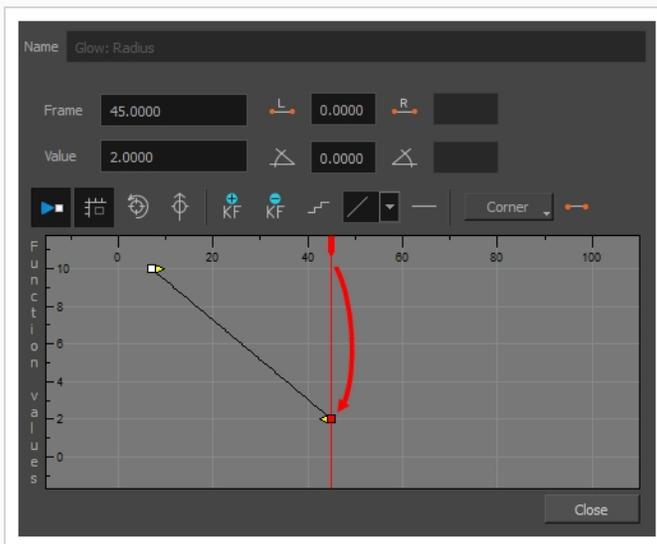


10. If you want to adjust the timing of the animation between the first and second keyframes, do the following:

    - Click and drag the Bezier handle of the first keyframe ▷ towards the right, in any direction, to affect the ease-in of the animation.
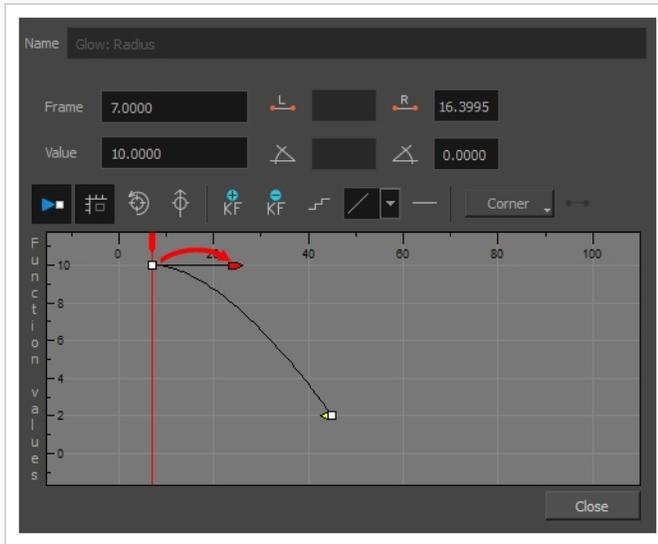
- Click and drag the Bezier handle of the second keyframe  towards the left, in any direction, to affect the ease-out of the animation.
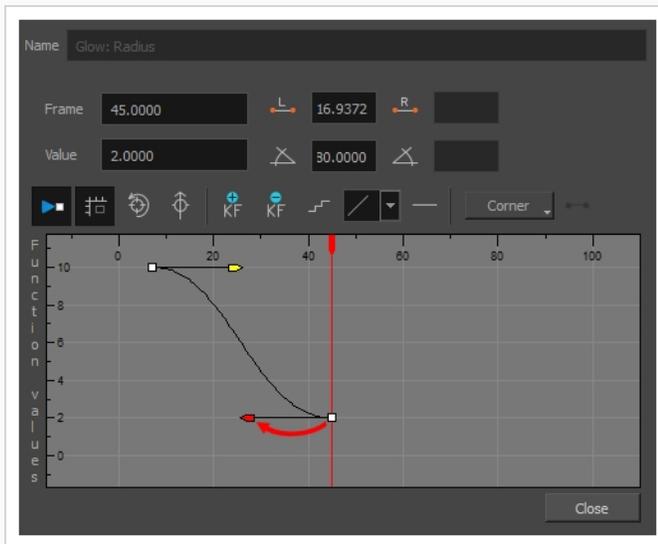


11. Repeat these steps until you created and timed every animation keyframe required to animate your effect.

# About Effects Preview

T-HFND-010-010

Most effects must be rendered so you can preview them properly. Some effects can be displayed in the OpenGL view, but most of them must be rendered and previewed in the Render Mode of the Camera view.

Once you preview your effect, you may want to adjust it. By default, as soon as you modify a parameter, Harmony will recalculate the preview image. If your scene is heavy and you do not want the preview rendered automatically, deselect the Auto-Render option and do the preview update manually.

You cannot play back your animation in Render mode. You must perform a render or a preview render to see your animation with the final effects. Effects must be calculated before they can be viewed in real time.

To make your previews calculate faster, you may want to render them at a smaller resolution. You can use the Preview Resolution command so you will not have to modify the resolution of your scene every time you make a check preview.

# Previewing Effects in Render Mode

T-HFND-010-011

You can preview a single final frames with all effects calculated in the Camera view when you enable the Render mode. You cannot playback your animation in Render mode. You can also disable the auto-render option when adjusting several effect parameters to avoid slowing down your computer.

### How to preview effects in Render mode

1. In the Camera view status bar, click the Render View ✳ button.

   In the bottom-right corner of the Camera view, the progress bar indicates the status of the render. Depending on the size of the frame to render, it may take several seconds.

### How to disable the Auto-Render option

1. In the Camera view status bar, click the Auto-Render ✳ button. In the top menu, you can enable and disable **Scene > Render > Auto-Render**.

   Once the Auto-Render option is disabled, you must request the preview update by clicking the Auto-Render ✳ button.

### How to manually update the rendering preview

1. In the Camera view status bar, click the Render 👁 button.
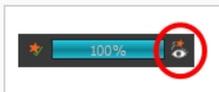
# Playing Back Effects

To playback your effects, you need to do a temporary render.

### How to play back effects

1.  In the Playback toolbar, click the Render and Play ⭐ button.

    The Play node opens and loads the frames.

    Loading Frames...
    48%
    Cancel
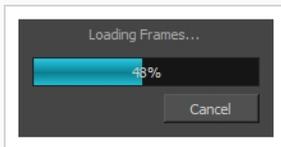
2.  Once the frames are loaded, click the Play ▶ button in the Play window.

3.  Select **Scene > Render > Cancel Preview Render** to cancel the rendering.

    > **NOTE**
    >
    > While previewing effects, you can press the Spacebar to stop and start playback.

# Changing the Preview Resolution

The Preview Resolution command allows you to quickly get a preview at three-quarter, half, one-third, or one-quarter of the scene resolution. You can even customize the preview resolution size.

**How to use the Preview Resolution command**

1. From the top menu, select **View > Preview Resolution** and one of the following:

   ‣ Same as Scene Resolution

   ‣ 3/4 of Scene Resolution

   ‣ 1/2 of Scene Resolution

   ‣ 1/3 of Scene Resolution

   ‣ 1/4 of Scene Resolution

   ‣ Custom

   If you selected the Custom option, the Custom Preview Resolution dialog box opens.
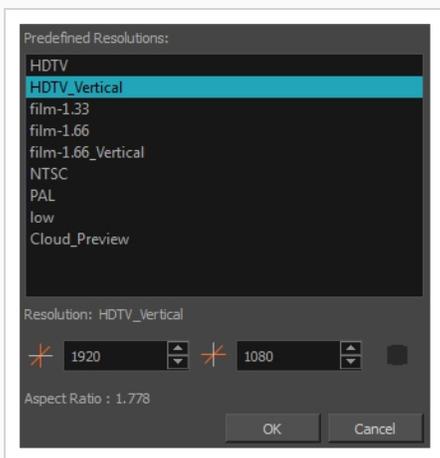
   

2. In the dialog box, select a resolution from the presets or type a new X-Y value.

3. Click **OK**.

4. Preview your effects animation.

# About Masking and Cutting Parts of Elements in your Scenes

An important part of staging and rigging is *cutting*. Cutting is the process of making parts of a drawing that intersect with another drawing invisible. It allows you, for example, to mask parts of a character that should appear behind a background element that is drawn on the same layer as other background elements, to mask two parts of a rig that should not overlap, or to confine an effect within the outlines of an element in your scene.

There are two methods to cutting in Harmony:

- Using the matte port of a drawing layer. With this port, you can connect any drawing layer to another drawing layer or group, and use the latter as the drawing layer's *matte*. Any part of the drawing that intersects with the artwork in its matte will be hidden.

- Using a Cutter effect. A cutter effect can be connected to a drawing, effect or group, and then can use any other drawing layer or group as its matte. Any part of what is connected to the Cutter effect which intersects with the artwork in its matte will be hidden.

Hence, if you only want to hide parts of a single drawing layer, you can use the drawing's matte port. If you want to hide parts of a group or an effect, you will have to use a cutter effect

> **NOTE**
>
> In either case, the effects of cutting can be inverted. When inverted, only the parts of the artwork that intersect with the matte are visible, and everything else is hidden.

# Using the Matte Port of a Drawing Layer

Each drawing in a Harmony scene has their own Matte port. Connecting a drawing or group to a drawing's matte port will make the parts of the drawing that intersect with the matte image invisible.

Optionally, you can invert a drawing layer's matte. This will make parts of the drawing that intersect with the matte image visible, and everything else hidden.

## How to connect a matte drawing layer to a drawing layer

1. In the toolbar above the layer list in Timeline view, click on the Add Layer ➕ button and select **Drawing**.

2. Give your new drawing layer a relevant name for a matte layer, such as "Matte-Drawing", then click on **Add and Close**.
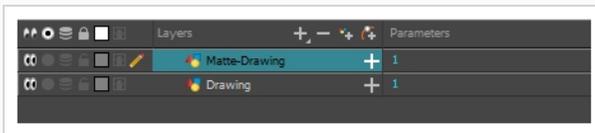


3. In the new matte drawing layer, draw a matte for your effect. Your matte can be a simple shape, but should be filled with a colour, as only parts of the matte that are opaque will be taken in account.
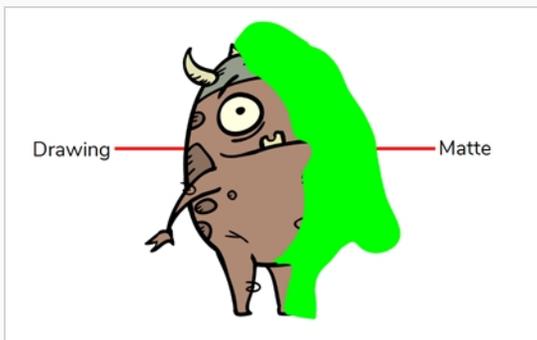


> **NOTE**
>
> Mattes can also have semi-transparent areas. Areas of the drawing that are covered by a semi-transparent area of the matte will appear semi-transparent. For example, if a matte is filled with a colour that has an alpha value of 64 (25% opaque), instead of making the parts of the drawing it covers completely invisible, it will subtract the matte's opacity from the opacity of those parts of the drawing, making them 75% opaque.

4. In the Timeline view, click on the Expand ✚ button right of the drawing layer.
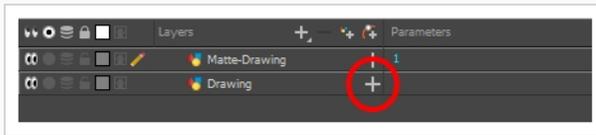


The drawing layer's parameters appear below it. The first parameter is the Matte parameter, which allows you to use another layer in your scene as the drawing layer's matte.
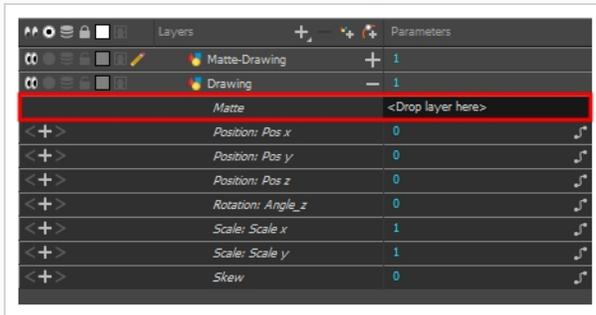


5. Drag and drop your matte layer next to your drawing layer's **Matte** field, under the **Parameters** column.
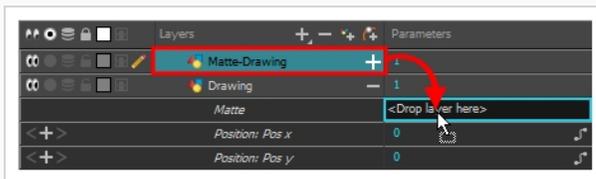


The matte drawing layer becomes the drawing layer's matte. At this point, areas of the drawing that intersect with the artwork in the matte drawing layer are hidden.
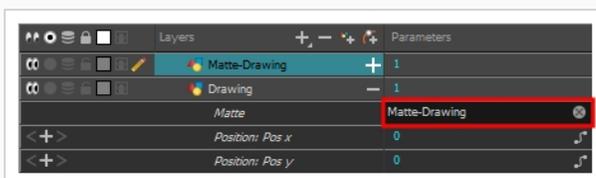


6. If you want to invert the matte effect for the drawing layer, so that the artwork that intersects with the artwork in the matte layer is visible and that everything else is hidden, do the following:

   a. Double-click on the drawing layer (but not on its name) to open its Layer Properties dialog

   b. In the Layer Properties dialog, select the **Drawing** tab.

   c. At the bottom of the Drawing tab, check the **Invert Matte** check box.
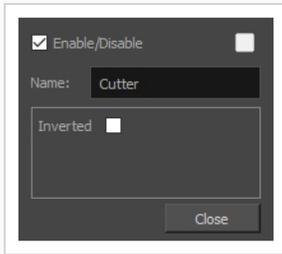
# Using the Cutter Node

You can use the Cutter node to hide parts of a drawing, a group or an effect. The Cutter node must be connected to a drawing that will serve as a matte. Parts of the drawing, group or effect that intersect with the matte drawing will be hidden.

Optionally, you can also invert the Cutter node's matte, which will make parts of the drawing, group or effect that intersect with the matte drawing visible, and everything else will be hidden.

### How to use the Cutter effect

1. Select a drawing layer.

2. Do one of the following:

   - In the toolbar above the layer list in the Timeline view, click on the Add Layer ✚ button and select **Effects > Cutter**.

   - Right-click on the layer and select **Insert > Effects > Cutter**.

   The Cutter effect is created as a child of the selected layer.

   

1. In the toolbar above the layer list in Timeline view, click on Add Drawing Layer 🖫 .

2. In the Add Drawing Layer dialog, give your new drawing layer a relevant name for a matte layer, such as "Matte-Drawing", then click on **Add and Close**.

   

3. In the new matte drawing layer, draw a matte for your effect. Your matte can be a simple shape, but should be filled with a colour, as only parts of the matte that are opaque will be taken in account.

> **NOTE**
>
> Mattes can also have semi-transparent areas. Areas of the drawing that are covered by semi-transparent areas of the matte are partially affected by the effect.

4. In the Timeline view, click on the Expand ➕ button right of the Cutter layer.
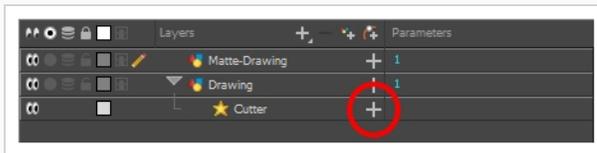


The Cutter's Matte parameter appears below it.
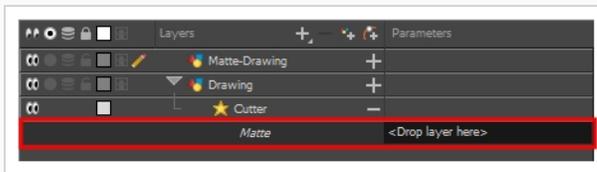


5. Drag and drop your matte layer next to your Cutter layer's **Matte** field, under the **Parameters** column.
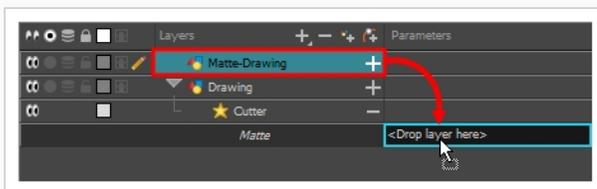


The matte drawing layer becomes the Cutter layer's matte. At this point, areas of the artwork that

intersect with the artwork in the matte drawing layer are hidden.
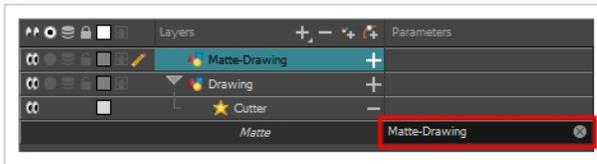


6.  If you want to invert the Cutter's effect, so that the artwork that intersects with the artwork in the matte layer is visible and that everything else is hidden, double-click on the Cutter layer (but not on its name) to open its Layer Properties dialog, then check the **Inverted** parameter.
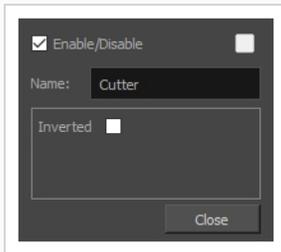
# Examples of Effect Usage

The following section gives examples of how to use a few commonly used effects in Harmony.

# Adding a Highlight to a Drawing

Using the Highlight effect, you can apply a highlight to a drawing. Contrary to the Glow effect, the Highlight effect does not convert your drawing into a glow, it applies the glow onto your drawing. The resulting render includes both the drawing to its glow.
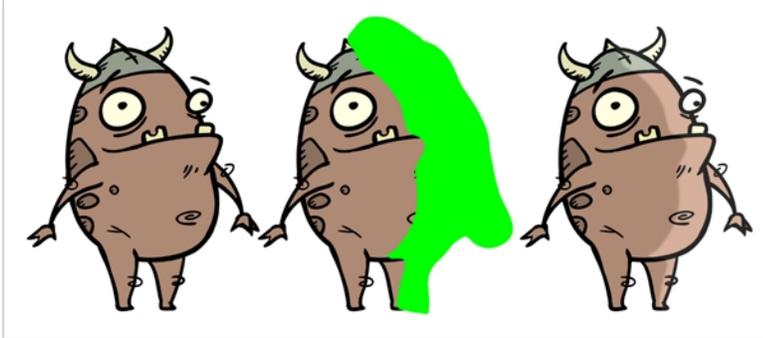


The Highlight effect uses a matte drawing layer to determine which areas of the drawing to apply the highlight to. The highlight will not be applied outside of the drawing or outside of the matte.

### How to use the Highlight effect

1.  Select a drawing layer.

2.  Click the Add Layers ✛ button and select **Effects > Highlight**.

    The Highlight effect is parented to the selected layer.

    

1.  In the toolbar above the layer list in Timeline view, click on Add Drawing Layer ✦.

2.  In the Add Drawing Layer dialog, give your new drawing layer a relevant name for a matte layer, such as "Matte-Drawing", then click on **Add and Close**.

    

3.  In the new matte drawing layer, draw a matte for your effect. Your matte can be a simple shape, but should be filled with a colour, as only parts of the matte that are opaque will be taken in account.

> **NOTE**
>
> Mattes can also have semi-transparent areas. Areas of the drawing that are covered by semi-transparent areas of the matte are partially affected by the effect.

4. In the Timeline view, click the Collapse/Expand ➕ button at the right the Highlight layer.
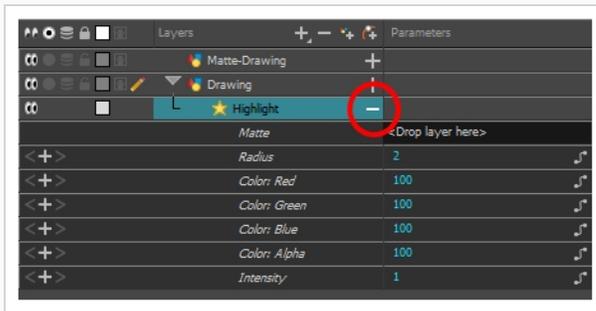


5. Drag and drop the matte layer right of the **Matte** field, under the **Parameters** column.
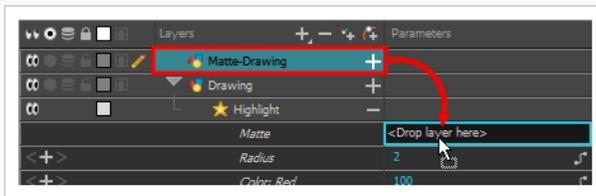


The value of the Matte parameter will be the name of the matte drawing layer.

6. Display the Highlight properties and adjust the properties to control the type and amount of blur and the colour of the highlight effect—see the Reference guide .

# Adding a Shadow to a Drawing

Using the Tone effect, you can apply a shadow to a drawing. Contrary to the Shadow effect, the Tone effect does not convert your drawing into a shadow, it applies the shadow onto your drawing. The resulting render includes both the drawing to its shadow.



The Shadow effect uses a matte drawing layer to determine which areas of the drawing to apply the shadow to. The shadow will not be applied outside of the drawing or outside of the matte.

### How to use the Tone effect

1. Select a drawing layer.

2. Click the Add Layers ➕ button and select **Effects > Tone**.

   The Tone effect is parented to the selected layer.

   

1. In the toolbar above the layer list in Timeline view, click on Add Drawing Layer ✦.

2. In the Add Drawing Layer dialog, give your new drawing layer a relevant name for a matte layer, such as "Matte-Drawing", then click on **Add and Close**.

   

3. In the new matte drawing layer, draw a matte for your effect. Your matte can be a simple shape, but should be filled with a colour, as only parts of the matte that are opaque will be taken in account.

Drawing ———— Matte

> **NOTE**
>
> Mattes can also have semi-transparent areas. Areas of the drawing that are covered by semi-transparent areas of the matte are partially affected by the effect.

4. In the Timeline view, click the Collapse/Expand ✚ button at the right the Tone layer.
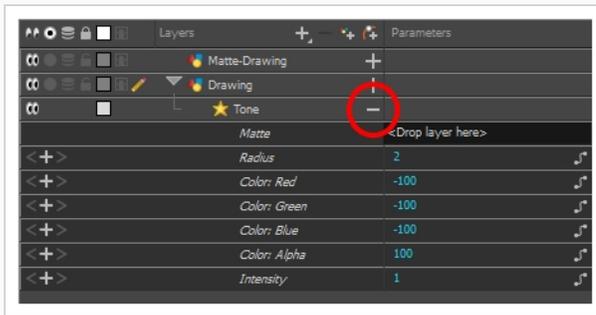


5. Drag and drop the matte layer right of the **Matte** field, under the **Parameters** column.
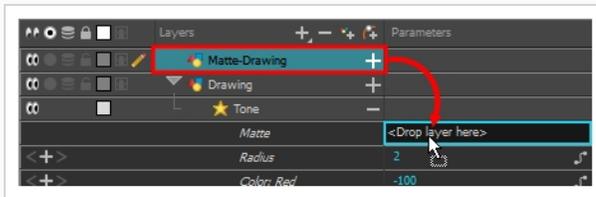


The value of the Matte parameter will be the name of the matte drawing layer.

6. Display the Tone properties and adjust the properties to control the type and amount of blur and the colour of the Tone effect—see the Reference guide .

# Creating a Drop Shadow

The Shadow effect converts the drawing layer it is connected to into a dark, blurry matte. You can control the type and amount of blur, as well as the colour of the shadow.

On its own, simply connecting a drawing or group to this effect will only convert your drawing to a shadow, which might not be useful. However, it is possible to make both the original character and its shadow version appear in your scene, and have the shadow version transformed and distorted to appear as a drop shadow. You can accomplish this by doing one of the following:

- Cloning the layers or group. You can then add the effect to the clone, and add a peg on top of the clone to transform it.

- Adding the layers or group to a symbol, then putting two instances of that symbol in your scene. You can then add the effect to one of the instances, and add a peg on top to transform it.

> **TIP**
>
> When creating a drop shadow against a floor, you can obtain a more realistic effect by using a Quadmap to transform the shadow instead of a Peg. A Quadmap is similar to a peg, except that it allows you to apply perspective effect to the drawings underneath it.

### How to create a drop shadow for an animated character

1. In the Timeline view, select all the layers making your character's rig. If your character is under a master peg, selecting the master peg will also work.
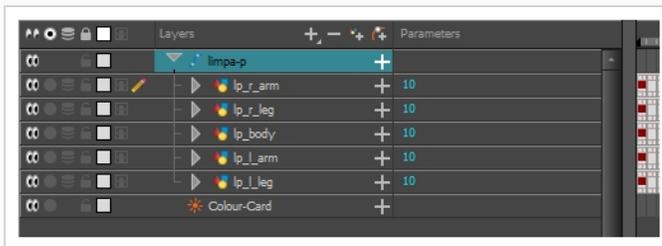


2. Make sure your character's rig is in a group. If it is not, right-click on your selection, then select Group Selection.
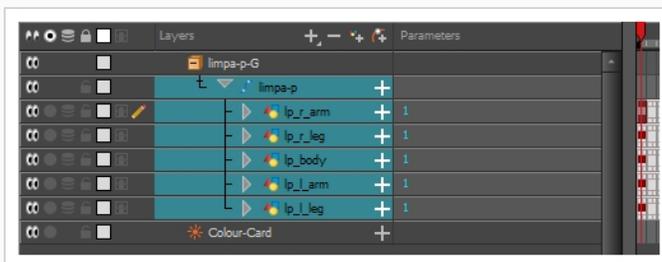
3.  With your character selected in the Timeline view, create a Clone of your character by doing one of the following:

    - Right click on your selection, then select **Clone Selected Layers: Drawings and Timing**.

    - From the Top menu, select **Edit > Clone: Drawings and Timing**.
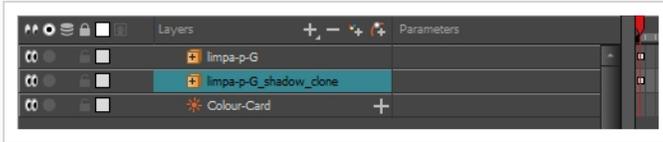
    

    > ### NOTE
    >
    > Contrary to a duplicate, a cloned layer always has the same timing and exposure as its origin layer, even if its origin layer is changed later. Hence, you can make changes to your character's animation, and your cloned character's animation will automatically update with these changes.

4.  Add a Shadow effect to your group by doing one of the following.

    - In the Timeline view's layers toolbar, click on Add Layers ➕ and select **Effects > Shadow**.

    - Right-click on your selection, then select **Insert > Effects > Shadow**.
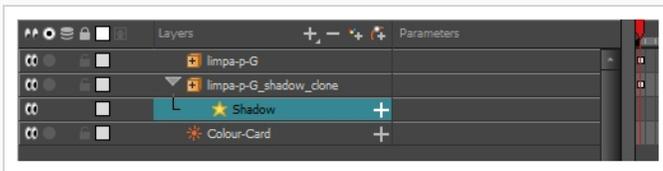
    

5.  In the Timeline view, select the root layer of your character's clone.

6.  Create a parent peg for your clone by doing one of the following:

    - From the Timeline View layers toolbar, click the Add Peg ⬚ button.

    - Press Ctrl + P (Windows/Linux) or ⌘ + P (macOS).
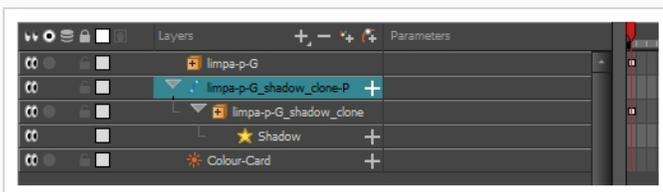
    

7.  In the Timeline view, select your clone's parent peg.

8.  In the Tools toolbar, select the Transform ⬚ tool.

9. In the Camera view, scale and skew your clone so that it looks like a drop-shadow.
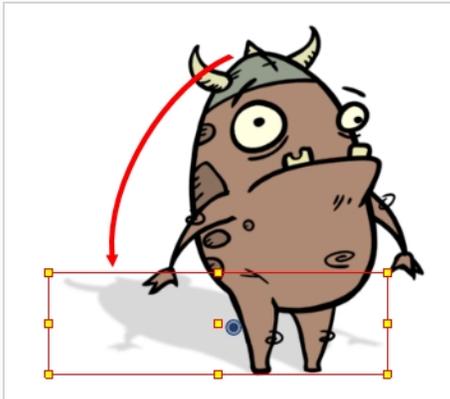
# Overriding Colours and Textures

The Colour Override Effect is one of the most useful and commonly used effects in Harmony, as it considerably expands the flexibility with which you can use colours and textures in your animation. With the Colour Override effect, you can replace individual colours or textures used your scene's drawings with other colours or textures. If your scene has different clones of the same palette, you can also use the Colour Override effect to make certain drawings use specific clones of the palette, whereas they would otherwise use the topmost clone in the palette list.

# Overriding a Colour

With the Colour-Override node, you can change the colour of some swatches.

### How to override colours

1. From the Colours section, select the colour swatch to modify and move it to the Individual Colour Overrides section. Several options are available to modify your colours.
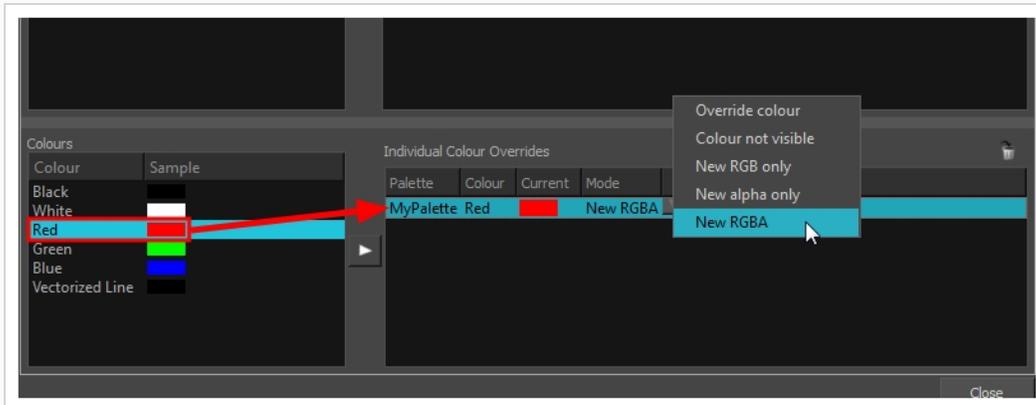


2. Once the swatch appears in the Colour-Overrides section, click the drop-down arrow and select one of the following options from the Mode menu:

   - **Override colour**: When selecting a colour swatch from a clone palette (not set as the current palette), use this option to override the current colour and use the swatch from the clone palette over the corresponding one in the current palette.

   - **Colour Not Visible**: Renders the selected colour invisible in the Camera view.

   - **New RGB Only**: Overrides the colour swatch RGB value while maintaining its original alpha value. You can select a new colour by clicking on the colour swatch and choosing a new colour from the Colour Picker window.

   - **New Alpha Only**: Overrides the swatch's alpha channel while maintaining its original RGB values. You can select a new alpha value by clicking on the colour swatch and choosing an alpha value from the Colour Picker window.

   - **New RGBA**: Overrides the swatch's colour and alpha values. You can select a new colour by clicking on the colour swatch and choosing an alpha value from the Colour Picker window.

# Chapter 16: Sound

With Harmony, you can import soundtracks and dialogue into your animation.There are several sound editing features you can use to synchronize sounds to individual frames or moments in time. You can also edit them to trim unwanted seconds from the beginning and end of your sound files, as well as loop sounds that you want to continue throughout your animation.



Your ability to add dialogue to animation is greatly enhanced with the Harmony automatic lip-sync detection. Harmony can analyze voice tracks to determine which of the eight animation phonemes (lip positions) would best apply to each frame of sound. With the mouth chart that is generated, you can easily draw lip positions for your character. Furthermore, Harmony can automatically apply drawings of lip positions to each frame of your animation based on the mouth chart.

