Toon Boom Harmony 11.1.0 Sketch Guide (Standalone)

Legal Notices

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Glossary

alpha channel	The image's channel carrying the transparency information. An image already has three channels: red, green and blue (RGB). The alpha channel is the fourth channel (RGBA). The matte, or the transparency information, is stored in this fourth channel. An image without an alpha channel is always opaque.
animatic	A movie with sound that is developed from the storyboard. The storyboard panel is exposed for the duration of the scene and at times, the characters are placed on a trajectory to indicate motion. The camera moves are also animated. The animatic is used to determine the rhythm of a project and provides a good overview of the project before beginning production.
animation	A simulation of movement created by displaying a series of pictures or frames.
anime	An animation style known for its sinister and dark feel; popular in Japan.
arc	Action rarely occurs in a straight-forward manner; rather it typically unfolds in what storytellers refer to as an arc. The purpose of a story arc is to move a character or a situation from one state or scenario to the next.
aspect ratio	The relationship between the width and height dimensions for any scene, frame or film format. Television ratio is 4:3 and widescreen ratio is 16:9.
auto-feed	An automated method of feeding drawings into a scanner in which multiple drawings are stacked into a sheet feeder. When the scanner is activated, the drawings are scanned consecutively, without further user intervention.
automatic lip-sync detection	Automatically mapping drawings in an element to the mouth chart generated for a sound. This can save time when lip-syncing a voice track.
axis	An imaginary line around which an object rotates. For 2D graphics, there are two axes: • X: Horizontal • Y: Vertical For 3D graphics, there are three axes: • X: Horizontal • Y: Vertical • Z: Depth
background	The part of a scene that is farthest to the rear. The background is the artwork, or decor, against which the animation takes place.
Bézier	A method of defining curved lines invented by French

	mathematician Pierre Bézier. A Bézier curve is a mathematical or parametric curve. Bézier curves use at least three points to define a curve. In Toon Boom, a function can be hooked to a Bézier curve and vary along with the curve value information. Bézier curves are also very useful in vector graphics. They are used to model smooth curves and can be scaled indefinitely.
bitmap	An image composed of pixels with a single resolution (size). If it is enlarged too much, it will lose definition and pixels will begin to appear. This is known as *pixelation*.
breakdown	In cut-out animation, breakdown is the action of breaking a character into pieces to create a puppet with articulations. To break down a character, the artist cuts part, such as hands and arms, from the character's model and pastes them in separate layers. Next, the joints are fixed and the pivots set. In traditional animation, a breakdown is an animation pose generally found between two key poses. The key poses are the main poses in an animation and the breakdowns are secondary poses, ones that help to describe the motion and the rotation curve.
camera shake	Camera shake occurs in a scene when the camera moves slightly and quickly in several directions. This gives the impression of an impact, vibration or, for example, bumps on the road.
caption	In a storyboard, a caption is a text field containing dialogue, effects, sound, or slugging information.
cel	In traditional animation, a cel, also known as a *celluloid*, is a transparent sheet on which the animation is inked and painted before being sent to the camera.The picture's outline is drawn on the front of the cel and then coloured along the back. In Toon Boom, a cel is an individual space encountered in an Xsheet's column, from which you can expose a drawing or a function`s coordinate.
character design	Each character in an animated film is drawn from multiple angles in poster-style format, called a *model sheet*, which serves as a reference for the animators.
clean up	After rough drawings have been tested and approved, all the noise in the image (excess lines, notes, etc) is removed to create final drawings which can be inked, painted and shot. The cleanup process refers to either tracing a clean line over a rough drawing to achieve the final version, or removing dirt and extra lines left by the scanning process.
CMYK	Cyan, Magenta, Yellow, Black. Refers to the process used by printers to define colour on the printed page.
colour card	A Colour Card is a solid colour card that is the same size as the camera. The Colour Card can be used to fill the background with a solid colour when there is no background image included.

colour model	In animation, a colour model is the official colour design that must be used to paint the animation. A model is the definitive character, prop, or location design that each artist must follow for the production.
colour wheel	A display of the colour spectrum in the form of a circle.
compositing	Compositing is the action of incorporating all of a scene's elements to create the final result prior to rendering. For example, the compositing artist will import all the animation sequences, background, overlays and underlays in the scene and position them correctly. The artist will then set the camera frame and animate it, if needed. Finally, the animator will create all the computer-generated effects for the project.
cross dissolve	An effect used to fade two scenes, one into the other.
cut	A direct transition between two scenes. When a cut is used, there are no transition effects inserted to pass from one scene to the next. The first scene ends and the second one starts immediately.
cut-out animation	The action of animating characters made of several pieces by moving them around frame by frame. Cut-out animation can either be computer generated or done traditionally using paper.
cycle	A group of images that together make up an action, such as walking. A cycle is an action repeated as a loop over a period of time. It can be a series of animated drawings or keyframes.
dialogue	The text spoken by a character in a movie or animation.
dope sheet	Used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as an *exposure sheet* or *Xsheet*.
doping	To assig a particular drawing to a range of frames.
DPI	Dots Per Inch is the standard measure of resolution for computerized printers. It is sometimes applied to screens, in which case it should more accurately be referred to as *pixels per inch*. Either way, the dot is the smallest discrete element making up the image.
ease/velocity	In animation, the ease, also known as *velocity*, is the acceleration and deceleration of a motion. It can be a motion created by a function curve, or a series of animated drawings. Other common terms for ease-in and ease-out are slow-in and slow-out.
ease-in	Gradual acceleration in the action. Another common term for ease-in is slow-in.
ease-out	Gradual deceleration in the action. Another common term for ease-out is slow-out.
establishing shot	A scene in which the viewer can see the whole area in which a sequence is happening. For example, if a child is playing on the ground in front of his house, the establishing shot would be a scene

	where the viewer can see the house, the ground, a part of the street and the buildings around the central point of action. This helps the viewer understand the story location and scene orientation.
exposure	In animation, an exposure is the number of cels on which a drawing appears in the scene. For a drawing to appear longer, the exposure must be extended over a greater number of cels.
exposure sheet (Xsheet)	The exposure sheet or Xsheet, is a sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene's layer. In each column, the drawing's numbers are indicated and repeated over the particular amount of frames they need to appear. The exposure sheet is used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as a *dope sheet*.
fade in/fade out	Fade in or fade out is a transition effect used to open or close a sequence. A fade in occurs when the first scene appears progressively, from complete transparency to its complete opacity. A fade out occurs when the last scene progressively disappears, going from complete opacity to complete transparency.
fast-in	Dramatic acceleration at the start of the action.
fast-out	Dramatic acceleration at the end of the action.
field	In animation, a field is a measurement unit used to calculate motion, registration and camera positioning. A standard animation scene will vary between 6 to 12 fields.
field chart	A guide containing all the field units that animation and layout artists use to determine a scene size or camera motion.
film-1.33	Use this resolution setting for the widescreen film format that conforms to the standard 4:3 pixel aspect ratio.
film-1.66	Use this resolution setting for the widescreen film format that conforms to the 16:9 pixel aspect ratio. (The pixels are wider than they are high).
flipping	In traditional animation, flipping is the action of going through the drawings of an animation sequence very quickly in order to see the animation in motion. Flipping can also be the action of creating a mirror transformation of an object.
follow-through	The follow-through is the secondary motion caused by the main action. For example, a character wearing a cloak is running. The main action is the body running. This will cause the cloak to follow the motion, although it will not move at the same time, but react a few frames later and follow the main motion curve.
forward kinematics	Forward kinematics is a feature used to animate principally 3D characters and cut-out puppets with hierarchy. It is used to animate

	a puppet from one of parent parts, such as a shoulder, and make the rest of the arm move with it as a single piece.
frame	A frame is a single photographic image in a movie. In traditional animation, the North American standard generally contains 24 frames per second, while in Europe the standard is 25 frames per second.
frame rate	This is the measurement of the frequency (rate) at which an imaging device produces unique consecutive images, called frames. The term applies equally to computer graphics, video cameras, film cameras, and motion capture systems. Frame rate is most often expressed in frames per second (FPS) and in progressive-scan monitors as hertz (Hz). The frame rate is the speed at which the frames are played. They are generally calculated by frame per second. For example, a scene could be played back at 12, 24, 25, 30 or 60 frames per second or any other number
functions	A function is a computer generated motion, trajectory or path that elements, other trajectories and effects parameters can be attached to. The function can be controlled by adding keyframes and control points on the function curve.
gamut	The range of colours that a particular device can represent.
HDTV	High Definition Television delivers a higher quality image than standard television does because it has a greater number of lines of resolution. To take advantage of the superior quality and make full use of your resolution setting, your output device must be compatible with HDTV technology.
hold	This is a frame in the animation in which the character maintains its position without moving. A hold can be created between any two keyframes.
HSV	Hue, Saturation, Value. A method of defining colours in terms of hue (tint), saturation (shade) and value (tone or luminance).
in-between	The drawings that exist between the key poses. These are drawn to create fluid transitions between poses.
ink and paint	The ink and paint process is the action of painting the empty zones and colouring the lines on the final animation drawings, while following a colour model.
interpolation	In animation, the interpolation is the computer generated motion created between two keyframes. You have the choice to create interpolation, or not, between your keyframes.
jump cut	A jump cut is a jerky cut between two scenes. Typically, a jump cut is not visually pleasing. It is generally caused by one scene ending, and a second one starting, with similar a image. The lack of difference causes the eye to see a little jump between the two scenes.

key pose	Important positions in the action defining the starting and ending points of any smooth transition. Keys, or key poses, are the main drawings in an animation sequence describing the motion. For example, if an arm is waving, the keys will be of the arm at one extremity of the wave motion and the other extremity. By flipping those drawings, the animator can see the skeleton of the motion without having all of the drawings.
keyboard shortcuts	One or more keyboard keys which, when used, cause an operation to be performed. Keyboard shortcuts are used throughout the Toon Boom software and form an integral part of the workflow. It is, in most cases, possible to customize the shortcuts in the Preferences dialog of the software. The shortcuts are written as follows in the Toon Boom user documentation: Each key in a sequence is shown inside square brackets as in: [Ctrl]+[A]. The brackets "[ ]" separate the key from the plus sign (+). Neither the brackets, nor the plus sign are part of the sequence. To use a shortcut, press the key and the character simultaneously.
keyframe	Important positions in the action defining the starting and ending points of any action. A keyframe is a computer generated position at a specific moment (frame) on a given trajectory.
layer	In animation, a layer is an individual column, level or character. A scene's layers are superposed to form the final image.
layout	The layout process is the communication step between the storyboard and the animation. The layout and posing process is the action of putting the storyboard on model, that is drawing the character following the design in the model pack, so that the animator can start his work. The layout artist will draw the background, create the camera and field guide matching the scene and the camera motion. Lastly, he will draw on model the main action poses.
layout and posing	The action of putting on model, that is, at the right scale, the storyboard for the animator to start his work.
library	A library is a storage area containing templates and assets that can be reused in any project or scenes.
light table	The Light Table feature allows you to see the other layers in transparency while you are working on a particular one in the Drawing view.
line of action	Direction that the action will follow. Also known as the Path of Action
lip-sync	The lip-sync is the character`s mouth synchronization with the dialogue sound track. Frame by frame, the mouth will be adjusted to fit the sound to give the illusion of the character is speaking.
low resolution	This format is ideal for videos destined for the web, where size and fast download of a video file might take precedence over quality. A low-resolution image is one that lacks fine detail.

manual lip-sync detection	The manual swapping of mouth position drawings to match a voice track. For this process, both sound scrubbing (listening to a sound wave broken up frame-by-frame) and drawing substitutions from the Library view are used.
master palette	A master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as palette.
model/colour model	In animation, a model is the definitive character, prop or location design that each artist must follow for the production. A colour model is the official colour design that must be used to paint the animation.
motion keyframe	In Toon Boom, the motion keyframe is a keyframe with computer-generated interpolation.
mouth chart	Adding a lip-sync to a project can really enhance its quality and storytelling. However, it can be difficult to shape a character's mouth so that it matches the sound at the precise frame. To solve this problem, Toon Boom provides a lip-sync feature which analyses the contents of a sound element and generates a mouth chart based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence).
multiplane	The effect of passing through multiple levels of drawings to create a sense of depth in a shot. A multiplane is a scene in which the layers are placed at different distances from the camera so that when the camera moves, a depth illusion occurs. With a multiplane, all the perspective and scale is calculated automatically.
NTSC	The standard analogue television broadcasting system used in North America. NTSC conforms to North American standards on how rectangular pixels are displayed for computer and television screens.
nudge	A small push (left, right, up, down, forward or backward) done with the keyboard arrow keys on a selected element. Nudging is used to move a selection very slightly and precisely.
onion skin	A feature that lets you see the previous and next drawings of a sequence.
overlay	A part of the scene environment, such as a chair or a bush, that is placed in front of the main animation.
PAL	A resolution that works best with the European format for television and computer screens, as the rectangular pixels are displayed at a different orientation.
palette/master palette	A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.

palette style	A palette style is a second version of an existing palette with a slight change in the tint and value. A palette style can be used to create the night version of a palette. It may also be called a clone palette.
pan	To move the camera across the scene in any direction.
panel	In a storyboard, a panel is a frame in a shot. A shot can be composed of one or several panels.
paperless animation/tradigital	The paperless animation process is the action of animating digitally. The main paperless animation process is to draw, frame by frame, the animation directly in the software.
passing position	When drawing a walk sequence for a character, the passing position is the point at which one leg passes the other.
path of action	Direction that the action will follow. Also known as the Line of Action.
peg	In traditional animation, a tool used to ensure accurate registration of action as cel layers move. In digital animation, in which you are doing a more advanced puppet rigging, you can use peg layers. Peg layers are trajectory layers that do not contain drawings. They are motion paths that you can use to add path articulations. For the latter, you can also use the Inverse Kinematics tool.
phoneme	Unit of sound in a language.
pivot	A pivot is the point around which a peg or a drawing rotates.
pixel	Smallest element of an image displayed on a monitor or TV screen. Pixel, short for Picture Element, is a single point in a graphic image. It is a small sample of an image, a dot, a square, or a very small section made out of smooth filtering. If you zoom in close enough on a digital image, you will see the pixels, which look like small squares of different colours and intensity.
pose-to-pose animation	The pose-to-pose animation process is the action of creating all the main action poses, called key poses, and then placing the secondary poses between the keys. The secondary poses are called breakdown. Finally, the animator fills the gaps with the in-between drawings to achieve a smooth animation.
rendering	The final step when animating by computer. During rendering, the computer takes each pixel that appears on screen and processes all of the components as well as adding motion blur before it produces a final image. In animation, the rendering process is the action of calculating the final images after the compositing process.
resolution	The resolution is the size of a scene, generally calculated in pixel. For example, the NTSC resolution is 720 x 480. Resolution type should match your final output: HDTV, film-1.33, film-1.66, NTSC, PAL, low.
RGB	Red, Green, Blue: method of defining colour by specifying amounts

	of these three colour components.
rigging	The rigging process is the action of attaching the cut-out puppet parts one to the other.
rotary table	The Rotary Table is equivalent to the animation disk/table and allows one to rotate the workspace to be more comfortable while drawing.
rotoscoping	Is an animation technique in which animators trace over live-action film movement, frame by frame, for use in animated films. The act of sketching over live-action footage to create an animated sequence.
roughs	The roughs are the skeleton sketch of an animation or a design. Roughs mainly consist of sketch lines and shapes, though they can also contain design details.
safey area	In animation and movie parlance, the safey area is the zone at the centre of the scene's frame, one safe from being cropped by the TV frame. As a TV frame cuts a margin off the original frame size, maintaining a safey area ensures that the scene's main action will remain clearly visible once the film is screened on television.
scene	A scene is a shot in a movie or show. A sequence is composed of several scenes. A scene changes to another scene by a simple cut, or a transition.
script	The script is the original text containing all the movie or show information. In animation, the script contains all of the location descriptions, dialogues, time and more. A project starts with a script.
sequence	In animation, a sequence is a series of scenes or shots forming a distinct part of the story or movie, usually connected by unity of location or time.
shot	A shot is a scene in a movie or show. A sequence is composed of several shots. A shot changes to another shot by a simple cut, or a transition.
slow-in	Gradual acceleration in the action. Another common term for slow-in is ease-in.
slow-out	Gradual deceleration in the action. Another common term for slow-out is ease-out.
slugging	In Storyboard Pro, slugging refers to indicating the start and stop times of dialogue and relevant actions.
sound scrubbing	A process that lets you hear sound in real time while you move the playhead forward or backward. This is very useful for finely-tuned lip-syncing.
stop-motion keyframe	A stop-motion keyframe is a keyframe with no computer generated interpolation.
storyboard	A visual plan of all the scenes and shots in an animation. The storyboard indicates what will happen, when it will happen and

	how the objects in a scene are laid out.
straight-ahead	A technique in which an entire sequence is drawn from the first position to the last, in order. There is very little planning in this methodology, and where the character ends up and how it gets there can be a surprise for both the audience and the animator. While this approach is a lot more spontaneous and creative, it can create inaccurate results.
strokes	Strokes are invisible vector lines forming the drawing zones. They can be adjusted with Bézier handles.
tablet/pen	Device used in conjunction with, or instead of, a mouse to move a mouse pointer (sometimes referred to as the cursor) around the computer screen.
template	In Toon Boom, a template is an asset stored in the library, one that can be reused in any project. A template can be a drawing, a series of keyframes, a sound file, a panel, a cut-out character, an effect, a trajectory, an animation, or anything else used in the software.
thumbnails	A thumbnail is a very small image used as a reference or indicator.
timecode	Timecode is timing information printed on a movie clip to indicate what scene, hour, minute and second is currently displayed on the screen.
timeline	The timeline is a horizontal representation of the scene`s elements, timing and keyframes.
trace and paint	After the rough animations have gone through cleanup and a final line or pencil test, each drawing is traced and painted for the final animation. In today's digital world, this may be done in a variety ways other than via the traditional celluloid or acetate methods.
track breakdown	The soundtrack for animated film is broken down into individual sounds documenting the precise frame-by-frame position of each sound.
traditional animation	The traditional animation process is the action of drawing on paper all of the animation sequences, before either scanning them or inking them on cels.
trajectory	A computer generated path or trajectory that elements can follow. The trajectory can be controlled by control points, keyframes and velocity.
transition	A transition is an effect placed between two scenes as they pass from one to the other. Common transition effects are cross-dissolve and wipe.
underlay	In animation, an underlay is a specific part of the decor placed behind the main animation.
aspect ratio	The aspect ratio describes the shape of the grid unit. A square grid unit would have the ratio 1:1, whereas a grid unit of aspect ratio 4:3 is a unit with one side 1.33 times as big as the other side.

vector	A vector-based image is composed of points and Bézier curves. The computer reads the points and traces the segments, linking them to reproduce the image shape. There is no fixed size or resolution in a vector image. The graphic can be enlarged and distorted as much as desired and the system will simply recalculate the segments and rebuild the shapes. Vector images are translated and displayed in pixels once the calculation is done.
velocity/ease	In animation, the velocity, also known as ease, is the acceleration or deceleration of a motion. This can be achieved by a function curve, or via a series of animated drawings. Other common terms for ease-in and ease-out are slow-in and slow-out.
walk cycle	To avoid making innumerable drawings, animators routinely make a walk cycle for their character. This comprises a series of drawings ``on the spot`` that describe the walk for that character. The illusion of movement is created via the use of background pans.
workspace	In Toon Boom, the workspace is made up of the views, toolbars, and menus.
Xsheet (exposure sheet)	The Xsheet or exposure sheet, is a sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene's layer. In each column, the drawing numbers are indicated and spread over the specific amount of frames they need to appear. The exposure sheet is used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as a Dope Sheet.
zone	An area which can be painted with colour.

Chapter 1: Introduction

The Sketch module is a component of the Stage module. It contains the essential tools to animate frame-by-frame drawings and paint them. It allows you to add layers and animation, and paint and adjust the timing. There are no effects, camera or other compositing tools included in this module. The Sketch module allows you to focus on the paperless animation tasks at hand without being distracted by other features that are not necessary to your work.

This guide is divided as follows:

- Toon Boom Harmony - About this Help System on page 1
- About Toon Boom Harmony on page 7
- Starting Toon Boom Harmony on page 11
- Interface on page 37
- Timing on page 87
- Character, Prop and Location Design on page 153
- Colour Styling and Colour Models on page 273
- Painting the Background on page 311
- Ink and Paint on page 325
- Paperless Animation on page 367
- Import on page 429
- Sound on page 473
- Export on page 499

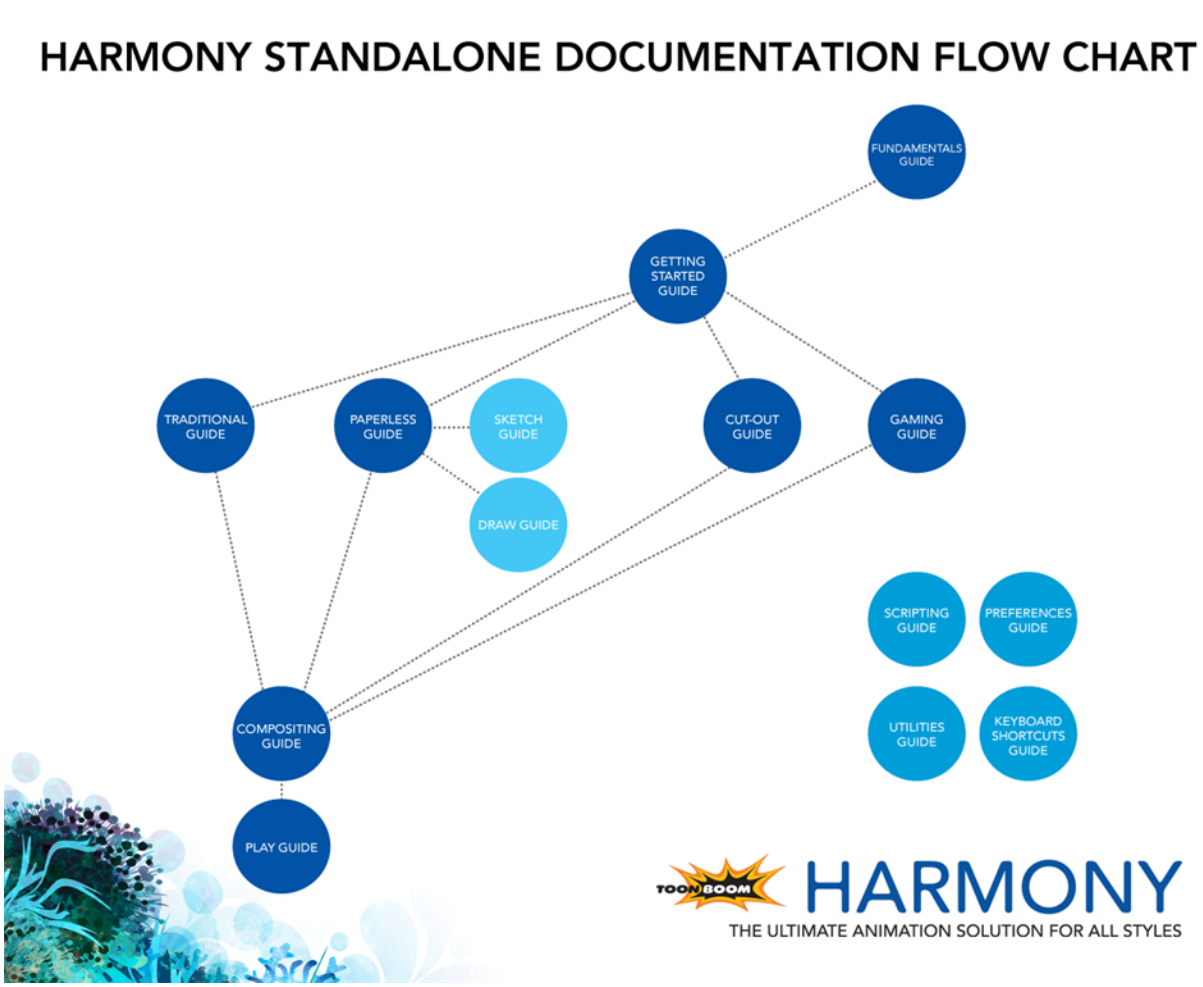
Chapter 2: Toon Boom Harmony - About this Help System

Toon Boom Harmony is an animation and digital content creation tool that offers you a wide array of features and options. Harmony is packaged in several different modules and allows you to create animation using the technique of your choice—see About Toon Boom Harmony on page 7.

This help system is built to guide you through the different workflows possible and explains which tool and module to use in a production context.

- Help Structure on the next page
- Tutorials and Other Help Tools on page 4

Help Structure



The fundamental concepts of animation and Harmony are explained in this guide. It covers the essentials of various animation workflows, basic animation principles, as well as Harmony's interface. Depending on what you want to do, you can either start with this Fundamentals Guide to get immersed into the world of Harmony and animation or go right to the Getting Started Guide, which covers the main functions and tasks. All conceptual and reference topics are omitted to get you up and running in a very short amount of time.

The core of this help system revolves around the main animation techniques you can use in Harmony to create animation:

- Traditional Animation
- Paperless Animation
- Cut-out Animation

If you use one of the animation technique listed above to produce games, you can complete your learning process using the Gaming Guide.

All workflows join in the compositing step of the process. All the information on compositing in Harmony can be found in the Compositing Guide. Finally, you can watch the rendered animations in the Play module. To learn how to use the Play module, refer to the Play guide.

If you are focusing on a single part of the workflow such as ink and paint or digital Xsheet creation, you can simply read the Fundamentals Guide and one of the corresponding module guides:

- Paint Guide
- Xsheet Guide
- Scan Guide
- Draw Guide
- Sketch Guide

Other satellite guides are also available to learn about additional information such as the preferences and keyboard shortcuts.

- Keyboard Shortcuts Guide
- Preferences Guide
- Scripting Guide
- Utilities Guide

If you are already a Harmony user and want to know more about the new features that were added to this latest version, refer to:

- Release Notes

Tutorials and Other Help Tools

Aside from the main product documentation, you can find supplementary material to learn more about Harmony. The Toon Boom website's online resources section offers a variety of videos and samples that can further your knowledge of Harmony.

- Video Tutorials: toonboom.com/resources/video-tutorials/harmony-network
- Templates and Sample Scenes: toonboom.com/resources/templates/harmony-network
- Tips and Tricks: toonboom.com/resources/tips-and-tricks/harmony-network
- White Papers: toonboom.com/solutions/white-papers

System Requirements

Here are the technical specifications for Toon Boom Harmony 11.1.0.

Harmony

Here are the specifications to install Harmony. Note that this does not encompass the network and server specifications for Harmony Network.

Requirements	Windows	Mac OS X
Operating System	Windows 7 64-bit Windows 8 64-bit	Mac OS X 10.7.5 Mac OS X 10.8.5 Mac OS X 10.9.3 or later
Processor	Intel Core i7, 3.4 GHz Intel Core i5, 3 GHz Intel Core 2 Duo	
Monitor	Optimized for 1920 x 1080 or higher Minimum requirement is 1280 x 800	
Memory	16 GB 8 GB 4 GB	
Video Card	**Fast** • NVIDIA Geforce GTX 780 **Medium** • NVIDIA Geforce GTX 560 • NVIDIA GeForce GTX 650 **Slow** • Intel HD Graphics 4000, 5000 • Intel Iris GraphicsNVIDIA GeForce GT 520, 620, 720	**Fast** • NVIDIA GeForce GTX 775M **Medium** • AMD Radeon HD 6770 • NVIDIA GeForce 750M **Slow** • Intel HD Graphics 4000, 5000 • Intel Iris Graphics • NVIDIA GeForce 320M • Radeon HD 4670
Drawing Tablet	**Best** • Wacom Intuos Pro • Wacom Cintiq **Basic** • Wacom Bamboo • Wacom Intuos	

Media Player	Apple QuickTime Player (free)

Chapter 3: About Toon Boom Harmony

Toon Boom Harmony is the most advanced professional animation software on the market. Bringing together an impressive 2D drawing toolset with the ability to work in a real 3D space, and import 3D models,

Top Features

- **Advanced Drawing Tools**: Texture brushes, and thick and thin pencil lines
- **Smart Colour Palettes**: Colour you can adjust on the fly
- **Character Rigging**: Hierarchy, deform, and effects for creating sophisticated rigs
- **Special Effects**: An array of effects including highlights and shadows, glows, blurs, and a full particle effects engine
- **Real 3D Camera**: A camera you can reposition in a full 3D space
- **3D Integration**: Allowing you to import 3D models, position and animate them in 3D space
- **Production Pipeline Integration**: Seamlessly integrate content from pre-production via Toon Boom Storyboard Pro

Toon Boom Pipeline

Toon Boom Harmony has been recognized for its excellence by winning many awards, including a Primetime Emmy® Engineering Award and the prestigious Ub Iwerks Annie Award for the integrated pipeline with Toon Boom Storyboard Pro.

Harmony works perfectly with Toon Boom Storyboard Pro for all pre-production phases. Therefore, animatics created in Toon Boom Storyboard Pro can be imported seamlessly in Harmony for animation and scene setup guidance.

Modules

Harmony Stand Alone is composed of the following modules:

- Stage on the next page
- Draw on the next page
- Sketch on page 9
- Play on page 9
- Cloud on page 9

These modules are all accessible from:

- Windows: **Start > Programs > Toon Boom Harmony 11.1.0**
- Mac OS X: **Applications > Toon Boom Harmony 11.1.0**

Stage

The Stage module is the core of Harmony. It comprises all the major drawing, animation and compositing features. It is used to work in the scene: design, character breakdown, cut-out animation, traditional animation, ink and paint, exposure sheet, timeline, effects, compositing, camera moves, colour styling, and so on.

You cannot create scenes in Stage Harmony Network, you require Control Center. You create them directly in Stage with Harmony Stand Alone.

To learn more about Stage, refer to the following guides:

- Fundamentals Guide
- Getting Started Guide
- Traditional Animation Guide
- Paperless Animation Guide
- Cut-out Animation Guide
- Gaming Guide
- Compositing Guide
- Play Guide
- Preferences Guide
- Keyboard Shortcuts Guide
- Scripting Guide
- Utilities Guide

Draw

The Draw module is a component of the Stage module. It contains all the tools necessary to create a paperless frame-by-frame animation project. There is no node system in this module, only the basic essential effects. Contrary to the Stage module, instead of creating effects in the Network view, you

simply create them in the Timeline view. The Draw module also includes all the scene setup and camera features for you to do the compositing for your project.

- Fundamentals Guide
- Draw Guide
- Preferences Guide

Sketch

The Sketch module is a component of the Stage module. It contains the essential tools to animate frame-by-frame drawings and paint them. It allows you to add layers and animation, and paint and adjust the timing. There are no effects, camera or other compositing tools included in this module. The Sketch module allows you to focus on the paperless animation tasks at hand without being distracted by other features that are not necessary to your work.

To learn more about the Sketch module, refer to the following guides:

- Fundamentals Guide
- Sketch Guide
- Preferences Guide

Play

The Play module is used to play back the rendered image sequences enabling the user to view the final scenes and compositing results.

To learn more about the Play module, refer to the following guides:

- Fundamentals Guide
- Play Guide

Cloud

Access your Database via the Cloud. When you're running a studio, you will most likely have a database set up. This enables all the artists working on your production to share the same scenes and assets.

What the Toon Boom Cloud enables you to do is to host this database on the Internet. When you do so, you can have freelancers log in from anywhere with an internet connection. Then they can download a scene from the database, work on it, and upload it again.

No more need to spend time copying files to an FTP. No need to have an admin exporting and importing files from the database. Do it all directly through the Cloud.

To learn more about the Cloud module, refer to the following guides:

- Installation Guide
- Control Center and Server Guide

Chapter 4: Starting Toon Boom Harmony

Once Harmony is installed, you are ready to start the application and animate! In this chapter, you will learn about starting the application, creating scenes, setting the resolution and opening the scenes.

- Starting Sketch on the next page
- Welcome Screen on page 13
- Creating and Opening Scenes on page 15
- Saving a Scene on page 19
- Setting the Scene Length on page 21
- Adding a Drawing Layer on page 22
- Scene Settings on page 23
- Verifying the Project Integrity on page 31
- Basic Commands on page 33
- Preferences on page 36

Starting Sketch

You can run the Harmony on the Mac OS X or Windows operating systems.

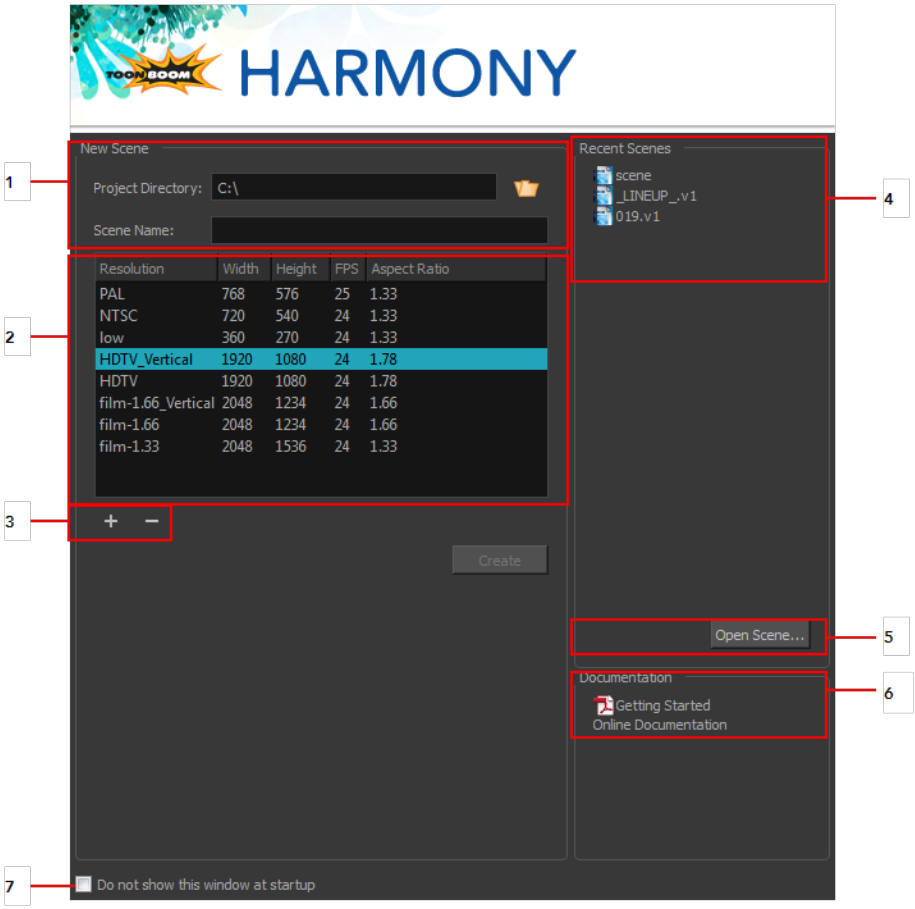
How to start Harmony Sketch

1. Do one of the following:
   - Mac OS X: Double-click on the Harmony **Sketch** icon or select **Applications > Toon Boom Harmony 11.1 > Sketch.**
   - Windows: Double-click on the Harmony **Sketch** icon or select **Start > Programs/All Programs > Toon Boom Harmony 11.1 > Sketch**

   Toon Boom Harmony opens.

Welcome Screen

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**.



The Welcome Screen allows you to:

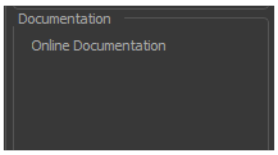
1. Create scenes
2. Choose the scene resolution
3. Add or delete a custom scene resolution
4. Open recent scenes from a list
5. Open scenes by browsing
6. Open the Help documentation
7. Open Harmony directly without opening the Welcome screen first.

   To display the Welcome screen later on, go to the top menu and select **Help > Show Welcome Screen**.

Accessing the Documentation

How to access the Harmony documentation

- In the Documentation section, click on the listed links to access the online documentation.



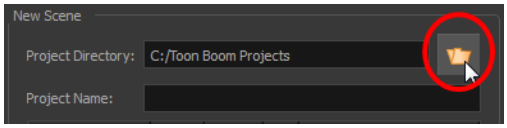
All the Harmony guides can also be opened directly in the software. From the top menu, select **Help > Help** or press F1.

Creating and Opening Scenes

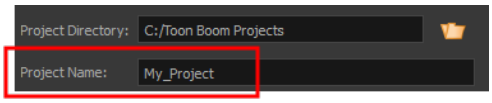
All scenes created via Harmony Stand Aloneare independent and local to the computer. You can create or open a scene using the Welcome screen or the File menu.

How to create a scene from the Welcome screen

1. To select the scene's location, in the Project Directory section, browse the files by clicking Browse button.



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



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

---

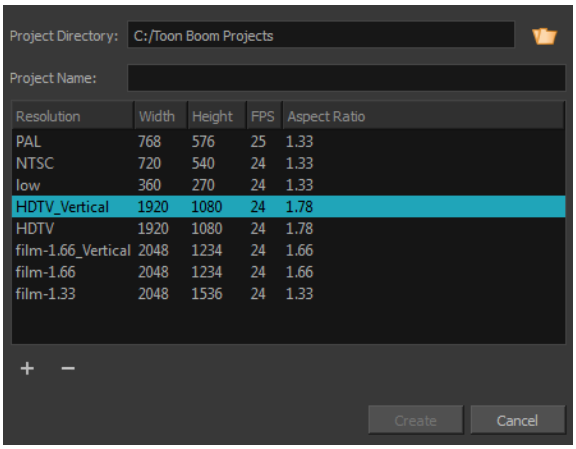
3. In the Resolution window, select the scene's resolution and click **Create**.

   A new scene is created.

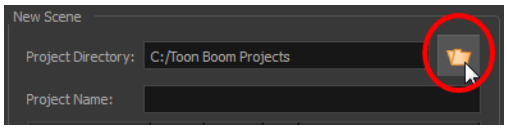
How to create a new scene from the File menu

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 (Mac OS X).

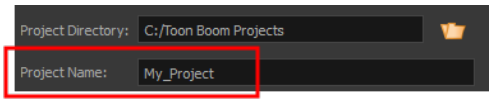
   The New Scene dialog box opens.



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



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



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**.

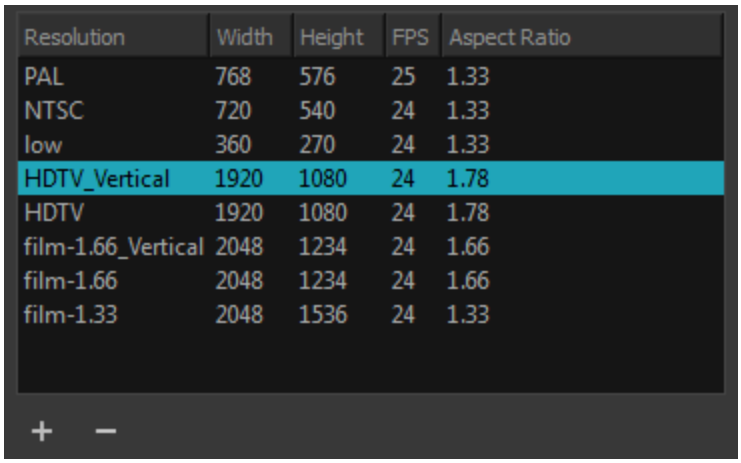
   A new scene is created.

How to create a scene with a custom resolution

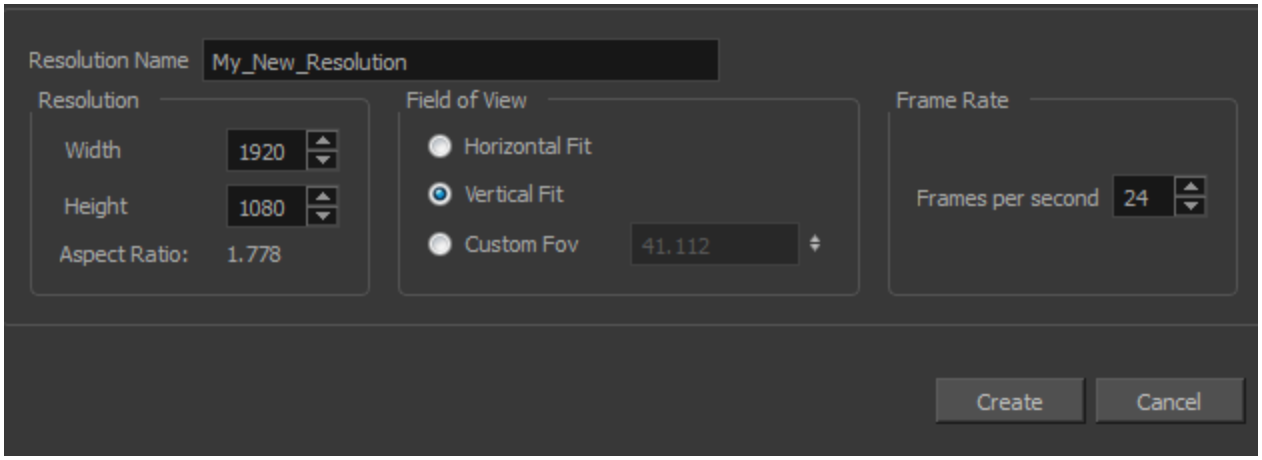
1. Create a new scene from the Welcome screen or from the File menu in Harmony.
2. Set the scene resolution by doing one of the following:
   - Select the scene resolution and click **Create**.

   A new scene is created.

   - 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, height and aspect ratio of the resolution.
- **Field of View**: Set the horizontal fit, vertical fit, or Custom Fov.
- **Frame Rate**: Type the scene's frame rate per second.

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 (Mac OS X).

   The Open Scene browser opens.
2. Browse and select the desired **`*.xstage`** file.
3. Click **Open**.

How to open a scene from the Welcome screen

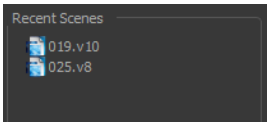
1. In the Recent Scenes section, click **Open Scene**.

   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 Recent Scenes 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.

Saving a Scene

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.

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 a new version of your scene. It is really important to note that the drawings and palettes are the same between ALL the scene versions. You can modify the timing, effects, parameters and camera motion, but if you modify the drawings, they will be changed everywhere.

You can also automatically save your work. Refer to the Preferences guide to learn more about this function.

How to save a scene

- From the top menu, select **File > Save**.
- Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).

How to save a scene as a new copy

1. From the top menu, 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.

How to save a new version of a scene

1. From the top menu, 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**.

Auto-Save

How to open the Preferences dialog box

1. Do one of the following:
   - Windows/Linux: From the top menu, select **Edit > Preferences**.
   - Mac OS X: Select **Stage > Preferences**.
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).
2. Select the **General** tab.
3. In the Save section, select the **Auto-save** option.

- **Interval (minutes):** This is the frequency at which the auto-save takes place.
- **Inactivity Interval (seconds):** When Auto-save is about to take place, it verifies if you are drawing or doing anything in the application. If so, Auto-save waits this number of seconds before attempting another save.
- **Ask Before Saving:** Before performing an auto-save, you are prompted with a message to confirm if you want to save or not. You can choose to turn off this option.
- **Enabled:** This enables the Auto-save feature. If you do not want the system to automatically save your work, deselect this option. The auto-save is off by default.

How to enable and disable the Open in Read Only mode if plugin syntax errors are detected preference

How to open the Preferences dialog box

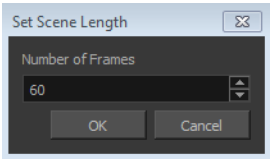
1. Do one of the following:
   - Windows/Linux: From the top menu, select **Edit > Preferences**.
   - Mac OS X: Select **Stage > Preferences**.
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).
2. Select the **General** tab.
3. In the Save section, enable or disable the **Open in Read Only mode if plugin syntax errors are detected** option.

Setting the Scene Length

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

How to set the scene length

1. From the top menu, select **Scene > Scene Length.**
   The Set Scene Length dialog box opens.

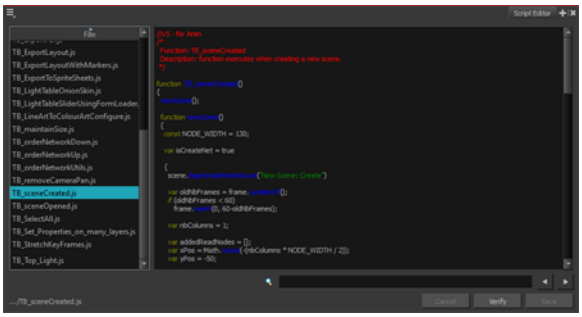


2. In the Number of Frames field, enter the number of frames needed.

New Scene Startup Script

When you create a new scene, the **`TB_sceneCreated`** script automatically sets the scene length to 60 frames and adds one of each of the following modules: drawing element, composite, display and write.

You can find the script in the Script Editor window.



You can customize this script to fit your current project needs. This way, you can set the default scene length to any number of frames you want, or even decide which types of elements and modules you want to be in your scene when you create it.

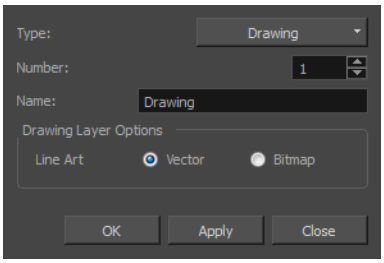
Refer to the Toon Boom Harmony Scripting Guide to learn more about using, creating and customizing scripts.

Adding a Drawing Layer

Now that your scene is set up, you can start adding drawing layers.

How to add a drawing layer from the Timeline view

1. In the Timeline view, click the Add Layers button.

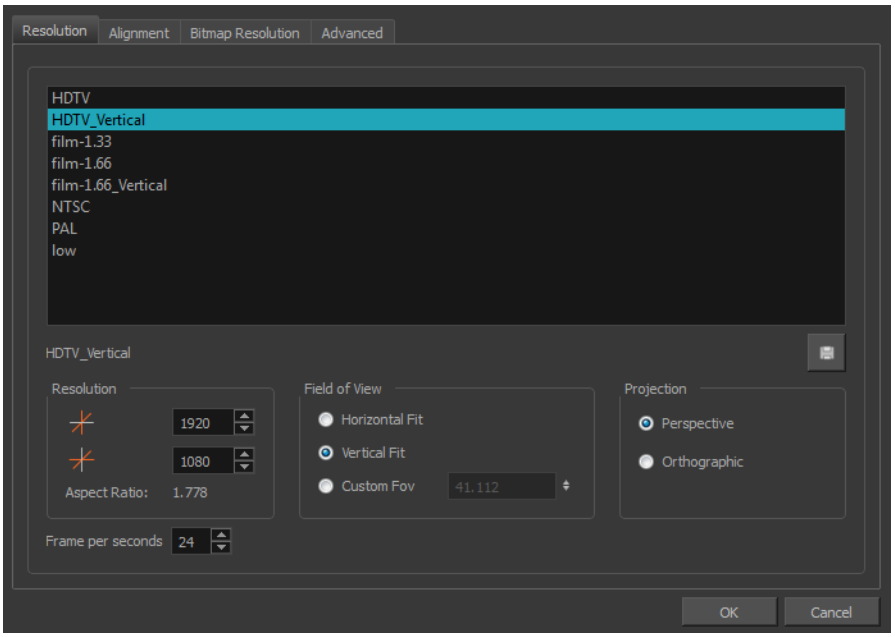


2. In the Name field, name your new layer.
3. Set the Line Art option to **Vector** to get a vector layer or to Bitmap to have a bitmap layer.
4. Click **OK**.

   A new drawing layer is added to the Timeline view.

Scene Settings

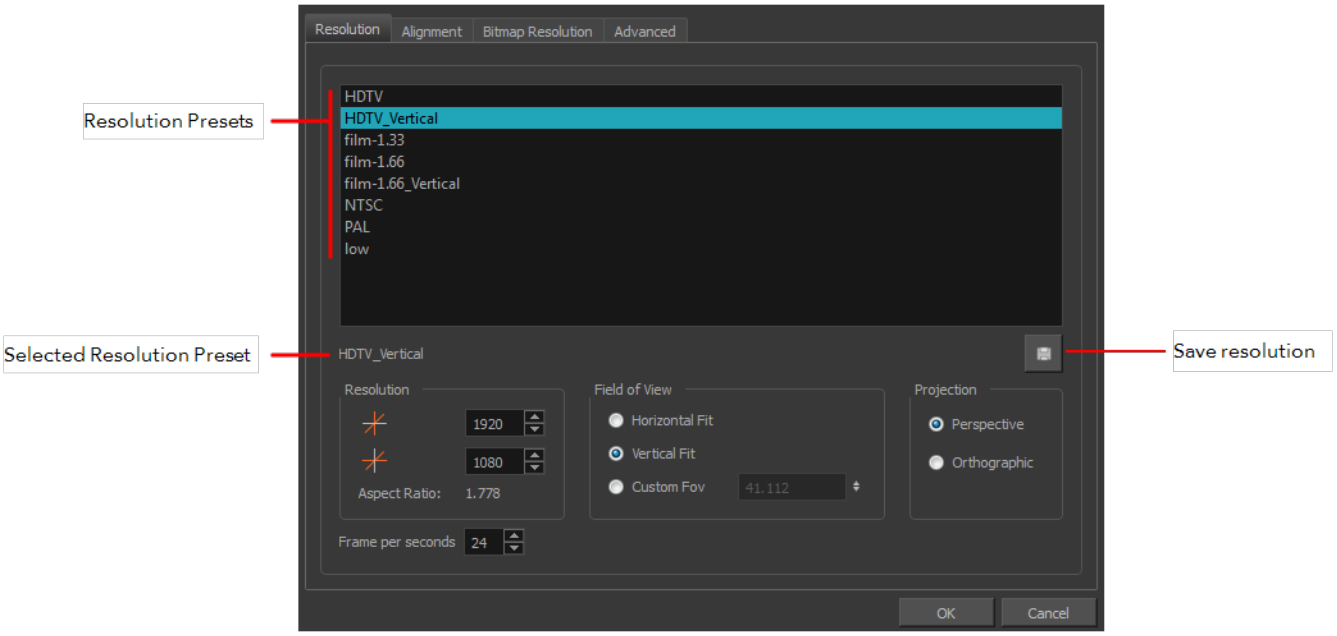
When you created your new scene, you set up the resolution and the alignment. However, if you want to change these initial settings later, you can do it using the Scene Settings dialog box. The different Scene Settings options are separated into four tabs.



How to open the Scene Settings dialog box

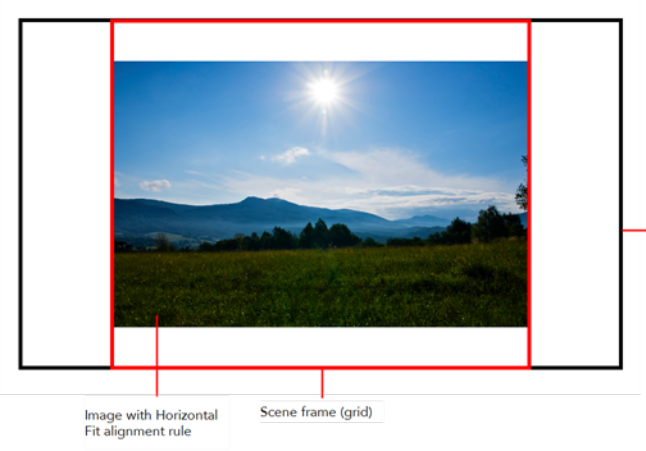
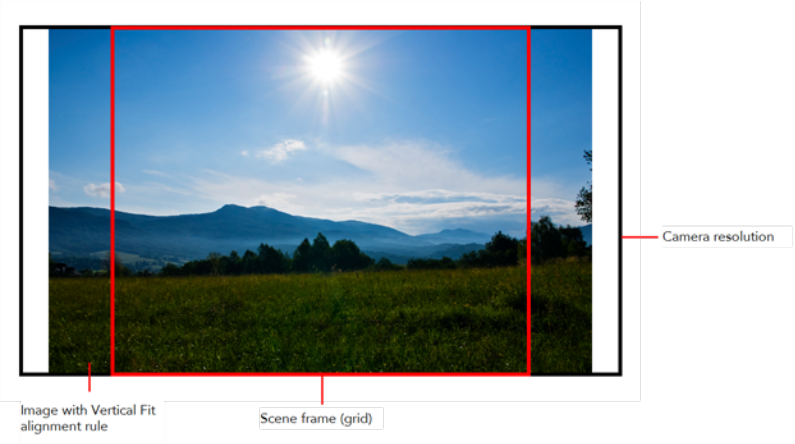
1. From the top menu, select **Scene > Scene Settings.**
   The Scene Settings dialog box opens.

Resolution Tab



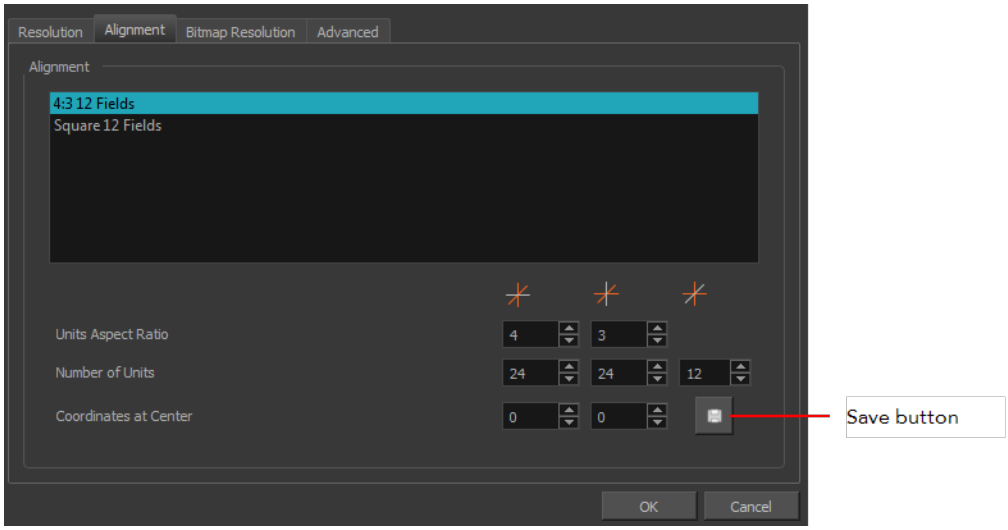
Parameter	Description
Resolution Presets	You can select your project's resolution (camera frame size) from this preset list. ▸ **HDTV:** High definition television delivers a higher quality image than standard television (4:3) does, because it has a greater number of lines of resolution. To take advantage of the superior quality your output device must be compatible with HDTV technology to make this resolution setting useful. ▸ **HDTV_Vertical**: The "vertical resolution" of HDTV_Vertical refers to how the images will be aligned in relation to the actual scene frame (default 4:3 grid). Note that the camera resolution and the scene frame are not the same. When working with 12 or 16 field drawing grids, the grid is a different aspect ratio from the camera frame. When you fit vertically, you fit the images with the top and bottom of the scene grid. ▸ **film-1.33:** Use this resolution setting for the academy film format that conforms to the standard 4:3 aspect ratio. ▸ **film-1.66**: Use this resolution setting for the widescreen film format that conforms to the 16:9 aspect ratio. ▸ **film-1.66_Vertical**: This is essentially the same as film-1.66. Refers to how the drawing is fit into the scene frame. When working with 12 or 16 field drawing grids, the grid is a different aspect ratio from the camera frame. When you fit vertically, you fit the images with the top and bottom of the scene frame.

	‣ **NTSC:** This is the standard analogue television broadcasting system used in North America and conforms to the North American standards on how rectangular pixels are displayed for computer and television screens. ‣ **PAL:** This resolution works best with the European format for television and computer screens, as the rectangular pixels are displayed at a different orientation. ‣ **Low:** This format is ideal for videos destined for the web, where size and fast download of a video file might take precedence over quality.
Selected Resolution Preset	Displays the selected resolution preset.
Save Resolution Setting	Click the Save Resolution button after you define your new resolution to save it as a preset.
Pixel Dimensions	Displays the pixel dimensions for your project resolution. If you decide to type in the pixel dimensions, or use the up and down arrows to change the pixel increments, you will have to save your custom selection in order to save it as a new preset. It will then appear in the resolution selection list. It doesn't modify the current resolution preset.
Aspect Ratio	Displays the ratio between the horizontal and vertical dimensions of the camera framing. Each resolution setting has a preset aspect ratio that cannot be changed.
Frame per second	Sets the frame rate for your project. The higher the frame rate, for example 30 fps, the faster the animation will pla. The lower the frame rate, for example 12 fps, the slower your animation will play. Avoid going under 12 frames per second as your animation will have a choppy playback. The human eye requires a minimum of 12 frames per second to perceive a fluid animation.
Field of View	Use these options to define the FOV (field of view) of the camera (angle of the camera cone) and how the drawing elements (and drawing grid) align to the scene grid. The drawing grid is always scaled proportionally to a 4:3 ratio (unless you change the scene alignment), therefore changing the Field of View setting may not show a visible difference if your project resolution is also 4:3, such as NTSC. ‣ **Horizontal Fit:** The camera resolution is set to fit the left and right edges of the scene grid.

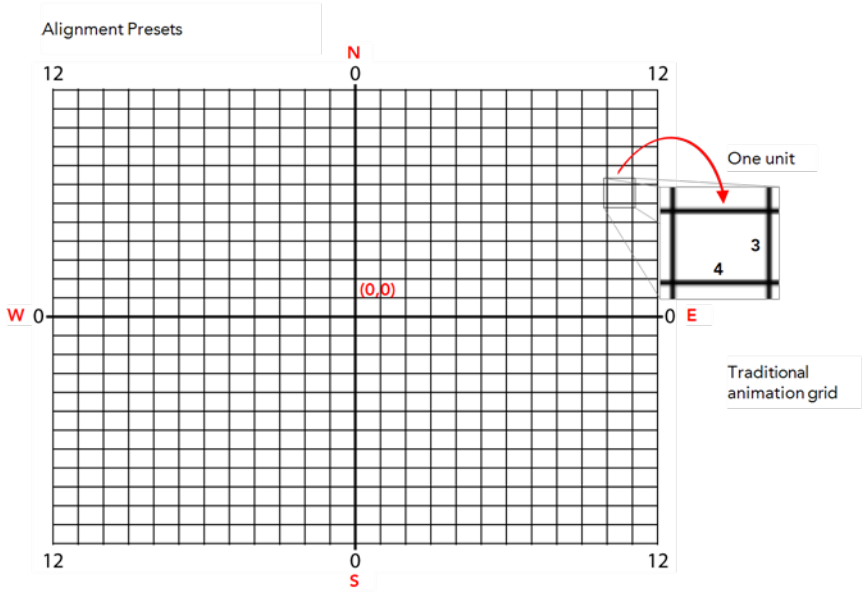
	 • **Vertical Fit:** The camera resolution is set to fit the top and bottom edges of the scene grid.  • **Custom Fov:** After selecting this option, use the now-active field to the right to enter in a value, in degrees, of the angle that you want the camera cone to be. Increasing this value will make the camera cone wider (the angle is more obtuse), widening the FOV and making the grid and all elements appear farther away. Decreasing the default value will create the opposite effect.
Projection	The Projection settings allows you to modify the type of camera your scene is using. You can either use a perspective camera (regular camera) or orthographic camera (no perspective). • **Perspective:** The Perspective option is the default and most common option. Objects placed closer to the camera will be displayed bigger and objects placed further away will be displayed smaller. • **Orthographic:** The Orthographic option is very specific to the gaming pipeline. It changes the camera from Perspective to Orthographic, meaning that there is no more perspective in the Camera view. Objects, when moved in depth will not change size.

	There is more information available about this option in the Gaming user guide. In order to create scenes with the Orthographic camera by default, you need to create a new custom scene resolution.

Alignment Tab



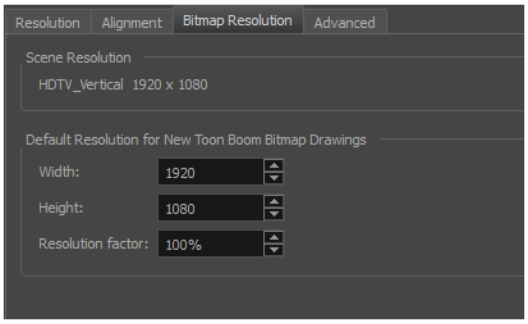
Parameter	Description
Alignment	The Alignment presets give you two preset options: • **4:3 12 Fields**: Defines the units of your project to have a 4:3 ratio and sets up 12 of these units to run both vertically and horizontally in four cardinal quarters (NW, NE, SW, SE). This Alignment preset is visible in the FOV and drawing grids. • **Square 12 Fields**: Defines the units of your project to have a 1:1 or square ratio and sets up 12 units to run both vertically and horizontally in four cardinal quarters (NW, NE, SW, SE). This Alignment preset is NOT visible in the FOV and drawing grids.
Units Aspect Ratio	In the Units Aspect Ratio fields, enter the aspect ratio of the grid you will use. The aspect ratio describes the shape of the grid unit. A square grid unit would have the ratio 1:1, whereas a grid unit of aspect ratio 4:3 is a unit with one side 1.33 times as big as the other side.

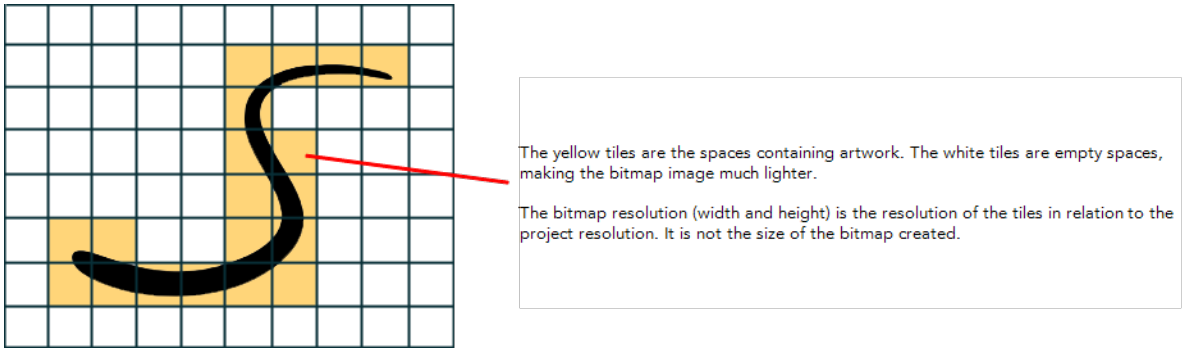
	 If the aspect ratio you want to use is 1:1, enter 1 in the Left/Right field (X-axis) and 1 in the Up/Down field (Y-axis). The default Aspect Ratio is set to 4:3 as it is the one used by traditional animators, who are accustomed to working with the grid system described above.
Number of Units	In the Number of Units fields, enter the number of horizontal, vertical and depth units for your scene's grid. Animators who prefer to work traditionally will understand the default setting of 24 units horizontal by 24 units vertical as it, once again, corresponds to the grid above. Twelve is a common setting for the field depth. Those who prefer to work in pixels should enter the pixel dimensions (3) of their project. This way if you want to move something over 600 pixels you just need to type in 600 units.
Coordinates at Centre	In the Coordinates at Centre, you can enter a new coordinate for the centre of your scene. By default, the (0,0) centre is set in the middle of the grid as shown in the grid above. If you want to change the centre of your grid, for example to the upper left corner, you would enter (-12, 12), -12 units across and 12 units up. That is of course unless you changed the number of units to match the pixel dimensions of your scene. Then you would enter negative half the width and positive half the height.
Save	Saves your current Alignment settings and be able to select them later from the list.

If you change your scene's alignment from 4:3 12 Fields to Square 12 Fields part way though your project, you may find that the animation grid becomes offset. To correct this, choose the following setting from the Layer Properties panel's Advanced tab: **Alignment > Alignment Rule > Centre First Page**.

Bitmap Resolution Tab

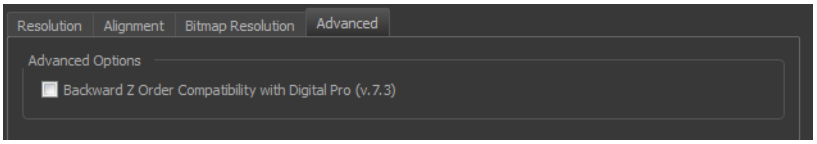
The bitmap resolution settings at the scene level affects newly created bitmap art layers.





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

Advanced Tab



The Advanced tab contains an option for Toon Boom Digital Pro release 7.3 and Harmony release 7.3.

Since version 7.8, the method in which Z-Ordering is calculated has been optimized. Enable this option if you want to use the version 7.3 system.

Toon Boom Digital Pro and Toon Boom Harmony 7.3 allowed smaller values on the Z-axis such as 0.0001. Since version 7.8, the Z-ordering calculation is now optimized and allows only larger values such as 0.001.

Verifying the Project Integrity

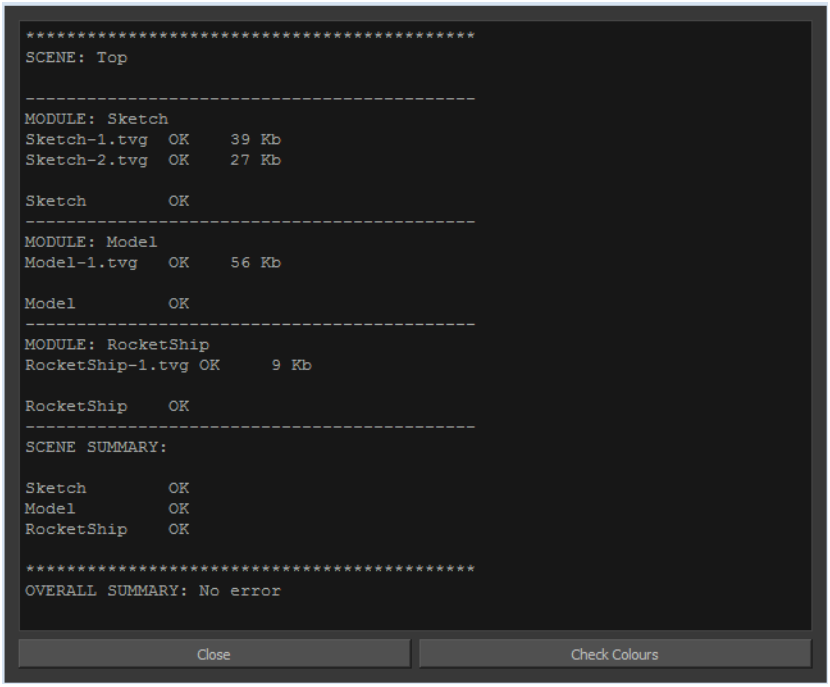
The Check Files command verifies the integrity of the drawing and palette files in your project.

How to open the Check Files dialog box

- From the top menu, select **File > Check Files**.

Check Files

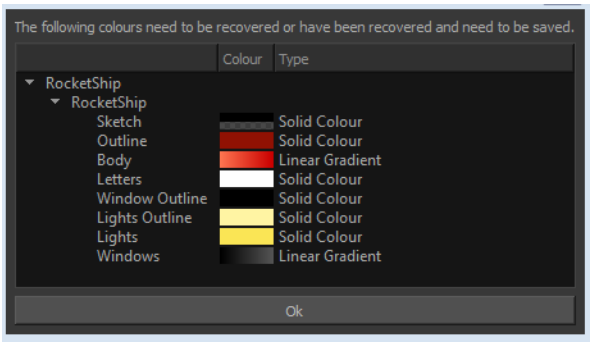
Use the Check Files dialog box to verify that the data is consistent, correct, and accessible.