# About the Sound Editor

When you double-click on a sound layer in the Timeline view, the Sound Element Editor appears.
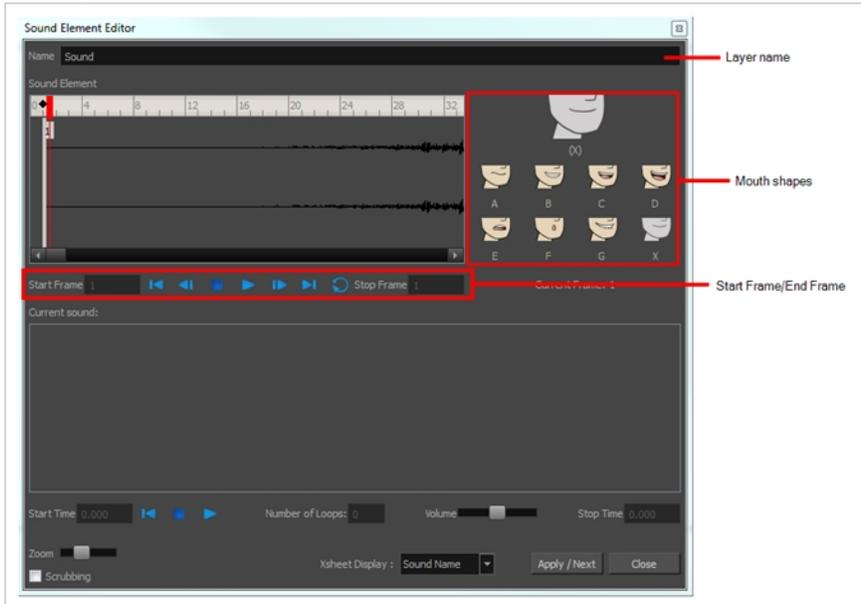


- **Mute/Unmute:** This button mutes and unmutes the sound layer during the scene play back.

- **Layer Name:** This field displays the layer's name.

- **Sound Editor:** This button opens the Sound editor.

- **Start Frame/End Frame:** These fields determine the start and end frame of the sound file.

- **Detect:** This button launches the automated lip-sync detection.

- **Map:** This button opens the Map Lip-sync dialog box.

- **Mouth Shapes**: This section shows the automated lip-sync detection during the scene play back. Click on the thumbnail image of each mouth to change the phoneme assigned to the current frame.

# Sound Layer

When you select a sound layer in the Timeline view, the options related to that layer appear in the Layer Properties view.
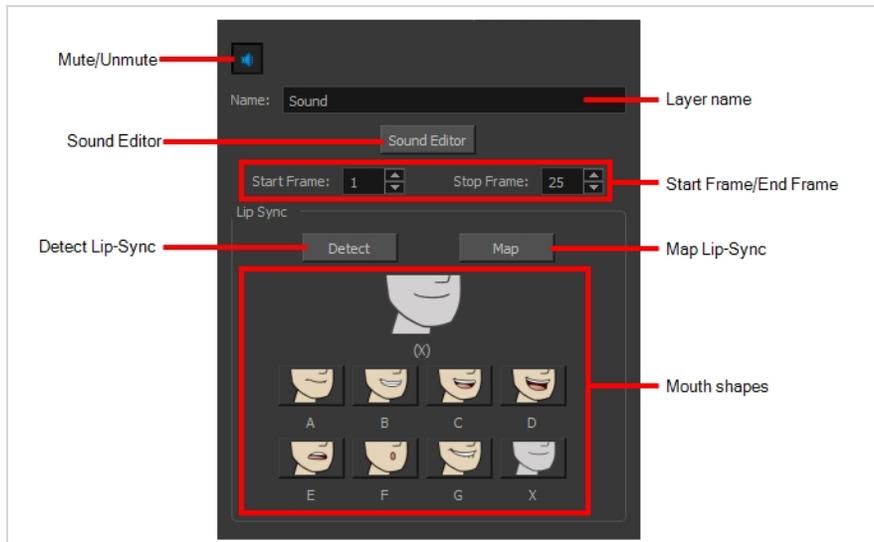


If you double-click on a sound layer in the Timeline view, or in a sound column in the Xsheet view, the Sound Element Editor dialog will open. This dialog allows you to fine-tune the sound track's lip sync, start time, stop time and volume.
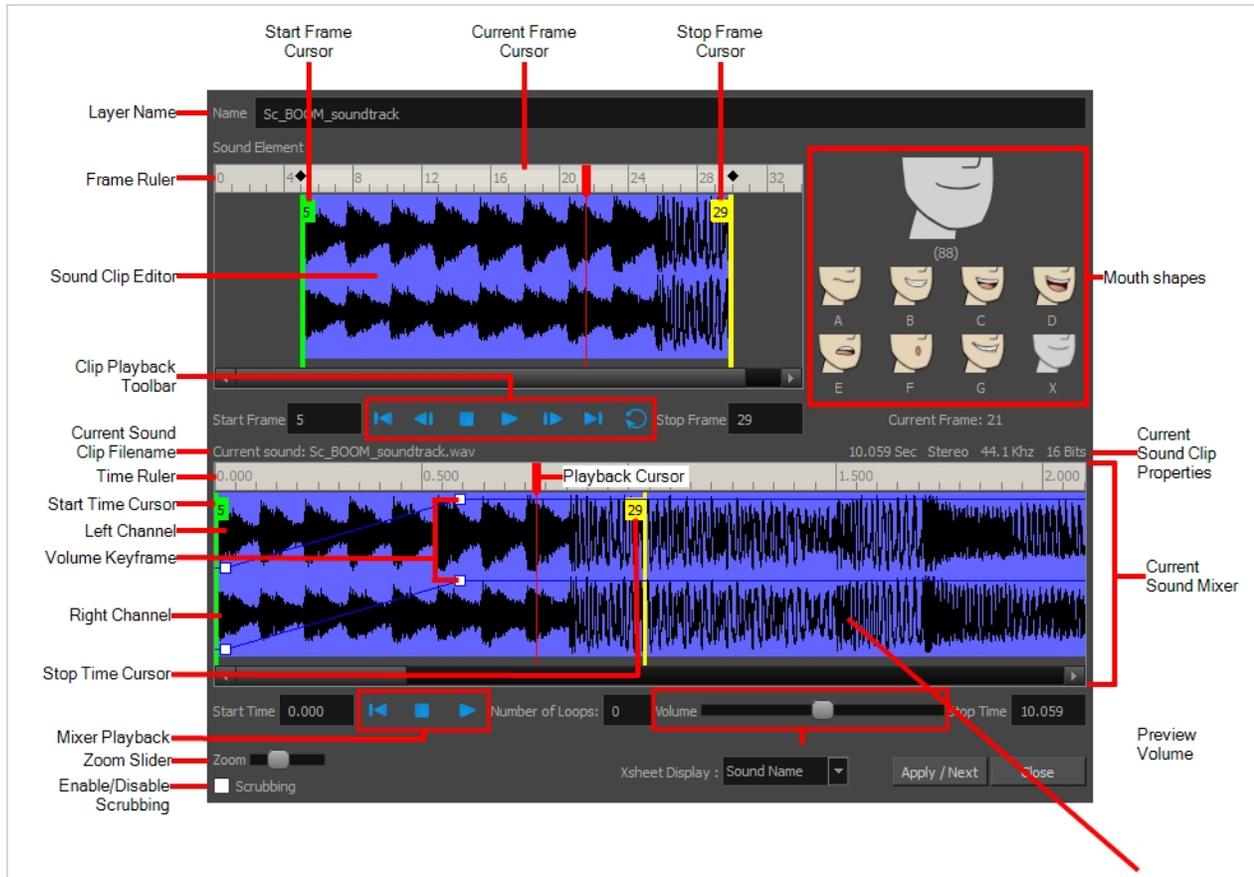
# Importing Sound

If you wish to add sound to your animation, it is recommended to edit and mix your sound files in a sound editing software. Having full-length pre-mixed soundtracks ensures the audio preserves its timing, mixing and quality should you use third party software for post-production. Another good practice is to keep your soundtrack separated in tracks for music, sound effects and characters to make it easier to sync your animation with voices and sounds. Otherwise, it is possible to clip sound effects and adjust their volume directly in Harmony when needed.

If you create your project in Toon Boom Storyboard Pro, you can export all of your project's scenes as separate Harmony scenes. The storyboard's sound track will be cut up by scene and each piece will be inserted into the exported scenes, allowing you to save time on splitting and importing your sound track.

Harmony can import .wav, .aiff and .mp3 audio files.

> **NOTE**
>
> Importing a soundtrack longer than your scene will not extend your scene's length. Sound playback will stop at the end of your scene's length.

## How to import a sound file

1. Do one of the following:

    - From the top menu, select **File > Import > Sound.**

    - In the Xsheet view, right-click anywhere in the frame area and select **Import > Sounds**.

    - From the Xsheet menu, select **File > Import > Sounds**.

    - From the Timeline menu, select **Import > Sounds**.

    The Select Sound File dialog box opens.

2. From the Select Sound File dialog box, find and select a sound file.

    The sound file appears as a layer in the Timeline view. Its waveform is displayed in the track to help you visualize at which frames the sound effects in your soundtrack occur.

    

    Your soundtrack also appears as a column in the Xsheet view, but will not display a waveform by default. If you wish, you can display a sound column's waveform by right-clicking on it, then selecting **Sound Display > Waveform**.
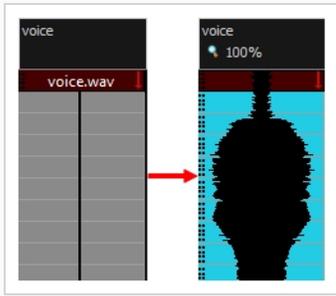
# Playing Sound

Before playing back any sound, click the Enable Sound ◀) button in the Playback toolbar or enable it through the Play menu (in the top menu). This will ensure that you can hear the sound layers in your scene, even the ones included within symbols.

If there are two or more sound layers and you want to listen to them independently, you can disable the unwanted sound by clicking the Disable Layer ◀| button on the sound name layer in the Timeline view.

If you are trying to do a playback with sound and the frame rate doesn't reach 24 fps (frame per second), you can do one of the following to troubleshoot the issue:

- Shrink down the Camera view size to reduce the cached image size.

- Playback your scene without sound first, then add the sound. If you do not cache the images first without sound, the playback will try to follow the sound by skipping images that will never get cached.

- In the Preferences panel, in the OpenGL tab, reduce the size of the Playback Cache Size (in mb) preference.

### How to play back sound

1. To select a starting point:

    - In the Xsheet view, click on a cell in the sound column.

    - In the Timeline view, click on a cell in the sound layer. You can also slide the red playhead to the correct cell.

    

2. In the Playback toolbar, activate the Enable Sound ◀) button.

3. Do one of the following:

    - Click the Play ▶ button in the Playback toolbar.

    - From the top menu, select **Play > Play** or click on the Enter/Return key.

4. To hear the sound played back again and again, do one of the following:

    - Click the Loop ↻ button in the Playback toolbar

    - From the top menu, select **Play > Loop**.

5. To mute soundtrack, on the left side of the sound layer, click the Disable Layer ◀| button.
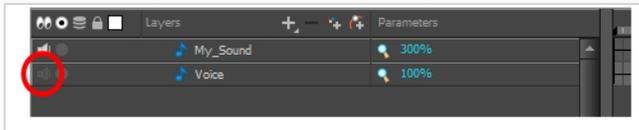
# Changing the Sound Display

Within the Xsheet view, you can display the sound file in different ways, depending on your sound editing needs.

You can show or hide the waveform in the Timeline view by selecting the Waveform ⌇ button in the Timeline View toolbar. You must customize the toolbar to display this button because it is not included in this toolbar by default.

### How to change the sound display in the Timeline view

1. In the Timeline view's right area, right-click in the frame section and select **Show Sound Waveforms** or in the Timeline view menu, select **View > Show > Show Sound Waveforms**.
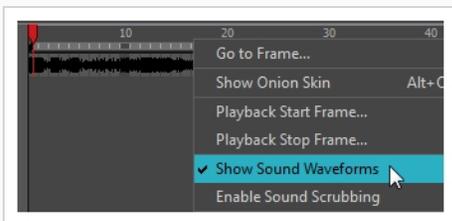
   

   - You can change the waveform scale using the Zoom Waveform 🔍 icon on individual sound layers in the Timeline view's left side.
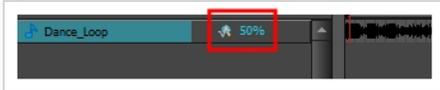
   

### How to change the sound display in the Xsheet view

1. Right-click in the sound column or on the sound column header, and select **Sound Display** and one of the following:

   - **Sound Name**: Shows the name of the sound file, as well as the file format. The line running vertically through the column frames between the same file name indicates a continuity of the same sound file in these frames.

   - **Mouth Shapes**: Shows the letter (or name depending on the way you named your character's different mouth positions) in the column's frames. There is only one mouth position allotted per frame and this position should correspond to the sound file after performing a lip-sync.

   - **Waveform**: Shows a vertical display of the sound file's actual waveform. In the column header, in the field under the column name, you can type in a percentage to zoom in or

zoom out on the waveform, or pass the scroll cursor 🖑 over the Zoom Waveform 🔍 icon.

# Sound Scrubbing

Harmony uses a process known as Sound Scrubbing to let you hear sound in real-time while you move the playback pointer forward or backward. This is very useful for finely-tuned lip-synching. You can scrub sounds from the Timeline view.

### How to scrub a sound from the Timeline view

1. Do one of the following:

   ‣ From the top menu, select **Play > Enable Sound Scrubbing**.

   ‣ Right-click in the frame bar of the Timeline view and select **Play > Enable Sound Scrubbing**.

   ‣ In the Playback toolbar, enable the Sound Scrubbing 🔊S button.
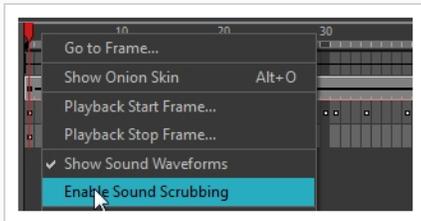
   

2. At the top of the Timeline view, drag the red playhead to hear the sound at each frame.

   

3. In the Playback toolbar, you can use the jog slidder to playback forward and backward subsequent sound frames. This allows you to do a more fluid scrubbing.
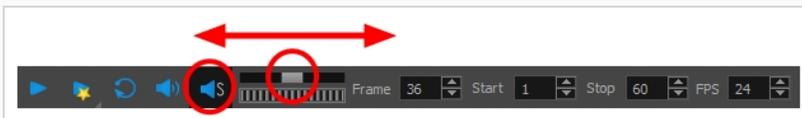
# About Analog Sound Scrubbing

Harmony is set to the digital sound scrubbing mode by default. This means that all sounds are played in real time. It also means that as you scrub over a frame, you will hear the section of your sound file that is allotted to that frame. As you are scrubbing, although it is accurate, the sound can sound clipped. It can also be difficult to hear nuances in pitch and tone.

Harmony has an analog sound scrubbing option. When sound scrubbing in this mode, the sound is played back according to the speed that the playhead or jog is manually adjusted. Harmony's interface offers shuttle and jog sliders to perform analog sound scrubbing, however, external hardware and their corresponding software can be used in conjunction with Harmony for improved analog sound scrubbing results.



Contour Shuttle Pro, an example of an external sound scrubbing controller.

> **NOTE**
>
> Refer to the device's manual to configure its functionality with Harmony.

# Performing an Analog Sound Scrub in Harmony

Before you can perform an analog sound scrub in Harmony, you have to learn about the Shuttle and Jog controls.



- **Shuttle**: Pull the Shuttle control backward or forward to make the red playhead in the Timeline view jump by large increments in the direction you are moving the shuttle.

- **Jog**: Drag the Jog control to make the "dial" rotate. The Jog controls finer incremental movements along the soundwave. Use the Frame field to see the frame number which you are on. As you rotate the dial, your speed in fps appears directly after the FPS field.

### How to perform an analog sound scrub

1. Do one of the following:

   ‣ From the top menu, select **Play > Enable Sound Scrubbing**.

   ‣ Right-click in the frame bar of the Timeline view and select **Play > Enable Sound Scrubbing**.

   ‣ In the Playback toolbar, enable the Sound Scrubbing ◀S button.
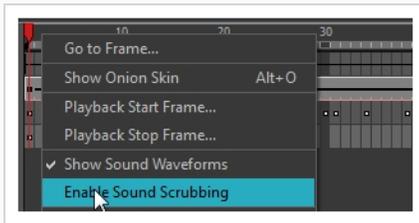
   

2. In the top menu, select **Edit > Preferences** (Windows) or **Harmony Advanced > Preferences** (macOS).

3. In the Sound tab, select the **Analog Sound Scrubbing** option.

4. Click **OK**.

5. Do one of the following:

   ‣ In the Playback toolbar, use the Shuttle to find the general location of where you want to start your sound scrub.

   ‣ In the Timeline view, drag the red playhead to the desired location.

6. In the Playback toolbar, use the Jog to fine-tune your scrub to just a few frames.

# Editing Sound

Now that you have successfully imported a sound file into Harmony, it is time to familiarize yourself with the sound editing interface. The Sound Element editor makes it possible to edit sounds that were created outside of Harmony and imported into your scene.

## How to open the Sound Element editor

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

    The Sound Element Editor dialog box opens.
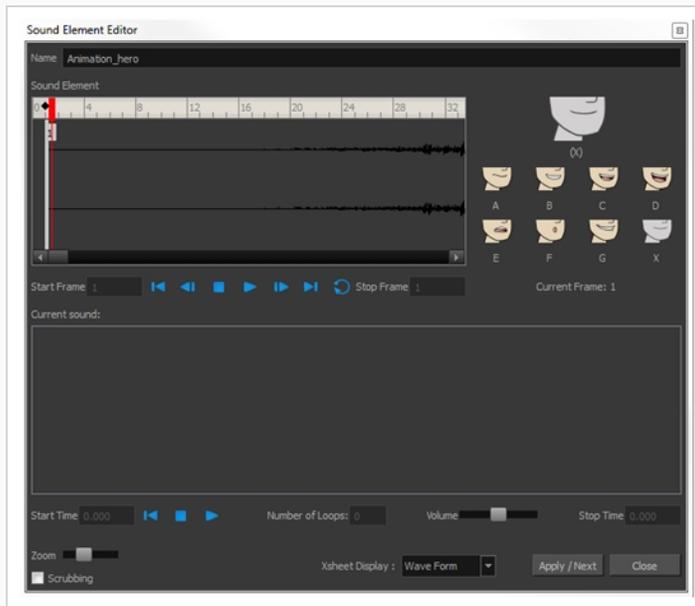
    

    The Sound Element editor consists of three main parts.

- **Sound Element:** The waveform in the Sound Element Editor is the actual sample that will be heard when the final movie is rendered. It may be shorter than the original sound sample due to the length of the scene. If any edits are made to the sound sample, they can be heard here. In the Sound Element panel, notice the coloured tabs that indicate the start and end frames of a sound segment. The frame number is displayed in the tab.

- **Current Sound**: Displays the original sound file in its entirety and is where you can edit its properties. This window remains empty until you click inside the Sound Element Editor.

- **Lip-sync Preview:** Lets you preview the automated detection and to manually insert different mouth positions to correspond with the sound sample.

# Cropping Sound

To synchronize the sound with specific images in your scene, you must set a start frame for your sound. To make sure the sound ends by a certain frame, you must set an end frame.

In the Sound Element panel you will see some coloured tabs, these tabs represent the frames. The frame number is shown inside the tab flag marker. These tabs indicate the start and end frames of a sound segment.

### How to change start or end frame of a sound

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

2. In the Sound Element editor, select a sound sample from the Sound Element section. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section.
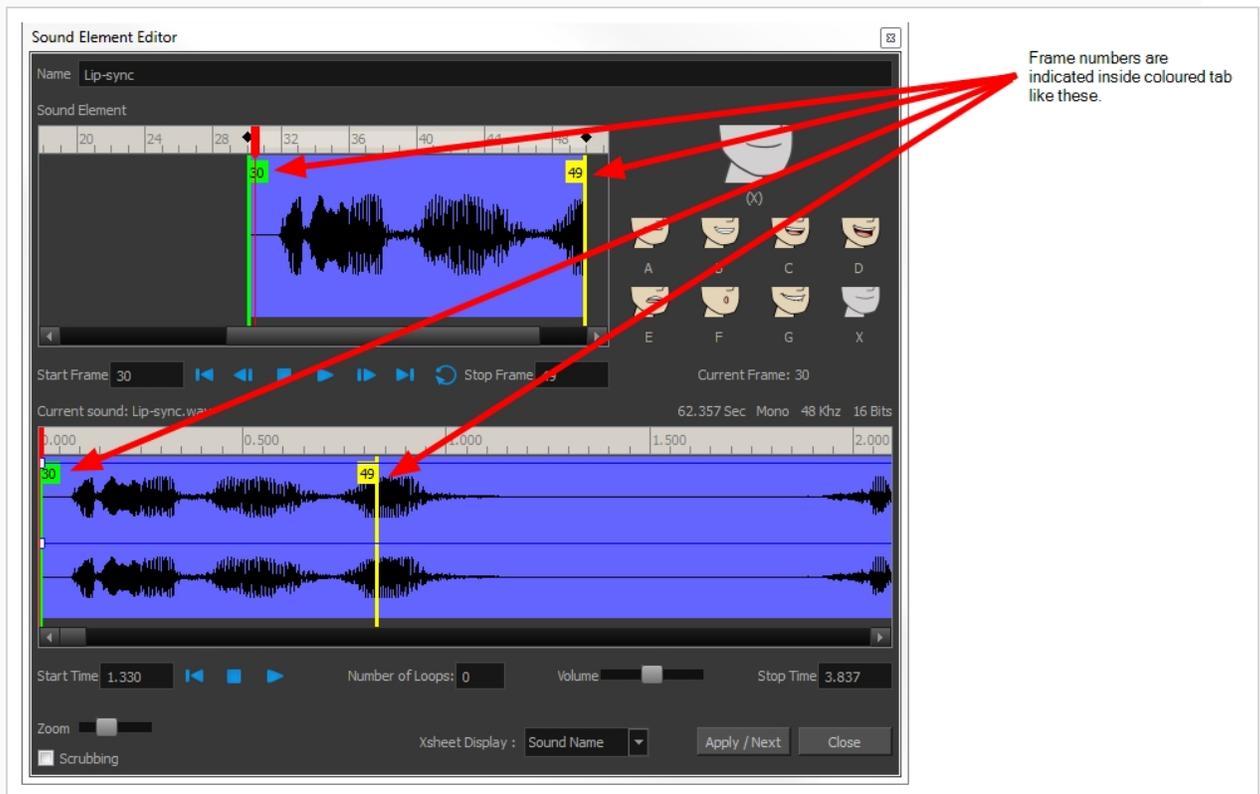


Click the Play ▶ button in the Current Sound section (only the selected sound plays).

3. Within the Sound Element panel, drag the selected clip to the frame number where you want it to start playing.

You can only move the clip to a section that does not already contain a clip; you cannot overlap two clips in the same element.

4. To change the end frame, drag the yellow marker at the end of the waveform to the frame position.
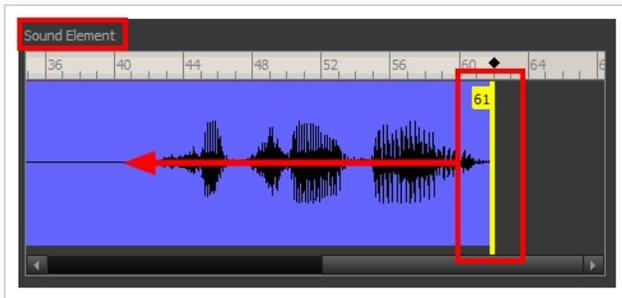


5. To hear how all the clips fit together in the element, click the Play ▶ button in the Sound Element section.
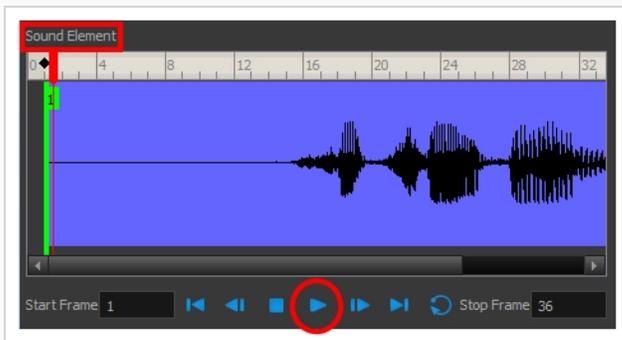


If you only want to hear the selected clip, click the Play ▶ button in the Current Sound section.
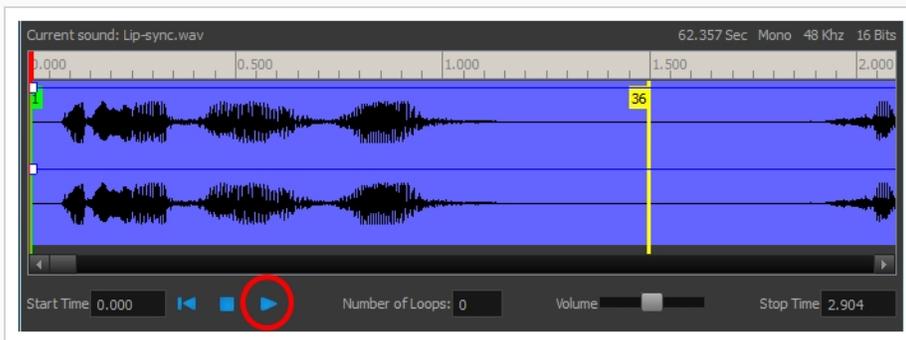
6. Click **Apply/Next**.

   The Xsheet and Timeline views display the sound clip at the start frame you selected.

# Trimming Sound

To play only a section of a sound file, use the Sound Element editor to select the exact part you want to use. For example, if there is a bit of noise at the start of the sound, use the Sound Element editor to cut the noise.

The Sound Element Editor does not change the original sound file; it only plays a section of it, ignoring the rest. This means that the entire sound file is included on export. If you need to be mindful of file size, it is better to edit sound files completely in a sound editor before bringing them into Harmony.

### How to trim the start and end of a sound file

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

2. In the Sound Element editor, select a sound sample from the Sound Element section. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section. Or select a soundwave and click the Play ▶ button in the Current Sound panel (only the selected sound plays).

3. Using the Current Sound section, decide on the part of the file you want to play by dragging the left and right boundaries of the selection area.
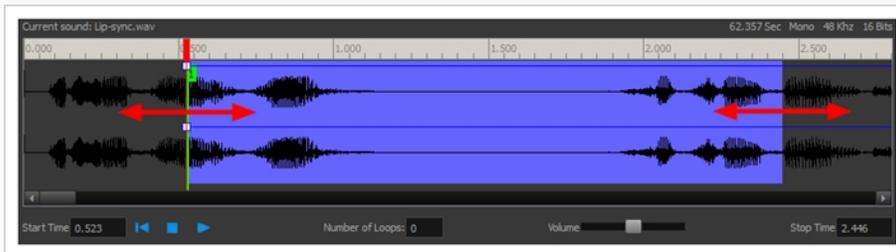


4. Click the Play ▶ button in the Current Sound section to check that you have trimmed the desired sections. Use the Zoom slider at the bottom of the panel to zoom in on the waveform so you can trim it more accurately.
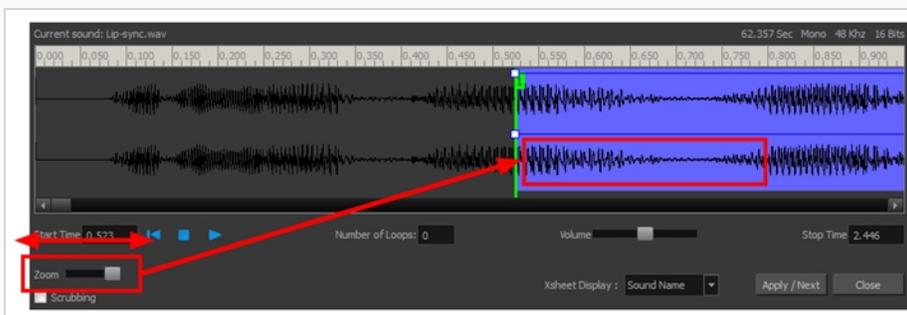


5. Click **Apply/Next**.

   The trimmed sound sample appears in both the Timeline and Xsheet views at the start and end positions you selected.

# Looping Sound

To repeat a sound, specify the number of times that you want it to loop in the Sound Element editor.

**How to loop a sound sample**

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

2. From the Sound Element section, select the sound section you want to loop.

3. In the Current Sound section, type the number of times you want the sound to play in the Number of Loops field.
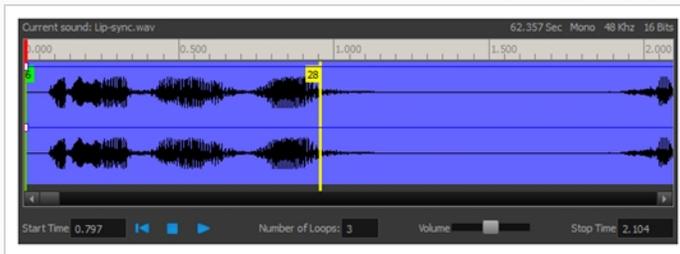


4. Press the Enter/Return key.

The looped sound appears after the current sound. They are indicated by their grey waveforms, as opposed to black.

When you loop a sound, the looped sections fill the cells in the sound element (column or layer) until the next sound sample starts or until the scene ends. This means that the looping could be cut if the next sound sample starts too soon or if the scene ends too quickly.

# Mixing the Sound Volume

You can adjust the volume of an entire sound clip or modify the volume in increments by adjusting the fade-in and fade-out times, otherwise known as sound envelopes. The fade edit only affects the playback; the original sound file is not affected.

## How to adjust the overall volume of the entire sound clip

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

2. In the Sound Element section, select the sound you want to work on.

   A more detailed version of the selected sound appears in the Current Sound section.

3. In the Current Sound section, use the Volume slider to adjust the volume.
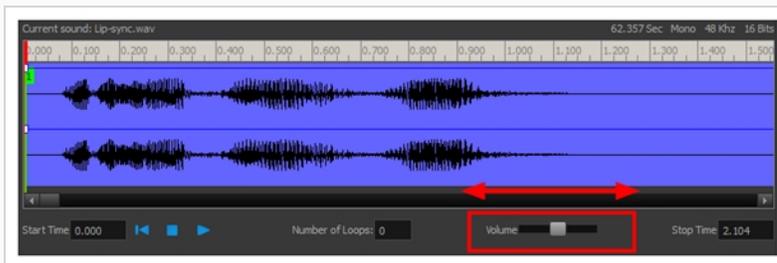


4. Click the Play ▶ button in the Current Sound panel to verify the volume.

## How to create the fade in/out effect on a sound clip

1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.

2. In the Sound Element section, select the sound you want to work on.

3. In the Current Sound section, click on the thin blue line above the waveform to add an envelope marker.
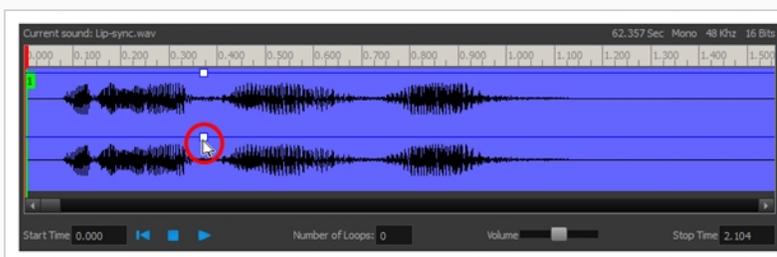
4. Drag the envelope markers to adjust the volume at that frame and to create the time of the transition. The line from the edge of the clip to the envelope marker identifies how the volume increases (fades-in) or decreases (fades-out) over time.