- Click **Check Colours** to open the Check Colours dialog box.

Check Colours

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



Related Tasks

Creating and Opening Scenes....15
Saving a Scene....19
Setting the Scene Length....21
Adding a Drawing Layer....22

Reference Materials

Scene Settings....23

Basic Commands

This table lists the most common commands used in Harmony.

Command	Action	Access Methods
New	Starts a new scene while closing any scene already open. The New Scene dialog box opens, asking for directory, name, and resolution information.	**File > New** Press Ctrl + N (Windows/Linux) or ⌘ + N (Mac OS X).
Open	Displays the Open Scene dialog box. Browse your file system for a scene file. The Open command is not disabled when a scene is opened. You can open a new scene from the current one and the previous scene will be closed.	**File > Open** Press Ctrl + O (Windows/Linux) or ⌘ + O (Mac OS X).
Open Recent	Displays a quick access list to view and open recently used Harmony files.	**File > Open Recent**
Open Recent > Clear	Clears the recently opened Harmony files list.	**File > Open Recent > Clear**
Close	Closes the currently opened scene, but does not close the Harmony application.	**File > Close**
Save	Saves all changes made to the opened scene, drawings, palettes, and palette lists.	**File > Save** Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
Save As	Saves the current state of a scene as another scene. The Save As window prompts you to give a new name and choose a different location to this scene	**File > Save As**

Command	Action	Access Methods
	before saving it. This will create a complete scene directory for the new scene. The scene name **cannot** exceed 23 characters.	
Save As New Version	Saves the current scene as another version. The Save Version dialog box prompts you to give a name for this new version. This will create a new .xstage file in your current project directory.	**File > Save As New Version**
Quit	Closes HarmonyHarmony Stage.	Windows/Linux: **File > Quit** Mac OS X: **Stage> Quit**
Cut	Removes selected objects. You can then paste the object or its properties to another object.	**Edit > Cut** Press Ctrl + X (Windows/Linux) or ⌘ + X (Mac OS X).
Copy	Copies selected objects and properties.	**Edit > Copy** Press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
Paste	Places an object you cut or copied into the location you select in the Camera, Drawing and Timeline views.	**Edit > Paste** Press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).
Delete	Removes selected objects.	**Edit > Delete** Delete
Select All	Selects all drawing objects in the current drawing window in the Drawing, Timeline and Camera views. This	**Edit > Select All** Press Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

Command	Action	Access Methods
	helps you manage multiple objects as one when moving them.	
Deselect All	Deselects all selected objects in the Drawing and Camera views.	**Edit > Deselect All** Esc
Undo	Removes remove the last change made to your project. Harmony supports multiple undo, so you can undo changes you made in the order you made them.	**Edit > Undo** Press Ctrl + Z (Windows/Linux) or ⌘ + Z (Mac OS X).
Redo	Redoes and operation you have undone that you later decide to keep. This command is active only after you use the Undo command.	**Edit > Redo** Press Ctrl + Shift + Z (Windows/Linux) or ⌘ + Shift + Z (Mac OS X).
Help	Launches the Toon Boom Harmony Online Help system, complete with instructions on how to use the system. This requires an internet connection.	**Help > Help**
Toon Boom Harmony on the Web	Launches the Toon Boom Harmony website, which features a Support and Community > Forum section.	**Help > Toon Boom Harmony on the Web**
About	Use the About command to access general information about the software.	Windows/Linux: **Help > About** Mac OS X: **Stage > About**
Show Welcome Screen	Brings back the Welcome screen	**Help > Show Welcome Screen**

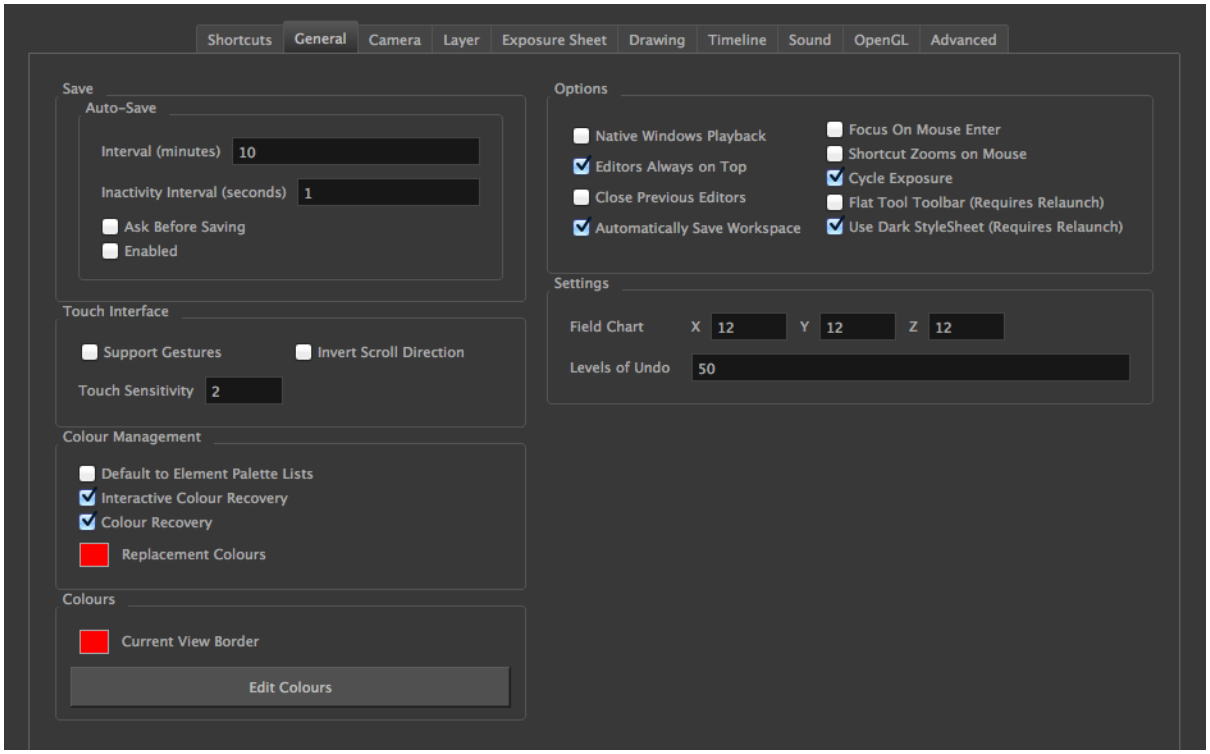
Preferences

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.

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

How to open the Preferences dialog box

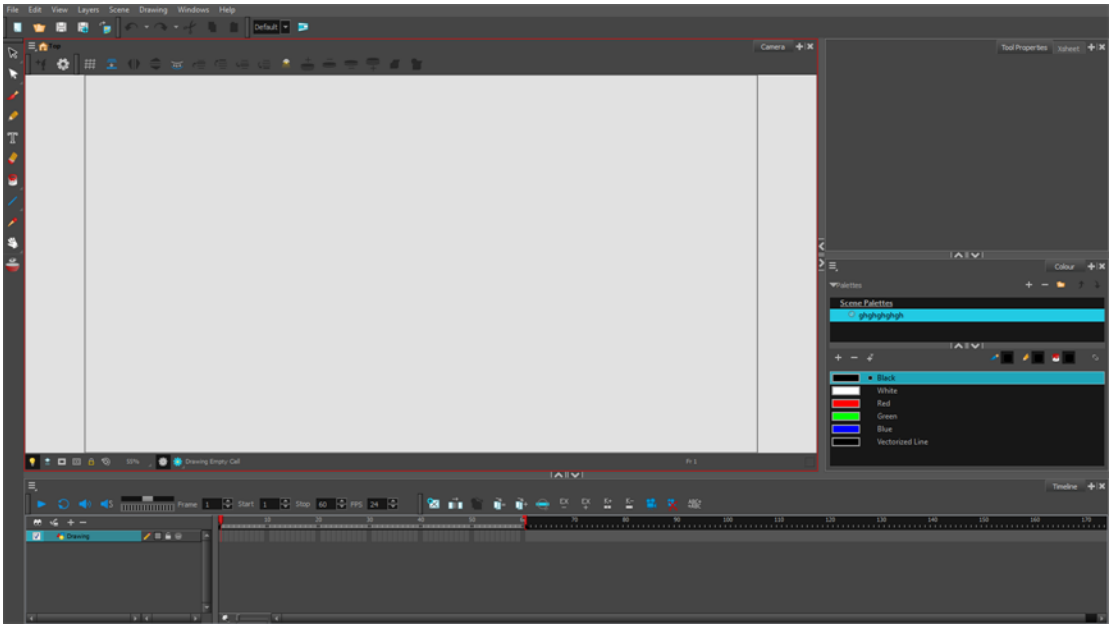
1. Do one of the following:
   - Windows/Linux: From the top menu, select **Edit > Preferences**.
   - Mac OS X: Select **Stage > Preferences**.
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).



Chapter 5: 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.

Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

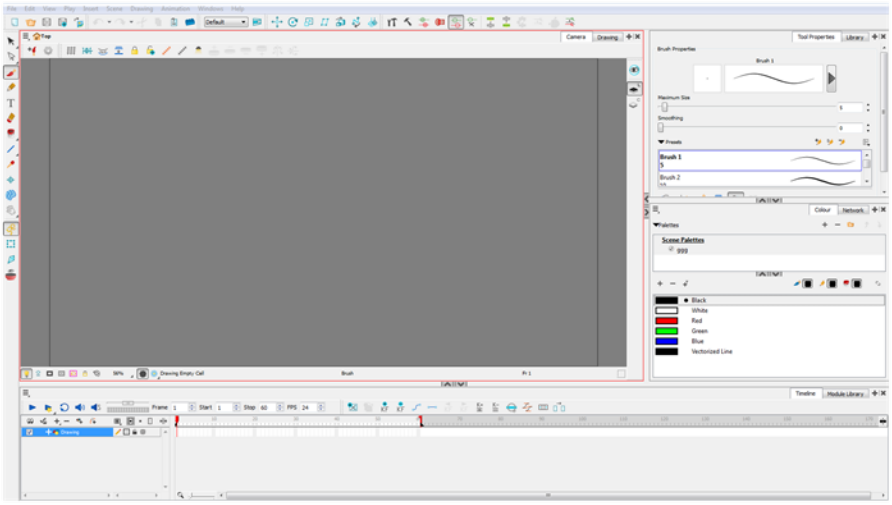


The Harmony interface is set to a dark theme by default. You have the option of switching to a light theme.

How to change the interface theme

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

   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.



This chapter is divided as follows:

- Menus on the facing page
- Managing the Views on page 41
- Managing the Toolbars on page 45
- Managing the Workspace on page 50
- View References on page 55
- Toolbar References on page 78
- Interface Navigation on page 81

Menus

Harmony has a large number of functions and options that you can access from the following menus:

Top Menu

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

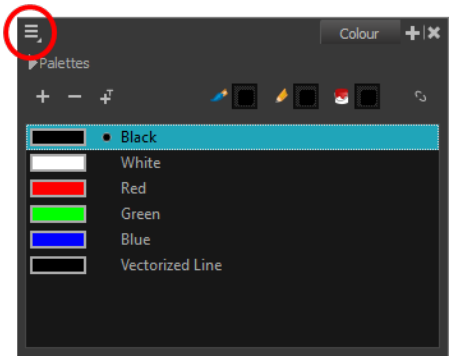
The top menu contains the following categories:

- File
- Edit
- View
- Layers
- Scene
- Drawing
- Windows
- Help

On Mac OS X, there is a Stage category containing the following commands:

- Preferences
- About
- Quit

View Menu



Some views have their own menu. These menus contain commands specifically related to that view.

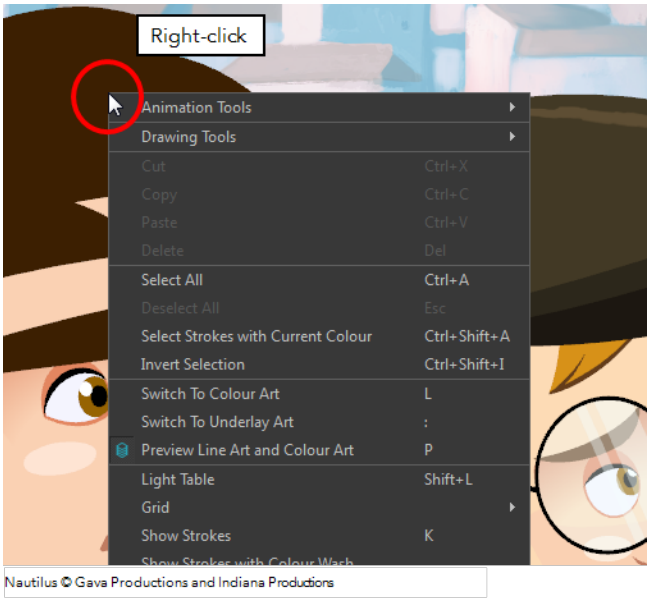
How to access the view menu

1. In the view's top-left corner, click the Menu button.
   A list of commands is displayed.

You can find a view menu in the following views:

- Camera view
- Colour view
- Drawing view
- Function view
- Integrated Help view
- Library view
- Model view
- Module Library view
- Network view
- Perspective view
- Script Editor view
- Side view
- Timeline view
- Top view
- Xsheet view

Quick Access Menu



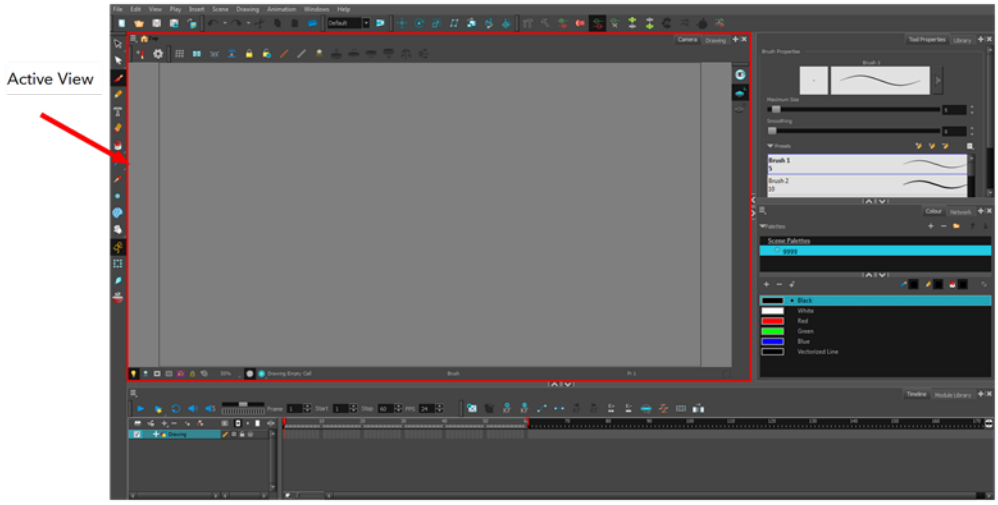
Each view has a quick access menu containing commands you will use most often. This menu is accessed by right-clicking anywhere in the view.

Managing the Views

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

Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

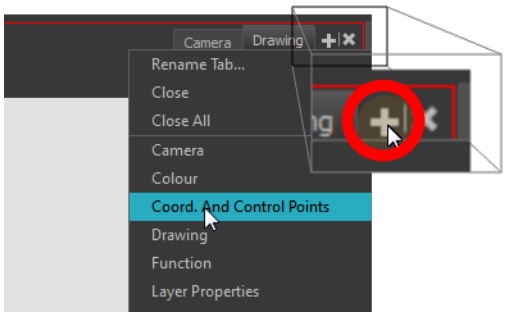
It is important to know about the active view. When a view is active, a red rectangle appears around the view. Keyboard shortcuts and top menu options are linked to the active view. If a menu option is greyed out, it either means it does not apply to your layer, drawing or other type of selection or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



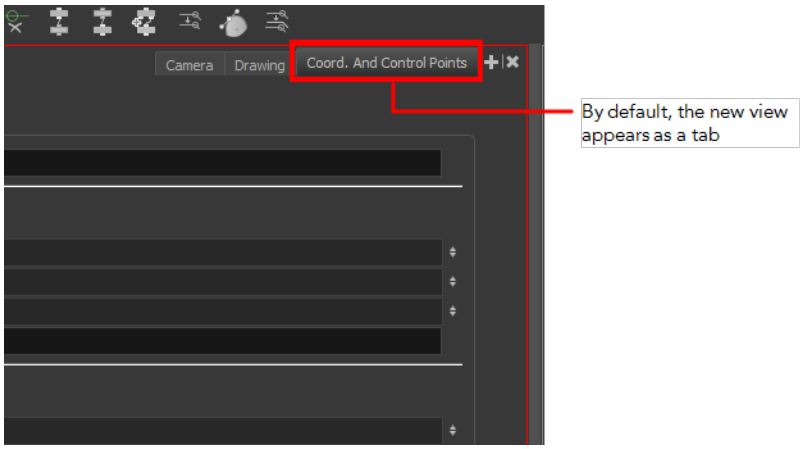
Workspace modifications are automatically saved when you exit the application unless you deselected the Automatically Save Workspace option in the Preferences dialog box.

How to add a view

1. Select the view you want to add from **Windows >** *the desired view*.
   - You can also use the Window drop-down menu button in each view. Click the **Add View** button and select a view from the list.You can open several instances of the same view except for the Timeline, Tool Properties, Colour and Drawing views.

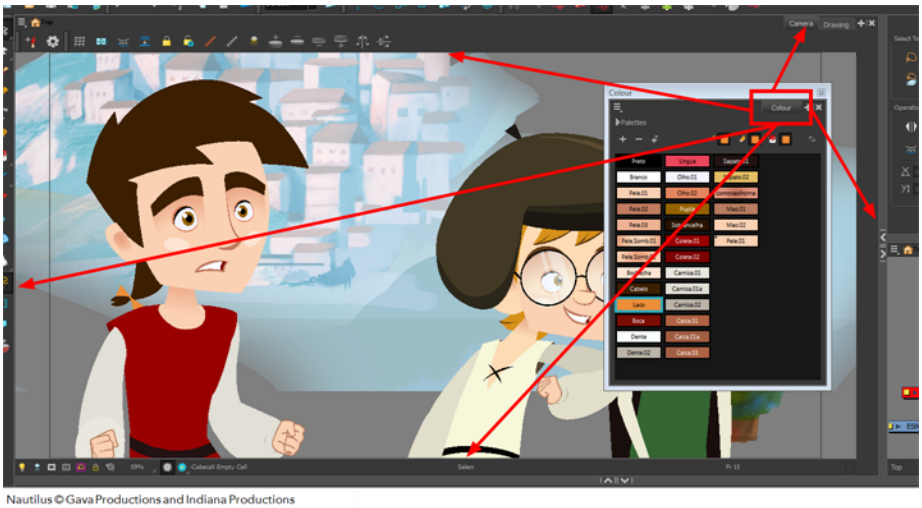


By default, the view appears tabbed.



How to dock a floating window in the workspace

1. Drag the window's tab onto one of the workspace's views. You can drop the view onto the other existing tabs to tab the view with the other ones. You can also drop the view onto either side of an existing view to insert the floating one beside it. When you get close to one of the edges, a black rectangle will appear, indicating where the view will be inserted.

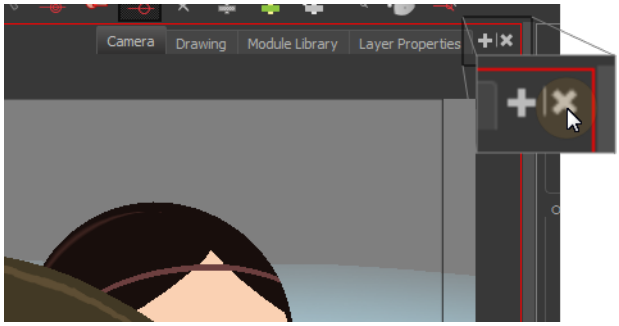


How to close a view

1. Click the Close View

button.

- If there are several tabs in the same window, hold Shift down and click the Close View button to close all tabs together.



How to swap views around

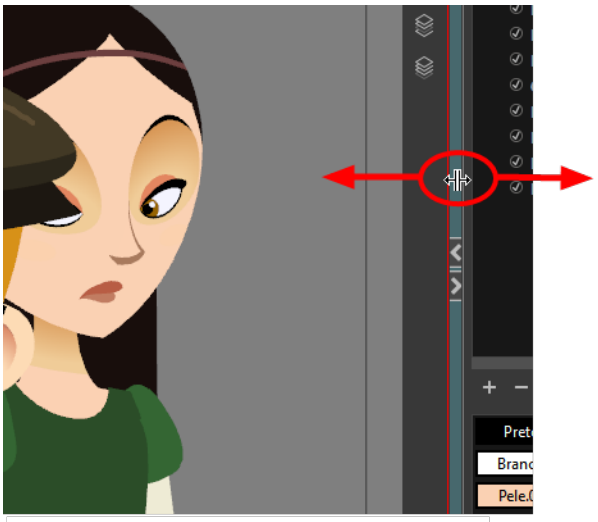
1. Select the view's tab and drag it onto one of the view's separators, top area or onto another view's tab.
2. When a blue rectangle outline appears showing an available location for the view, release the mouse button and drop the view tab into position. One of three things will happen:

Nautilus © Gava Productions and Indiana Productions

- The view becomes a tabbed window.
- The view becomes a floating window.
- The view becomes a new docked window.

How to resize a view

1. Position your cursor on the edge of the view you want to resize.
2. When you see the Resizing cursor, click and drag the side of the window to the desired width or height.



You can also temporarily hide a view to get more working space.

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.

Managing the Toolbars

Harmony contains toolbars which, by default, are located at the top of the interface. Some of the workspace's 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.

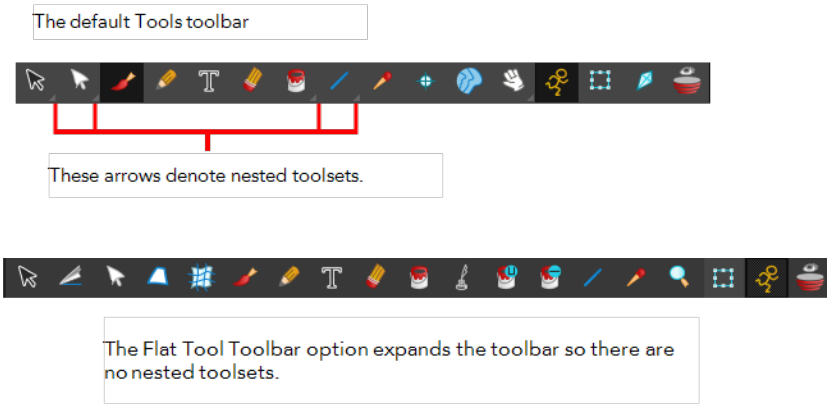
Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

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 View toolbars can be customized to contain your favourite tools and options. Using the Toolbar Manager window, you can organize different toolbars to suit your working style.

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 which tool icons appear in the toolbar to fit your work pattern.



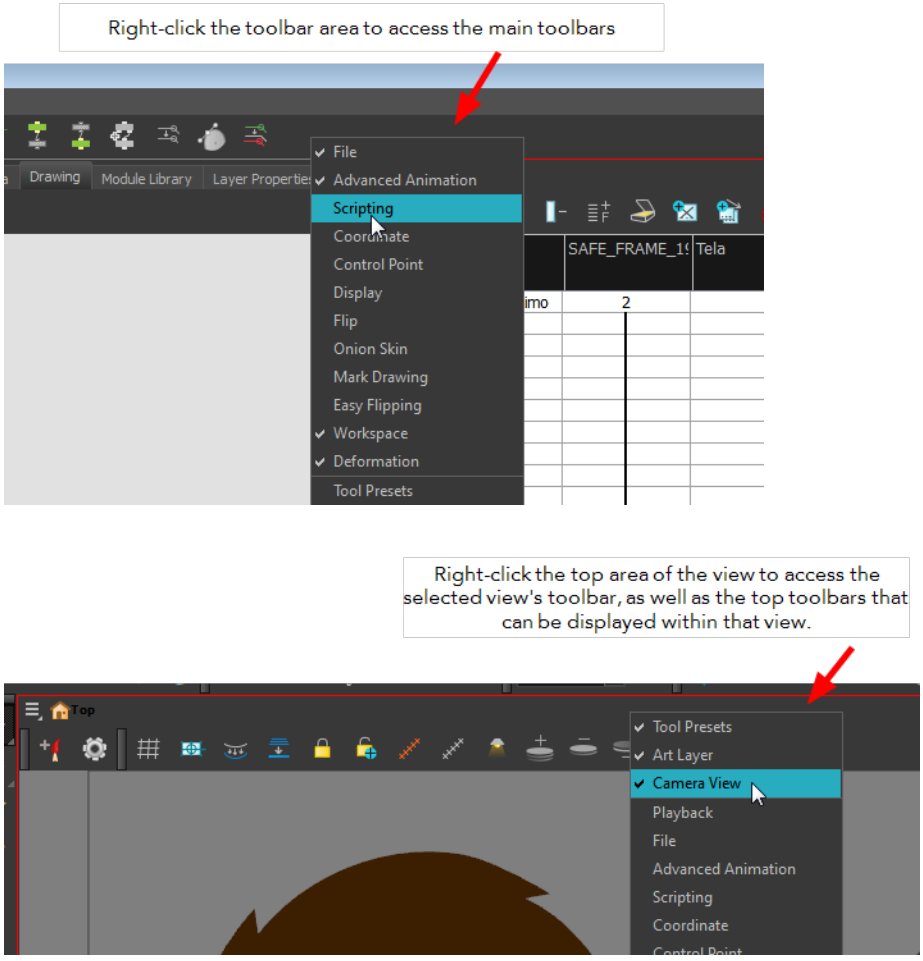
If the default toolbar does not contain the tools you require, you can customize the toolbar.

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.

How to show and hide a toolbar

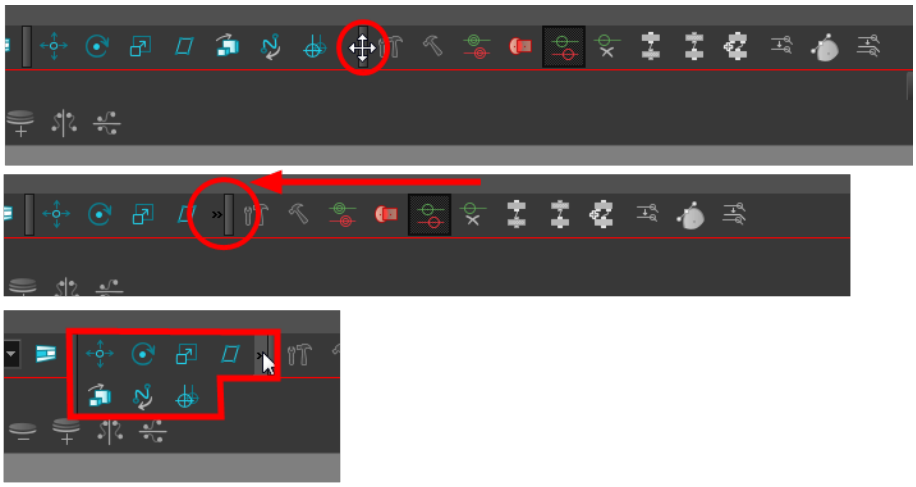
1. From the top menu, select **Windows > Toolbars >** *the desired toolbar*.

- 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.



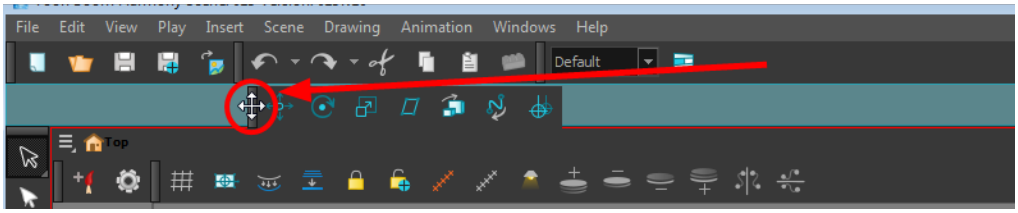
How to resize a toolbar

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.

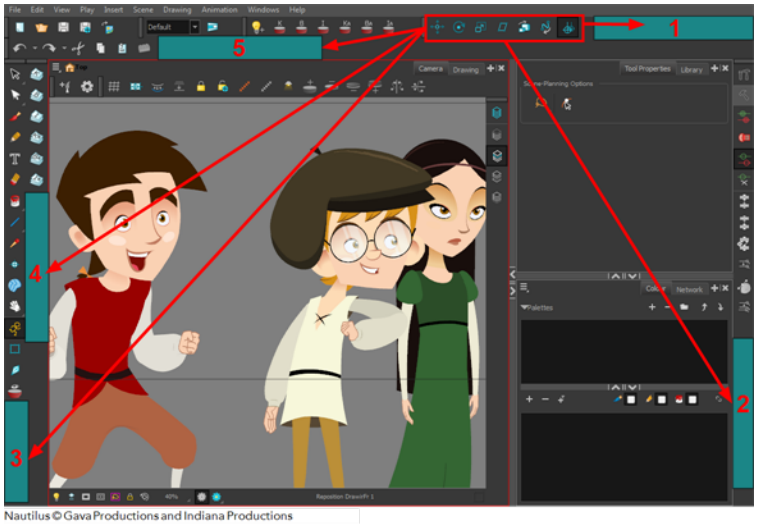


How to move a toolbar

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.



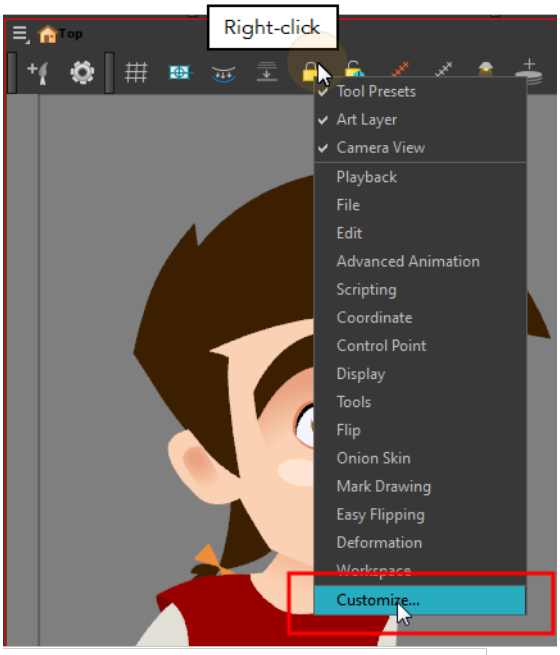
Nautilus © Gava Productions and Indiana Productions

- 1. Dock to the top toolbar area.

- 2. Move a toolbar down a row.
- 3. Dock to the left toolbar area.

How to customize a view toolbar

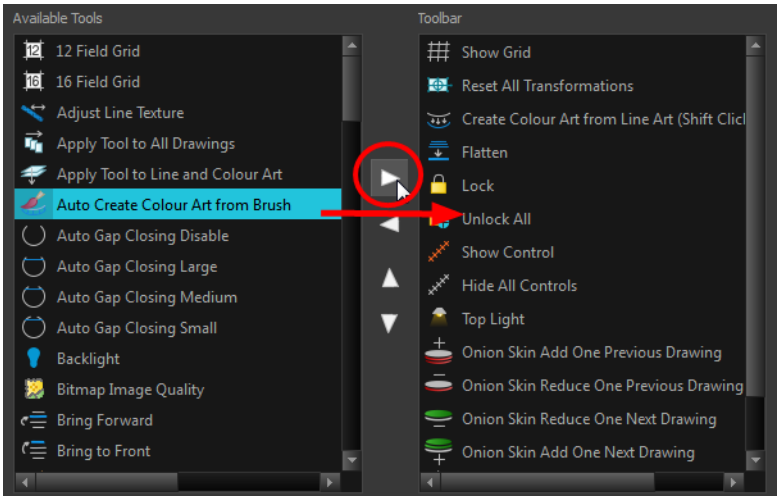
1. In the chosen view, right-click on any button in the toolbar where you want to add or subtract a new button. You can also reorder the buttons. Make sure the button you right-click on is active.
2. From the menu, select **Customize**.



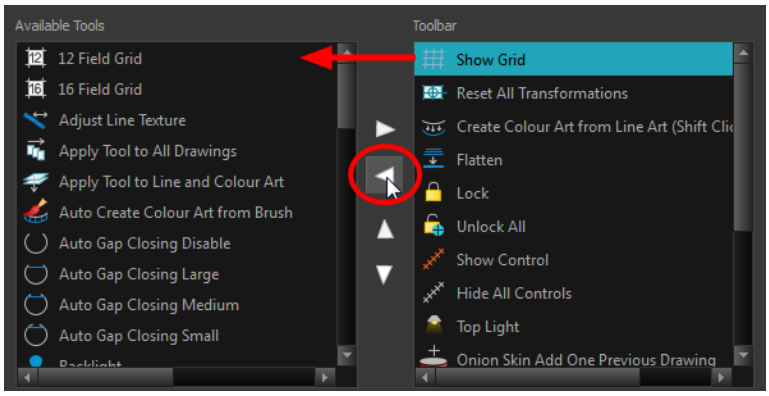
Nautilus © Gava Productions and Indiana Productions

The Toolbar Manager window opens.

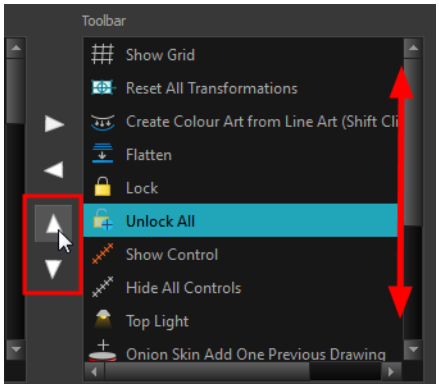
3. To add a new icon to your toolbar, select the tool or command from the Available Tools list and click the Right Arrow button to switch it to the Toolbar list.



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.

How to use enable the Flat Tool Toolbar preference

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **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.

Managing the Workspace

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.

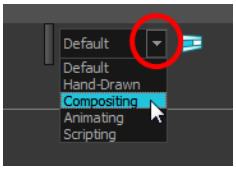
By default, when you modify the look of a workspace, it is automatically saved. If you prefer to keep your workspaces as they are and only save the modifications when you really want to, you must disable the Automatically Save Workspace option.

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.

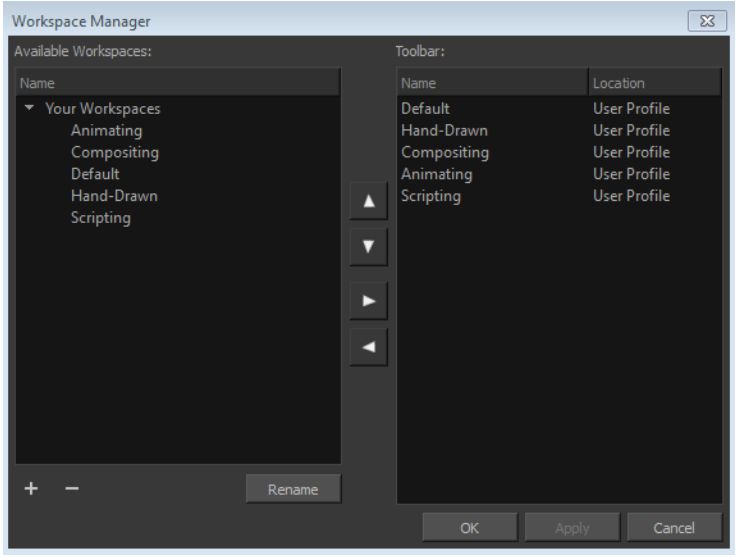
You can also restore modified workspaces to their original default layout if you do not like the current modifications or inadvertently closed some windows.

How to load a workspace

1. Do one of the following:
   - From the top menu, select **Windows > Workspace > Workspace.**
   - Select a workspace from the Workspace toolbar.



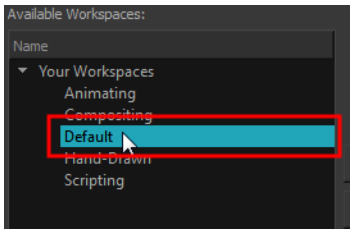
How to open the Workspace Manager



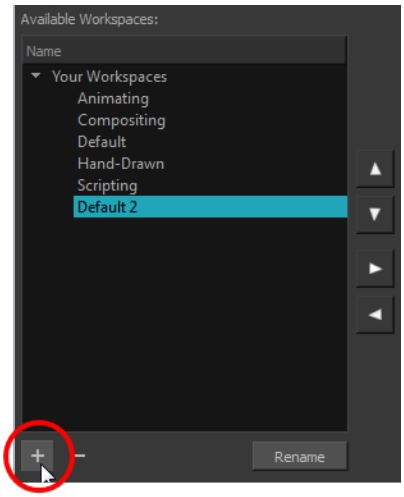
1. Do one of the following:
   - In the Workspace toolbar, click the button.
   - From the top menu, select **Windows > Workspace > Workspace Manager**.

How to create a new workspace

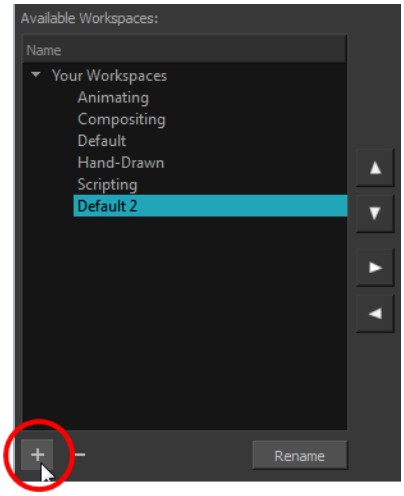
1. Open the Workspace Manager.
2. In the Available Workspaces list, select an existing workspace.



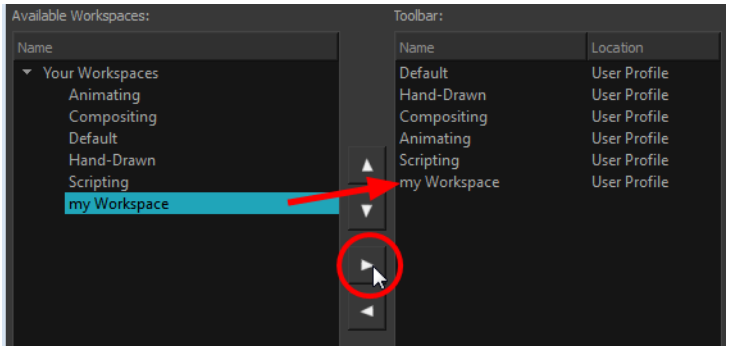
3. At the bottom of the Available Workspaces list, click the Add button to add a workspace.



4. Select the new workspace that was created. Click **Rename** and give it a new name.



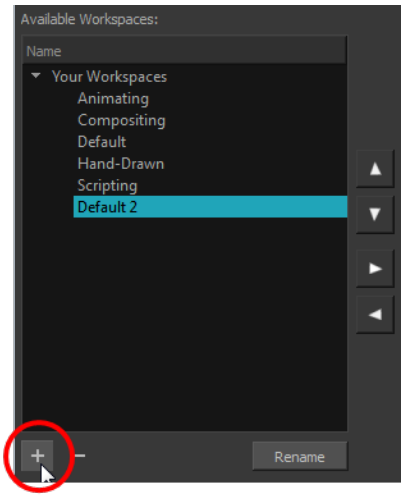
5. Select the new workspace and click the Right Arrow button to move it to the Workspace toolbar.



6. Click **OK**.

How to rename a workspace

1. Open the 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**.

How to disable the Automatically Save Workspace preference

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

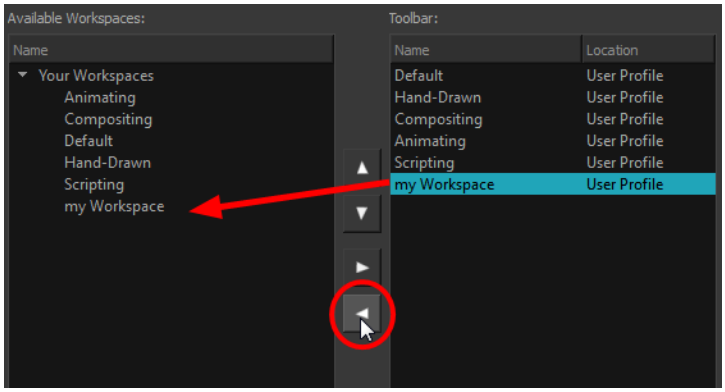
1. Do one of the following:
   - In the Workspace toolbar, click the Save Workspace button.
   - You can also select **Windows > Workspace > Save Workspace**.

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 delete a workspace

1. Open the 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**.

How to show a workspace

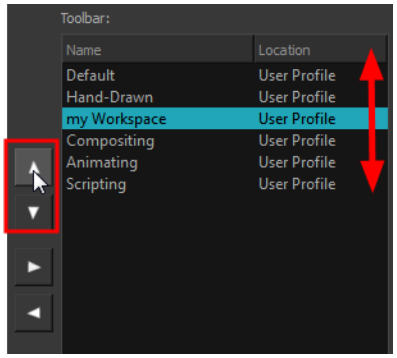
1. Open the Workspace Manager.
2. In the Available Workspaces list, select the workspace to be displayed and click the Right Arrow button to move it to the Workspace toolbar.
3. Click **OK**.

How to hide a workspace

1. Open the 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**.

How to reorder workspaces

1. Open the 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**.

How to restore the default workspaces

- From the top menu select **Windows > Restore Default Workspace**.

View References

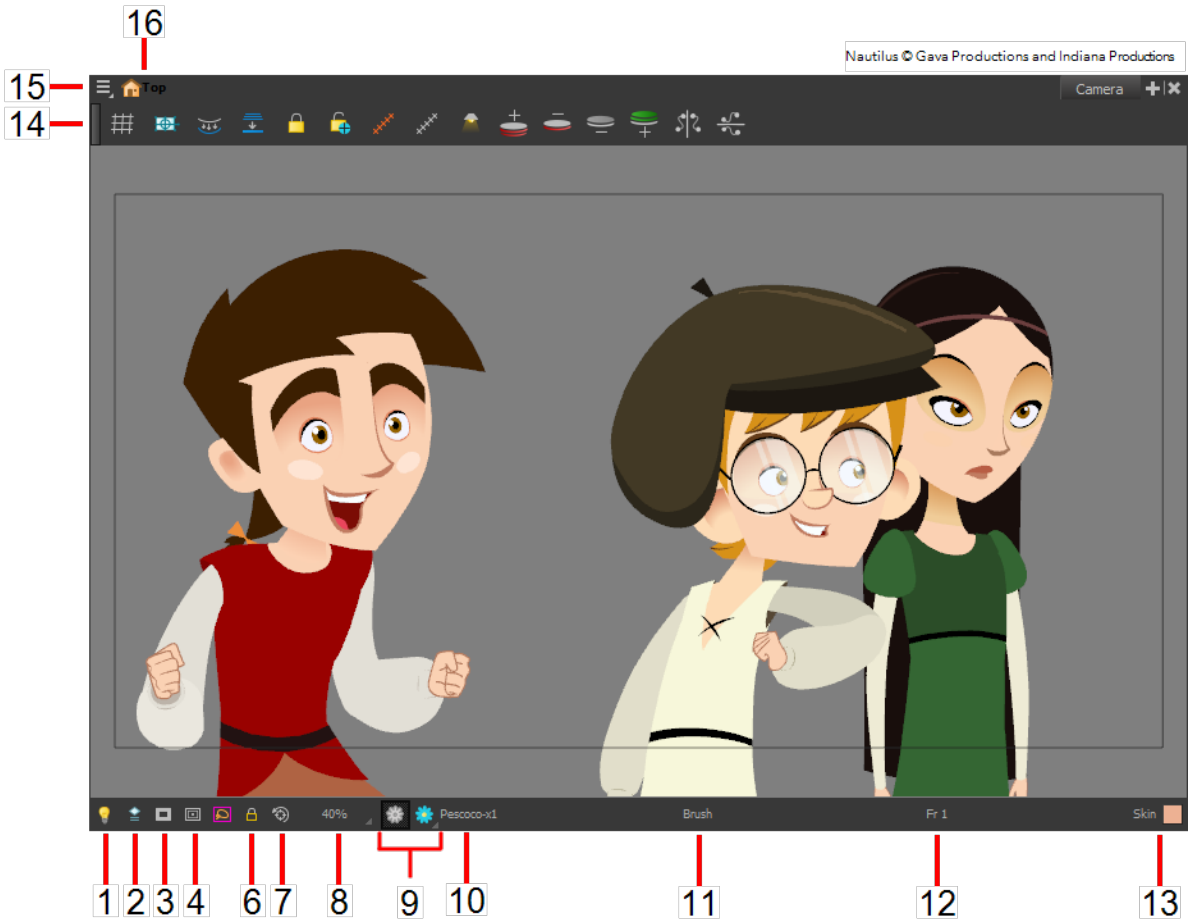
Harmony contains a series of views that are each focused on a specific set of tasks. Here are the views available:

- Camera view
- Colour view
- Message Log view
- Model view
- Script Editor view
- Timeline view
- Tool Properties view
- Xsheet view

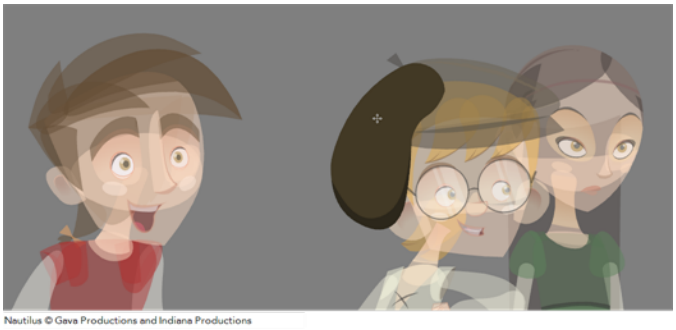
Camera View

The Camera view is the centre of operations in Harmony. In this view, you will draw, paint, animate, create animation paths and see your results. You can also move through your symbol's hierarchy.

The Camera view has a top and bottom toolbar that you can use to navigate in the view, change the display mode, or go back up your symbols hierarchy.



1. Light Table

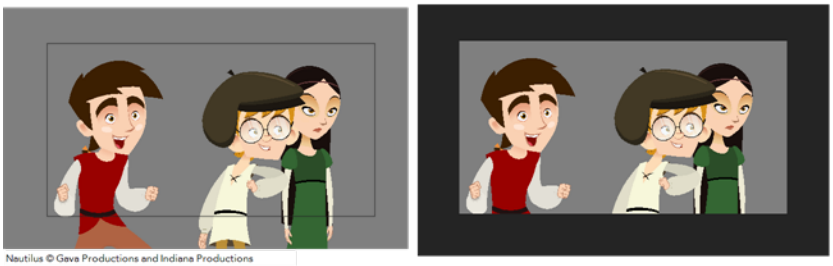


When you have a drawing layer or drawing selected, the Light Table button button allows you to fade the colours of the other layers so you can see the current artwork better as you edit with a drawing tool. Note that the light table does not work when using a layer editing tool such as the Transform tool.

2. Current Drawing On Top

When this button is enabled, the drawing that you are currently editing with a drawing tool is temporarily displayed in front of all the other elements. The actual scene is not modified.

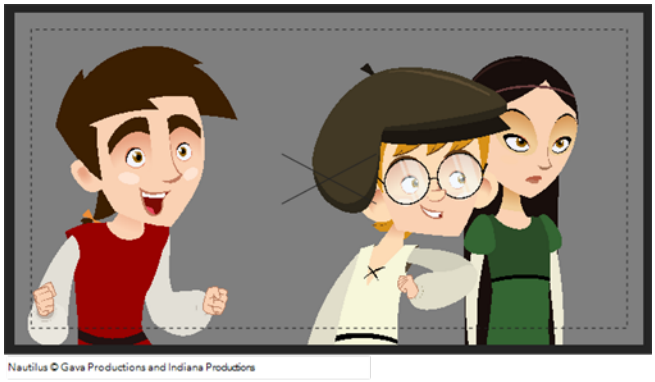
3. Camera Mask



The Camera Mask button shows or hides a black mask around the scene's frame to avoid seeing the unnecessary artwork. This option is handy when you are animating and setting up the scene. It allows you to see your scene's composition better.

You can also access this feature from the top menu by selecting **View > Show > Camera Mask**.

4. Safe Area



The Safe Area button shows or hides the TV safety zone and the centre of the camera frame. The Safe Area will adapt to the scene resolution as well as the safety zone and frame's centre.

You can also access this feature from the top menu by selecting **View > Show > Safe Area**.

6. Outline Locked Drawings

Drawings that are locked in the Timeline view (cannot be selected in the Camera view) will be displayed as wireframes.

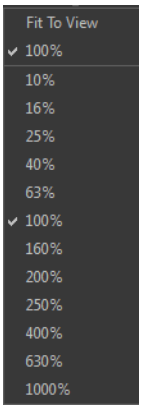
7. Reset View

The Reset View button will reset any panning, zooming or rotation done in the Camera view and return the display to the initial settings. You can also press Shift + M.

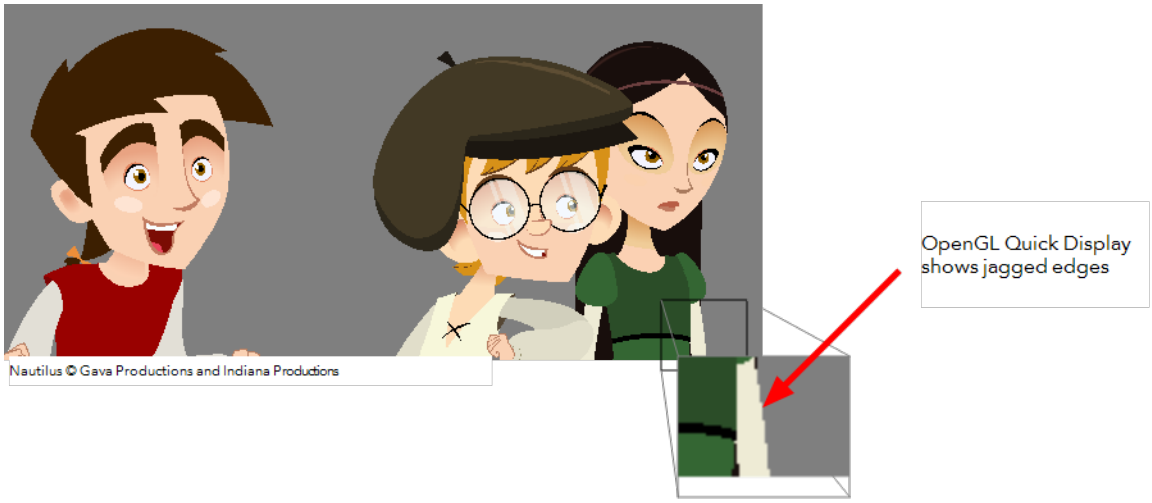
8. Zoom Menu

The Zoom menu lets you enlarge or reduce the Camera or Drawing view display.

To make the camera frame size always match the size of your view, select the **Fit to View** option. Click the drop-down arrow and select a zoom level or press 1 and 2.



9. OpenGL View Mode



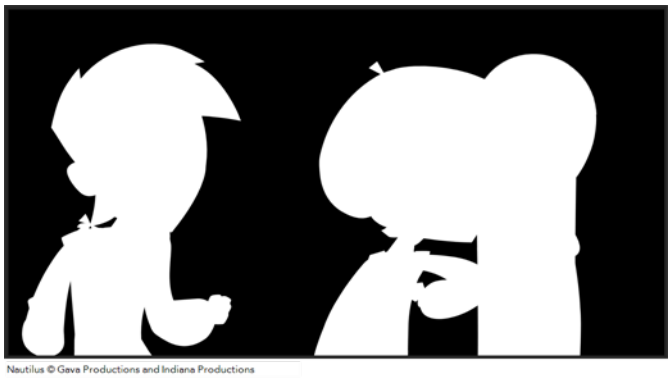
The OpenGL View Mode button switches the Camera view to fast display, letting you see your animation play in real time. The OpenGL display requires less memory. The final look of your effects is not shown in the OpenGL View Mode. You must switch to the Render View Mode to see your effects.

9a. Render View Mode

The Render View Mode button switches the Camera view to a fully rendered display showing the final image of the current frame. If a modification is done to your current frame or if you move to a different frame, click the **Update Preview** button to update the display if your preview does not update automatically.

The Render View Mode display lets you see the final look of your frames including effects and antialiasing. You cannot play back your scene in Render View Mode. To see your scene fully rendered and to play it back, you must press the Render and Play button in the Playback toolbar.

9b. Matte View Mode



The Matte View Mode button switches the Camera view to a matte display showing the alpha channel of the elements in your scene. The transparency level ranges from 0 to 100 percent. Zero percent is completely transparent and represented by black and 100 percent is completely opaque and represented by white. Everything in between these extremes has a transparency level somewhere between 1 and 99 percent and is represented in various shades of grey.

- To access the Matte View mode, click on the **Render View Mode** button and select **Matte View** from the drop-down menu.

10. Drawing Name

The Drawing Name field displays the name of the selected drawing, as well as the layer containing it. If the cell does not contain any drawing, an **`Empty Cell`** text is shown in the field.

11. Tool Name

The Tool Name field displays the name of the selected tool. If you temporarily override a drawing tool using a keyboard shortcut, the tool's name will be highlighted in red. You can temporarily override a tool by holding its keyboard shortcut without the [Alt] key. For example, the Select tool shortcut is Alt + S. If you hold down [S], you will switch to the Select tool. As soon as you release the key, you will return to the tool you were using.

12. Frame Number

The Frame Number field displays the number of the current frame.

13. Selected Colour

The colour swatch displays the currently selected colour in the Colour view.

14. Camera View Toolbar

The Camera View toolbar contains all the tools and options you can use in the Camera view to draw, animate or set up the scene. The toolbar can be displayed or hidden by right-clicking on it and selecting or deselecting the Camera View toolbar.

15. View Menu

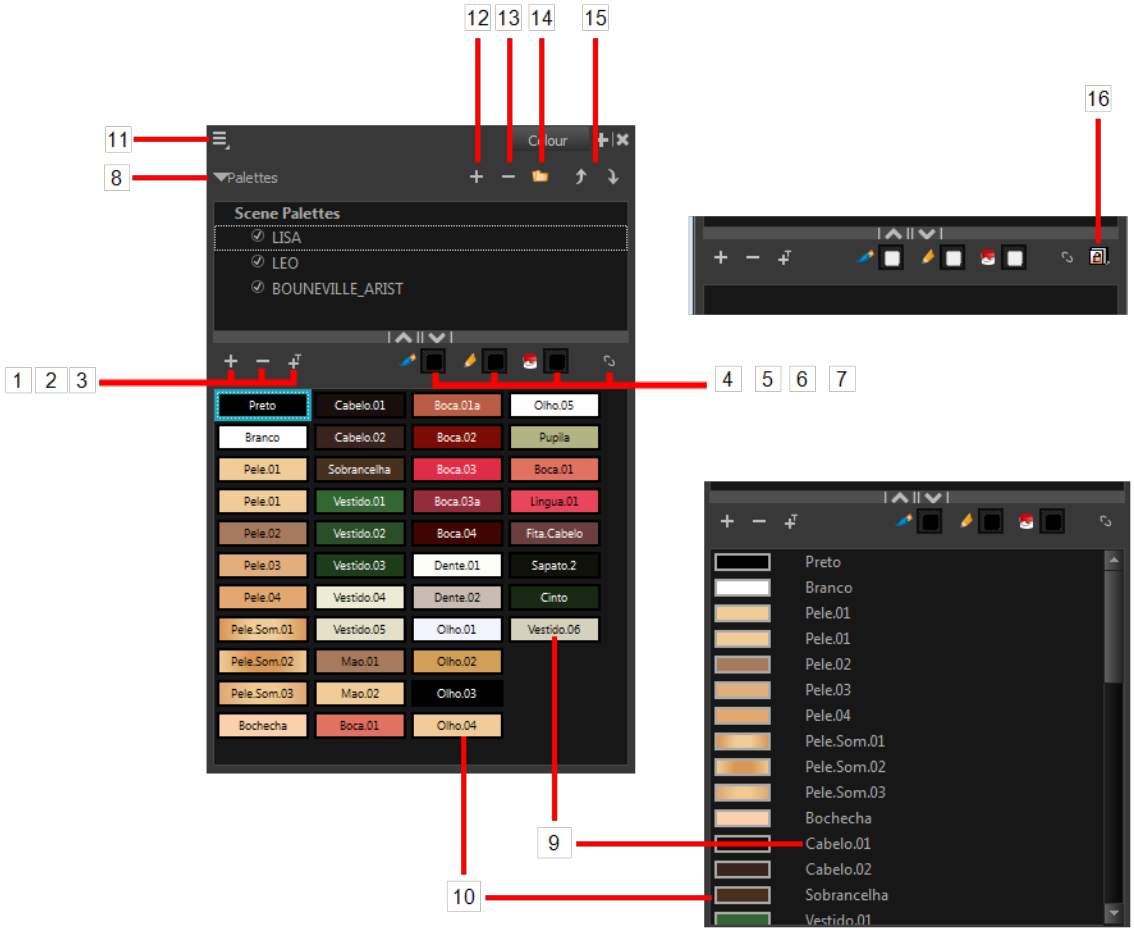
The View menu contains all the tools and options that you can use in the Camera view to draw, animate or set up the scene.

16. Editing Stack Menu

The Editing Stack menu displays the names of the symbols and their hierarchy when you are editing a symbol. You can click on the different names to go back up to the different parent symbols or the top/current project.

Colour View

The Colour view is where you create colours and palettes and import existing palettes into your project. The Colour view is also necessary for drawing, painting and creating colour styling.



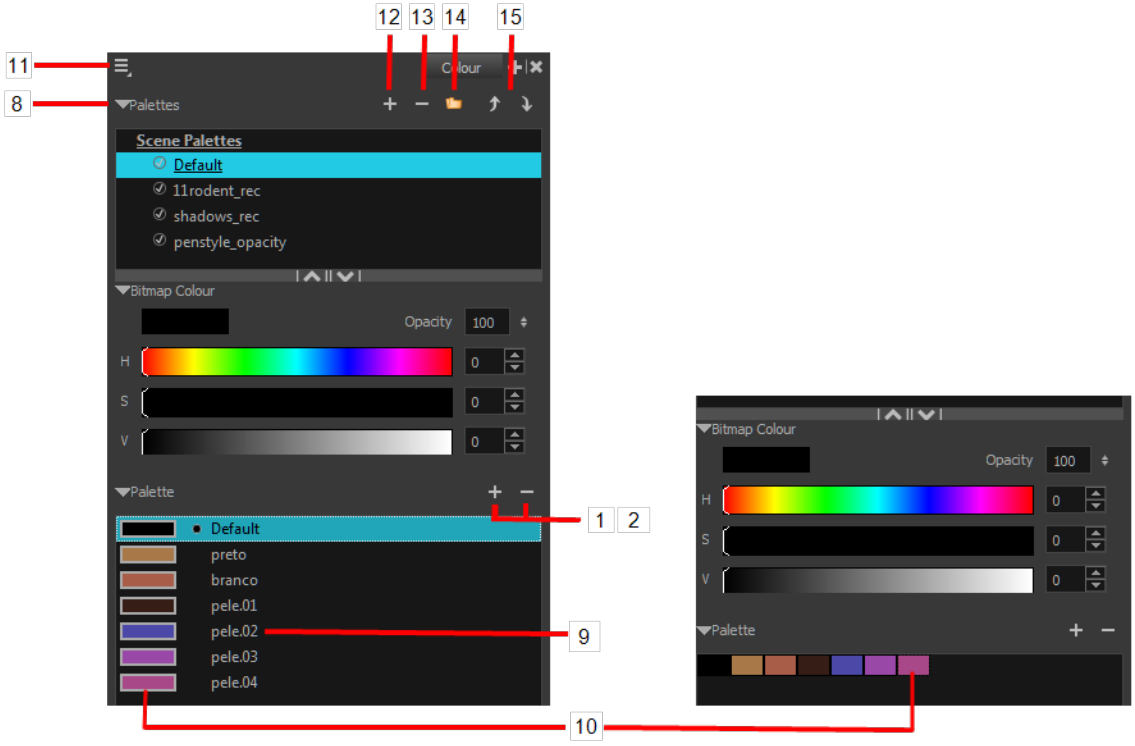
The Colour view has two display modes:

- List mode
- Swatch mode

How to switch between the display modes

1. From the Colour View menu, select **Colours > Swatch Mode** and do one of the following:
   - Select the option to display the swatches.
   - Deselect the option to display the colour list.

When you are painting on bitmap layers, the Colour view will look like the following. It contains a subset of the tools available when working with vector layers.

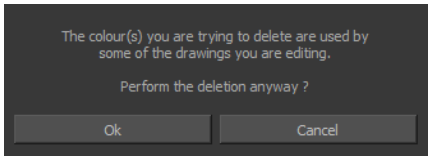


1. Add Colour

The Add Colour button lets you add a new colour swatch to the bottom of your colour list.

2. Remove Colour

The Remove Colour button lets you delete the currently selected colour swatches. If the colour swatch is used in your project, the Delete Colour dialog box will appear asking you to confirm the operation.



- Click **OK** to confirm the operation or Cancel to cancel it.

Zones painted with colour swatches which have been deleted will turn red, easily identifying them so you can repaint them with another colour swatch.

3. Add Texture

The Add Texture button lets you add a bitmap colour swatch to your palette. You can load photos and textures and paint your drawings with it. The bitmap image must be a TGA or PSD file format.

4. Set Current Brush Colour

The Set Current Brush Colour button let you set the currently selected colour swatch as the colour used by the Brush tool. If you select a new colour in the Colour view while using the Brush tool, the Set Current Brush Colour swatch will be updated.

5. Set Current Pencil Colour

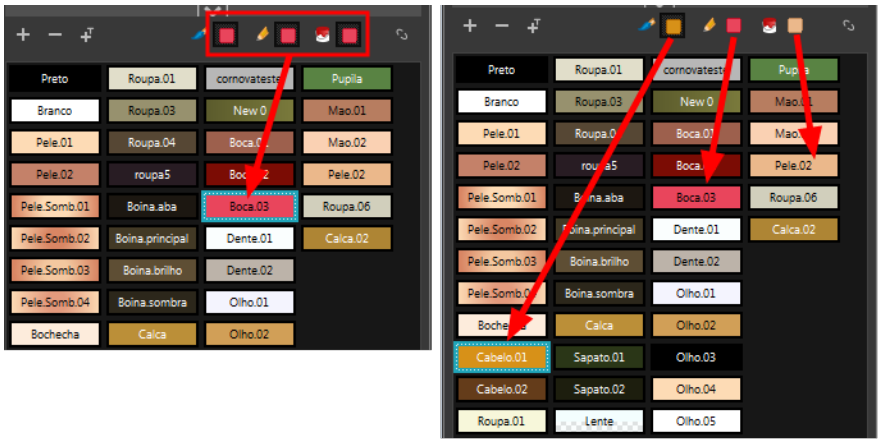
The Set Current Pencil Colour button lets you set the currently selected colour swatch as the colour used by the Pencil, Polyline, Ellipse, Rectangle and Line tools. If you select a new colour in the Colour view while using any of these tools, the Set Current Pencil Colour swatch will be updated.

6. Set Current Paint Colour

The Set Current Paint Colour

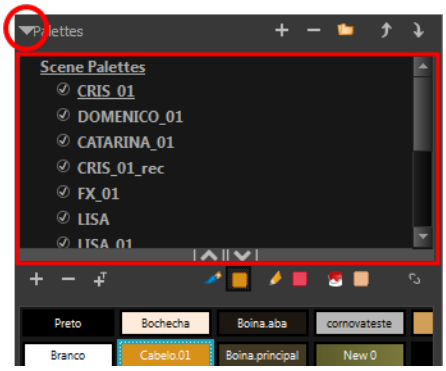
button lets you set the currently selected colour swatch as the colour used by the Brush tool. If you select a new colour in the Colour view while using the Paint tool, the Set Current Paint Colour swatch will be updated.

7. Link/Unlink Three Colours



The Link/Unlink Three Colours button lets you link the Set Current Brush Colour, Set Current Pencil Colour and Set Current Paint Colour swatches to the currently selected colour swatches in the Colour view.

8. Show/Hide Palette List View



The Show/Hide Palette List View button lets you display the Palette List view in the Colour view. This option is for the advanced user who wants to create colour palettes for their props and characters.

9. Colour Swatch Name

Each colour swatch available in the Colour view can have its own name, making it easy to identify which colour is used to paint what part of your character or background.

Two colours can have the same name.

10. Colour Swatch

A colour swatch is a specific colour used to paint a certain zone of a character or background. Colour palettes are composed of colour swatches. They can also be called *colour pots*. When you paint a zone with a colour swatch, the zone is linked to the swatch. So if you update the swatch's tint, the zone will be updated along with it. This allows you to modify your animation colours even after it is completely painted.

11. Colour View Menu

The Colour view menu lets you access commands related to the Colour view such as creating new palettes, adding new colour swatches, and displaying the Tint panel.

12. Add Palette

The Add Palette button lets you add a new palette to the bottom of your palette list.

13. Remove Palette

The Remove Palette button lets you delete the currently selected palette. If the colour swatch is used in your project, zones painted with colour swatches which have been deleted will turn red, easily identifying them so you can repaint them with another colour swatch.

14. Link Palette

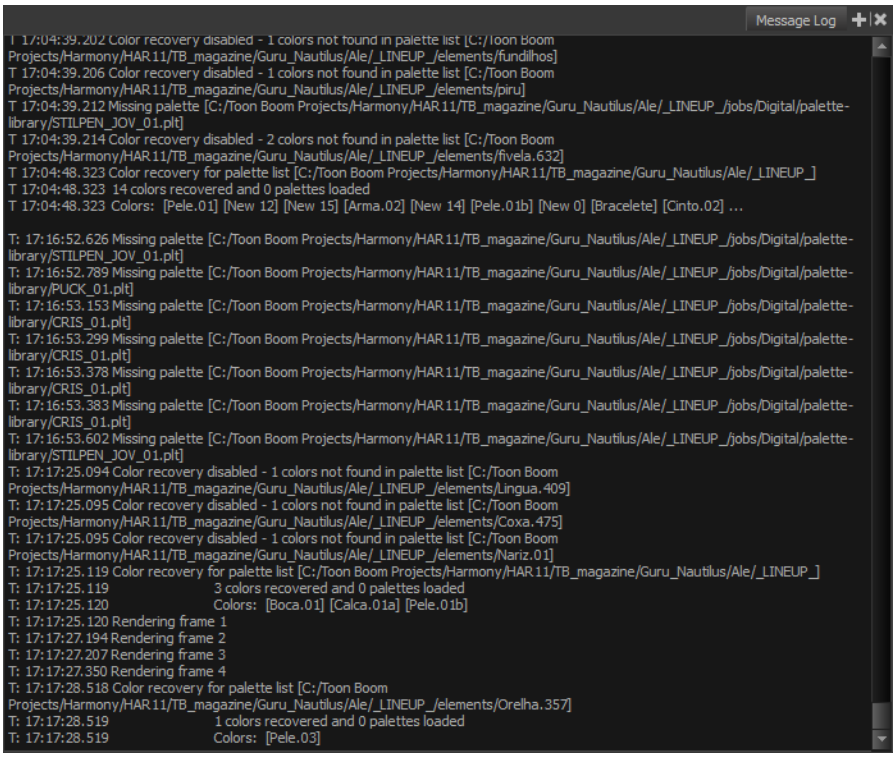
The Link Palette button lets you access other palettes created in the project and link them to your scene.

15. Order Palette List

The Up and Down arrows let you reorder the selected palette. When using clone palettes (colour styles), the highest palette is the list will override its clone located lower in the list.

Message Log View

The Message log view displays information gathered during a render task, such as which frames and at what time they were each rendered. The view also contains a list of the colour recovery operations.



Model View

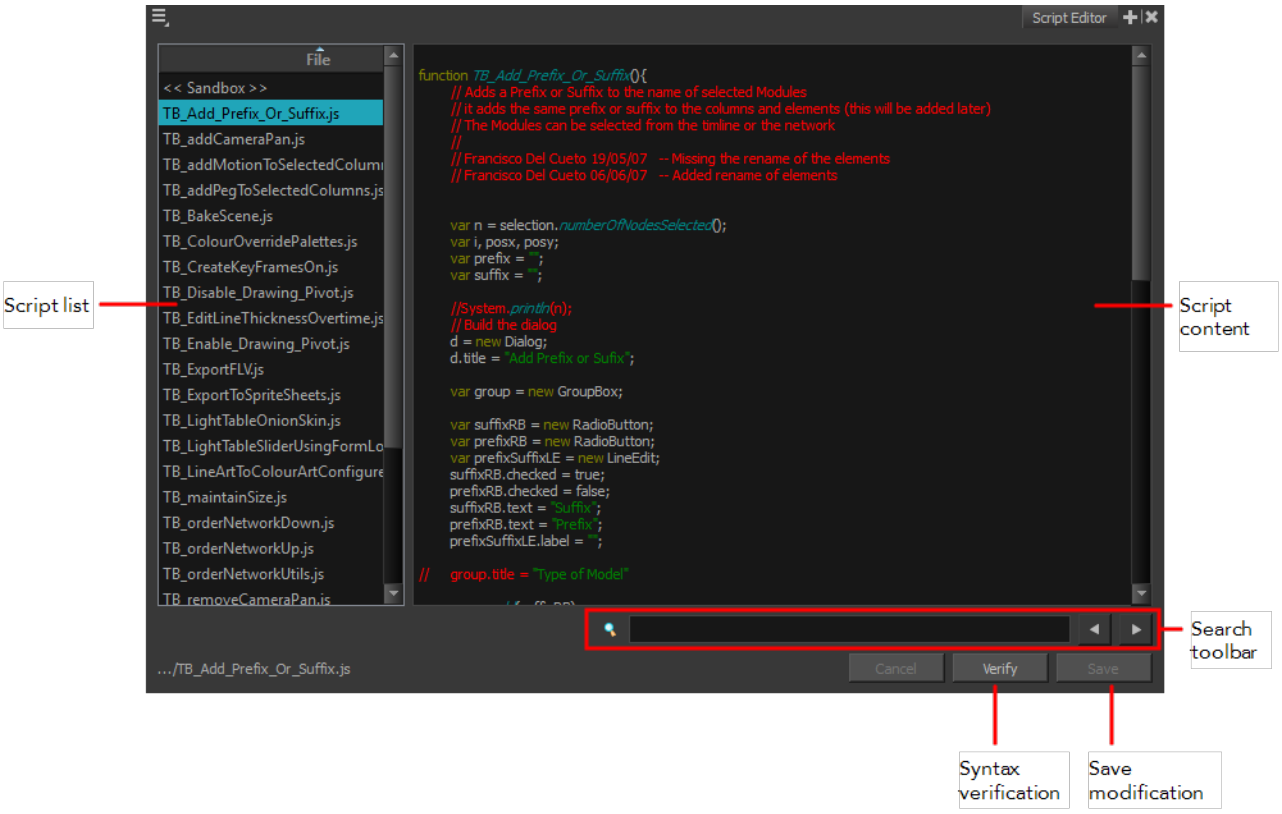
Once you have a fully painted drawing, you can use it as a colour model and load it in the Model view. This drawing can be used and loaded in any of your Harmony scenes.

Once a drawing is loaded in the Model view, you can use the Dropper tool to select a colour from the model and use it to paint in the Camera or Drawing view without having to pick the colour from the colour palette.

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

Script Editor View

Qt Script provides access to many of the functions supported in the interface. With Qt Script, you can automate a number of Harmony functions to speed the completion of various repetitive tasks. The Script Editor view allows you to edit existing scripts and create new ones. Refer to the Scripting guide to learn more about scripting with Harmony.



Script List

On the left side of the Script Editor view, all existing script files are listed and can be modified in this view. The script format is JavaScript. Click on a file to display its content in the Script Content window of the view.

Script Content

On the right side of the Script Editor view, the contents of the selected script are displayed and can be edited.

Search Toolbar

The Search toolbar allows you to search a string within the selected script content. You can use the Previous and Next buttons to navigate through the results.

Syntax Check

This function verifies the syntax of the currently displayed script and lists any error found.

Save Changes

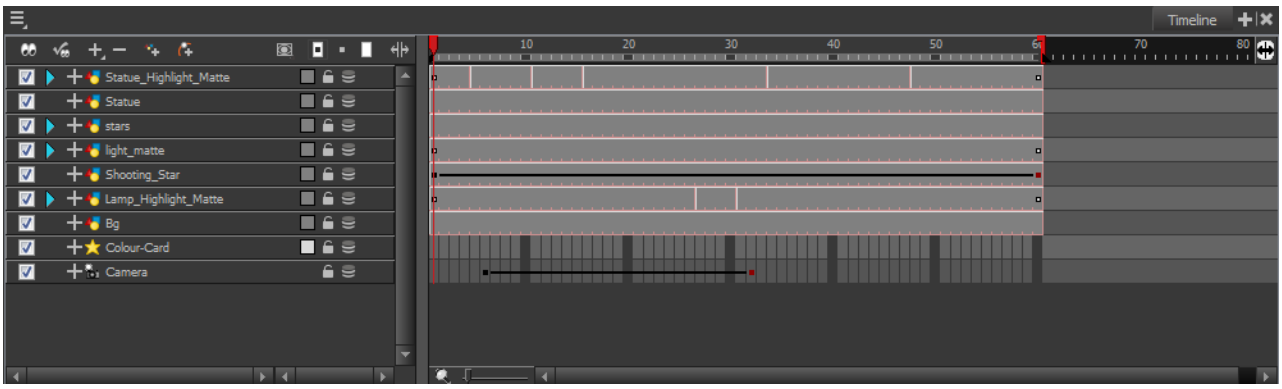
Once you are satisfied with the modifications made to the script, click **Save Changes** to save the modifications.

Timeline View

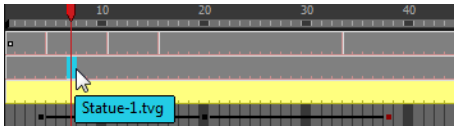
To set your animation timing, you will mostly work with the Timeline and Xsheet views. It is extremely useful to become familiar with the Timeline view, how it works, and its interface.

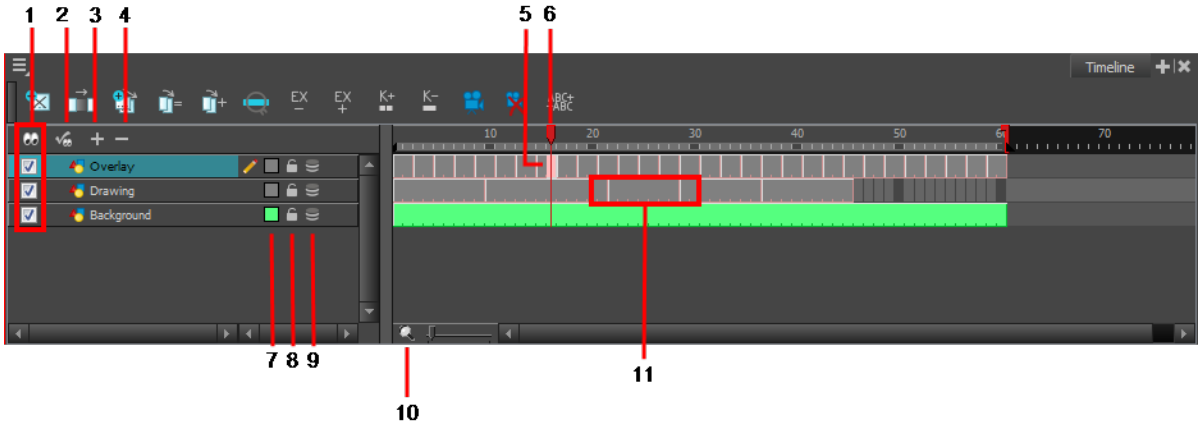
Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

The Timeline view is the main view used when adjusting the timing of drawings and ordering layers. The Timeline view displays layers, scene length, layer names, drawings and frames.



The Timeline view allows you to read your timing from left to right. It represents the scene's elements in their simplest form. You can also see the layers and their names, as well as the drawing's exposure. The drawing name is displayed when you place the cursor above the drawing's exposure.



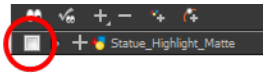


1. Enable/Disable All

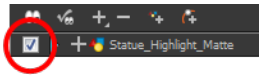
The Enable/Disable All button is used to show or hide all layers simultaneously.

When you deselect a layer in the Timeline view, the corresponding column is hidden in the Xsheet view. When a column is hidden in the Xsheet view, the corresponding layer is disabled in the Timeline view.

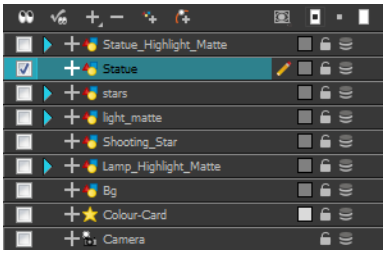
To disable a particular layer, deselect the layer's checkbox or press D.



To enable a particular layer, select the layer's checkbox or press A.



2. Show Selection and Hide All Others



The Show Selection and Hide All Others button is used to show only the currently selected layer in the Timeline view and disable all the other layers.

3. Add Layers

The Add Layers button lets you add new layers to the Timeline view.

4. Delete Layers

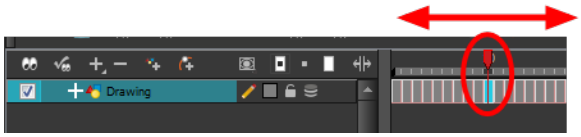
The Delete Layers button lets you delete the currently selected layers in the Timeline view.

5. Current Drawing Displayed

The highlighted drawing represents the drawing currently displayed and is linked to play head position.

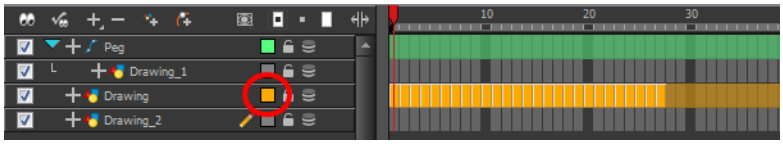
6. Current Frame

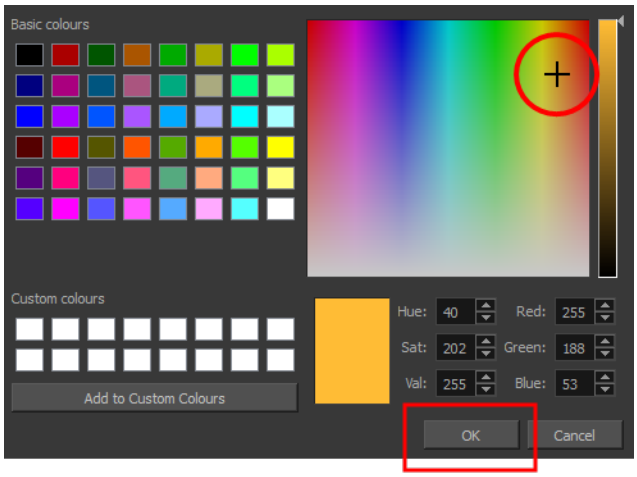
The red play head represents the current frame displayed and marked in the Playback toolbar. If you slide the play head to the left or right, it will scrub through your frames and update the Camera view.



7. Change Track Colour

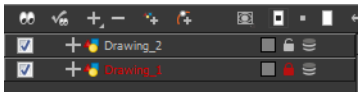
The Change Track Colour button lets you change the colour of the exposed frames; this helps you to quickly locate a layer in the Timeline view. Double-click on the colour swatch to open the Select Colour window and choose a new colour. You can modify the layer for any type of layer, such as group, peg, drawing, and effects.



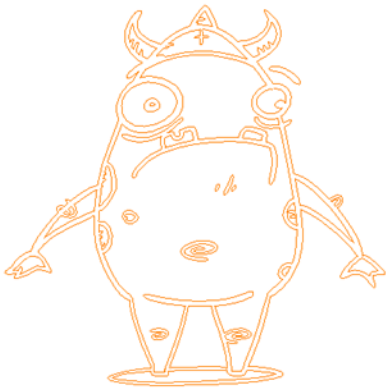


8. Lock/Unlock Layer

The Lock/Unlock Layer button lets you prevent the selection or editing of a layer in the Camera view. To select some of the layers without selecting others, in the Timeline view, lock the layers you do not want to select.



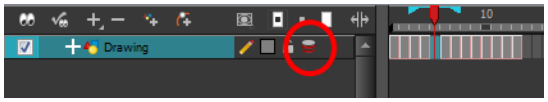
You can display the locked drawings as outlines in the Camera view to quickly find out which drawings are locked.



How to display locked drawings as outline

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (**Mac OS X**).
2. In the Preferences dialog box, select the **Camera** tab.
3. In the Tools section, select the **Show Locked Drawings As Outlines** option.

9. Onion Skin



The Onion Skin button enables the Onion Skin option on a particular layer. If you want to see the previous and next frames of a specific layer, go to the Timeline view and click the Onion Skin button for that particular layer. Blue arrows appear on both sides of the play head. Pull on the blue arrows to add more frames to the onion skin display.

To activate the general Onion Skin preview, in the Tools toolbar, click the Onion Skin button.

10. Zoom

The Zoom tool is used to increase or reduce the width of the frames in the Timeline view. Drag the cursor to the right to increase the width or to the left to reduce it. You can also press 1 and 2.

11. Drawing Exposure

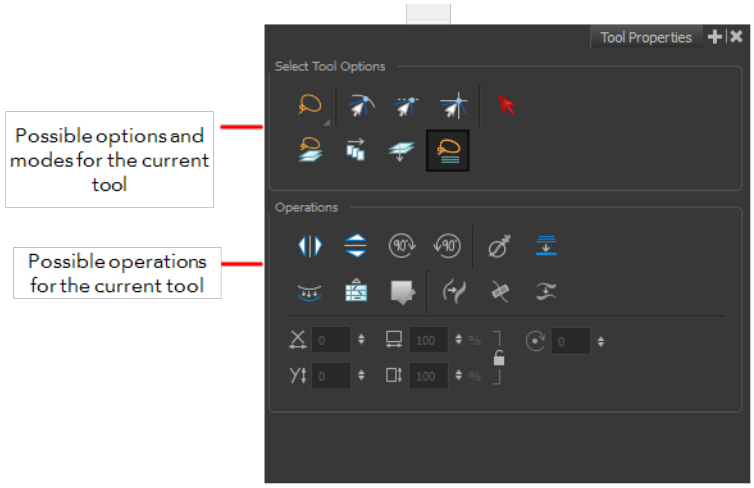
In the Timeline view, when a drawing is exposed, it is represented as a grey block. If the drawing is exposed for several frames, the block is extended. When a second drawing is exposed, a new grey block is displayed.

- The exposure's colour can be changed. To pick a new colour, double-click on the Change Track Colour button in the corresponding layer.

Tool Properties View

The contextual Tool Properties view contains the most common options and operations related to the currently selected tool. As soon as you select a tool from the Tools toolbar, the Tool Properties view updates.

For example, if you choose the Select tool in the Tools toolbar, the Tool Properties view will display the options and operations related to the Select tool, such as Snap to Contour, Apply to All Drawings, Flip Horizontal, and Flatten.



Options

Options are different modes you can apply to a selected tool to modify its behaviour to fit the current task's needs.

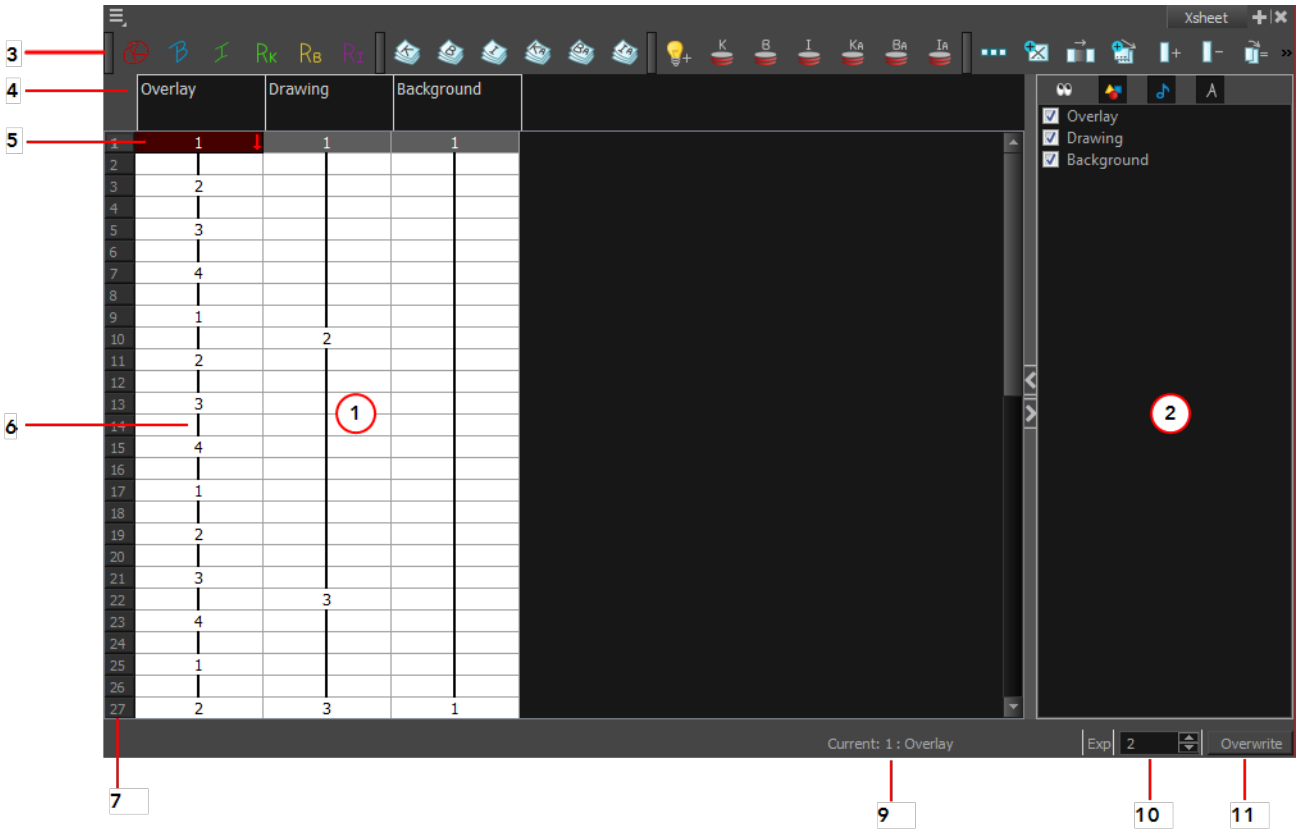
Operations

Operations are actions you can perform while using the selected tool.

Xsheet View

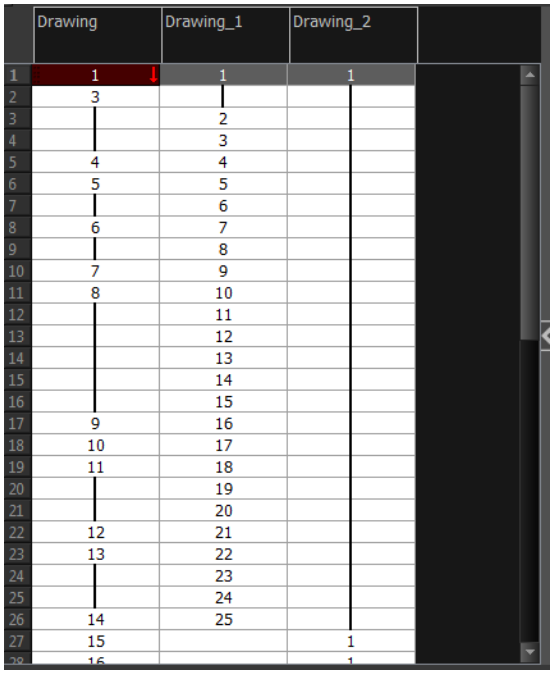
The Xsheet view lets you read the timing vertically, displays the drawing layers as columns, and shows the drawing's name. You can also see the functions and keyframes of the motion paths in the Xsheet's function columns. The value of each keyframe is shown in the Xsheet view; these are displayed as black squares in the Timeline view. The Xsheet view contains more details than the Timeline view, and is faster and easier to read.

Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

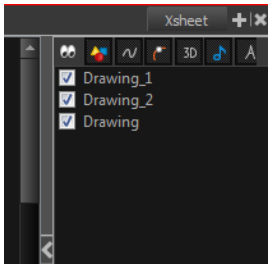


1. Xsheet Main Section

The Xsheet view has three sections. By default, only the main section is visible. It displays the drawing layers, also known as *drawing columns*.



2. Column List Section

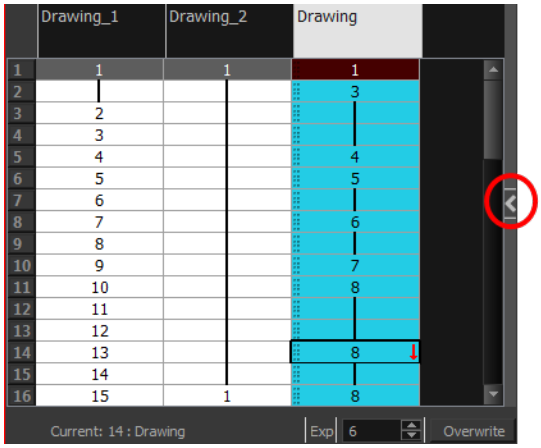


The Column List section allows you to show and hide columns in the Xsheet view. When you hide a layer in the Xsheet view, it is also disabled in the Timeline view.

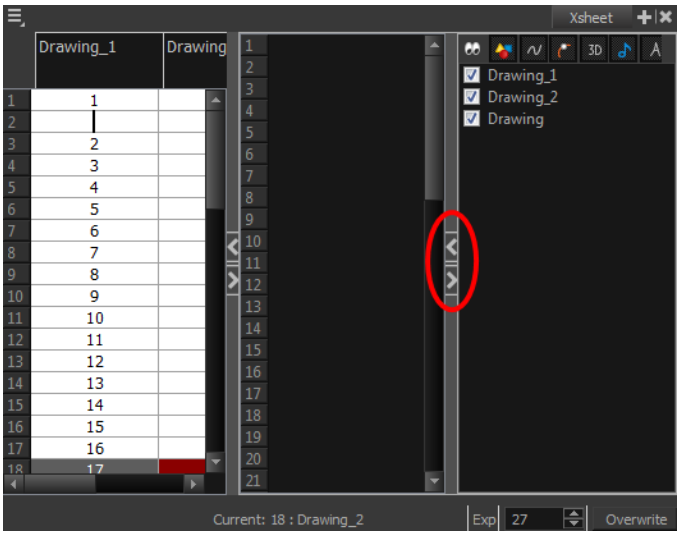
You can use the Column List to hide individual columns or hide an entire column type (drawing or function) from the Xsheet view. By default, the Functions section is hidden.

How to display the Column List section

1. In the Xsheet view, click the Expand button on the right side of the main section to show the Functions section. Click on the same button to collapse it. You can also use the Show Column List button in the Xsheet View toolbar.
   - In Harmony, you can also go to the Xsheet view menu and select **View > Show Column List**.



2. Click the Expand button on the right side of the Functions section to display the Column List section.



3. Xsheet View Toolbar

The Xsheet view has its own toolbar where you can find the most common features. This toolbar is displayed by default. If you do not see it, select **Windows > Toolbars > Xsheet View**.

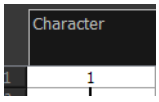
The Xsheet view must be part of your workspace in order to display its toolbar.

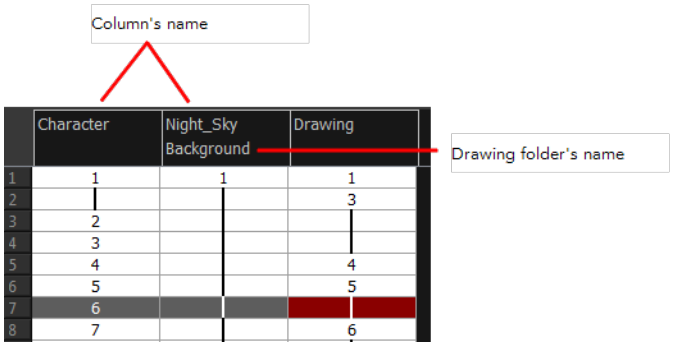
4. Column Header

Each column available in the Xsheet view has a header displaying the column's name. The column's name is the same as the corresponding timeline layer. If you rename one or the other, they will both be renamed.

A quick access menu is available when you right-click. This menu contains the command affecting an entire column such as renaming, changing the default colour, or deleting a column.

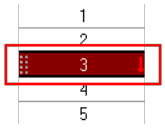
The tooltip that appears when you hover at the top of each Xsheet column shows the folder path to the source drawings for that column.





5. Current Drawing

A drawing selected in dark red indicates that the drawing is currently displayed in the Drawing and Camera views. The current drawing selection is not linked to the drawing displayed in the Camera view since drawings from each visible layer are displayed at once.

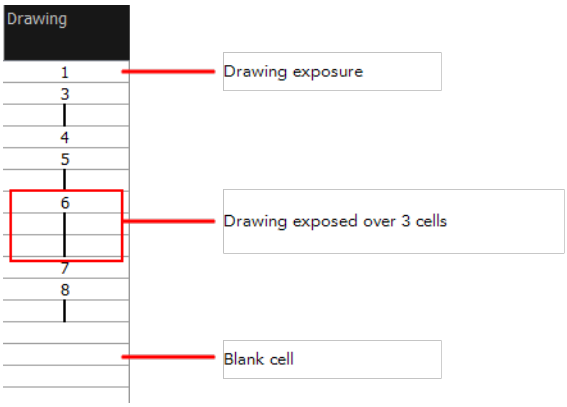


5a. Current Frame

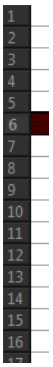
The darker frame appearing in the Xsheet view represents the current frame.

6. Drawing Exposure

In the drawing columns, you can see the drawing names and their exposure. You can use any alphanumeric symbol to name your drawing. When a drawing is exposed over more than one cell, a vertical black line is displayed to indicate the continuity of the exposure. When there is no drawing in a cell, the cell will be blank.

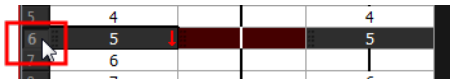


7. Frame Numbers

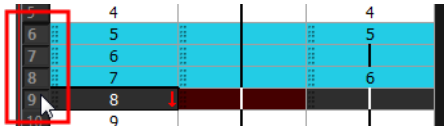


On the left side of the Xsheet view, the frame numbers are shown indicating where you are. These read vertically instead of being displayed horizontally as they are in the Timeline view.

- To go to a particular frame, click the frame number.

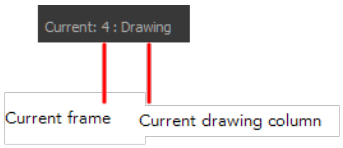


- To select an entire range of frames, click and drag a selection downwards.



8. Current Frame Display

At the bottom-right of the Xsheet view, you can see the current frame number, as well as the column containing the drawing currently displayed in the Drawing view.



10. Increase/Decrease Exposure

You can quickly increase or decrease the exposure of the selected cell by clicking on the up and down arrows in the Increase/Decrease Exposure field.

11Overwrite/Insert Modes

The Overwrite/Insert button allows you to decide the way the values are inserted into the Xsheet.

Toolbar References

Harmony has several toolbars. The Top toolbars are available at the top of the interface and the View toolbars are in individual windows. View toolbars are only shown if the particular view is displayed in the workspace. This is a complete list of the toolbars available in Toon Boom Harmony.

Top Toolbars

Art Layer

A drawing is composed of two layers, a line layer and a colour layer. The colour layer is always placed under the line layer. These layers are accessible in the Drawing or Camera view (using drawing tools). When you view the final drawing, you will see the final composition of the lines and colours, not two separate layers. You need to change your Preferences to allow the use of those advanced Art layers in order to see them.

You can draw and paint in all layers. If you prefer to work in a single layer, everything can be done in Line Art.

- Line Art
- Colour Art

Edit Toolbar

The Edit toolbar contains common operations such as Copy, Paste, Cut, Undo and Redo. These options can also be found in the Edit menu.

File Toolbar

The File toolbar contains the common file operations such as New, Save and Open. These options can also be found in the File menu.

Flip Toolbar

This toolbar lets you enable what type of drawing to include in your flipping selection. You can flip through the key, breakdown or in-between drawings individually, or view a combination.

Mark Drawing Toolbar

The Mark Drawing toolbar lets you identify drawings such as Key, Breakdown and In-between. The

drawing Identification feature can help the animator stay well organized and save time when identifying key, breakdown or in-between drawings in the Xsheet and Timeline views.

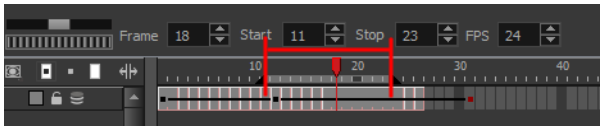
Onion Skin Toolbar

When designing or animating, it is useful to be able to see your previous drawings. The Onion Skin tool is used to preview the previous and subsequent drawings. By default, the previous drawings will appear with a shade of red and the next drawings will be displayed with a shade of green, but you can change the display options in the Preferences dialog box. In the Onion Skin toolbar, you can select what type of drawing you want to display in your onion skin display.

Playback Toolbar

The Playback toolbar lets you play back your animation and sound. Use it to scrub the sound to create your lip-sync, loop the playback, navigate through frames, and change the playback range and speed.

Name	Button	Description
Play		Plays and stops the animation. You can also select **Play > Play Scene Forward** or **Stop**.
Render and Play		Creates a render of your scene to play back the final result including the effects.
Loop		Repeatedly plays back your animation indefinitely. You can also select **Play > Loop.**
Sound		Enables sound in the playback. You can also select **Play > Enable Sound.**
Sound Scrubbing		Enables sound scrubbing in the playback. You can also select **Play > Enable Sound Scrubbing.**

Jog Frames	Lets you scroll through the playback's frames.
	Lets you change the playback frame range by entering new values in the Start and Stop fields. You can also click on the Start and Stop words to set the start or end frame at the current frame.
FPS	Lets you enter a new value to change the speed of the playback.

Scripting Toolbar

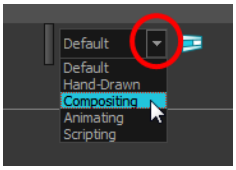
The Scripting toolbar lets you import and access the scripts created to automate actions and operations.

Tools Toolbar

The Tools toolbar contains all of the main tools you will use while working in Harmony. In the default workspace, you will find this toolbar on the left-most side of the interface.

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 you create, from the Windows menu and the Workspace toolbar.



View Toolbars

Here is a list of the view toolbars available in Harmony:

- Camera View Toolbar
- Model View Toolbar
- Script Editor View Toolbar
- Timeline View Toolbar
- Xsheet View Toolbar

Interface Navigation

Toon Boom Harmony supports zoom in, zoom out, rotate, pan and reset view for easy interface navigation for the views.

Command	Action	Access Methods
Zoom In	Zooms into the view.	**View > Zoom In** Press 2 or roll the mouse wheel up. In the Timeline view, press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and roll the mouse wheel up.
Zoom Out	Zooms out of the view.	**View > Zoom Out** Press 1 or roll the mouse wheel down. In the Timeline view, press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and roll the mouse wheel down.
Zoom In or Out	Zooms in or out of the view.	Roll the middle mouse button up or down.
Pan	Moving parallel to the view.	Hold down the Spacebar and drag the mouse in the direction in which you want to pan the view.
Recenter view	Recenters the view on your mouse cursor.	Press N
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** Press Shift + M
Reset Rotation	Resets the view's rotation to its default position.	**View > Reset Rotation** Press Shift + X
Reset Zoom	Resets the view's zoom to its default position.	**View > Reset Zoom**
Toggle Full Screen	Enlarges the selected view to full screen. The full screen process is done in three stages.	**View > Toggle Full Screen** Press Ctrl + F

	First, the selected view enlarges to the maximum width or height, but keeps the tool views such as Colour or Tool Properties view. Second, the view enlarges to full screen. Third, the view returns to its original size.	(Windows/Linux) or ⌘ + F (Mac OS X)
Rotate 90 CW	Rotates the Camera view 90 degrees clockwise, like an animation table.	**View > Rotate View CW**
Rotate 90 CCW	Rotates the Camera view 90 degrees counter-clockwise, like an animation table.	**View > Rotate View CCW**
Toggle Quick Close-up	Use the Magnifier tool to quickly center on the mouse position and zoom in to a pre-defined value such as 4X. Then you can zoom out again. Hold the shift key and press Z to zoom in and back out again. Replacing the Reset Zoom by pressing Shift +. The area where you zoom in or out is dependent on the cursor location in the Camera view. If you zoom in and them move the cursor to a different location when you zoom out the mouse will be centered on that location.	

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
First Frame	Jump to the first frame. You can also press <.
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 >.
Previous Frame	Jumps to the frame before the frame currently selected in the Timeline view. You can also press the comma (,) key.

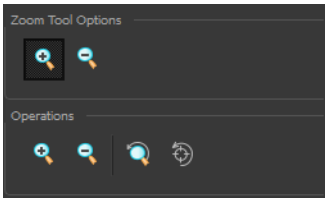
Go to Frame	Opens the Go to Frame window in which you can enter the number of the frame you want to display. You can also use the Go button, which you can add to the Timeline View toolbar through the Toolbar Manager. Open the Go to Frame dialog box and enter the frame number to jump to.
Enable Playback	Plays back your animation from the Top, Side, or Perspective view.

Zoom Tool

From the Tools toolbar, use the Zoom tool to zoom in and zoom out in the Camera or Drawing view.

- The keyboard shortcuts are 1 and 2.
- When the Zoom In mode is selected, hold Alt as you click to zoom out.

When you select the Zoom tool, its properties are displayed in the Tool Properties view.



Zoom Tool Options	Button	Description
Zoom In		Zooms in
Zoom Out		Zooms out
Operations	**Button**	**Description**
Perform Zoom In		Zoom in the Camera or Drawing view. The keyboard shortcut is 2.
Perform Zoom Out		Zoom out the Camera or Drawing view. The keyboard shortcut is 1.
Reset Zoom		Restores the current zoom level to 100%.
Reset View		Restores the original display by resetting any pan, rotation or zoom actions.

Navigating between Frames and Columns

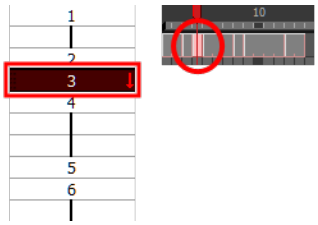
Once a cell is selected in the Timeline or Xsheet view, you can navigate between the drawings, frames, and layers using keyboard shortcuts that work in the Camera, Drawing, Timeline, and Xsheet views.

You can navigate through:

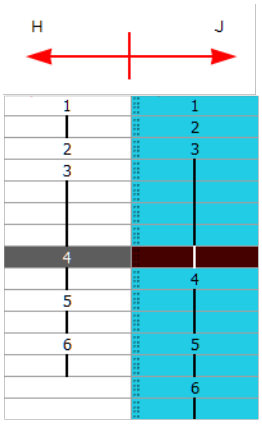
- Drawings
- Frames
- Columns

How to navigate through drawings, frames and columns

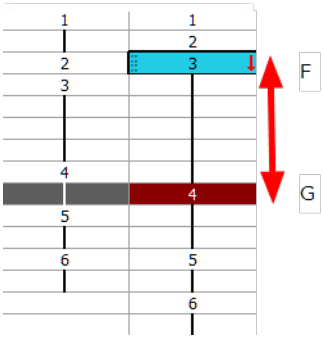
1. In the Timeline or Xsheet view, select a cell.



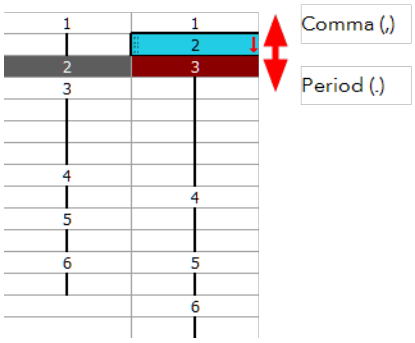
2. Once the cell is selected, you can navigate between:
   - Previous and next layers: From the top menu, select **Drawing > Previous Layer** and **Next Layer** or press H and J.



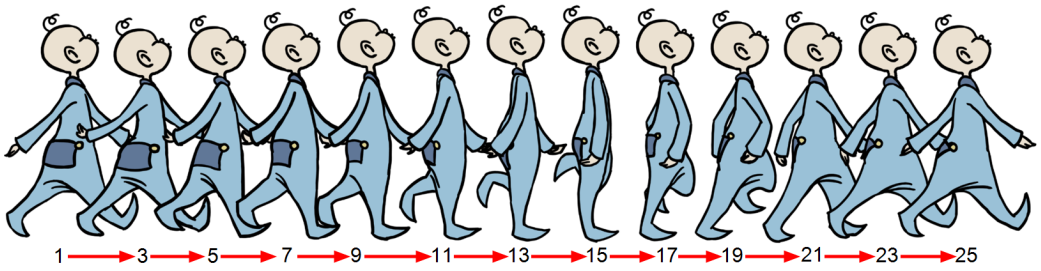
   - Previous and next drawings: From the top menu, select **Drawing > Previous Drawing** and **Next Drawing** or press F and G.



   - Previous and next frames: From the top menu, select **Play > Previous Frame** and **Next Frame** or press comma (,) and period (.).


1
2
3
4
5
6
1
2
3
4
5
6
Comma (,)
Period (.)

Chapter 6: Timing



Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

When you create hand-drawn animation traditionally or in a paperless environment, it is 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 his own exposure sheet directly in Harmony without the need for reproduction.

If you are more of a traditional animator, you are more likely to work with an exposure sheet. If you are 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 are used to working with. 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 will be able to choose which one you prefer.

In this topic, 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.

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 gain useful tips by reviewing the section on exposure sheets.

The basic digital exposure sheet process is divided into the following steps:

- Preparation on the facing page
- Frames on page 91
- Filling Exposure on page 110
- Managing Drawings on page 132
- Modifying the Layer and Column Display on page 139

Preparation

The digital exposure task is quite simple. There are very few things to prepare in order to get ready.

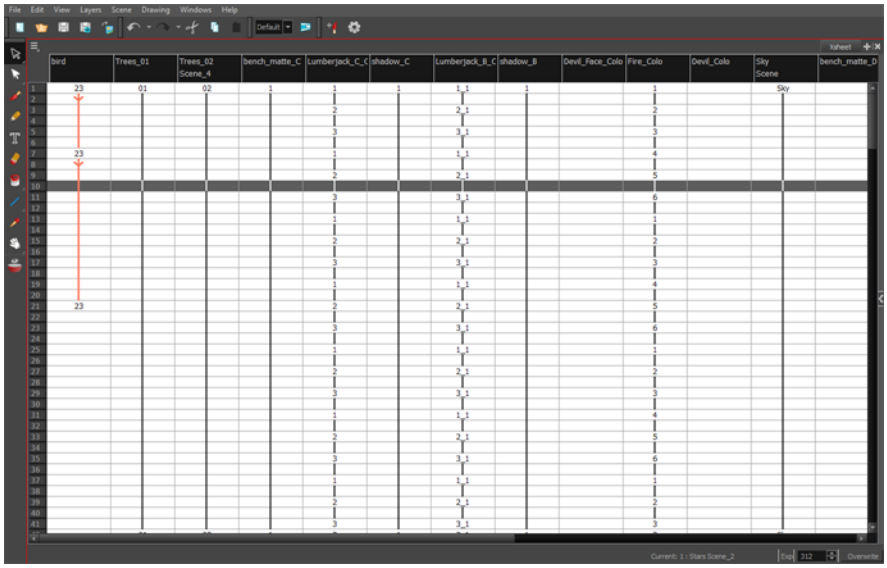
Opening the Scene

The scene is generally created during a previous step such as scanning (in a traditional animation workflow), scene setup, digital layout, or production organization.

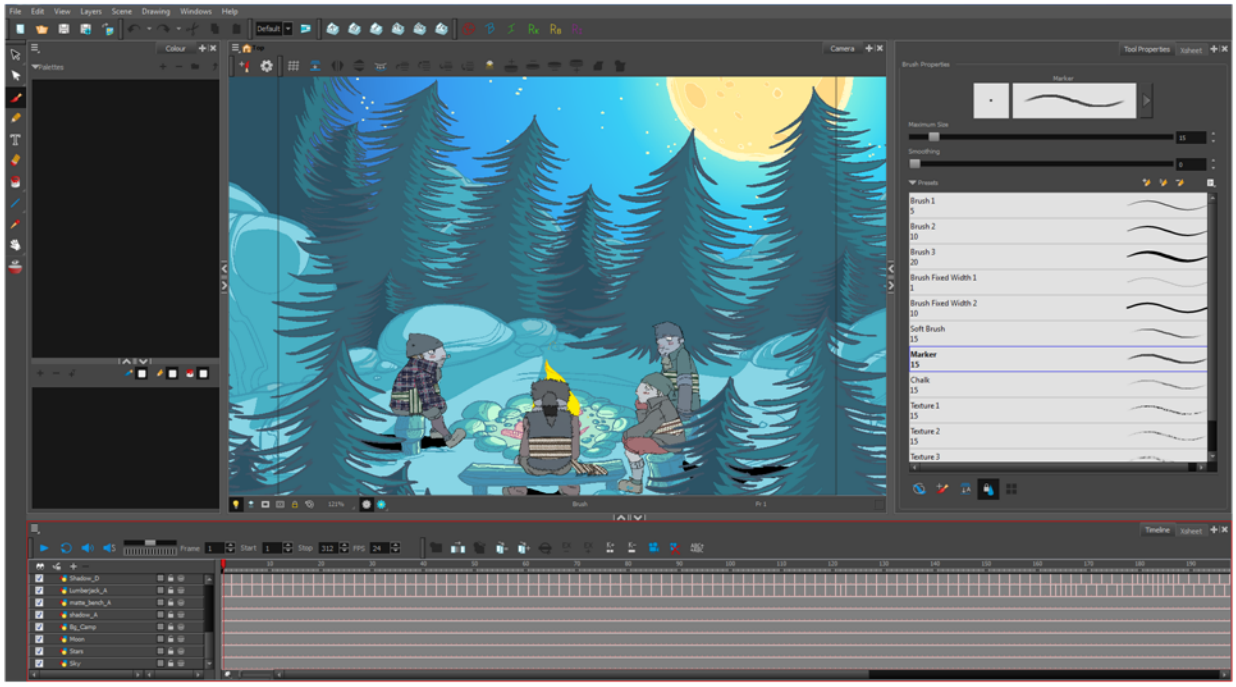
Using the Workspace

The person creating the exposure sheet will need only the Xsheet view to create the digital exposure sheet, although the Timeline view may also be helpful. If you are doing paperless animation, use the Camera view if you want to sketch at the same time.

If you work with this layout often, you can use the Workspace Manager to save it as a workspace,and name it **`Xsheet`**, for example.



While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it **`Paperless Animation`**, for example.



Preparing References

To start an exposure sheet, you need to prepare your references. For traditional animation, you will need to reproduce the animator's paper exposure sheet. If you are working remotely, the studio can scan the paper exposure sheet using third-party software and send the digital files to be opened and viewed digitally.

In paperless animation, you will usually create an exposure sheet from the Xsheet view.The information from your layout and posing or storyboard will help you approximate how many elements are required in the scene.

Frames

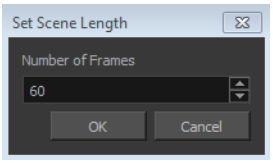
Once the references are ready, you need to set the scene length by adding the right number of frames to your scene. You can set the global scene length from the top menu.

In the Xsheet and Timeline view, you can add and remove frames from a scene to edit its length.

How to set the scene length

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

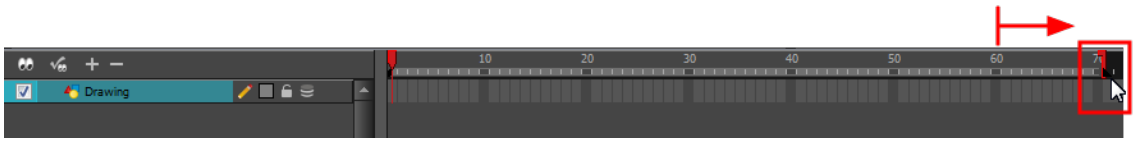
   The Set Scene Length dialog box opens.



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

How to extend a scene in the Timeline view

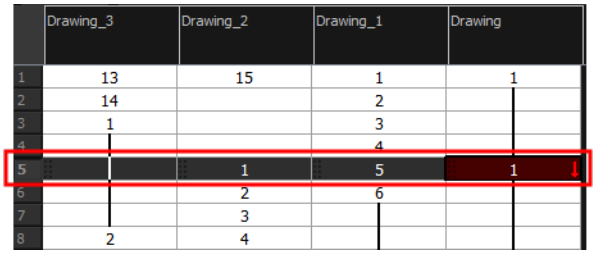
1. In the Timeline view, drag the scene length bracket to the right to add more frames to your scene.



How to add frames before or after a selection to the extend scene length in the Xsheet view

You can add frames anywhere in the middle of the scene. If you select a frame row in the Xsheet view, Harmony will add the new frames before or after the selection, depending on your choice.

1. In the Xsheet view, select a frame row.

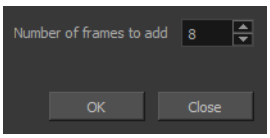


2. Do one of the following:

   - From the top menu, select **Scene > 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 view toolbar, click the Add Frames button to add frame after your selection.

- Press Ctrl + G and Ctrl + H (Windows/Linux) or ⌘ + G and Ctrl + H (Mac OS X).

The Add Frames dialog box opens.

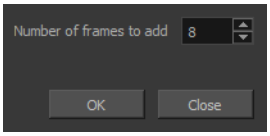


3. In the Number of Frames to Add field, enter the number of frames needed in the scene.

How to add frames at the start or end to extend the scene length from the top menu

1. From the top menu, select **Scene > Add Frames At Start** or **Add Frames At End**.
   - In the Xsheet view toolbar, press the Add Frames button to add frame after your selection.

   The Add Frames dialog box opens.

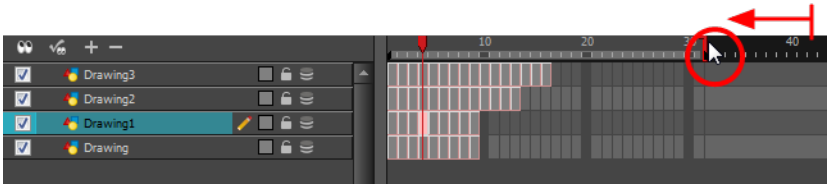


2. In the Number of Frames to Add field, enter the number of frames needed in the scene.

How to reduce the scene length in the Timeline view

When you remove frames at the end of a scene to reduce the scene length in the Timeline view, the exposed drawings and symbols are not deleted. They are still available if you extend the scene afterwards.

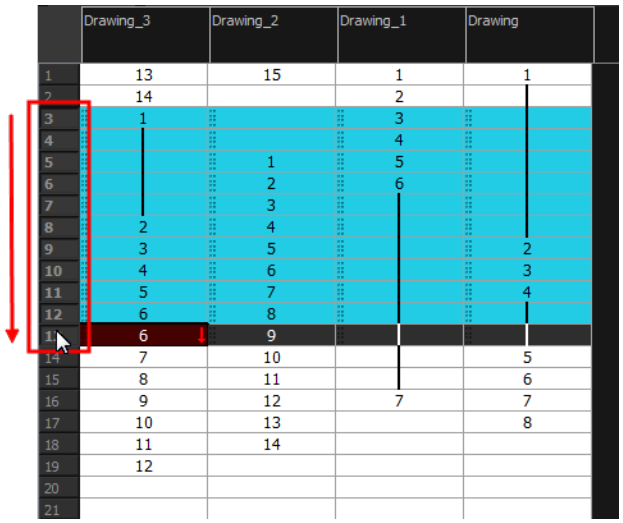
1. In the Timeline view, drag the scene length bracket to the left to remove frames from the scene.



How to remove a frame or a range of frames to reduce the scene length in the Xsheet view

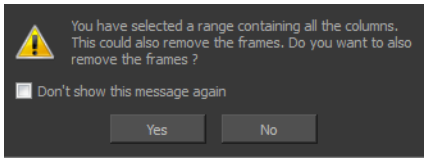
In the Xsheet view, you can remove any selected frame range, such as the last frame.

1. In the Xsheet view, do one of the following:
   - Select a frame in a given column.
   - Select a frame range by clicking the first frame's number and then dragging the selection highlight down to the last frame to delete.



2. To delete the selected frames, do one of the following:
   - From the top menu, select **Scene > Remove Selected Frames**.
   - Press Delete to delete the selection.
   - Click Remove Frames button. To remove several frame selections, click the button repeatedly.

   If you selected a range of frames, the Warning dialog box may open.



3. To complete the operation:
   - Click **Yes** to delete the selection.
   - Click **No** to delete only the exposure in the cell and not the frames.
   - Select the **Don't Show This Message Again** option to prevent the warning message from being displayed each time you delete a frame range.

Creating Drawing Elements

Before filling any value or setting any timing or exposure, you need to add different drawing elements.

Each drawing element is represented as a vertical element column in the Xsheet view and a horizontal element layer in the Timeline view.

In Harmony, whether you work in the Timeline or Xsheet view, any modification you do to one view will be applied to both. You can also see your layers displayed in the Network view as modules.

To start an exposure sheet, you will use drawing elements. Drawing elements are drawing containers. Any image file, either bitmap or vector, will use a drawing element.

When you add a drawing element to your scene, a folder is added to the scene directory. This folder is named the same way as the drawing element. Its purpose is to contain all the drawings related to this element. For example, in cut-out animation, a character can have many heads available. All of the head drawings will be contained in this folder, even if they are not exposed in the Timeline or the Xsheet view. There is always a drawing container connected to a drawing element (layer, column).

There are different element types available such as Sound and Expression. A sound element will contain sound files. Expressions, Beziers, Eases, 3D Path, Quadmaps and Pegs are for motion purposes during the compositing step. It is not necessary to create these types to create your exposure sheet.

You can add drawing elements from the Timeline view, Xsheet view, and the Scene menu.

This section is divided as follows:

- Layer and Column Concepts below
- Layer and Column Types on the facing page
- Adding New Drawing Elements on page 96
- Deleting Layers and Columns on page 98
- Layer and Column Properties on page 98
- Modifying Layers and Columns on page 99
- Duplicating Layers and Columns on page 101
- Cloning Layers and Columns on page 101
- Adding an Annotation Column on page 102

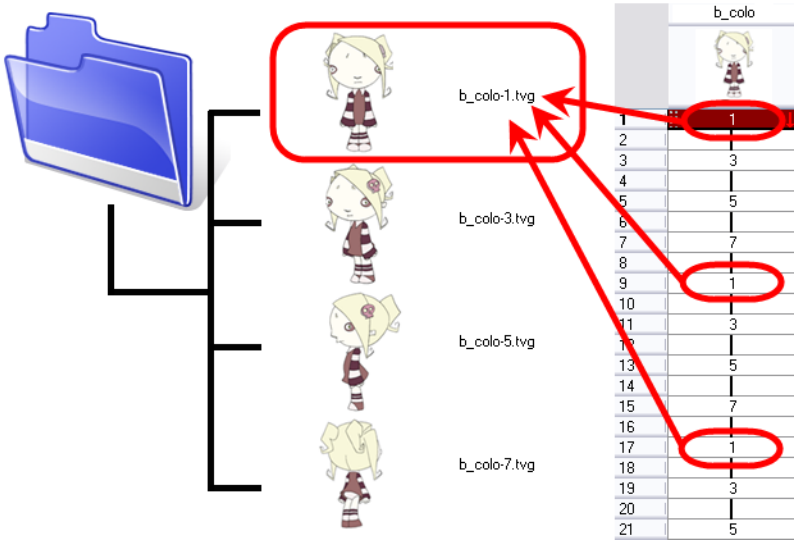
Layer and Column Concepts

A layer is linked to a directory, the location where all its drawings are saved. This directory has the same name as the layer. When a name is typed in a cell,Harmony searches the layer's directory for the corresponding drawing to display. If there is no corresponding drawing, a new one is created.

Drawings are exposed in cells, and linked to the drawings saved in the layer's directory. Removing a drawing from a cell means it is not displayed. It will not be deleted from the directory.

A drawing that is exposed multiple times (for example, in a walk cycle) would be linked to the same original drawing in the layer's directory. If you modify, repaint, or correct the drawing, all exposed

drawings with the same name are updated simultaneously. You must duplicate or create a new drawing to modify a single exposure and retain the others.



When you create a drawing cycle, all of the repeated drawings are linked to the original files. This means that when you modify, repaint, or correct a drawing named "1," all drawings named "1" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

Layer and Column Types

A column is also known as a layer. There are several types of layers that you can add in the Xsheet and Timeline view. Each layer is tagged with an icon to help 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.

Bitmap images are contained in Bitmap layers.

Bitmap Layer

If you import a picture or bitmap images in your project, they are inserted in a Bitmap layer. If you choose to vectorize your image when you import, the bitmap object will be placed on a Drawing layer. This way, you can have bitmap images mixed with vector drawings on a Drawing layer.

When importing a bitmap image, you have the option of encapsulating the image in a symbol. If you place a non-vectorized bitmap into a symbol, you will still not be able to mix vector drawings with it on the same layer. If you place a vectorized bitmap in a symbol, you must enter the symbol to be able to mix it with vector artwork.

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.

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.

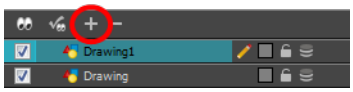
In the Xsheet view, the Sound layer is a dark grey colour.

Adding New Drawing Elements

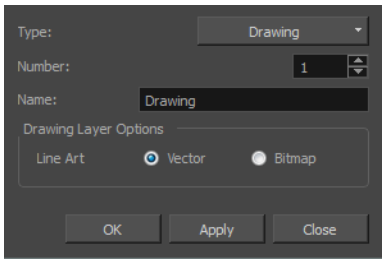
There are different ways to add a drawing layer to your project. By default, when you create a new scene there is one Drawing column in the Xsheet view and one corresponding Drawing layer in the Timeline view.

You can add an element for each drawing and it will appear as a column in the Xsheet view, a layer in the Timeline view, and a module in the Network view.

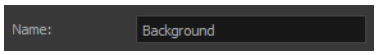
How to add a drawing element from the Timeline view

1. Do one of the following:
   - In the Timeline View menu, select **Insert > Drawing**.
   - In the Timeline view toolbar, click the Add Layers button.
   - 
   - Press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer dialog box opens.



2. In the Name field, enter a relevant element name.



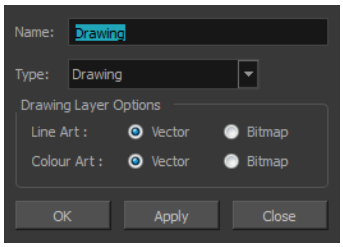
3. Do one of the following:
   - Click **OK** to add the layer and close the dialog box.
   - Click Apply to add the layer and keep the dialog box open to add another layer.
   - Click **Close** to cancel the operation.

   The new drawing element appears in the Timeline and Xsheet Views.

How to add a drawing element from the Xsheet view

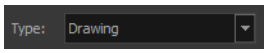
1. Do one of the following:
   - In the Xsheet view menu, select **Columns > Add Columns**.
   - Click the Add Columns button.
   - Press Shift + C.

   The Add Column dialog box opens.



2. In the Name field, type a relevant element name.

3. In the Type field, select Drawing.



4. To complete the operation:
   - Click **OK** to add your new layers and close the dialog box.
   - Click **Apply** to add your new layers and keep the dialog box open to add column.
   - Click **Close** to cancel the operation.

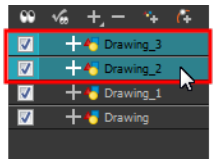
   The new drawing element appears in the Timeline and Xsheet Views—see Layer and Column Types on page 95.

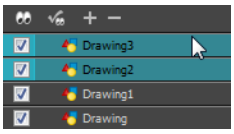
Deleting Layers and Columns

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 be deleted.

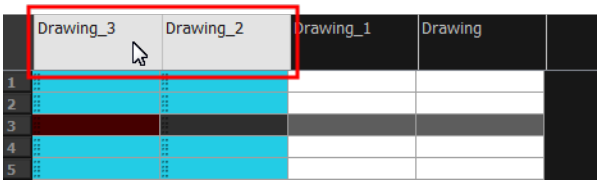




2. Do one of the following:
   - In the Timeline's Layer toolbar, click the Delete Layers button.

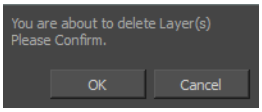
How to delete columns in the Xsheet view

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 View toolbar, click the Delete Columns button.
   - Press Delete.

   The Confirm Delete dialog box opens.



3. To complete the operation:
   - Click **OK** to delete the selected layers.
   - Click **Cancel** to cancel the operation.

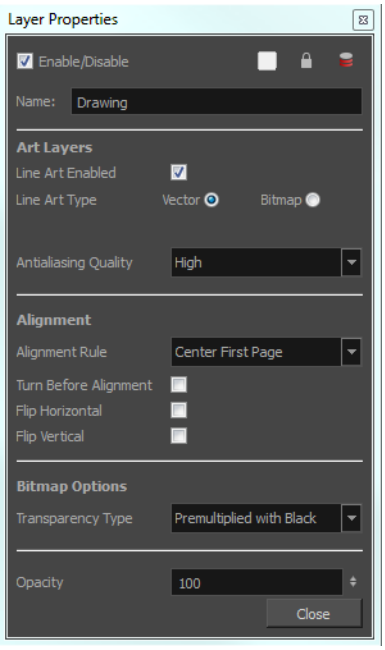
Layer and Column Properties

Each element has its own set of properties that can be modified, including effect and peg layers.

If you want to modify some of the element's properties, display the Layer Properties or Column Properties editor. You can display the Layer Properties editor from the Timeline or Network view as a dialog box or open the Layer Properties as a view of its own.

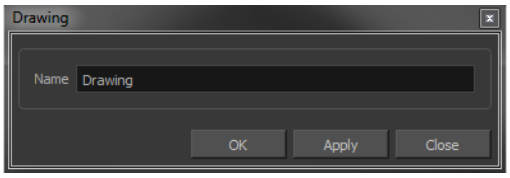
The Layer Properties editor allows you to:

- Rename the layer
- Enable or disable the layer
- Lock the layer
- Change the track colour



The Column Properties editor allows you to:

- Rename the layer
- Enable or disable the layer
- Adjust parameters for bitmap format, scan type and field chart



How to display the Column Properties editor from the Xsheet view

1. Do one of the following:
   - In the Xsheet view, double-click on a column's header.
   - In the Xsheet view, right-click on a column's header and select **Column Editor**.
   - Press Shift + E.

Modifying Layers and Columns

Once you add layers and columns to your project, you can modify their properties, names, or ordering.

You can change the order of your elements in the Timeline view and Xsheet view. When you change the order of your elements in one view, the other one is updated.

How to rename a layer in the Timeline view

1. In the Timeline view, double-click on the name of the layer to rename.
2. In the Name field, rename the layer and press Enter/Return.

How to rename a layer in the Layer Properties editor

1. In the Timeline view, double-click anywhere on the layer except the layer name to rename.

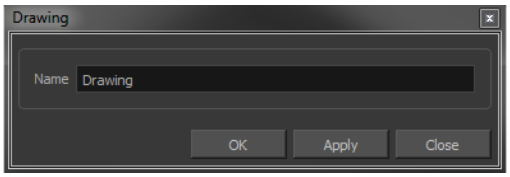
   The Layer Properties editor opens.
2. In the Name field, rename the layer.

3. Click **Close**.

How to rename a column

1. In the Xsheet view, double-click on a column name. Do not click on the drawing folder name that the column is linked to (this also appears in the column header just below the column name).

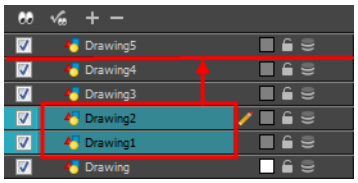
   The Drawing dialog box opens.



2. In the Name field, rename the column.
3. Click **OK**.

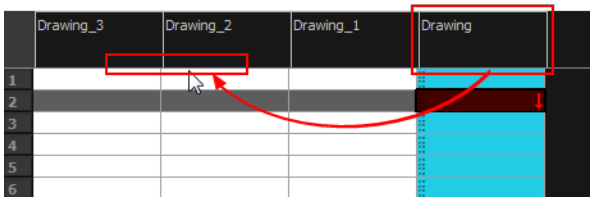
How to reorder layers in the Timeline view

1. In the Timeline view, select the layers to move.
2. Drag the selection to the new location.
3. Do one of the following:
   - Drop the selection on an existing layer to make it a child of another element layer.
   - Drop it between the existing layers. Timeline layers that are located above the selection are displayed in front it. Layers located under it in the Timeline View are displayed behind it.



How to reorder columns in the Xsheet view

1. In the Xsheet view, click on the column's header with the middle mouse button.
2. Drag the column to its new position.

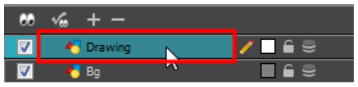


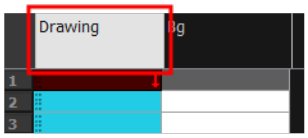
Duplicating Layers and Columns

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 you want to duplicate.





2. In the Xsheet View menu, select **Drawings > Duplicate Drawings.**

   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.

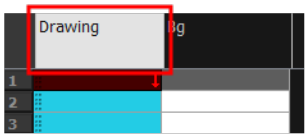
- You can modify the column timing independently from each other, but the drawings remain linked.
- You can copy the columns timing, so drawings and timings remain linked.

You can clone selected modules from the Network view in the same way.

This feature is useful when you want to reuse a hand-drawn animation but have different timings.

How to clone an element

1. In the Timeline or Xsheet view, select the layer or column you want to clone.



2. Do one of the following:
   - In the Xsheet View toolbar, click the Clone Selected Columns: Drawings Only button.
   - From the top menu, select **Edit > Clone** to clone the columns' drawings only.
   - In the Xsheet View or Timeline View toolbar, click the Clone Selected Layers/Columns: Drawings Only button.

   The new cloned layer or column appears.

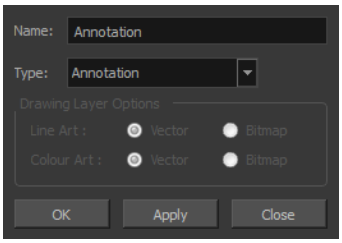
Adding an Annotation Column

The Annotation columns are useful for marking actions, corrections or other information related to your animation that you want to draw or write. This way, you can print your Xsheet, take it back to your animation table and work with the annotations.

How to add an annotation column

1. Do one of the following:
   - In the Xsheet View menu, select **Columns > Add Columns**.
   - In the Xsheet View toolbar, click the **Add Columns** button.
   - Press Shift + C.

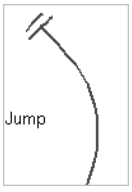
   The Add Column dialog box opens.



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 and Typing in the Annotation Column



In the annotation column, you can type in your notes and relevant information, as well as draw sketches and ideas that will be useful in producing your animation.

How to draw in the Annotation column

Pen tablet pressure sensitivity is not supported in the Annotation column.

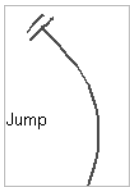
1. To draw in an Annotation column, simply use your mouse or pen tablet.

How to type in an Annotation column

Typing in an Annotation column is independent from the Drawing mode. You can be in either mode and the typing will work.

1. Do one of the following:
   - In the selected cell, press Ctrl (Windows/Linux) or ⌘ (Mac OS X).
   - In the selected cell, hold down Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (Mac OS X)..

2. In the selected cell, type the desired text.



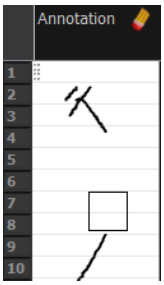
To learn about typing values in the Xsheet view, refer to Typing Exposure on page 111.

How to erase part of a drawn annotation using Erasing mode

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.

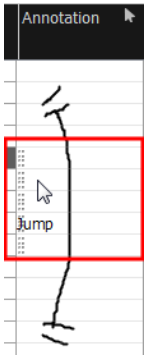
1. In the Annotation column header, click to cycle through the icons until the Eraser icon is displayed.
2. In the column, click and drag the cursor on top of the drawn annotation to erase parts of it.



When using a pen on a tablet, you MUST flip your pen to the eraser side for the eraser to work.

How to erase an Annotation column selection

1. In the Annotation column header, click to cycle through the icons until the Select icon is displayed.
2. In the Xsheet view, select the cell range you want to clear of text or drawn annotations. A selection is indicated by four pairs of dots on the left side of a cell. Do not select any cells if you plan to clear everything.



3. In the Xsheet view, right-click in the Annotation column.
4. Do one of the following:
   - Select **Annotation > Erase All** to erase the entire content of the column.
   - Select **Annotation > Erase Selected Images** to erase the images contained in the selected cell range.
   - Select **Annotation > Erase Selected Texts** to erase the text contained in the selected cell range.

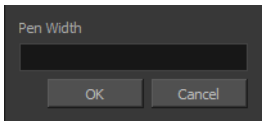
Changing the Drawing Settings

You can change the pen size and colour when you draw in the Annotation column.

How to change the pen width

1. Right click on a frame within an annotation column or in the Xsheet View menu, select **Annotation > Pen Width.**
2. Do one of the following:
   - Select a pen width preset.
   - Select **Change Current**.

   If you selected the Change Current option, the Pen Width dialog box opens.