   Dragging the marker to the bottom of the channel mutes the volume, while dragging it upwards increases the volume.

   > **NOTE**
   >
   > To create an even effect, be sure to adjust the envelope markers uniformly in both the left and right (bottom and top) channels.
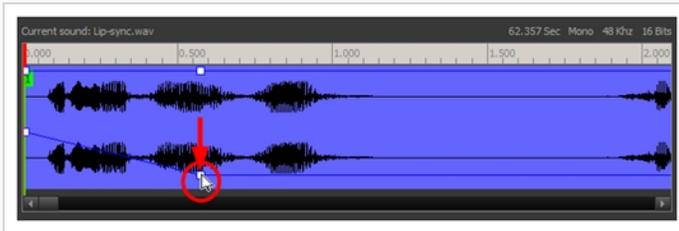


5. Click the Play ► button in the Current Sound panel to check the fade envelopes.

# Setting the Playback Range

To hear a specific section of the sound element, adjust the playback range in the Sound Element editor to start or stop at specific frames. This customized playback range does not affect the actual sound in the Sound element.

### How to change the playback range in the Sound Element editor

1. Drag the start or end range markers in the Sound Element section to the boundary frames you want.



2. When you click the Play ▶ button to play back your sound in the Sound Element editor, it only plays the sound which exists between the two markers.
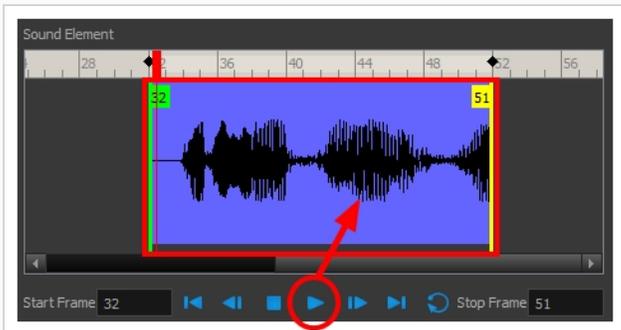
# Adding an Empty Sound Layer

When performing sound editing tasks, it can be useful to chop up a sound sample into different layers. For example, when performing a lip-sync, only a single view of the various mouth positions for a character can exist on one layer. Therefore, if you want to have a character turn its head from a profile view to a three-quarter view and have mouth position changes to fit with the sound sample from these two different views, you would need to cut up the sound samples needed for the profile view mouth positions on one layer and the sound samples needed for the three-quarter view on another.

For this task, you will need an empty sound layer.

### How to add an empty sound layer

1. In the Timeline Layer toolbar, click the Add Layer button.

2. From the drop-down menu, select **Sound**.

   An empty (silent) sound layer appears in both the Timeline and Xsheet views.

   

3. Rename the layers accordingly by double-clicking on the layer name and renaming it in the Sound Element editor. Click **Apply/Next** to accept the change.
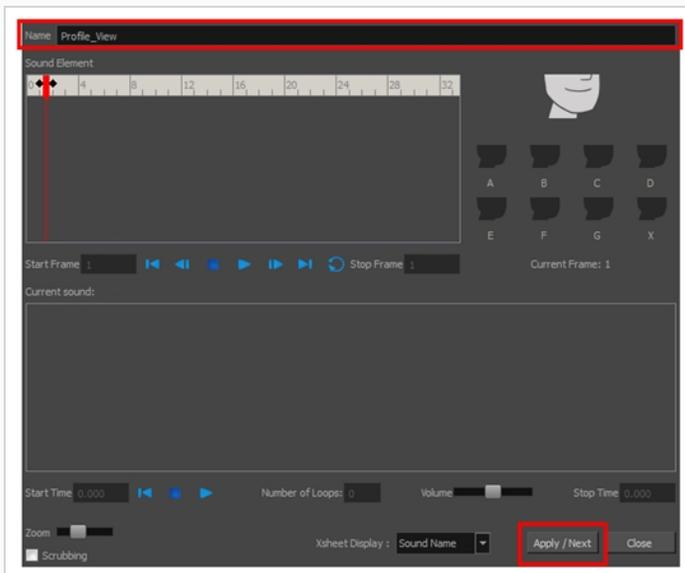
   

1. In the sound file you want to grab sounf frames from, click the cell where you want to start the cut and Shift + click on the final cell of the cut. The sample to be cut becomes highlighted.
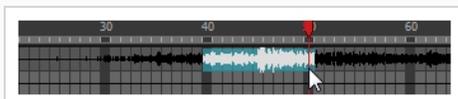
2. Drag the selection into the empty sound layer below.
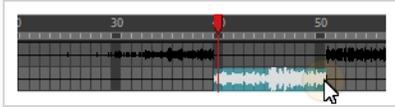


4. You can now continue to cut-up and distribute the sound sample between the two layers or carry on to the lip-synching process for each layer and its corresponding facial view.

> **NOTE**
>
> If you need to duplicate your sound layer to keep an unedited copy for safety, select the Duplicate Selected Layers button in the Timeline View toolbar. You must customize the toolbar to display this button because it is not included in this toolbar by default.

# About Lip-sync

Adding a lip-sync to your animation is essential to making your characters seem alive. However, it is also a particularly tedious part of the animation process.



To solve this problem, Harmony provides an automatic lip-sync detection feature. This feature analyzes the content of a sound track in your scene and associates each phoneme it detects with one of the mouth shapes in the following mouth chart, which is a standard mouth chart in the animation industry.



> **NOTE**
>
> The letters assigned to these mouth shapes are standard identifiers, they do **NOT** correspond to the sound they are meant to produce.

This is an approximation of the English phonemes each mouth shape can be used to represent:

- **A**: m, b, p, h
- **B**: s, d, j, i, k, t
- **C**: e, a
- **D**: A, E
- **E**: o
- **F**: u, oo
- **G**: f, ph
- **X**: Silence, undetermined sound

When performing automatic lip-sync detection, Harmony does not create mouth drawings. It simply fills the drawing column of your character's mouth layer with the generated lip-sync, by inserting the letter associated with the right mouth shape into each cell of the column. Therefore, for the automatic lip-sync detection to work, your character's mouth layer should already contain a mouth drawing for each drawing in the mouth chart, and these drawings should be named by their corresponding letter.

# Generating a Lip-sync Detection

There are several places where you can perform a lip-sync detection: Layer Properties view, Timeline view, Xsheet view and Sound Element editor.

**How to generate a sound detection for lip-sync using the Layer Properties view**

1.  In the Timeline or Xsheet view, select the sound layer.

    The options for that layer will appear in the Layer Properties view.

2.  In the Layer Properties, click **Detect**.

    

    Harmony analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.

3.  Click the **Map** button to open the Lip-Sync Mapping dialog box.

    

4.  From the Destination Layer menu, select the layer that contains the mouth positions for the character's voice track.

> **NOTE**
>
> If the selected layer contains symbols, you can map the lip-sync using drawings located directly on the layer or use the symbol's frames. In the Symbol Layer field select **Don't Use Any Symbol** if you want to use the drawings or select the desired symbol from the drop-down menu.

5.  In the Mapping section, type the drawing name or Symbol frames in the field to the right of the phoneme it represents. If your drawings are already named with the phoneme letters, you can skip this step.

6.  Click **OK**.

7.  In the Playback toolbar, enable the Enable Sound ◀S option.

8.  Press the Play ▶ button in the Playback toolbar to see and hear the results in the Camera view

## How to generate a sound detection for lip-sync in the Xsheet or Timeline view

1.  Do one of the following:

    - In the Xsheet or Timeline view, right-click on the sound layer's cells and select **Lip-Sync > Auto Lip-Sync Detection**.

    - From the top menu, select **Animation > Lip-Sync > Auto Lip-Sync Detection**.

    > **NOTE**
    >
    > To show the mouth chart letters, if they're not already present in the Xsheet view, right-click on the sound column and select **Lip-Sync > Sound Display > Mouth Shapes**.

Harmony analyzes the selected sound clips and assigns a lip-sync letter to each frame. The X markers in the frame are replaced by these designated letters.

## How to generate a sound detection for lip-sync using the Sound Element editor

1. Do one of the following:

   - In the Timeline view, double-click on the sound layer.

   - In the Xsheet view, double-click on the sound column header.

   The Sound Element editor opens.

2. In Sound Element section, select the waveform for which you want to generate a mouth chart.

3. Right-click on the sound file and select **Auto Lip-Sync Detection**.
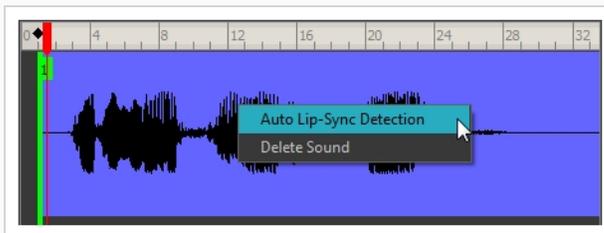


A progress bar appears while Harmony analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.

# Mapping the Lip-Sync Detection

Harmony can automatically map Automatically maps drawings in an element to the mouth chart you have generated for a sound. This can save time when you are lip-synching a voice track.

In the Layer Properties view, you can identify each lip drawing of a character. Harmony then automatically labels all of the cells in the character's element with the appropriate name.

## How to automatically map lip-sync drawings to a mouth layer

1. To open the Lip-Sync Mapping dialog box, do one of the following:

   ‣ In the Layer Properties view, click on the Map button.

   ‣ In the Timeline view, right-click on any cell in the sound sample layer and select **Lip-Sync > Map Lip-Sync**.

   ‣ From the top menu, select **Animation > Lip-Sync > Map Lip-Sync**.

   The Lip-Sync Mapping dialog box opens.
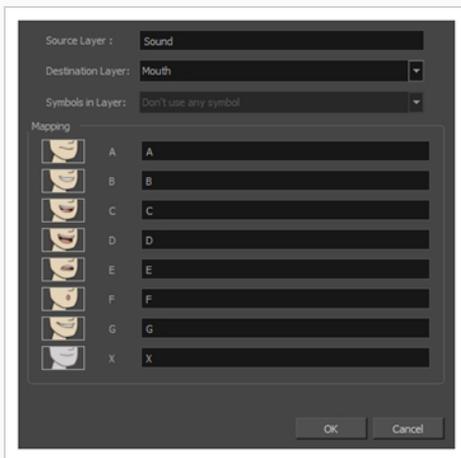
   

2. From the Destination Layer menu, select the layer that contains the mouth positions for the character's voice track.
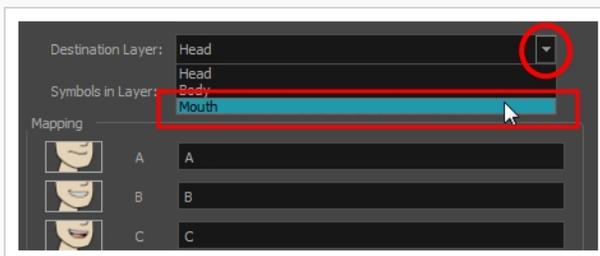
   

3. If the selected layer contains symbols, you can map the lip-sync using drawings located directly on the layer or use the symbol's frames. In the Symbol Layer field select **Don't Use Any Symbol** if you want to use the drawings or select the desired symbol from the drop-down menu.

4. In the Mapping section, type the drawing name or Symbol frames in the field to the right of the phoneme it represents. If your drawings are already named with the phoneme letters, you do not have to do anything.

# Modifying the Lip-sync Detection

You can change the mouth position assigned to a frame if you think another position is more appropriate.

For example, you may have a character who says nothing for 10 frames between two speeches. Harmony would normally assign an X image for the silent period. However, if you want your character's mouth to hang open in astonishment for these 10 frames, you can change the lip assignment for these frames from an X to an F.

If you modify the sound detection, you will need to remap the lip-sync to your animation—see .

**How to change the mouth position assignment of a sound from the Sound Element editor and Layer Properties view**

1. Double-click the sound layer name in the Timeline view or the sound column header in the Xsheet view to open the Sound Element editor.

2. In the Sound Element section, drag the frame slider to the frame you want to change the mouth position assignment on.

   In the Lip-sync image area, the image on top represents the lip position assigned to the current frame.
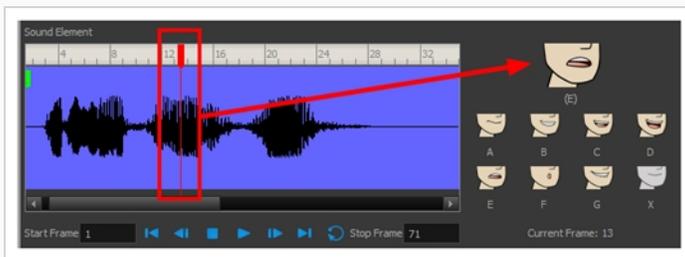
   

3. To change the image assigned to the frame, click on the image of the mouth position you want from below the preview image. The preview image changes to the mouth position image you select. You can perform the same operation in the Layer Properties view.
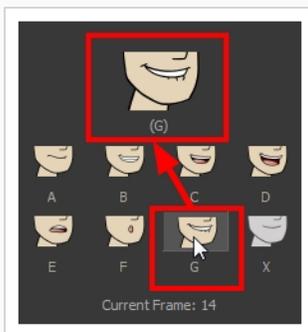
   

   The position is updated in the Timeline and Xsheet views.

**How to change the lip assignment of a sound in the Xsheet or Timeline view**

1. Right-click in the cell that contains the mouth position you want to change.

2. From the pop-up menu, select **Lip-Sync > Change Mouth Shape to** and choose the letter that reflects the mouth position you want to use for that sound. You can also select **Animation > Lip-Sync > Change Mouth Shape > *the desired mouth shape*** from the top menu.

> **NOTE**
>
> Note that if you modify the lip-sync detection you must remap the detection to your mouth layer.

# Manual Lip-syncing

You can manually create the lip-syncing for your scene by selecting which mouth drawing should be exposed at each frame of your character's dialogue. For this process, you will be using the Sound Scrubbing functionality, which plays the part of your sound track at the current frame whenever you move your Timeline cursor, allowing you to identify which phonemes you should match your character's mouth to. You will also be using drawing substitution to change which mouth drawing is exposed at every frame.

### How to animate lip-sync using the Timeline view

1. In the Playback toolbar, enable the **Sound Scrubbing** ◀S button.

2. In the Timeline view, drag the red playhead along the sound layer waveform.

3. When you reach a frame where a mouth position should go, for example, an open mouth with rounded lips for an "oh" sound, click on that frame on your mouth shapes layer.

4. In the Parameters section, staying on your mouth shapes layer, place your cursor on top of the drawing name (often a letter) until it changes to the swapping pointer.

5. Pull the cursor to see the list of mouth shape names and choose the one you want. The current drawing automatically changes to the new selection.



### How to animate lip-sync using the Library view

1. In the Playback toolbar, click the Sound Scrubbing ◀S button.

2. In the Timeline view, drag the red playhead along the waveform of your sound layer.

3. When you reach a frame where a mouth position should go, for example, an open mouth with rounded lips for an "oh" sound, click on that frame on your mouth shapes layer.

4. In the Drawing Substitution window of the Library view, drag the slider to choose a mouth shape. The current drawing is swapped for the one in the preview window.

# Chapter 17: Export

Now that you've finished your animation, it's time to render your movie. Depending on whether you plan to further edit your movie using a third party software, composite the movie in a larger body of work or put it up directly on the web, Harmony supports several formats for all your rendering needs.
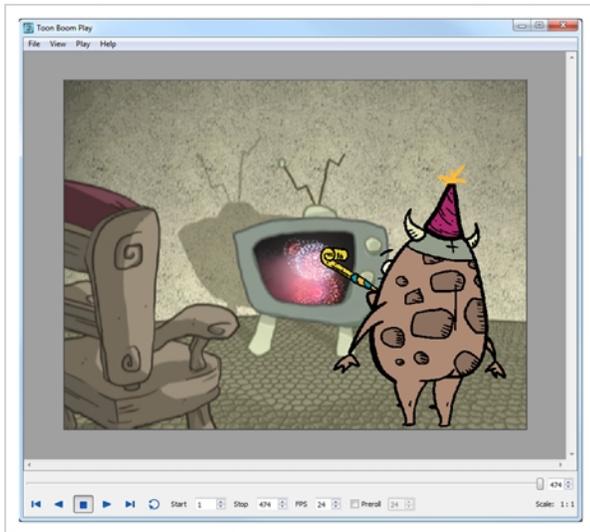


> **NOTE**
>
> The different editions of Harmony support the following maximum render resolutions:
>
> - Harmony Essentials: 2K (2048x1556)
> - Harmony Advanced: 4K (4096x3112)
> - Harmony Premium: Unlimited

# Exporting Image Sequences

In Harmony, you can export you scene as a sequence of image files, which can be played in Harmony Play or imported in a video editing software for post-production.

You can export an image sequence in a handful of different image types. If you want to export images with transparency, you can do so by selecting an image type that supports it, such as TGA, PNG or PSD, then setting the Colour Mode to Colour with Transparency. You can also export images with deep colour (16 bits/channel) by selecting a file type that supports it, such as PNG or PSD, and setting the Colour Depth to 16 bits/channel.

### How to render an image sequence

1. From the top menu, select **File > Export > Images** or press Ctrl + Shift + Y (Windows/Linux) or ⌘ + Shift + Y (macOS).
   The Export Images dialog box opens.
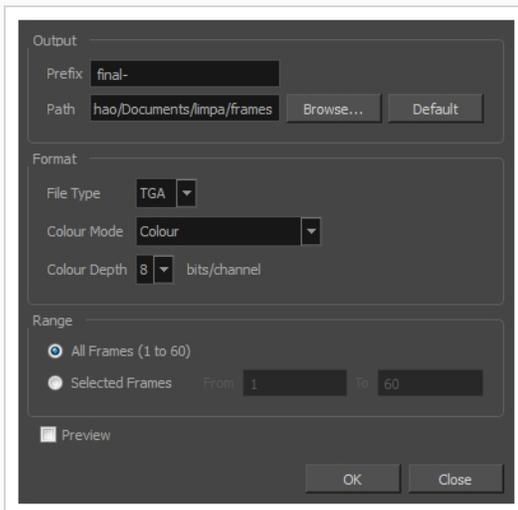


> **NOTE**
>
> If you are using Harmony Server, the Render Write Nodes dialog will have a **Batch Composite Options** section. Enabling this option will send your scene to batch rendering instead of rendering it locally. Simply disable this option and follow the steps below. For information on how to use Batch Composite Options, see Batch Rendering.

2. In the **Prefix** field, enter a prefix for the file names of the exported images. The images will be named with the prefix, followed by their frame number. T

3. Click **Browse** and select the directory in which to export your images, or click on **Default** to set the export destination to your scene's `frames` subfolder.

4. In the Format section, choose the desired image format in the **File Type** drop down list. Colour Mode and Colour Depth from their respective menus.

5. In the **Colour Mode** drop down list, select whether you want the exported images to be in **Greyscale**, **Colour** or **Colour with Transparency**.

6. In the **Colour Depth** drop down list, select whether you want the exported images to be in **8 bits/channel** or **16 bits/channel**. 8 bits per channel is the most standard colour depth, but 16 bits per channel allows for more colour precision.

> **NOTE**
>
> Most image formats will export in Colour at 8 bits/channel. Only a few image formats, such as PNG , TGA and PSD, can be exported in different colour modes and colour depths.

1. In the Range section, select the frame range to render by doing one of the following:

   - If you want to render all the frames in your scene, select **All Frames**.

   - If you want to render a specific sequence of frames, select **Selected Frames** then, in the fields to the right, enter the number of the first and last frame of the frame sequence you wish to render.

7. Enable the **Preview** option to automatically preview the exported image sequence in Harmony Play once the render is done.

8. Click **OK**.

   Harmony begins rendering the scene's frames.
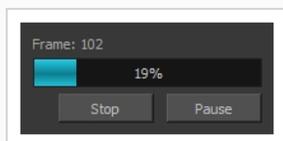
   

   If you enabled the Preview option, the exported images will load in Harmony Play once the render is done. You can user Harmony Play to play the image sequence with the scene's soundtrack.

# Exporting a Movie File

Using the Export Movie dialog, you can export your animation as a video file. By default, Harmony will export your entire scene in its full resolution. If you prefer, you can choose to export only a specific frame range in your scene, or to export in a smaller resolution, which can be useful if you need to save on time or disk space.

If you have specific requirements for the quality and size of your exported video files, you can use the Movie Options dialog to configure the video and audio compression settings. If you're exporting a QuickTime movie, you have access to all of the codecs and compression settings made available by QuickTime's interface.

### How to export a movie file

1.  From the top menu, select **File > Export > Movie**.

    The Export to QuickTime Movie dialog box opens.
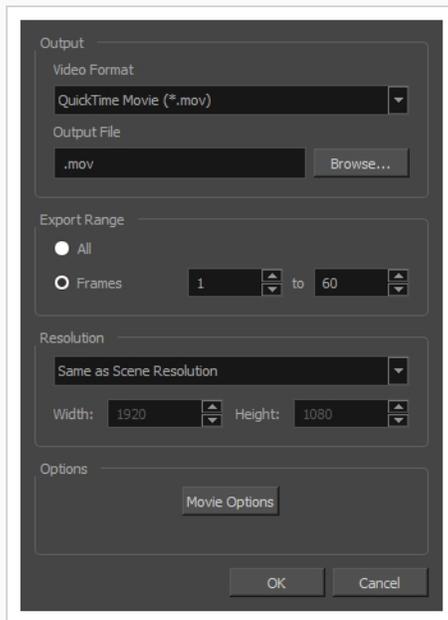
    

2.  In the Video Format drop-down menu, select the desired format for your movie file:

    - **Quick Time Movie (\*.mov)**: Available on Windows, macOS and GNU/Linux.

    - **Windows Media Video (\*.wmv)**: Available on Windows only.

    > **NOTE**
    >
    > On Windows and macOS, Apple QuickTime must be installed in order to export QuickTime movies. On GNU/Linux, Harmony uses a more limited, open source QuickTime-compatible library which does not require additional software.

3. Click **Browse** to select the location and file name of your exported movie file.

4. Click **OK**.

5. From the Export Range section, decide whether you want to export the entire scene (All) or a specific frame range. If you decide on the latter, enter the frame range.
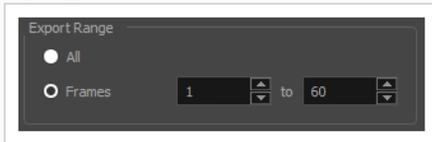


6. In the Resolution section, select one of the following from the menu:

   - A preferred resolution ratio.

   - **Custom**: Enables the Width and Height fields so you can enter a specific size.





7. In the Options section, do one of the following to configure your movie's video and sound compression settings:

   - If on Windows or macOS and exporting a QuickTime movie, click on **Movie Settings** to open the QuickTime Movie Settings dialog box—see _Configuring Movie Settings for QuickTime Movies on Windows and macOS_ on page 1210

   - If on Windows and exporting in Windows Media Video format, click on Movie Settings to open the Windows Media Video Settings dialog box—see _Configuring Movie Settings for Windows Media Video_.

   - If your video format is QuickTime Movie and you're on a GNU/Linux machine, click on Video Options to configure the video compression settings for your movie file, or on Sound Options to configure its audio compression settings—see _Configuring Movie Settings for QuickTime Movies on GNU/Linux_.

8. Click **OK**.

9. In the Export to QuickTime Movie dialog box, click **OK**.

   A progress bar appears.
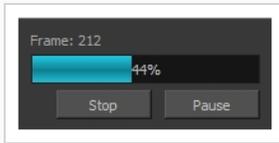
10. Browse to the location on your computer where you exported your movie and double-click on it to view it in your video player.

# Configuring Movie Settings for Windows Media Video

On Windows, it is possible to export in Windows Media Video format.

**How to configure video and sound settings for Windows Media Video**

1. In the Video section, select the desired Variable Bit Rate Quality for your video. A higher setting will ensure a better image quality. A lower setting will create a smaller video file.
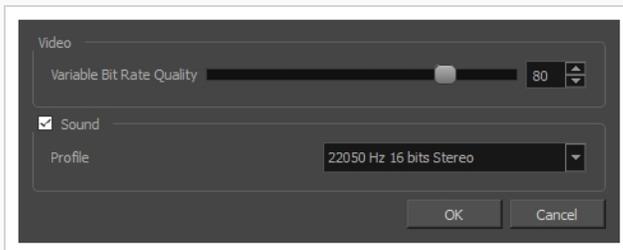


2. Using the Sound checkbox, select whether or not you want your movie file to have sound.

3. Using the Profile drop-down menu, select the preferred compression settings for your movie's soundtrack. Each profile has a combination of audio sample rate, sample size and channel mode, which cover the following options:

   - **Sample rate**: Available sample rates are 8000 Hz, 16000 Hz, 22050 Hz and 44100 Hz. The default setting is 22050 Hz. It is best to export your audio at a rate that matches the rate of your original sound files. For example, if your file has an audio sample rate of 48000 Hz and you choose a sample rate of 22050 Hz, the sound will play at the same speed, but higher frequencies will be missing, making it sound muffled. For reference, the standard sound quality is **44000 kHz** for films, and **48000 kHz** for DVD. Lower rates are liable to impact the quality of your movie's soundtrack negatively, but they can be useful if disk space or download speed is critical.

   - **Sample size**: Also known as *Bit Depth*, this determines the amount of precision used to record each wavelength in the soundtrack. The standard size is **16-bit**. If you choose **8-bit**, the amount of disk space your sound track requires is halved, but the audio will sound muffled.

   - **Channel mode**: Stereo sound has a separate sound track for the left and the right speakers, allowing to make the origin of each sound realistically match the origin of their corresponding action. If you choose Mono, your sound track may use less disk space, but both the left and right channels will be merged into a single track.

   > **NOTE**
   >
   > Exporting in 8-bit audio requires Apple QuickTime to be installed.

# Configuring Movie Settings for QuickTime Movies on Windows and macOS

On Windows and macOS, you can export QuickTime movies. You can configure the video and audio settings for your exported movies using the configuration interface provided by QuickTime.

> **NOTE**
>
> To export QuickTime Movies on Windows, Apple QuickTime must be installed on your machine.

**How to configure video and sound settings for QuickTime movies on Windows and macOS**

1. In the Movie Settings dialog box, select whether you want your movie to include **Video** and **Sound** data, as well as if the video should be optimized for Internet streaming.
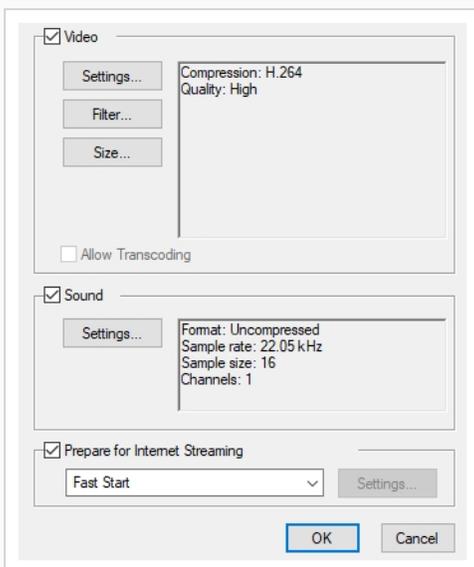
   

2. In the Video section, click **Settings**.

   The Standard Video Compression Settings dialog box opens.
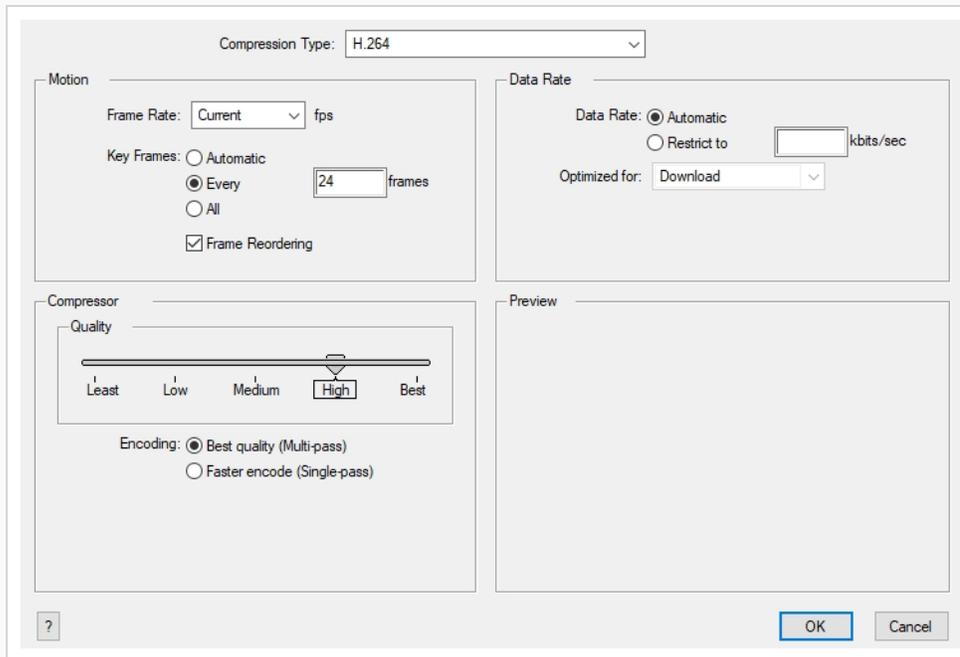
3. From the Compression Type menu, select a codec. The availability of certain compression settings depends on the Compression Type selected. For example, when the Animation compression type is selected, the Data Rate option is greyed out.

> **TIP**
>
> If you want to render a QuickTime movie with high quality compression and transparency, you can use the **Animation** video codec with the colour depth set to **Millions of Colours+**.

4. In the Motion section, choose a **Frame Rate** from the list.

   By default, it is set to match the frames-per-second (fps) of your Harmony project. If you choose a lower frame rate, your export playback will be faster than your actual project. The reverse is also true for a higher frame rate.

5. If you want keyframes inserted, select the **Every** option and set the number per frame.

   This is the option recommended by QuickTime. For further details, refer to the QuickTime documentation.

6. In the Quality section, use the slider to choose a quality setting. Remember that the better the quality of the export, the larger the file.
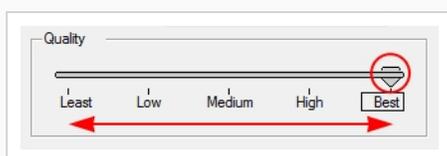
7. From the Data Rate section, either choose to allow the program to automatically select the most optimal bit rate, or enter a Restricted rate to save space and allow for faster downloading at a cost to the quality of the export.

8. In the same section, from the Optimized For menu, select the intended viewing method for the export.

9. Click **OK**.

10. From the Movie Settings dialog box, click **Sound Settings**.

   The Sound Settings dialog box opens.
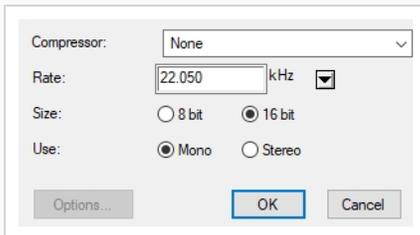
   

11. From the **Compressor** menu, select a compression type. The default setting is **None**. This exports your audio as is without performing any lossy compression or conversion, preserving its fidelity. Other compressors can be used if you need your movie's audio track to be exported in a specific format, or if disk space or download speed is critical, but they may impact the quality of your movie's soundtrack negatively.

12. From the **Rate** menu, select a rate. It is best to export your audio at a rate that matches the rate of your original sound files. For example, if your file has an audio sample rate of 48 kHz and you choose a conversion rate of 22.05 kHz, the sound will play at the same speed, but higher frequencies will be missing, making it sound muffled. For reference, the standard sound quality is **48 kHz** for broadcasting and DVD. Lower rates are liable to impact the quality of your movie's soundtrack negatively, but they can be useful if disk space or download speed is critical.

13. Select the **Size** of your audio's encoding. Also known as *Bit Depth*, this determines the amount of precision used to record each wavelength in the soundtrack. The standard size is **16-bit**. If you choose **8-bit**, the amount of disk space your sound track requires is halved, but the audio will sound muffled.

14. Select whether to **Use** the **Mono** or **Stereo** channel mode. Stereo sound has a separate sound track for the left and the right speakers, allowing to make the origin of each sound realistically match the origin of their corresponding action. If you choose Mono, your sound track may use less disk space, but both the left and right channels will be merged into a single track.

# Exporting a QuickTime Movie with Lossless Compression and Transparency

It is possible to export a QuickTime movie with lossless video compression and transparency by using specific compression settings.

### How to export a lossless QuickTime movie with transparency

1. In the Video section of the Movie Settings dialog, select **Settings**.

2. In the Standard Video Compression Settings dialog, set the **Compression Type** to **Animation.**

3. In the Compressor section, set the **Depth** to  **Millions of Colors+** .
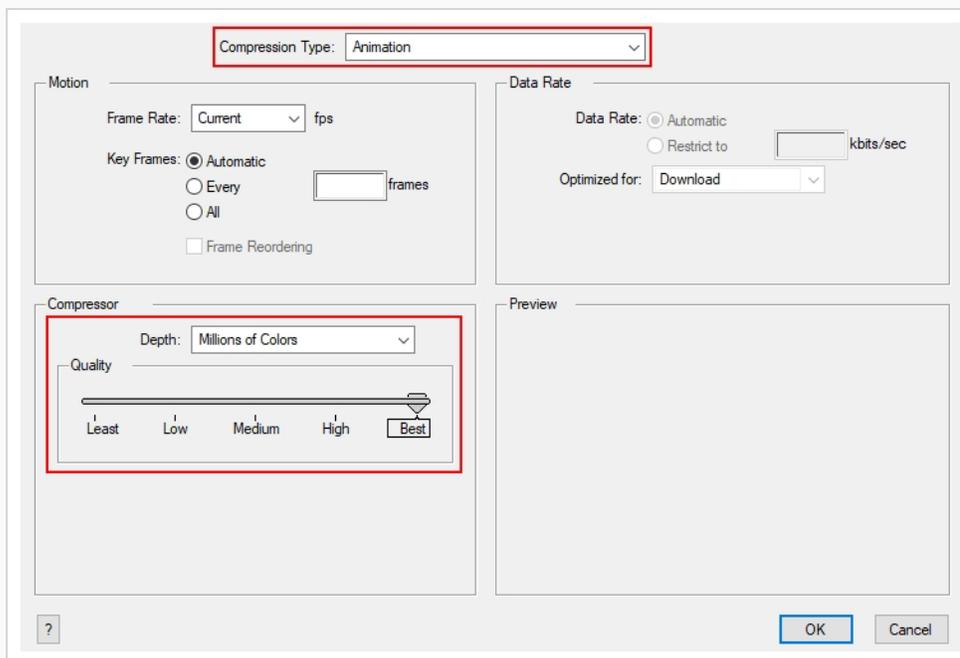


4. Click **OK**.

# Configuring Movie Settings for QuickTime Movies on GNU/Linux

On Windows and macOS, Harmony uses QuickTime to export QuickTime movie files. On GNU/Linux, QuickTime is not supported, but Harmony is still able to export QuickTime-compatible movie files using the OpenQuickTime library, which is included in Harmony's package. As a third party library, OpenQuickTime offers a more limited set of compression settings.

**How to configure video and sound settings for QuickTime movies on GNU/Linux**

1. Open the **Video Options** dialog.
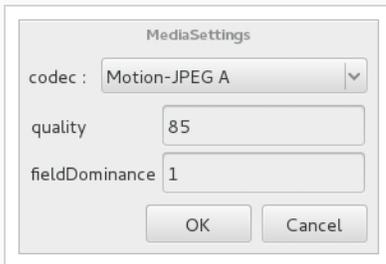
2. In the Video Options dialog, select the preferred **Codec**:

   - **Motion-JPEG A:** A very portable codec that performs lossy JPEG compression and interlaces the frames. Motion-JPEG A compression is less efficient than Photo JPEG in terms of quality and file size, but may be a more portable alternative for software that does not support Photo JPEG.

   - **Photo JPEG:** Encodes the movie as a sequence of JPEG images. JPEG images have lossy compression. This is the most efficient codec for file size.

   - **Portable Network Graphics (PNG):** Encodes the movie as a sequence of PNG images. PNG images have lossless compression.

   - **Tag Image File Format (TIFF):** Encodes the movie as a sequence of uncompressed TIFF images. This codec is lossless.

   - **Uncompressed (RGB):** Encodes the movie as uncompressed bitmap data. This codec is lossless.

   > **NOTE**
   >
   > Portable Network Graphics (PNG) and Photo JPEG is the only codec supported by both Harmonyand GNOME's Totem Video Player. Other codecs may require additional software to play on Linux workstations.

3. If exporting in Motion-JPEG A or Photo JPEG, set the desired **JPEG quality** for your video in the Quality field. This setting ranges from 0 to 100, and is set to 85 by default. A higher setting

increases picture quality, but makes the resulting movie file heavier.

4. If exporting in Motion-JPEG A, set the desired **Field Dominance**. Motion-JPEG A is interlaced. When set to 1, odd frames are encoded on the first field. When set to 2, odd frames are encoded on the second field.

5. Click **OK**.

6. Open the **Sound Options** dialog.
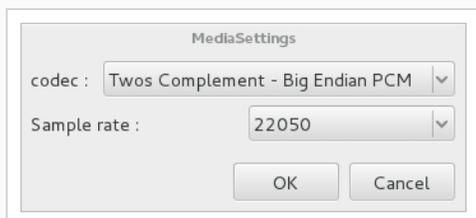


7. In the Sound Options dialog, select the preferred Codec:

- **A-Law 2:1:** This codec uses logarithms to compress audio data. The resulting audio stream requires half the disk space of uncompressed audio data, but is of noticeably lower quality.

- **IMA 4:1:** This codec compresses audio data to require a quarter of the disk space required for uncompressed audio data. It is not supported by a lot of software.

- **Twos Complement - Little Endian PCM:** A standard uncompressed audio codec.

- **Twos Complement - Big Endian PCM:** A legacy standard uncompressed audio codec. This codec may be compatible with older editing interfaces.

- **(mu)-Law 2:1:** Similarly to A-Law, this codec uses logarithms to compress audio data. The resulting audio stream requires half the disk space of uncompressed audio data, but is of noticeably lower quality.

8. In the Sample Rate drop down menu, select **22050**. This is the only sample rate supported for movie export in Harmony on Linux.

9. Click **OK**.

# Exporting Flash (SWF) Movies

Exports a Flash movie file.

Harmony supports exporting Flash movie files with a limited subset of vector and bitmap effects, the latter which can be previewed in Render View ✿ mode.

The following can also be exported in Flash movies:

- Pencil line thickness, which are converted to brush strokes

- Auto-Patch nodes, for patching the joints between different parts of a cut-out character

Before attempting to export a Flash movie, it is recommended to preview how your scene will render in Flash using the SWF Preview command. To do this, do one of the following:

- From the top menu, select **Play > Test SWF Movie.**

- In the Playback toolbar, click and hold the Render and Play 🌠 button to open its mode menu, select the Test SWF Movie 🌠 mode, then click on the button again.

## How to export a .swf movie

1. From the top menu, select **File > Export > SWF**.

   The Export to Flash Movie (.swf) dialog box opens.
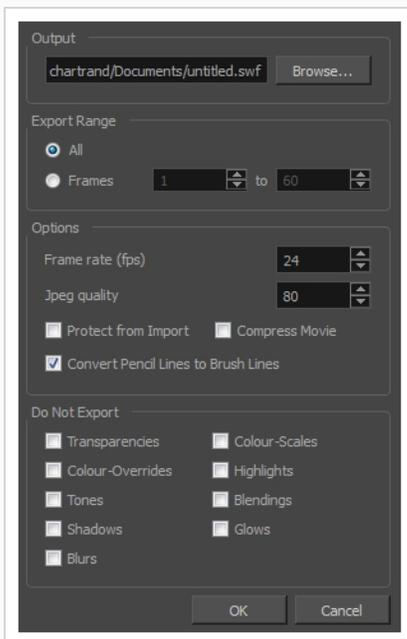
   

2. Click **Browse** and select a file name and destination path for your movie.

3. In the Export Range section, select one of the following options:

   ‣ **All**: To export all the frames of your movie.

‣ **Frames**: To export a frame range. Enter the frame range in the fields.



4. In the Options section, enter a Frame rate (fps). By default, it will be set to match the fps of your Harmony project. If you choose a lower frame rate, your export playback will be faster than your actual project. The reverse is also true for a higher frame rate.

5. In the same section, select the JPEG quality:

‣ 100 = Full quality

‣ 50 = Average quality at about 1/5th of the size.

‣ 25 = Medium quality where loss of high image resolution starts to occur.

‣ 10 = Low quality where "macro-blocking" or large pixelation become obvious.

‣ 1 = Lowest quality where there is extreme loss of colour and detail and the image becomes nearly unrecognizable.

6. To prevent your movie from being imported into another application, select the **Protect from Import** option.

7. For a lighter format, select the **Compress Movie** option. The movie may lose some quality, but the file will be lighter.

8. To retain the thickness of pencil lines, select the **Convert Pencil Lines to Brush Lines** option.

9. In the Do Not Export section, select the effects you do **NOT** want to be rendered in the SWF movie.

   Note that certain Harmony effects are not listed in this section as they are not compatible and therefore not available for SWF export. These effects will not appear in the SWF render.

10. Click **OK**.

11. Browse to the location on your computer where you saved your Flash Movie and double-click on it to view the export.

# Exporting OpenGL Frames

Because rendering scenes requires a lot of computer resources, and playback in Harmony does not always keep up with the scene's framerate, it may be difficult to decide how to preview your animation as you're working on it. Exporting OpenGL frames gives a more convenient alternative.

*OpenGL* is the name of the engine used to display your scene's content as you are working on it. Hence, exporting OpenGL frames basically means you're exporting frames as they are usually rendered in the Camera view: Without antialiasing, compositing or effects. This is significantly faster than exporting your final frames, and can allow you to preview your animation in real-time without having to wait for a render.

> **TIP**
>
> You can quickly and easily create and view an OpenGL render of your scene using the Record and Play command. To do this, do one of the following:
>
> - In the top menu, select **Play > Record and Play**.
> - In the playback toolbar, click and hold the Render and Play 🐦 button, select **Record and Play** 🐦 to set the button to Record and Play mode, then click on the button again.

### How to export OpenGL Frames

1. From the top menu, select **File > Export > OpenGL Frames**.

   The Export OpenGL Frames dialog box opens.
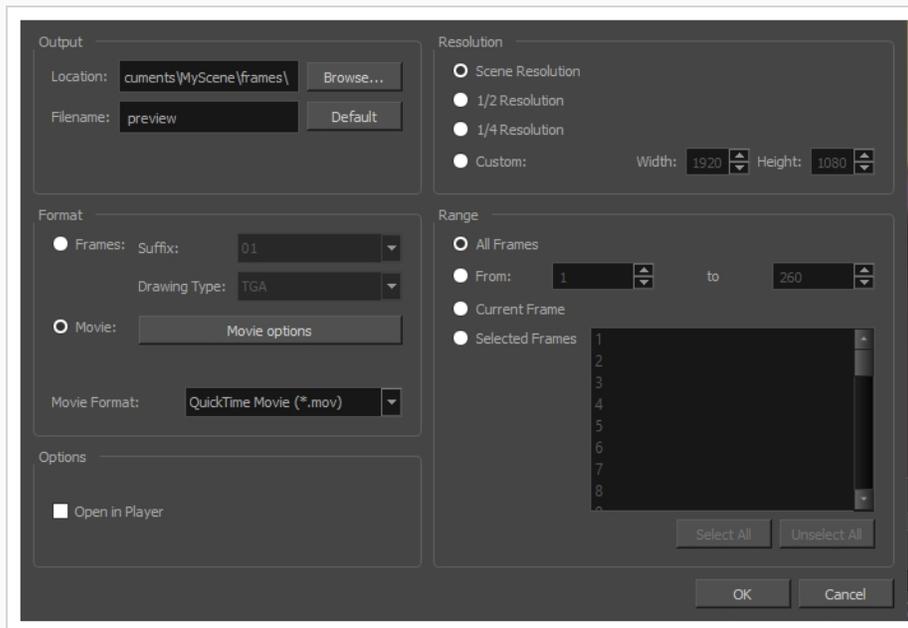
   

2. In the Output section, click **Browse** and select the directory where you wish to export the frames.

3. In the **Filename** field, enter a file name for the file to export. If you're exporting frames as individual images, the specified file name will be used as a prefix, and the frame number will be used as a suffix. To use the default file name, click on **Default**.

4. In the Format section, select **Frames** if you want to export each frame as an individual image, or **Movie** if you want to export a QuickTime movie file.

5. If you are exporting frames:

   a. Select a numbering format in the **Suffix** dropdown. The numbering format determines how many digits to use for the frame numbers. For example, if the Suffix is set to 001, the first frame will be numbered 001, the second one will be numbered 002, etc.

   b. If you are exporting frames, select an image format from the **Drawing Type** dropdown.

   > **NOTE**
   >
   > A lot of formats are listed as their file extension, but some also have suffixes to indicate how they are encoded. For example, PNGDP4 means *PNG: double precision with 4 channels*, which means the exported PNG images will have 16 bits per channel instead of 8 bits, and will also have an *alpha* (transparency) channel.

   If you are exporting a movie:

   a. In the Video Format drop-down menu, select the desired format for your movie file:

      - **Quick Time Movie (*.mov)**: Available on Windows, macOS and GNU/Linux.

      - **Windows Media Video (*.wmv)**: Available on Windows only.

      > **NOTE**
      >
      > On Windows and macOS, Apple QuickTime must be installed in order to export QuickTime movies. On GNU/Linux, Harmony uses a more limited, open source QuickTime-compatible library which does not require additional software.

   b. In the Options section, do one of the following to configure your movie's video and sound compression settings:

      - If on Windows or macOS and exporting a QuickTime movie, click on **Movie Settings** to open the QuickTime Movie Settings dialog box—see *Configuring Movie Settings for QuickTime Movies on Windows and macOS* on page 1210

      - If on Windows and exporting in Windows Media Video format, click on Movie Settings to open the Windows Media Video Settings dialog box—see *Configuring Movie Settings for Windows Media Video*.

- If your video format is QuickTime Movie and you're on a GNU/Linux machine, click on Video Options to configure the video compression settings for your movie file, or on Sound Options to configure its audio compression settings—see Configuring Movie Settings for QuickTime Movies on GNU/Linux.

6. From the **Resolution** section, select a resolution for export. If you are running some quick tests, then you might want to reduce the resolution to save on exporting time. You can also select the **Custom** option to specify the desired **Width** and **Height** of your exported frames.

7. In the **Range** section, do one of the following:

   - If you want to render all the frames in your scene, select **All Frames**.

   - If you want to render a specific sequence of frames, select **Selected Frames** then, in the fields to the right, enter the number of the first and last frame of the frame sequence you wish to render.

   - If you want to export the current frame, select **Current Frame**.

   - If you want to export specific frames, select **Selected Frames**, then click on each frame you wish to export in the frames list to the right. You can also click and drag to select a range of frames in the list. If you want to remove a frame from your selection, simply click on it again.

8. In the Options section, select the **Open in Player** option to view the rendered frames.

9. Click **OK**.

# Batch Rendering

In Harmony Server, you can choose to render your scene locally or to send it to the render farm on your network so that other computers can render your scenes while you continue working on your station. This option is not available in Harmony Stand Alone, as render jobs are sent to a Harmony Server database, and machines that perform the render must be connected to this database.

There are two approaches to rendering a scene in Harmony Server:

- **Local Rendering** is done directly by your machine in your Harmony session. Hence, it uses your machine's resources and will prevent you from working on the scene until the render is done. You will see the render progress in real time and will be able to preview the results right after it's finished.

- **Batch Rendering** is done by sending a scene to the server's render queue so it can be processed by the render farm. This allows you to keep working on your scene while the render is being done. The rendering progress can be monitored in Control Center and, when finished, the results can be previewed in Harmony Play. Batch Rendering gives you access to additional rendering options.

When sending a scene to batch rendering, it is not rendered immediately. Computers connected to the Harmony database that are configured to render scenes for the database check for new render jobs periodically, and start performing the render job when they find one that isn't already being rendered by another machine.

> **NOTE**
>
> To configure a Harmony Server database and to set up clients to perform batch rendering jobs, refer to the Harmony Installation Guide.

### How to send a scene to the batch rendering queue

1. Save your scene.

2. From the top menu, select **File > Export > Render Write Nodes** or press Ctrl + Shift + Y (Windows/Linux) or ⌘ + Shift + Y (macOS).

   The Export Images dialog box opens.
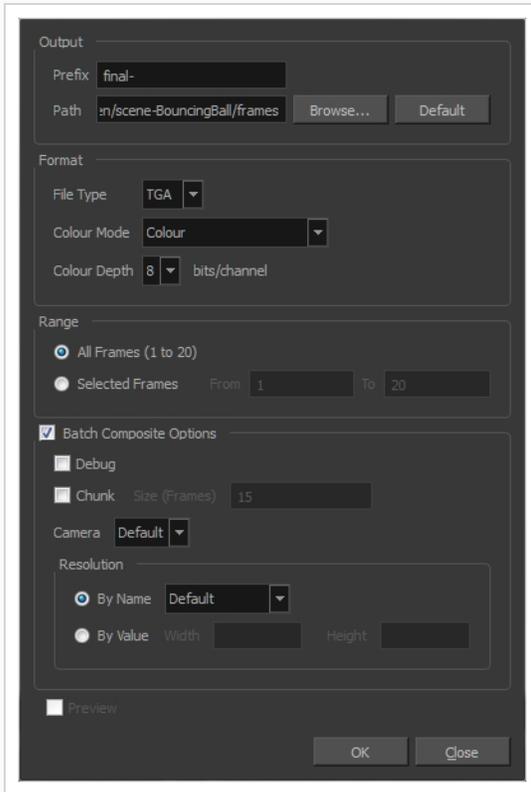
3. In the **File Type** list, select the desired file type for the exported images.

4. In the **Colour Mode** list, select an option to export your images: **Colour**, **Colour with Transparency**, or **Greyscale**.

5. In the **Colour Depth** menu, select the number of bits per channel for the exported images. Most format only support 8 bits, but some support 16 bits.

1. In the Range section, select the frame range to render by doing one of the following:

   - If you want to render all the frames in your scene, select **All Frames**.

   - If you want to render a specific sequence of frames, select **Selected Frames** then, in the fields to the right, enter the number of the first and last frame of the frame sequence you wish to render.

6. Enable **Batch Composite Options**. This will send your scene to your Harmony database's batch rendering farm, whereas disabling this option will make Harmony render your scene locally.

> **NOTE**
>
> When Batch Composite Options is enabled, the Preview option is not available. This is because Harmony does not track the progress of a render when it is performed by the Harmony database's render farm. You can only enable the Preview option when rendering locally.

7. If you want the machine that will render your scene to output detailed information about the process in its log, enable the **Debug** option.

8. If you want to split the render job for your scene into several smaller render jobs, so that the load can be shared by different machines in the render farm, enable the **Chunk** option. Then, enter the amount of frames each chunk should render in the **Size (Frames)** field.

9. If you want to render the scene from a specific camera, select the desired camera from the **Camera** drop down list. A scene can have several cameras added in the Timeline view, and each of them can be animated independently.

10. In the Resolution section, do one of the following to select the resolution in which to render the scene:

    - If you want to render the scene in its actual resolution, select **By Name** and, in the resolution preset drop down list, select **Default**.

    - If you want to render the scene in one of the available preset resolutions, select **By Name** and, in the resolution preset drop down list, select the desired resolution preset.

    - If you want to render the scene in a specific resolution, select **By Value**, then enter the **Width** and **Height** of the desired resolution, in pixels.

11. Click **OK** to start the rendering process.

    A confirmation dialog box opens to inform you that the frames have been sent to the Render queue.
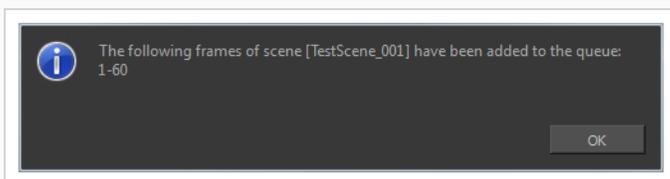
    

    If the selected frames were already sent to the Render queue, but were not yet rendered, dialog box opens to inform you that these frames were already in the queue, but that they have been updated with the selected options.

You can also send scenes to batch rendering and check the status of the rendering queue using the Control Center application.

# Chapter 18: Library

Using templates and symbols, you can share and reuse any elements you create in Harmony. The Harmony library lets you store several different elements such as puppets, backgrounds, animations and key poses. In fact, anything you create in Harmony can be stored in the library.
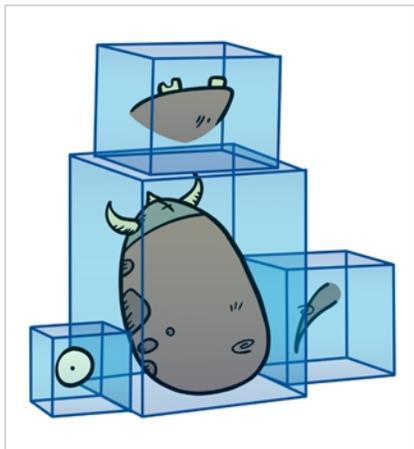


The Library view is where you can store and reuse your artwork and animation in other scenes or build props and puppets.

The library is a storage centre for all production assets; the elements stored in the library are called *templates*. Although it is mainly used for cut-out animation, the library is also useful for paperless and traditional animation processes. The library can contain any asset used in a Toon Boom Harmony production.

Using the library is as simple as dragging the content into the library to store your artwork and then dragging it to the Timeline or Camera view when you want to reuse it.

Additionally, the Library view's Drawing Substitution panel allows you to quickly change the current frame's exposure to one of the existing drawings in a layer. This is especially useful for animating a cut-out character's mouths, hands, eyelids and other such body parts which typically contain several drawings to choose from.

When working on the database, the structure of the library differs from when working on Harmony Stand Alone.
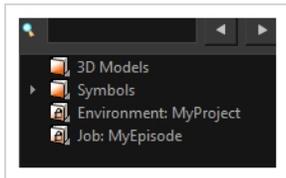


Harmony Server provides three default library folders:

- **Symbols:** The only library folder containing symbols for your project. You can organize the symbols library folder using subfolders, but you cannot create a second library for your symbols. This library is

local to your project.

- **Environment:** A folder located inside the Environment folder. Every asset stored in this folder is accessible from any job and scene contained within this environment.

- **Job:** A folder located inside the Job folder. Every asset stored in this folder is accessible from any scene contained within this job.

> **NOTE**
>
> You can create a folder called library in the usa_db folder on the server to create a global library. Once the Harmony application is restarted, a Global library folder automatically appears in every user's library. Every asset stored in this folder is accessible from any scene, job and environment.

# About Structure

As you will probably create a large number of symbols and templates, you will soon realize they need to be organized. You can create different libraries and subfolders to easily access your assets. For example, you can create a different library for each project and divide it into several categories, such as:

- Characters
- Props
- Backgrounds

# Creating Libraries

There are two ways to create libraries.

- Directly through your operating system

- Using Harmony's interface

Although you can only have one symbol library folder, you can organize it by creating subfolders.

## How to create a library folder through your operating system

1. On your computer, create a new folder with a relevant name in the location where you want the library to be stored.

## How to create a library folder in Harmony

1. In the Library View menu, select **Folders > Open Library**.

   The Browser window opens.

2. Browse for the location where you want to store your new library folder.

3. Click the New Folder button.

   A new folder appears.

4. Name the new library folder with a relevant name and click **OK**.

   The new library appears in the Library List section.
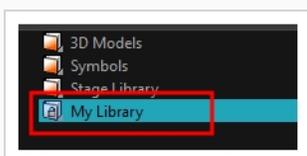
# Opening Libraries

Folders can be opened in Harmony when you require it. You can open any folder on your hard drive or network as a library. Opening a library means linking the folder to your Library view. You only need to open the library once. The library folder is available every time you open the application until you decide to close the library and unlink it.

### How to open a library

1. In the Library View menu, select **Folders > Open Library**.

   The Browser window opens.

2. Browse to the location of the library folder.

3. Select the folder and click **OK**.

   The new library appears in the Library Folders section.
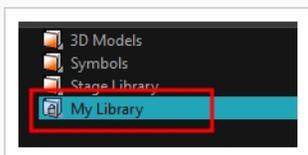
# Closing Libraries

You may not always require all the library folders in the Library List. If so, you can close the ones you do not need. Closing a folder does not delete it; it only unlinks it from the Library view. If you want to reopen it, locate it on your hard drive or network and open it in the Library view.

### How to close a library

1. On the right side of the Library view, select the library folder to close.

2. In the Library View menu, select **Folders > Close Library**.

   The library closes.

# Creating Folders

Symbol and template libraries need to be organized. You can create different subfolders on your hard drive or in the Harmony Library view, so you can easily access assets. By default, any new library you link to your Library view is locked to prevent accidental deletion or modification of symbols and templates. You must obtain the right to modify it before being able to add a new folder to it.

### How to create a folder

1. On the left side of the Library view, select the library folder to which you want to add a subfolder.

2. In the Library View menu, select **Edit > Right to Modify**.

3. In the Library View menu, select **Folders > New Folder**.

   The new folder appears in the Library. Click on the library containing the new folder and click the plus [+] sign to expand it.
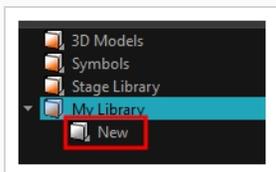
# Deleting Folders

You can delete a folder from the library if its contents are no longer needed.

> **NOTE**
>
> All templates and symbols in the folder will be deleted from your hard drive. Once deleted, the data cannot be retrieved.

### How to delete a folder

1. In the Library view's left side, select the folder to delete.

2. In the Library View menu, select **Edit > Right to Modify** or right-click on the selected library and select **Right to Modify**.

3. In the Library View menu, select **Folders > Delete Folder** or press Del.

# Renaming Folders

Once you add a folder, you can rename it. This also renames the folder on your hard drive.

### How to rename a folder

1. In the Library view's left side, select the folder to rename.

2. In the Library View menu, select **Edit > Right to Modify** or right-click on the selected library and select **Right to Modify**.

3. In the Library View menu, select **Folders > Rename Folder**.

4. Rename the selected folder.
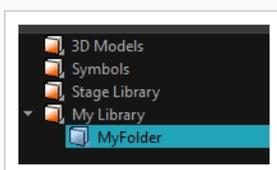
   

5. Press Enter/Return to validate the operation.

# Refreshing Libraries

If you update the content of your libraries through your operating system, you will need to refresh your library folders in the Library view.

**How to refresh a library**

1. In the Library view's left side, select the folder to refresh.

2. In the Library View menu, select **Folders > Refresh** or press F5.

    The library displays the new content.

# Generating Thumbnails

When you display thumbnails in the Library view, the system generates a series of small images (thumbnails) for you. You can generate template thumbnails yourself, if they do not display or if the process has been stopped.

### How to generate thumbnails

1. In the Library view's right side, select the template in which you want to generate thumbnails.
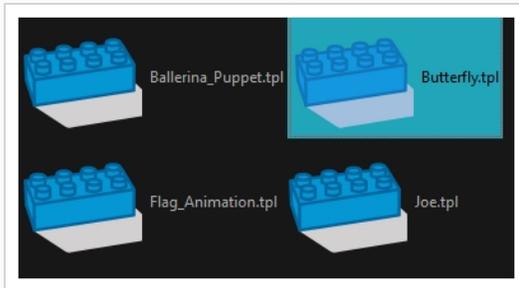


2. In the Library View menu, select **View > Generate Thumbnails**.

   The progress bar appears.

# Deleting Thumbnails

You can also delete thumbnails if you want to send a template to another user or studio and keep your packages small.

**How to delete thumbnails**

1. In the Library View menu, select **Edit > Delete Thumbnails**.

   All the thumbnails contained in the library are removed.

# Searching in Libraries

When working on a movie or series, you will probably end up with many templates and symbols in your library. Using the Search tool, you can quickly find the templates and symbols in your folders.

## How to use the Library Search tool

1. From the left side of the Library view, select the library in which you want to search.
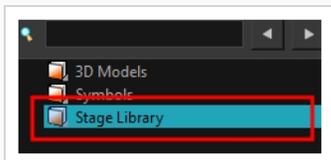
   

2. In the Search field, type the name or partial name of the symbol or template you are looking for.
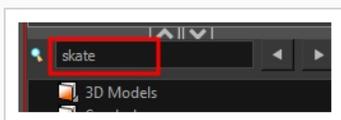
   

3. Click the left ◄ and right ► arrows to see the previous and next results. The Search engine will look for results within the library master folder and its subfolders. It will not look in other libraries.
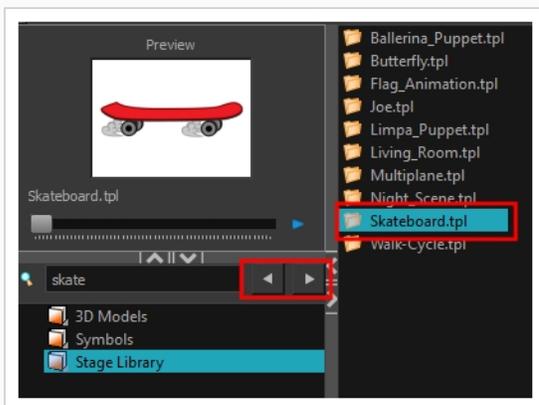
# About Templates

When you want to reuse artwork and animation from your project in other scenes, you must create a template. A template can be seen as a portable scene or package that you can drag inside your project. A template is an individual copy of the artwork stored in the library which you can reuse in different scenes. Once a template is stored in the library, you can access it from any project.
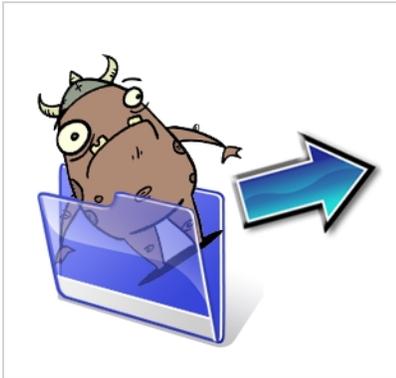
# Creating Templates

You can create a template using the Timeline view.

> **NOTE**
>
> If you are creating a template from a character rig master template, you should collapse everything inside a master peg and put a keyframe on the first frame before creating the template.

### How to create a template from the Timeline view

1. In the Timeline view, select some cells or layers.

   You can create a template from a whole hierarchy of layers by collapsing the hierarchy and selecting its root layer. This can be useful for creating templates based on character rigs or scene backgrounds.

2. In the Library view, select a folder to store the template. By default, you will have a library named **Harmony Advanced Library** , which is stored on your computer, in the Toon Boom Harmony Advanced Library subfolder of your Documents folder.