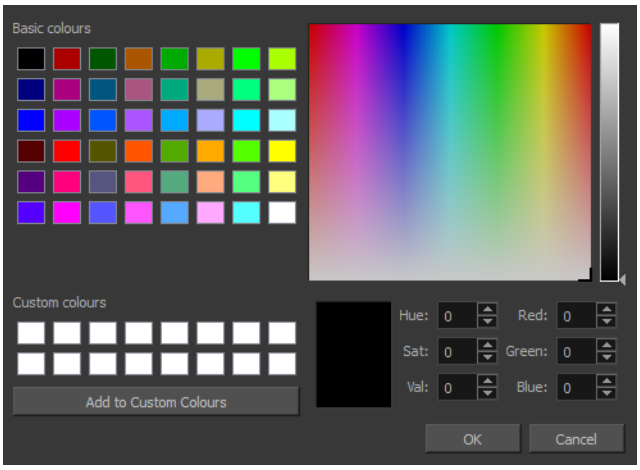


3. In the Pen Width field, type the number of pixels you want the pen size to be.
4. Click **OK**.

How to change the pen colour

1. In the Xsheet View menu, select **Annotation > Change Pen Colour**.

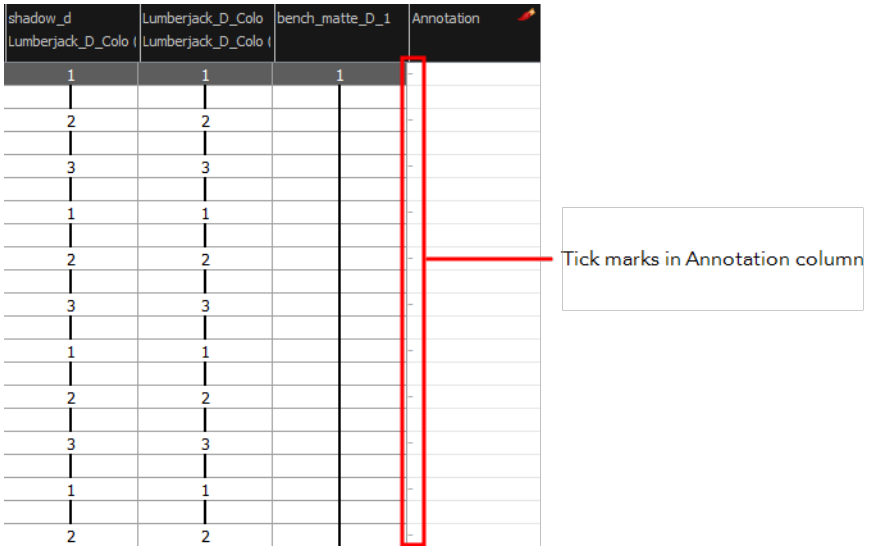
   The Select Colour dialog box opens.



2. Choose the new colour.
3. Click **OK**.

Displaying Tick Marks

When working with the Annotation columns, it is useful to display tick marks on odd-numbered frames.



To display the tick marks, you must run a short script.

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 File 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 an Annotation File

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.

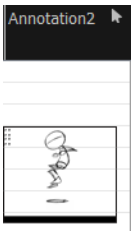
How to import annotation files

1. In the Xsheet view, select the first cell in the annotation column where you want the imported image to start.

2. Right click on the frame or from the Xsheet view menu, select **Annotation > Import File**.
3. Browse for the bitmap image to import.

4. Click **Open**.

   The image appears in the annotation column.



Linking External Files with Timing Columns

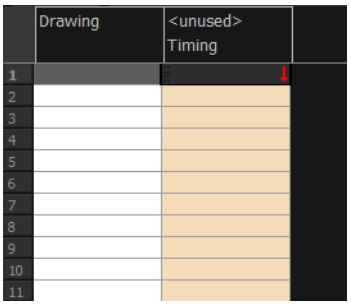
Timing columns are unique in that they can reference a source folder outside of the project folder to bring images into the project. For example, you may have background scenes created in a third party software that you might need to update in the future; by using Timing columns, you can dynamically link your backgrounds, expose different backgrounds at different times, and have live, automatic updating capabilities.

If the project file is moved, or the folder that the column is linked to is moved, then dynamic linking is broken and the images that were in that folder will disappear in Toon Boom Harmony.

How to use a Timing column

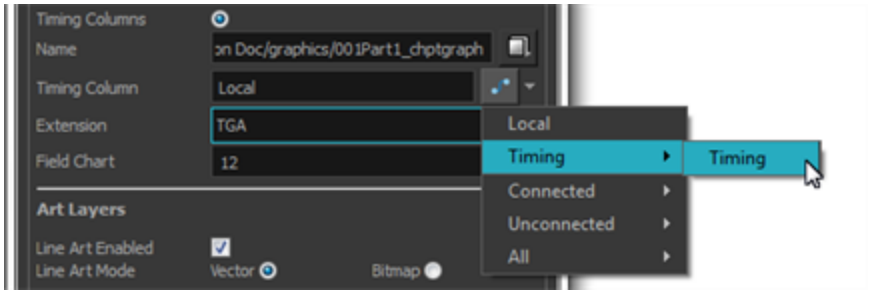
1. In the Xsheet view, click on the Add Columns button.
2. In the Add Column dialog box, type in the name of the new column, then from the Type menu, select **Timing**.
3. Do one of the following:
   - Click **OK** if you are finished.
   - Click **Apply** if you want to continue adding more columns and column types.

   A peach coloured column appears in the Xsheet with the name you typed in, and for the header, <unused>.



4. In the Timing Column field, click the **Arrow** button to create a new timing column, or select the name of the column from the list. If you have an element directory selected in the Name field, the Timing Column will indicate which files are called from that element directory. Remember that the file displayed at each frame is based on the element name, cell label, and extension. If the element

is **toto**, the timing column is labeled 1, 2, and 3, and the extension is TVG, Harmony will display drawings **totobody-1.tvg**, **totobody-2.tvg**, and **totobody-3.tvg** at the selected frames.



In the Xsheet, the <unused> header changes to the name of the module in the Network view.

5. From the Extension list, select the file format of the files you want to display.
6. Click **OK**.
7. In the Xsheet view, in the Timing column, type the number that corresponds to the suffix of the drawing file that you want to expose to make it appear in the Camera view.

Filling Exposure

Harmony provides different tools to fill in exposures and values, create cycles, and set increments.

This section is divided as follows:

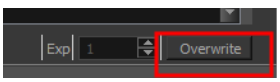
- Filling Exposure Mode below
- Typing Exposure on the facing page
- Holding Exposure on page 112
- Extending a Single Exposure on page 113
- Extending an Exposure Sequence on page 114
- Dragging Cells on page 115
- Increasing and Decreasing Exposure on page 118
- Inserting Blank Cells on page 121
- Deleting Exposure on page 120
- Setting the Exposure on page 122
- Filling a Selection with a Single Exposure on page 123
- Filling a Selection with a Sequence on page 124
- Filling a Selection Randomly on page 126
- Filling Empty Cells on page 127
- Creating Cycles on page 128
- Managing Drawings on page 132
- Renaming a Drawing on page 132
- Deleting a Drawing on page 133
- Duplicating a Drawing on page 134
- Copying and Pasting Drawings on page 134
- Merging Drawings on page 137

Filling Exposure Mode

In the Xsheet view, you can fill columns using two different filling modes: Overwrite or Insert. These modes control the filling behaviour. The Timeline view only uses the Overwrite mode.

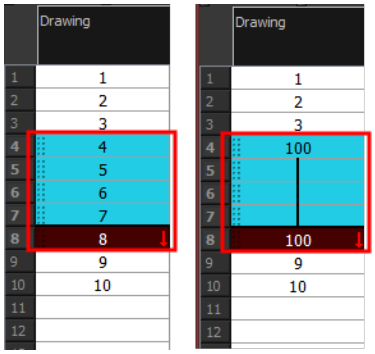
How to toggle between Overwrite and Insert modes

1. Do one of the following:
   - In the bottom-right corner of the Xsheet view, click the **Overwrite/Insert** button.
   - Press I.



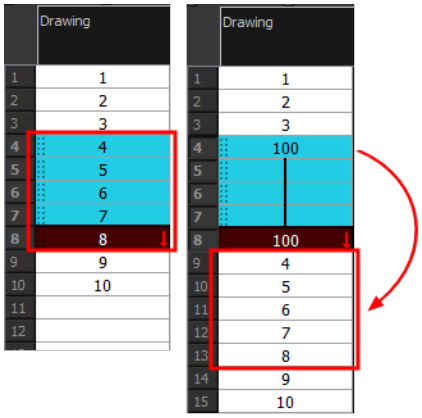
Overwrite Mode

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.



Insert Mode

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.



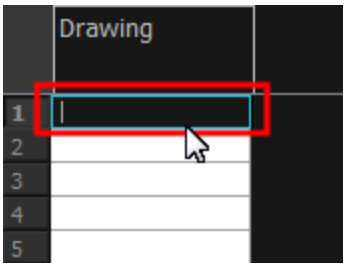
Typing Exposure

To fill in your exposure, you can directly type the values in the Xsheet view and Timeline view.

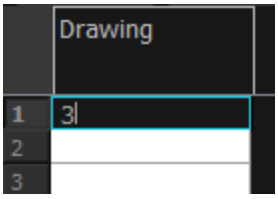
How to type values in the Xsheet view

You can only use alphanumeric values. **(0-9**, **a-z**, underscore (_) and dash (-)).

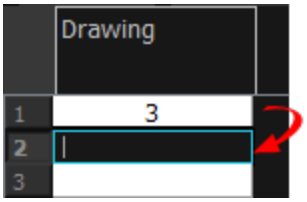
1. In an Xsheet column, double-click on one cell.



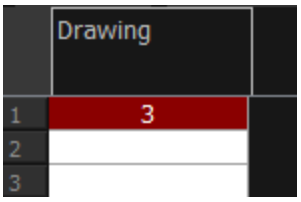
2. Type a value or drawing name in the cell.



3. Press Enter/Return to move to the next cell.



4. Press Esc to exit the typing mode and return to normal mode.



Holding Exposure

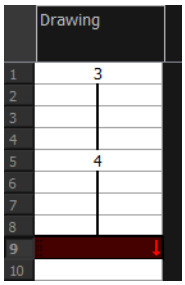
Drawings in an animation project are not always exposed on a single frame; they are often exposed for more than one frame. The most common exposure of a drawing is two frames. In the industry, this type of exposure is known as animation in double frames or animation on twos. A drawing can also be exposed for three, four, five cells and so on. To prevent mistakes and save time, the Xsheet lets you hold your cells automatically as you type.

The Set Exposure option allows you to choose how many frames you want to hold for your exposure.

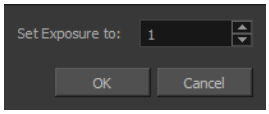
- This option is only available in the Xsheet view.
- The selected Set Exposure settings will be kept from session to session. You will not have to set them every time you use Toon Boom Harmony.

How to hold exposure

1. In the Xsheet View menu, select **Exposure > Hold Exposure > Hold 2 Cells**.
2. In the Xsheet view, right-click and select **Exposure > Set Exposure To > Set Exposure to 1, 2,3**, or **Set Exposure**.
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.



   - If you selected Set Exposure, the Set Exposure dialog box opens. You can hold as many cells as needed.

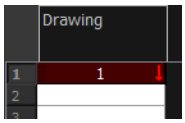


Extending a Single Exposure

Extending the exposure lets you select an Xsheet cell that contains a value and pull it down to the desired frame.

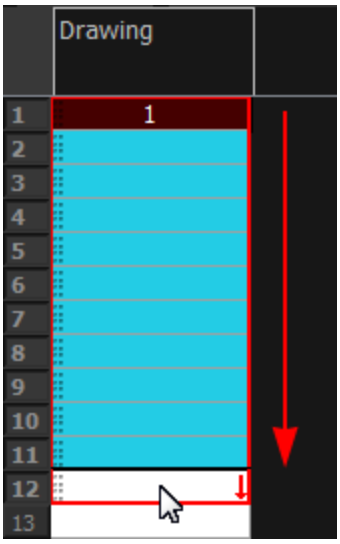
How to extend a cell exposure gesturally

1. In the Xsheet view, select the red arrow in the cell's right side. Make sure you see the drag down cursor.



2. Pull down the selected cell to the desired frame.

The red selection box must be visible when releasing the mouse button. If not, the action is considered cancelled.

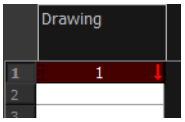


Extending an Exposure Sequence

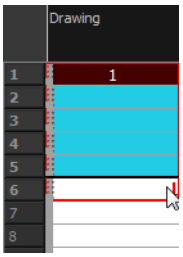
When working with a sequence that contains only numbers, you can extend an exposure sequence in a similar manner to extending a single exposure.

How to extend an exposure to create a sequence

1. In the Xsheet view, select a cell containing a number.
2. In the selected cell, click the red arrow on the cell's right side. Make sure to see the drag down cursor.

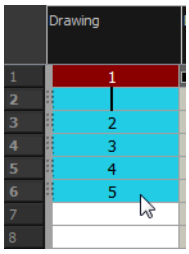


3. Hold down the Shift key. Make sure a plus (+) sign appears.
4. Pull down the selection box to the desired frame.



The red selection box must be visible when releasing the mouse button. If not, the action is considered cancelled.

5. First release the Shift key, then release the mouse button.

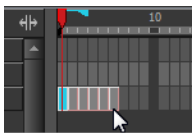


Dragging Cells

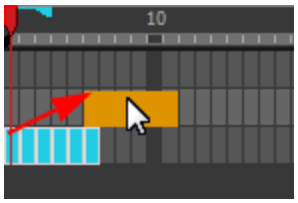
To readjust your timing, you can drag one or several cells to a new location. You can drag a cell to any other frame in the same column or into another column.

How to drag a cell to another location in the Timeline view

1. In the Timeline view, select one or several cells to move.

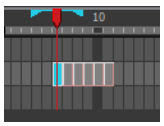


2. Click on the cells selection and drag it to the new location.

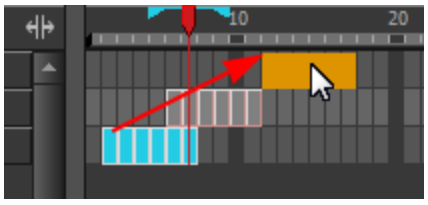


3. Drop the selection. Do one of the following:

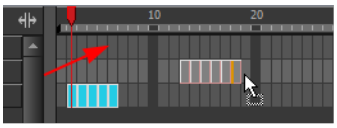
   - Drop by simply releasing the mouse or pen to overwrite the existing cells.

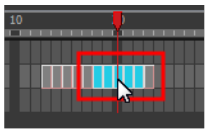


   - Hold Ctrl (Windows/Linux) or ⌘ (Mac OS X) while dropping the selection to copy the cells. The original cells will not be moved.



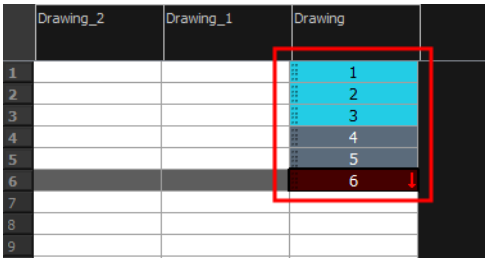
   - Press Shift while dropping to insert the selection between the existing frames.



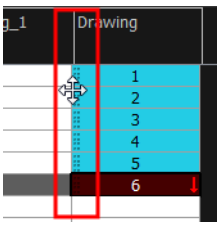


How to drag a cell to another location in the Xsheet view

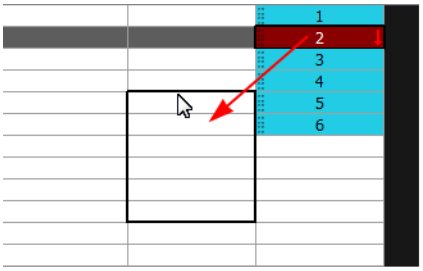
1. In the Xsheet view, select one or more cells.

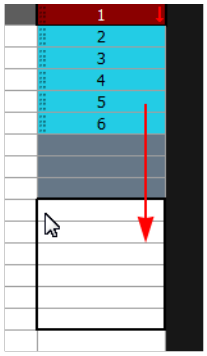


2. In the Xsheet view, select the small dotted area on the left side of the selected cells.

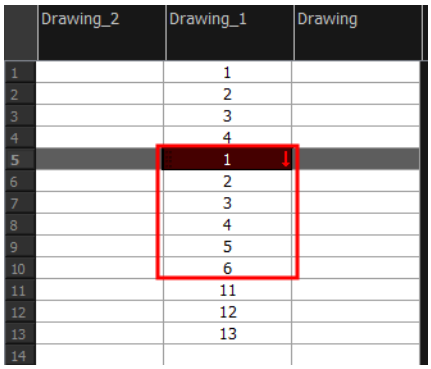


3. Drag the selection to any other cell in the same column or in another column.

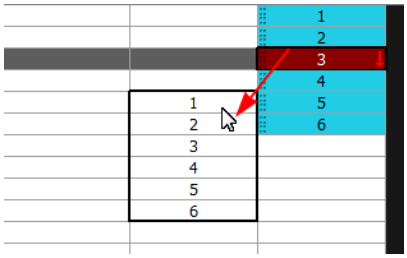




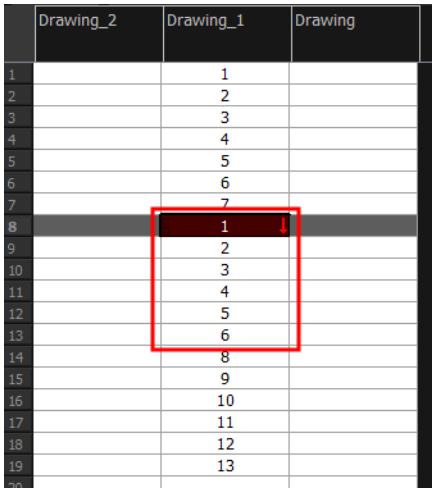
4. Do one of the following:
   - Drop the selection to overwrite the existing cells.



- Hold down Ctrl (Windows/Linux) or ⌘ (Mac OS X) while dropping the selection to copy the cells. The original selection will not be moved.



- Press Shift while dropping the selection to insert it between the existing frames.

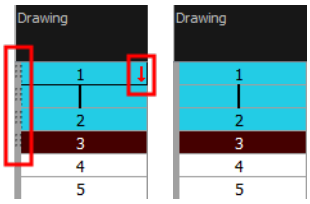


You can turn off the Gestural Drag Mode for the Xsheet view to prevent drawings from being dragged from one location to another.

How to turn off the Gestural Drag mode

1. Do one of the following:

- In the Xsheet view, right-click and deselect the **Gestural Drag Mode** option.
- Click the Toggle Gestural Drag Mode button (you may have to customize the toolbar to display it).



The dragging pad disappears when the Gestural Drag mode is off.

This feature does not apply to Annotation columns.

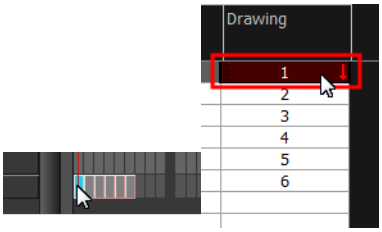
Increasing and Decreasing Exposure

Once a value is entered in the Timeline or Xsheet view, you can increase and decrease its exposure.

How to increase exposure

Increasing the exposure adds one more exposure to a selected cell; repeating this action adds an extra cell each time. This is an efficient way of extending a drawing exposure and is always set in Insert mode. Increasing an exposure pushes the existing exposure ahead.

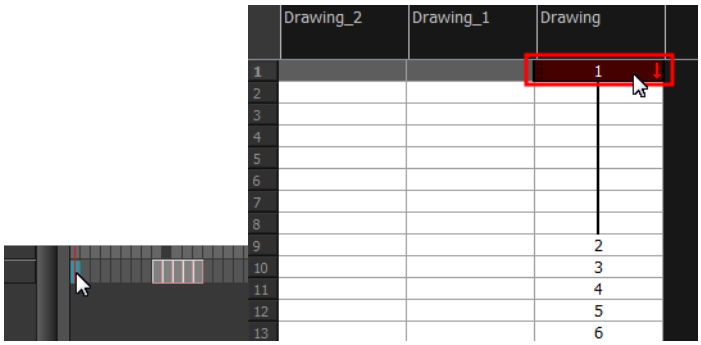
1. In the Timeline or Xsheet view, select a cell.



2. Do one of the following:
   - Right-click on the selected cell and select **Exposure > Increase Exposure**.
   - Press +.
   - In the Xsheet or Timeline View toolbar, click the Increase Exposure button.

How to decrease exposure

1. In the Timeline or Xsheet view, select a cell.

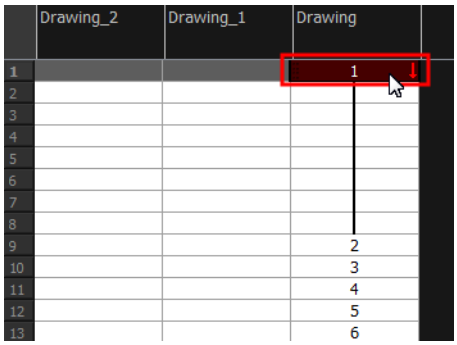


2. Do one of the following:
   - Right-click on the selected cell and select **Exposure > Decrease Exposure**.
   - In the Xsheet or Timeline View toolbar, click the Increase Exposure button.
   - Press -.

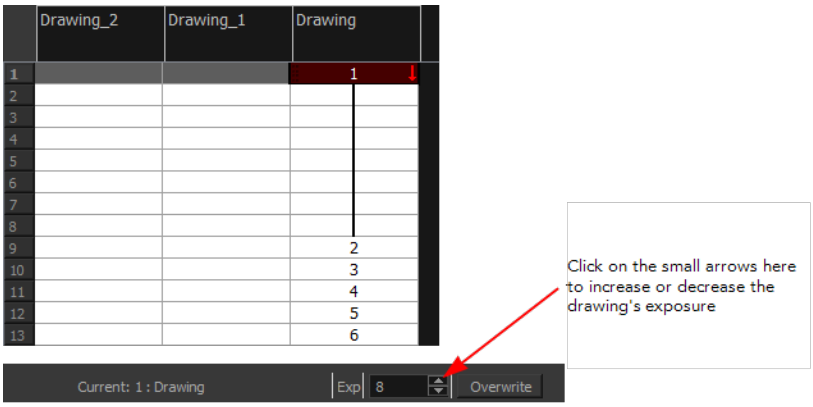
How to increase and decrease exposure using the Increase/Decrease Exposure field

You can use this option in the Xsheet view to increase or decrease the exposure of a selected drawing.

1. In the Xsheet view, select the cell to modify.



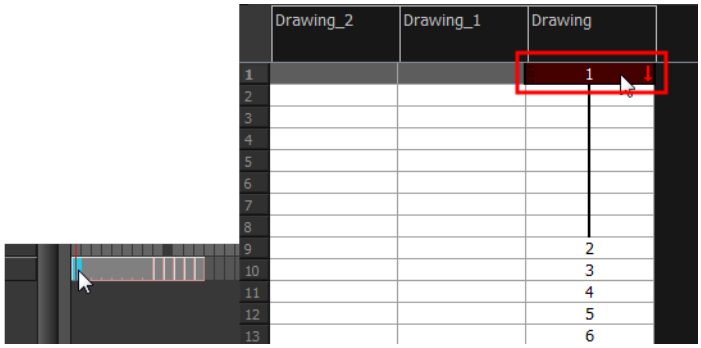
2. Do one of the following:
   - In the Xsheet's bottom right-corner, enter the number of cells over which the drawing will be exposed.
   - In the Xsheet's bottom-right corner, increase or decrease the drawing's exposure by clicking the up or down arrows.
   - Press + to increase exposure.
   - Press - to decrease exposure.



How to use the Clear Exposure and Pull feature

You can use this option to reduce a drawing's exposure.

1. In the Timeline or Xsheet view, select or range of cells.



2. Do one of the following:
   - Right-click on the selected cell and select **Exposure > Clear Exposure and Pull**.
   - In the Xsheet or Timeline View toolbar, click the Clear Exposure and Pull button.
3. The exposure is reduced by the selected number of cells.

Deleting Exposure

You can delete a drawing's exposure in several ways. When you delete a drawing's exposure from the Timeline or Xsheet view, you are not deleting the actual drawing file. You can always retrieve it by typing its name again in a cell.

You can delete the exposure contained 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 contained inside a collapsed group.

How to delete selected exposures

1. In the Timeline or Xsheet view, select the exposure you want to delete.
2. Do one of the following:
   - Right-click and select **Delete**.
   - Press Delete.

How to clear the entire exposure of a drawing

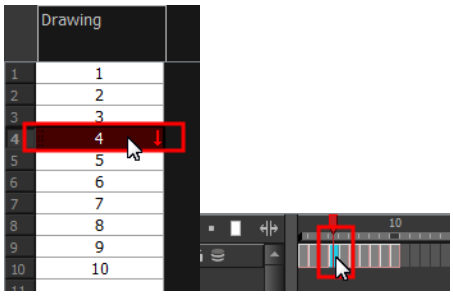
1. In the Timeline or Xsheet view, select a cell of a drawing exposed over several cells.
2. Do one of the following:
   - In the Timeline view, right-click on the selection and select **Exposure > Clear Exposure**.
   - In the Xsheet View toolbar, click the Clear Exposure button (you may have to customize the toolbar to display it).

Inserting Blank Cells

You can place an empty cell between other cells. This is always done in Insert mode and pushes down existing exposure, even if you are set to Overwrite mode.

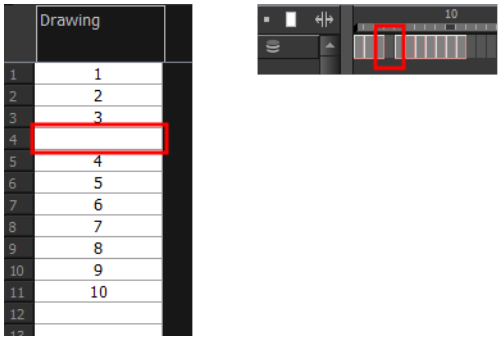
How to insert blank cells

1. In the Xsheet or Timeline view, select the cell in which you want to insert a blank cell.



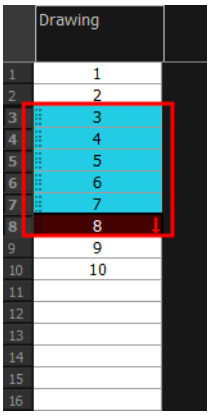
2. Do one of the following:
   - Right-click on the selected cell and select **Exposure > Insert Blank Cell**.
   - In the Xsheet or Timeline view toolbar, click the Insert Blank Cell button (you may have to customize the toolbar to display it).
   - Press Shift + J.

   The blank cell is inserted.

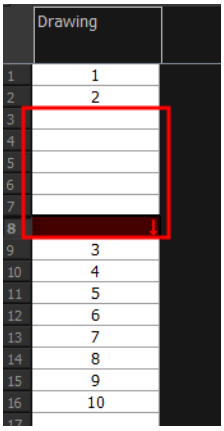


How to clear a selected cell range without changing the exposure and timing

1. In the Xsheet view, select the frame range to clear.



2. Right-click on the selected cells and select **Clear**.

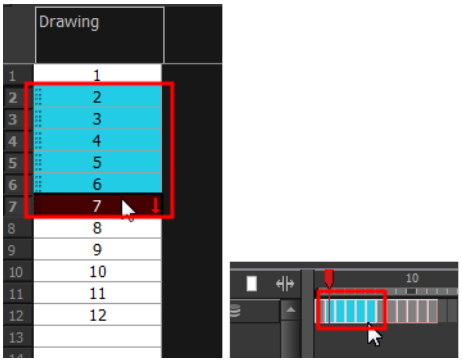


Setting the Exposure

You can easily increase or decrease the exposure for a selected cell range by using the Set Exposure options.

How to set the exposure

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



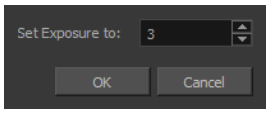
2. Do one of the following:

   - In the Xsheet view, right click and select **Exposure > Set Exposure to > Set Exposure to 1**, **2**, or **3**, or **Set Exposure**.

- In the Timeline View toolbar, click one of the Set Exposure buttons (you may have to customize the toolbar to display them).

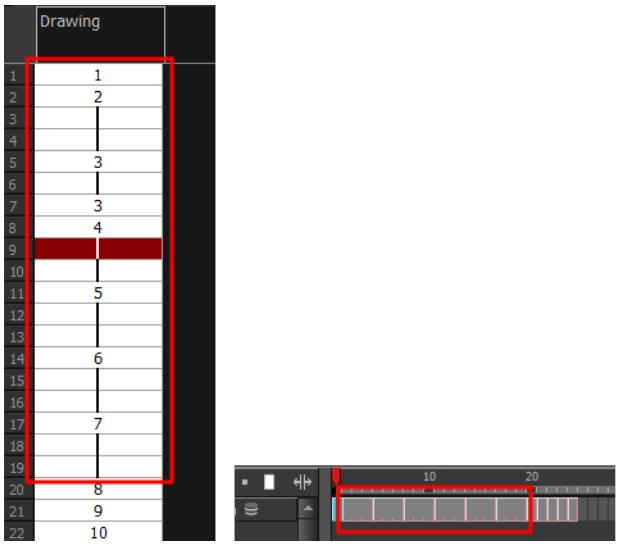
3. In the Xsheet view, right-click and select **Exposure > Set Exposure to > Set Exposure to 1**, **2**, or **3**, or **Set Exposure**.

   If you chose the Set Exposure option, the Set Exposure dialog box opens.



4. Type the number of frames you want the drawings to display and click **OK**.

   The new timing is displayed in the Xsheet view.

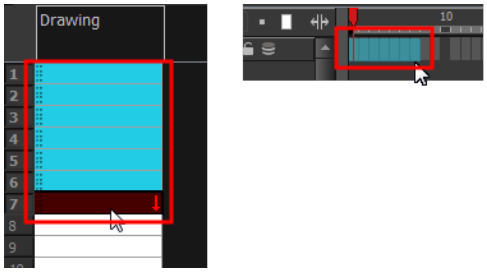


Filling a Selection with a Single Exposure

The Fill Selection option lets you fill the same value over an entire selection. The selection can be over one cell, a cell range in one column, a cell range over many columns, an entire column, or many columns. You can use numbers, words, letters, or any alphanumeric value.

How to fill a selection with a single exposure

1. In the Xsheet or Timeline view, select a cell range.

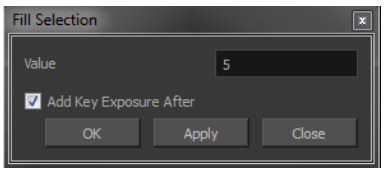


2. Do one of the following:

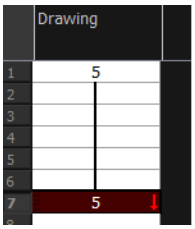
   - Click the Fill Selection button in the Xsheet or Timeline view toolbar (you may have to customize the toolbar to display it).

- Press Ctrl + T (Windows/Linux) or ⌘ + T (Mac OS X)).

The Fill Selection dialog box opens.



3. In the Value field, type the desired value.
4. To insert a keyframe in the frame following the last cell in the selection, select the **Add Key Exposure After** option. Otherwise, leave it deselected.
5. Click **OK**.

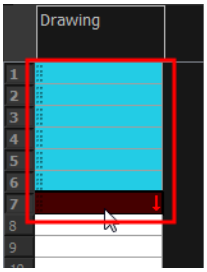


Filling a Selection with a Sequence

You can create a numbered sequence over a selection. The sequence can be forward, backward, single, double or higher increment, as a cycle, and so on. The sequence can be over one cell, a cell range in one or more columns, or one or more columns.

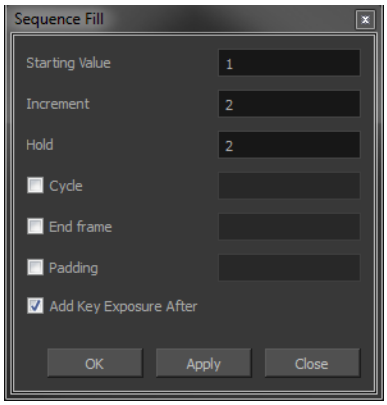
How to fill a selection with a sequence

1. In the Xsheet or the Timeline view, select a cell range.



2. Do one of the following:
   - In the Timeline view, right-click and select **Exposure > Sequence Fill**.
   - In the Xsheet View toolbar, click the **Sequence Fill** button (you may have to customize the toolbar to display it).
   - Press Ctrl + M (Windows/Linux) or ⌘ + M (Mac OS X).

   The Sequence Fill dialog box opens.



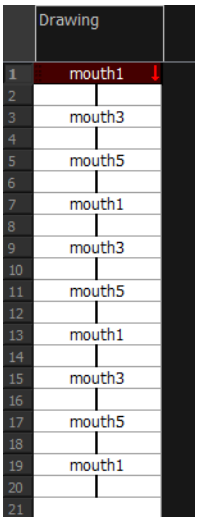
3. In the Starting Value field, type the first number in the sequence.
4. In the Increment field, type the number by which the drawing number will increase from frame to frame. For example, an increment of 1 is used in this sequence:**1-2-3-4**; this sequence increments by 2: **1-3-5-7**; and this one, by -2: **8-6-4-2**.
5. In the Hold field, select an exposure holding value.
6. Select the **Cycle** option if you want a cycle; enter the number of cells for this cycle's duration.

If you choose a two-cell hold, a cycle of three drawings will last for six cells.

7. If you selected a larger range than the amount of frames needed, select the **End Frame** option and type the last frame needed.

8. If you want to have more than one digit in your numbers such as "**001**" instead of "**1**", select the Padding option and add as many pound signs (**#**) as digits needed. In the field, you can type a letter or word to add before the drawing number.

9. To insert a keyframe in the frame following the last cell in the selection, select the **Add Key Exposure After** option. Otherwise, leave it deselected.
10. Click **OK**.

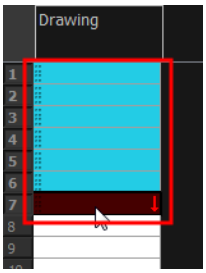


Filling a Selection Randomly

You can fill in random values over a selection. You can give a maximum and a minimum value and create a range for the system to choose the random values from. The selection can be over one cell, a cell range in one column or more, or an entire column or many entire columns.

How to fill cells randomly

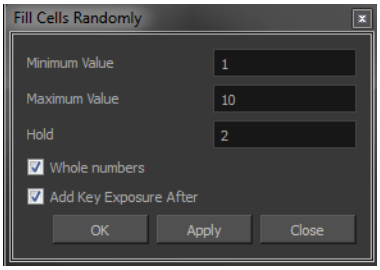
1. In the Xsheet view, select a cell range.



2. Do one of the following:

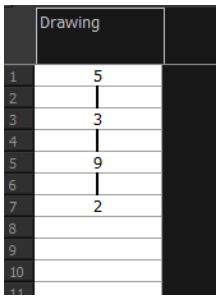
   - In the Xsheet view, click the Fill Cells Randomly button (you may have to customize the toolbar to display it).

   The Fill Cells Randomly dialog box opens.



3. In the Minimum Value field, enter the lowest acceptable value.
4. In the Maximum Value field, enter the highest acceptable value.
5. In the **Hold** field, choose an exposure holding value.

6. If you are applying this option to a drawing column, enable the **Whole Numbers** option to avoid decimal points.
7. Click OK.



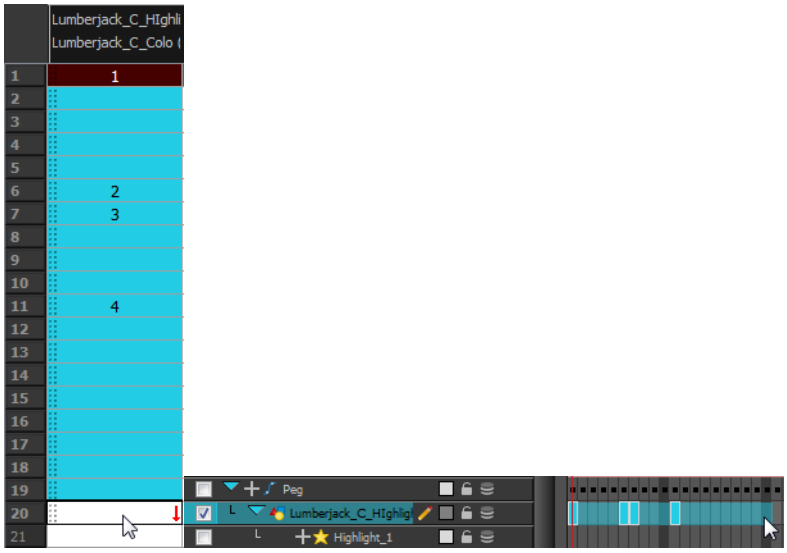
Filling Empty Cells

The Filling Empty Cells feature is used to extend the exposure of single frame drawings to fill the range of empty cells after each one.

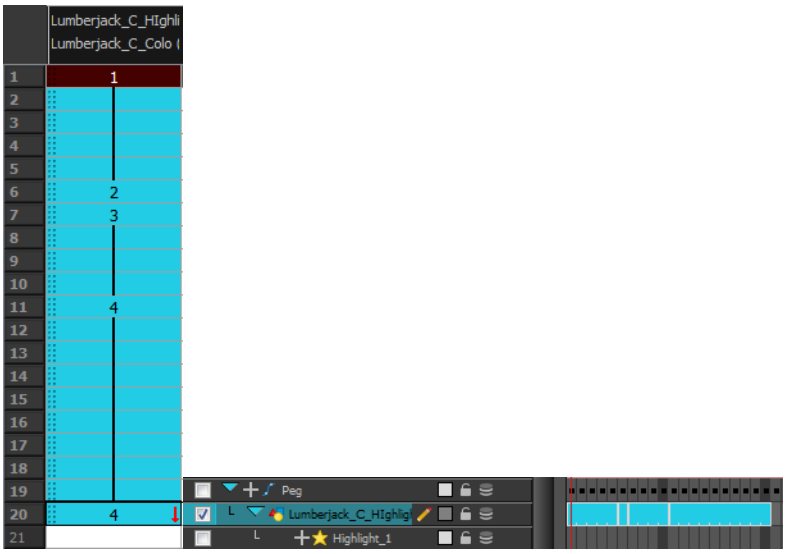
When creating drawings on cells that are not side-by-side, the exposure of the first drawing no longer fills automatically. You need to select the frame range where you want your drawings to hold their exposure up to the next drawing and use the Fill Empty Cells command.

How to fill empty cells

1. In the Xsheet view or Timeline view, select a cell range.



2. Do one of the following:
   - In the Timeline View toolbar, click on the Fill Empty Cells button.



Each drawing in the selection is exposed in the range of empty cells that follow it.

Creating Cycles

Once you have entered a series of drawings and exposures, you can create cycles out of them in several ways.

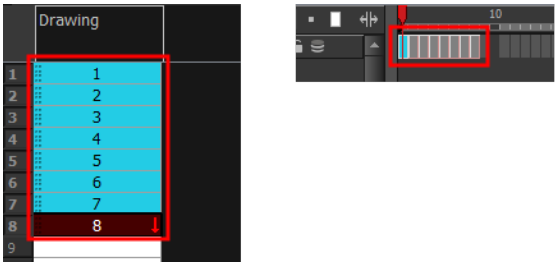
You can loop your drawings using the following commands:

- Paste Cycle
- Paste Reverse
- Create Cycle

When you create a drawing cycle, all of the repeated drawings are linked to the same original files. This means that when you modify, repaint, or correct a drawing named "**1**," all drawings named "**1**" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

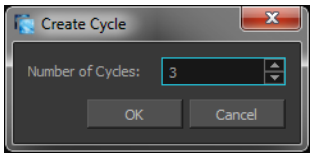
How to create a cycle

1. In the Timeline view, select the cell range to loop.



2. In the Timeline View toolbar, click the Create Cycle button (you may have to customize the toolbar to display it).

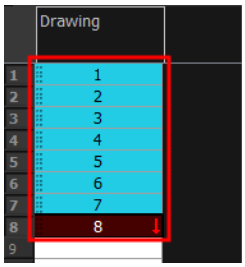
   The Create Cycle dialog box opens.

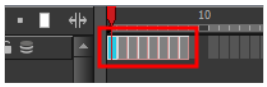


3. Enter the number of cycles you want, including the current selection.

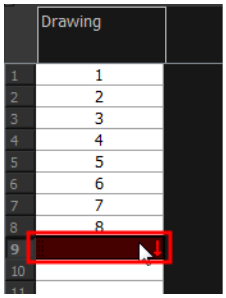
How to paste a cycle

1. In the Xsheet or Timeline view, select the cell range to loop.



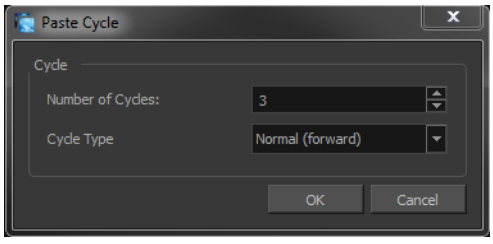


2. From the top menu, select **Edit > Copy**.
3. In the Xsheet or Timeline view, select the cell where you want your cycles to start.

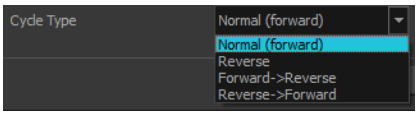


4. Do one of the following:
   - From the top menu, select **Edit > Paste Cycle**.
   - Right-click and select **Paste Cycle**.
   - Press Ctrl + / (Windows/Linux) or ⌘ + / (Mac OS X).

   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.



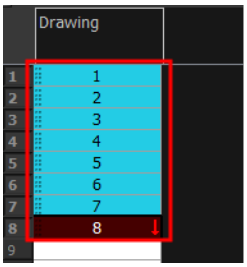
- **Normal (forward)**: Pastes cycles as for all cycles, starting with the first cell of your selection and ending with the last.
- **Reverse**: Pastes cycles in the reverse order of the original selection, starting with the last cell of your selection and ending with the first one.
- **Forward > Reverse**: 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.

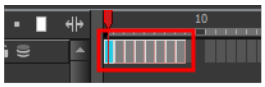
7. Click **OK**.

You can perform the same operation using the Paste Special dialog box. To open the Paste Special dialog box, select **Edit > Paste Special** or press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

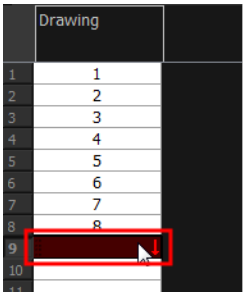
How to paste a reversed cycle

1. In the Xsheet or Timeline view, select the cell range to paste in reverse order.

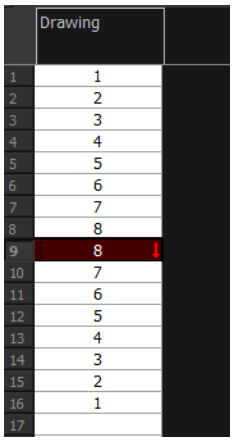




2. From the top menu, select **Edit > Copy**.
3. In the Xsheet or Timeline view, select the cell where you want your cycles to start.



4. Do one of the following:
   - From the top menu, select **Edit > Paste Reverse**.
   - Right-click and select **Paste Reverse**.
   - Press Ctrl + . (Windows/Linux) or ⌘ + . (Mac OS X).


Drawing
1
2
3
4
5
6
7
8
8
7
6
5
4
3
2
1

Managing Drawings

Drawings that are created in Toon Boom Harmony are not stored in their cells. They are actual files stored in the project's folder. If you want to rename a drawing or delete a drawing from your project, you need to edit the file and not the cells.

Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

This section is divided as follows:

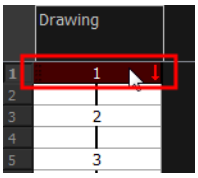
- Renaming a Drawing below
- Deleting a Drawing on the facing page
- Duplicating a Drawing on page 134
- Copying and Pasting Drawings on page 134
- Merging Drawings on page 137

Renaming a Drawing

To rename a drawing, you need to select the drawing cell and use the Rename Drawing command.

How to rename a drawing

1. In the Xsheet or Timeline view, select the drawing to rename.

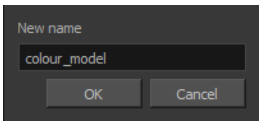


2. Do one of the following:

   In the Xsheet or Timeline View toolbar, click the Rename Drawing button (you may have to customize the toolbar to display it).

   - Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.



3. In the New Name field, type in the new drawing name.

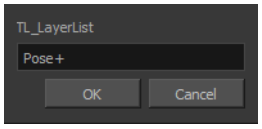
How to rename a drawing sequence with a prefix

You can rename a drawing sequence with a prefix, which can be quite useful for cut-out puppet

breakdown and deformation animation.

1. In the Xsheet or Timeline view, select your drawing sequence. Note that you can only select a drawing range in one column or layer at the time.
2. Right-click and select **Drawings > Rename Drawing with Prefix**.

   The Rename Drawing with Prefix dialog box opens.

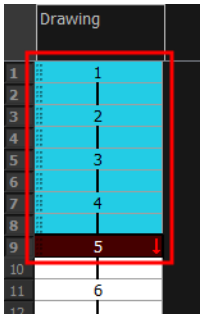


3. In the Prefix to Add field, type the prefix to add before the drawing name.

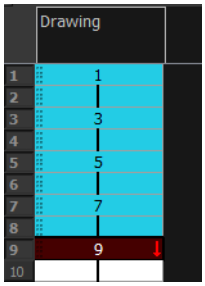
How to rename drawings by their frame position

You can rename a series of drawings relative to their frame position. This is useful in hand-drawn animation.

1. In the Xsheet or Timeline view, select the drawing sequence to be renamed.



2. From the top menu, select **Drawing > Rename by Frame**.



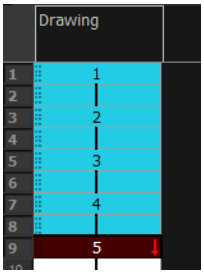
Deleting a Drawing

You can permanently delete a drawing file from a project's folder.

Deleting a drawing file is an operation that cannot be undone.

How to delete a drawing

1. In the Xsheet or Timeline view, select the drawings to delete.



2. Do one of the following:
   - From the top menu, select **Drawing > Delete Selected Drawings**.
   - Right-click and select **Drawings > Delete Selected Drawings**.

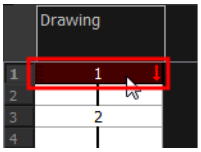
Duplicating a Drawing

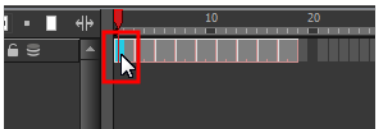
If you want to modify a drawing that already exists, but keep the original drawing intact, you can duplicate the drawing and work on the copy. When duplicating a drawing, the selected cell is replaced with the new drawing. The exposure of the original drawing that was on the current cell is removed. The original drawing is not deleted from the project folder or other cells in which it is exposed.

With Toon Boom Harmony you can create a keyframe at the same time as you duplicate your drawing. This way you can modify and reposition drawings without affecting the original drawing.

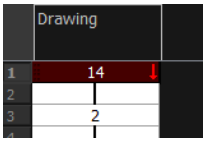
How to duplicate a drawing

1. In the Xsheet or Timeline view, select the drawing to duplicate.





2. Do one of the following:
   - From the top menu, select **Drawing > Duplicate Drawing**.
   - Right-click and select **Drawings > Duplicate Drawings**.
   - In the Xsheet view toolbar, click the Drawing > 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.

If you want to copy and paste the 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 three methods of pasting your selected drawings with the Paste Special dialog box:

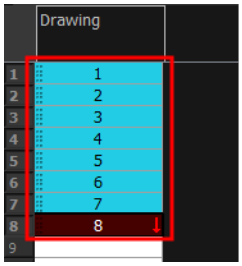
- **Never Create Drawing Files**: Pastes all of your drawings as is. If there is a drawing in a cell, it is overwritten by the pasted selection.
- **Always Create Drawings**: Pastes all of your drawings as is, unless a pasted drawing has the same name as an existing one. In this case, the pasted drawing is duplicated and renamed.
- **Only Create Drawings When They Do Not Exist**: Pastes only the drawings that are named differently from existing drawings. If a drawing has the same name as an existing one, it is ignored and not pasted. This avoids the duplication of drawings in your layers.

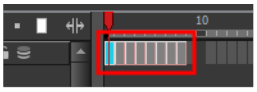
  This option is useful when you are pasting cut-out character templates containing drawings you may already have in your scene and some new ones. Using this option, you only paste the new drawings and are not duplicating all of the other parts you already have.

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.

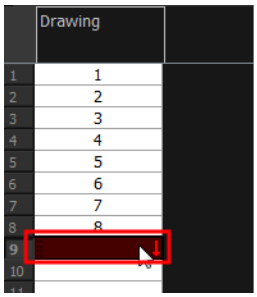
How to paste drawings with the Paste Special command

1. In the Xsheet or Timeline view, select the drawings to copy and press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).



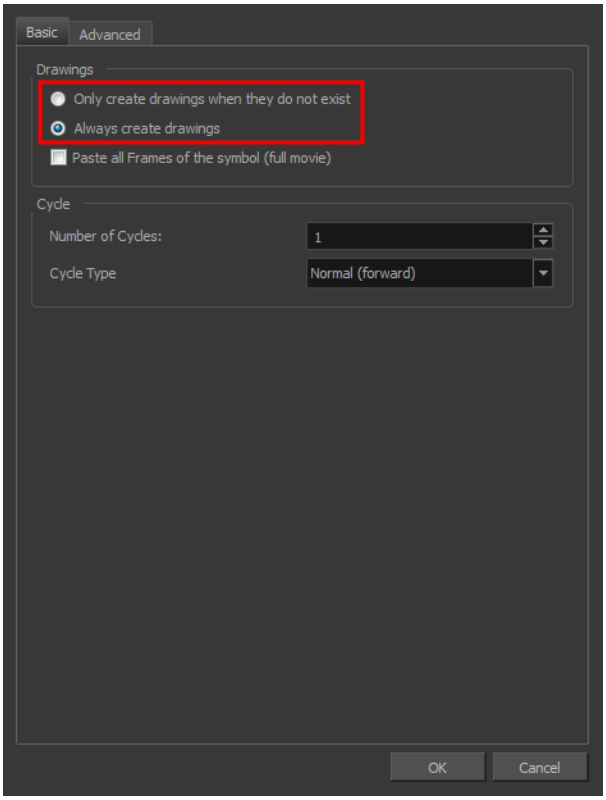


2. In the Xsheet or Timeline view, select the cell where you want your pasted selection to start.



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 View toolbar, click the Paste Special button (you may need to customize the toolbar to display it).
   - Press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

The Paste Special dialog box opens.



4. Select the **Basic** tab.
5. In the Drawings section, select an option: **Always Create Drawings** or **Only Create Drawings When They Do Not Exist**.

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 Xsheet or Timeline view toolbar, click the Paste Special Again button (you may have to customize the toolbar to display it).
   - Press Ctrl + Shift + B (Windows/Linux) or ⌘ + Shift + B (Mac OS X).

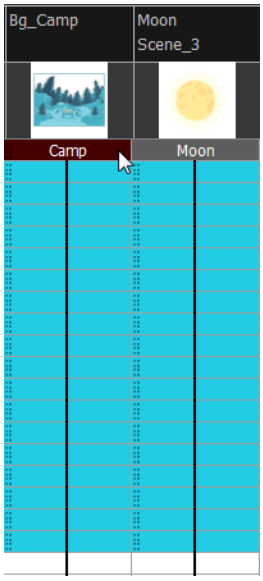
Merging Drawings

There are two methods of merging drawings.

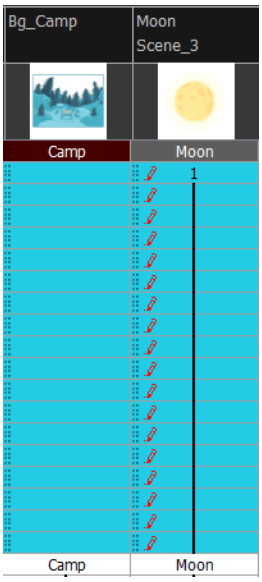
- You can merge selected drawings in adjacent elements. The columns and layers will be left intact, and each new merged drawing will reside in the frames of the left-most column or lower layer.
- You can merge elements. All drawings will be merged. Unused columns and layers will be deleted, but the original drawing files are still accessible.

How to merge selected drawings

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



2. Do one of the following:
   - In the Xsheet View menu, select **Columns> Merge Selected Drawings**.
   - In the Timeline View menu, select **Layers > Merge Selected Drawings**.

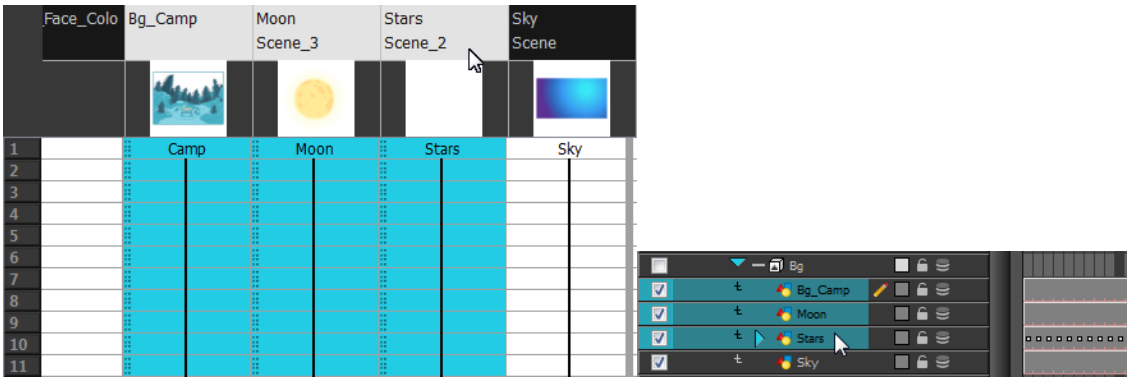


3. Do one of the following:
   - In the Xsheet View menu, select **Columns > Merge Selected Columns.**
   - In the Timeline View menu, select **Layers > Merge Selected Layers**.

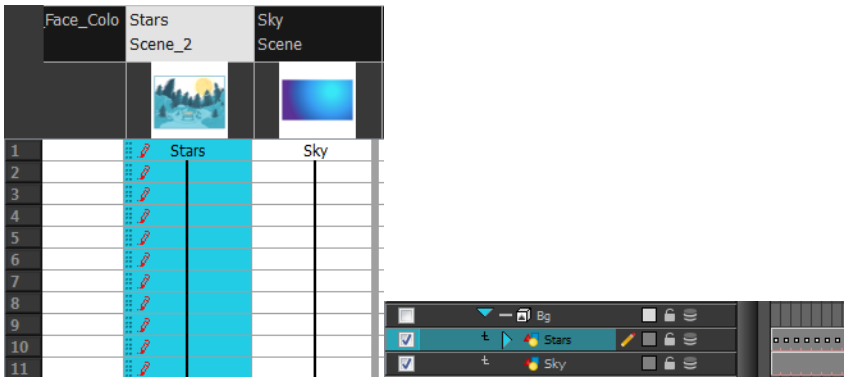
   In the Xsheet view, the right-most column will contain the merged drawings and the remaining columns will be left blank at the corresponding frames. In the Timeline view, the bottom timeline layer will contain the merged drawings from all layers and the other layers will be left blank at the corresponding frames. Drawings are not deleted and are still accessible.

How to merge drawings in entire layers or columns

1. Do one of the following:
   - In the Timeline view,select the layers you want to merge.
   - In the Xsheet view, Shift-click the headers of the columns you want to merge.



2. Do one of the following:
   - In the Xsheet View menu, select **Columns > Merge Selected Columns.**
   - In the Timeline View menu, select **Layers > Merge Selected Layers**.



In the Xsheet view, the right-most column will contain the merged drawings and the other columns will be deleted. In the Timeline view, the bottom timeline layer will contain the merged drawings from all layers and the other layers will be deleted. Drawings are not deleted and are still accessible.

Modifying the Layer and Column Display

You can change the way a layer in the Timeline view or a column in the Xsheet view display. You can stay organized without changing the content of elements or your animation output.

This section is divided as follows:

- Showing and Hiding Layers below
- Showing and Hiding Columns on the next page
- Modifying the Look of the Column on page 142
- Xsheet Thumbnails on page 146
- Changing the Colour of a Layer or Column on page 147
- Setting Scene Markers on page 148
- Setting Tempo Markers on page 152

Showing and Hiding Layers

As you work in the Camera view, some layers may be in the way or are used as references. You can hide these layers to make your work area less cluttered and easier to navigate. You can show and hide layers in the Timeline view in several different ways.

How to show or hide all layers

1. Do one of the following:

- In the Timeline view's Layer toolbar, click the Enable/Disable All button to show or hide all layers.

How to show or hide individual layers

1. Do one of the following:

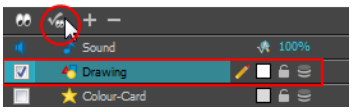
- On the right side of the Timeline view, select or deselect the layer's checkbox.

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:

- In the Timeline view's Layer toolbar, click the Show Selection and Hide All Others button.



Showing and Hiding Columns

The Xsheet view has a Column List section that can display all the columns contained in the exposure sheet. It can be used to hide individual columns.

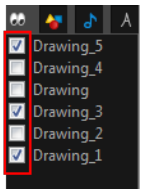
If you need to see a column after it has been hidden, you can display it directly from the Xsheet view without using the Column List section.

You can also hide an entire column type, such as Drawing or Sound.

When a column is hidden in the Xsheet view, the corresponding layer is disabled in the Timeline view.

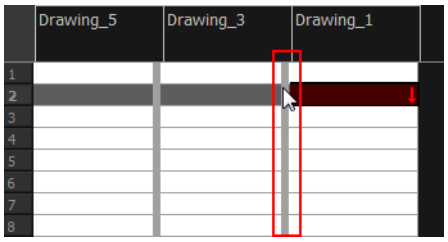
How to show or hide columns in the Xsheet view

1. In the Xsheet View 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.

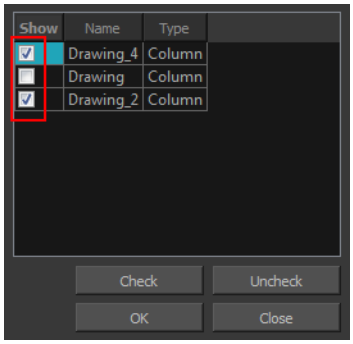


How to show a hidden column in the Xsheet view

1. In the Xsheet view menu, click on the thick grey line that represents a hidden column. You can also right-click on the column header and select **Show Hidden Columns**.



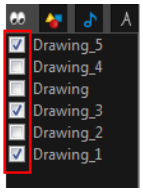
The Show Hidden Columns dialog box opens.



2. In the Show column, select the hidden columns you want to display in the Xsheet view.
   - Click **Check** to select all the selected columns.
   - Click **Uncheck** to deselcted all selected columns.

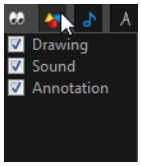
How to show or hide Xsheet columns using the Column List

3. On the right side of the Functions section, click the Expand button to display the Column List section.
4. In the Column List section, select the columns to display and deselect the columns to hide.



How to show or hide an Xsheet column type using the Column List

1. In the Column List section, click the button corresponding to the type you want to show or hide.



Column Type button	Action

	Show/Hide All Columns
	Show/Hide Drawing Columns
	Show/Hide Sound Columns
	Show/Hide Annotation Columns

Modifying the Look of the Column

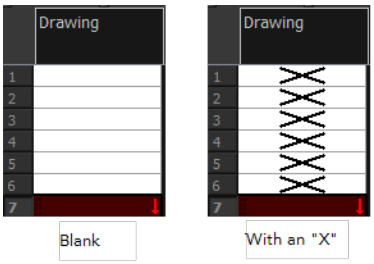
In Harmony, you can modify the way the column displays drawings, empty cells and the column width.

You can modify the following elements:

- Empty cells
- Row units
- Held exposure
- Column width

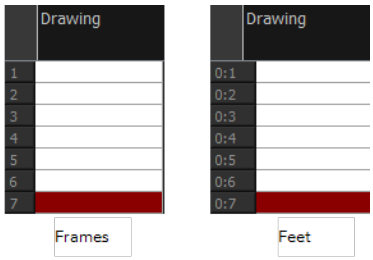
How to modify the look of empty cell

1. From the Xsheet View menu, select **View > Empty Cells > With an "X"** or **Blank**.

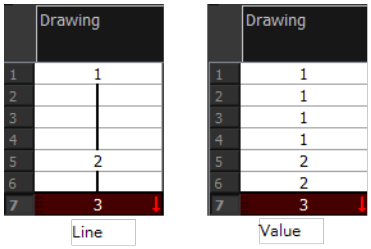


How to modify row units

1. From the Xsheet View menu, select **View > Row Units > Frames** or **Feet**.



How to modify the look of a held exposure

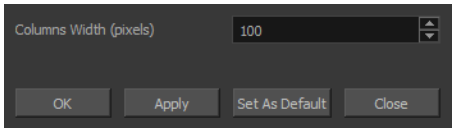


- In the Xsheet View menu, select **View > Held Exposures > Line** or **Value**.

How to modify column width

1. In the Xsheet view, select any column to modify the width.
2. From the Xsheet view 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. To end the operation:
   - 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 View menu, select **All Columns to Default Width**.

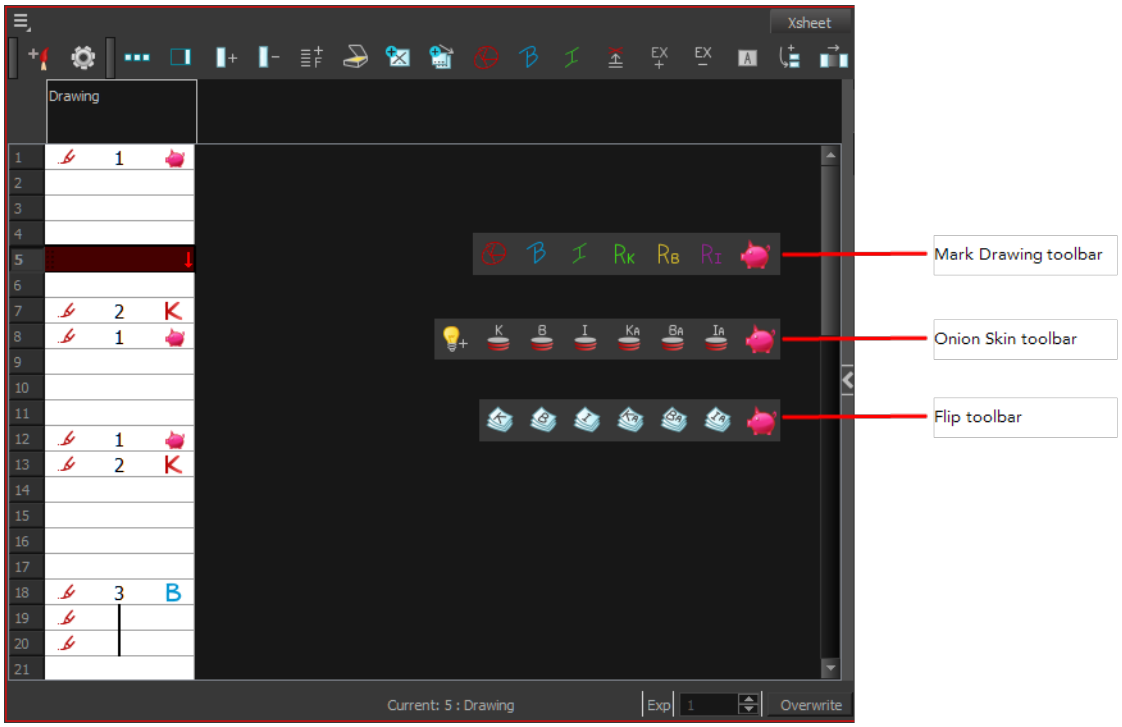
Drawing Identification

In the Xsheet view, you can identify drawings as Key, Breakdown or In-between. This helps to keep the Xsheet well organized while animating.

When working with several animators, directors, or even other studios, the necessity for retakes will often arise. Harmony also gives you the possibility to mark new drawings as either Retake Key, Retake Breakdown, or Retake Inbetweens.

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.

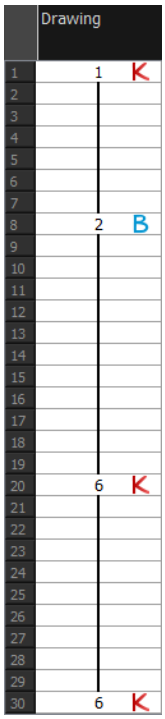


You can create custom shortcuts for the Drawing Identification options in the Preferences dialog box.

How to mark a drawing as Key, Breakdown or In-between

1. From the top menu, select **Windows > Toolbars > Mark Drawing.**
   The Mark Drawing toolbar displays.

2. In the Xsheet view, select the cell you want to identify. This option is not available in the Timeline view.
3. In the Mark Drawing toolbar, click one of these buttons: Mark as Key Drawing, Mark as Breakdown Drawing or Mark as In-between Drawing . In the Xsheet View 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.



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.

If the **`drawingTypes.d`** folder does not exist, you must create it. To do so, copy the **`resources`** folder from the following location.

- Windows: C:/Program Files (x86)/Toon Boom Animation/Harmony 11.1/resources/drawingTypes.d
- Mac OS X: /Applications/Harmony 11.1/resources/drawingTypes.d
- Linux: /usr/local/ToonBoomAnimation/ProductNameVersion/resources/drawingTypes.d

---

Stand-alone

- Windows: **`C:\Users\USERNAME\AppData\Roaming\Toon Boom Animation\Toon Boom Harmony\full-1100-pref\drawingTypes.d`**
- Mac OS X: **`/Users/USERNAME/Library/Preferences/Toon Boom Animation/Toon Boom Harmony/full-1100-pref/drawingTypes.d`**

The Library folder is usually hidden in the Finder. To see all the hidden folders and files, type the following in a terminal window:

```
defaults write com.apple.Finder AppleShowAllFiles YES
```

- Linux: **/home/USERNAME/Toon Boom Animation/Toon Boom Harmony/full-1100-pref/drawingTypes.d/**

Network

In Harmony Network, the path is global for all users so you must create the folder and place in /USA_DB.

- **/USA_DB/drawingTypes.d**

4. Paste your icons in the **drawingTypes.d** directory.
5. In the same directory, open the **drawingTypes.xml** file in a text editor.
6. For each custom icon you want to create, add the following line. Make sure to place it before this closing tag: **</DrawingTypes>**.
   - <DrawingType text="NewButtonName" pixmapFile="XsheetIcon.png" commandIcon="MarkDrawingIcon.png" flipIcon="FlipIcon.png" onionIcon="OnionIcon.png" />
7. In that line, replace the following information with your new icon information:
   - NewButtonName: Write the name of your new marker. This name will appear in the button tooltip.
   - XsheetIcon.png: Write the name of the icon that you created to appear in the Xsheet column. Include the file extension.
   - MarkDrawingIcon.png: Write the name of the icon that you created to appear in the Mark Drawing toolbar. Include the file extension.
   - FlipIcon.png: Write the name of the icon that you created to appear in the Flip toolbar. Include the file extension.
   - OnionIcon.png: Write the name of the icon that you created to appear in the Onion Skin toolbar. Include the file extension.
8. Save the file and close it.
9. Start Harmony.

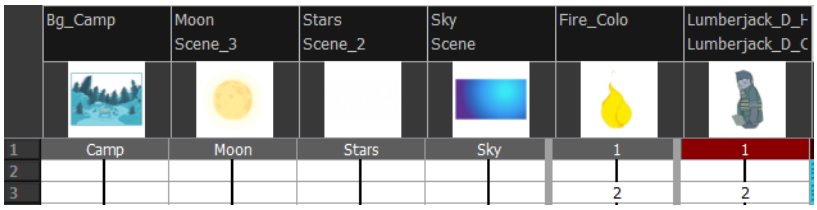
Xsheet Thumbnails

When there are a large number of columns in the exposure sheet, it is not always 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. In the Xsheet view, select **View > Show Thumbnails**.