3. If the library folder is locked 🔒, right-click and select **Right to Modify**.

4. Drag the selection to the chosen library folder.
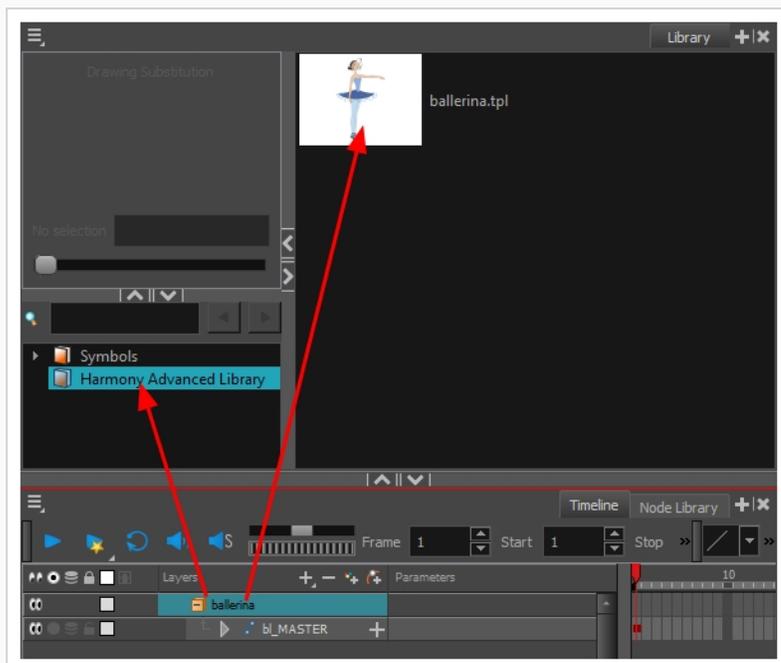


5. In the Rename dialog box, give the new template a name.

6. Click **OK**.

# Deleting Templates

To delete templates from your library, use the Library view. Harmony lets you undo the action if necessary.

### How to delete a template

1. In the Library view, select the folder containing the template to delete.

> **NOTE**
> If the library folder is locked, right-click on the folder and select **Right to Modify**.

2. Right-click on the selection and select **Delete** or press Del.

# Editing Templates

You can open a template and edit it just like any other project. If you want modify your templates, you can edit them using the Edit Template command.

**How to edit a template**

1. In the Library view, select the folder containing the template to edit.

> **NOTE**
>
> If the library folder is locked, right-click on the folder and select **Right to Modify**.

2. Right-click on the selection and select **Edit Template**.

   A new Harmony application opens.

3. Edit the template.

4. From the top menu, select **File > Save**.

5. In the top menu, select **File > Quit** (Windows/Linux) or **Harmony Advanced > Quit** (macOS).

# Importing Templates

There are several ways you can import templates in your scene.

For greater control over how the action template behaves when brought into the Timeline view, you can use the Paste Special feature—see *Using Paste Special* on page 1261.

---

📝 **NOTE**

Dragging a template into your scene copies the content in your Timeline and does not link it to the original. You can modify this individual copy at any time.

---

### How to import a template into the Timeline or Camera view

1. In the Library view, select the template you want to import.

2. Drag the selected template to the Camera view or to the left side of the Timeline view.
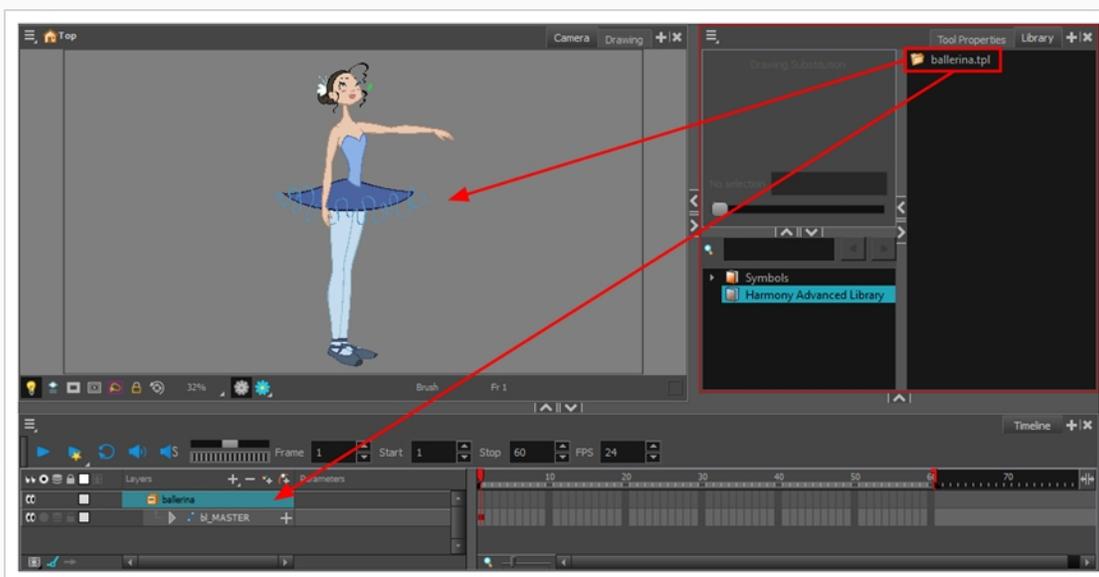


If you drop the template in the Camera view, its layers will be added at the top of your layers list. If you drop a template in the layers list in the Timeline view, it will be inserted between the layers where you dropped it.

If your template has the same layer structure as a part of your scene, you can drop the template directly onto the frames on the right side of the Timeline view. Instead of inserting new layers into your scene, this will replace the drawings and keyframes in your scene with the ones from the template. This is useful for importing pose or animation templates for characters that are already in your scene.
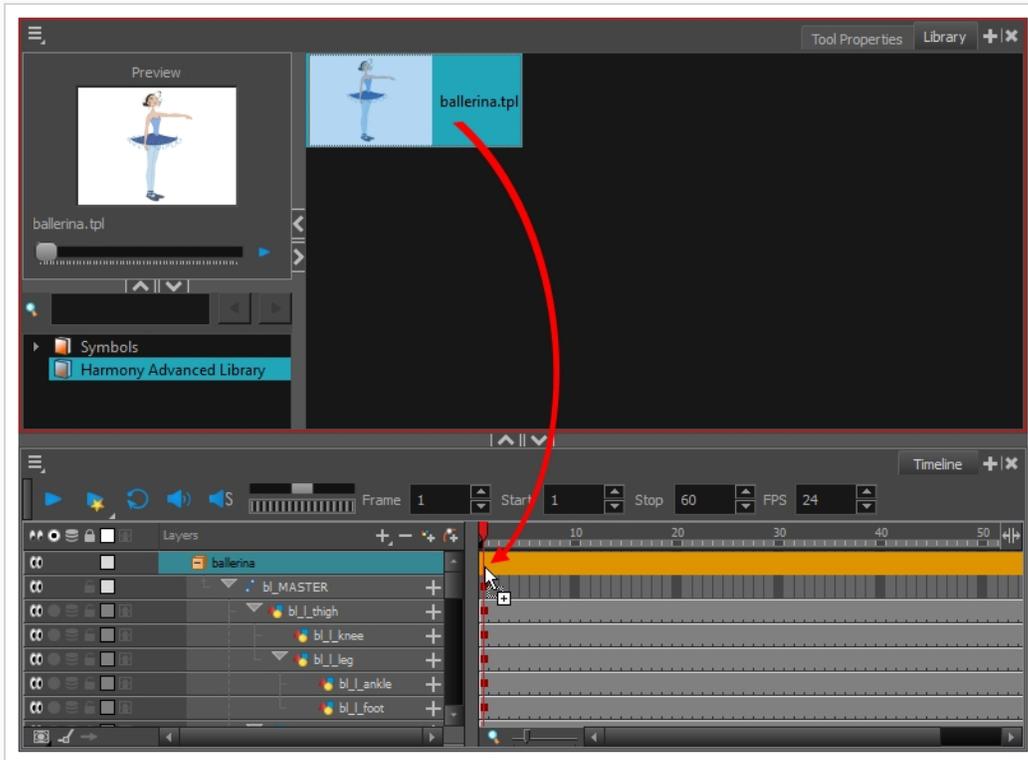
### How to import a template with symbols

1. From the right side of the Library view, select the action template that contains symbols.

2. Hold down Alt as you drag it from the Library view to the right side of the Timeline view and drop it next to a template with the exact same rig.

   The Paste Special window opens.
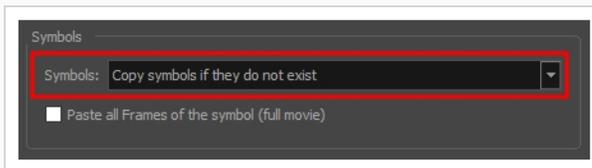
   

3. Select the **Advanced** tab.

4. Select one of the following options from the Symbols menu:
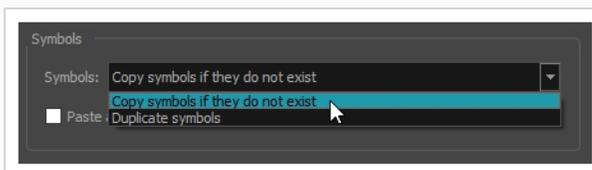
- **Copy symbols if they do not exist**: This is the default setting for this operation and will prevent symbols in an action template from being copied.

- **Duplicate symbols**: Makes copies of the symbols in your template.

# Opening Templates as Folders

Since a template is like a scene, you can open the template's folder and select elements inside it such as drawings.

Instead of importing the entire contents of a template, you may only want to import a few drawings or a palette. In this case, use the Open As Folder command to import the items you want.

If you want to import a palette, simply drag the palette file into the Palette list section of the Colour view.

### How to open a template as a folder

1. In the Library view, select the folder that contains the template to open. If the library folder is locked, right-click on the folder and select **Right to Modify**.

2. Right-click on the selection and select **Open As Folder**.

3. In the library list section, click on the template's folder to display its content.
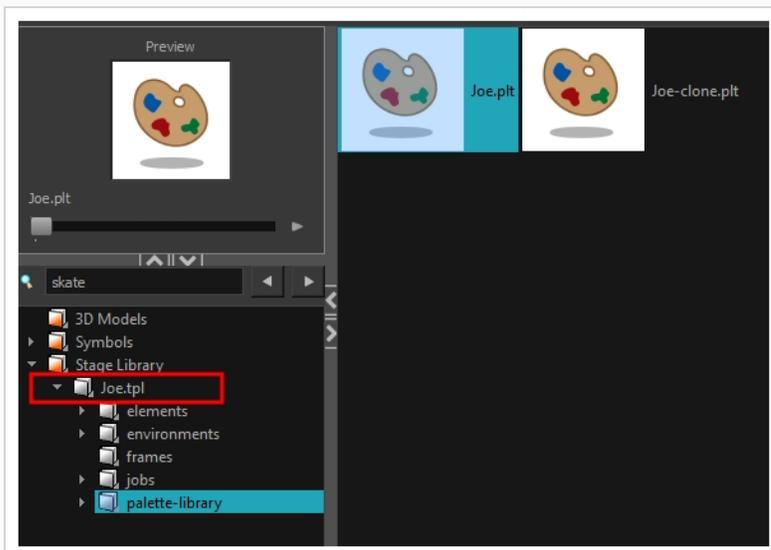


4. Drag the content to the Timeline or Colour view.

# About Symbols

A symbol is a container used to build your props, puppets and looping clips. You can use symbols to contain artwork and animation and manipulate them as a single object. You can also use symbols as a placeholder in which you place a series of different drawings for each body part of your puppets or when you have a repeating cycle. However, symbols are not necessary for creating characters.
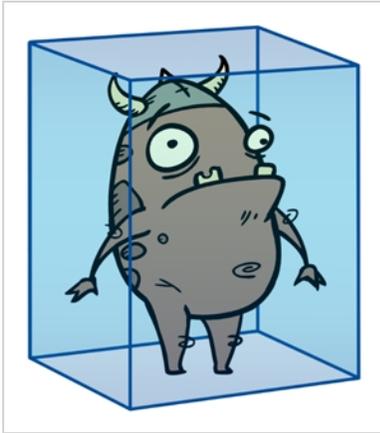


When a symbol is exposed in the Timeline view, the symbol's cells are represented as a movie strip.



When you enter a symbol to edit it, you are entering another scene with an independent timeline. You can nest many symbols one inside the other. To help you follow the hierarchy of your nested symbol, take note of the Editing stack at the top of the Camera view which displays the path to your symbol's location. You can click on the symbol's name to move up the chain.
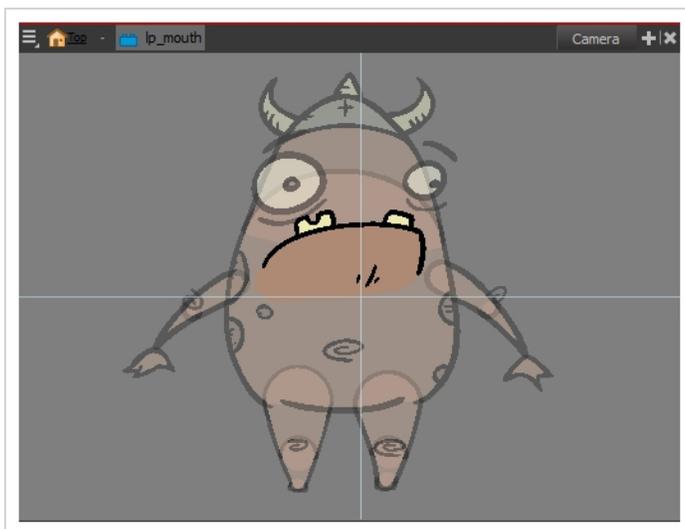
# Creating Symbols

A symbol combines animation, artwork or layers into a single object that you can control in one layer. You can also create symbols out of each body part in your cut-out puppets.

To create a symbol, drag your artwork to the Symbol library. When you drag a symbol from the Symbol library into your scene, it will be linked to the original symbol. If you drag a symbol into your scene several times in the Timeline view, they will all be linked to the original symbol. If you modify one, they will all be modified.

### How to create a symbol from the Timeline view

1. In the Timeline view, select the layer or cells from which your want to create a symbol.

2. Do one of the following:

   ‣ From the top menu, select **Edit > Create Symbol**.

   ‣ In the Edit toolbar, click the Create Symbol 🧱 button.

   ‣ Press F8.

   ‣ Drag your selection to the Symbol folder in the Library view.
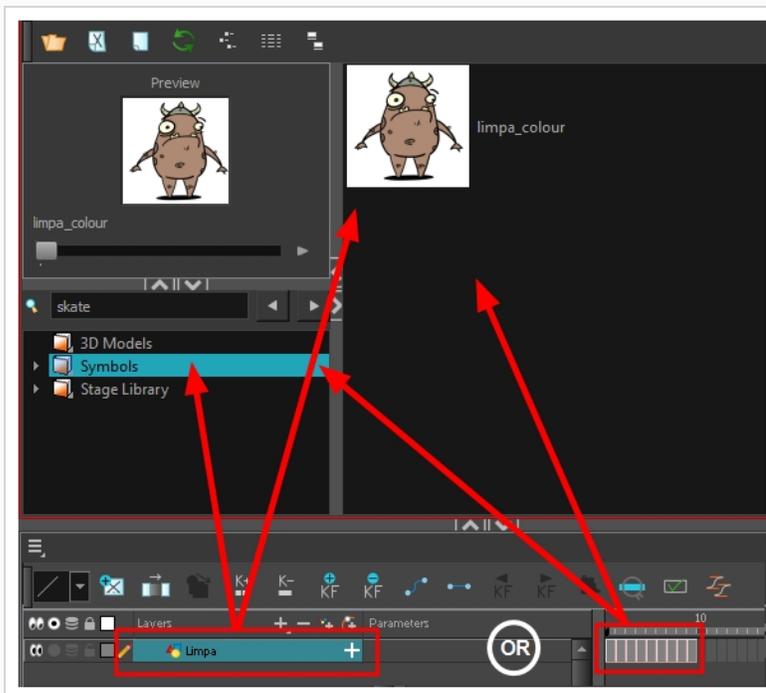


The Create Symbol dialog box opens
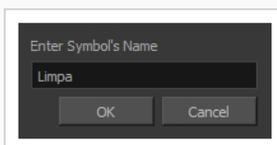
3.  In the Enter Symbol's Name field, type the new symbol's name.

    To rename a symbol once it is created, right-click on the symbol and select **Rename**.

4.  Click **OK**.

    The new symbol appears in the Library view's Symbol folder. The current selection is not replaced by the new symbol. The new symbol only appears in the library. You must drag it into your scene to use it.

# Creating a Symbol from a Drawing

You can create a symbol from a drawing selection.

## How to create a symbol from a drawing selection

1. In the Tools toolbar, select the Select ⬉ or Cutter ✎ tool.

2. In the Camera view, select the drawing elements to create a symbol.
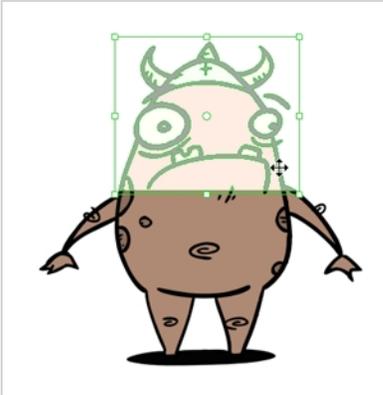
3. From the top menu, select **Edit > Create Symbol** or press F8.

   ‣ Clicking the Create Symbol 🗷 button in the Edit toolbar will create a symbol from the entire layer.

   The Create Symbol from Drawing Selection dialog box opens.
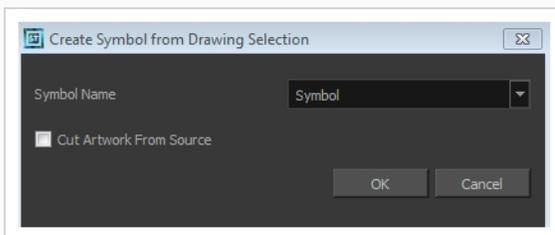
4. In the Symbol Name field, type the name of the symbol.

   ‣ You can also select an existing layer from the Symbol Name drop-down menu. It will add your symbol on the layer's current cell. If there is already an exposure on that cell, the symbol will be added to a new layer.

5. You can choose to place the current selected artwork in the drawing or remove it:

   ‣ To remove currently selected artwork from the drawing and place it in the new symbol, select the **Cut Artwork From Source Drawing** option.

   ‣ To keep currently selected artwork in both the drawing and in the new symbol, deselect the **Cut Artwork From Source Drawing** option.

6. Click **OK**.

   The new symbol appears in the Library view's symbol folder and in the Timeline view as a new layer.
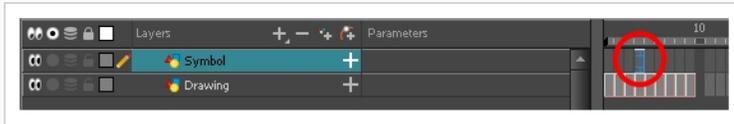
# Creating Empty Symbols

You can create a symbol without any artwork in it.

### How to create an empty symbol

1. In the Library view, select the **Symbol** folder.

2. Do one of the following:

   - In the Library view's right side, right-click and select **New Symbol**.

   - From the top menu, select **Insert > Create Empty Symbol in Library**.

   The new empty symbol appears in the Library view.
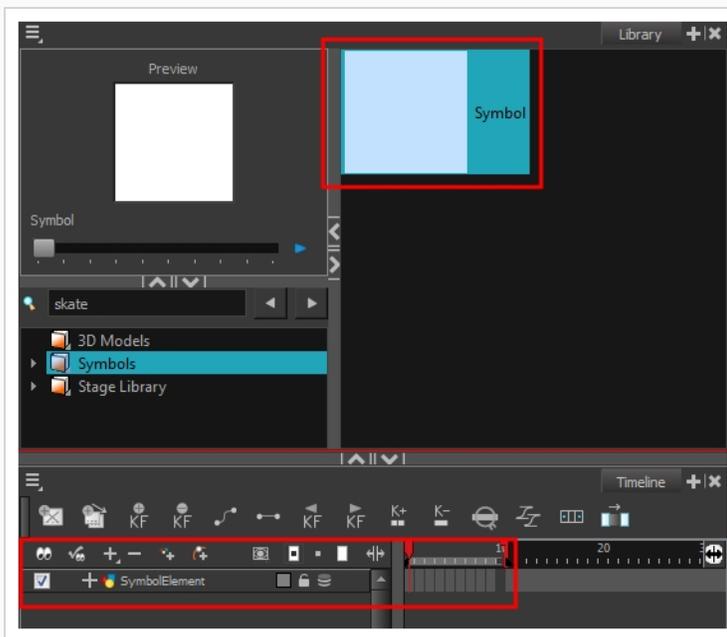
   

   The symbol is ready for you to edit (add content to). To go back to the root timeline, click the Top 🏠 button in the Camera view.

   To rename a symbol once it is created, right-click on the symbol and select **Rename**.

# Deleting Symbols

When you delete a symbol, it will be deleted from your hard drive. You can use the Undo function to retrieve the data. The symbol cannot be retrieved once you close the application.

### How to delete a symbol

1. In the Library view, select the symbol to delete.

2. Right-click and select **Delete** or press Del.

   ‣ If the symbol is currently in use in the scene, a warning message displays. Click **OK** to delete the symbol from the library and scene.
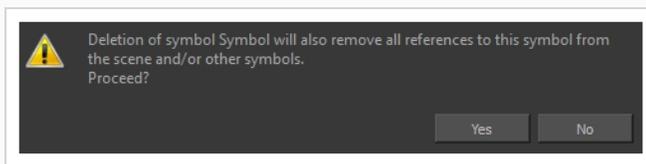
# Editing Symbols

You can either edit a symbol from the Timeline view or from the Library view.

When you edit a symbol, the drawings contained in it are not placed at the centre of the stage, but are located in the position where they were created. The pivot is translated at the centre of the symbol.

### How to edit a symbol from the Timeline view

1. Do one of the following:

   ‣ In the Timeline view, double-click on the symbol's cell to edit the symbol.

   ‣ In the Camera view, double-click on the symbol or press Ctrl + E (Windows/Linux) or ⌘ + E (macOS)).

   ‣ Click the Edit Selected Symbol 🖱 button in the Camera View toolbar's extra buttons.
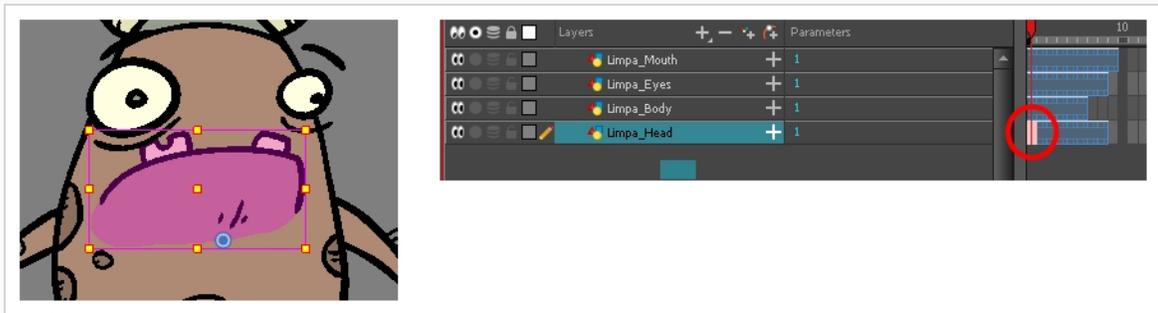
   

   You are now inside the symbol and you are able to edit it.
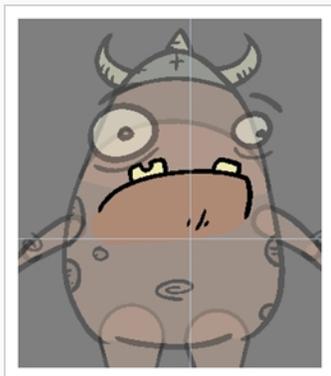
   

2. Do one of the following:

To return to the project's timeline, click the Top 🏠 button in the Camera view's top-left corner, press Ctrl + Shift + E (Windows/Linux) or ⌘ + Shift + E (macOS).

   ‣ In the Timeline view's right side, right-click and select **Symbols > Leave Current Symbol**.

### How to edit a symbol from the Library view

1. In the Library view, select the symbol to edit.

2. Right-click and select **Edit > Edit Symbol** or double-click on the symbol.

   You are now inside the symbol and you are able to edit it.



To return to the project's timeline, click the Top 🏠 button in the Camera view's top-left corner, press Ctrl + Shift + E (Windows/Linux) or ⌘ + Shift + E (macOS).

# Importing Symbols

There are several ways you can import symbols in your scene.

When you import a symbol from the library to the Timeline view it is linked to the original symbol in the library. If you import a symbol into your scene several times in the Timeline view, they will all be linked to the original symbol. If you modify one, they will all be modified.

### How to import a symbol in the Timeline view

1. In the Library view, select the symbol you want to import.

2. Drag the selected symbol to one of the following:

   ‣ The Timeline view's left side to import it into the centre of the camera frame.

   ‣ The Camera view to place it at the location where you release your cursor.

   > **NOTE**
   >
   > This may be useful if you saved a character's body parts as separate symbols. If you dropped them into the Timeline view, then they would all appear in the centre, haphazardly one on top of the other. It would be more efficient to arrange them into their correct places as you bring them into the scene.

# Expanding Symbols

You can use the Expand Symbol command to extract a symbol's contents and place it on the root timeline. The symbol will not be removed from the Timeline view. Its contents will be copied and inserted into the root timeline. The symbol's layers will be parented to it in case you created motions and transformations on the drawing layer that contains the symbol. Breaking the hierarchy could result in the loss of any scaling and animation you may have created.

You can also expand a symbol within a group to avoid crowding the timeline with a series of layers. When you expand the symbols, the layers will be contained in a group node that you can expand to see the content.

### How to expand a symbol

1. In the Timeline view, select the symbol to expand.
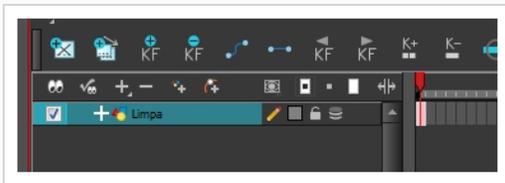
2. From the top menu, select **Edit > Expand Symbol** or press Shift + F8.
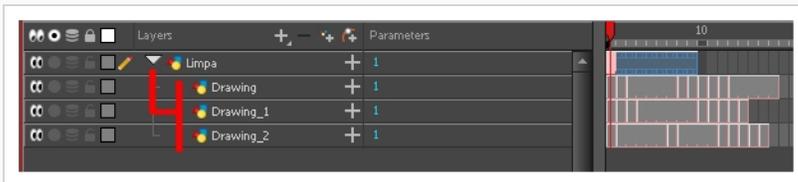
### How to expand a symbol in a group

1. In the Timeline or Node view, select the symbol cell or symbol node you want to expand.

2. From the top menu, select **Edit > Expand Selected Symbol in a Group**.

3. In the Timeline view, click the plus sign (+) to see the group content. In the Node view, click the **Expand Arrow** to enter the group.
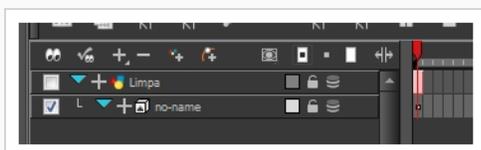
# Converting Symbols to Templates

A symbol is local to the project and cannot be accessed directly from other scenes. To reuse a symbol's content in another scene, you must create a template. This conversion breaks the drawing's link with both the original scene and symbol. It then becomes a separate entity that you can import into other projects.

### How to convert a symbol into a template

1. From the Library view, select the symbol to convert into a template and drag it to the Camera or Timeline view. If you drop your symbol into the Camera view instead of the Timeline view, it will not be placed in the centre of your camera frame, but rather wherever your cursor drops it within the camera frame.
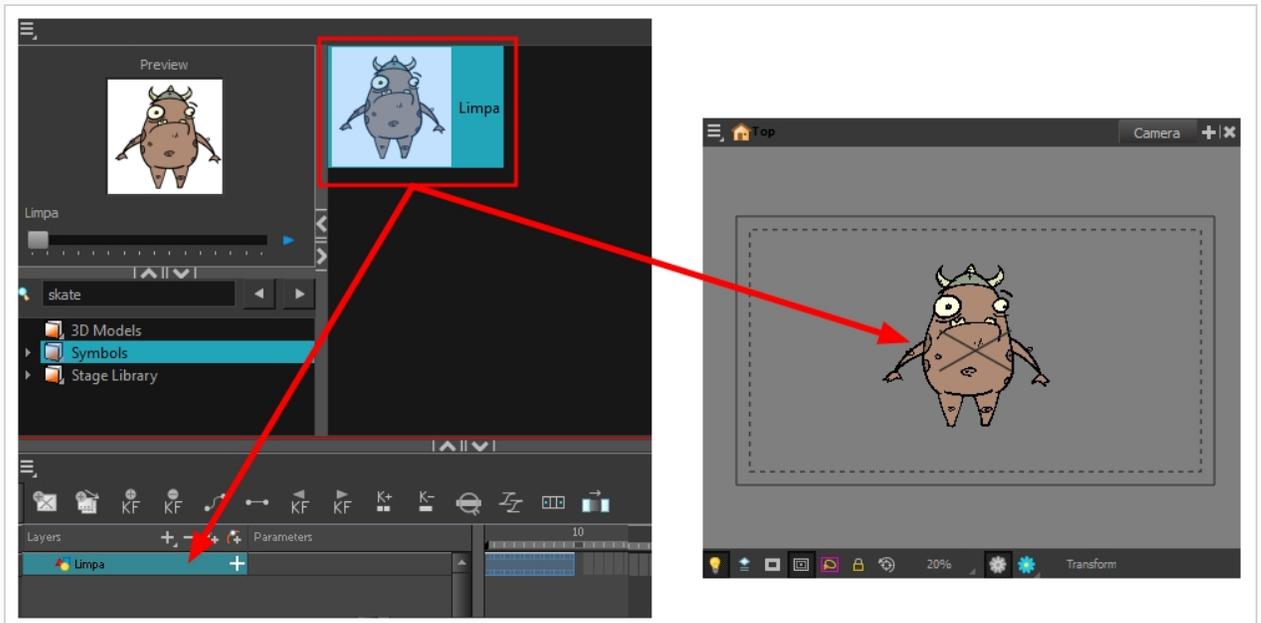


2. In the Timeline view, select the symbol's cells or layer and drag it to the Stage Library folder or to any other library folder. Make sure you have the right to modify the library folder.
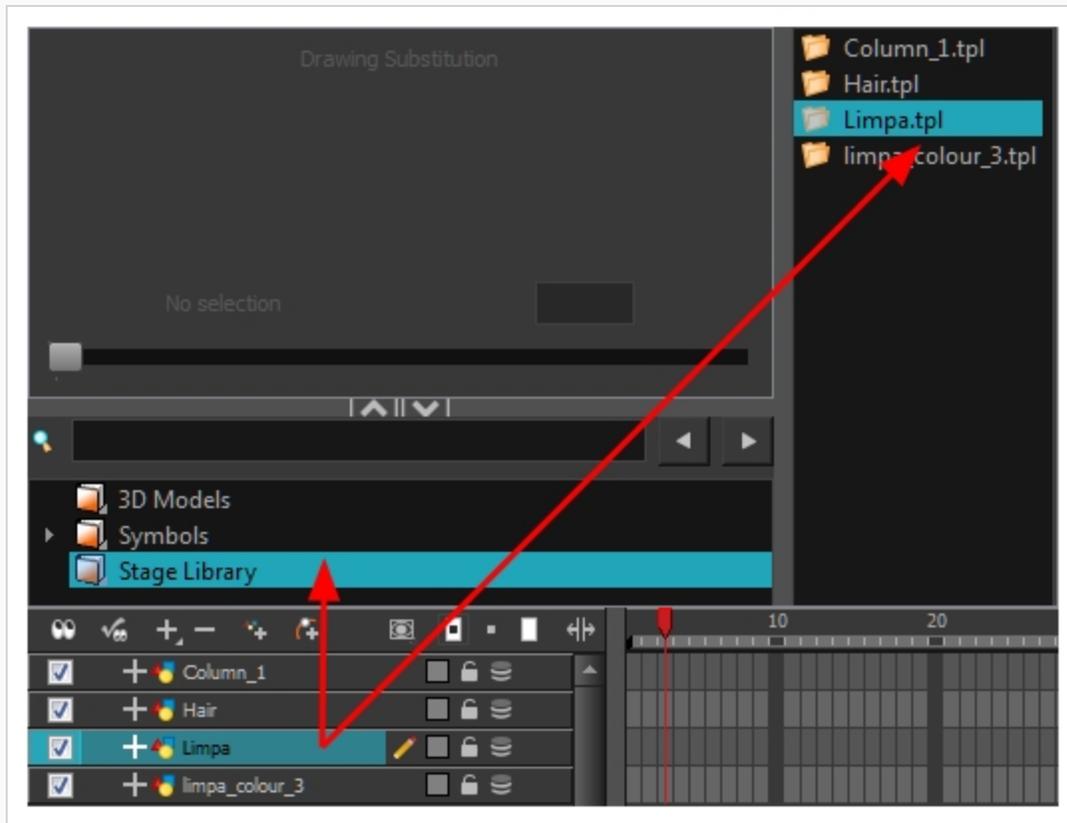
3. In the Rename dialog box, rename the new template.
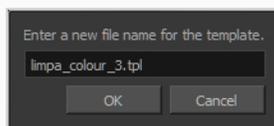


4. Click **OK**.

# Importing Files in the Library

Harmony lets you import sound files and images directly through the Library view. Simply open the folder containing your files in the Library view and drag them directly from there.