   The thumbnails appear.

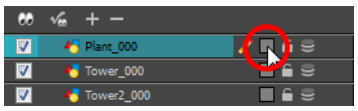


Changing the Colour of a Layer or Column

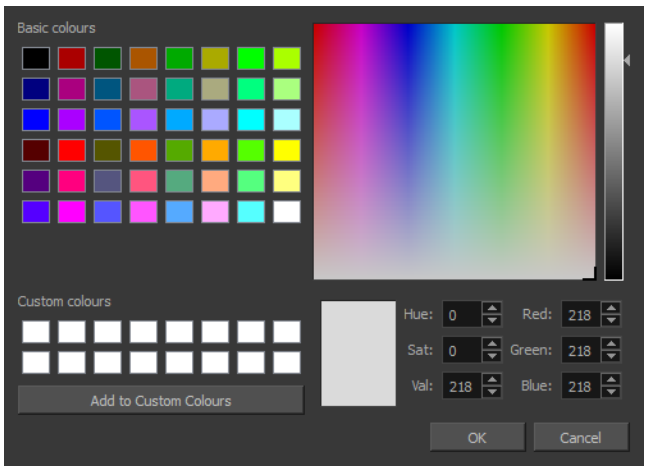
To easily identify elements in the Timeline or Xsheet view, you can change the colour of layers and columns.

How to change the layer's colour in the Timeline view

1. Do one of the following:
   - In the Timeline view, click the colour swatch of the layer you want to modify.

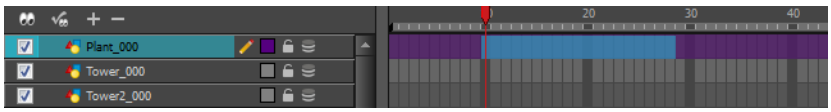


2. In the Select Colour dialog box, select a new colour for your layer.



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.



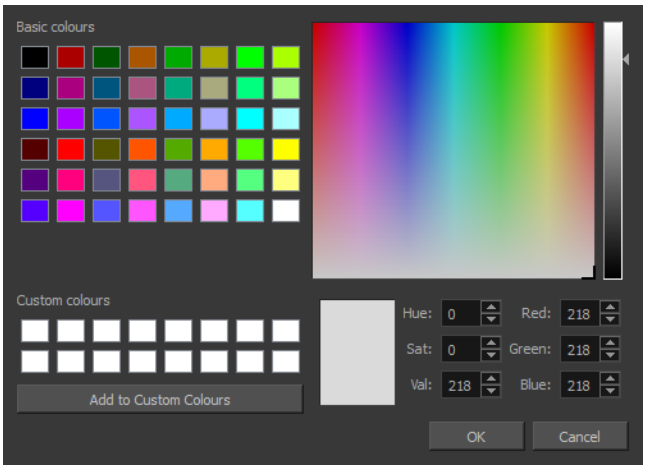
How to reset a layer's colour in the Timeline view

1. In the Timeline view, select the layers to reset.

How to change a column's colour in the Xsheet view

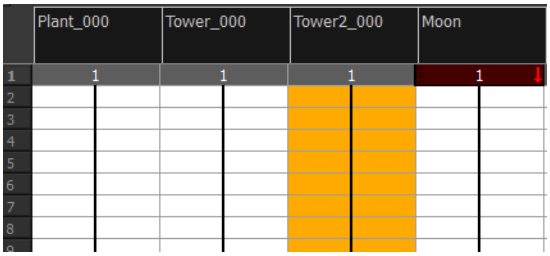
1. In the Xsheet view, select one or more columns to modify.

2. Right-click on the column's header and select **Colour > Change Columns Colour**.
3. In the Select Colour dialog box, select a new colour for your columns.



4. Click **OK**.

   The column's colour is updated. The corresponding column colour is also updated.



How to reset the column's colour in the Xsheet view

1. In the Xsheet view, select the columns to reset.
2. Right-click on the column's header and select **Colour > Default Columns Colour**.

Setting Scene Markers

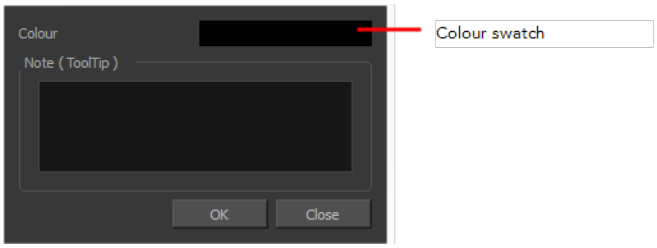
Scene markers are visual indicators displayed at the top of the timeline in the frame counter area. You can use it to denote anything relevant to your work. You can indicate at the frames you want to clean up, a change in action, an impact, or where you intend to apply an effect. You can also add a note 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 make a frame range selection and mark that whole section or simply mark the current frame.

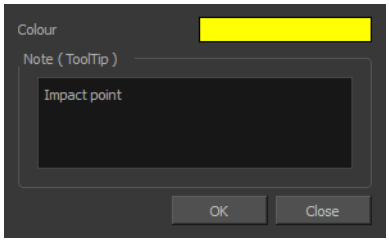
How to mark the current frame

1. In the Timeline view, make sure the 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, which means where the red playhead is.
2. Right-click in the frame counter area and select **Scene Markers > Mark Current Frame**.

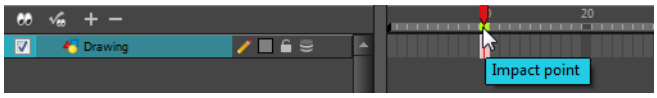
The Timeline Scene Marker dialog box opens. The Colour box displays a black colour swatch, or the colour of the last scene marker you created.



3. Double-click the Colour box to select a colour for your scene marker.
4. In the Note field, enter text to display a tooltip.



5. Click **OK**.
6. In the Timeline view, the scene marker is displayed at the current frame. Hover over the scene marker to display its note as a tooltip.

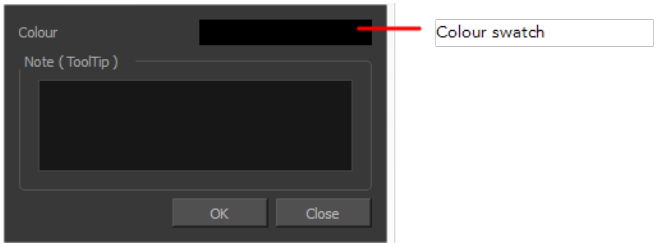


How to create a scene marker on a frame range

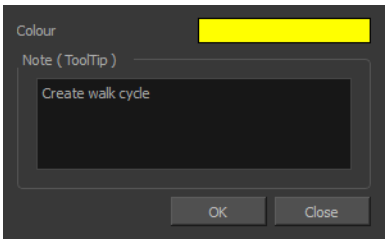
1. In the Timeline view frame counter, select the frame range on which you want to mark your scene.

2. Right-click and select **Scene Markers**.

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 and select a colour for the scene marker.
4. In the Note field, enter text to display as a tooltip.



5. Click **OK**.
6. In the Timeline view, the scene marker is displayed over the selected frame counters. Hover over the scene marker to display its note as a tooltip.

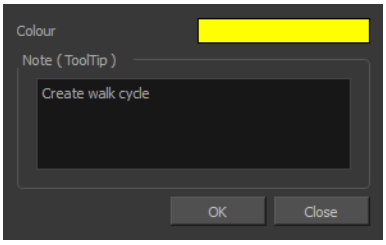
How to edit a scene marker

If you select only a part of a scene marker, you will not open the scene marker for editing. You will only be able to create a new scene marker to overwrite it.

1. In the Timeline view frame counter, select the entire scene marker.

2. Right-click the selection and select Edit Scene Marker.

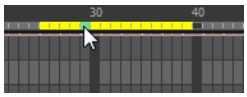
   The Timeline Scene Marker dialog box opens.



3. Make your changes.
4. Click **OK**.

How to delete a scene marker

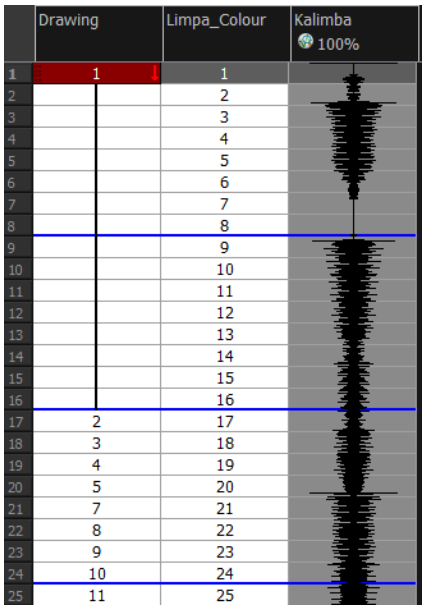
1. In the Timeline view frame counter, at least one frame counter in the scene marker you want to delete.



2. Right-click the selection and select Delete Scene Marker.

Setting Tempo Markers

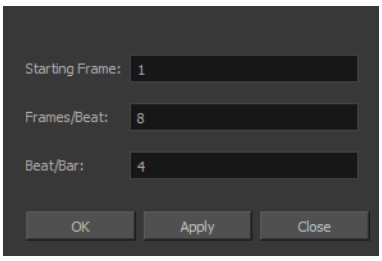
Tempo markers are used to synchronize your animation with a musical score. This lets you reproduce the FPB (Frames Per Beat) and use the tempo signature as tempo markers. The Xsheet view allows you to pace your animation according to the tempo or beat of the soundtrack music or to any rhythmic sound, such as the ticking of a clock or water leaking from a spout.



How to set the tempo markers

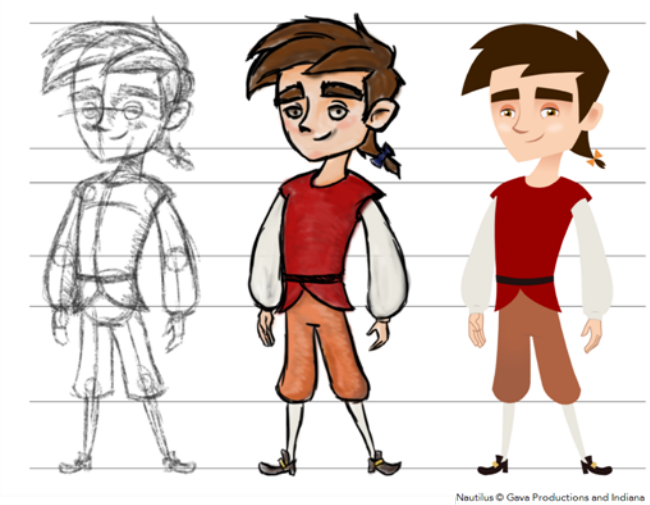
1. In the Xsheet View menu, select **View > Set Tempo Marker** or in the sound column, right-click and select **View > Set Tempo Marker**.

   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**.

Chapter 7: Character, Prop and Location Design



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

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

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

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

- Preparation on the next page
- Sketching the Model on page 156
- Cleaning and Inking the Model on page 169

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

- Drawing Tasks on page 171

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

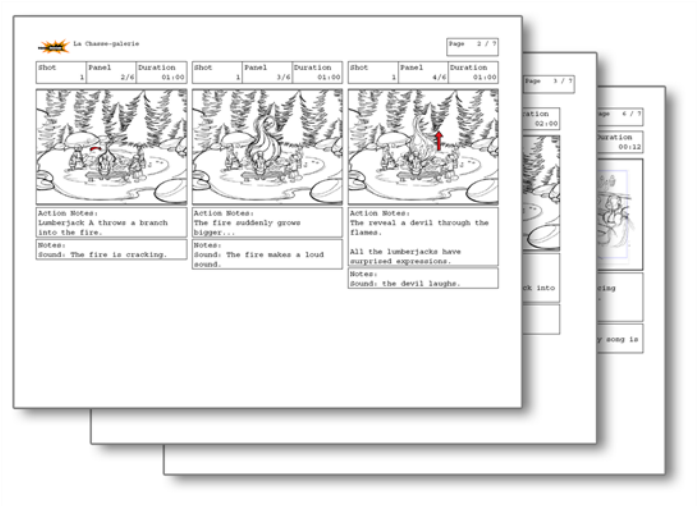
- Drawing Tool References on page 232

Preparation

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

- Getting References below
- Using the Workspace below

Getting References



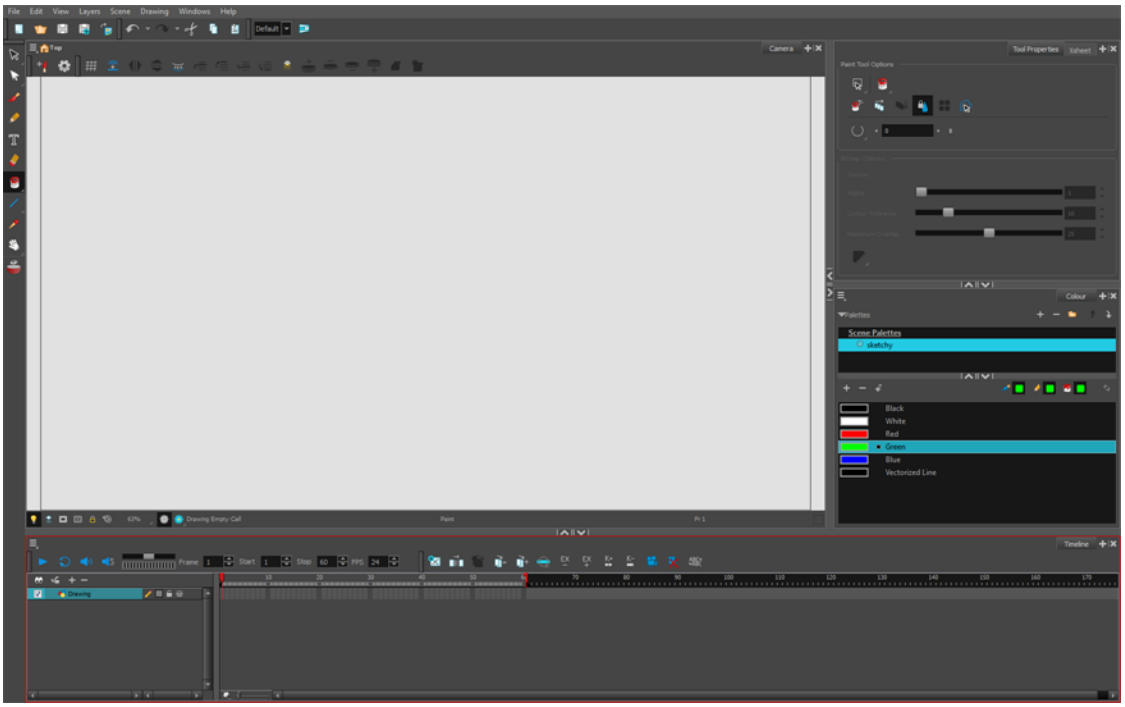
Creating models requires two main reference sources, the script and the storyboard. Once you have the script in hand, you can learn about the characters and their personalities, the props, the ambiances, and so on. This will be your main reference, so it is very important to read it carefully.

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

Using the Workspace

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

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

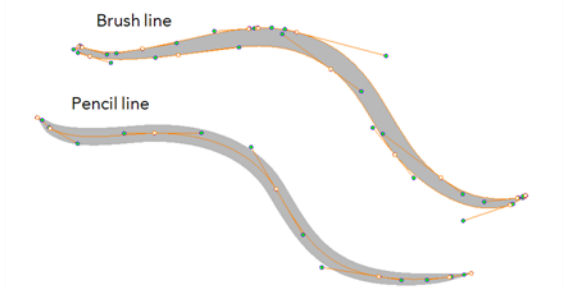

Scene Palettes
sketchy
Black
White
Red
Green
Blue
Vectorized Line

Sketching the Model

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

- Drawing with the Brush or Pencil Tool below
- Override Tool on the facing page
- Relative Size on page 158
- Palettes and Colours on page 162
- Sketching the Character on page 166

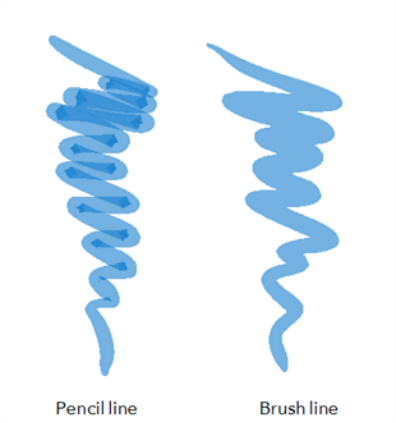
Drawing with the Brush or Pencil Tool



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

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

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



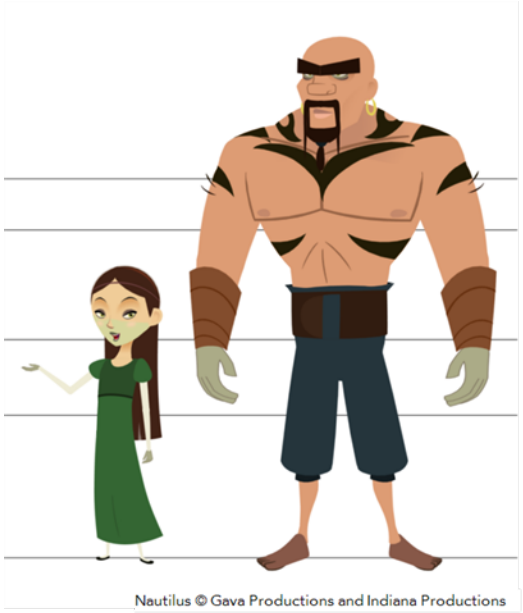
Also, it is recommended to use brush lines when designing cut-out puppet articulations which use patches.

Override Tool

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

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

Relative Size



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

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

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

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

Line Up

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

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

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

Field Chart

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

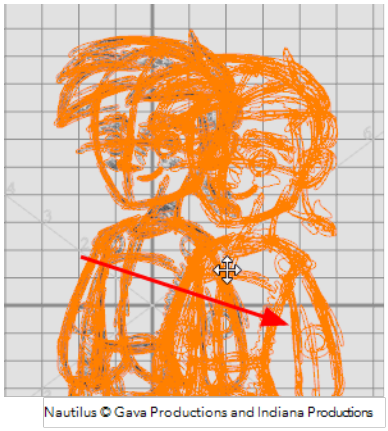
It is recommended that you keep the character design and breakdown inside the 12 field size. This ensures that it fits the default camera size and the template thumbnails. If some parts were drawn too big or too far apart, you can use the Reposition All Drawings tool and reposition, scale or rotate multiple drawings from different layers all at once.

Use the Show Grid option to display a grid in the Camera view.

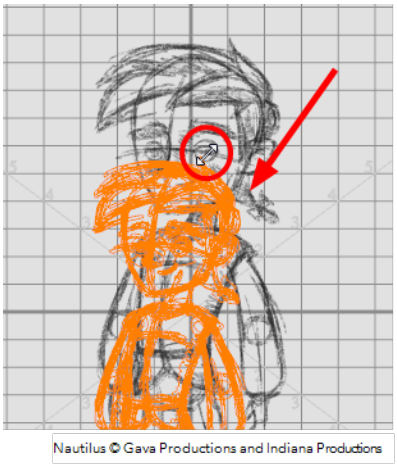
Name	Button	Description	Keyboard Shortcut
Show Grid		Displays the grid	From the top menu, select **View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Square		Displays a standard square grid	From the top menu, select **View > Grid > Square**.
12 Field Grid		Displays a 12-field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

How to use the Reposition All Drawings

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



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



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

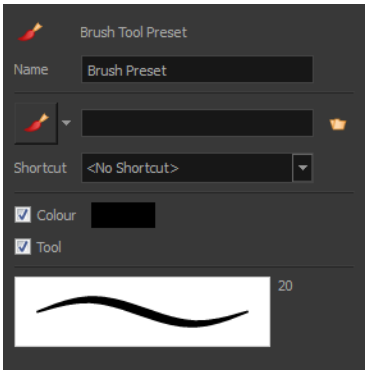
Brush Size

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

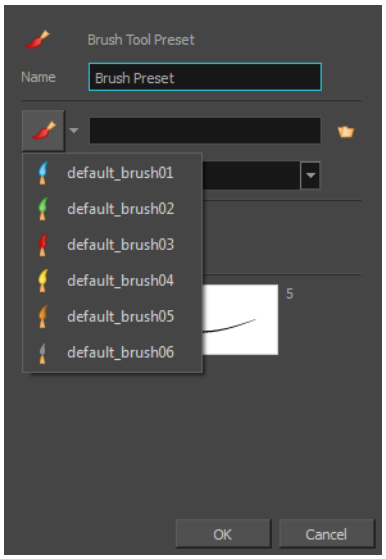
It is a good idea to create and save pens with precise sizes and parameters to trace and design your models and breakdowns.

How to create a tool preset

1. In the Tools toolbar, select a tool, for example the Brush tool.
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 that when using this preset in another scene not using that colour palette, upon selecting this new preset, a colour recovery dialog box will appear asking to add this colour to your scene.
4. In the Tool Presets toolbar, click the New Tool Preset button.
5. In the New Tool Preset dialog box, in the Name field, type a name for your new preset.



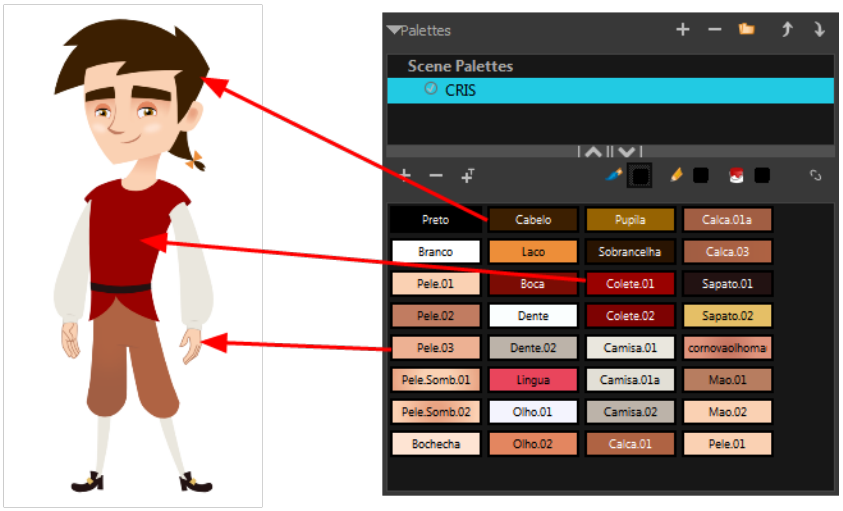
6. From the icon list, select an icon to quickly identify your preset or upload your own by clicking the File button.



7. (Optional) From the Shortcut menu, set a keyboard shortcut to quickly access your preset.
8. When you select any of the following options, they will take effect when you use the tool preset. If an option is deselected, then using a tool preset will not override your current settings.
   - **Colour**: Saves the current colour into the tool preset.
   - **Tool**: Only the colour will be associated. You could, for example, set three different colours with shortcuts. It would use the current tool with the chosen preset colour.
9. Click **OK**.

Palettes and Colours

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



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

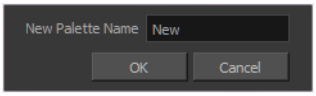
You can sketch and design using the default palette without any problem. However, it is not recommended that you use the default palette for the colour models. A different colour palette should be created for each colour model.

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

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

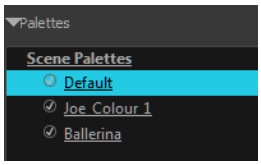
1. From the Colour View menu, select **Palettes** > **New** or click the New Palette button.

   The Create Palette window opens.
2. Enter the palette name according to the model.



3. Click **OK**.

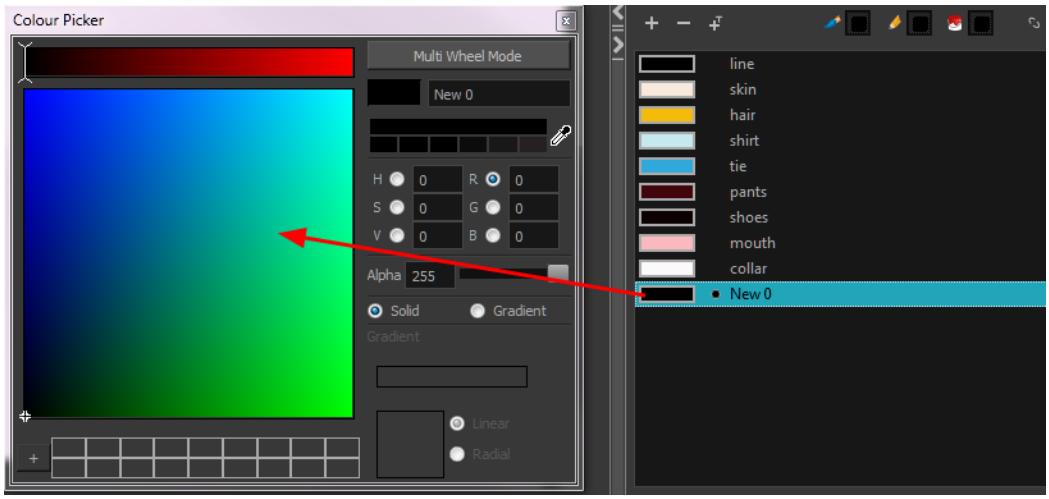
   The palette appears in the drawing element's palette list.



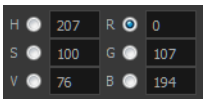
How to add or modify a solid colour swatch

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

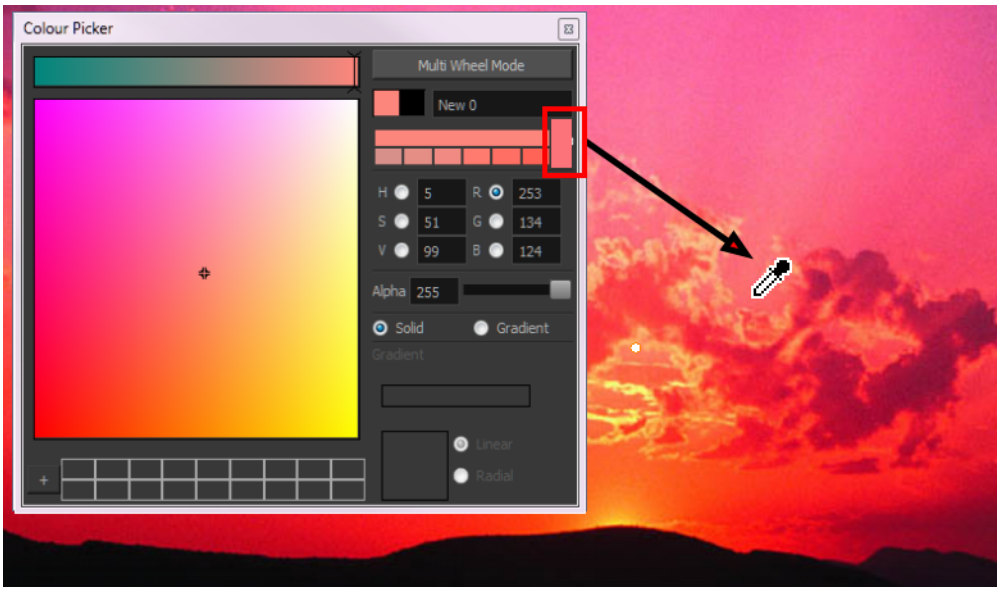
   The Colour Picker window opens.



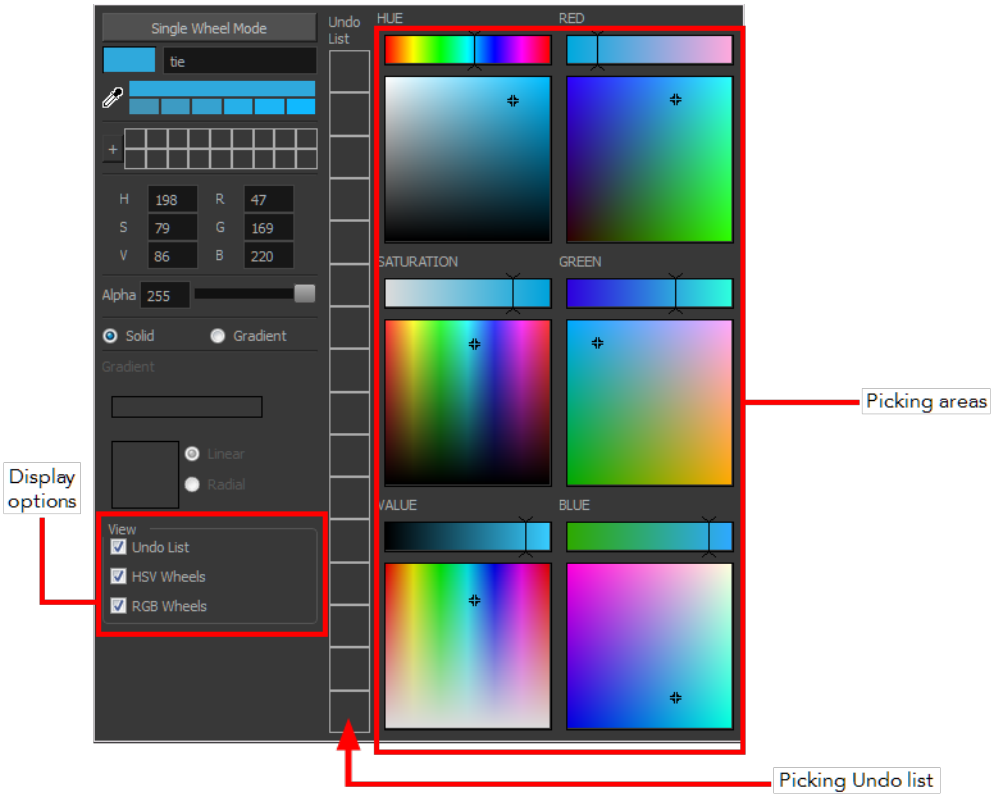
3. To set your colour, do one of the following:
   - In the colour wheel, select a colour.
   - Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.



   - Click the Dropper button to select any colour on your screen. It can be from the Toon Boom Harmony interface, your operating system or any other open application.



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



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

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

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

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

Sketching the Character

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

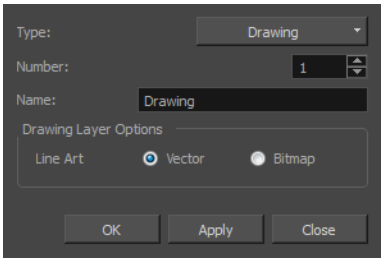
- Add a drawing layer
- Sketch the model

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

If you would like to separate your lines and colours on separated art layers, see Art Layers on page 420

How to add a drawing layer

1. In the Timeline view, click the Add Layers button.

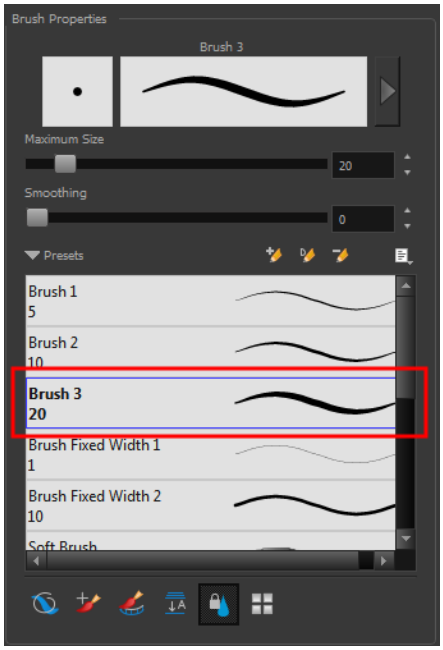


2. In the Name field, name your new layer.
3. Set the Line Art option to **Vector** to get a vector layer or to Bitmap to have a bitmap layer.
4. Click **OK**.

   A new drawing layer is added to the Timeline view.

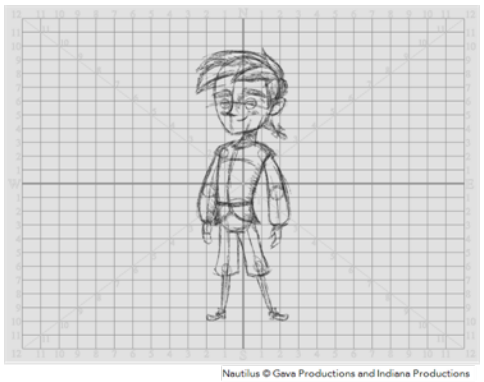
How to sketch a model

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

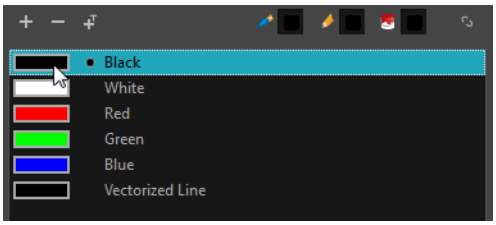


3. In the Timeline or Xsheet view, click in the first cell of the drawing layer.
4.

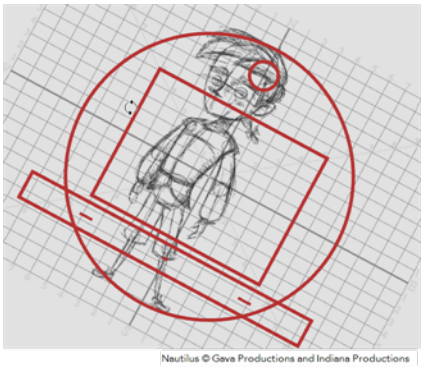
5. In the Camera view, enable the Grid (Field Chart). You can press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
   - Make sure the Camera view is the active view while using the keyboard shortcut.
6. In the Camera view, start drawing.



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



8. In the Camera view, use the Rotary Table to rotate your workspace.You can press Ctrl+Alt (Windows/Linux) or Ctrl+⌘ (Mac OS X).
   - The default keyboard shortcut to reset the workspace rotation is Shift + X.



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

Cleaning and Inking the Model

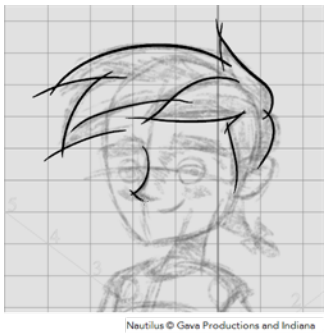
When your rough models are ready, it is time to clean and ink them. You can still use the default palette and colours to do so, especially if you are not the one doing the colour styling. If you have already created a palette for your model, you can add new colours for tracing.

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

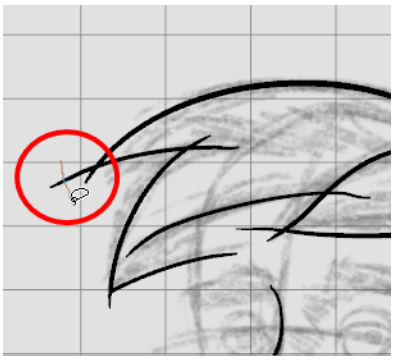
If you would like to separate your lines and colours on separated art layers, see Art Layers on page 420

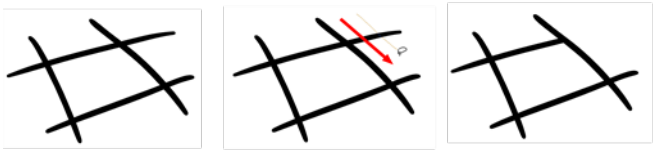
How to trace your character in a new layer

1. In the Timeline view, add a new drawing layer and name it: **`clean`**.
2. Do one of the following:
   - In the Tools toolbar, select a drawing tool.
3. In the Timeline or Xsheet view, select the cell in which you want to draw.
4. Trace the model.

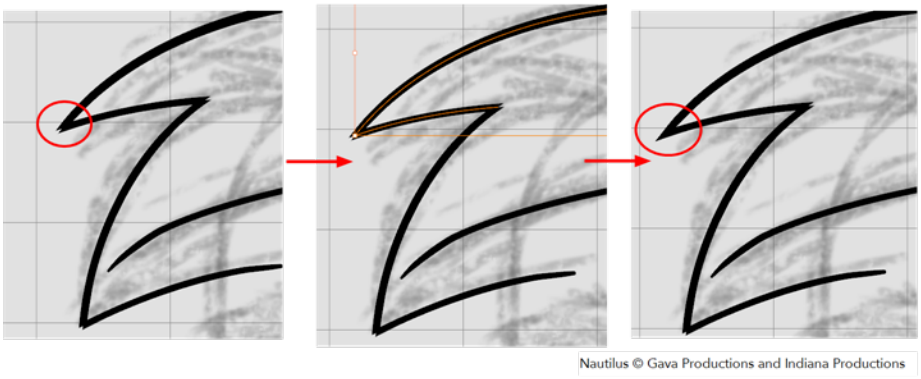


5. To make perfect points and corners, you can intersect the two strokes to create a point. Using the Cutter tool, you can automatically trim the excess portion. In the Tool Properties view, enable the Lasso selection type. Make sure the Use Mouse Gesture button is enabled. In this mode, you can automatically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

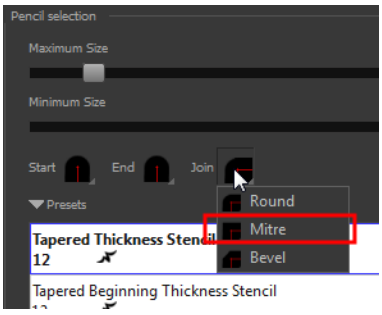




6. If you are using the Pencil tool to clean your drawing, you will need to merge your pencil lines together after cropping the points.
   - In the Tools toolbar, select the Select tool.
   - In the Camera view, select the two strokes to be merged.
   - In the Tool Properties view, click the Merge Pencil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



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



Drawing Tasks

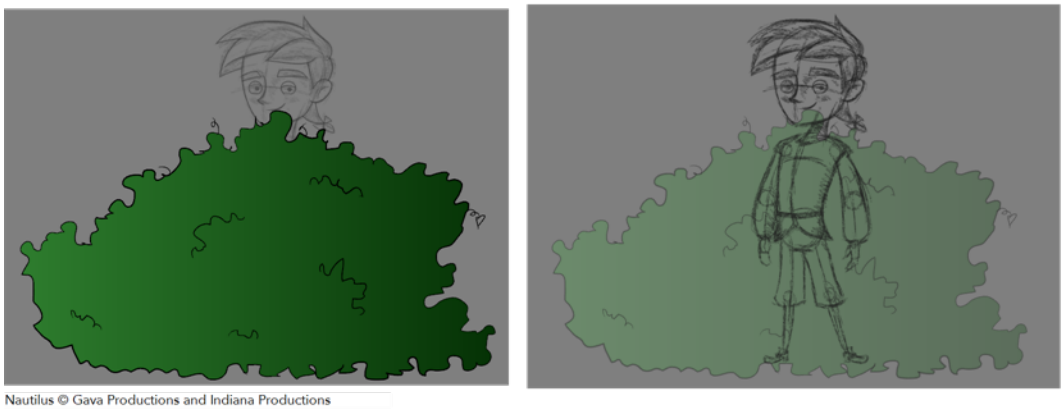
Harmony has a wide variety of drawing tools for all kinds of drawing tasks. This section covers how to use these tools. For the complete details on their options in the Tool Properties view, see Drawing Tool References on page 232.

In this topic, you will learn about:

- Current Drawing on Top below
- Drawing with the Pencil Tool on the next page
- Drawing with the Brush Tool on page 181
- Drawing with Textured Brushes on page 187
- Viewing the Final Lines as You Draw on page 200
- Selecting the Current Colour of a Tool on page 201See "Selecting the Current Colour of a Tool " on page 201
- Selecting Drawing Objects on page 203
- Erasing Parts of a Drawing on page 207
- Reshaping a Drawing Using the Contour Editor Tool on page 209
- Reshaping Pencil Lines with the Pencil Editor Tool on page 211
- Drawing with Shapes on page 213
- Drawing with the Polyline Tool on page 214
- Drawing with Invisible Lines on page 215
- Deforming a Drawing with the Perspective Tool on page 217
- Warping a Drawing with the Envelope Tool on page 218
- Cutting Drawing Parts on page 220
- Smoothing Lines on page 221
- Working With Text on page 222
- Working with Tool Presets on page 222
- More Drawing Tools on page 226

Current Drawing on Top

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



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

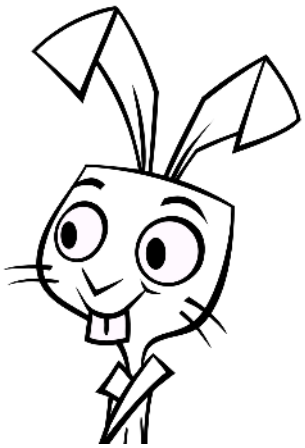
The Show Current Drawing on Top status (enabled or disabled) is remembered when you exit Harmony. When you restart the application, the last status will be used.

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

How to display your drawing on top

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

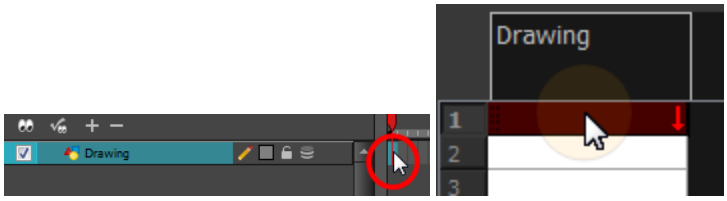
Drawing with the Pencil Tool



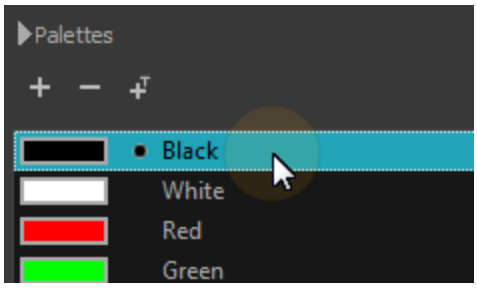
The Pencil tool is for drawing the final images, such as character modules, cut-out puppet and clean animation. The pencil creates a central vector shape. Pencil lines support pressure sensitivity and texture.

How to draw with the Pencil tool

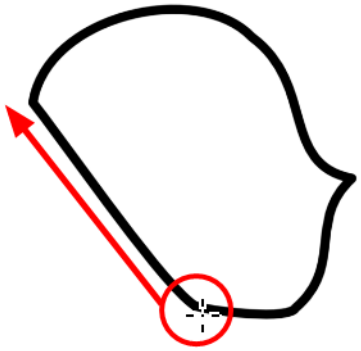
1. In the Timeline or Xsheet view, select the cell on which you want to draw.



2. In the Tools toolbar, select the Pencil tool or press Alt + /.
3. In the Colour view, click a colour swatch to select a colour.

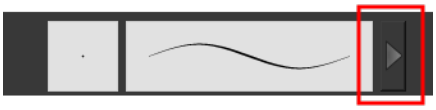


4. In the Camera view, start drawing.
   - When you get close to an existing pencil line, hold Alt to draw and connect your stroke to the existing one. Pencil lines are central vector lines and you might think your line is connected, but in fact, only the contour is touching the other one. Also, make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

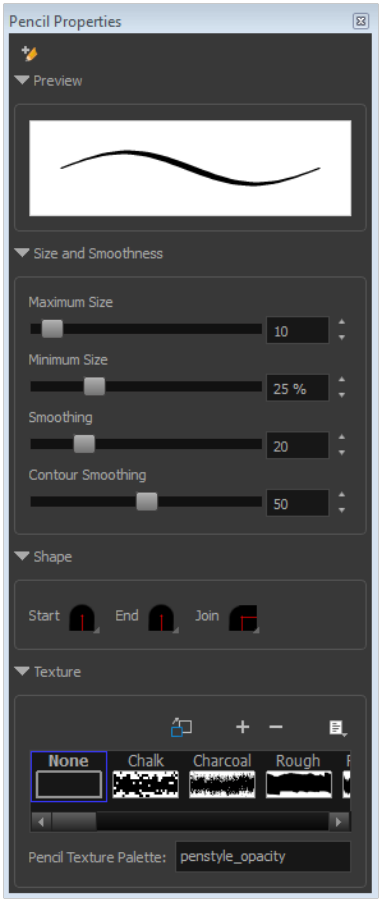


How to modify the pencil settings

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



The Pencil Properties window opens.



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

Parameter	Description
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter will smooth the contour of the line once it has been traced; the higher the value, the fewer control points will compose your line.

Shape	 You can adjust the start, end, and joint style of a selected pencil line. • **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style. • **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style. • **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.
Texture	See Pencil Line Texture on page 178.

Working with Pencil Presets

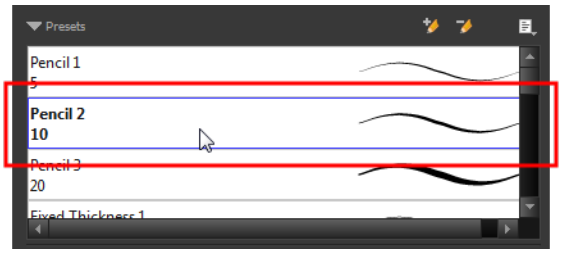
A preset is a pencil with specific properties. You can work with regular pencil presets and thickness stencils.

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

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

How to select a pencil preset

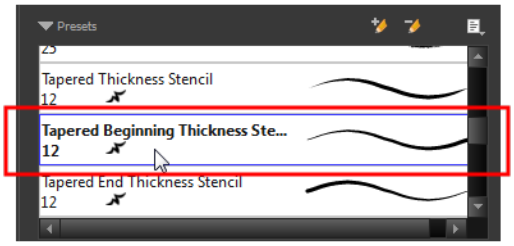
1. In the Tools toolbar, select the Pencil, Line, Ellipse, or Rectangle tool.
2. In the Tool Properties view, use the Presets menu to select a pencil preset.



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

How to select a pencil thickness stencil

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

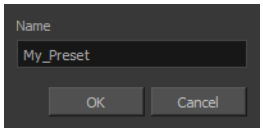


3. In the Camera view, draw your pencil line or shape.

How to create a pencil preset

1. In the Tools toolbar, select the Pencil, Line, Ellipse, or Rectangle tool.
2. In the Tool Properties view, adjust your pencil settings—see How to modify the pencil settings on page 173.
3. In the Tool Properties view, click the New Brush button.

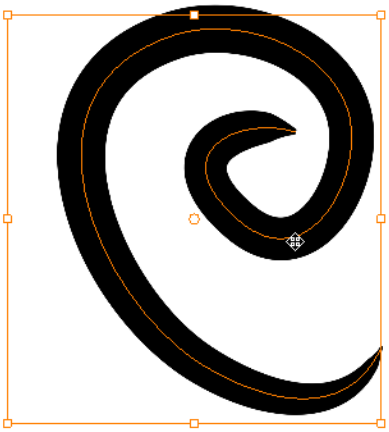
The New Preset dialog box opens.



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

How to create a pencil thickness stencil

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

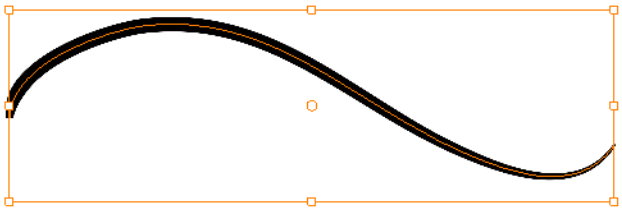


3. In the Tool Properties view, click the New Thickness Stencil button.

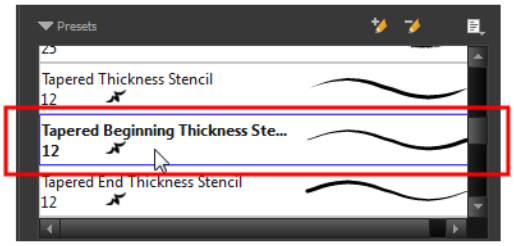
   A new thickness stencil is added to the end of the list in the Presets menu.
4. In the Presets menu, select a new thickness stencil and click on a line or shape in the Camera view to apply the thickness stencil you created.

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

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



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

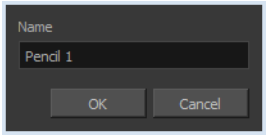


The style you selected is applied to your selection.

How to rename a thickness stencil or pencil preset

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

   The Rename Preset dialog box opens.



4. In the Name field, type in the new name.

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.

Pencil Line Texture

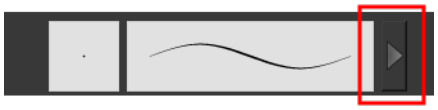
You can apply a texture to a pencil line.

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

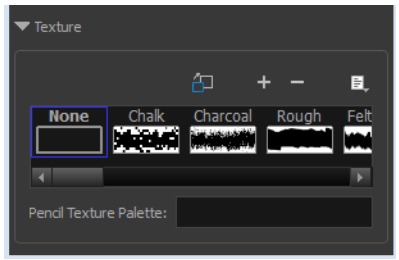
When you import a texture in your pencil styles, it is saved in your scene. If you want to add that texture to a bank that you will reuse in different scenes, you can add that texture to your preferences.

How to apply a preset texture to a pencil line

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



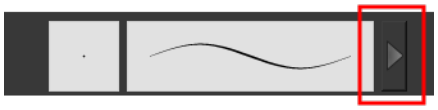
In the Pencil Properties display.



3. In the Texture section, select a texture for the pencil.
4. In the Camera view, draw a pencil line.

How to create a pencil texture template with the Pencil tool

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

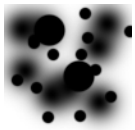


3. In the Pencil Properties editor, click the New Texture button or select **New Texture** from the Texture menu.
   - To delete a preset style, click the Delete Texture button.
4. Browse for your bitmap texture file.

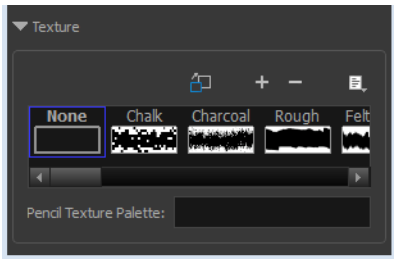
The file must be a TGA or PSD. Your texture **MUST HAVE** an alpha channel.

5. Click **Open**.

   The imported texture is saved in your scene texture list.

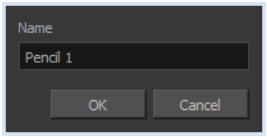


6. In the Pencil Properties editor, select your new texture.



7. In the Tool Properties view, click the Texture menu and select **Rename Texture**.

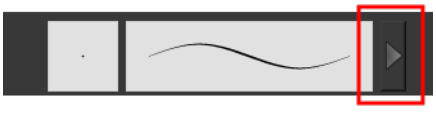
   The Rename Opacity Texture dialog box opens.



8. In the Name field, type the template name and click **OK**.
9. In the Camera view, draw your pencil lines.

How to add a texture to your preferences

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

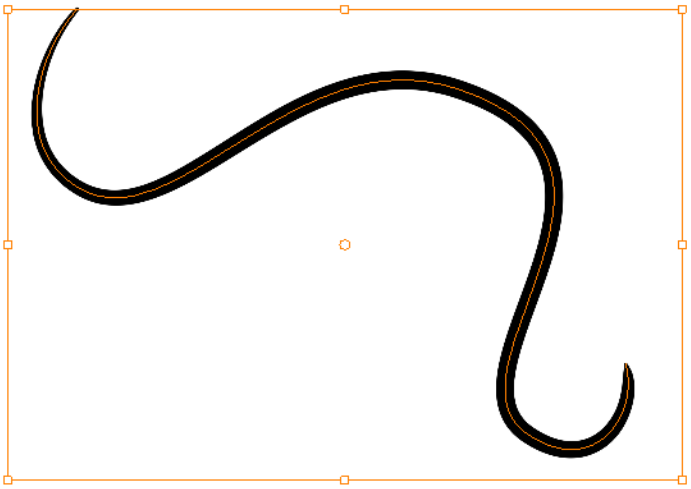


3. In the Pencil Properties property editor, select a texture from the Textures area to add to your preferences.

4. Click the Copy to Preference button.

How to apply a preset texture to a pencil line

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



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

Drawing with the Brush Tool

The Brush tool is pressure sensitive and can create a contour shape which gives a thick and thin line effect, as if the drawing was made with a paint brush.

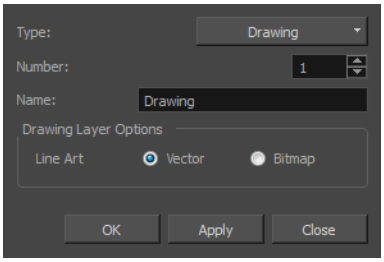
With the Brush tool, you can draw as vector or bitmap, depending on your preference. When you add your drawing layer, you can simply select the vector or bitmap option. If you use vector, you will be able to enlarge your drawing and zoom into it without losing quality or resolution. You can also use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

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

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

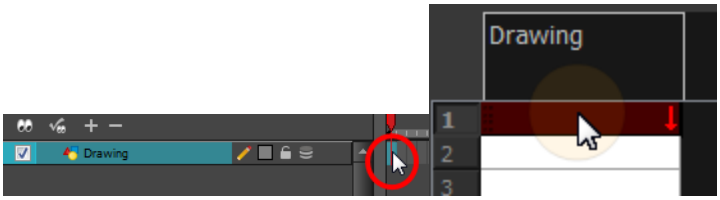
To draw with the Brush tool

1. In the Timeline view, click the Add Layers button.

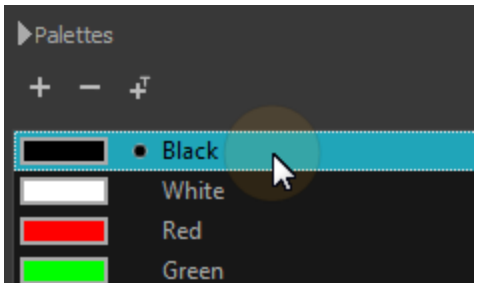


2. In the Name field, name your new layer.
3. Set the Line Art option to **Vector** to get a vector layer or to Bitmap to have a bitmap layer.
4. Click **OK**.

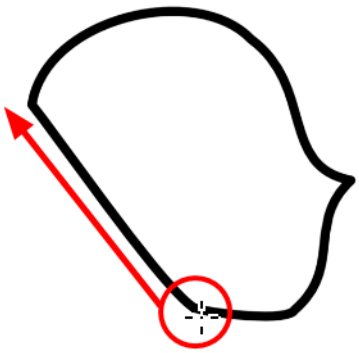
   A new drawing layer is added to the Timeline view.
5. In the Timeline or Xsheet view, select the cell on which you want to draw.



6. In the Tools toolbar, select the Brush tool or press Alt + B.
7. In the Colour view, click a colour swatch to select a colour.



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



The last colour you select while using the Brush tool is recalled the next time you select the Brush tool.

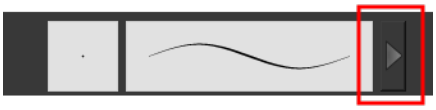
How to select a brush style

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

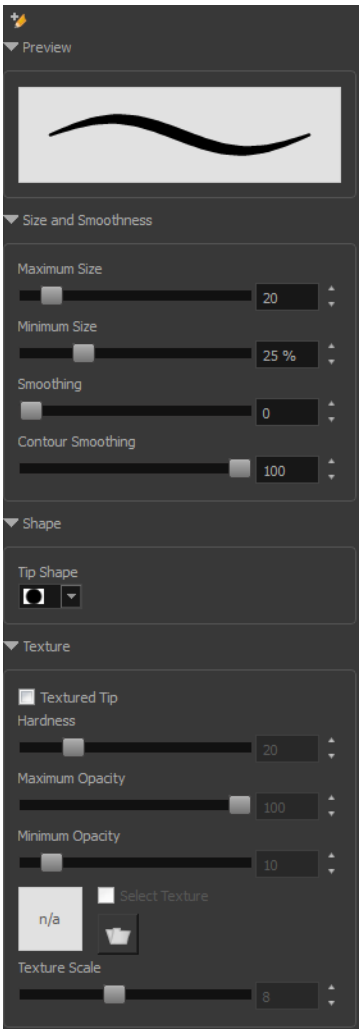
How to modify the brush settings

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

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

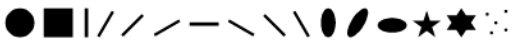


The Brush Properties window opens.



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

Parameter	Description
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.

Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter will smooth the contour of the line once it has been traced; the higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape from round and square ones to star shaped. 
Texture	See How to draw with textured lines on page 188

How to create a brush preset

1. Make sure your current brush has the settings you want in the preset you are will create.
2. Do one of the following:
   - In the Brush view, click the New Brush button.
   - From the Brush menu, select **New Brush Preset**.
   - In the Properties window of the tool you are using, click the button in the upper-left corner.
3. In the New Preset window, type a name for your new brush preset.

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

Brush presets cannot be updated. However you can select a preset, which applies those properties to the current brush. Then you can modify the properties, and create a new preset with the new properties. If desired, you can delete the old preset.

How to rename a brush

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

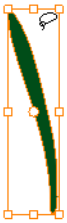
How to delete a brush preset

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

How to create a new dynamic brush

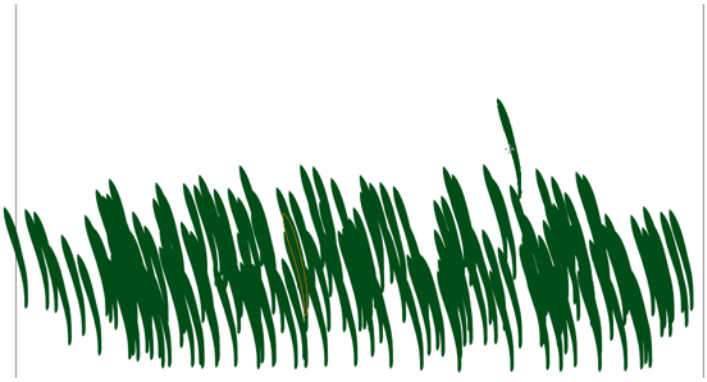
1. In the Tools toolbar, select a drawing tool.
2. In the Camera view, draw the pattern you want to use as your dynamic brush stamp.

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



4. In the Tools toolbar, select the Brush tool or press Alt + B.
5. In the Tool Properties view, click the Add Dynamic Brush button to add your selection as a new dynamic brush preset.
6. From the Brush menu, select **Rename Brush**.

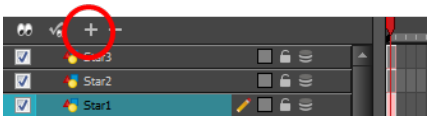
   The Rename Preset dialog box opens.
7. Type in a name for the new dynamic brush and click **OK**.
8. In the Camera view, start drawing with your dynamic brush to quickly repeat a pattern.



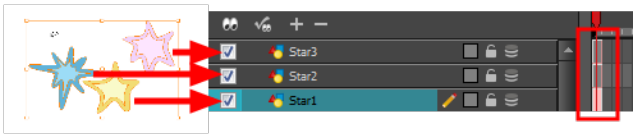
9. To adjust the scale of your pattern to make it bigger or smaller as you stamp it, adjust the Maximum Size value in the Tool Properties view.

How to create a dynamic brush with multiple drawings

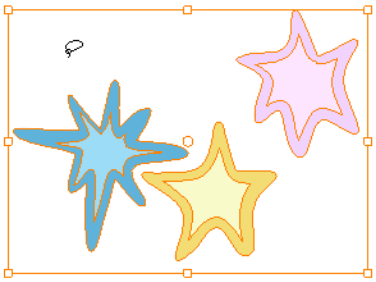
1. In the Timeline view, click the Add Layers sbutton to create the layers you want to use as patterns in your dynamic brush. Make sure to rename your layers.



2. In the Camera view, draw your individual pattern on a separated layer.



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



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

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

Drawing with Textured Brushes

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

In the Brush Tool Properties view, you will find a series of default textured brushes, but you can also create your own collection by importing PSD or TGA files in the Preset list.

To create your own texture brush, you must prepare your texture file in a third-party software, such as Adobe Photoshop. If your image has transparency in it, it will be supported. The texture file must be either a PSD or TGA file. It is recommended that you maintain your texture resolution between 100 x 100 pixels and 400 x 400 pixels.

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

Sometimes you need to hide the line texture to see the complete vector frame around your lines. This is useful to help you see any dirt floating around your drawing.

At some point, you may want to modify the look of a textured drawing. Maybe you find that your line is too smooth or too faint. You can adjust those parameters by using the Adjust Line Texture Opacity command.

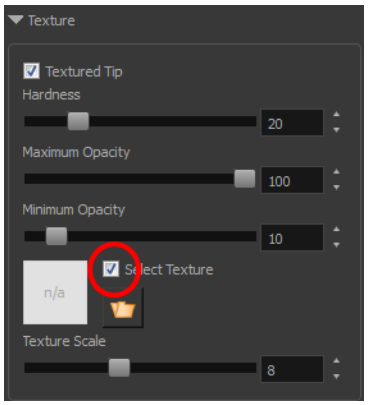
To hide the line texture in the Camera view, you must enable the Show Drawing on Top option. From the top menu, select **View > Show > Current Drawing on Top**—see Current Drawing on Top on page 171.

To draw with textured lines, use the Brush tool and the correct pen in the list. You can also draw with pencil line texture—see Pencil Line Texture on page 178

How to draw with textured lines

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

3. In the Texture section, select the **Select Texture** option.



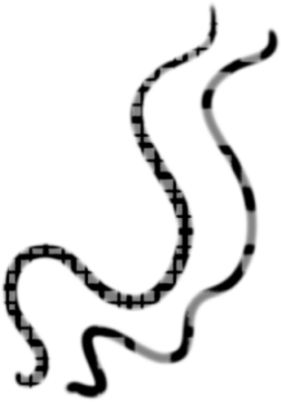
4. Set the following parameters:

   - **Hardness**: The hardness value corresponds to the smoothness of the line edge. The lower the value, the more blurry and smooth the line edge will be. The higher the value, the sharper the line edge will be.

   - **Minimum Opacity**: This value corresponds to the transparency of the brush when the pressure is very light. Values closer to 0 produce a more transparent line.

   - **Maximum Opacity**: This value corresponds to the transparency of the brush when the pressure is heavy. Values closer to 1 produce a more opaque line.
   - **Select Texture**: Lets you use and select a texture for your brush. The thumbnail displays the current texture. You can also browse for a texture file to import. Browsing for a texture file in a brush already using texture will replace the file currently in use, although it will not replace the texture in the lines already drawn. If your image has transparency in it, it will be supported. The texture file must be either a PSD or TGA file. It is recommended that you maintain your texture resolution between 100 x 100 pixels and 400 x 400 pixels.

- **Texture Scale**: Changes the size of the texture in the lines you draw. If you are using a plaid texture, the squares will be larger if you increase the value and smaller if you decrease it.

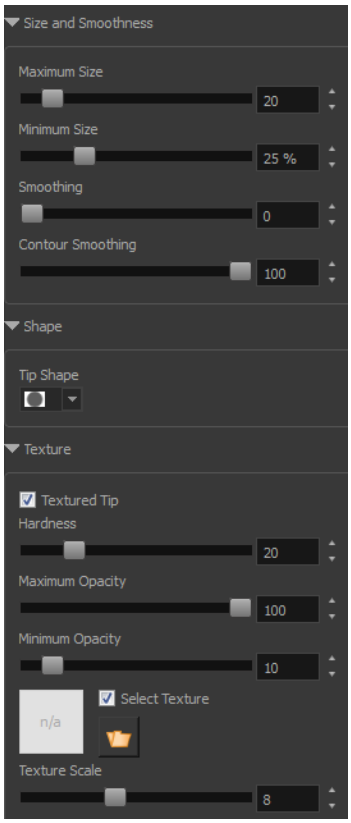


5. In the Camera view, start drawing.

How to erase textured lines

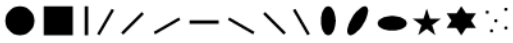
1. In the Tools toolbar, select the Eraser tool, press Alt + E.
2. In the Tool Properties view, click the arrow button.

The Brush Properties window opens.



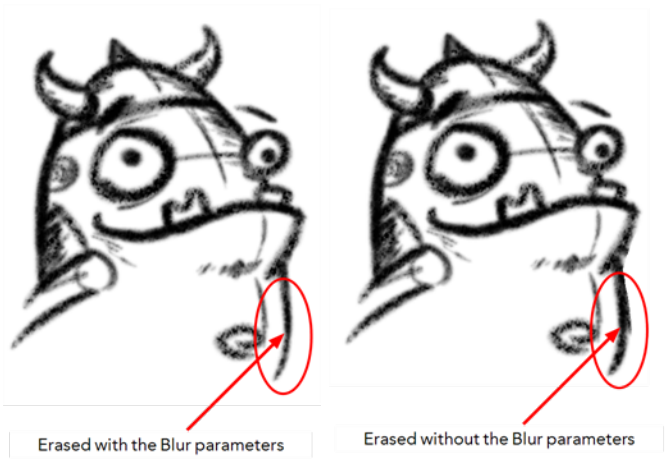
3. Adjust the following:

- **Maximum/Minimum Size:** Defines the minimum and maximum width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line.
- **Contour Smoothing**: Defines the number of control points added to the contour boundaries (around the line). Lower values mean that the line will appear as you draw it (with more control points added along the centre line). Higher values mean that the line will be smoothed out (removing control points from the centre line).
- **Tip Shape**: Lets you select a shape for the tip of the eraser. There are a variety of tips to choose from: round, square, oval, star-shaped, and more. This option is only available when the textured tip is not in use.



- **Soft Tip**: Gives the tip of your stroke a soft edge.
- **Keep Vectors:** Keeps your vector frames and does not cut them.
- **Hardness**: The smoothness of the line edge. The lower the value, the more blurry and smooth the line edge will be. The higher the value, the sharper the line edge will be.
- **Saturation**: The intensity of line colour.
- **Maximum Opacity:** The transparency of the brush when the pressure is heavy. Values closer to 1 produce a more opaque line.
- **Minimum Opacity**: The transparency of the brush when the pressure is very light. Values closer to 0 produce a more transparent line.

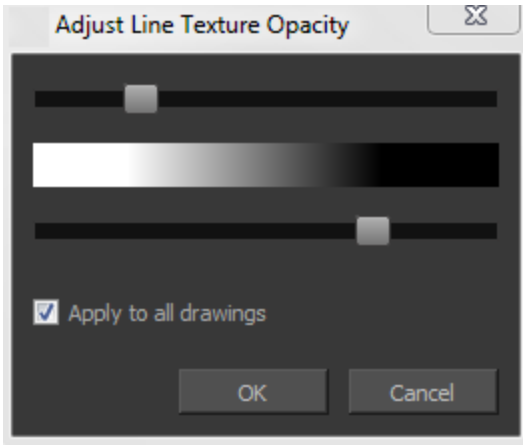
4. In the Camera view, erase your textures lines.



How to adjust the line texture opacity

1. If you are in Camera view, select the **Current Drawing on Top** option—see Current Drawing on Top on page 171.
2. In the Timeline or Xsheet view, select the drawing that contains the opacity you want to adjust.
3. In the Camera view menu, select **Drawing > Adjust Line Texture Opacity**.

   The Adjust Line Texture Opacity dialog box opens.



4. Drag the sliders toward the middle to increase the contrast and opacity of the textured lines.
5. If you want to apply the changes to all drawings exposed on the layer, select the **Apply to All Drawings** option and click **OK**.