### How to open a file through the Library

1. In the Library view menu, select **Folders > Open Library**.

2. Browse for the folder containing the files you want to import.

3. Click **Open**.

4. From the Library's template list, drag the file you want to import in the Timeline or Camera view.
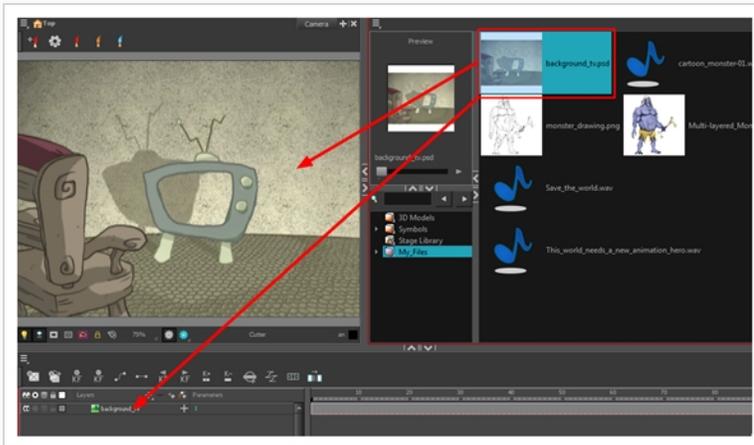
# Using Paste Special

When you import a template in the Timeline view, all layers are created as well as drawings and keyframes. You can choose to import only the keyframes without the drawings or import only the drawings that are not already in your layers. You can adjust the behaviour using the Paste Special dialog box.When you import a symbol in your scene, its full length is exposed by default. If you import a symbol in the Timeline view's left side, all the frames will be exposed. However, if you import it into an existing layer, you can use the Paste Special dialog box to adjust the import behaviour to fit your requirements.Once you set the parameters, Harmony will reuse them each time you import a symbol in the Timeline view's right side until you set new parameters.

### How to open the Paste Special dialog box

1. In the Library view, select the symbol or template to import.

2. Do one of the following:

   - While holding down the Alt key, click and drag on the template, then drop it on the Timeline view, over the layer and at the frame where you want to paste it.

   - Press Ctrl + C (Windows/Linux) or ⌘ + C (macOS). Then, in the Timeline view, click on the frame where you want to paste the template and press Ctrl + B (Windows/Linux) or ⌘ + B (macOS)

   The Paste Special dialog box opens.

3. In the Paste Special dialog box, select the desired parameters—see the Paste Special Dialog Box topic of the Reference guide .

4. Click **OK**.

# Chapter 19: Gaming

Harmony can be used to create and animate characters that can be imported in Unity. The procedure is very similar to rigging and animating characters for a regular animated production, and requires no programming skills. However, you must follow some guidelines when creating and animating your character to make sure it is properly imported in Unity.



The procedure for creating game assets in Harmony can be broken down into the following steps.

- Rig and animate your characters in Harmony, while following the guidelines for rigging and animating game characters in this guide.

- Separate your character's different animation clips.

- Create anchors and props for your character, if needed.

- Export the character from Harmony into a sprite sheet format that can be imported in Unity.

- Import the exported data into Unity.

# Rigging Guidelines

The following section explains how to create game assets in Harmony. You should go over this section before you start creating your character rigs, as it not only contains useful guidelines and tips for rigging game characters in Harmony, it also contains important information on what you can and cannot do when using Harmony to rig and animate game characters.
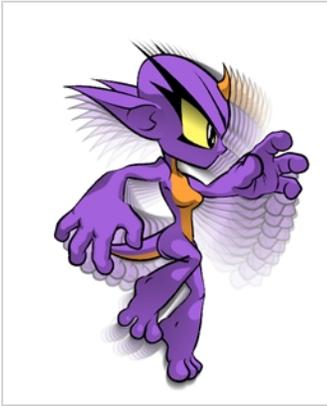
# Exporting Rigged Sprite Sheets or Rendered Sprite Sheets

When creating game assets in Harmony, the first decision you should take is which type of export you intend to make:

- **Rigged Sprite Sheets** is where you export a sprite sheet with one sprite for each layer in your character along with metadata allowing Unity to build and animate your character using those sprites. This is the traditional way of exporting sprite sheets, and most other Harmony features related to gaming are optimized for it.

> **NOTE**
>
> In Harmony, this is simply referred to as exporting sprite sheets.

- **Rendered Sprite Sheets** is when you export a sprite sheet with one sprite representing your entire character, rendered and flattened, for each animation frame in your scene. This means that Unity does not have to reproduce the way Harmony renders your character, as it is already rendered. This method creates significantly heavier packages, does not work with some other gaming features in Harmony and is harder to import in Unity, but it ensures that what you see in Harmony is also what you will see in your game.

> **NOTE**
>
> In Harmony, this is referred to as exporting to Easel JS.



A character rig in Harmony | The exported sprite sheet



The rendered frames of a game character in a sprite sheet
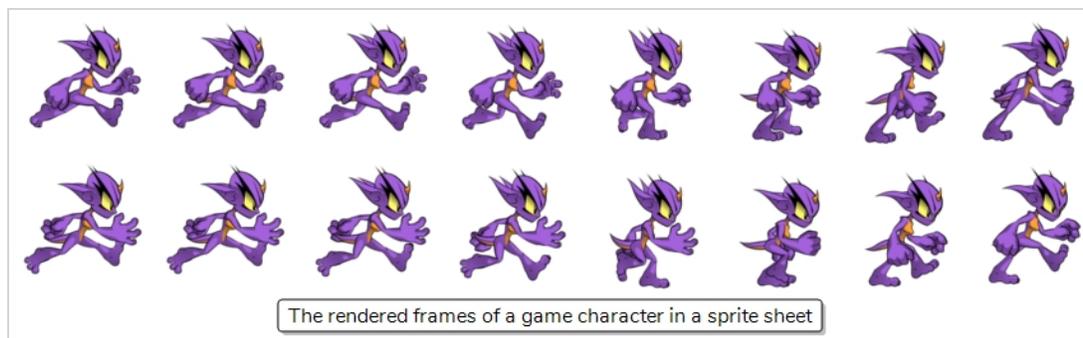
The following table offers a detailed comparison of all the advantages and limitations of between the traditional method of exporting sprite sheets versus exporting to Easel JS:

|  | Advantages | Disadvantages |
|---|---|---|
| **Rigged Sprite Sheets** | <ul><li>Significantly lighter packages.</li><li>Allows you to easily import the assets in Unity using the Harmony Game SDK package.</li><li>Allows you to create props and anchors in Harmony.</li><li>Different animation clips can be separated by scene versions or can be separated with scene markers, whichever is preferred.</li></ul> | <ul><li>Only supports *Game Bone*-type deformations.</li><li>Does not support Morphing, except if baked into frame-by-frame animations.</li><li>Does not support any effect except for the Cutter.</li><li>Using cutters has several limitations.</li><li>The matte port of drawing layers cannot be used.</li></ul> |
| **Rendered Sprite Sheets (Easel JS)** | <ul><li>All methods of animating, including morphing, curve deformations and envelope deformations are supported.</li><li>Effects are supported.</li><li>What you see is what you get.</li></ul> | <ul><li>Harder to import in Unity. This format cannot be imported using the Harmony Game SDK. Developers must write their own scripts to import the exported sprite sheets.</li><li>Exported sprite sheets are significantly heavier in file size, which may make it unsuitable for mobile games due to file-size and bandwidth limitations.</li><li>Different animation clips can only be separated by scene versions.</li><li>Does not allow you to create prop and anchors in Harmony.</li></ul> |

# Scene Set-Up Guidelines

The following are guidelines you must follow when creating and setting up scenes in which you intend to create game assets for Unity.

| | |
|---|---|
| **Scenes** | You must create one scene for each character. A scene can contain all of a character's different animations and props, but should not contain several characters that need to act independently from each other. |
| **Resolution** | Your scene's resolution should be square, meaning its width and height should be equal. For example, 1024 x 1024 is a proper scene resolution for a game object. |
| | It is highly recommended to use a power of two for the dimensions of your scene, such as 64, 128, 256, 512, 1024, etc. This is because graphics cards naturally handle textures with such dimensions. While recent video cards will adjust to non-standard texture sizes, which might cause some overhead and slow down your game's performance, older video cards might not be able to display these textures at all. |
| **Main Pivot** | When imported in Unity, the master pivot of your GameObject will be exactly where the centre of your scene is. Hence, if you want the pivot to be at a specific position on your character in Unity, you should position your character accordingly in your Harmony scene. |
| | For example, if you want the pivot point of a bipedal character to be between its two feet, at the centre of its drop shadow, you should position this character so that the point in the middle of its feet is in the centre of the scene. |
| |  |
| **Naming** | **Do not use non-alphanumerical characters in scene, layer, drawing and group names. Only use letters, numbers, dashes and underscores. Unity does not support Unicode characters in names.** |
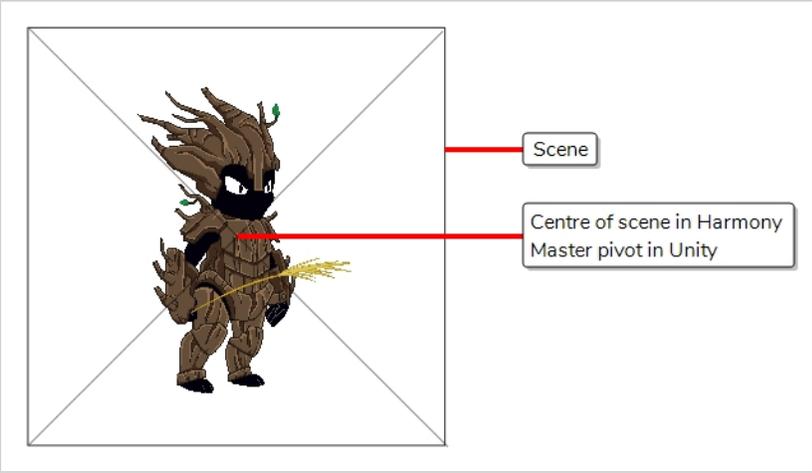
# Guidelines for Rigging Game Characters in Harmony

The following are guidelines to follow when creating a character rig in Harmony if you plan to export it for use in Unity.

> 📝 **NOTE**
>
> You do not need to follow these guidelines if you intend to export a rendered sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265.

| | |
|---|---|
| **Resources Usage** | When rigging and animating game sprites, you need to keep in mind the size of the exported sprite sheets as well as the resources required to play out their animations. |
| | If you are working on a console or PC game, you have a lot of leeway for both, as they often have high performance video cards and a lot of storage space. |
| | If you are working on a mobile game, you might need to take measures to ensure your animation and sprite sheets are lightweight, as mobile devices have slower rendering hardware and more limited storage space. Also, some users may want to download your game over a mobile data network with costly data charges. |
| **Hierarchy** | When creating your character rig's structure, you should use a simple peg-layer hierarchy, which means: |

- Each body part of the character that you want to animate independently is on its own drawing layer.

- Each drawing layer has its own parent peg, which should be used for animating the layer.

- Pegs can be rigged in a hierarchy to make body parts attached to each other move together. For example, a hand's peg can be rigged under the forearm's peg, and the forearm's peg under the arm's peg, etc.

- You can create groups to keep your rig structure tidy and organized.
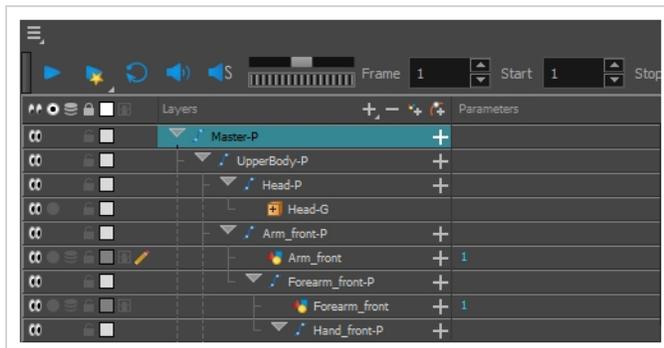


Body parts that are meant to move together with other body parts (i.e.: the head with the neck, the forearm with the arm, etc.) can be rigged together in either one of these ways:

- By rigging the peg of the child part under the peg of the parent part. For example, you could rig the forearm's parent peg to be the child of the bicep's parent peg. Moving the bicep's peg

would automatically move the forearm.



- By rigging both parts under a common peg. For example, you could rig the forearm and the bicep's parents pegs under a dedicated peg for the whole arm. You could hence move the bicep's peg independently, or move the arm peg to move both the bicep and the forearm together.



| z-Axis Positioning | Nudging layers on the z-Axis to change the order in which they appear is supported and its effect will be visible in Unity. However, you should not attempt to put layers at significant distances from each other on the z-Axis in Harmony, as they will not be rendered in perspective in Unity. |
|---|---|



| Animation functions | By default, pegs use 3D Path functions to record their position. It is recommended, but not required, to configure your pegs to use Separate position functions instead, as 3D Path functions are a bit heavier on performance. You can make a peg use separate functions by opening its Layer properties, then selecting **Separate** under the Position section. |
|---|---|
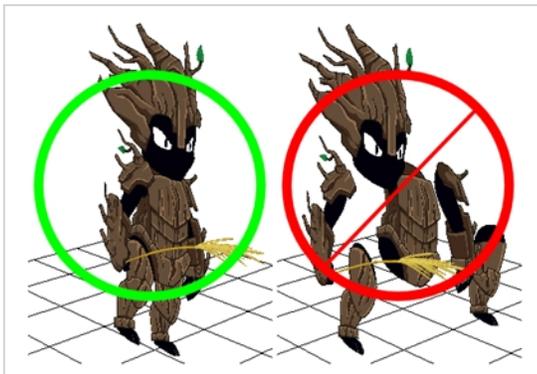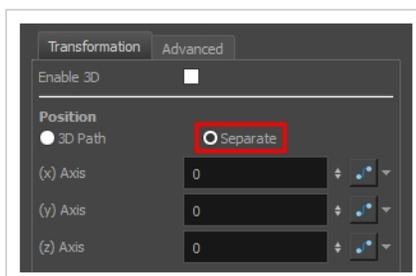
> **NOTE**
>
> Converting a peg or layer's function type to Separate will discard any existing animation on that peg or layer.

## How to make a peg's position functions separate

1.  Do one of the following to access the peg's Layer Properties:

    -   Open the Layer Properties view, then select the peg layer in the Timeline view.

    -   In the Timeline view, double-click on the peg layer, but not inside its name, to open its Layer Properties dialog.

2.  In the **Transformation** tab of the peg's Layer Properties, under **Position**, select **Separate**.

Also, you should only animate using Bezier type functions. This is the default type of function that Harmony creates when you animate a peg or a layer. However, some animators or rig artists may have the habit of manually configuring their layers and pegs to use Ease functions instead. Exporting animation that uses Ease type functions to Unity is not supported, so you should not do that when creating a game asset.
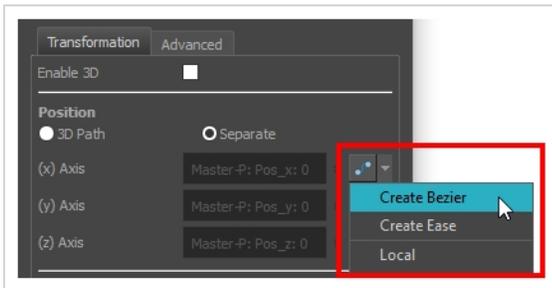


## How to make sure peg's position functions are Bezier functions

1.  Do one of the following to access the peg's Layer Properties:

    -   Open the Layer Properties view, then select the peg layer in the Timeline view.

    -   In the Timeline view, double-click on the peg layer, but not inside its name, to open its Layer Properties dialog.

2.  Right of one of the Position functions, click on the 💉 **Function** button to open its Function editor.

    -   If the title of the dialog is **Bezier Editor**, then the function is a Bezier function.

    -   If the title of the dialog is **Ease Editor**, click on **Close**. Then, click on the ▼ **Menu** button next to the 💉 **Function** button and select **Create Bezier** to create a Bezier function instead. Repeat for each of the functions in the Transformation

|  |  |
|---|---|
|  | tab. |
| **Effects** | Aside from the Cutter, you should not use any effect, as no other effect supported by Harmony can be exported to Unity. <br><br> > **NOTES** <br><br> • This includes Colour-Override and other simple colour effects. No such effect will be exported to Unity. <br><br> • The Cutter effect also has limitations when rigging a character for gaming—see *Guidelines for using the Cutter Effect for Game Assets in Harmony* on page 1272. |
| **Bitmap** |  |
| **Symbols** | The use of symbols is not supported. |
| **Art Layers** | Only the artwork in the Line Art and Colour Art layers will be exported to Unity. <br><br> By default, those are the only two art layers available. However, if you enabled the **Support Overlay and Underlay Arts** preferences, which is available in the **Advanced** tab of the Preferences dialog, you can use the Overlay and Underlay Art layers as reference or sketch layers. They will be visible in Harmony, but they will not be exported in your sprite sheets. |

# Guidelines for using the Cutter Effect for Game Assets in Harmony

If you intend to use cutters in a character rig that you plan to import in Unity, you must follow the following guidelines to ensure your character displays as expected in your game.

> **NOTE**
>
> You do not need to follow these guidelines if you intend to export a rendered sprite sheet—see
> *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265.

| | |
|---|---|
| **No Consecutive Cutters** | You can only connect a single cutter under any drawing. If you connect several cutters in a chain, only one of them will take effect in Unity.  A single cutter connected to the Arm_front layer / Two cutters connected in a chain under the Arm_front layer |
| **No Using groups as Mattes** | You can only connect individual drawings to the matte connection of a Cutter. You cannot use a group or effect as the matte of a Cutter.  Right: Using a single layer as a cutter's matte / Wrong: Using a group as a cutter's matte |
| **No Using the Drawing Layer's Matte connection** | Although drawing layers have their own matte connection, you should not use them. You must use Cutter effects if you want to mask parts of certain layers.  Right: Connecting a cutter under the Arm_front layer to mask it. / Wrong: Using the matte connection of the Arm_front layer to mask it. |
| **No Cutting a Deformed Drawing** | You cannot connect a cutter under a drawing that is under a deformation.  |
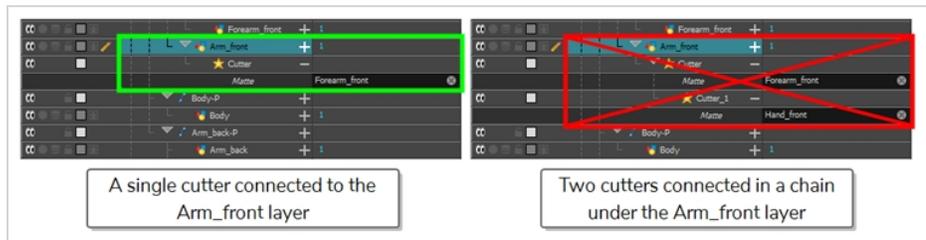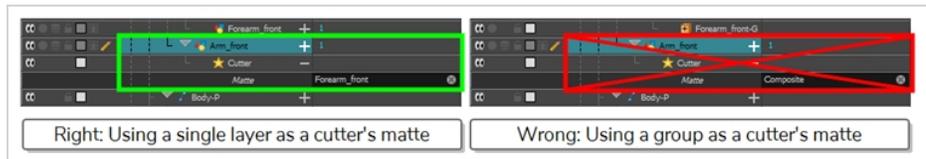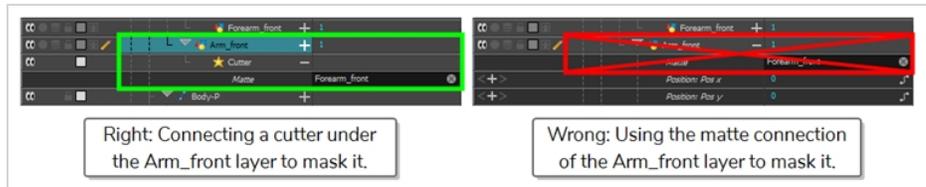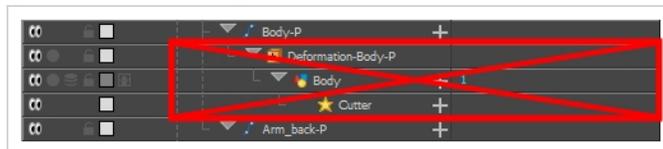
# Guidelines and Tips for Animating Game Assets in Harmony

The following are guidelines to follow when animating a character in Harmony if you intend to export it for use in Unity.

> **NOTE**
>
> You do not need to follow these guidelines if you intend to export a rendered sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265.

| | |
|---|---|
| **Animation on Pegs** | When animating game sprites in Harmony, you should animate the body parts on their parent pegs or their deformations, and not on the drawing layers directly, to keep the drawing information and the animation information separate.<br><br><br><br>> **TIP**<br>><br>> To facilitate this workflow, you can enable the ⟋ Peg Selecton Mode option in the Tool Properties of the Transform tool. This will ensure that, when you click on a drawing layer in the Camera view, its parent peg is selected instead. You can also disable animation on your drawing layers—see *Disabling Animation on Drawing Layers* on page 807. |
| **Animation Techniques** | It is recommended to use geometrical transformations—done with the ⬚ Transform tool or the ⟡ ⟳ ⊞ ⧄ Advanced Animation tools—to animate the body parts of your rig as much as possible, as those are easier for Unity and for graphics cards to render. You should only use deformations, drawings swaps or frame by frame animation when necessary. |
| **Deformations** | If you want to use deformations for your animation, you must use Game Bone deformations. Game Bone deformations are similar to regular Bone deformations, but have less options and are designed to render the way Unity would render them—see *About Game Bone Deformations* on page 950. |
| **Moprhing Tool** | Unity does not support animations made with Harmony's ⟲ Morphing tool. Hence, if you want to use these to animate your character using the Morphing tool, you will need to bake the animations made with this tool into frame by frame animations. Note however that this will make the resulting sprite sheet heavier in file size as each frame of these animations will be exported as a single sprite—see *Converting Morphing Animations to Drawings* on page 746. |

| Exported Assets | Drawings that are not used by your character or its props will not be exported with the sprite sheet. Hence, you do not need to delete unused drawings from your scene to optimize the exported assets. |

# Guidelines for Adding Audio to your Game Assets

The Harmony Game SDK supports exporting sound clip from a Harmony scene into a Unity GameObject. However, there are important limitations to consider if you plan to do this.

| | |
|---|---|
| No Clipping | If you clip your sound effects in Harmony, they will still be imported as whole in Unity. Hence, you should edit your sound effects in a sound editing software before importing them in Harmony. |
| | Likewise, if a sound effect extends past the end of the scene, it will not be cut off in Unity. It will play until the end. |
| No Splitting | If you are separating your animation clips with scene markers, you cannot have a single audio file play over several scene markers. If you do this, the sound effect will play from beginning to end in each of the exported clips. |
| |  |
| No Volume Adjustments | If you adjust the volume envelope of a sound effect in Harmony, these adjustments will not be exported to Unity. |
| Importing into Unity | Sound effects exported with your Harmony assets will not automatically play with your animations in Unity. The developer must themselves program the logic for playing sound clips. |

Because of these limitations, it is highly recommended to only import audio in your Harmony scene and export them with your sprite sheets when necessary, such as when you need to lip-sync your character's mouth with their dialogue. Otherwise, it is recommended to add your sound clips in Unity instead.

# Creating Multiple Clips for a Game Object in Harmony

A game sprite typically has more than one animation. With Harmony, you can create all of your character's animation clips in the same scene, provided that you separate them properly.

There are two possible approaches for separating your animation clips. Make sure to read about each carefully to choose the right one for your pipeline:

| Approach | Description |
|---|---|
| Separating Clips Using Scene Markers | With this approach, you create all of your character's different animation clips in the same scene, and add scene markers, which are markers that span over a certain part of your scene with a color and a name, to separate each clip. |
| Separating Clips by Scene Version | With this approach, you create your rig in the first version of your scene, then save a new scene version for each animation clip you want to add to your character.<br><br>NOTE<br>Using this method is required if you intend to export a rendered sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265. |

# Separating Clips Using Scene Markers

Separating animation clips using scene markers is the recommended method if you intend to export a rigged sprite sheet. It is convenient as it allows you to create and edit all your animations in the same scene.

> **NOTE**
>
> This method is not supported if you intend to export a fully rendered sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265

This method consists of creating all of your character's animations in different spans of the scene's timeline. Then, you mark which animation corresponds to which clip by adding scene markers. Scene markers mark a range of frames in your scene with a colour and a name. The name you give to a scene marker is the name the animation clip will have in Unity.

> **NOTE**
>
> To learn how to creating scene markers, see *Creating Scene Markers on Frame Ranges* on page 600.

When separating your clips with scene markers, keep in mind that:

- Each scene marker must have a Note. The note will be the name of the clip in Unity. Hence, the note should be a single line composed only of alphanumerical characters, dashes or underscores.

- Make sure to add keyframes at the beginning and end of each scene marker, so that your animations are properly separated when Harmony exports your spritesheet.
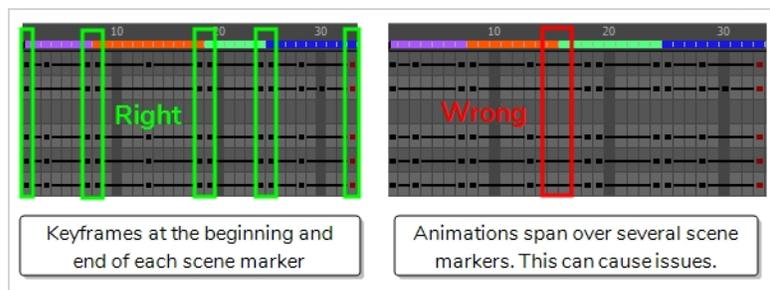


- When you export your sprite sheet, in the Export To Sprite Sheet dialog box, make sure to check the **Use Scene Markers to Export Clips** option. Otherwise, your sprite sheet's clips will be separated by scene version instead.
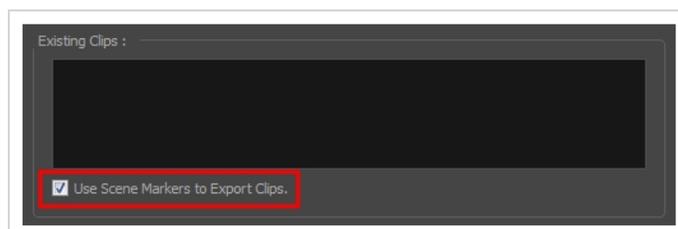
> **NOTE**
>
> This option will be checked by default if the scene contains scene markers.

# Separating Clips by Scene Version

This is the legacy method for separating clips in a sprite sheet. It is supported whether you want to export a rigged or rendered sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265.

To separate your clips by scene version, you must proceed like this:

1. First, you create a scene and, in this scene, create the full rig for your character, without animating it.

2. Then, you save a new version of your scene for the first animation clip you want to create. To do this, select **File > Save As New Version** from the top menu. Give this scene version the name you want your clip to have. For example, if you want to create your character's idle animation, you could name this scene version *Idle*.

3. In this scene version, create your character's animation. Make sure the animation starts as soon as the scene begins and that the scene ends as soon as the animation is over.

4. To create another clip, repeat steps 2 and 3 until you have all the clips you need for your character.

In the end, your scene and its versions may have something like this:

| Scene | Version |
|---|---|
| SpaceDuck | <ul><li>Idle</li><li>Run</li><li>Jump</li><li>Shoot</li></ul> |

# About Anchors and Props

Anchors and props are a feature of Unity allowing you to attach a prop, such as an item or a weapon, to a body part in your character rig. This is done by creating an anchor on your rig, which is a point that can be moved and rotated, and to which the prop can be bound. For example, you could make the hand of your character an anchor, and the weapon the character wields with that hand a prop.



A prop can be enabled and disabled in Unity. Also, a single prop can have several different drawings in it, which can be switched in Unity at any time. Hence, creating props for your character allows them to carry or wear different objects and equipment without rendering a sprite sheet of your character for each object.

> **NOTE**
>
> To be able to export your character with anchors and props, you must export your character as a rigged sprite sheet—see *Exporting Rigged Sprite Sheets or Rendered Sprite Sheets* on page 1265.

# Creating an Anchor for a Game Character

An anchor is simply a layer that has been marked as an anchor. Creating anchors is required to make props follow the animation of the layer they are rigged to.

In Unity, an anchor is a point, whereas a layer in Harmony is more like a canvas. Hence, the exact position of the anchor is based on the position of the layer's pivot point in Harmony. Because of this, it is recommended to create a layer specifically for the anchor in Harmony, instead of using one of your character's existing layers, so that you can position its pivot point without affecting your character's animation.

For example, if the character's hand is meant to be an anchor for a weapon prop, the hand's pivot point would usually be on the wrist to optimize animation, but you'd want the anchor for this hand to be positioned in the palm. Hence, you could create an empty drawing layer, rigged under the same peg as the hand, make this layer the anchor, and position its pivot point in the hand's palm.

> **NOTE**
>
> For a layer to work as an anchor, it must have a drawing, because drawings store pivot points. Hence, if you want an empty layer to be used as an anchor, you must put an empty drawing in it so that you can set its pivot point.

### How to create an anchor

1. If the Game toolbar is not already in your workspace, do one of the following to add it:

   - In the top menu, select **Windows > Toolbars > Game**.

   - Right-click on any existing toolbar and select **Game**.

   The Game toolbar is added to your workspace.

   

2. In the Timeline view, scroll to and select the layer for the body part which you want to use as an anchor.
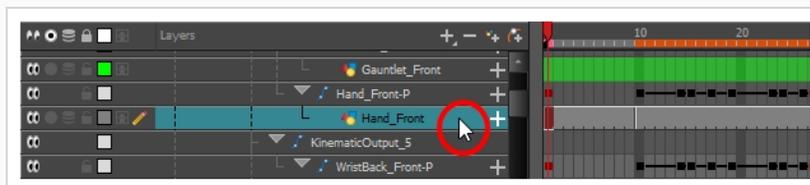
3. Create a new drawing layer by doing one of the following:

   - In the toolbar over the layers list, click on � Add Drawing Layer

   - Right-click on the layer and select **Insert > Drawing Layer**.

   - Press Ctrl + R
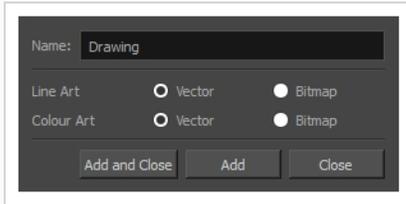
   

4. In the Add Drawing Layer dialog, type in a name for your anchor.

> 💡 **TIP**
>
> To make it easier to associate your anchor and its props in Unity, it is recommended to give your layer a name that indicates which prop it will be attached to. For example, if you are creating an anchor for a prop layer named `Weapon`, you could name it `Weapon_ anchor`.

5. Click on **Add and Close**.

   The anchor layer will be created as a sibling to the body part you previously selected. If you animated this body part's parent peg, the anchor layer will move at the same time as that body part.
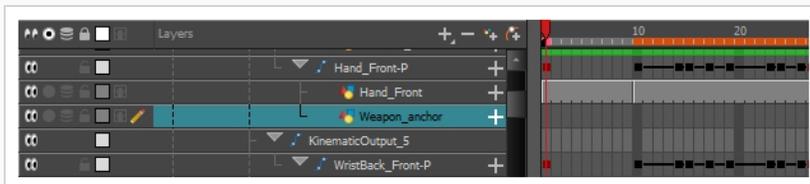
   

6. In the Timeline view, select the first frame in the anchor layer.
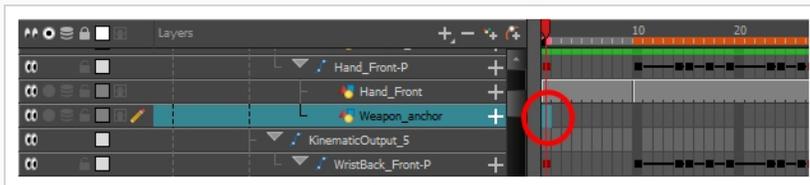
7. In the anchor layer, create an empty drawing by doing one of the following:

   - In the Timeline view, right-click on the first frame of the layer and select **Drawings > Create Empty Drawing**.

   - In the top menu, select **Drawing > Create Empty Drawing**.

   - Press Alt + Shift + R.
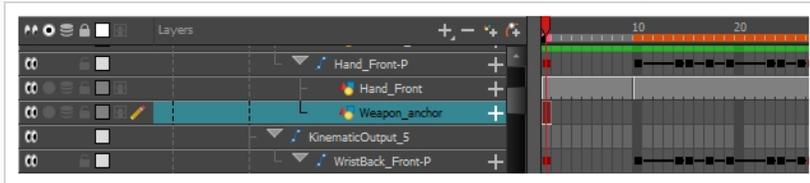


> **TIP**
>
> If you have Overlay and Underlay Art layers enabled, you can draw a cross hair in the Overlay or the Underlay art layer where the anchor's pivot is positioned, to help you keep track of the anchor's position. Artwork in Overlay and Underlay Art layers is not exported to Unity. You can find the **Support Overlay and Underlay Arts** preference in the **Advanced** tab of the **Preferences** dialog.
>
> 
>
> A crosshair representing the hand's anchor, drawn in the Overlay Art layer
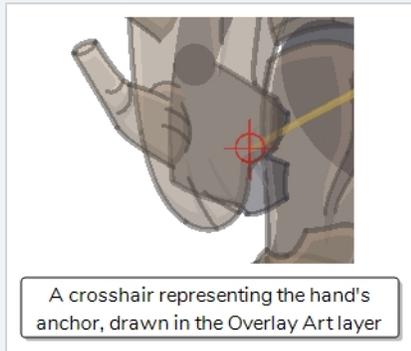
8. Extend the exposure of the empty drawing until the end of your scene by doing one of the following:

   - In the top menu, select **Animation > Cell > Extend Exposure**.

   - Press F5.

The Extend Exposure dialog appears.
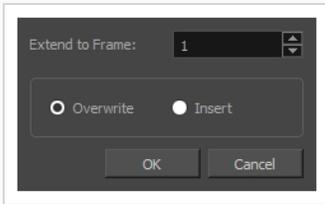
9. In the **Extend to Frame** field of the Extend Exposure dialog, type in the amount of frames in your scene.

10. Click on **OK**.

The exposure of the anchor drawing is extended until the end of the scene.
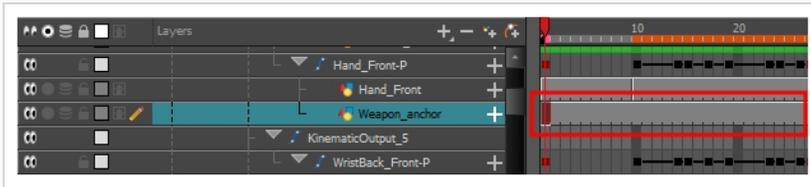


11. In the Timeline view, double-click on the anchor layer (but not on its name) to open its Layer Properties dialog.
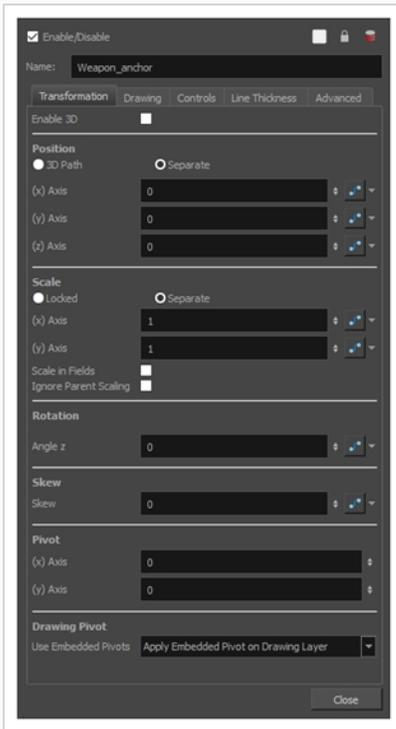
12. In the **Transformation** tab, under the **Drawing Pivot** section, open the **Use Embedded Pivots** drop-down and select either **Don't Use Embedded Pivot** or **Apply Embedded Pivot**.
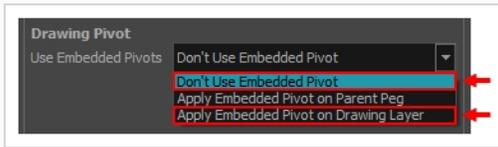


13. Close the Layer Properties dialog.

14. In the Advanced Animation toolbar, select either the ⊕ **Translate**, ⟳ **Rotate**, ⬚ **Scale** or ⬚ **Skew** tool.

15. In the Camera view, click and drag on the pivot point ⊙ and position it where you want the anchor to be positioned.
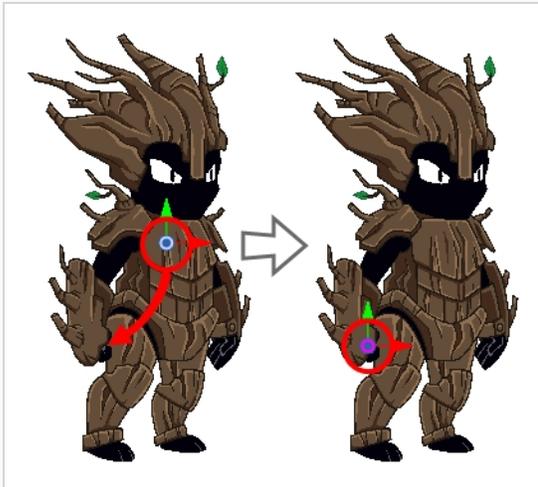


16. In the Game toolbar, click on ⚓ **Toggle Anchor**.

    The layer will now be an anchor. Its colour in the Timeline view will be changed to red.
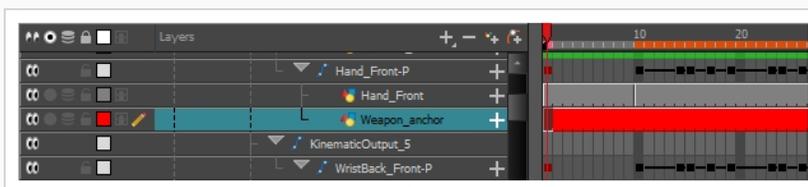


    In the **Metadata Editor** view, its **Node Metadata** should contain the following entry:

        game.isAnchor

    You now have an anchor layer for which you can create props.

# Creating Props for Game Characters

A prop is simply a drawing layer that has been marked as a prop. To make sure it follows its anchor's animation, it must be either rigged as a child or a sibling of the anchor in the rig hierarchy.

A prop can have one or several drawings. All drawings in a prop will be exported with your character, and it will be possible to switch between the different drawings for your prop in Unity.

**How to create a prop**

1. If the Game toolbar is not already in your workspace, do one of the following to add it:

   - In the top menu, select **Windows > Toolbars > Game**.

   - Right-click on any existing toolbar and select **Game**.

   The Game toolbar is added to your workspace.

   

2. Select the anchor layer to which you want your prop to be attached.
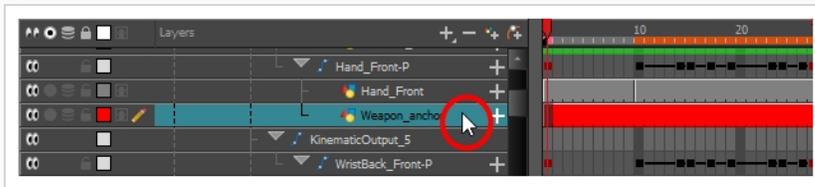
   

3. Create a new drawing layer by doing one of the following:

   - In the toolbar over the layers list, click on ⬩ Add Drawing Layer

   - Right-click on the layer and select **Insert > Drawing Layer**.

   - Press Ctrl + R
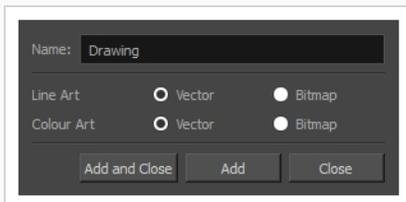
   

4. In the Add Drawing Layer dialog, type in a name for your prop layer.

5. Click on **Add and Close**.

The prop layer will be created as a sibling to the anchor layer you previously selected. If you animate the anchor layer's parent peg, the prop will also move along with it.
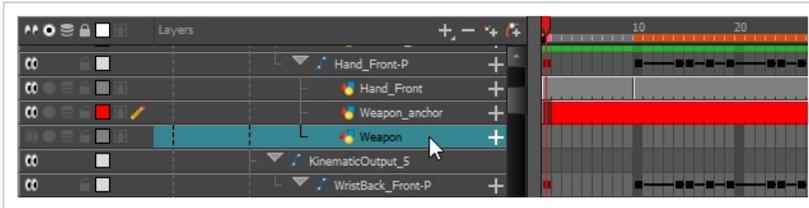


> **TIP**
>
> You can also rig the prop to be a child of the anchor layer, like so:
>
> 
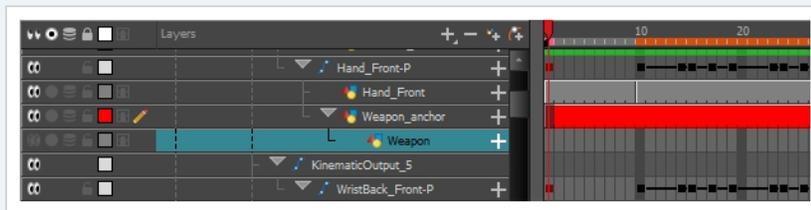
6. In the Timeline view, select the first frame of the prop layer.
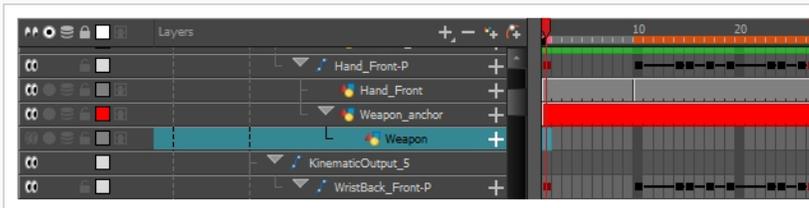


7. Create an empty drawing in the prop layer by doing one of the following:

    - In the Timeline view, right-click on the first frame of the layer and select **Drawings > Create Empty Drawing**.

    - In the top menu, select **Drawing > Create Empty Drawing**.

    - Press Alt + Shift + R.
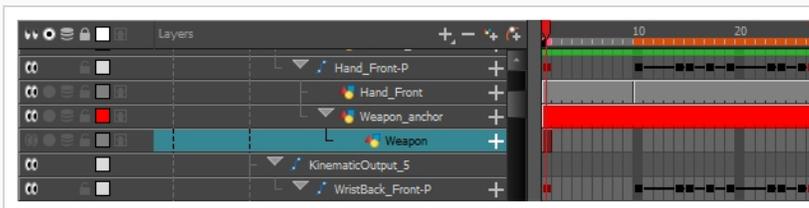


8. In the Advanced Animation toolbar, select either the ✛ **Translate**, ⟳ **Rotate**, ⊡ **Scale** or ⧄ **Skew** tool.

9. In the Camera view, click and drag on the pivot point ⊙ and position it where you want the anchor to be positioned.
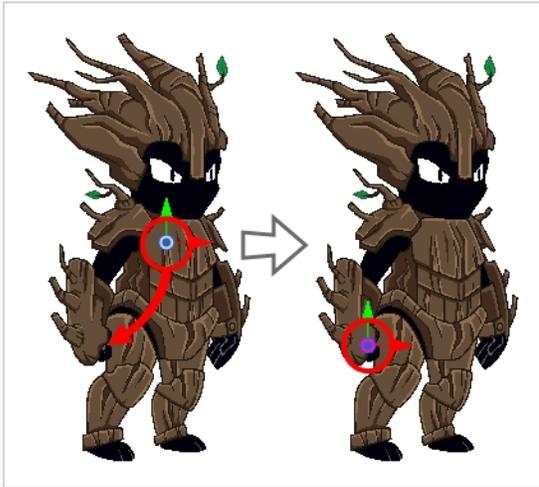


10. In the Game toolbar, click on 🗡 **Toggle Prop**.

The layer will now be a prop layer. Its colour in the Timeline view will be changed to **green**.
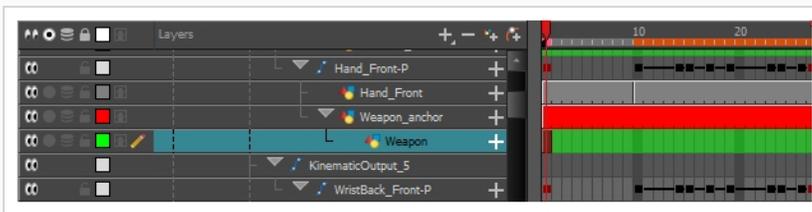


In the Metadata Editor view, its Node Metadata will contain the following entry:

    **`game.isProp`**

You can now start drawing your props in the prop layer.
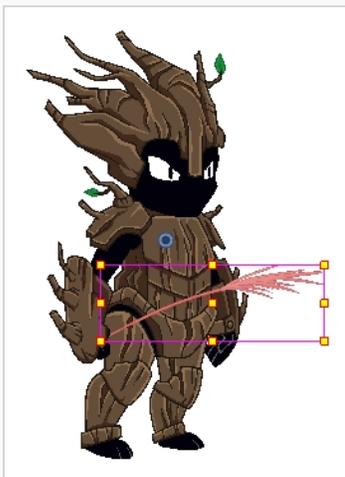
> **TIP**
>
> You can create several drawings in a single prop layer. You will get to toggle between those drawings after attaching the prop to the anchor in Unity.

# Adding Metadata Notes to Game Props

You can add metadata notes to props, which will have a name and value. This metadata will be accessible in Unity. It will be visible in the Inspector view when the prop is selected in the Hierarchy view

You can use this mechanic to add properties to your props in Harmony, then use them in Unity. For example, if a character has a weapon for a prop, you could add the attack power of that weapon as a metadata note for the prop.

**How to add metadata to a prop**

1. If the Metadata Editor view is not in your workspace, do one of the following:

   - In the top-right corner of a view, click the ✚ **Add View** button and select **Metadata Editor**.

   - In the top menu, select **Windows > Metadata Editor**.

2. In the Timeline view, select the prop layer to which you want to add metadata.

   The name of the layer appears near the top of the Node Metadata section.

   

3. In the Node Metadata section, click on the ✚ **Add Node Metadata Entry** button to create a new metadata entry.

   The Add Metadata dialog box appears.

4. In the Add Metadata dialog box, type in `game.` followed by the name of the metadata variable you want to add.
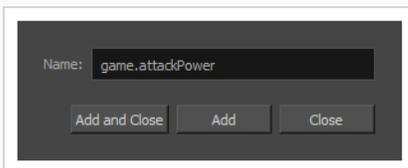
   

   > 📝 **NOTE**
   >
   > For the prop's metadata to be imported in Unity, its name must begin with `game` followed by a period.

5. Do one of the following:

   - Click on the **Add** button if you want to add more metadata entries.

   - Click on the **Add and Close** button to add this metadata entry and close the Add Metadata dialog.

   The metadata entries you created as added to the Metadata Editor view, in the Node Metadata section.

   

6. In the Metadata Editor view, double-click on the cell right of the name of the new metadata entry, in the Value column, to edit the entry's value.
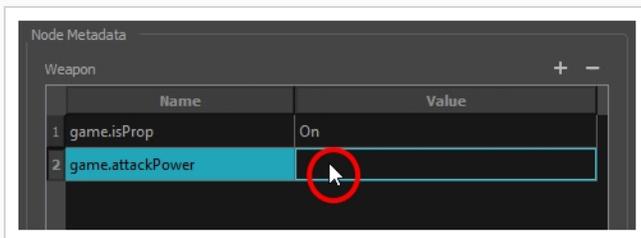
   

7. Type in the value for this metadata entry and press ENTER.

   You now created a metadata entry with a name and value for your prop.
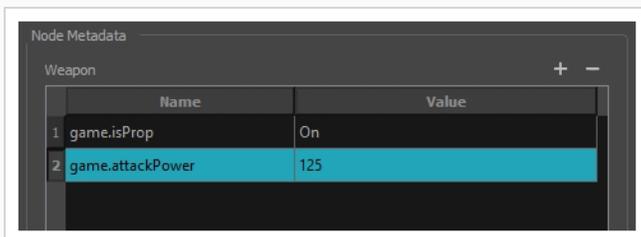
# Using the Harmony Game Previewer

If you are not a developer and would like to see if your animations and rigs will work once imported in Unity, you can use the Harmony Previewer application. You can visualize your characters in the Unity game engine with no programming required.
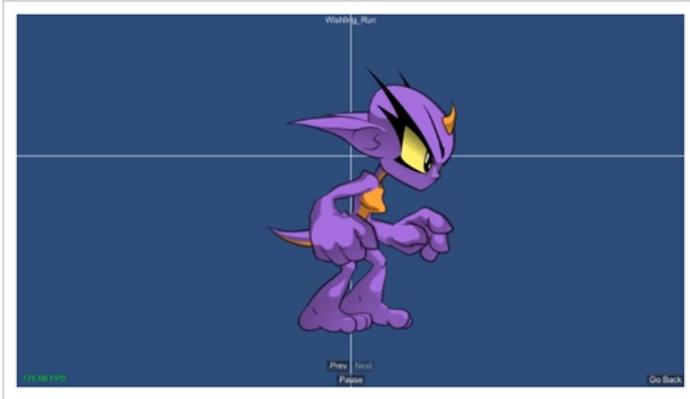


To get the latest version of the Harmony Game Previewer, visit our Gaming landing page:

[https://www.toonboom.com/games](https://www.toonboom.com/games)

## How to use the previewer on Windows

1. Download the Harmony Game Previewer for Windows:

   - [https://docs.toonboom.com/go/download/GamePreviewer-12-2-windows](https://docs.toonboom.com/go/download/GamePreviewer-12-2-windows)

2. Extract the following to your hard drive:

   - GamePreviewer-[version].exe

   - GamePreviewer-[version]_Data folder

3. Copy your export from Harmony to this folder:

   - GamePreviewer-[version]_Data\StreamingAssets\HarmonyResources\

4. Start the Game Previewer application.

5. Select the export you want to preview.

## How to use the previewer on macOS

1. Download the Harmony Game Previewer for macOS:

   - [https://docs.toonboom.com/go/download/GamePreviewer-12-2-mac](https://docs.toonboom.com/go/download/GamePreviewer-12-2-mac)

2. Extract the GamePreviewer-[version].app.

3. Right-click on the GamePreviewer-[version].app and select **Show Package Contents**.

4. Copy your export from Harmony to this folder:
   Contents/Data/StreamingAssets/HarmonyResources/

5. Start the Game Previewer application.

6. Choose the export you want to preview

# About Exporting to Unity

Using the 🎮 **Export to Sprite Sheet** and 🎮 **Export to Easel JS** buttons in the Game toolbar, you can export your character into a package containing sprite sheets and metadata that can be imported into a game engine.

Specifically, if you use the Export to Sprite Sheet option, your character will be exported as a rigged, animated skeleton with sprites, in a format that can easily be imported using the Harmony Game SDK package for Unity, without any scripting required.



If you use the Export to Easel JS option, your character will be exported with each animation frame rendered as a full body sprite, along with metadata that can be used to import it in Unity. However, you will need to program the logic for importing the spritesheet into Unity yourself.
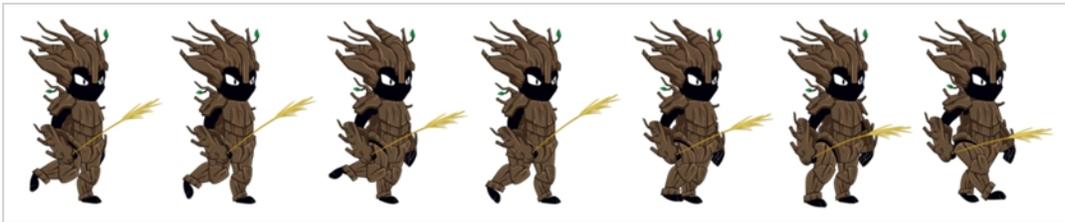


> 💡 **TIP**
>
> Since both the Export to Sprite Sheet and Export to Easel JS dialogs are scripts, you can modify them in Harmony's Script Editor view, to make them export in a format that is compatible with your game engine. Those scripts are named `TB_ExportToSpriteSheets.js` and `TB_ExportToEaselJS.js`, respectively.

Before exporting your character as a spritesheet, ensure that:

- Your scene is saved. Harmony creates the sprites using the drawing files in your scene folder. Hence, any unsaved changes will not appear in the exported sprite sheets.

- The dimensions of your scene are set to a number that is a power of two, such as 512, 1024, 2048, etc. Graphic cards work with textures the dimensions of which are a power of two.

- Your character rig is positioned so that the centre of the stage is where you want its pivot point to be.

- You respected all the guidelines for rigging and animating game assets—see *Rigging Guidelines* on page 1264.

# Installing the Scripts for Exporting Game Sprite Sheets

The scripts that are required for exporting game assets have been significantly updated in Harmony 15.0.5.

Because scripts packaged with Harmony are copied to your user preferences when you first launch Harmony, but do not get replaced by Harmony when you launch it again, if you have used any version of Harmony between 15.0.0 and 15.0.4 inclusively, your preferences have the older versions of these scripts, and the updated scripts will not be copied to your preferences so as to avoid overwriting these older scripts.

Hence, you must update the scripts in your preferences manually in order to be able to export your game assets from Harmony. To do this, you must copy them from the Harmony installation directory to your preferences.

### How to copy the new gaming scripts to your preferences on Windows

1.  Open an Explorer window.

2.  Navigate to the following location:

    `C:\Program Files (x86)\Toon Boom Animation\Toon Boom Harmony 15.0 Advanced\resources\scripts`

3.  Select the following file:

    `TB_ExportToSpriteSheets.js`

4.  Right-click on the selected files and select **Copy**.

5.  In the top menu, select **View** and check the **Hidden items** option in the **Show/hide** section.
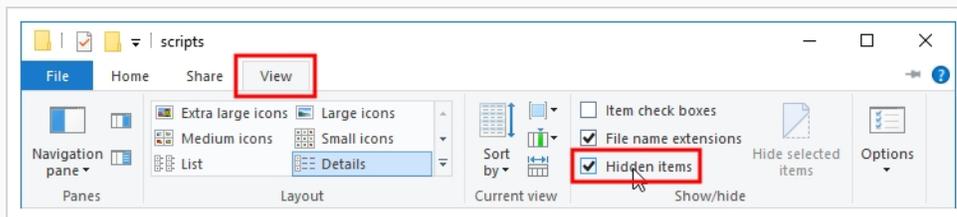
    

6.  Navigate to the folder of your user's scripts:

    -   If you are using Harmony Stand Alone:

        `C:\Users\<your username>\AppData\Toon Boom Animation\Toon Boom Harmony Advanced\1500-scripts`

    -   If you are using Harmony Server:

        `C:\USA_DB\users\<username>\Harmony Advanced\1500-scripts`

7.  Right-click inside the folder and select **Paste**.

8.  When prompted, confirm that you want to replace the existing files.

**How to copy the new gaming scripts to your preferences on macOS**

1. Open a Finder window.

2. Navigate to the following location:

   **/Applications/Toon Boom Harmony 15.0 Advanced/tba/resources/scripts**

3. Se,lect the following file:

   **TB_ExportToSpriteSheets.js**

4. Right-click on the selected file and select **Copy "TB_ExportToSpriteSheets.js"**.

5. Navigate to the folder of your user's scripts:

   - If you are using Harmony Stand Alone:

     a. While holding the Alt key, in the top menu, select **Go > Library**.
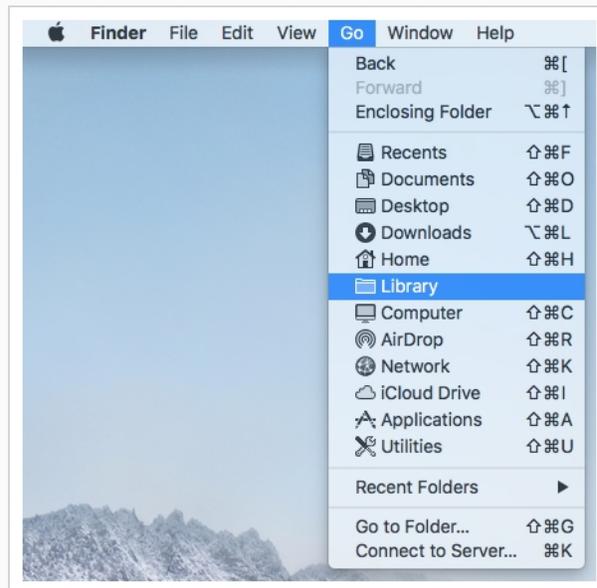


     b. From there, go to **Preferences/Toon Boom Animation/Toon Boom Harmony Advanced/1500-scripts**.

   - If you are using Harmony Server:

     a. In the top menu, select **Go > Computer**.

     b. From there, double-click on the name of your computer's main partition (usually **Macintosh HD**), then go to **USA_DB/users/<username>/Harmony Advanced/1500-scripts**.

6. Right-click inside the folder and select **Paste**.

7. When prompted, confirm that you want to replace the existing files.

# Exporting a Game Character as a Rigged Sprite Sheets

The Export to Sprite Sheets dialog allows you to export your rig into a sprite sheet and its animation into animation metadata, in a package that can be directly imported into Unity using the Harmony package for Unity.

If you created the different animation clips in the same scene and separated with scene markers, all you need to do is open the Export to Sprite Sheet dialog and export your sprite sheet and animations once.

However, if you separated your animation clips by saving them in different scene versions, you will need to start by exporting the sprite sheet from your base scene, then open each scene version and export their animation clip one by one.

### How to export sprite sheets for a character with clips separated by scene markers

1. If the Game toolbar is not already in your workspace, do one of the following to add it:

   - In the top menu, select **Windows > Toolbars > Game**.

   - Right-click on any existing toolbar and select **Game**.

   The Game toolbar is added to your workspace.

   

2. In the Game toolbar, click on the 🎮 **Export to Sprite Sheets** button.

   The Export to Sprite Sheets dialog appears.
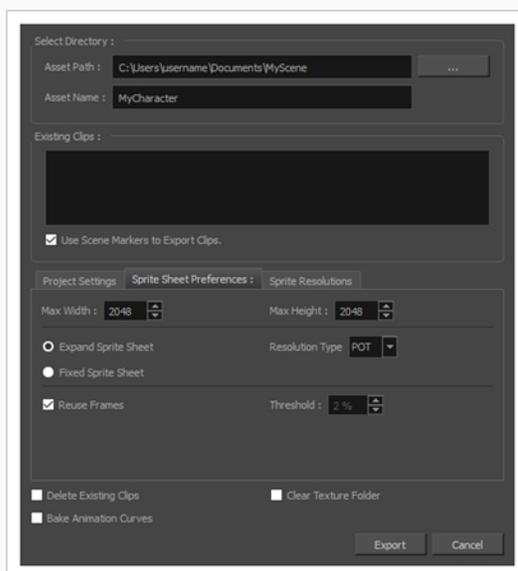
3. Right of the **Asset Path** field, click on the **...** button.

    A folder select dialog opens.

4. Browse to and select the directory in which you want to create your asset directory.

    > **NOTE**
    >
    > You do not need to create a directory specifically for your exported assets. One will be created with the name in the Asset Name field.

5. In the **Asset Name** field, type in the name of the directory in which to export your assets. This will also be the name of the GameObject in Unity.

6. Under **Existing Clips**, make sure the **Use Scene Markers to Export Clips** option is checked.

7. Select the **Sprite Resolutions** tab.

    This tab contains a list of all the resolutions in which your sprite sheets will be exported.

8. Do the following to export in the resolutions you want your game support:

    - To add a resolution, click on the **+ Add Resolution** button. A row will be added to the list. Double-click on each field in the new row to type in its name, its width and its height, in that order from left to right.

    - To remove a resolution, select it in the list, then click on the **— Remove Resolution** button.

9. For most usages, the other default parameters in the dialog should be fine. To learn more about the parameters in the Export to Sprite Sheet dialog, refer to the Export to Sprite Sheet Dialog Box topic of the Reference guide.

10. Click on **Export**.

    Harmony will export the sprite sheet for your rig and the animation for all of the clips in your scene.

### How to export sprite sheets for a character with clips separated by scene version

1. If the Game toolbar is not already in your workspace, do one of the following to add it:

    - In the top menu, select **Windows > Toolbars > Game**.

    - Right-click on any existing toolbar and select **Game**.

    The Game toolbar is added to your workspace.

2. Open the base scene version for your character, that is: the scene version in which you built your character rig.

3. **Make sure every drawing used by every scene version of your character is exposed at least once in this scene version.** To do this:

   a. Add as many frames to your scene as there are drawings in the layer with the most drawings.

   b. Leave the first frame with the drawings for your character's normal poses.

   c. In subsequent frames, expose the other drawings in each layer until every drawing used for all of your character's animation clips is exposed for at least one frame.

4. In the Game toolbar, click on the 🎮 **Export to Sprite Sheets** button.

   The Export to Sprite Sheets dialog appears.
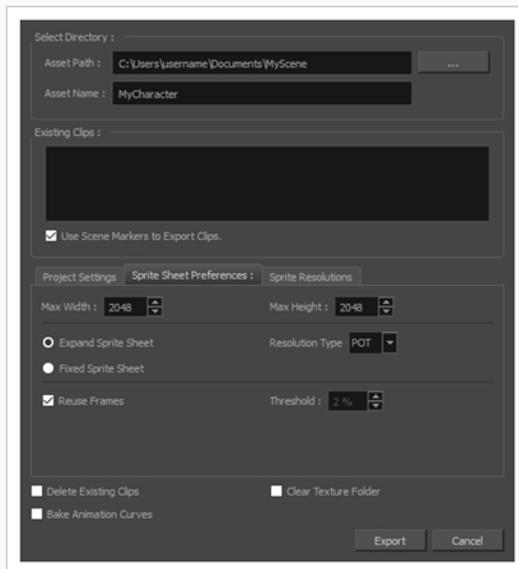


5. Right of the **Asset Path** field, click on the **...** button.

   A folder select dialog opens.