Drawing with Bitmap Brushes

With Harmony, you have the choice to draw with vector or bitmap brushes. When adding a new drawing layer in , you can set your art layers (Line, Art, Colour Art) to vector or bitmap. This way, you can draw in bitmap and paint in vector, draw everything in bitmap, or whatever other combination suits you.

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

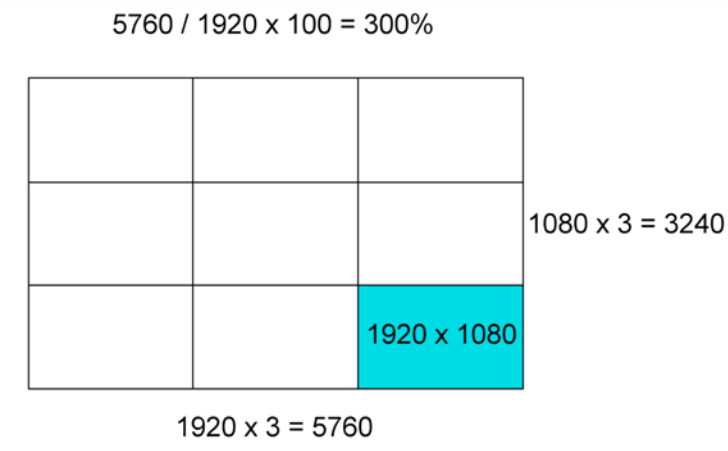
- Brush
- Cutter
- Dropper
- Ellipse
- Eraser
- Line
- Paint
- Paint Unpainted
- Pivot
- Rectangle
- Repaint
- Reposition All Drawings
- Select
- Text
- Unpaint

In , when adding a new drawing layer to the Timeline view, you can select the art mode for each art layer. You can set the Line Art layer to vector while setting the Colour Art as bitmap. You also have the opportunity to adjust them later by converting them from one to the other. If you are using the Overlay and Underlay layers, you can also set them to either bitmap or vector.

If you selected the incorrect art mode for your layers, you can open the Layer Properties view and modify them there directly. If you switch the art mode for a layer that already has strokes on it, the artwork will NOT be converted. You will be able to add new strokes. A drawing with bitmap strokes will be converted to a vector layer but the bitmap artwork will remain as bitmap. You will be able to use vector drawing tools to continue drawing on it. A drawing with vector lines switched to a bitmap layer will allow you to draw new bitmap strokes and move the vector strokes with the Select tool, but you will not be able to edit the vector art further. You need to convert the drawings in order to pass the artwork from one mode to the other.

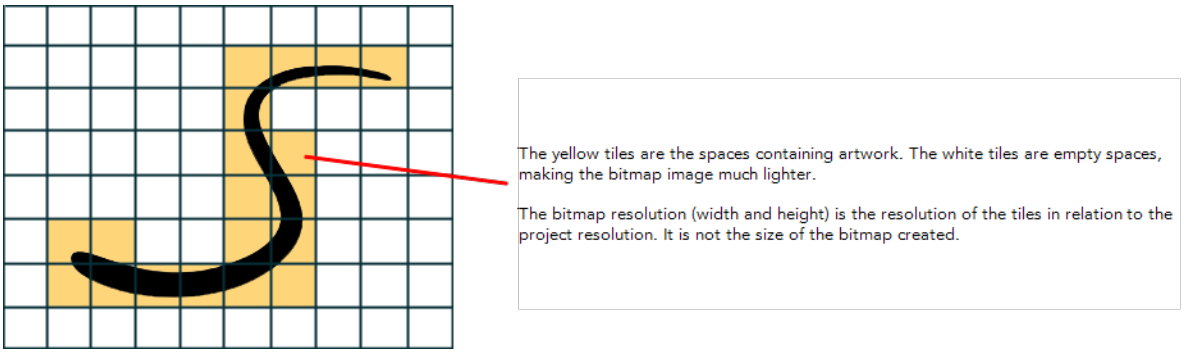
To always reuse the same art mode settings, you can adjust them in the Preferences dialog box.

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



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

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



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

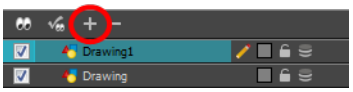
If you drew an outline drawing on a bitmap layer, you can vectorize your artwork. Using a vector drawing layer, you can simply select your bitmap drawing and the vector cell on which you want your new vector layer to be, and use the Vectorize Line Art in Selected Drawing function.

You should avoid scaling up your bitmap strokes using the Select tool. If you do, keep in mind that when you continue drawing, your image will be resampled and your new strokes will be at the original resolution and not the scaled up size.

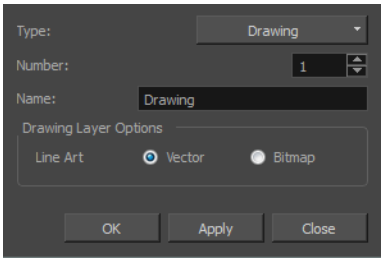
Your drawing should be scaled up using the Transform tool instead of the Select tool to avoid creating very large bitmap layers.

How to add a bitmap layer

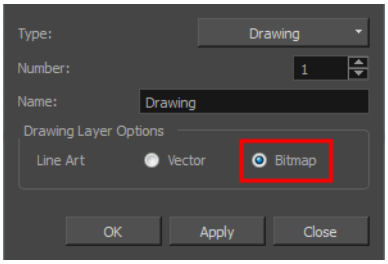
1. In the Timeline view, click the Add Drawing Layer button,



The Add Drawing Layer dialog box opens.



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



3. Click **OK**.

How to convert drawings to match the art mode

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

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

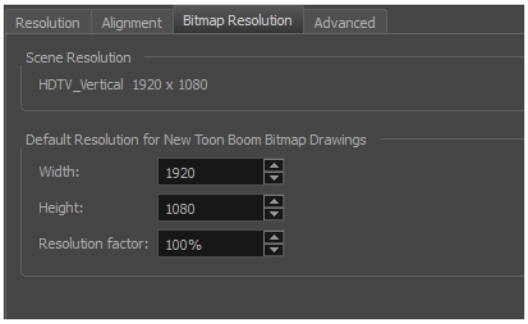
   All drawings in the layer are converted to the selected art mode. Note that bitmap strokes are not vectorized when converted to a vector art layer. They are simply inserted in a square vector frame containing a bitmap texture.

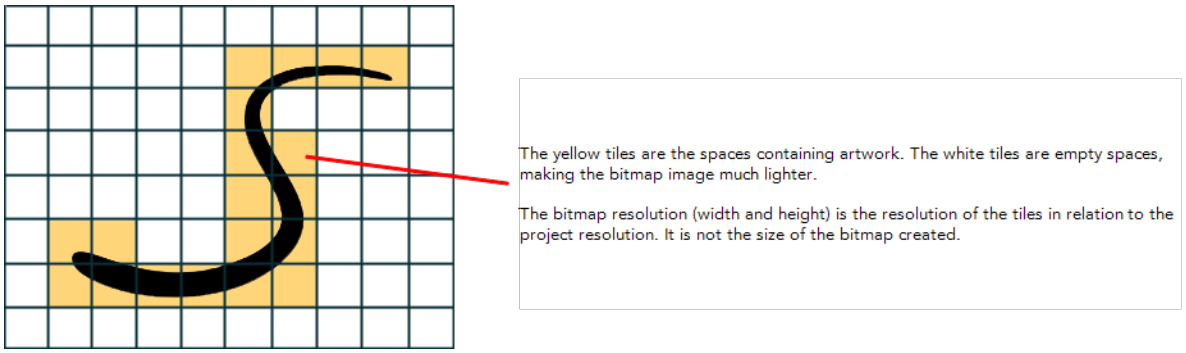
How to change the bitmap layer resolution at the scene level

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

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

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



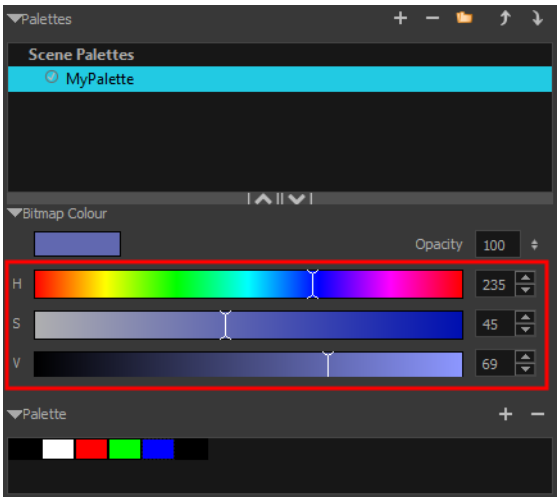


Parameter	Description
Scene Resolution	This is the scene resolution preset name and size in pixel.
Width	This is the width of the resolution for the bitmap that will be created. This is not the actual size of the bitmap. TVG drawings (Toon Boom drawing native format) have an infinite size. Bitmap TVGs are composed of small tiles. Therefore it does not mean that because you have art-work at the four corners of your camera frame or even quite far outside

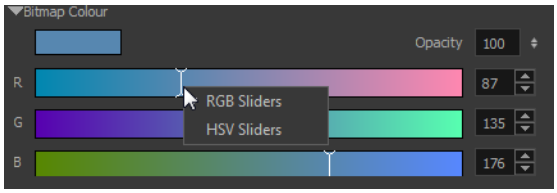
	of your drawing that your bitmap image will be very large and heavy. By default, it is set to the same width as the scene resolution.
Height	This is the height of the resolution for the bitmap that will be created. By default, it is set to the same height as the scene resolution.
Resolution Factor	This is the size of the bitmap resolution in relation to the scene resolution. If you increase the percentage, the width and height fields will increase accordingly. If you plan to animate the camera and zoom into your background, you will need to set a higher resolution so that the smaller area in which you will zoom will be 100% of the scene resolution.

How to draw with bitmap brushes

1. In the Timeline view, add a bitmap drawing layer—see How to add a bitmap layer on page 196.
2. In the Tools toolbar, select the Brush tool or press Alt + B.
3. In the Colour view, select a colour.



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

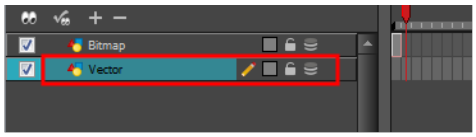


When using bitmap colours, there is no longer a link between the painted zones and selected colour. You can modify the colour picker as much as you want. Your drawing will not be affected. You can still select colours from your vector colour palette to use the same tint, but you will not create links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

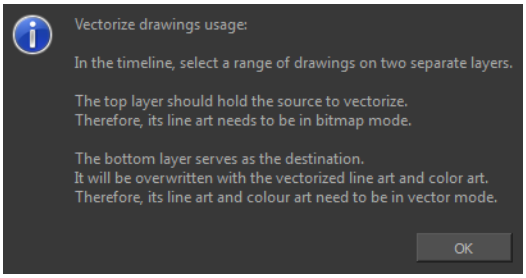
4. In the Camera view, start drawing.

How to vectorize a bitmap drawing

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



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



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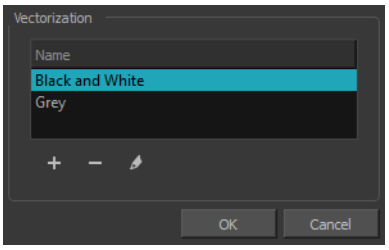
2. On the right side of the Timeline view, select the bitmap drawing and corresponding cell in the vector drawing layer.

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

   The Convert to Vector Drawing dialog box opens.



4. In the Vectorization section, select a vectorization preset. You can customize your own preset using the Add or Edit buttons—see Custom Vectorization Parameters on page 458.
5. Click **OK**.

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

Viewing the Final Lines as You Draw

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

Full Scene Antialiasing

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

There is no need to modify your graphic card settings.

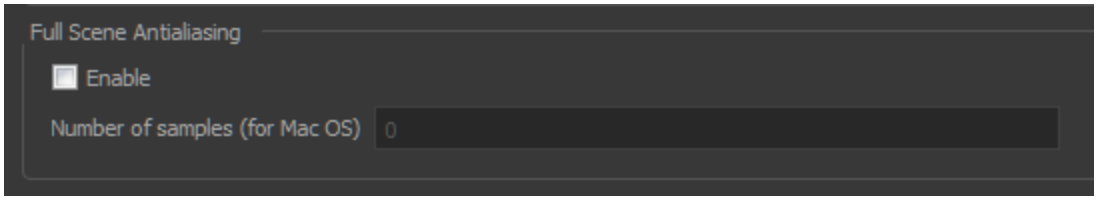
Full Scene Antialiasing parameters are only valid while you work in your scene. The scene will be rendered to 100% of its resolution regardless of your preference settings or graphic card panel.

How to customize the full scene antialiasing parameters

For Mac OS X, you must restart Harmony after you change the parameters.

1. In the Harmony, do one of the following:
   - Windows/Linux: Select **Edit > Preferences.**
   - Mac OS X**: Stage > Preferences.**
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

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

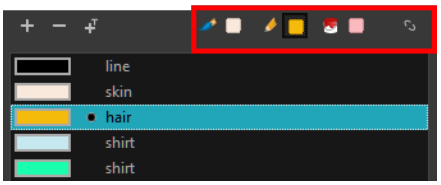


   - **Enable:** Select this option to enable/disable the Full Scene Antialiasing.

Number or samples (For Mac OS): If you are using a Mac OS X computer, 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.

3. Restart Harmony.

Selecting the Current Colour of a Tool



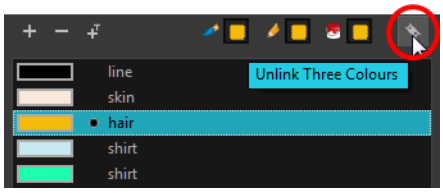
While drawing and painting, you can let Harmony retain the last colour you selected for each one of the following tools:

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

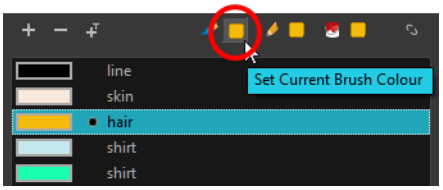
The Colour view has three swatches where you can set a colour for the Brush , Paint, and Pencil tools.

How to unlink the storage swatches

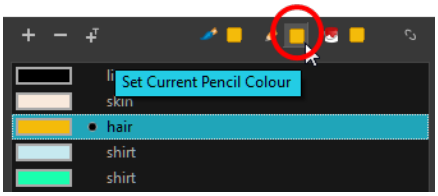
1. In the Colour view, if the storage swatches are linked, click the Link button to unlink them.



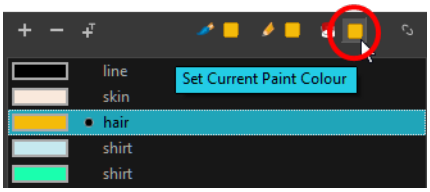
2. Click on the Brush storage swatch.



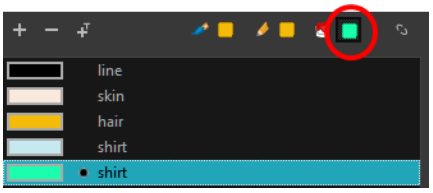
3. In the Colour list, select the desired colour.
4. Click the Pencil storage swatch.



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



7. In the Colour list, select a colour.



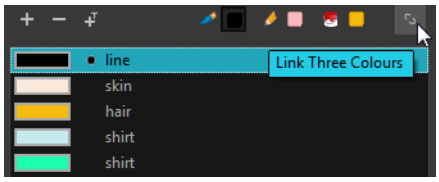
If you prefer to have Toon Boom Harmony use the same colour swatches regardless of the selected tool, you can link the three swatches together.

How to link the storage swatches

1. In the Tools toolbar, select one of the following tools:
   - Brush
   - Paint
   - Pencil
   - Polyline
   - Line
   - Ellipse

- Rectangle

2. In the Colour view, if the storage swatches are unlinked, click the Link button to link them.



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

Using Independent Colours when Working with Bitmap Layers

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

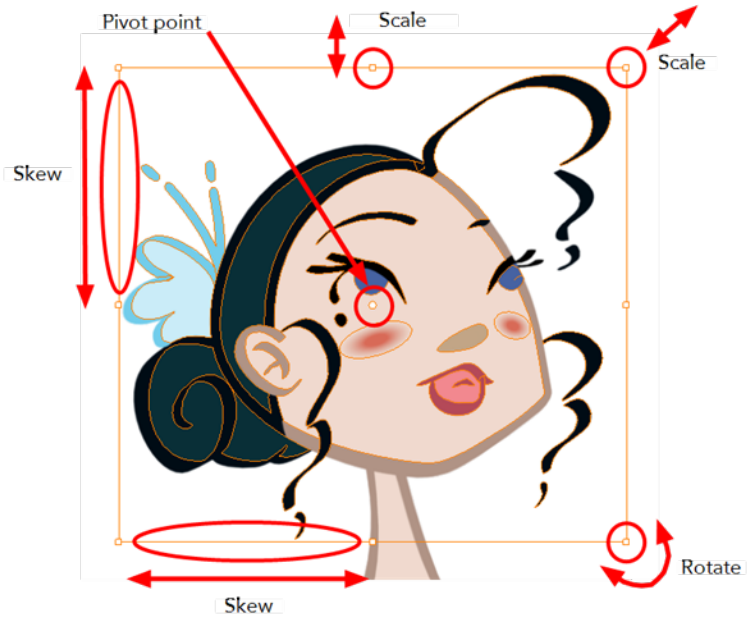
When using bitmap colours, there is no longer a link between the painted zones and selected colour. You can modify the colour picker as much as you want. Your drawing will not be affected. You can still select colours from your vector colour palette to use the same tint, but you will not create links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

How to use independent colours

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

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

Selecting Drawing Objects



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

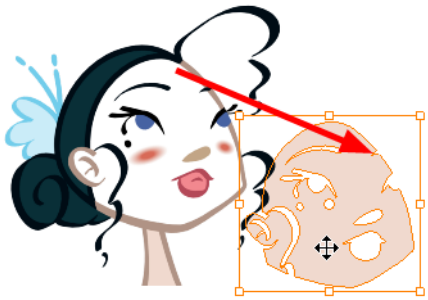
Sometimes, when you want to select multiple objects while leaving one unselected, it can be handy to select only the stroke or line that you do not want included in your selection. Then, you can invert the selection so that everything else becomes selected. This can be quite a time saver.

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

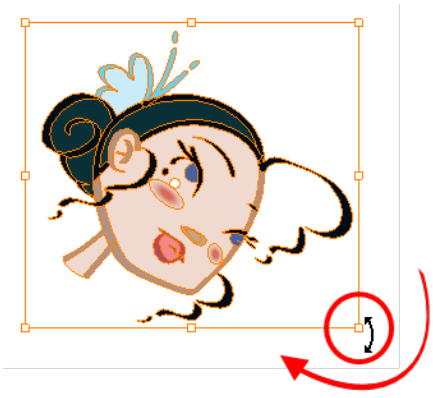
Some of the transformations, such as rotation, scale, skew, and flip are done relative to the position of the pivot point. You can temporarily reposition this pivot point for a transformation using the Select tool.

How to select with the Select tool

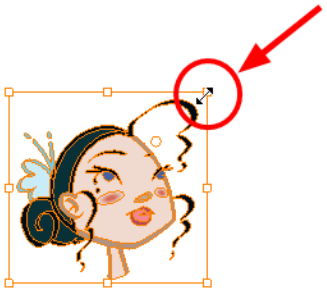
1. In the Timeline view, select the cell on which you want to select drawing objects.
2. In the Tools toolbar, select the Select tool or press Alt + S.
3. In the Camera view, select the drawing objects.
   - You can select all the drawing objects in a drawing by using **Edit > Select All** or by pressing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



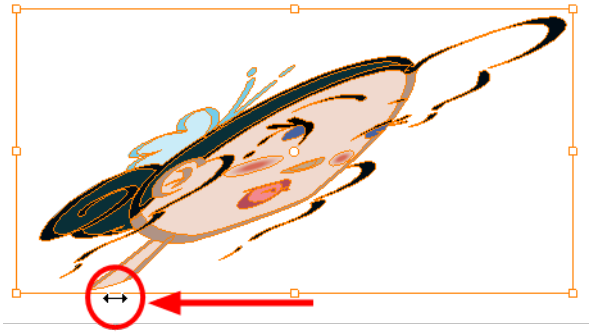
   - To rotate, grab the selection box handle and rotate it.



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



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



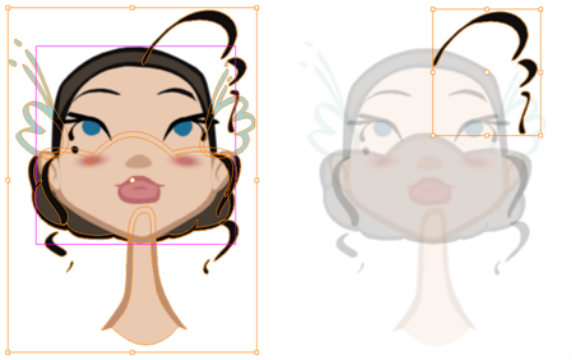
How to invert a selection

1. From the top menu, select **Edit > Invert Selection** or press Ctrl + Shift + I (Windows/Linux) or ⌘ + Shift + I (Mac OS X).
   - You can also find the Invert Selection option in the Camera View menu by selecting **Edit > Invert Selection**.

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

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

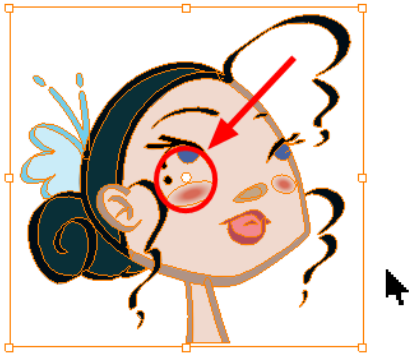
   The Preferences dialog box opens.
2. In the Camera tab, go to the Tools section and select or deselect the **Select Tool Works on Single Drawing** option and click **OK**.
3. In the Tools toolbar, select the Select tool or press Alt + S.
4. In the Camera view, make your selection. It is possible that you will have to restart Harmony depending on your system.



How to temporarily reposition the pivot point

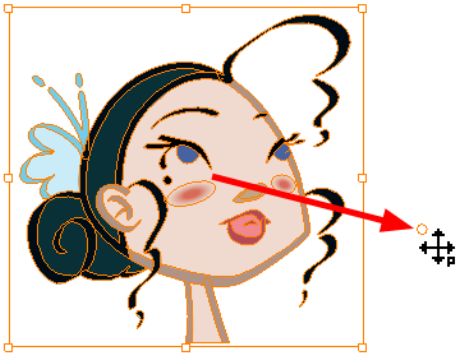
1. In the Camera view, select the drawing object you want to transform.

   The pivot point appears in the middle of your selection.



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

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

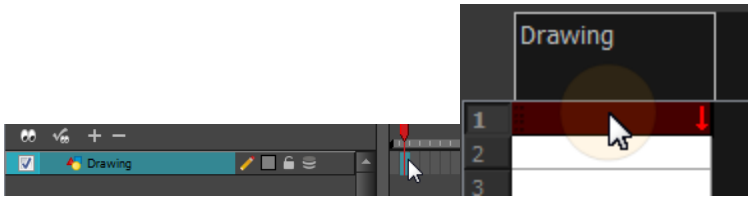


Erasing Parts of a Drawing

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

How to erase with the Eraser tool

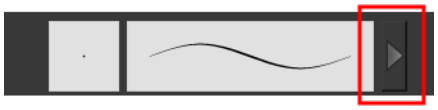
1. In the Timeline or Xsheet view, select the cell that contains objects you want to erase.



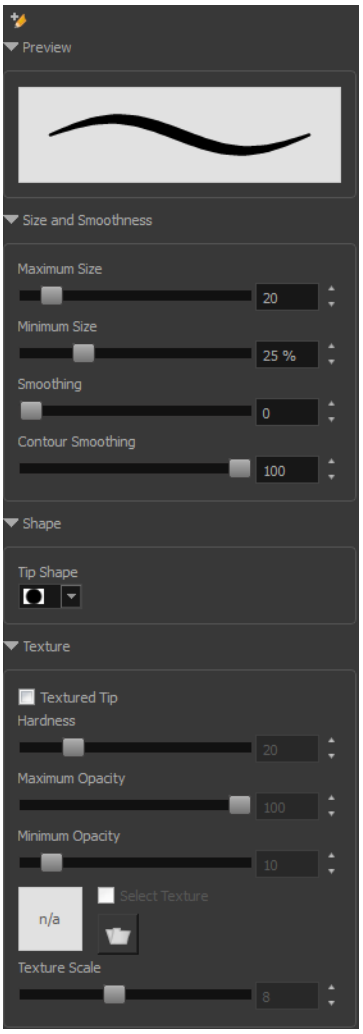
2. In the Tools toolbar, select the Eraser tool or press Alt + E.
3. In the Camera view, start erasing.

How to modify the eraser settings

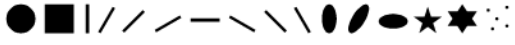
1. In the Tools toolbar, select the Eraser tool .
2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters in the Tool Properties view. Click the arrow button.



The Brush Properties window opens.



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

Parameter	Description
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter will smooth the contour of the line once it has been traced; the higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape from round and square ones to star shaped. 
Texture	See How to draw with textured lines on page 188

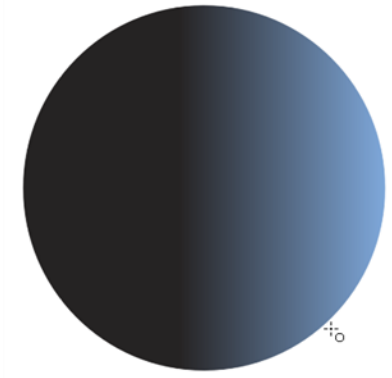
Reshaping a Drawing Using the Contour Editor Tool

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

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

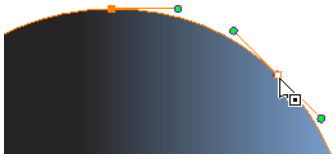
How to reshape with the Contour Editor tool

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



5. In the Tools toolbar, select the Contour Editor tool.
6. In the Camera view, click the line to reshape it.

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

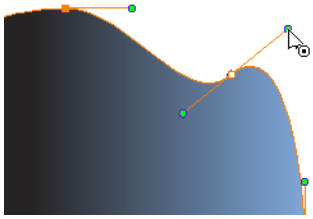


8. Press Delete to delete a selected point.

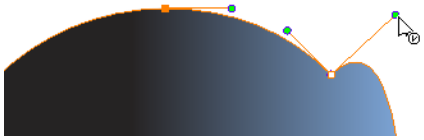
   Press Ctrl (Windows/Linux) or ⌘ (Mac OS X)and click on the contour to add a new point to adjust the contour.

9. To modify the shape, you can:

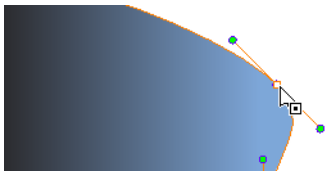
   - Pull on the Bezier handle. Both point's handles will move as one.



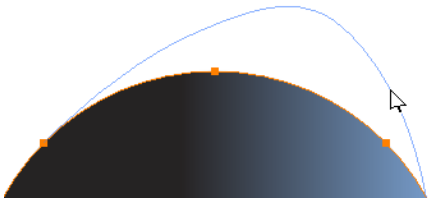
   - Hold down Alt and pull on one of the Bezier handles. The point's handle will move independently from the other one.



   - Move the selected points to a new area.



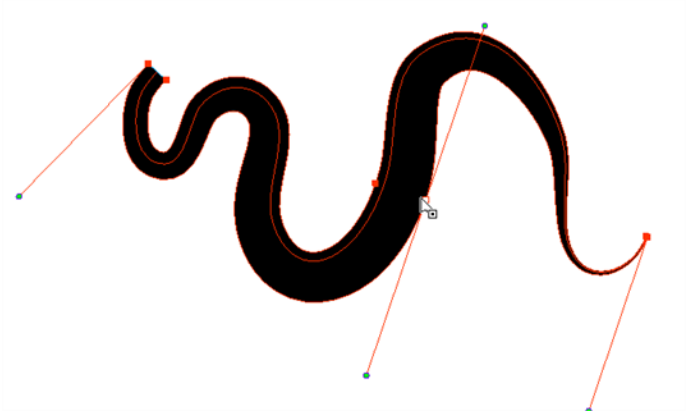
   - Pull directly on the line between two points. No selection is necessary. Holding down Shift will limit the contour modification to the curve between the two first points.



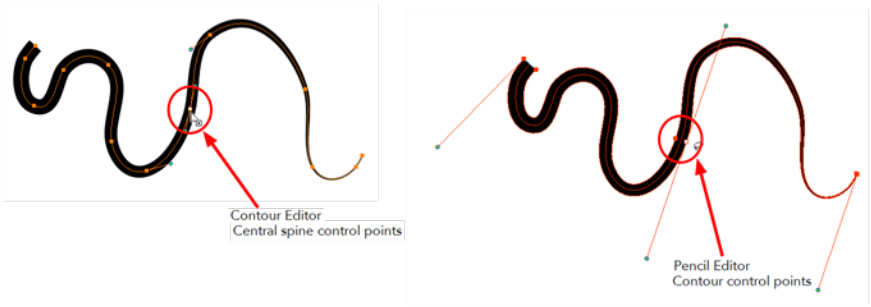
   - If an anchor point has no visible Bezier handles, hold down the Alt key to display them.
   - To add control points, press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the line.

- To remove control points, select the control point and press Delete.

Reshaping Pencil Lines with the Pencil Editor Tool

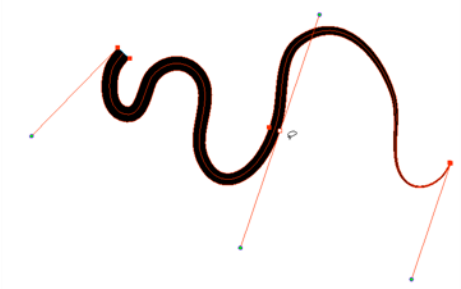


The Pencil Editor tool is used to modify the thick and thin contour of a pencil line. A pencil line is a central vector shape. The shape control points are located all along the central spine allowing you to adjust the stroke curve and position. When using the Contour Editor tool, you can reposition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

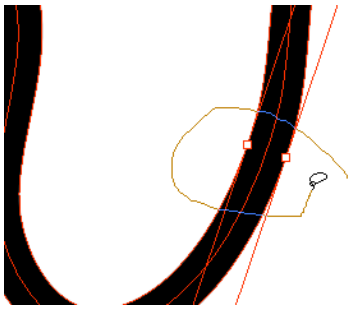


How to use the Pencil Editor tool

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

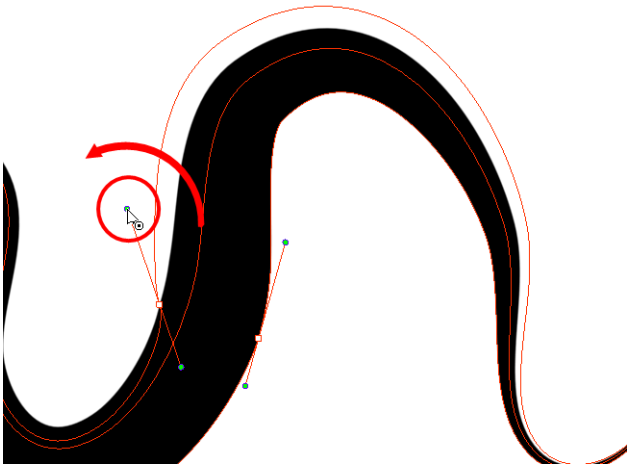


3. Select one or several points by clicking them or circling around.

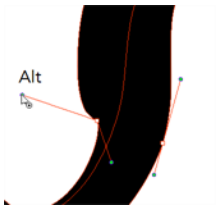


4. Press Delete to delete a selected point.
5. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the central spine to add a set of points to adjust the contour.
6. To modify the shape, you can:
   - Move the selected points to a new area. If you select matching points on each side of the line, holding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

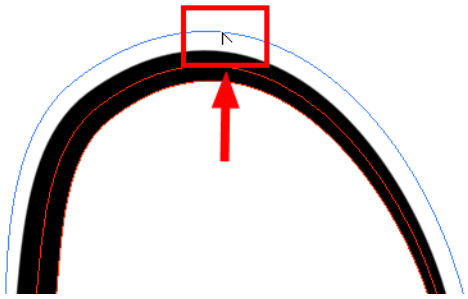
   - Pull on the Bezier handle to move both points' handles as one.



   - 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.



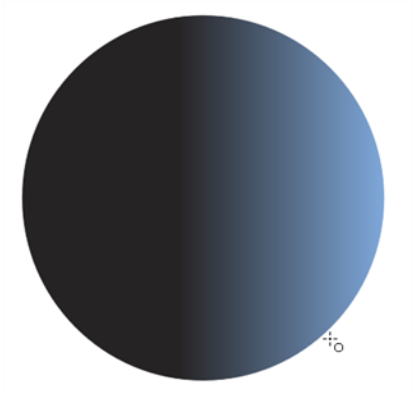
- If an anchor point has no visible Bezier handle, hold down Alt to display them.

Drawing with Shapes

In Harmony, you can use the shape tools to draw circles, lines and squares. You can also easily reshape a square or circle into a much more complex drawing such as these butterfly wings—see Reshaping a Drawing Using the Contour Editor Tool on page 209 and Reshaping Pencil Lines with the Pencil Editor Tool on page 211.

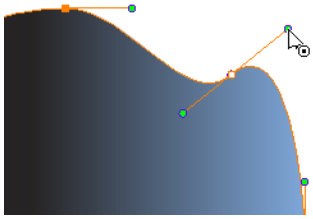
How to draw with a Shape tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar, select a shape tool: .
3. To automatically fill the shape, in the Tool Properties view, select the Auto Fill option.
4. In the Camera view, click and drag to draw the shape.

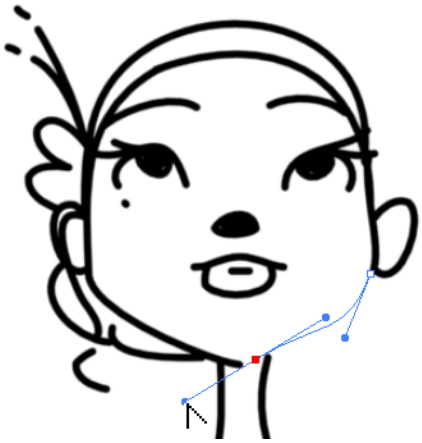


- Hold down Shift to lock the rectangle or the ellipse ratio to 1:1.
- Hold down Alt to draw the rectangle or ellipse from its centre.
- Hold down Shift to snap the line every 15 degrees.
- Hold down Alt to snap the start or end of the line to a nearby stroke.

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



Drawing with the Polyline Tool

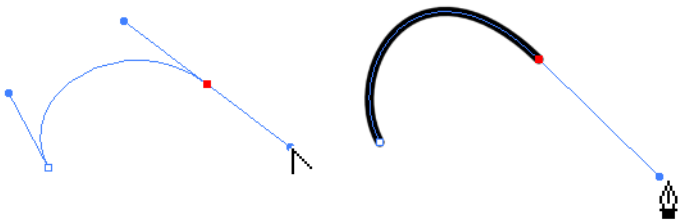


The Polyline tool is used to draw shapes with a central vector type of line. To form a shape, you click to add a point and then, without releasing the mouse, pull the handle in the desired direction before adding the next point and repeat the operation. To edit the shape, you can use the Contour Editor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

How to draw with the Polyline tool

1. In the Timeline view, select the cell on which you want to draw.
2. In the Tools toolbar, select the Polyline tool or press Alt + _.

3. In the Camera view, click and drag to create a point and a Bezier handle to shape your line.
   - Press Alt to pull only one handle, instead of two.
   - Press Shift to snap the handles to 45, 90, or 180 degrees.
4. Click a new area and drag to create a second point and Bezier handle.



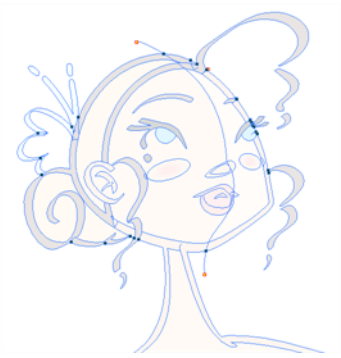
5. Repeat the previous step until your shape is completed.
6. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click to release the Polyline tool from the current path or shape that it is creating. Continue to use the tool to make multiple, independent paths or shapes.
7. If necessary, reshape the lines using the Contour Editor tool—see Reshaping a Drawing Using the Contour Editor Tool on page 209.

Drawing with Invisible Lines

There are two different ways to draw invisible lines.

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

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

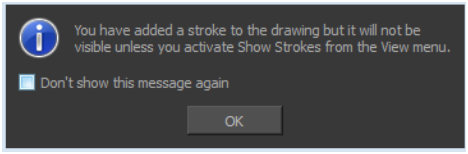


Sometimes, it may be difficult to see your strokes, especially if your colours are similar to the blue stroke colour. In Harmony, you can display the strokes and washed-out the colours of your drawings so that the invisible lines stand out.

How to draw invisible lines with the Pencil tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar, select the Pencil tool or press Alt + /.
3. From the top menu, select **View > 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 view, start drawing.

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

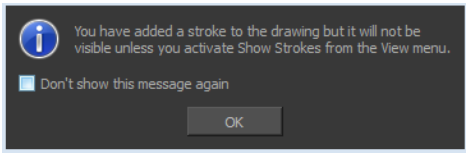
   

   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.
6. Click **OK**.
7. You can modify the stroke shape with the Contour Editor tool.

How to draw invisible lines with the Stroke tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar from the Paint drop-down menu, select the Stroke tool or press Alt + V.
3. From the top menu, select **View > Show Strokes** or press K.
4. In the Tool Properties view, you can adjust the smoothness.
5. In the Camera 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.

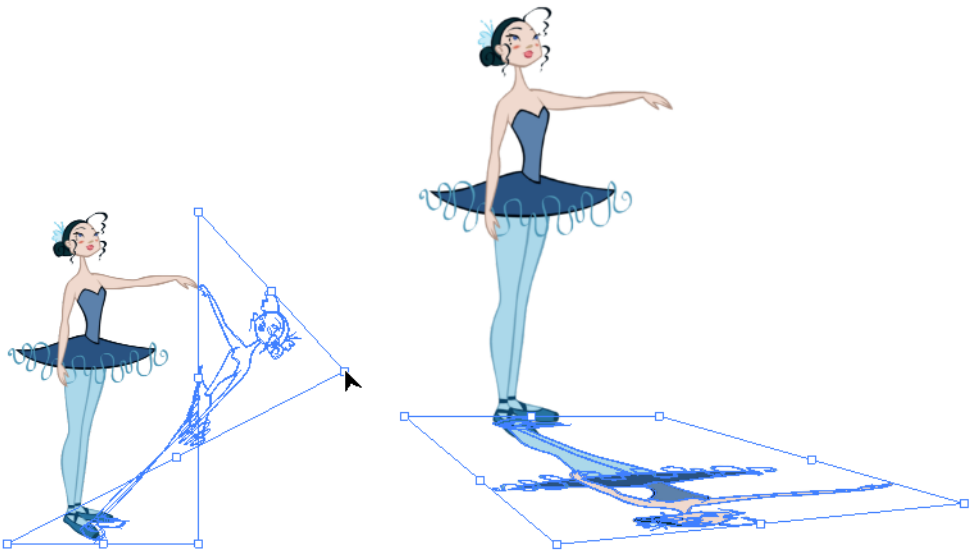
6. Click **OK**.
7. You can modify the stroke shape with the Contour Editor tool.

Deforming a Drawing with the Perspective Tool

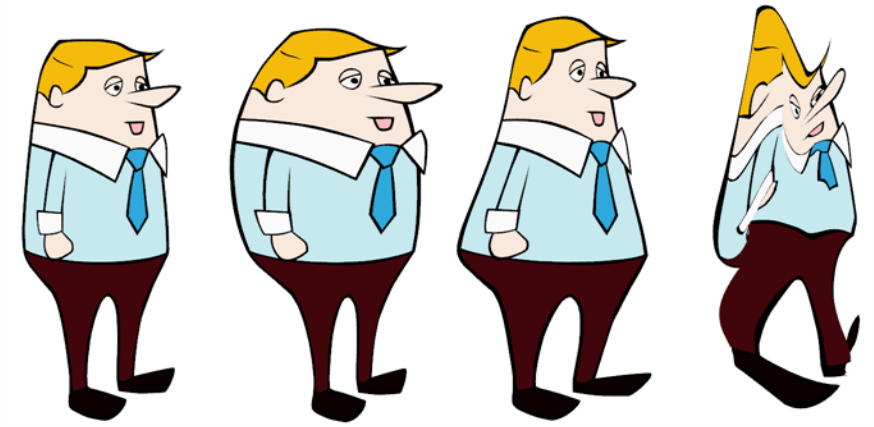
The Perspective tool lets you deform a drawing selection and alter its perspective.

How to deform a drawing with the Perspective tool

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



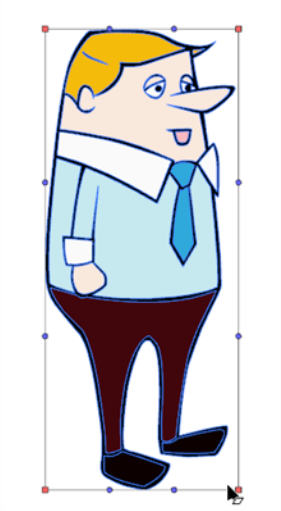
Warping a Drawing with the Envelope Tool



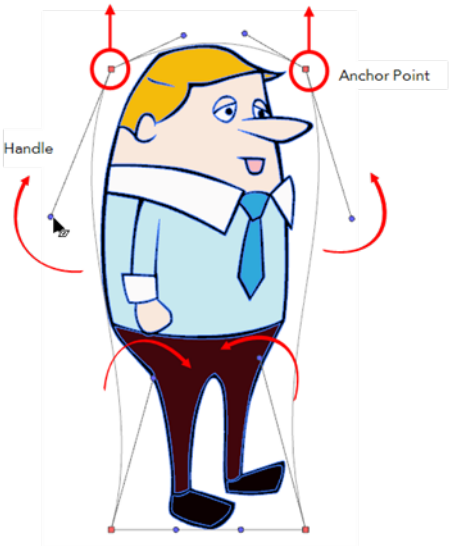
The Envelope tool lets you deform and warp part of a drawing using a grid envelope and Bezier handles.

How to warp a drawing with the Envelope tool

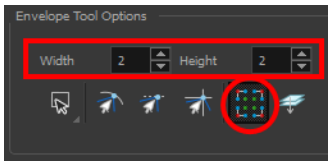
1. In the Tools toolbar, select the Envelope tool from the Contour Editor drop-down menu.
2. In the Timeline view, select a drawing to deform.
3. In the Camera view, select the region you want to deform



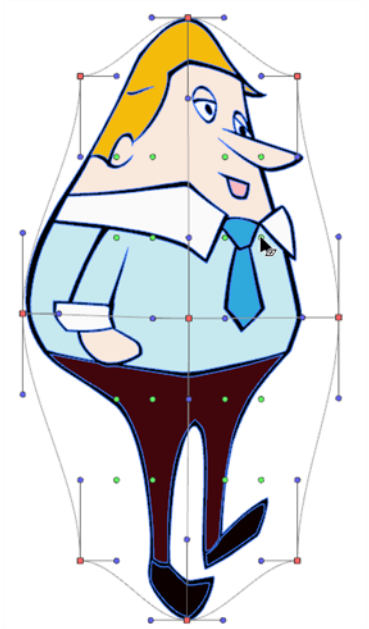
4. Click and drag the different anchor points and handles to deform the image.



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



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

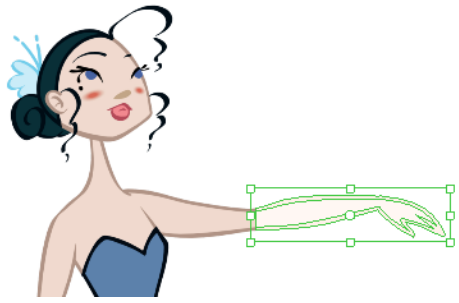


Cutting Drawing Parts

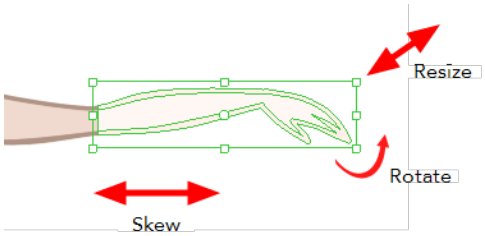
The Cutter tool lets you cut a drawing area to move, copy, cut or delete it.

How to cut with the Cutter tool

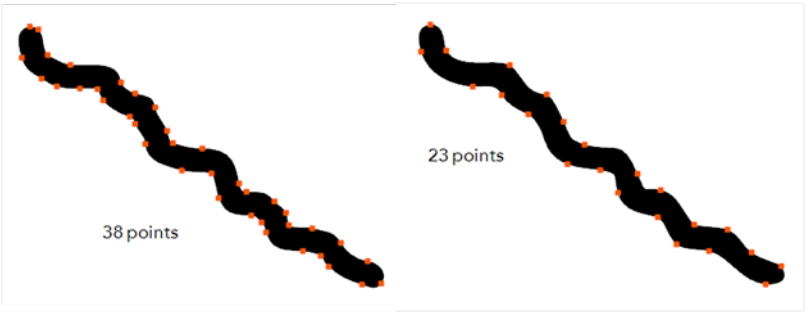
1. In the Tools toolbar, select the Cutter tool or press Alt + T.
2. In the Camera view, make a selection around an area to cut away.



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



Smoothing Lines



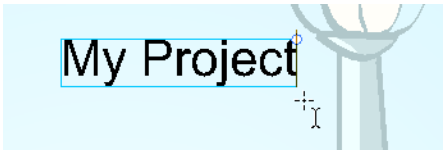
When drawing in a digital application, it is not like drawing on a sheet of paper. Sometimes the lines you draw may look as if they were drawn with an unsteady hand. When this occurs, you may need to correct the look of your lines.

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

How to optimize lines with the Smooth Editor tool

1. In the Tools toolbar, select the Smooth Editor tool or select **Drawing > Tools > Smooth Editor**.
2. In the Camera view, place your pointer over the lines to smooth. You may need to pass over the same line several times to remove more points and make the line smoother. Note that by default, the Smooth Editor tool colour is yellow, it was changed to orange for screen grab clarity—see Smooth Editor Tool Options on page 267 to learn about the various settings available.

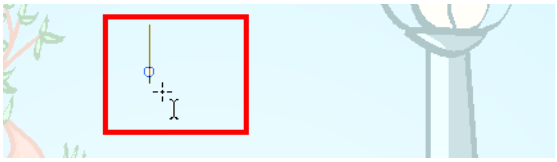
Working With Text



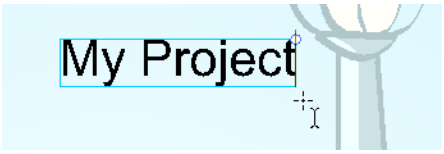
With the Text tool, you can type text in your project using various fonts and texts attributes. Text objects are part of a drawing, so you can manipulate them in the same way. OTF fonts are also supported.

How to add text to drawings

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



4. You can use the Tool Properties view to select the font, font size and format of the text you will type—see Text Tool Options on page 269.
5. Type in the desired text.



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

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

Working with Tool Presets

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

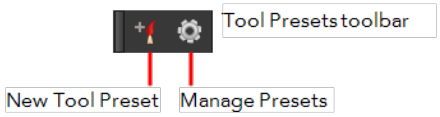
The Tool Presets Toolbar

The Tool Presets toolbar lets you create new tool presets and manage them. There are four default brush presets to get you started—Rough Brush, Clean Pencil, Fill Paint, and Inking Brush. By default,

this toolbar is not displayed.

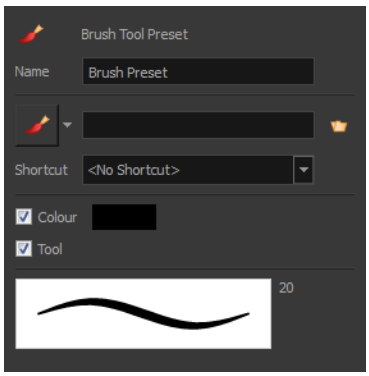
How to display the Tool Presets toolbar

- Select **Windows > Toolbars > Tool Presets**.
- Right-click an empty area below the top menu and select **Tool Presets**.

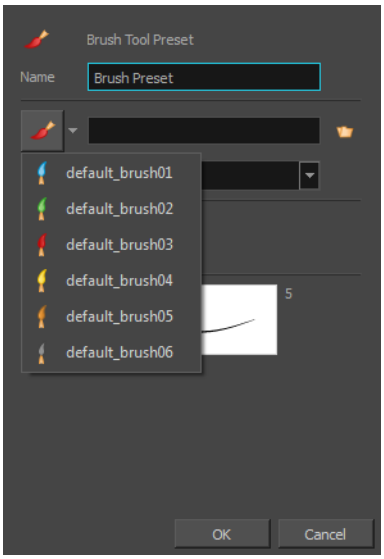


How to create a tool preset

1. In the Tools toolbar, select a tool, for example the Brush tool.
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 that when using this preset in another scene not using that colour palette, upon selecting this new preset, a colour recovery dialog box will appear asking to add this colour to your scene.
4. In the Tool Presets toolbar, click the New Tool Preset button.
5. In the New Tool 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.



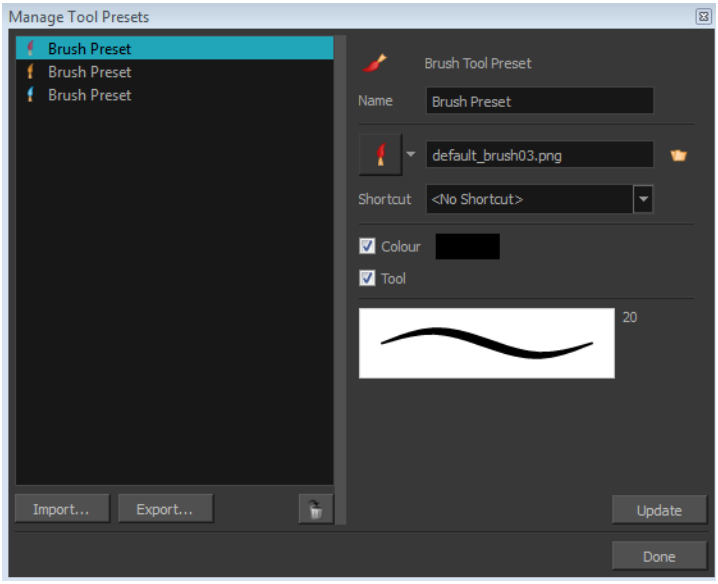
7. (Optional) From the Shortcut menu, set a keyboard shortcut to quickly access your preset.
8. When you select any of the following options, they will take effect when you use the tool preset. If an option is deselected, then using a tool preset will not override your current settings.
   - **Colour**: Saves the current colour into the tool preset.
   - **Tool**: Only the colour will be associated. You could, for example, set three different colours with shortcuts. It would use the current tool with the chosen preset colour.
9. Click **OK**.

How to select a tool preset

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

How to delete a tool preset

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



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

How to import a tool preset

1. In the Tool Presets toolbar, click the Manage Tool Presets button.
   The Manage Tool Presets dialog box opens.
2. Click **Import**.
3. In the Select Folder window that opens, locate and select the preset(s) to import and click **Select Folder**.

How to export a tool preset

1. In the Tool Presets toolbar, click the Manage Tool Presets button.
   The Manage Tool Presets dialog box opens.
2. Click **Export**.
3. In the Export Brush Presets window that opens, click **Export**.
4. Select a folder and click **Select Folder**.

How to update a tool preset

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

More Drawing Tools

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

- Arrange below
- Convert Brush Strokes to Pencil Lines on the facing page
- Pencil Lines to Brush Strokes on the facing page
- Strokes to Pencil Lines on page 228
- Optimize on page 228
- Remove Extra Strokes on page 228
- Reduce Drawing Texture Resolution on page 229
- Crop Brush Textures on page 229
- Grid on page 230
- Group/Ungroup on page 231
- Hand on page 231
- Rotate View on page 231

Arrange

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

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

			(Windows/Linux) or ⌘ + PgDown (Mac OS X).
Send to Back		Moves the selected art behind everything (bottom / back)	From the top menu, select **Drawing > Arrange > Send to Back**. Press Ctrl + Shift + PgDown (Windows/Linux) or ⌘ + Shift + PgDown (Mac OS X).

Convert Brush Strokes to Pencil Lines

The Brushes Strokes to Pencil Lines operation converts selected contour strokes into centreline pencil strokes. This command is only available from the top menu.

How to convert brush strokes to pencil lines

- Right-click on the selection, select **Convert > Brush Strokes to Pencil Lines** or press ^

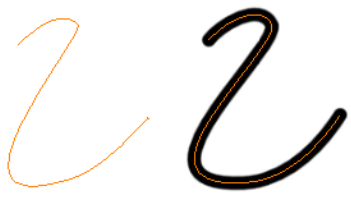
Pencil Lines to Brush Strokes

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

How to convert pencil lines to brush strokes

- Right-click on the selection, select **Convert > Pencil Lines to Brush Strokes** or press &

Strokes to Pencil Lines

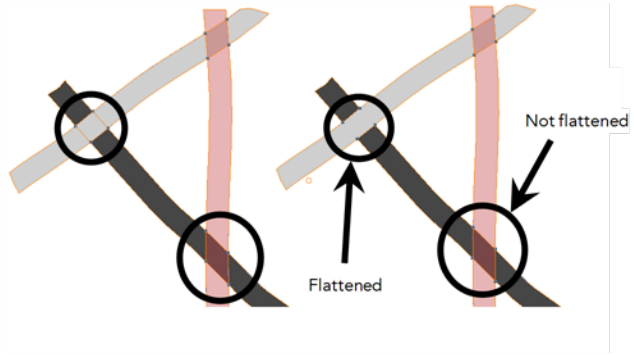


The Strokes to Pencil Lines operation converts the selected invisible line to a pencil line.

How to convert strokes to pencil lines

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

Optimize



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

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

How to optimize

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

Remove Extra Strokes

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

How to remove extra strokes

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

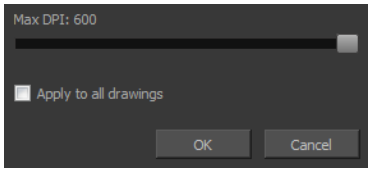
2. In the Camera view, use the Select tool to select the drawing objects you want to remove invisible lines from.
   - From the Camera view menu, select **Drawing > Optimize > Remove Extra Strokes**.

Reduce Drawing Texture Resolution

If you import and vectorize as texture (colour) a high resolution image, the size of your drawing can be heavy. This option is used to reduce the size and resolution of the textures in your drawing. When you import and vectorize drawings using the grey or colour preset styles, you don't have control on the size of the bitmap texture. This tool allows you to reduce that bitmap texture.

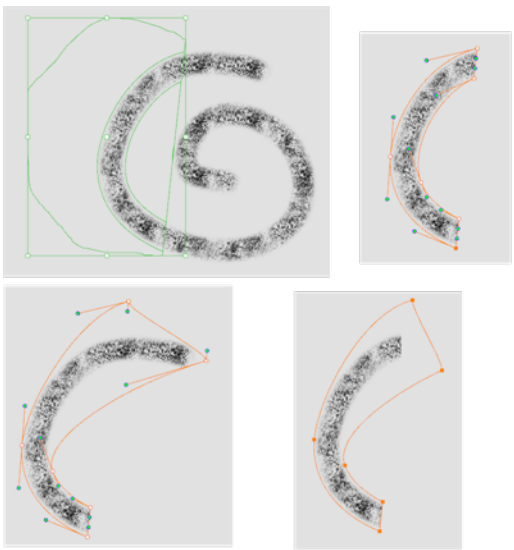
How to reduce the drawing texture resolution

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



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

Crop Brush Textures



The Crop Brush Textures option is used to crop an unnecessarily large texture bitmap that lies unseen beneath the vector contour of a textured line. This often occurs when you cut and paste textured lines

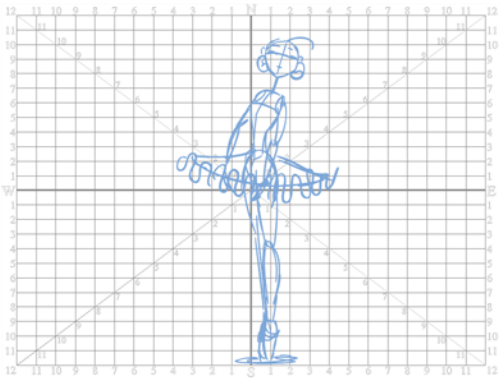
from one drawing into another. If you cut a portion from a textured line and paste it into a different drawing, Harmony pastes the entire unseen texture bitmap from the source drawing into the new one, even if you only took a small portion of the source drawing. Using the Crop Brush Texture command will crop away extraneous texture that does not touch the vector area. If there are many textured lines in your scene, this will greatly reduce the file size.

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

How to crop the brush texture

1. In the Timeline or Xsheet view, select the drawing whose texture you want to crop.
2. From the Camera view menu, select **Drawing > Optimize > Crop Brush Textures**.

Grid



Use the Show Grid option to display a grid in the Camera view.

Name	Button	Description	Keyboard Shortcut
Show Grid		Displays the grid	From the top menu, select **View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Square		Displays a standard square grid	From the top menu, select **View > Grid > Square**.
12 Field Grid		Displays a 12-field size grid	From the top menu, select **View > Grid > 12 Field Grid**.
16 Field Grid		Displays a 16-field size grid	From the top menu, select **View > Grid >**

			16 Field Grid.
Underlay		Displays the grid under the drawing elements	From the top menu, select **View > Grid > Underlay**
Overlay		Displays the grid over the drawing elements	From the top menu, select **View > Grid > Overlay**

Group/Ungroup

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

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

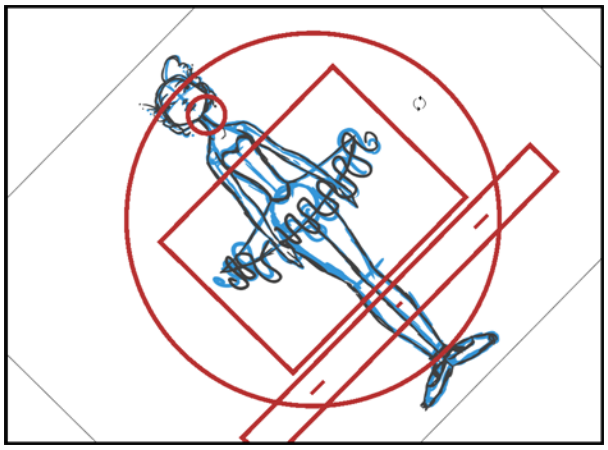
Hand

Use the Hand tool to pan through the Camera view.

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

Rotate View

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



How to use the Rotate View tool

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

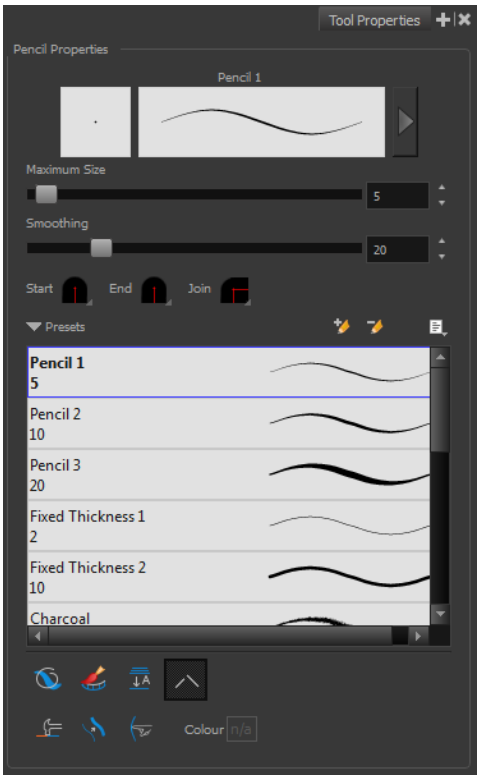
Drawing Tool References

Harmony has a wide variety of drawing tools and each one of them has a series of options and modes available. This section covers these options. For details on how to use these tools, see Drawing Tasks on page 171.

- Pencil Tool Options below
- Brush Tool Options on page 237
- Select Tool Options on page 239
- Eraser Tool Options on page 247
- Contour Editor Options on page 249
- Pencil Editor Options on page 252
- Shape Tool Options on page 255
- Polyline Tool Options on page 259
- Stroke Tool Options on page 260
- Perspective Tool Options on page 261
- Envelope Tool Options on page 262
- Cutter Tool Options on page 265
- Smooth Editor Tool Options on page 267
- Text Tool Options on page 269

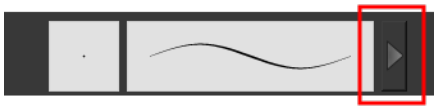
Pencil Tool Options

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



Previewing the Stroke

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



Maximum Size and Smoothing

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

- **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line.

Adjusting the Pencil Line Style

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

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

Thickness Stencils

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

A thickness stencil saves a preset of how the thickness information looks across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded in order to apply the thickness stencil.

A thickness stencil can be used while drawing, or applied afterwards.

You also have the possibility to apply different textures to your lines by either using the preset ones or importing your own—see Working with Pencil Presets on page 175 and Pencil Line Texture on page 178.

Pencil Line Texture

You can apply a bitmap texture on your pencil line and adjust it as needed—see Pencil Line Texture on page 178

Draw Behind

Auto-Flatten Mode

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

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

Using the Select tool, you can use the middle mouse button to select a segment of a

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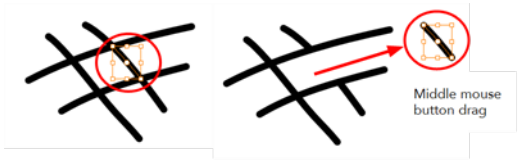
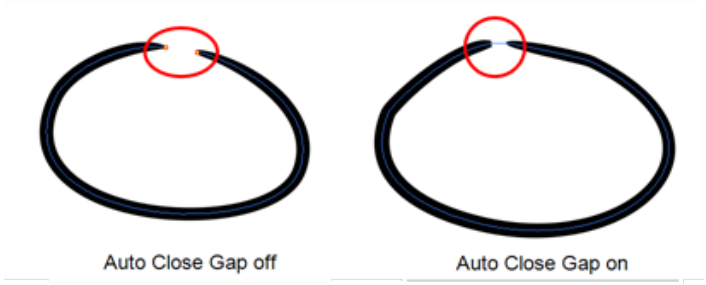
flattened pencil line to create a nice finish on the lines and corners of your artwork.



Auto-Close Gap



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

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

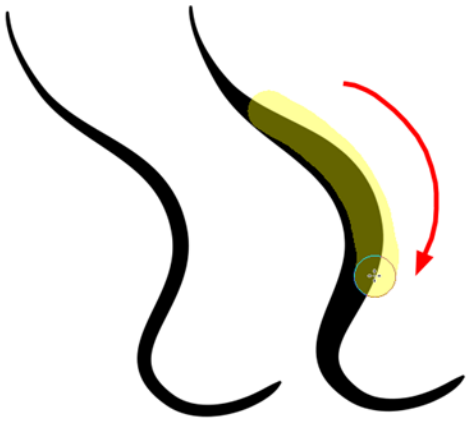
Line Building Mode

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

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

This mode only works with pencil lines.

Auto Adjust Thickness

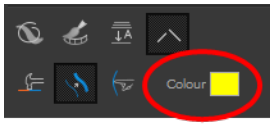


The Auto Adjust Thickness tool is useful when you want to render a portion of a line thicker. When tracing a drawing on paper, you will often go back to a section of a curve to make it thicker to add dynamism to the line. Using the Auto Adjust Thickness tool, you can draw highlight strokes over the section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

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

How to change the Auto Adjust Thickness Colour

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



The Colour Picker window opens.

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

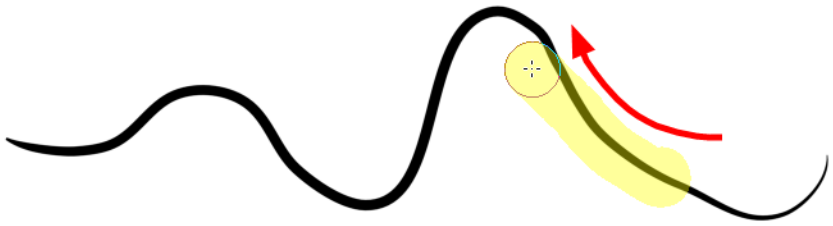
Line Pushing Mode

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

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

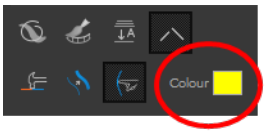
To change the Line Pushing Mode colour

1. In the Tools toolbar, select the Pencil



tool.

2. In the Tool Properties view, select the Line Pushing Mode button.
3. Click the colour swatch.

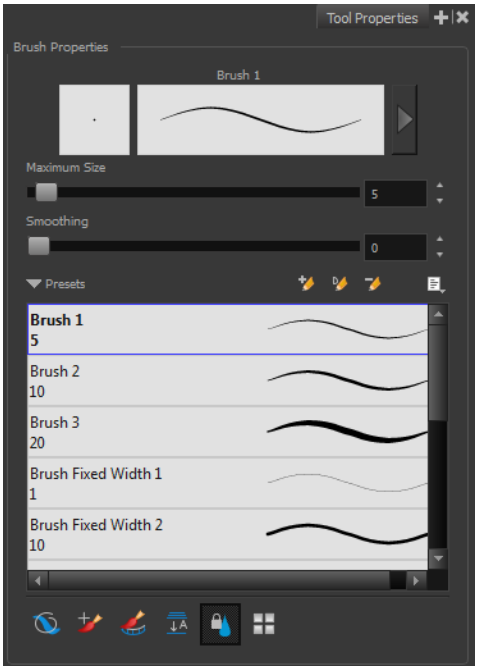


The Colour Picker window opens.

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

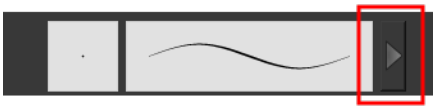
Brush Tool Options

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



Previewing the Stroke

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



Maximum Size and Smoothing

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

- **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line.

Brush Presets

Brush presets are created by saving the properties of the current brush to a new preset, which you can reuse for repeated tasks. You can create as many brush presets as you need—see Drawing with the Brush Tool on page 181.

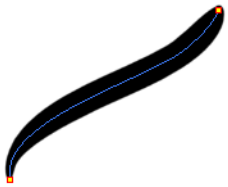
Draw Behind

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

Repaint Brush Mode

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

Create Colour Art Automatically



As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer. To access this option, you must be in the Advanced Art mode.

Auto-Flatten Mode

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

Respect Protected Colour

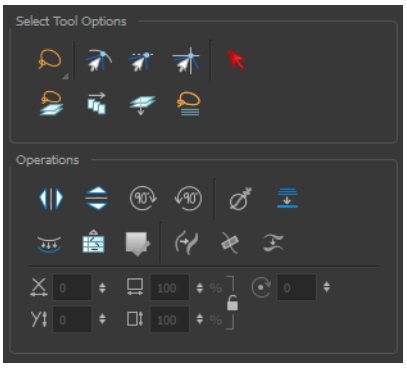
The Respect Protected Colour option prevent the colours you marked as protected in the Colour view to be repainted using the Repaint Brush mode or any of the painting tools.