6. Browse to and select the directory in which you want to create your asset directory.

> **NOTE**
>
> You do not need to create a directory specifically for your exported assets. One will be created with the name in the Asset Name field.

7. In the **Asset Name** field, type in the name of the directory in which to export your assets. This will also be the name of the GameObject in Unity.

8. Under **Existing Clips**, make sure the **Use Scene Markers to Export Clips** option is unchecked.

9. Select the **Sprite Resolutions** tab.

   This tab contains a list of all the resolutions in which your sprite sheets will be exported.

10. Do the following to export in the resolutions you want your game support:

    - To add a resolution, click on the ✚ **Add Resolution** button. A row will be added to the list. Double-click on each field in the new row to type in its name, its width and its height, in that order from left to right.

    - To remove a resolution, select it in the list, then click on the ━ **Remove Resolution** button.

11. For most usages, the other default parameters in the dialog should be fine. To learn more about the parameters in the Export to Sprite Sheet dialog, refer to the Export to Sprite Sheet Dialog Box topic of the Reference guide.

12. Click on **Export**.

    Harmony will export the sprite sheet for your base rig.

13. Open the scene version for the first animation clip for your character.

14. Repeat steps **5** to **14** to export the animation for this scene version. Make sure to export in the exact same directory in which you exported the sprite sheet for your base rig.

15. Repeat for each scene version containing an animation clip for your character.

# Exporting Game Assets to Easel JS

The Export to Easel JS dialog allows you to export your game character as a sprite sheet, in which each animation frame in your scene is rendered as an individual sprite.

Since the Export to Easel JS dialog renders each frame in your scene, there will not be any visible difference between the way your character is rendered by Harmony and how it is rendered in your game engine.

However, the Export to Easel JS dialog has the following important limitations:

- Contrary to the Export to Sprite Sheet dialog, the Export to Easel JS only outputs a sprite sheet and an XML document delimiting each sprite in the sheet. Hence, they cannot be imported into Unity using the Harmony Game SDK package. You must program the logic to import those sprite sheets into your game engine yourself.

- The Export to Easel JS dialog does not export anchors and props.

- To export to Easel JS, you must separate your animation clips using scene versions. The Export to Easel JS dialog will not export separate animation clips if you have separated them using scene markers.

- Fully rendered sprite sheets are much heavier in size than rigged sprite sheets, which is what the Export to Sprite Sheet dialog exports.

## How to export a game character to Easel JS

1. Do the following to add the Game toolbar to your workspace:

    - In the top menu, select **Windows > Toolbars > Game**.

    - Right-click on any existing toolbar and select **Game**.

    The Game toolbar is added to your workspace.

    

2. Open the base scene version for your character, that is: the scene version in which you built your character rig.

3. In the Game toolbar, click on the ⬚ **Export to Easel JS** button.

    The Export to Easel JS dialog appears.
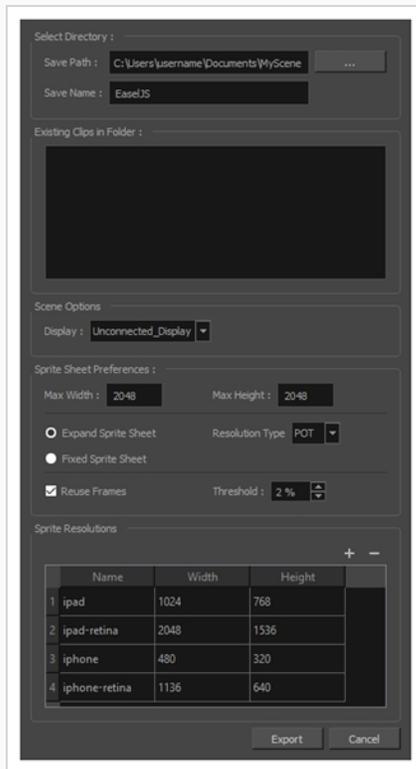
4. Right of the **Asset Path** field, click on the **...** button.

   A folder select dialog opens.

5. Browse to and select the directory in which you want to create your asset directory.

   > **NOTE**
   >
   > You do not need to create a directory specifically for your exported assets. One will be created with the name in the Asset Name field.

6. In the **Asset Name** field, type in the name of the directory in which to export your assets. This will also be the name of the GameObject in Unity.

7. In the **Sprite Resolutions** section, there is a list of all the resolutions in which your sprite sheets will be exported. Do the following to export in the resolutions you want your game support:

   - To add a resolution, click on the **+ Add Resolution** button. A row will be added to the list. Double-click on each field in the new row to type in its name, its width and its height, in that order from left to right.

   - To remove a resolution, select it in the list, then click on the **— Remove Resolution** button.

8. For most usages, the other default parameters in the dialog should be fine. To learn more about the parameters in the Export to Sprite Sheet dialog, refer to the Export to Easel JS Dialog Box topic of the Reference guide.

9. Click on **Export**.

   Harmony will export the sprite sheet for your base rig.

10. Open the scene version for the first animation clip for your character.

11. Repeat steps **3** to **10** to export the animation for this scene version. Make sure to export in the exact same directory in which you exported the sprite sheet for your base rig.

12. Repeat for each scene version containing an animation clip for your character.

# Converting Exported Game Assets from XML to Binary

Programmers may be interested to note that the XML data exported by Harmony can be converted afterwards to a more optimized binary data structure. To convert XML to Binary format, use the **Xml2Bin** utility. This utility converts the XML data structure generated through the Toon Boom Harmony software to a compressed binary data structure. This utility is available in the gaming SDK in the following directory:

**HarmonySDK/Source/Utils/**

This directory contains the following:

- **macosx**: Precompiled binary for macOS.

- **win32**: Precompiled binary for Windows.

- **Xml2Bin**: Xml2Bin sources.

- **Xml2Bin/proj.mac/Xml2Bin.xcodeproj**: XCode project formacOS.

- **Xml2Bin/proj.win32/Xml2Bin.sln**: Visual Studio project for Windows.

The C++ code that handles the data structure can be reused and parsed in your own code if you want to integrate with other game engines.

# About Working in Unity

The following section details how to import a character which you have created in Harmony and exported using the Export to Sprite Sheet dialog into a Unity project. Once your character is imported, you will also learn how to preview the clips and the props you created in Harmony in Unity, if applicable.

> **NOTES**
> - The following section does not explain how to import a package exported using the Export to Easel JS dialog, as this dialog only exports a basic sprite sheet.
> - The following section does not explain how to create a game in Unity. It only explains how to import and preview assets created in Harmony.
> - No coding skills are required to follow the methods in this section

# About the Sample Unity Project

Toon Boom includes a sample Unity project that contains all the scripts necessary to import the data exported from Harmony. Inside this project is an Assets folder which contains the following folders:

- Plugins

- Scenes (demo scenes and a previewer)

- Scripts (all Harmony scripts)

- StreamingAssets (this is where all the Harmony scene files should be exported to)

By configuring the Harmony script, you can automatically export animations into the StreamingAssets folder. This way, Unity will dynamically load the most up-to-date assets as soon as they appear in the folder. You can also manually place exported Harmony data into this location.

# About the Unity Interface

Here are the main components of the Unity interface and their equivalents in Harmony:

| Unity | Harmony | Description |
| --- | --- | --- |
| Scene view | Perspective view | This is where you set the scene, selecting and positioning environments, the player, the camera, enemies, and all other GameObjects. |
| Game view | Camera view | The rendered view from the camera(s) in your game. It is representative of the final, published game. |
| Inspector | Layer Properties | Displays detailed information about the selected GameObject, including all attached Components and their properties. |
| Hierarchy | Layers in Timeline view | Displays the hierarchy of elements in the scene, and lets you set up parent-child relationships for different game objects. |
| Project Browser | --- | Lets you access and manage a project's assets. |

The main camera displays the scene and is located in the Hierarchy. To show a Harmony object, you must add a special component. With the main camera selected, in the Inspector, select **Add Component > Scripts > Harmony Camera**.

Scene view (Unity) =
Perspective view (Harmony)

Game view (Unity) =
Camera view (Harmony)

Inspector (Unity) =
Layer Properties (Harmony)

21.18 FPS

Hierarchy (Unity) =
Layers in Timeline

Project Browser (Unity)
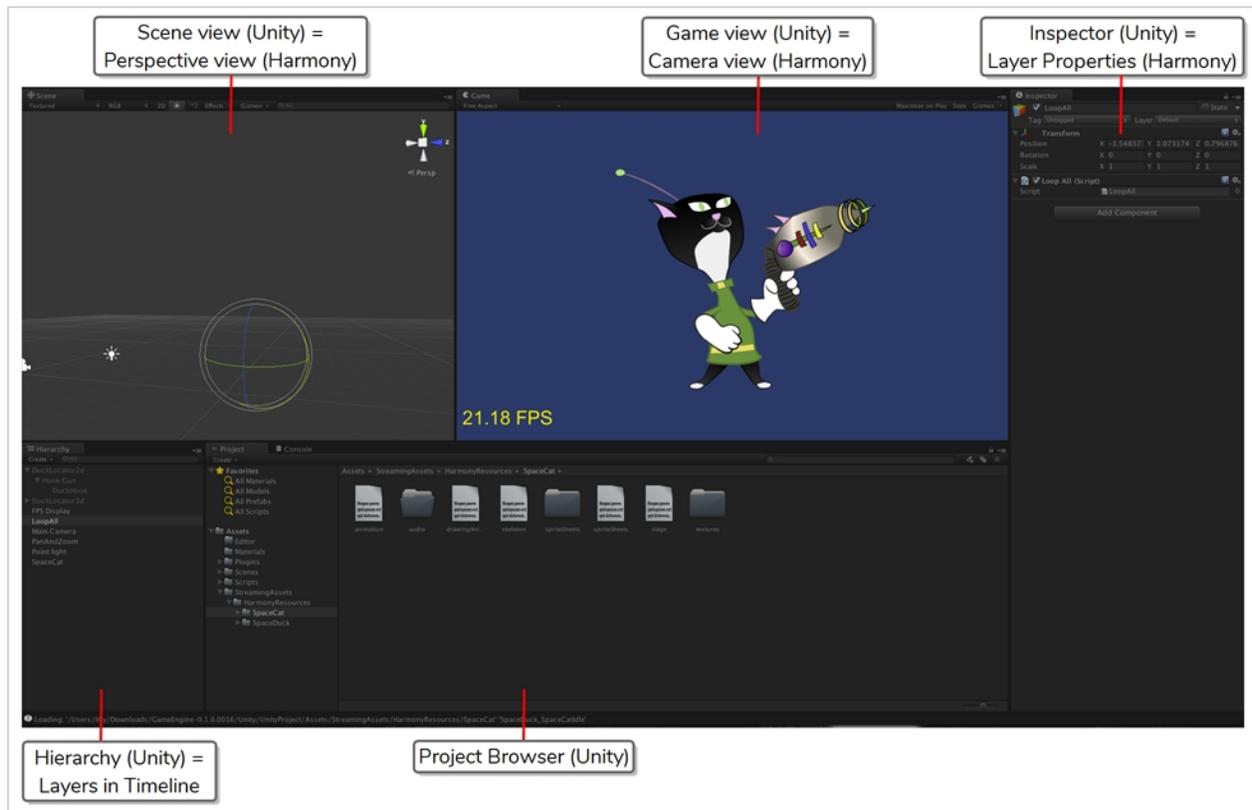
# Importing Harmony Files into Unity

Once you've finished creating your artwork and cyclable animated character movements in Harmony, it's time to import them into Unity for game integration.

## How to import Harmony files directly into Unity

1. Create a Unity 2D project.

2. The SDK Harmony project needs to be imported to your project in order for the assets to be brought in. Do one of the following:

   - Go to the Unity Asset Store (https://docs.toonboom.com/go/download/UnityPackage) and save the Harmony Game SDK file on your computer. Then import it in your project from the following: **Top Menu > Asset > Import Package > Custom Package**.

   - Search for the Harmony Game SDK in the Unity Asset Store, then download and import the package. You can access the Asset Store from the following: **Top Menu > Window > Asset Store.**

   > **NOTE**
   >
   > For each new Unity project, you must repeat step 2 as it contains the necessary files and folders to make the Harmony import process work.

3. Add the exported game object to the scene by going to **Top Menu > GameObject > Harmony >**

   - **Harmony Object**: Lets you browse for the exported Harmony project folder. If you've already saved this to your StreamingAssets folder, you can browse to it through there. Then it adds the Harmony scene to your Unity file, and sets up the rendering, audio, and animation scripts you need to get going.

   - **Harmony Texture Object**: Lets you browse for the exported Harmony project folder similarly to Harmony Object, but creates a Unity plane to render your animation on it.

# About Game Objects

GameObjects are the fundamental objects in Unity that represent characters, props and scenery. Basically everything you create in Unity will be a GameObject. There are two main types of GameObject you can use to import Harmony data:

- **Create Empty**

- **Create Other > Plane**

To understand the process fully, there are two examples using an empty GameObject and a plane GameObject with the SpaceCat demo file. Everything you do will be based on the GameObject you create to load your Harmony data.

# Using Empty Game Objects

An Empty Game object is a regular GameObject in which you can load the exported Harmony data. All the individual body parts on the sprite sheet come in as separate elements, but are treated as one whole object with a dynamically created bounding box. If you put a transparency on this object, you would see the overlapping transparencies of all the individual objects. This creates a higher-quality render and should be the default if you're not animating the transparency of an object. With this option, direct rendering will read the depth information in the scene but not write it. Note that with this option, the rendering cannot be customized.

## How to use an empty GameObject

1. Select **GameObject > Create Empty**.

2. Rename the empty GameObject so it's clear in the Hierarchy. Since we're using the SpaceCat demo file, rename the GameObject to **SpaceCat** by doing one of the following:

   - Double-click on the name and rename it in the Hierarchy.

   - Select the GameObject and rename it in the Inspector.

3. At this point, it's an empty object. Accessing Harmony data is done through scripts.

   - Select the SpaceCat GameObject.

   - In the Inspector, go to **Add Component > Scripts > Harmony Renderer**.
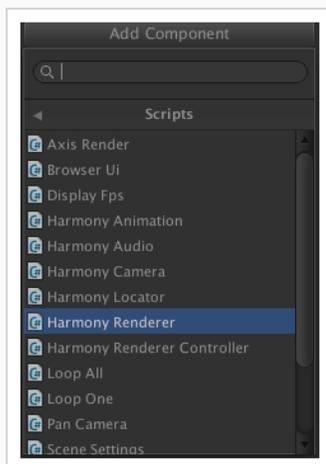


A new section appears in the Inspector called Harmony Renderer (Script).
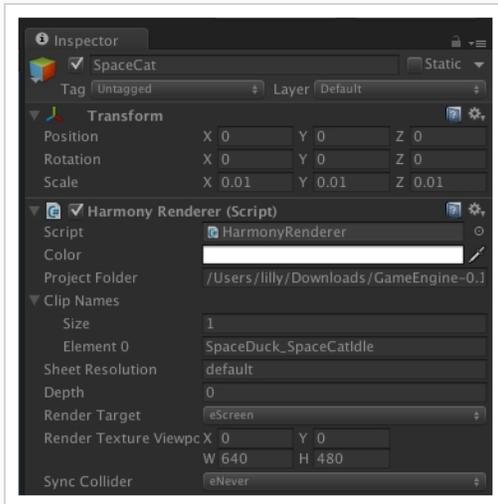
This will let you load an animation file. You must put the path of the asset relative to the HarmonyResources folder. Before this, you must export from Harmony directly to this folder, or manually copy and paste the data here.

4. You exported a scene called SpaceCat. In the Project Folder, place **HarmonyResources/SpaceCat** under the Transform information at the top, under Scale. Set the values to 0.01 for X, Y, and Z because the default Harmony project is for an HD screen.

5. You won't see anything until you define a few parameters:

   - Set the Clip Name Size to 1. A second field will appear, Element 0.

   - Enter the clip name for the animation you want to load.

6. Double-check on the right Clip Name to put in Element 0; you can check the output you exported from Harmony.

7. Double-check the `stage.xml` file, which was exported to the folder you specified when exporting from Harmony. Our default export path is to StreamingAssets, so it will automatically load in the game engine.

8. Look in the Project tab, under **Assets > StreamingAssets > HarmonyResources > [ExportName].**

   You'll find the data that was exported. In this case, we're looking for SpaceCat. Select the file marked `stage` to load the data you want to double-check.
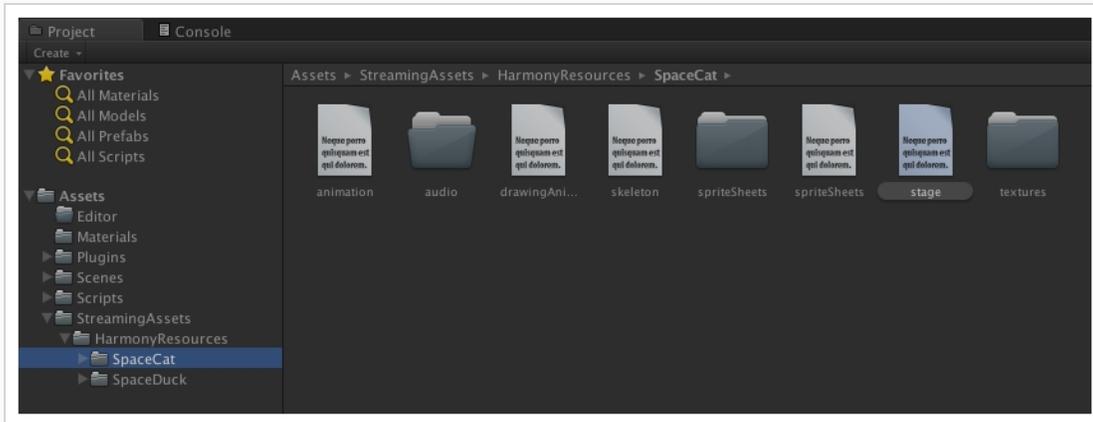
The text data appears in the Inspector.
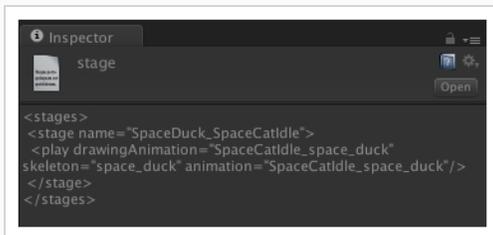


The name to use for loading the object is the stage name. In this case, `SpaceDuck_SpaceCatIdle`.

9. If your GameObject has animation in it, and you want it to load the animation data from the Harmony export, add one more component by doing the following:

- Select the GameObject.

- In the Inspector, select **Add Component** and select **Scripts > Harmony Animation**.

10. To loop the animation, you must set a GameObject to define it:

- Select **GameObject > Create Empty** and rename it: **LoopAll**.

- Click the **LoopAll** GameObject to display its properties in the Inspector.

- Click **Add Component > Scripts > Loop All**.

When you play the animation, it will loop as it plays back. The Loop All command simply iterates on all GameObjects on runtime and asks them to loop, which is useful when testing the animation. When programming the actual game, you should write additional scripts to control the different elements separately.

# Attaching Props to Anchors in Unity

An anchor is an attachment point you can use to bind one or several props to a specific location that is predefined by the anchor.

A prop is a game item that will be attached to an anchor. It could be a stick held within the character's hand, a helmet attached to the character's head...the possibilities are endless. Props are easy to turn on or off, and easily swappable from within Harmony or Unity.



### How to attach the prop to an anchor

1. Open up your character in the Hierarchy view to have access to both the props and the anchors.

2. Click on the prop you wish to attach, and drag it onto the appropriate anchor.
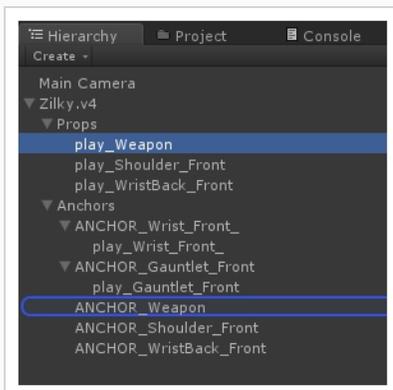


3. Repeat these steps for each prop and anchor in your project.

4. In the Inspector view, under Frame, you can select which frame you wish to show. If you only had one drawing in your prop, then you will not have multiple options.

5. If part of your character is cut off by the plane of the character, now that the props are showing, you will need to regenerate the mesh. To do so, select your GameObject. After this is done, go to **Inspector View > Render > Generate Mesh**.

# Attaching Props to Anchors in Unity

An anchor is an attachment point you can use to bind one or several props to a specific location that is predefined by the anchor.

A prop is a game item that will be attached to an anchor. It could be a stick held within the character's hand, a helmet attached to the character's head...the possibilities are endless. Props are easy to turn on or off, and easily swappable from within Harmony or Unity.



## How to attach the prop to an anchor

1. In the **Hierarchy** view, click on the right-pointing arrow left of your GameObject to expand its content and see its Props and Anchors hierarchies.
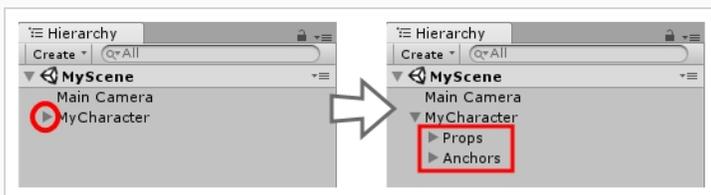


2. Expand both the Props and Anchors hierarchies to view your character's list of props and anchors.



3. Select a prop, then drag and drop it over the anchor you want to attach it to. It should end up being

a child of the anchor.
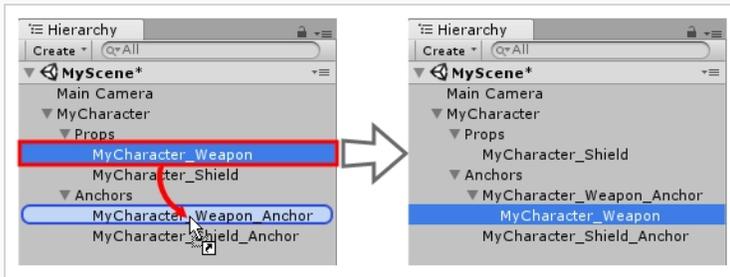


4. Select the prop in the **Hierarchy** view to view its properties in the **Inspector** view.
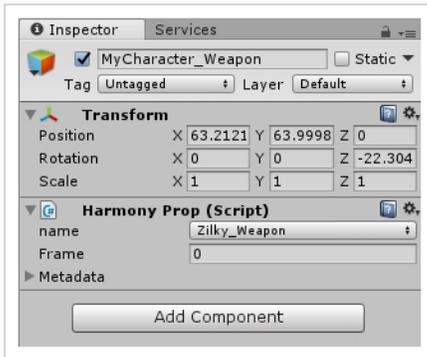


Each prop has a Frame property. The prop has one frame for each drawing that was in the prop's drawing layer in Harmony. Its default value, 0, makes the prop invisible.

5. Select the **Frame** field.

6. Type in the index of the drawing you want to display in the prop object. For example, if your prop only had one drawing in Harmony, type **1** to display it. If your prop had 5 drawings, type a number between **1** and **5** to display one of those drawings in the prop object.
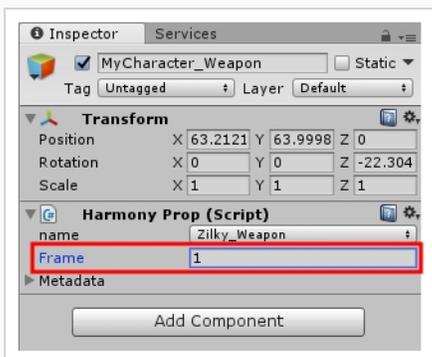


The selected prop frame will display in the Scene view, attached to its anchor.
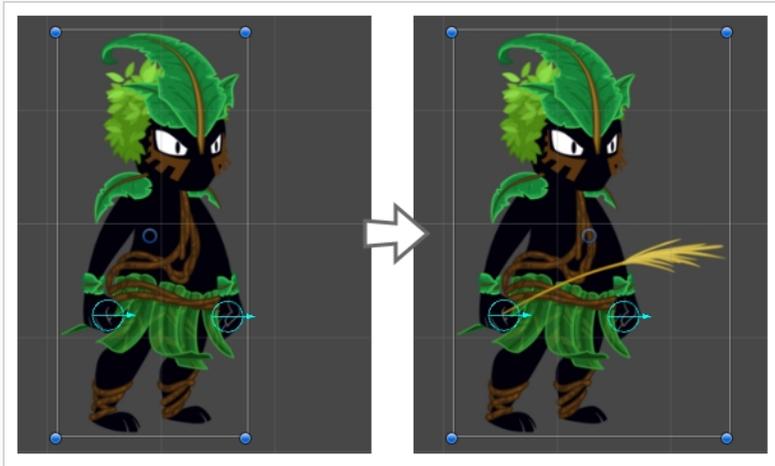
# Troubleshooting

## Unity Questions

**Q.** My Harmony asset does not appear in the Unity Editor.

**A**. There are several possible reasons for this. Check the following:

- Has the HarmonyRenderer plugin been copied to the Assets/Plugins directory? The plugin is named `HarmonyRenderer.bundle` on macOS and `HarmonyRenderer.dll` on Windows.

- Is the clip name valid ? Make sure the clip name exists in the stage.xml file.

- Are the binary files up to date? If you updated the Toon Boom Game Engine SDK to a newer version, make sure to regenerate the binary files if you use them so they're compatible with the SDK.

**Q**. My Harmony asset does not appear in iOS or Android when exported from Unity.

**A.** There are several possible reasons for this. Check the following:

- Make sure the Harmony assets are copied in the `StreamingAssets` directory. Since the HarmonyRenderer plugin cannot use Unity's asset database, the Harmony assets were packaged as plain files so they are accessible to the plugin.

- Is the plugin for iOS the same version as the one used for the editor? The plugin for iOS is in the `Assets/Plugins/iOS` directory.

- Is the clip name spelled correctly? Windows and macOS aren't usually case sensitive file systems, but iOS and Android are. This implies that an asset that is visible on the editor will not appear on the mobile platform because it cannot be found.

- Make sure the size of your sprite sheets does not exceed the hardware limit of the device you're working on. Otherwise, the texture might not appear at all.

- Is the path to the project folder an absolute path? If it is, it might not work on the mobile device as that path will not exist on the platform. Make sure to use relative paths to the `StreamingAssets` directory.

**Q.** My Harmony asset does not composite properly with other 2D sprites in Unity. The 2D sprites always appear behind the Harmony assets even if I change the order index in the GameObjects.

**A.** The 2D sprites from Unity and the Harmony assets cannot currently composite together. There are, however, several solutions for working around this problem:

Use 2D textures instead of 2D sprites. The 2D textures, when attached to a geometry in Unity, will composite like the other 3D elements in the scene and you can change the compositing order by incrementing or decrementing the Z value of the transform.

Use multiple cameras to render your scene in parts. Here's how:

### Harmony Camera

1. Create a new camera.

2. Make sure you set the Harmony GameObjects to a specific layer (top-right of the game object inspector).

3. In the camera, set the culling mask to this layer (and the other layers you want rendered in the background).

4. Add the HarmonyCamera component to this camera so the Harmony GameObjects render properly.

### Sprite Camera

1. Create a new camera.

2. Make sure to set the 2D sprite objects to a specific layer.

3. In the camera, set the culling mask to this layer (and the other layers you want rendered in front of the 2D sprites).

4. Make sure to set the clear flags to **Depth Only** or **Don't Clear**.

5. Set the depth to be higher than the Harmony camera.

6. Afterwards, if you move the camera, make sure to move both cameras simultaneously if you want to keep Game Ojects in sync.

**Q.** How can you specify the frame rate of the animation? My animation does not play at the same frame rate in Harmony and in the Game Previewer in the Unity Editor.

**A.** The Game Previewer previews the animation at a default of 24 frames per second. In your game, using the HarmonyAnimation component, you can schedule animations at the speed you want.

### Example

```
HarmonyAnimation animation = GetComponent<HarmonyAnimation>();

if (animation != null)

{

animation.PlayAnimation( frameRate, clipName );

}
```

**Q.** I cannot see my character in the Scene view in Unity. Is there any way to preview the Harmony asset?

**A.** Since the rendering of Harmony assets is implemented in a plugin, it does not update any Renderer component in the GameObject, and so cannot be shown directly in the Scene view.

However, you should still be able to preview your assets in the Game view (even when not playing). To help find and position assets, we also added bounding box shapes rendered in the editor and the Game view.

**Q.** How is memory management handled in Unity for Harmony assets?

**A.** Most of the memory extensive algorithms are executed in the C++ plugin. The data structure is maintained alive as long as a GameObject refers to it. This means you can instantiate as many clones of a character without

reloading the data. Upon destruction, the GameObject will issue a clean-up call to the plugin and delete its associated rendering object. The sprite sheet and animation data are kept alive as long as a single GameObject uses them and a cleanup call is issued once they are destroyed.

**Q.** The Harmony assets memory does not appear in the Unity profiler. Can we profile the assets memory?

**A.** The Unity profiler does not pick up Harmony assets in its traces. Since the Harmony GameObject refers to a C++ plugin for its asset management and rendering, its memory cannot be recorded in the profiler. Profilers such as the one provided with XCode or Visual Studio should allow you to track your application's memory including the Harmony assets and should also provide a more accurate result.

## General Questions

**Q.** How can you specify the resolution used for the drawings in the sprite sheet?

**A.** The drawing resolution is not fixed in Harmony. Since you're exporting the scene to multiple sprite sheets in multiple resolutions, every drawing will have a different resolution in the end. You can use the Drawing view to see the resolution of a drawing compared to the rest of the scene. By enabling the light table in the Drawing view, you will see all of the scene's drawings untransformed in the same proportion as they will appear in the sprite sheet. More specifically, the resolution used in the sprite sheet for a drawing is the size it appears untransformed in the Camera view, scaled to the sprite sheet resolution ("Sprite Resolutions" in the Export Sprite Sheet dialog box).

Once you know that, you can easily adjust the size of a single drawing. Use the Select tool to scale down a drawing and use the Transform tool to scale it back up so it does not change visually in the Camera view. This should allow you to alter the size of drawings in the sprite sheet.

**Q.** The assets take time to load on mobile devices. Is there any way to speed up the process?

**A.** Harmony exports an interchange XML format that is intended to be compatible with multiple game engines. However, reading data from the XML files is slow and this is mostly intended to test the assets in your project. At some point, they should be converted to a binary compact data structure that can be read into memory a lot faster than the XML.

You can use the Xml2Bin tool provided with the game engine SDK to convert your XML files to binary. This tool is in the `Utils/Xml2Bin` folder and a precompiled version for macOS is available in the `Utils/macosx` folder.

**Q.** There are problems with the character I exported in the game engine. Pieces are not exported or are not showing in the proper order. What can I do ?

**A.** To integrate with the game engine SDK, all animations in Harmony must follow certain guidelines. Here are some of the key points for building a character that is compatible with the rendering in the game engine SDK:

- Build your rig in the Timeline view. The game engine SDK data structure is similar to what is displayed in the Timeline view and an advanced node system might not always export properly.

- Because every top level node in your scene will render separately in the game engine SDK, they may not intersect. A top level node is also isolated in its separate sprite sheet to allow the artist better memory

segmentation of the character. If you created a character with top level nodes and this was not the intended result, create a top level group or peg to group them all together.

- Use micro-Z ordering if necessary. With no Z ordering, a child layer will appear behind its parent (as it does in Harmony). To change the ordering, add some Z offset to the child layer.

- The export script does not handle plain bitmap images. Toon Boom vector drawings and Toon Boom bitmap drawings are supported though.

- The export script does not handle symbols.