Use Stored Colour Gradient

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

Select Tool Options

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



Lasso and Marquee

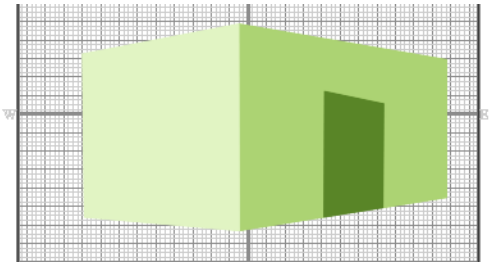
Choose between the Lasso and Marquee options to change the selection style of the tool.

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

Snap Options

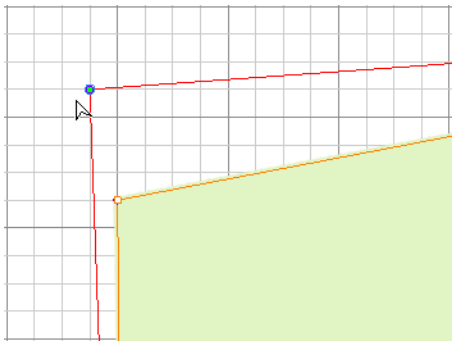
You can enable different snapping modes to help you when repositioning drawings using the Select tool.

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

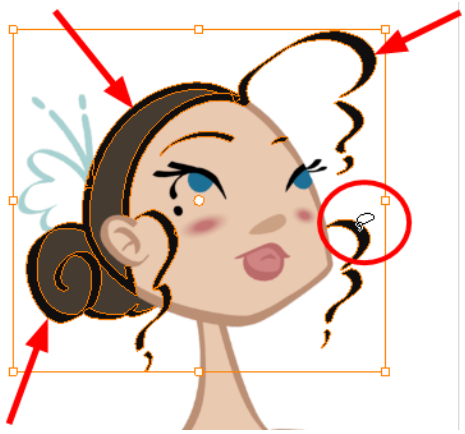


How to snap to grid

1. Do one of the following:
   - Select **View > Grid > Show Grid** to display the grid in the Camera or Drawing view or press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
   - Select **View > Grid > Square Grid**, **12 Field Grid** or **16 Field Grid** for your current needs.
2. In the Tools toolbar, select the Contour Editor tool or press Alt + Q.
3. In the Contour Editor Tool Properties view, click the Snap to Grid button.
4. In the Camera or Drawing view, click on the anchor point you want to snap following the grid, drag it to the desired position and release.



Select by Colour



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

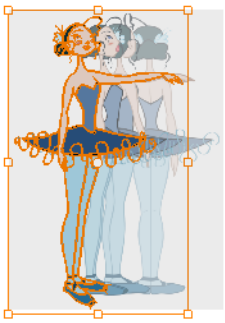
Only the zones painted with the **SAME** colour swatch will be selected. If another zone is coloured with the exact same RGB value (same colour), but not painted with the same colour swatch, it will not be selected.

How to select areas by colour

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

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

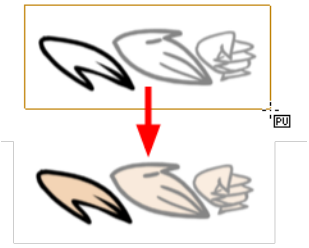
Permanent Selection



The Permanent Selection option lets you maintain a selection over multiple drawings. Once this option is enabled, the selection zone made using the Select tool will remain as you navigate through drawings from a layer and drawings from other drawing layers. This option can be used to

simultaneously delete artwork inside or outside of the selection on several drawings when combined with the Apply to Multiple Drawings option.

Apply to All Drawings in Layer

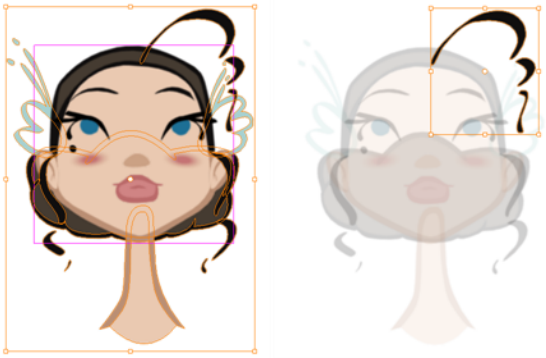


The Apply to All Drawings in Layer option is used to perform an action on all the drawings contained in a layer. For example, you could enable the option to paint a section on all the drawings simultaneously. The Apply Tool to All Drawings option must be activated before performing the action and will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

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting or resizing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers. To access this option, you must be in the Advanced Art mode.

Works on Single Drawing



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

Flip Horizontal and Vertical

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

Rotate 90 Degrees CW and CCW

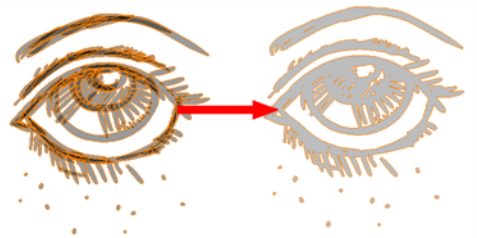
The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smooth

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

Flatten



The Flatten operation is used to merge drawing objects and brush strokes into a single layer. If you draw new lines to fix a drawing or line with many brush strokes, it can be useful to flatten them all into a single shape. By default, lines are drawn one on top of each other. If you intend to repaint the lines or modify their shape, it will be easier if they are flattened.

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

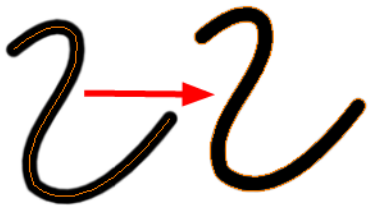
Distribute to Layers

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

Store Colour Gradient

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

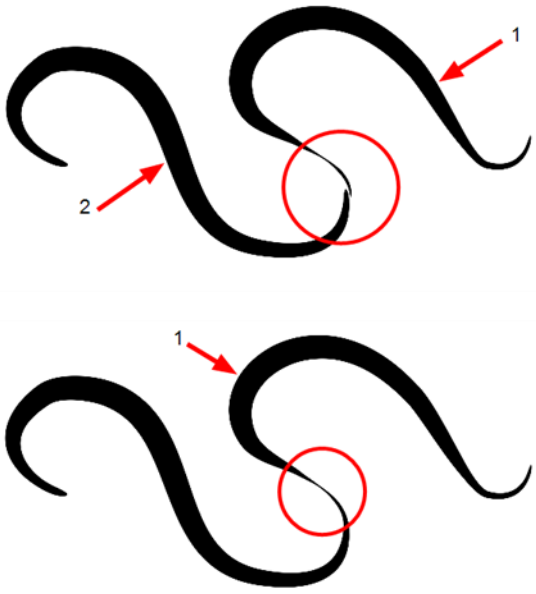
Pencil to Brush



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

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

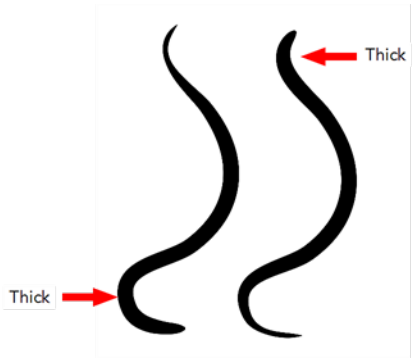
Merge Pencil Lines



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

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

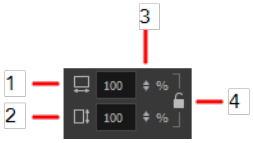
Reverse Pencil Thickness



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

Width and Height

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



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

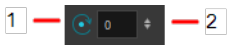
Offset X and Y

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

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

Angle

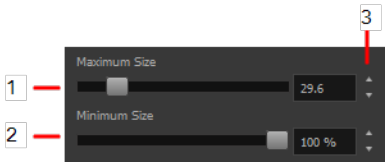
The Angle operation lets you to enter specific values and accurately rotate the selected shape.



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

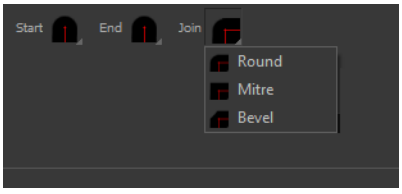
Adjusting the Pencil Line Thickness

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



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

Adjusting the Pencil Line Style



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

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

Pencil Stencils

Toon Boom Harmony gives you the flexibility to change the style and thickness of your pencil lines even after they are drawn. You can apply preset pencil stencils or create your own—see Working with Pencil Presets on page 175.

Adding Texture to a Pencil Line

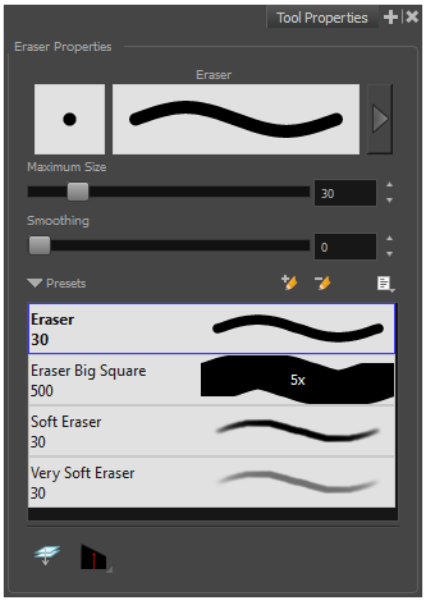
Pencil lines support texture. Once a pencil line is drawn, you can apply a preset texture or load your own. Textures are independent from pencil stencils—see Pencil Line Texture on page 178.

Adjusting the Text Selection

When you select text with the Select tool, the tool properties will display the Text tool options on the bottom of the view. You can also press Alt + 9 to display only the Text properties in the Tool Properties view—see Text Tool Options on page 269.

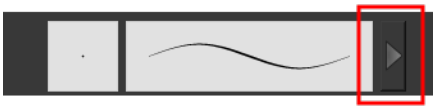
Eraser Tool Options

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



Previewing the Stroke

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



Maximum Size and Smoothing

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

- **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line.

Eraser Presets

Eraser presets are created by saving the properties of the current eraser to a new preset, which you can reuse for repeated tasks. You can create as many eraser presets as you need—see Erasing Parts of a Drawing on page 207.

The Eraser tool uses its own preset list, separated from the Brush tool. Toon Boom Harmony provides a variety of eraser styles and allows you to create and save your own. It is a good idea to create and save eraser with precise sizes and parameters to draw and design.

Eraser Blur Parameters

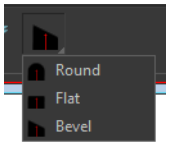
Since Harmony lets you draw with textured lines and create feathered edges on them, you may also want to erase with smooth edges instead of the solid vector based eraser. The Eraser Blur

Parameters allow you to adjust the smoothness of your eraser for the textured lines—see How to erase textured lines on page 190

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting or resizing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers. To access this option, you must be in the Advanced Art mode.

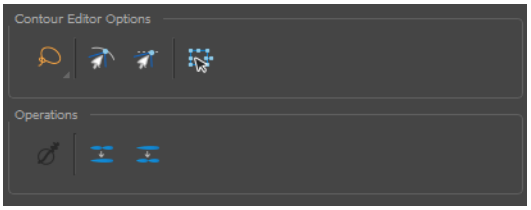
Tip Style



Use the Tip Style option to customize the tip of the pencil line you are cutting.

Contour Editor Options

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

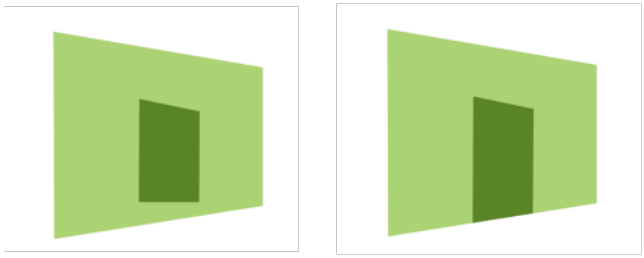


Lasso and Marquee

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

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

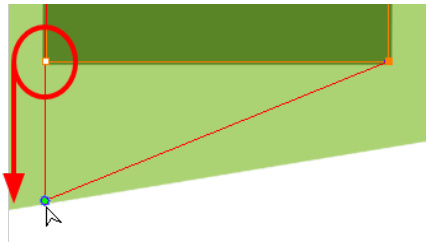
Snap to Contour

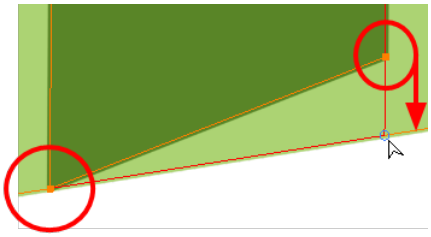


The Snap to Contour option will snap the selected anchor point to any line you position it on.

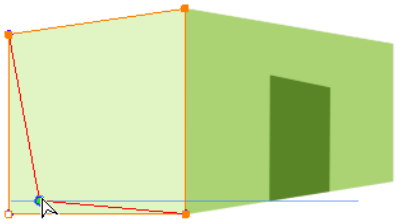
How to snap two shapes together

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





Snap and Align

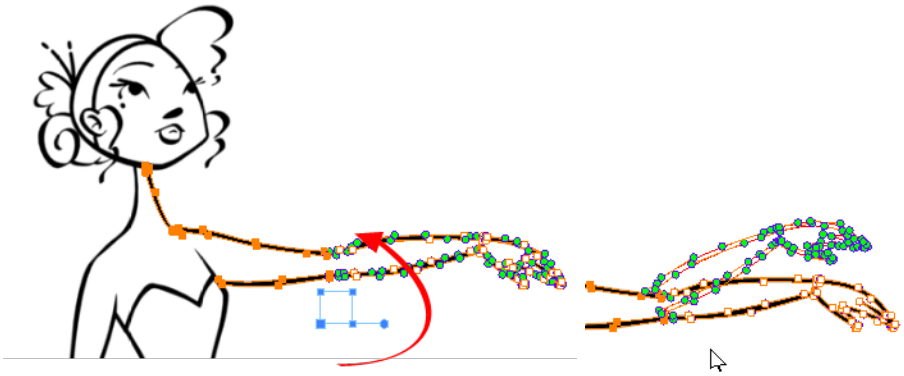


The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to.

How to snap and align

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

Show Contour Editor Controls



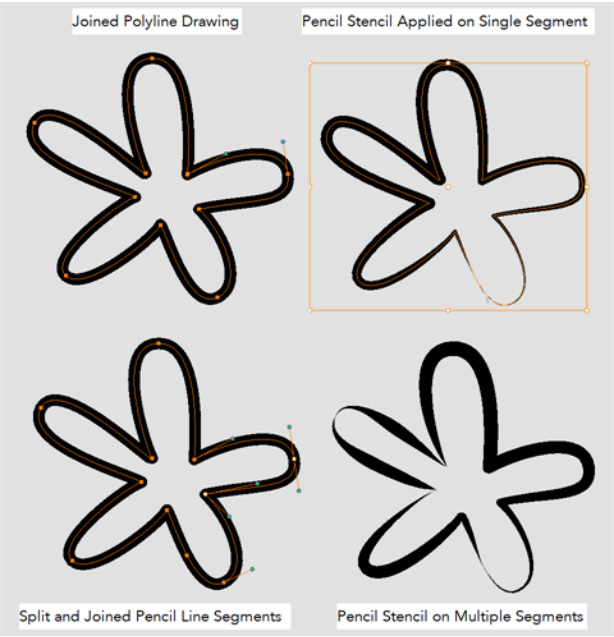
Use the Show Contour Editor Controls option to show the contour editor controls. You can use these controls to scale, reposition and rotate the selected anchor points.

Smooth Selection

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

Split Pencil Line and Join Pencil Lines

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

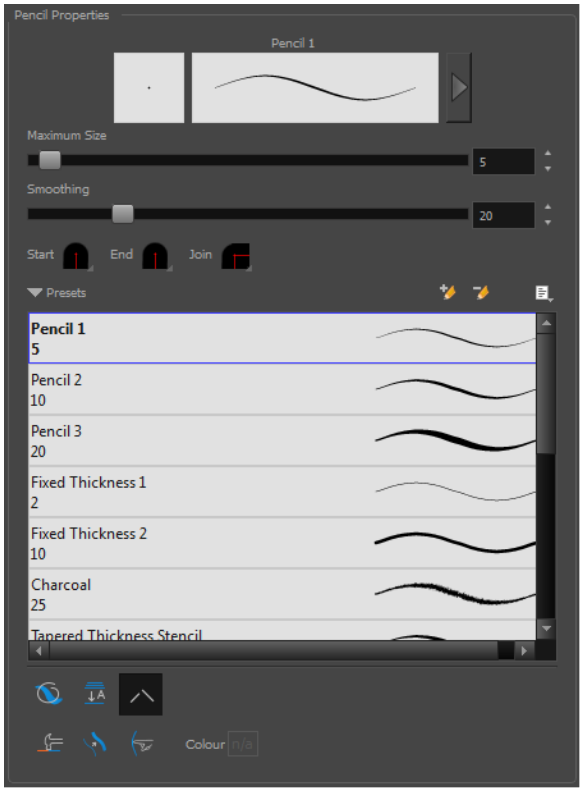


How to split and join pencil lines

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

Pencil Editor Options

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



Lasso and Marquee

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

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

Maximum Size and Smoothing

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

- **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line.

Adjusting the Pencil Line Style

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

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

Preset

To work with Pencil line presets, see Working with Pencil Presets on page 175.

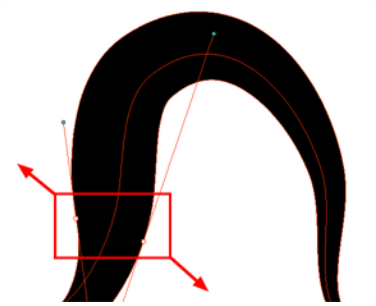
Textures

To work with Pencil Line Texture, see Pencil Line Texture on page 178

Smooth

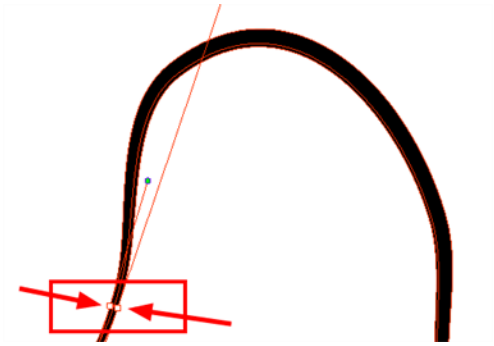
The Smooth operation lets you smooth out selected drawing strokes and remove extra points.

Pump Pencil Pressure



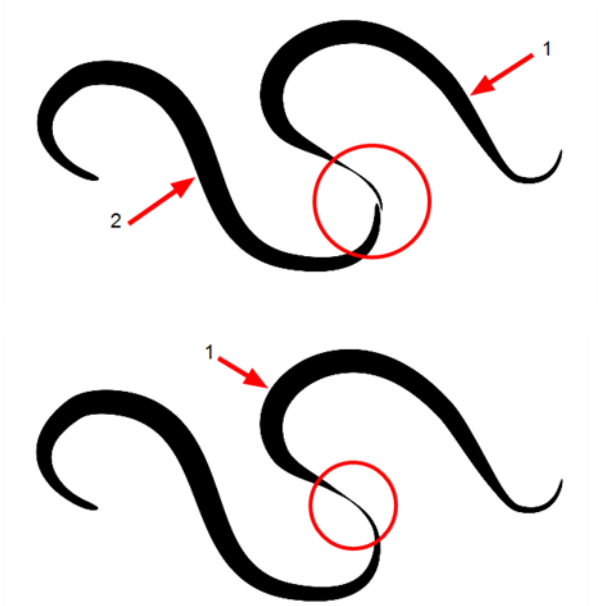
The Pump Pencil Pressure option is used to increase the line thickness of a selected area on a pencil line.

Deflate Pencil Pressure



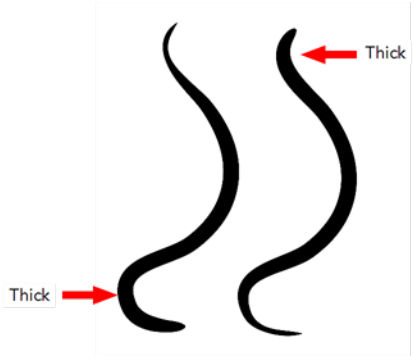
The Deflate Pencil Pressure option is used to decrease the line thickness of a selected area on a pencil line.

Merge Pencil Lines



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

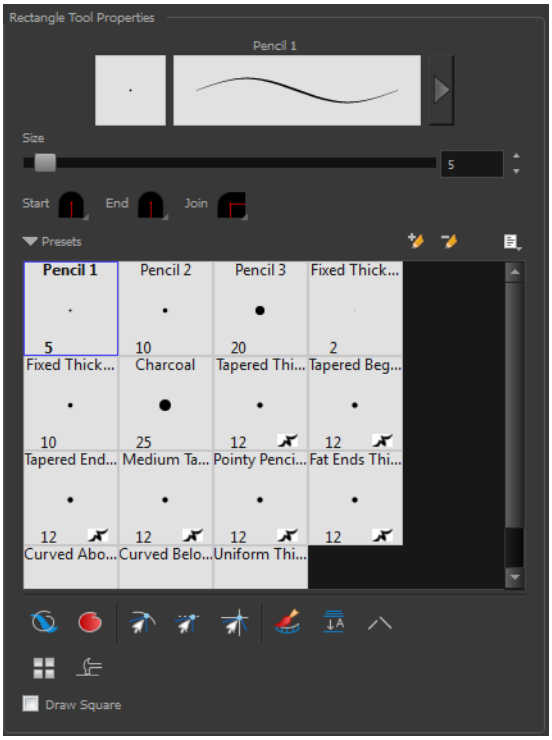
Reverse Pencil Thickness



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

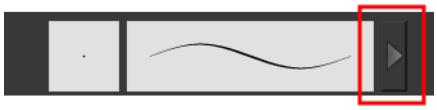
Shape Tool Options

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



Previewing the Stroke

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



Size

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

Adjusting the Pencil Line Style

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

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

Thickness Stencils

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

A thickness stencil saves a preset of how the thickness information looks across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded in order to apply the thickness stencil.

A thickness stencil can be used while drawing, or applied afterwards.

You also have the possibility to apply different textures to your lines by either using the preset ones or importing your own—see Working with Pencil Presets on page 175

Draw Behind

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

Snap Options

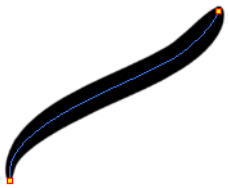
When drawing a shape, you can enable different snap modes to help you create your shape.

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

Automatic Filling

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

Create Colour Art Automatically

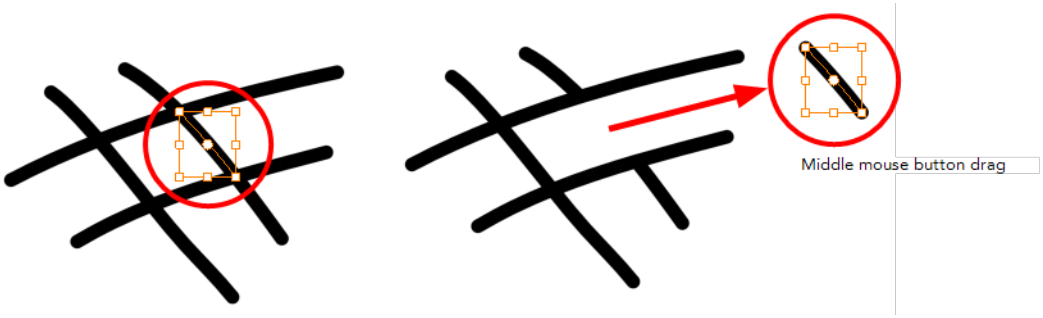


As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer. To access this option, you must be in the Advanced Art mode.

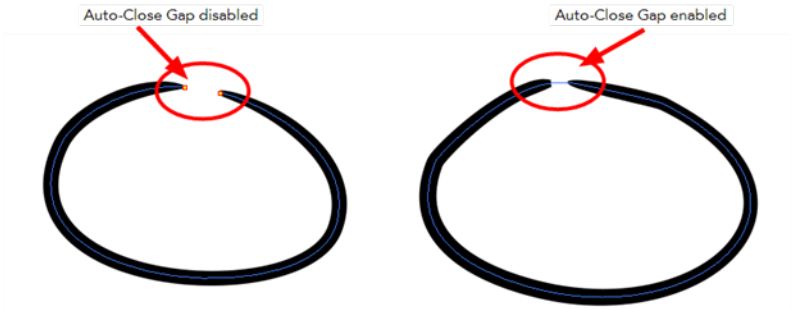
Auto-Flatten Mode

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

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



Auto-Close Gap



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

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

Use Stored Colour Gradient

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

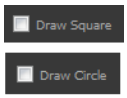
Line Building Mode

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

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

This mode only works with pencil lines.

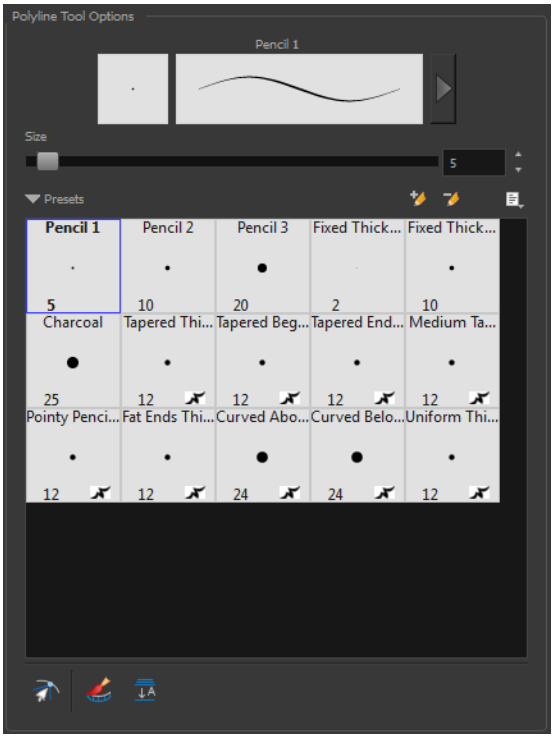
Keep Proportion



When the Ellipse or Rectangle mode is enabled in the Tool Properties view, the Draw Circle or Draw Square option appears. When selecting these options, the shape produced will be a circle or square. Holding down the Shift key as you create your shape will maintain proportion.

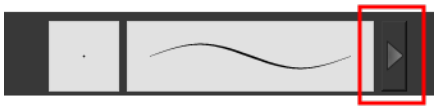
Polyline Tool Options

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



Previewing the Stroke

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



Size

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

Thickness Stencils

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

A thickness stencil saves a preset of how the thickness information looks across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded in order to apply the thickness stencil.

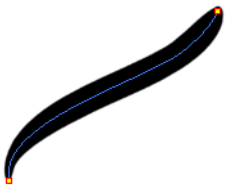
A thickness stencil can be used while drawing, or applied afterwards.

You also have the possibility to apply different textures to your lines by either using the preset ones or importing your own—see Working with Pencil Presets on page 175

Snap to Contour

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

Create Colour Art Automatically



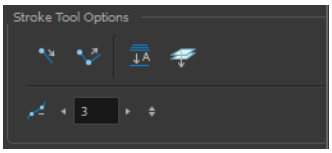
As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer. To access this option, you must be in the Advanced Art mode.

Auto-Flatten Mode

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

Stroke Tool Options

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



Draw Stroke as Straight Lines

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

Connect Line Ends

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

Auto-Flatten Mode

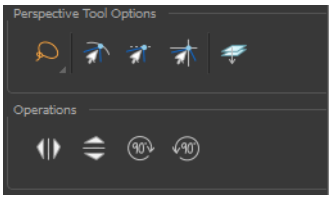
When enabled, the Auto-Flatten mode automatically flattens the new lines created with the existing artwork as you draw in the Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Smoothness

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

Perspective Tool Options

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



Lasso and Marquee

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

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

Snap Options

- The Snap to Contour option will snap the selected anchor point to any line you position it on—see Contour Editor Options on page 249.
- The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see Contour Editor Options on page 249.
- The Snap to Grid option snaps your selection according to the currently enabled grid.

Flip Horizontal and Vertical

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

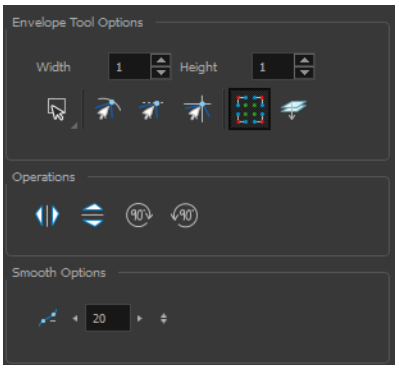
Rotate 90 Degrees CW and CCW

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

- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

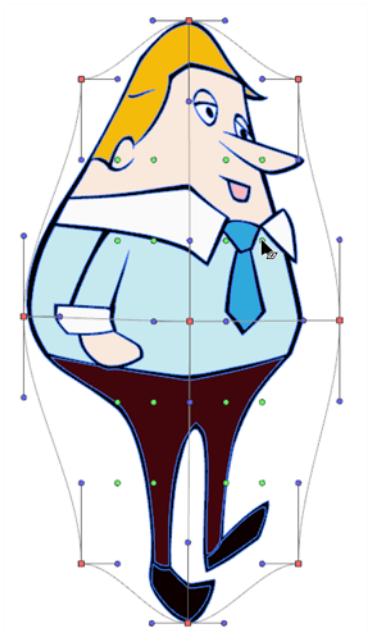
Envelope Tool Options

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



Width and Height

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



Lasso and Marquee

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

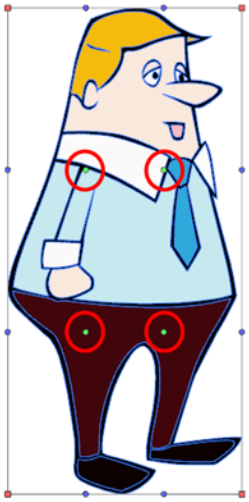
- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

- The Snap to Contour option will snap the selected anchor point to any line you position it on—see Contour Editor Options on page 249.
- The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see Contour Editor Options on page 249.
- The Snap to Grid option snaps your selection according to the currently enabled grid.

Show Advanced Controls

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



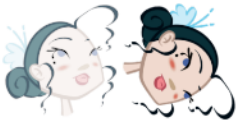
Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting or resizing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers. To access this option, you must be in the Advanced Art mode.

Flip Horizontal and Vertical

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

Rotate 90 Degrees CW and CCW



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

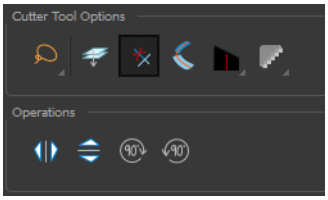
- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smoothness

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

Cutter Tool Options

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



Lasso and Marquee

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

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

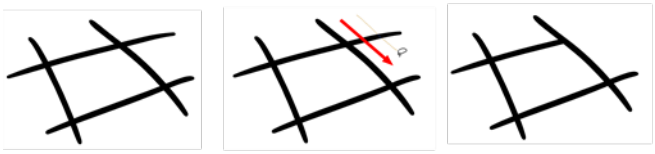
Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting or resizing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers. To access this option, you must be in the Advanced Art mode.

Use Mouse Gesture

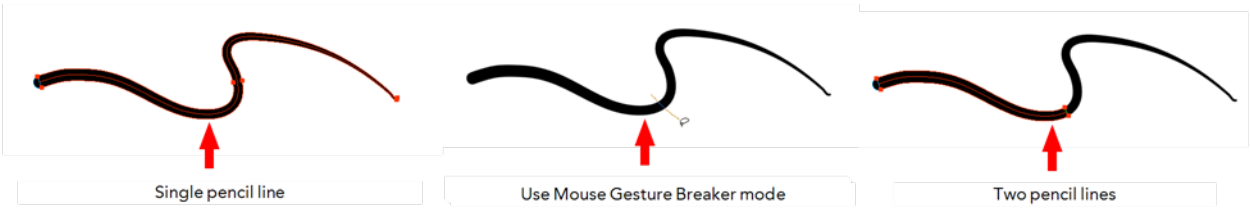
When using the Lasso selection type, the Use Mouse Gesture option lets you automatically delete any extra sections of line in your artwork by simply dragging your mouse over it.

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



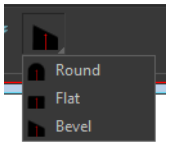
Use Mouse Gesture Breaker Mode

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



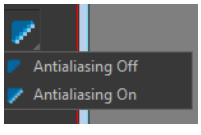
This option only works with pencil lines.

Tip Style



Use the Tip Style option to customize the tip of the pencil line you are cutting.

Antialiasing



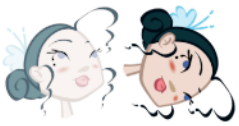
When drawing on a bitmap layer, lines are no longer clean vector shapes. For the edges to be smooth, a slight amount of antialiasing is used. When using the Cutter tool, you can cut a portion of

your drawing with or without antialiasing. By default, the option is enabled. If you want to cut your drawing using a hard edge, you can select the Antialiasing Off option.

Flip Horizontal and Vertical

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

Rotate 90 Degrees CW and CCW

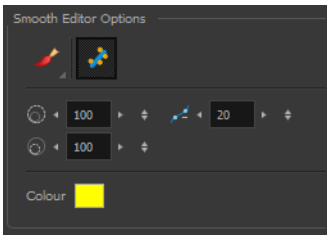


The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smooth Editor Tool Options

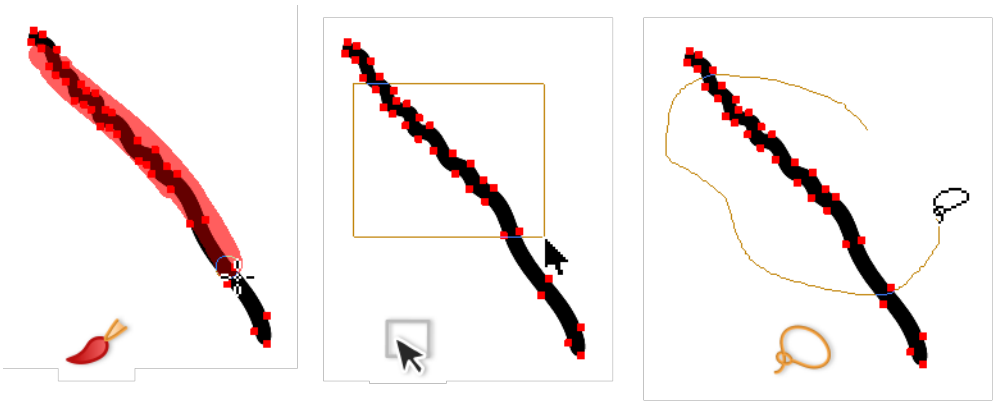
When you select the Smooth Editor tool, its properties and options appear in the Tool Properties view.



Brush, Marquee and Lasso Smoothing Style

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

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



Show Control Points

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

Minimum Size and Maximum Size

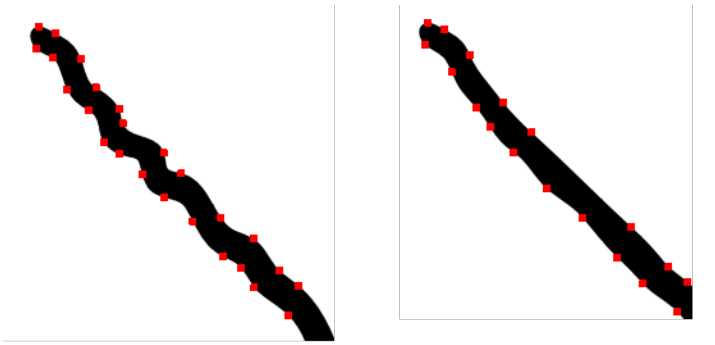
This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

This options is available while using the Brush Smoothing style.

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

Smoothness

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

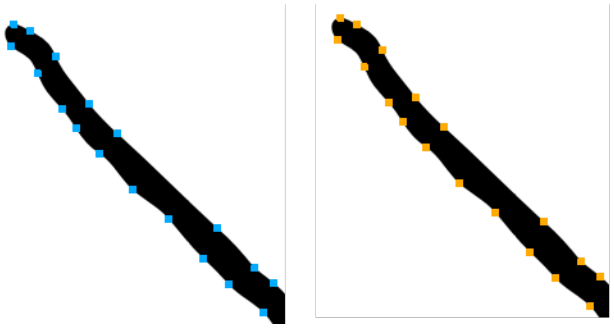


Smoothness = 2

Smoothness = 10

Colour

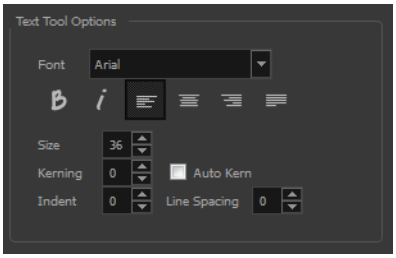
You can modify the colour of the control points displayed on the artwork while working with the Smooth Editor tool by double-clicking on the colour swatch.



Text Tool Options

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

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



Font Type

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

Font Style

Use these buttons to select a style for your text:

- Bold

- Italic

Alignment

Use these buttons to align the paragraph.

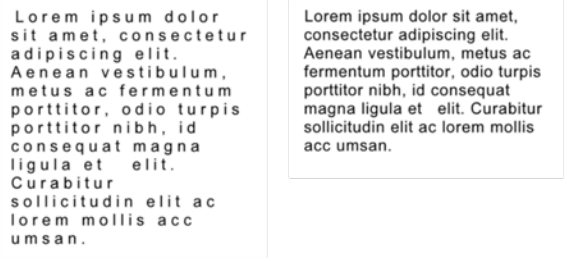
Left LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.	Centered LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN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

Font Size

Enter a size for the text.

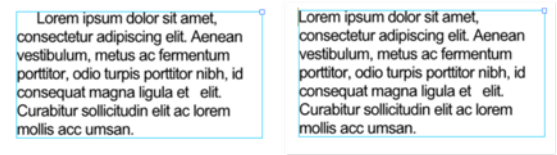
Kerning

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



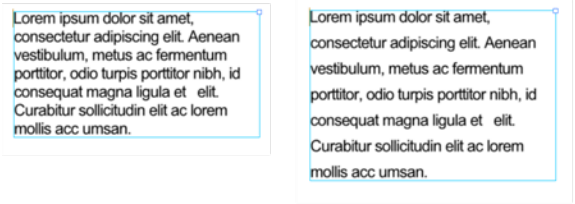
Indent

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



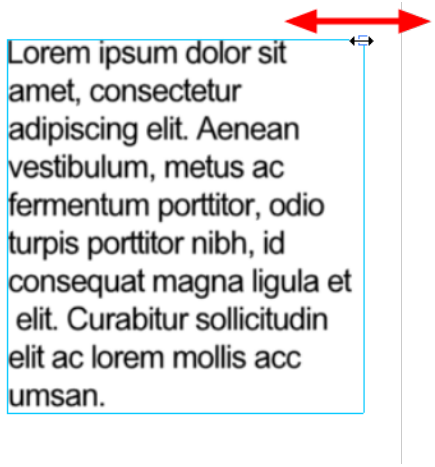
Line Spacing

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



Resizing the Text Box

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



Converting Text into Separate Objects

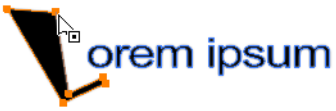
Text contained in a text field is treated as a single drawing object. You can easily separate the text so each character becomes an individual drawing object that you can select and modify independently.

How to break a text object

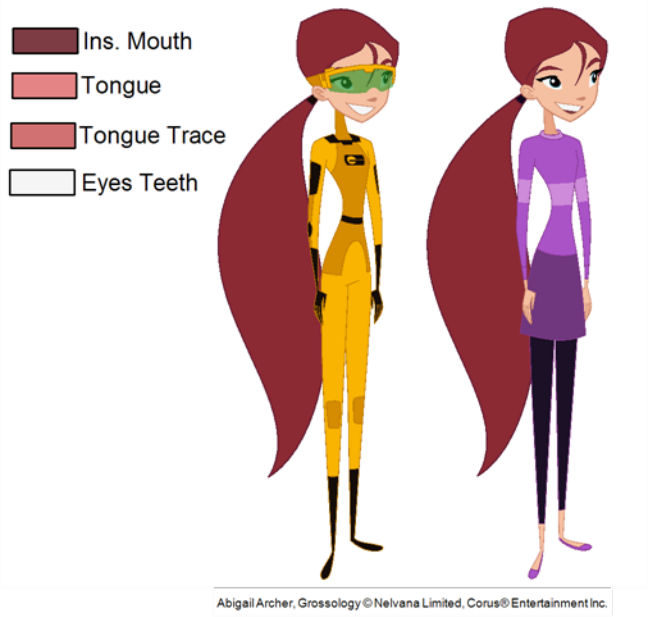
1. In the Tools toolbar, click the Select tool or press Alt + S.
2. In the Camera view, select the text object you want to break.

   - From theCamera 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.
3. 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.
   - From the Camera view menu, select **Drawing > Convert > Break Apart Text Layers** to break the selection into a regular drawing object, with no more text attributes.



Chapter 8: Colour Styling and Colour Models



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

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

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

Throughout this chapter you might notice slight differences between your interface and the images used to demonstrate the procedure. This is because the images are taken from Harmony Stage. Sketch is a subset of Harmony Stage.

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

- Preparation on the next page
- Working with Palettes on page 279
- Colours on page 296
- Painting the Model on page 308

Preparation

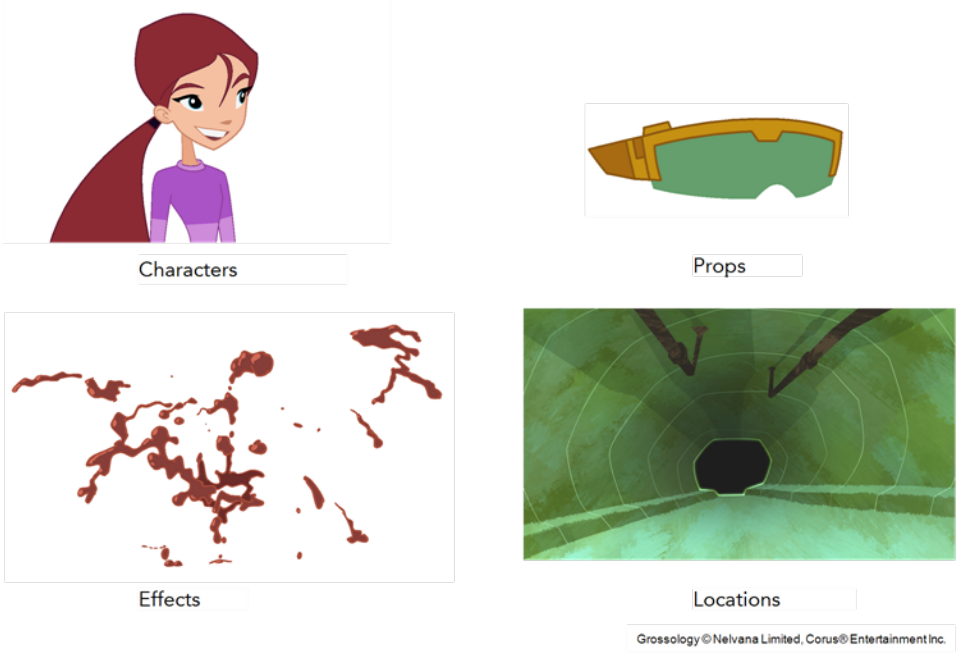
Before painting, you need to organize the colour model scenes and bring in your references. The colour styling preparation is done in five steps:

- Colour Model Storage below
- Scene Creation below
- Setting Up the Workspace on the facing page
- Naming on page 276

Colour Model Storage

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

There are four main model categories:



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

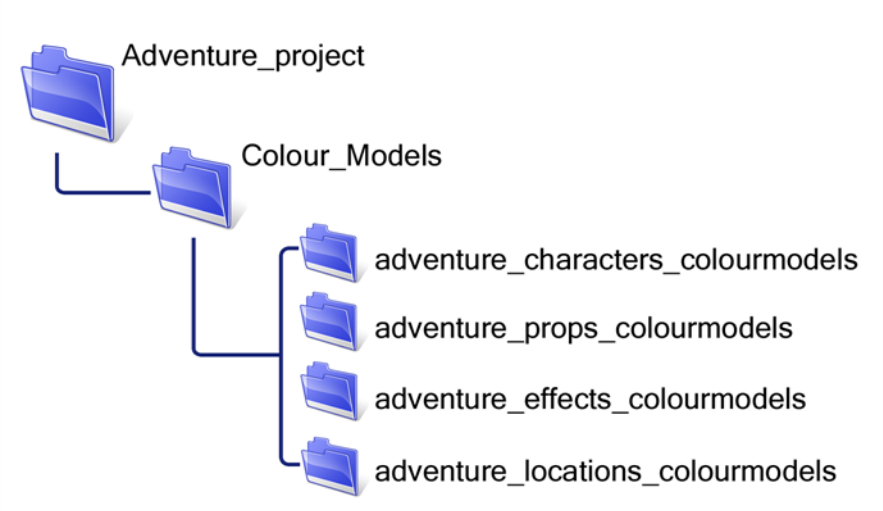
Scene Creation

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

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

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

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



Colour Model Scene Structure

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

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

Setting Up the Workspace

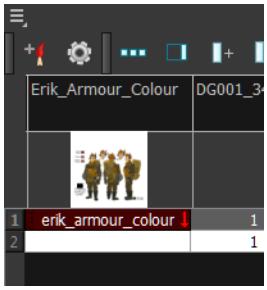
Now that your scenes are created and structured, you can open the corresponding colour model scene. For the optimal workspace for inking and painting, set up your workspace with these views:

- Xsheet
- Camera
- Colour

Naming

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

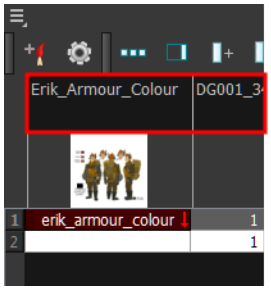
For example, if there is a black and white character model called **`Erik`** in one drawing element and its colour models in another one, rename your elements to include the character's name. For example, the colour model for Erik's armour could be named: **`erik_armour_colour`**.



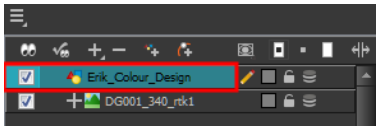
How to rename a drawing element

1. Do one of the following:

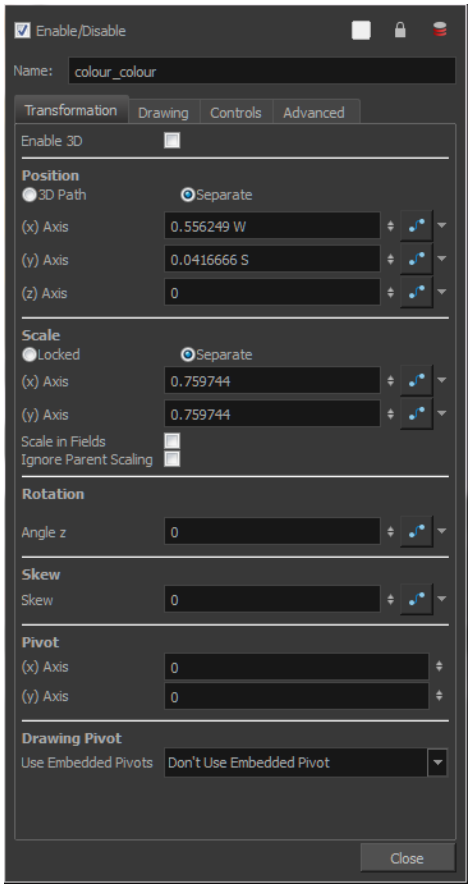
- In the Xsheet view, double-click on the column header of the drawing element.



- In the Timeline view, double-click on the drawing element's layer.



The Layer Properties window opens.



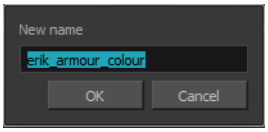
2. Type in a new name.

How to rename a drawing

1. In the Xsheet view, click on a drawing name.

2. Do one of the following:
   - From the Xsheet menu, select **Drawings > Rename Drawing.**
   - Right-click on the drawing name and select **Drawings >Rename Drawing.**
   - Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.



3. Type in a new name and click **OK**.

Working with Palettes

In animation, specific colours are used to paint each particular character. In order to maintain absolute consistency, a colour palette is created for each character, prop and effect throughout the production. These are referred to as ***master palette***[1]*s*.

Master palettes contain a colour swatch for each zone to colour with a precise RGBA colour value.

Using a master colour palette has many benefits, including:

- Each character consistently retains their dedicated colours.
- You cannot accidentally use a colour which is not in the master palette.
- Standardization and colour consistency throughout the production
- Multiple artists can use the same colour palette and produce the same results.

Toon Boom Harmony uses palettes to hold all the colours needed to paint your elements, allowing complete control and consistency in your painting process.

A **palette**[2] is created by assigning a set of colours to each character, prop or effect. You will create a new palette and add a new colour, known as a *colour swatch*, for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on.

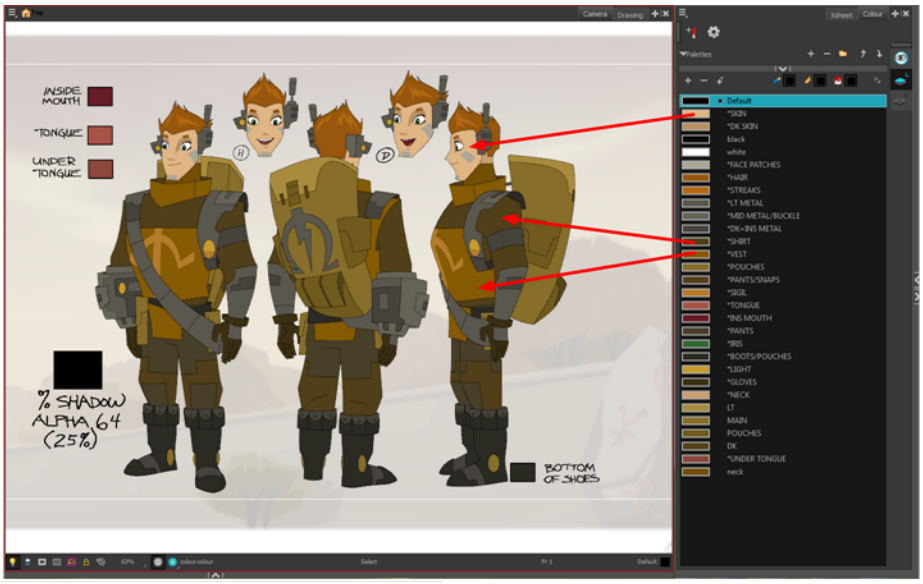
In Harmony, palettes are individual files that you can copy, transfer, and store. Palettes have a **`*.plt`** file name extension—see Palette File Storage on page 283.

When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

[1] A master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as palette.

[2] A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire Toon Boom Studio project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.



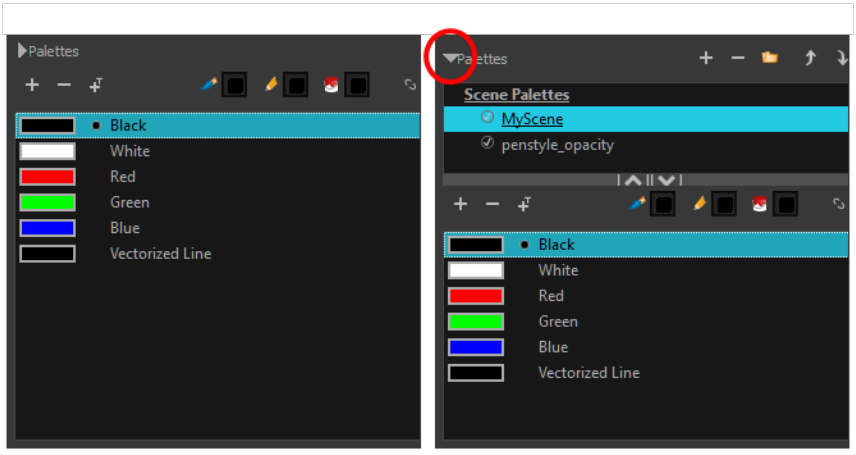
Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

This section is divided as follows:

- Palette Lists below
- Palette File Storage on page 283
- Creating a Colour Palette on page 284
- Duplicating a Colour Palette on page 288
- Cloning a Colour Palette on page 289
- Importing and Linking Palettes on page 291

Palette Lists

The Colour view has two modes: basic and advanced.



Basic mode Advanced mode

- **Basic Mode**

  The Colour view's basic mode only shows the Colour list. When you open Toon Boom Harmony, you only see the colours available in the Default palette which contains six basic colour swatches and is automatically named the same as your scene. For simple projects, you can manage with the default palette, but for movies, series, or shorts it is recommended that you create palettes for your characters. To create a palette, you have to switch to the Advanced mode of the Colour view and show the Palette list.

- **Advanced Mode**

  The Advanced mode displays the list of all palettes that are linked to the scene. To create palettes for your characters, you must display the Palette list.

A palette list is a file containing all of the links to the original palette files. Every drawing layer has a palette list. The scene also has a palette list. For example, a drawing layer can use three different palettes stored in three different locations, while another drawing layer can use two of these palettes plus another one coming from another scene. The palette list keep track of the locations of the palettes.

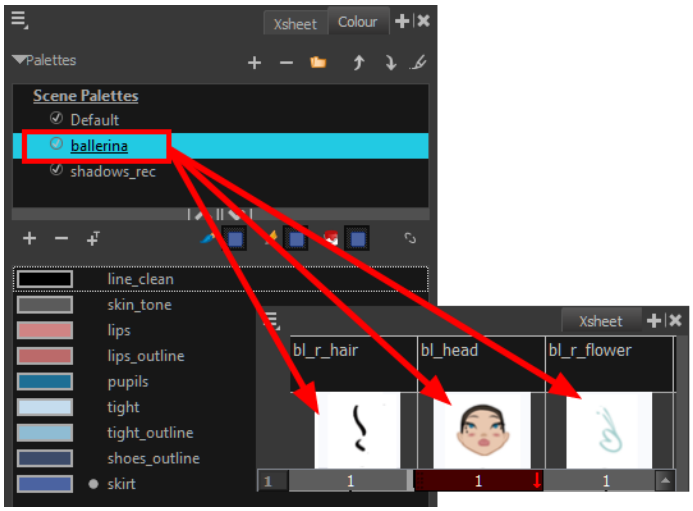
There are two types of palette lists:

- **Scene Palette List**

  The Scene Palette list is mainly used with cut-out animation, but is also very useful for paperless and traditional animations. A cut-out character will often be divided into 20 to 30 different drawing elements that use the character's master palette.

  The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

  The Scene Palette list is the simplest one to use. By default, Toon Boom Harmony is set to use only Scene Palette lists.

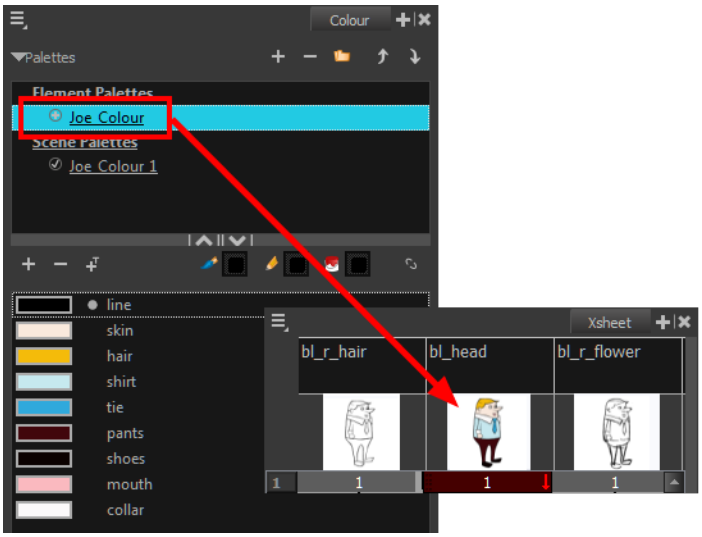


- **Element Palette List**

  In Toon Boom Harmony, you can switch to Advanced Palette List mode and choose to save your palette at an element's level. The Element Palette list is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters,

props, backgrounds, and effects. The Element Palette list is used when you do not necessarily want all of the palettes for all of your elements linked in every column.

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

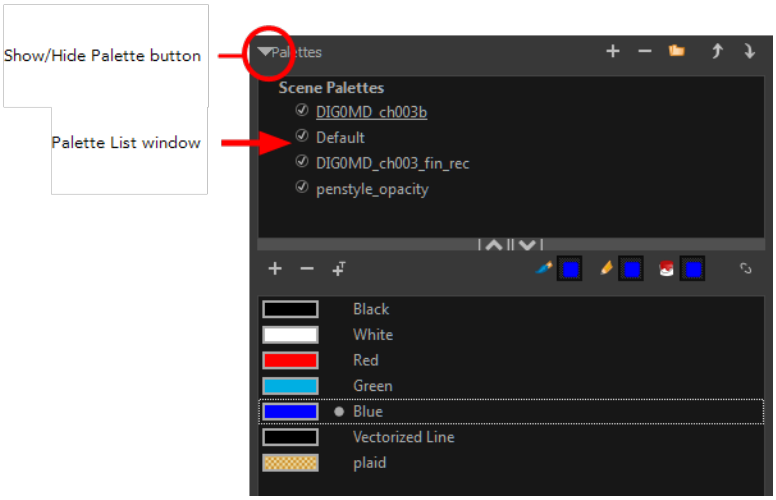


When you are using several cloned palettes that are related to the same original palette, Toon Boom Harmony uses the highest palette in the list to determine the colour of the painted zones—see Cloning a Colour Palette on page 289.

How to show or hide the Palette list

- In the Colour view, click the Show/Hide Palette List View button to expand or collapse the Palette List area.

The Palette List window opens and displays all your palettes.

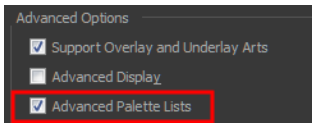


How to set the Advanced Palette Lists mode

1. Do one of the following:

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

2. Select the **Advanced** tab.
3. Select the **Advanced Palette Lists** option.

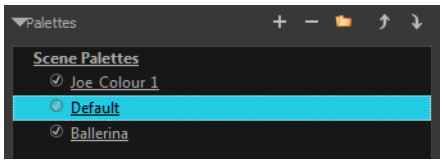


4. Click **OK**.

How to reorder palettes in the Palette list

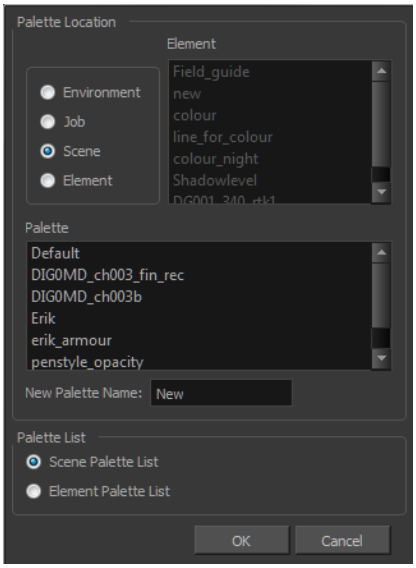
Do one of the following:

- From the Colour View menu, select **Palettes** > **Move Up** or **Move Down**.
- In the Palette list, click the Up and Down buttons.



Palette File Storage

In Harmony, palettes are individual **`*.plt`** files that can be copied, transferred and stored. When a palette is created from Harmony, it needs to be stored somewhere. By default, the palette file is stored in the scene directory in a palette-library folder unless you specify a different location. There are four locations where you can find palette-library folders:



- **Element**

  The Palette Library folder is stored directly in the drawing Element folder.

- **Scene**

  The Palette Library folder is stored directly in the Scene folder.

- **Job**

  The Palette Library folder is stored in a Job folder contained in the Scene folder.

- **Environment**

  The Palette Library folder is stored in an Environment folder contained in the Scene folder.

By default, the palette is stored at the scene level. For simple projects and standalone projects, it is recommended to keep it as is. If you work with a larger studio, it is recommended to verify with them on the file structure.

This existing structure is compatible with Toon Boom Harmony Server. Toon Boom Harmony's database has a leveled structure starting from the Environment down to the Element. Its client-server configuration allows all data, such as palettes and scenes, to be shared between a series of client machines.

Element Level

Working with Harmony as a stand alone, the Element level is very useful when there are a lot of different palettes. When a colour model drawing is created, it is stored in its element folder. By storing the corresponding palette file with the colour model, the colourist can load them both from the same location. This also creates a more organized structure.

Scene Level

Working with Toon Boom Harmony as a stand alone, a palette file can also be saved at the scene level, so that all of the palettes from the scene are stored together. The palette naming must be structured so the colourist or character builders can find the correct one. Saving the palettes at the scene level makes it very easy to back up the palettes and retrieve their location.

The scene level can also be useful for cut-out animation. Instead of creating a colour model scene that includes all of the characters, props, effects, and location, the colour palette or model will often be directly imported to, or created in, the character building scene. Just as with a cut-out character building scene, each element uses the same palette so it would not be efficient to save the palette inside one element. Instead, it is saved at the scene level. This prevents a palette overload because all of the models are in different scenes. It also allows each scene to have its own set of palettes corresponding to its model.

When working on a cut-out animation production, it is highly recommended that you work with the Scene level.

Palette Backup

When sharing palettes between scenes, some users may accidentally modify the colours, even though the palettes are locked by default. That is why it is a good idea to copy and back up your palette libraries and master palette directories.

When a palette file is copied, it automatically becomes a clone palette, so there will not be any trouble replacing an altered file. Harmony automatically updates all of the files and drawings linked to it.

Creating a Colour Palette

You can create a palette in either Basic or Advanced mode.

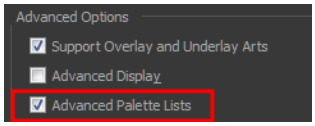
By default, Toon Boom Harmony is set to the Basic mode. For simple productions, it is recommended to use the Basic mode. This setting stores the palettes automatically for you and saves them at the Scene level. When you use the Advanced Palette Lists mode, you can decide at which level you want to store your palettes: Environment, Job, Scene, or Element.

Before you can create a palette in the Advanced Palette Lists mode, you must first set your preferences to Advanced Palette Lists mode in the Preferences dialog box.

You can remove palettes from your Palette list if they are not needed in your scene. The actual palette file will not be deleted and you can reimport it in your Palette list later on.

How to set the Advanced Palette Lists mode

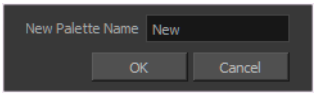
1. Do one of the following:
   - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).
2. Select the **Advanced** tab.
3. Select the **Advanced Palette Lists** option.



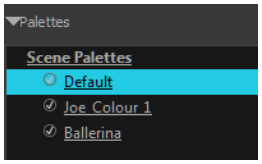
4. Click **OK**.

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

1. From the Colour View menu, select **Palettes** > **New** or click the New Palette button.
   The Create Palette window opens.
2. Enter the palette name according to the model.

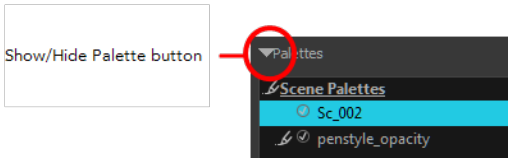


3. Click **OK**.
   The palette appears in the drawing element's palette list.



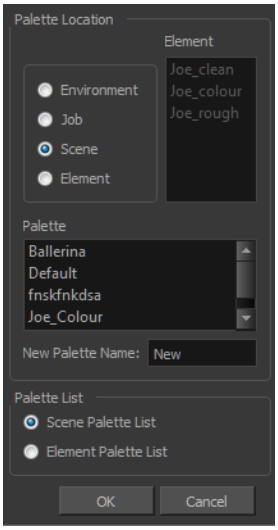
How to create a palette from the Advanced Palette Lists mode

1. In the Timeline or Xsheet view, select the drawing that requires a palette.
2. In the Colour view, click the **Show Palette List View** button to display the palette list.



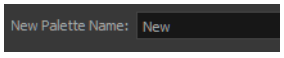
3. Do one of the following:
   - From the Colour view menu, select **Palettes > New.**
   - Click the Create Palette button.

   The Palette Browser: Create Palette dialog box opens.

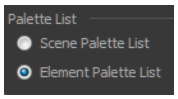


4. Select the level to store the palette file.
   - **Environment**: The palette-library folder is stored in the scene's parent environment folder.
   - **Job**: The palette-library folder is stored in the scene's parent job folder.
   - **Scene**: The palette-library folder is stored directly in the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

   When you select a level that has a palette stored in it, the palette names are displayed in the Palette field.
5. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.



6. Select a Palette List option.



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

The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

- The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

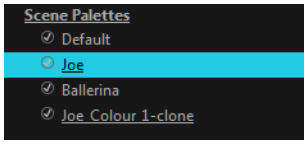
  The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

7. Click **OK**.

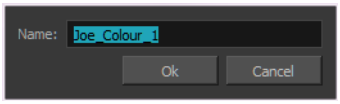
   The new palette appears in the palette list.

How to rename a palette

1. In the Colour view, select the palette to rename.

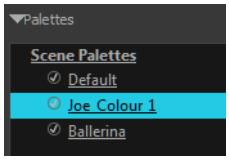


2. Do one of the following:
   - Right-click and select **Rename**.
   - From the Colour View menu, select **Palettes** > **Rename**.
3. In the Rename dialog box, give the palette a new name and click **OK**.



How to remove a palette

1. In the Colour view, select the palette to remove.



2. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Remove**.
   - Right-click on the selected palette and select **Remove**.
   - Click the Remove Palette button located above the Palette list.

   If the palette was used in your scene, the zones painted with its colours turn red.

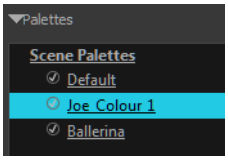
Duplicating a Colour Palette

A duplicated palette is a simple copy of the original palette. It uses the same names, colour values, but has a different ID and is independent from the original palette. This ensures that both palettes are completely independent.

This option is used when there are similar models and you want to avoid recreating and naming all of the colours. You can change the values and the names afterward without affecting the original palette. You can also keep some RGBA values, such as the eyes, teeth, tongue, inside mouth, etc.

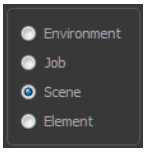
How to duplicate a palette

1. In the Colour view, select the palette to be duplicated.

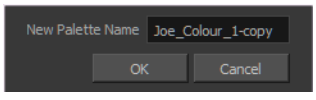


2. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Duplicate**.
   - Right-click on the selected palette and select **Duplicate**.

   The Palette Browser: Duplicate Palette window opens.
3. If you are in Advanced Palette List mode, select the palette storage level—see Palette File Storage on page 283.



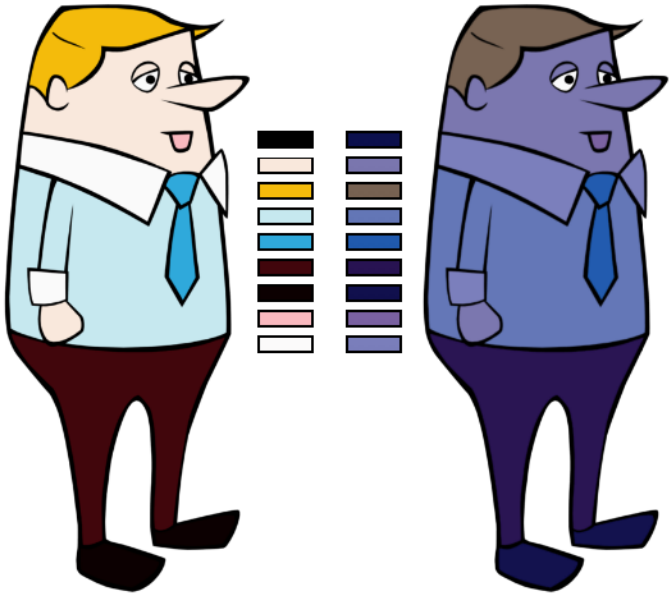
4. In the New Palette Name field, name the palette.



5. In the New Palette Name field, name the palette.
6. Click **OK**.

   The palette appears in the palette list.

Cloning a Colour Palette

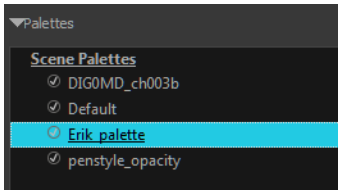


A character usually has only one master palette, although there are times when the characters are placed in different lighting conditions and require a different colour shading. The night palette is a popular choice when a scene or sequence changes from day to night. It can be difficult and time-consuming to repaint everything and creating two independent palettes can be quite complex. As an alternative, Toon Boom Harmony provides clone palettes.

The clone palette is a copy of the master palette. The colours in each palette have the same properties. The colours have the same identification number pointing to the same colour zones, but they can have different names and RGBA values. Depending on the activated palette (night or day), the painted drawing will update. So there is no need to repaint the animation, but to create or import a clone palette (palette style).

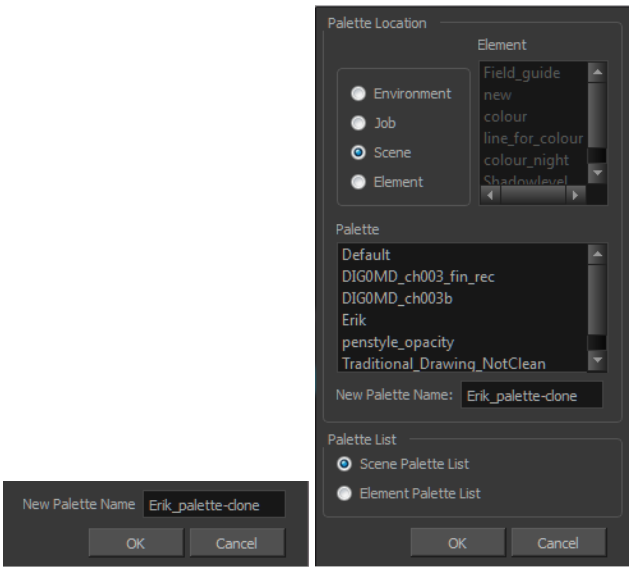
How to clone a palette

1. In the Colour view, select a palette to clone.



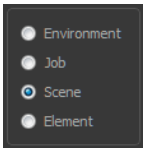
2. From the Colour View menu, select **Palettes > Clone** or right-click and select **Clone**.

   The Palette Browser: Clone Palette dialog box opens.



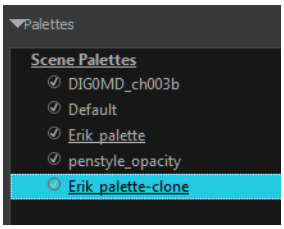
Basic palette | Advanced Palette List mode

3. If you are in Advanced Palette List mode, select the palette storage level—see Palette File Storage on page 283.



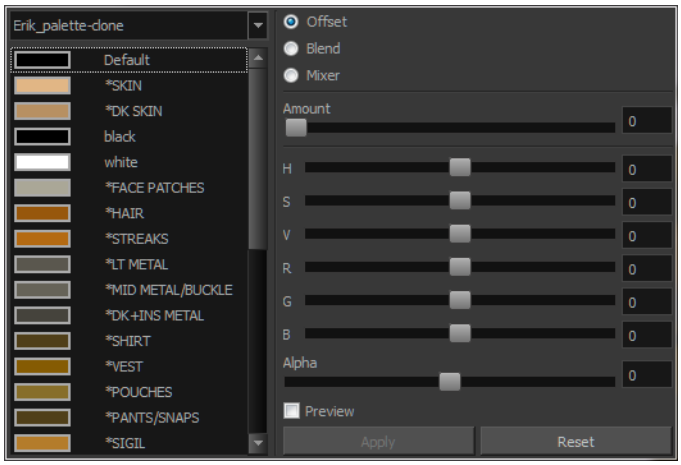
4. In the New Palette Name field, name the palette. It is recommended that you keep the "-clone" in the name.
5. Click OK.

   The cloned palette appears in the palette list.

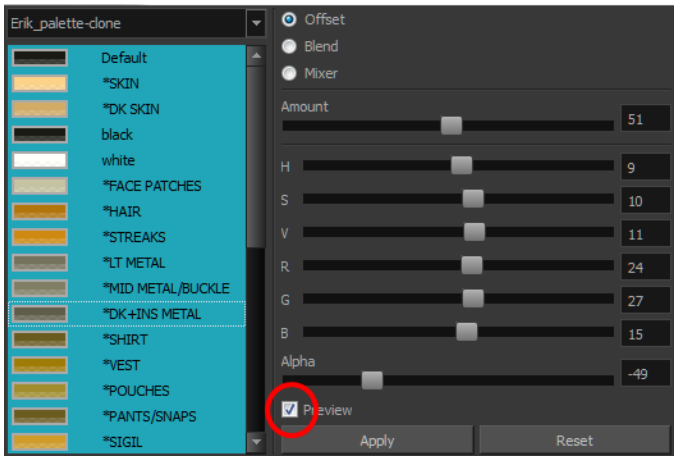


6. In the Palette list, select the clone palette you created to offset or blend colours—see Mixing Colours on page 305.
7. From the Colour View menu, select **Palettes> Tint Panel** or right-click and select **Tint Panel**.

   The Blend/Offset Tint panel opens.



8. Select one or more colours to modify. You can select all your colours by pressing Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).
9. Offset, blend, or mix the colours using the sliders and increasing the Amount value.



10. Select the **Preview** option to see a preview of the colours while you adjust them.

You can also modify the colours individually with the Colour Picker window.

Importing and Linking Palettes

Before starting colouring work such as Ink and Paint or even creating new colour models, you may want to load existing colour palettes to your scene. You can do so by linking colour palettes to your palette lists.

You may encounter a case where only a colour palette is visible when a layer is selected. If you need that palette in a second layer, you can link the palette to the second layer's palette list, A good example would be a scene where there is a character on one layer and its arm is on another. In order for both layers to access the palette, you must link both Element Palette lists to that palette. If you palette is linked to the Scene Palette list, it will be accessible by all layers.

If you created a palette in another project and you want to import it in your current project, you can browse for the palette file on your computer and add it to your scene. When the palette is imported in your scene, the file is copied in the project's directory. It is not linked to the original file.

With Toon Boom Harmony as a stand-alone application, every scene is local to the machine. This means that all of the scene's data is only accessible from that particular scene. Palettes are also local to the scene; they can be shared between all drawing layers, but not between scenes.

However, you may want to share palettes across a whole project. Harmony offers that possibility. By default, a palette is an independent file stored in your scene. This file can be copied, moved, or deleted.

To link a palette throughout an entire project, you need to create a central directory where you can copy all the palettes you created. Every time you link a palette in an element, it is linked to this folder. If you modify the palette, it will be updated throughout the whole project.

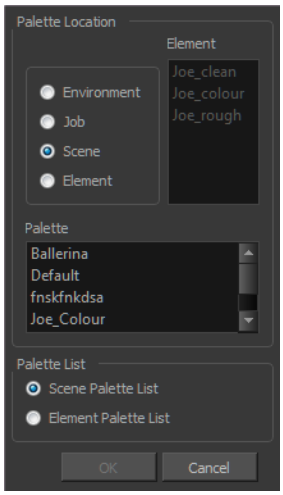
You will notice that when you create or link a palette, a small icon appears on its left. These icons represent the palette linkage status.

Icon	Description
	Indicates that the palette is safe. There won't be any trouble once the scene will be exported. For example, the palette file is stored in the scene folder and is linked to the Scene Palette List.
	Indicates that the palette file is stored in a directory external to the scene's structure. The palette file is probably stored in a Master Palette directory on a hard drive external to the palette-libraries planned for the palette storage. The warning in this case is that if you move your Master Palette directory to another location, you may loose the palette in your scene.
	Indicates that a palette file stored in a level such as Element, Scene, Job or Environment is linked to a Palette list that is not on the same level. For example, a palette file is stored into the Environment folder and is linked to the Element Palette list. The palette is shared.

How to link a colour palette

1. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Link**.
   - Right-click and select **Link**.
   - Click the Import button.

   The Palette Browser: Link Palette dialog box opens.



2. Select the level where the palette file is stored—see Palette File Storage on page 283.
3. Select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see Palette Lists on page 280.

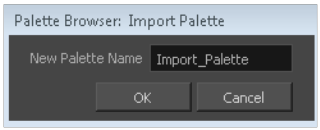
   The palette appears in the Colour view.

How to import a palette into your project

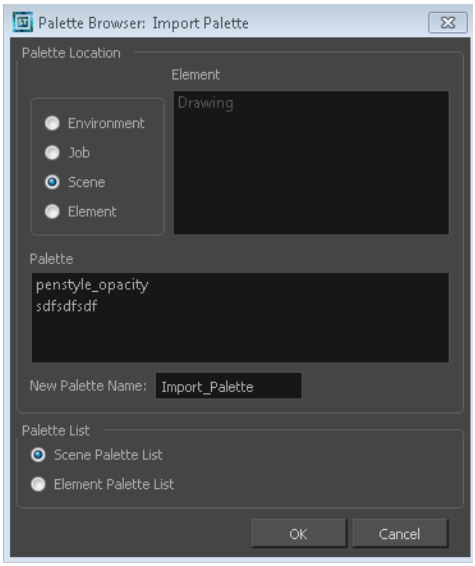
4. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Import**.
   - Right-click and select **Import**.

   The Browser window opens.
5. Browse for a palette file located (`*.plt`) on your hard drive. You will generally find the palettes in your project's palette-library directory.
6. Click **Open**.

   The Palette Browser opens.



Basic Palette List mode



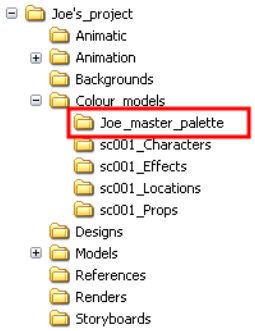
Advanced Palette List mode

7. If you are in Advanced Palette mode, select the level where the palette file is stored—see Palette File Storage on page 283.
8. If you are in Advanced Palette mode, select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see Palette Lists on page 280.
9. In the New Palette Name, name the imported palette.

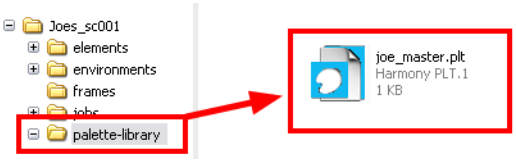
   The palette appears in the Colour view and the file is copied in your project.

How to link to an external palette

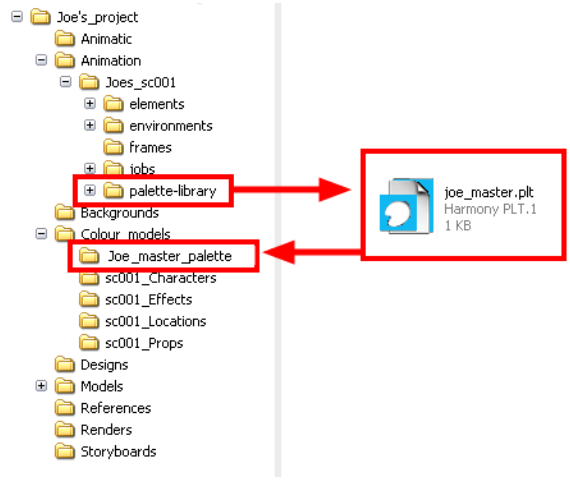
1. In the Colour view, click on the **Create Palette** button to create your palette to be used as external.
2. Save your scene by selecting **File > Save** from the top menu or by clicking the Save button or press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
3. On your computer or server, create a master directory. Ideally, this should be created in your Root folder to keep it within the project directory. You could also place it inside your Colour Model's subdirectory. Refer to the Fundamentals Guide to learn more about project organization.



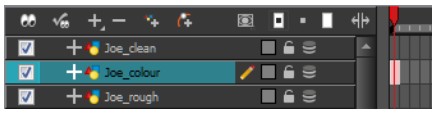
4. Name the folder appropriately, for example: **`Joe_master_palette`**.
5. From your operating system, browse to your Toon Boom Harmony scene and open the palette-library folder.



6. Select and copy your palette **`*.plt`** file to copy it to the master palette directory.

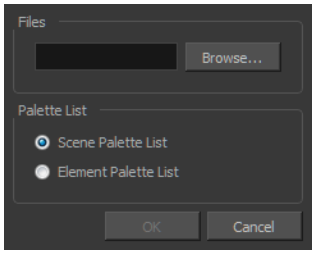


7. Create a new Toon Boom Harmony scene or open the scene where you will link this palette.
8. In the Timeline or Xsheet view, select the element to link the palette to.



9. From the Colour View menu, select **Palettes > Link to External.**

   The Link to External Palette dialog box opens.



10. Click **Browse** to search for your master palettes folder and select the palette **`*.plt`** file you want to link.
11. In the Palette list section, select how you want to load the palette; at the scene or element level.
12. Click **OK**.

    The linked palette appears in the Colour view.

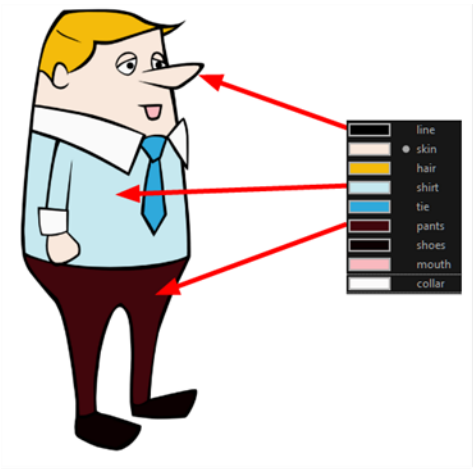
    If a palette is outside the scene, the External icon appears beside the palette name.

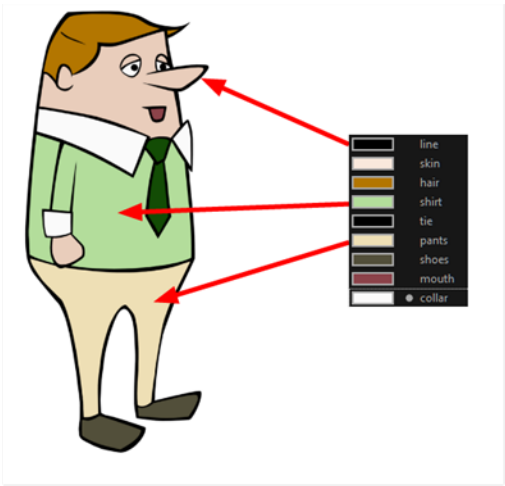
To link an element (such as a colour model) to the palette that is stored in the external palette directory, you must remove the original palette from the element's palette list. You will then load the duplicated palette into the palette list using the Link to External command, like you did for the other elements.

Colours

Toon Boom Harmony has some very powerful colouring features when it comes to painting. To paint your drawings, you will use different colour swatches, unlike some other painting programs where you modify the main swatch each time you want to paint with a different colour.

In the Colour view, you choose a different colour swatch for each colour you want to paint in your drawing. You can add as many swatches as you want. You can also rename them and modify existing ones.





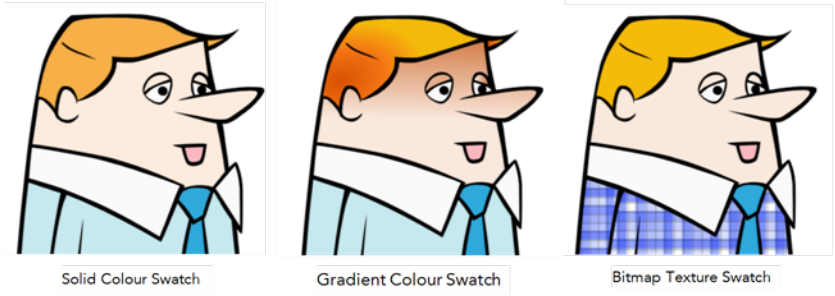
When you modify the colour of an existing swatch, it automatically updates all the zones painted with this swatch throughout the entire project. The colour swatch has a unique ID number that associates it with the painted zones. This way, you can change the look of your character at any time without having to repaint it!

This section is divided as follows:

- Adding a Colour Swatch below
- Colour Display Modes on page 303
- Copying and Pasting Colours on page 304
- Mixing Colours on page 305

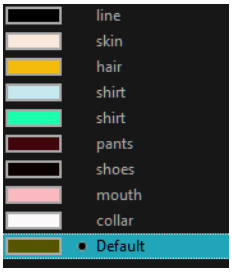
Adding a Colour Swatch

You can use several different types of colour swatches.



In Toon Boom Harmony, when you click on the Add Colour button, a new colour swatch is created using the colour of the currently selected swatch from your palette. However, you can set a default colour to be used every time you create a new colour in your colour palette. This might be useful if you want to create different shades of the same basic colour.

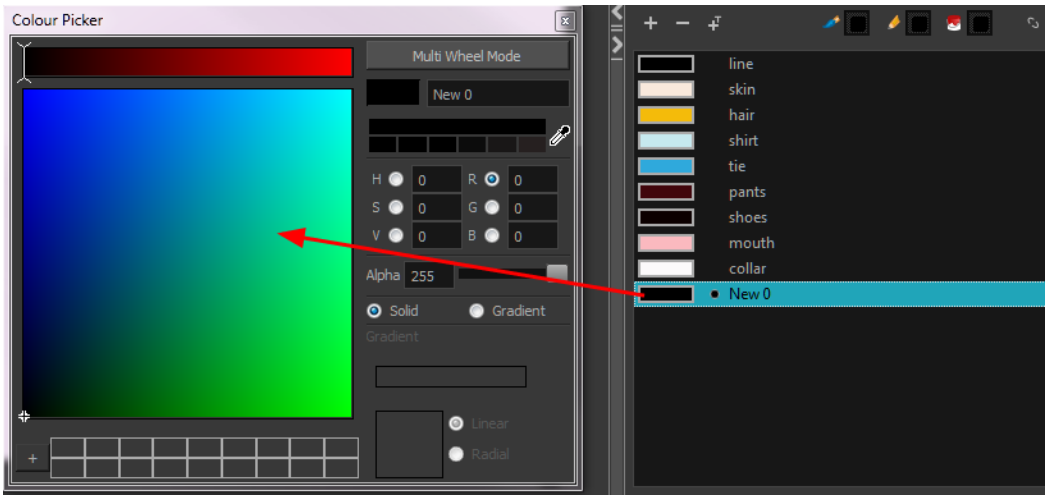
The default colour is also the colour used when you choose to vectorize images that you are scanning into your scene, however you add the Default colour swatch to your palette in a different way, so that it is unique. It has a unique ID number that makes it recognizable from all the other colours in your colour palettes. Being able to change this colour allows you to change the basic colour of all scanned drawings. This can be useful on more than just an aesthetic level as sometimes when you go to NTSC or PAL, pure colours, such as pure black, can create problems.



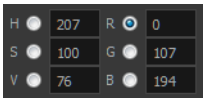
How to add or modify a solid colour swatch

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

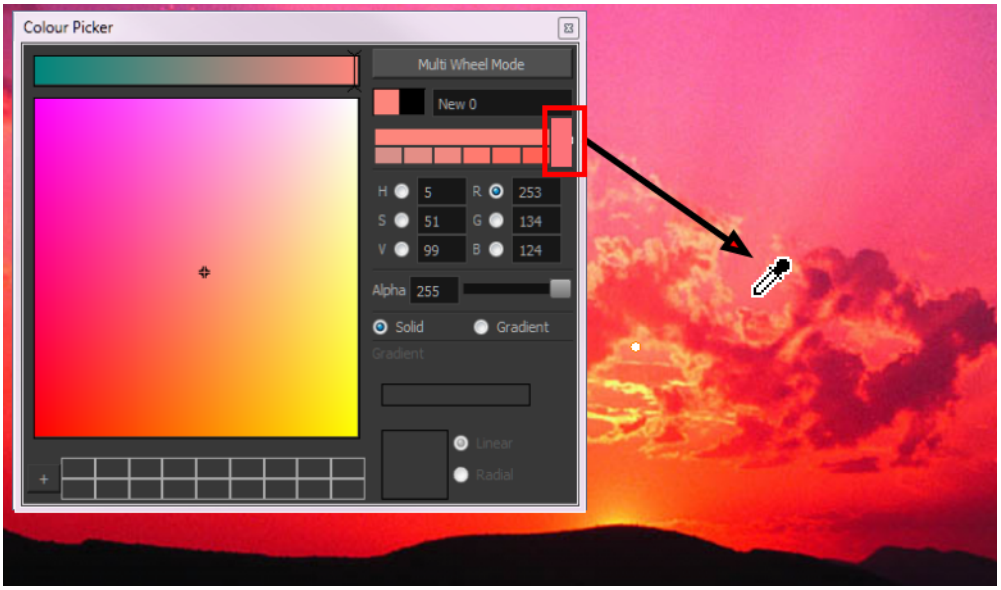
   The Colour Picker window opens.



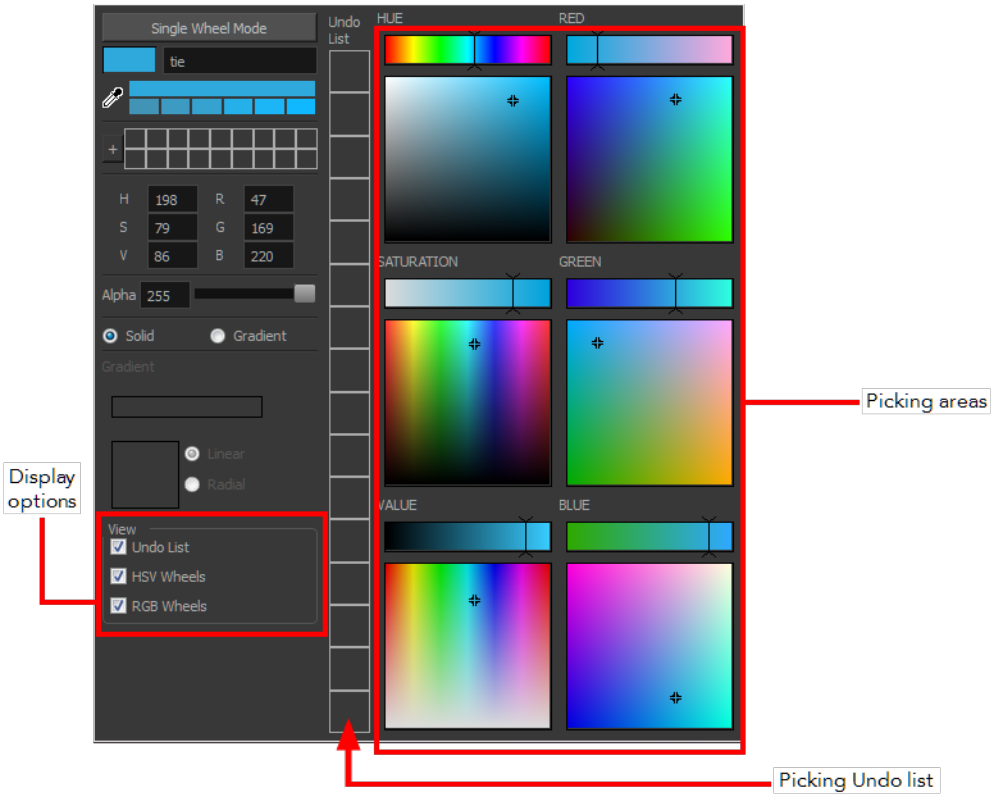
3. To set your colour, do one of the following:
   - In the colour wheel, select a colour.
   - Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.



   - Click the Dropper button to select any colour on your screen. It can be from the Toon Boom Harmony interface, your operating system or any other open application.



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



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

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

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

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

How to change the default swatch colour for all your colour palettes

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **Drawing** tab.

3. In the New Colour Pots section, select the **Create New Colour Pot Using the Default Colour** option. You can also click on the colour swatch beside the option to change the Default colour.

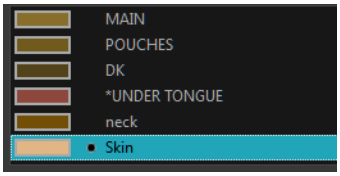
How to add a new colour swatch using the default colour

- From the Colour View menu, select **Colours > New**.

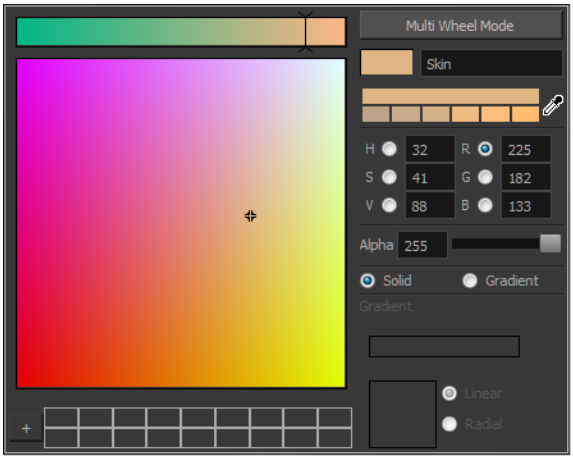
A new swatch is added to your palette using the default colour swatch colour. The new swatch created with the New command will be named **`New 0`**.

How to create a gradient colour swatch

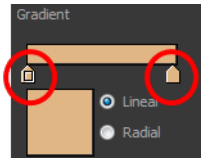
1. In the Colour view, select a colour to modify .
2. Do one of the following:
   - Click the new colour and from the Colour View menu, select **Colours > New**.
   - Double-click on the colour swatch.



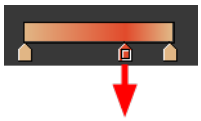
The Colour Picker window opens.



3. Select the **Gradient** option.
4. Select the **Linear** or **Radial** option.
5. Adjust the Gradient arrows to modify the colours.



   - Add extra colours by clicking between the arrows below the gradient bar. Then click on the Colour Preview to select a colour.
   - Pull down the arrows to remove them.

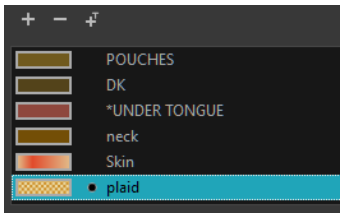


- Move the arrows left and right to modify the gradient distance.

Refer to the Editing Gradients and Textures on page 345 topic to learn how to reposition the gradient zones in your drawings.

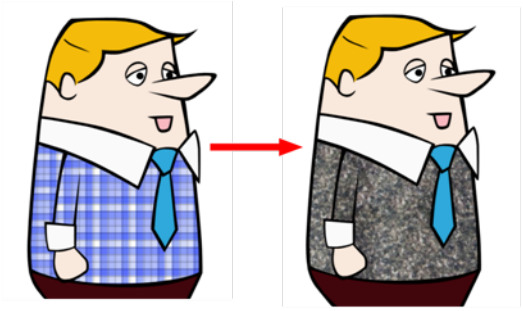
How to create a texture colour

1. From the Colour View 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.



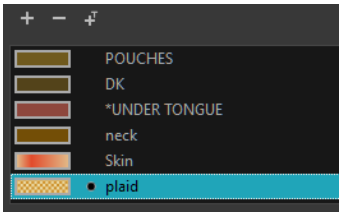
Refer to the Editing Gradients and Textures on page 345 topic to learn how to reposition your textured zones in your drawings.

You can also replace a texture once it is painted. If you decide to make the character's shirt wool instead of plaid, just update the texture file in the swatch and the entire project updates. Any transformation previously applied to the texture's position in your drawings will be kept.



How to replace a texture swatch

1. In the Colour view, select the texture swatch that contains the bitmap texture you want to replace.

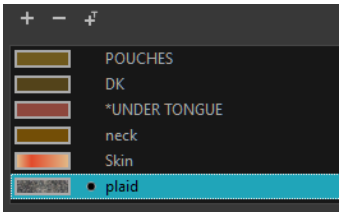


2. From the Colour View menu, select **Colours > Edit Texture** or double-click on the swatch.

   The Browser window opens.

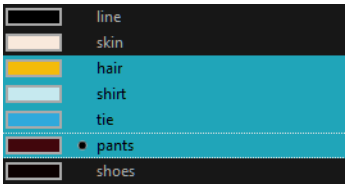
3. Browse for the new PSD or TGA bitmap file created in a third party software.

4. Click **Open** to update the colour swatch.



How to delete a colour swatch

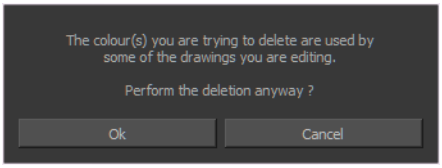
1. In the Colour view, select the colour swatches to delete.



2. Do one of the following:

   - From the Colour View menu, select **Colours > Delete**.
   - Click the Delete Colour button.
   - Right-click and select **Delete**.
   - Press Delete.

   If the colour swatch is used in a drawing, the Delete Colour dialog box opens.



3. Click **OK** to delete the colours or click **Cancel** to abort the operation.
    - If you delete colour swatches already in use, the zones painted with them turn red so you can easily identify them.

Colour Display Modes

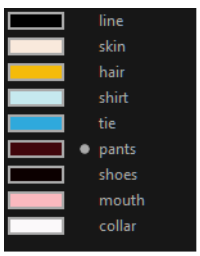
The Colour view has two display modes:

- List
- Swatch

You can alsodisplay the RGB values and names of your solid colour swatches instead of only the name. This option is not available when displaying the colours in Swatch mode.

How to switch between the display modes

1. From the Colour View menu, and do one of the following:
    - Select **Colours > Swatch Mode** to display the swatches.
    - Deselect **Colours > Swatch Mode** to display the colour list.



List mode

Swatch mode

How to display the swatch colour values

- From the Colour View menu, select **Palettes > Display Colour Values**.

  The solid colour swatches' RGB values will be displayed between the colour swatch and its name. The gradient colour swatches will be identified as (gradient).

Copying and Pasting Colours

When you are 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.

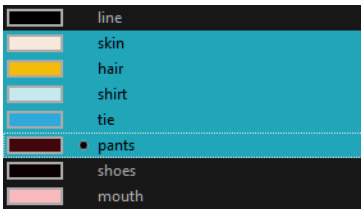
You can copy a selected colour swatch and paste it as a clone. Since it produces a clone colour swatch, it is impossible to use the Paste as Clone command in the same palette as you copied the original colour swatch from.

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`**.

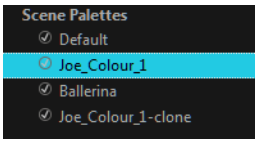
```
ToonBoomAnimationInc PaletteFile 2
Solid    Black                    0x075cf5b15fe006a1   0   0   0 255
Solid    White                    0x075cf5b15fe006a3 255 255 255 255
Solid    Red                      0x075cf5b15fe006a5 255   0   0 255
Solid    Green                    0x075cf5b15fe006a7   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
```

How to copy and paste colours

1. In the Colour view, select one or more colours to copy.



2. In the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. In the Palette list, select the palette in which you want to paste the colours.



4. From the Colour View menu, select **Colours** > **Paste as New Colours** or press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).
   - To paste the colour values of the copied swatch over an existing colour swatch, select **Colours** > **Paste Colour Values**.

How to clone a colour swatch

1. In the Colour view, select the colour swatch you want to clone.
2. From the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. In the Colour view, select the colour palette you want to paste the clone into or create a new palette.
4. From the Colour View menu, select **Colours > Paste as Clone**.

   The cloned colour swatch appears in the palette.

How to copy a colour ID

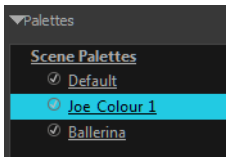
1. In the Colour view, select the colour swatch you want toget the ID from.
2. From the Colour View menu, select **Colours > Copy Colour ID** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. Paste the copied value as plain text in the desired document.

Mixing Colours

If you want to modify a series of colours at once to blend a tint in them or offset their RGBA values, you can use the Tint panel. This panel is quite useful when creating palette styles such as night and day styles.

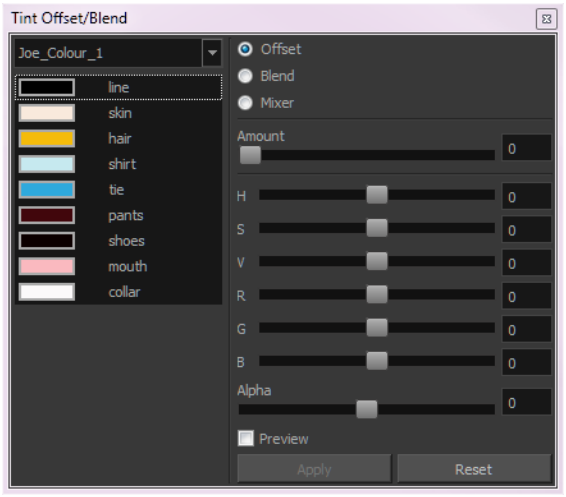
How to mix colours

1. In the Colour view, select the palette that contains the colours you want to offset or blend.

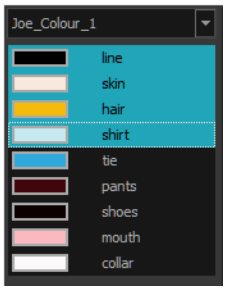


2. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Tint Panel**.
   - Right-click and select **Tint Panel**.

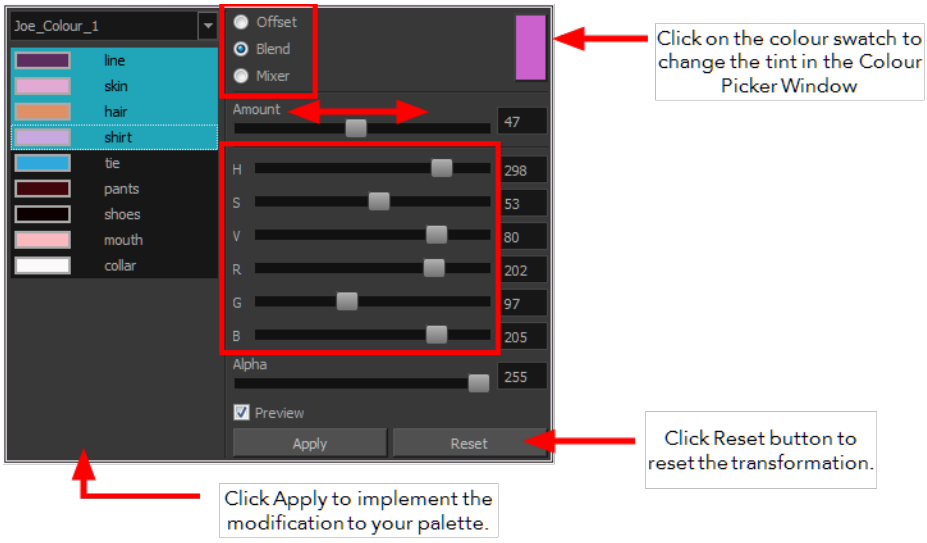
   The Blend/Offset Tint panel opens.



3. Select one or more colours to modify in the colour list. To select all the colours, press Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).



4. Select **Preview** option.
5. Select the **Offset**, **Blend**, or **Mix** option.



Parameter	Description
Offset	Offsets the selected colours by the adjustments made using the HSB and RGB sliders. Use the Amount slider to adjust the

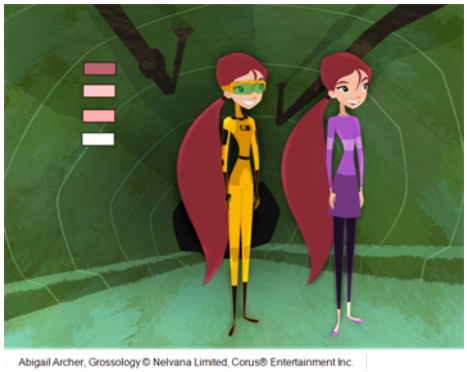
	degree of offset. Use the Alpha slider to adjust the opacity of the selected colour.
Blend	Blends the selected colours with the colour swatch in the top-right corner. Use the Amount slider to adjust the degree of blend. A blend of 100% turns the selected colours into the same colour as the swatch. Adjusting the HSB and RGB sliders affect the swatch colour, which in turn affects the selected colours on the left. Use the Alpha slider to adjust the opacity of the swatch.
Mixer	Select a Base and Tint colour to form a third colour swatch. Use the slider just beneath to mix the Base and Tint colours by different amounts. This will affect the mixed swatch whether it is selected or not. Select either the Tint or Base swatch and use the HSB and RGB sliders to adjust its colour. This will affect the mixed swatch colour, which in turn affects the selected colours on the left.

6. Click **Apply**.

Painting the Model

Now that you have created the colours and the palette, you are ready to paint your model.

The colour model needs to be painted in order to adjust the colours with the other elements in the production. You can paint your model regardless of the colour RGBA and adjust them later when all the elements are together.



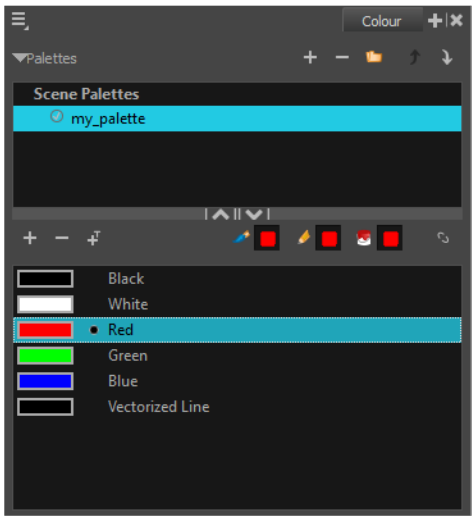
For paperless and cut-out animation, it is a good idea to provide a line-up template with the colour model to show the scale ratio between the characters, props and backgrounds.

Once your colour model is completed, create a line-up template by pasting one of the production's main characters, or even just a hand, beside the colour model to show the relative size. This allows the animator, layout artist, or scene setup artist to retain the correct scaling throughout the entire project when setting the elements in the scene. You can store your template in the Library.

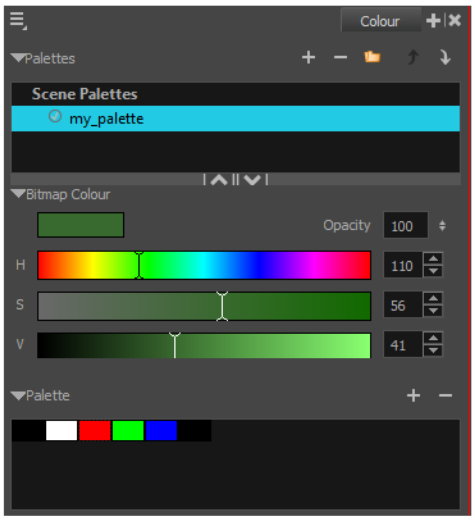
How to paint a colour model

1. From the Camera View menu, select **View > Switch to Colour Art/Switch to Line Art** or press L.
2. Create your master colour palette—see Creating a Colour Palette on page 284
3. Add new colours to the palette—see Adding a Colour Swatch on page 297.
4. Select your Paint Bucket tool. We recommend the Paint Unpainted tool.

5. In the Colour view, select the colour you need to paint your drawing.



Colour view when working with vector layers



Colour view when working with bitmap layers

6. Paint the model by selecting colour swatches in the palette and clicking on your drawing. Note that only closed zones will be painted. If there is a gap in your artwork, you will need to close it in order to paint it.

Abigail Archer, Grossology © Nelvana Limited, Corus® Entertainment Inc.

7. If you would like to separate your lines and fill zones on separated art layers, see Art Layers on page 420.
8. Adjust the colours—see Mixing Colours on page 305.

Chapter 9: Painting the Background

Not only does Toon Boom Harmony give you the ability to animate and composite, you can also use it to paint your backgrounds. You can use solid, gradient or textured colours to create vector-based and bitmap colouring.

If you create multiplane moves, a vector background will generally be lighter and will allow extreme truck-ins.

The background painting process consists of painting the black and white production backgrounds, also known as background layouts. For traditional animation, the background layouts are usually drawn on paper and then scanned in. For paperless and cut-out animation, the background layouts can either be drawn on paper or designed directly in Harmony.

This chapter is divided as follows:

- Preparation on the facing page
- Importing the Background Layout on page 315
- Painting the Background on page 317

Preparation

Before you begin painting, prepare by organizing your work and bringing in your references.

Setting the Scene

Once you chose your technique, it is time to open or create your scene and get ready to import your background layouts.

Working Directly in the Production Scenes

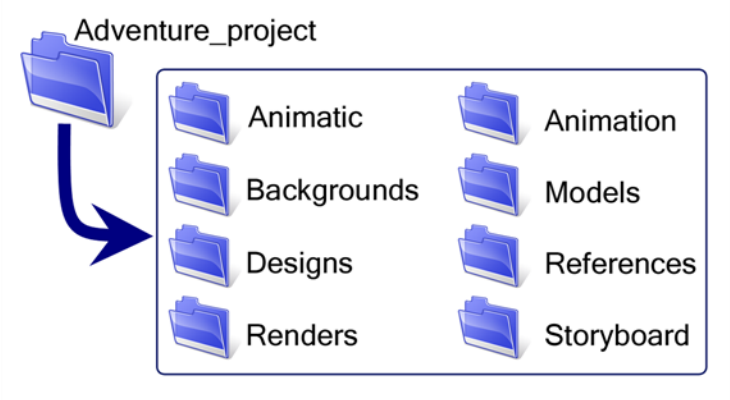
You can decide to import the background layout directly in the corresponding production scene and paint it there. This way, the background exists only in the production scene and not in a central storage scene, saving space on the hard disc drive and avoiding duplicate files.

Working in a Special Background Scene

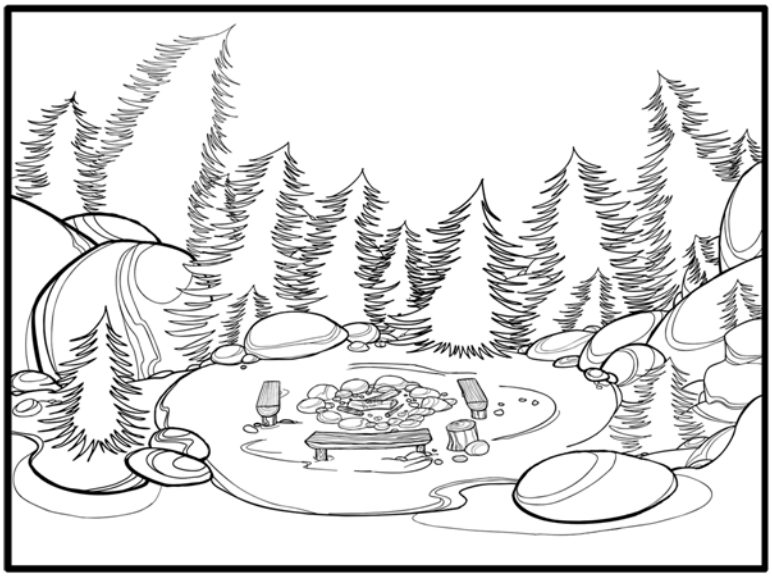
You can decide to create a new scene, import all your background layouts and paint them in that scene. This scene will become the colour background storage scene.

It is useful to keep all the backgrounds in the same scene to compare the style and colours, use the same master palette, and keep track of the work and all existing backgrounds.

We recommend that you store this scene in the project root folder.



Importing the Background Layout



When the background painting or production scene is ready, import your background layout in it. Designing your backgrounds and locations directly in Harmony can be a time saver and allows you to keep all your project materials in the same software.

Refer to Chapter 2: Import in the Compositing Guide to learn how to import bitmap images and the Scan Guide to learn how to scan the layout.

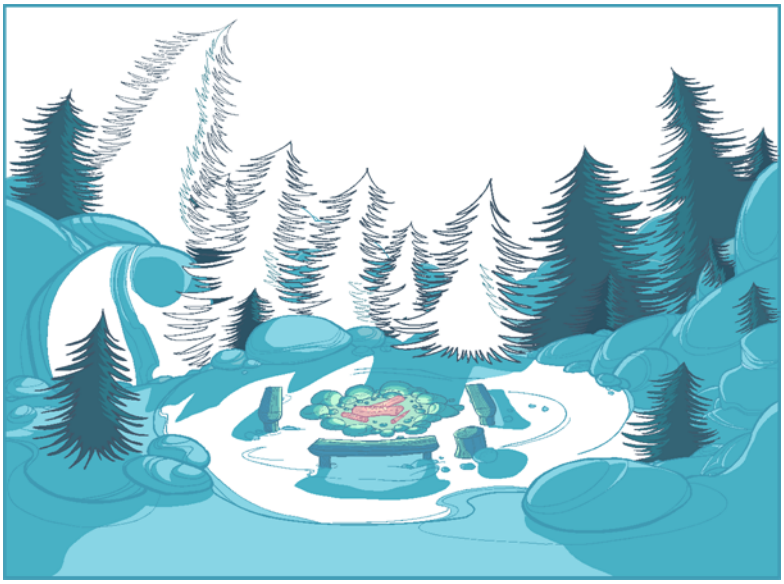
Importing a Bitmap Layout

If your background layout was drawn on paper and scanned in a third-party software or simply drawn in a bitmap third-party software, you can import them using the **Import Drawings** command.

Scanning the Layout from a TWAIN Device

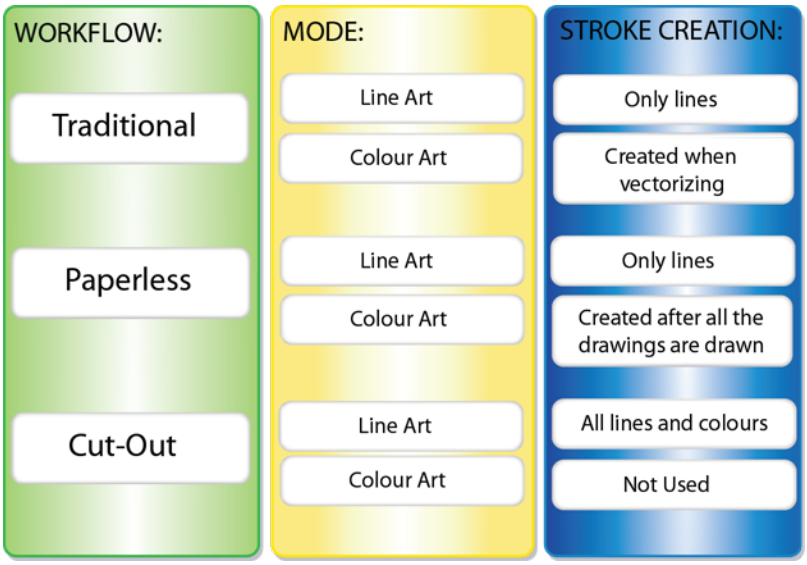
If your models were drawn on paper, you can also scan and import them using a TWAIN Device.

Painting the Background



Now that your background layout, master palette and location colour model are imported in your scene, you are ready to paint your background.

A Harmonydrawing is composed of several art layers. Lines and colours can be separated or joined, depending on the animation process. When a traditional drawing is scanned in, strokes are automatically created in the Colour Art from the Line Art. For paperless drawings, once the drawing sequence is completed, create your Colour Art strokes if you plan to paint your animation in the Colour Art layer. Use the Create Colour Art from Line Art option to create strokes from your lines—see Art Layers on page 420.



How to create strokes once the drawing is completed

You may prefer to create strokes once the drawing is cleaned up. In this case, select the full drawing and create the strokes in Colour Art.

1. Skip this step if you are creating strokes for a single drawing. Do one of the following:

- In the Select Tool Properties view, click the Permanent Selection tool.
- PressCtrl + Shift + P (Windows/Linux) or ⌘ + Shift + P (Mac OS X).

2. Do one of the following:
   - In the Drawing Tools toolbar, click the Select tool.
   - Press Alt + S.
3. Select the entire animation sequence.
4. Do one of the following:
   - In the Camera view, select **Drawing > Create Colour Art from Line Art**.
   - Press *
5. Repeat steps 1 to 4 for each drawing in the animation sequence.

How to create strokes while drawing in Line Art mode

If you have some traditional drawings that need to be fixed, for example, need extra lines to patch gaps, the strokes can be created in the Colour Art layer at the same time as the lines are drawn using the Auto-Create Colour Art from Brush feature. This feature creates strokes from the lines and brush strokes created in the Line Art layer as you draw.

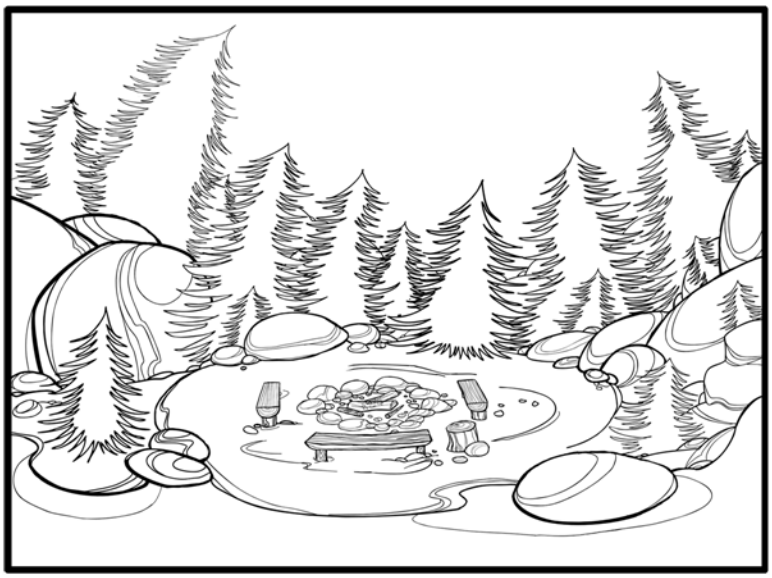
You can use it to fix drawings, but if you draw a sketch from scratch it is better to create the strokes afterward using the Create Colour Art from Line Art option.

1. Do one of the following:
   - In the Camera View toolbar, click the Automatically Create Colour Art from Brush button. You may have to customize the toolbar to display it.
   - When the Brush, Pencil or any shape tool is enabled, in the Tool Properties editor, click the Automatically Create Colour Art from Brush button.
2. Draw the extra lines required.
3. Once you are done, deselect the **Automatically Create Colour Art** option.

You are now ready to paint your background.

How to paint your background

1. Do one of the following:
   - In the Camera view, switch to the Line Art or Colour Art to paint your model.
   - Press L.



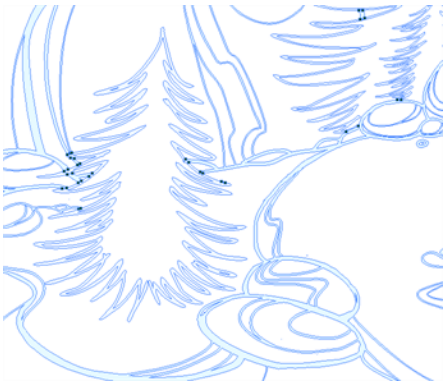
2. Select one of the Paint Bucket tools. The Paint Unpainted tool is recommended.
3. Paint the background by selecting the colours from the colour model or the palette, and clicking on the different drawing zones.

How to use the Stroke tool to create tone and highlight zones

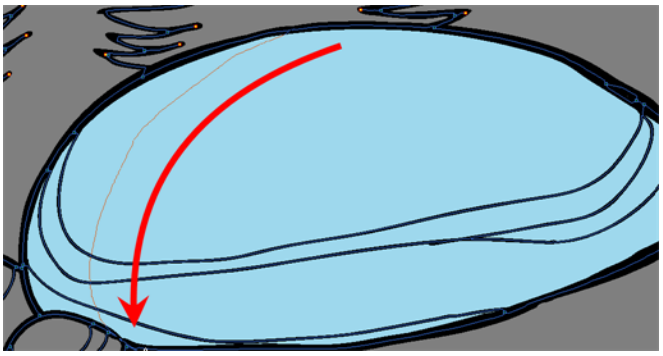
You can use the Stroke tool to draw invisible vector strokes and separate some of the drawing sections to create tone and highlight zones.

1. Do one of the following:
   - In the Camera view menu, select **Drawing Tools > Stroke**.
   - Press Alt + V.
2. Do one of the following:
   - In the Camera view menu, select **View > Show Strokes**.
   - Press K.

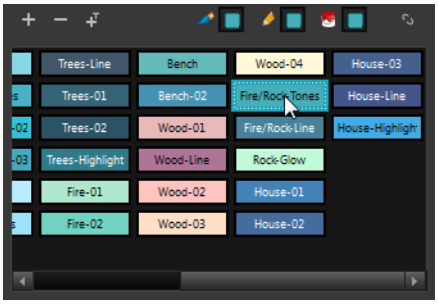
   The strokes appear.



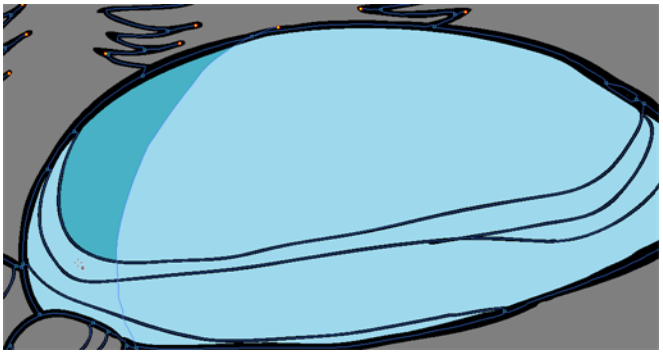
3. Draw the stroke on the background drawing.



4. In your colour palette, select the colour needed to paint the new zone.



5. In the Tools toolbar, click the Repaint button.

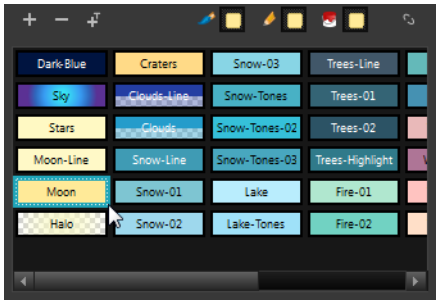


6. Do one of the following:
   - In the Camera View toolbar, select **View > Show > Show Strokes** to hide the strokes.
   - Press K.

How to use gradient colour

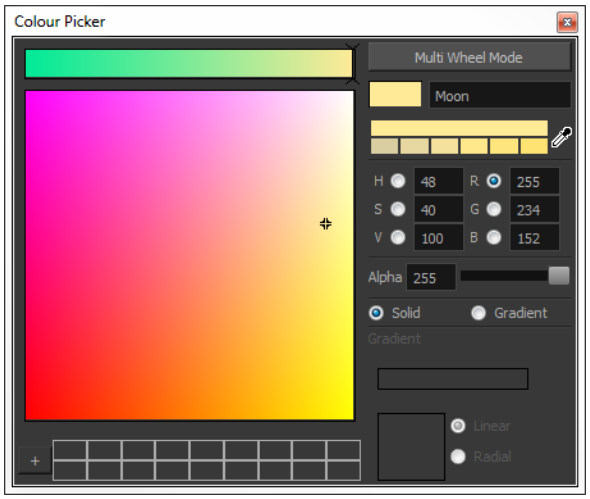
Using a gradient colour adds more depth and variation to your drawings.

1. In the Colour view, select the colour to be modified.



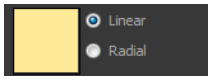
2. Do one of the following:
   - In the Colour view menu, select **Colour > Edit Colour**.
   - Double-click on the colour swatch.

   The Colour Picker window opens.

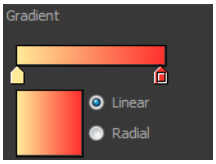


3. Select the **Gradient** option.

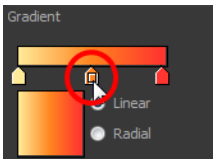
4. Select the **Linear** or **Radial** option.



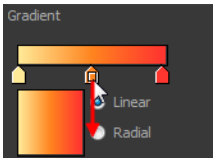
5. Select the Gradient arrows to modify the colours.



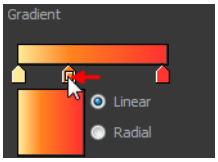
- Click between the arrows to add extra colours.



- Pull down the arrows to remove them.



- Move the arrows left and right to modify the gradient distance.

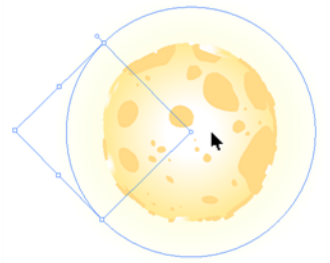


6. Use the Edit Gradient/Texture tool to set your gradient's position.

How to use the Edit Gradient and Texture tool

1. Do one of the following:
   - In the Camera view menu, select **Drawing Tools > Edit Gradient/Texture**.
   - Press Shift + F3.
2. Click on the gradient or texture colour to be modified.

   The Edit Gradient/Texture selection frame appears.



3. Move the edit texture's parameters to the desired result.
4. If the same modification needs to be applied to another gradient or texture zone, do one of the following:

- Select the modified zone and select **Edit > Copy**.
- Press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

5. Select the zone you want to modify.
6. Do one of the following:
   - From the top menu, select **Edit > Paste**.
   - Press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

Chapter 12: Ink and Paint

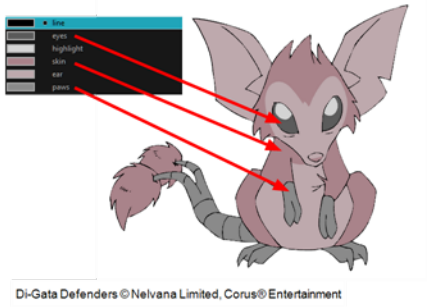
When traditional animation is traced, cleaned up, scanned in and properly exposed, it is time for the ink and paint process. This consists of cleaning all dirt and hair (for example, dust that was in the scanner, dots that do not belong in the drawing, extra floating artwork around the drawing that must be removed), painting the lines and filling the colours in the empty zones on an entire animation sequence.

For paperless animation, the drawings are cleaned up directly in Harmony, so there is generally no dirt to clean, only painting and inking.

For cut-out animation, once the character builder paints the pieces, there is no more ink and paint process because the same parts are always reused and moved around. The ink and paint process applies only to traditional and paperless animation workflows.

Harmony is optimized to ink and paint drawings efficiently. Since most of the drawings are vector-based, the colour zones are completely filled and there are no scattered spots left blank. Also, there are some actions that can be applied on an entire animation sequence at once, like dirt removal, some colour filling, line repainting, and so on.

Harmony uses palettes to hold all the colours you need to paint your elements. A palette is created by assigning a set of colours to each character, prop or effect. The colour styling artist will create a new palette and add a new colour for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on. Each colour is known as a *colour swatch*—see Working with Palettes on page 279.



When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

The ink and paint process is divided into the following steps:

- Preparation on the facing page
- Dirt Clean Up on page 330
- Art Layers on page 420
- Creating Strokes on page 337
- Painting on page 339
- Inking the Lines on page 354
- Verifying the Zones are Painted on page 358
- Ink and Paint Tool Properties on page 360

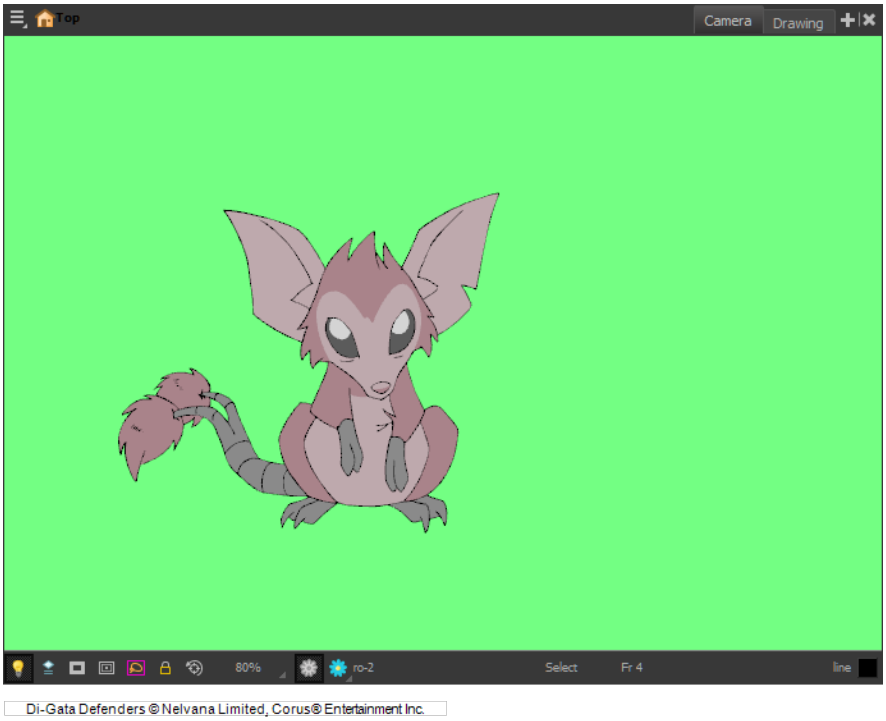
Preparation

The optimal workspace for creating colour models and inking/painting in traditional animation includes the following views:

- Xsheet
- Camera
- Colour

As there is no default workspace for these tasks you will need to create a custom workspace for yourself—refer to the Fundamentals Guide.

You may have a character or element palette that has colours that are very similar to the Drawing and Camera view's background colour. For example, a white eyeball colour on a white background which makes it difficult to know if the zone was painted. You can change the background colour of the Camera or Drawing view in the Preferences dialog box.



How to change a view's background colour

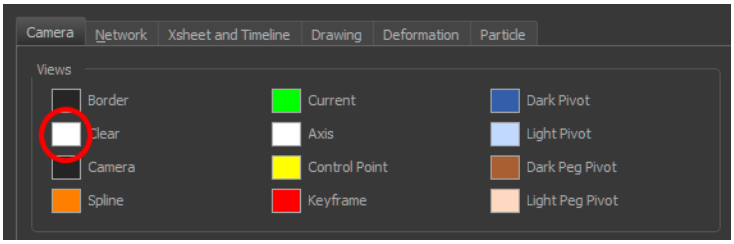
1. Do one of the following:
   - From the top menu, select **Edit > Preferences**.
   - Mac OS X: Select **Stage > Preferences.**
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.
2. Select the **General** tab.
3. In the Colours section, click **Edit Colours**.

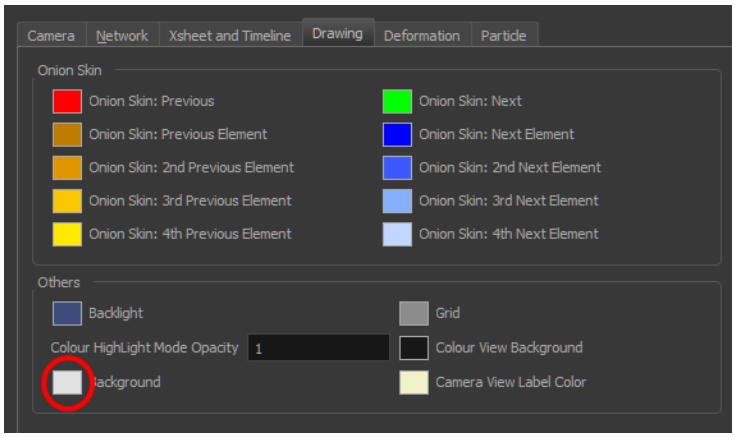
   The Colours dialog box opens.

4. Select the **Camera** or **Drawing** tab.

5. Change the background colour of:
   - **Camera View**: Click the **Clear** colour swatch.

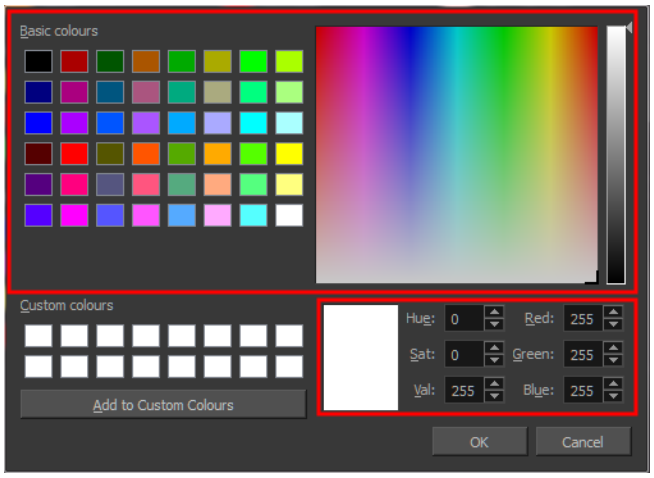


   - **Drawing View**: Click the **Background** colour swatch.



The Select Colour dialog box opens.

6. Select a colour by clicking a colour swatch, clicking a colour in the colour gradient, or entering a HSV/RGB Value.

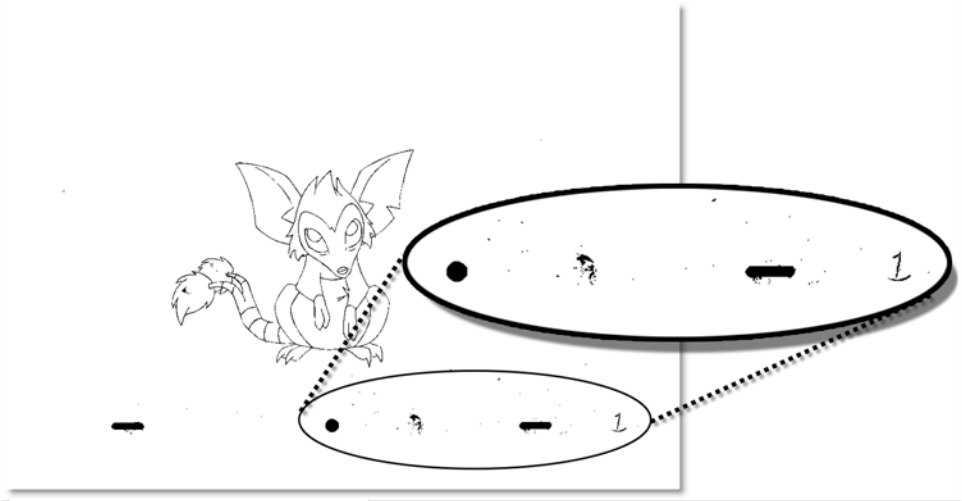


7. Click **OK** in the three opened dialog boxes to apply your changes.

When you need to paint drawings with similar colours throughout the palette, you can create a clone of that palette and change all the colours to very bright tints to facilitate the paint process—see .

Dirt Clean Up

When paper drawings are passed through a scanner, there can be some hair and dirt scattered across them. These lines and dots need to be cleaned. Harmony provides different tools to help get rid of them quickly.



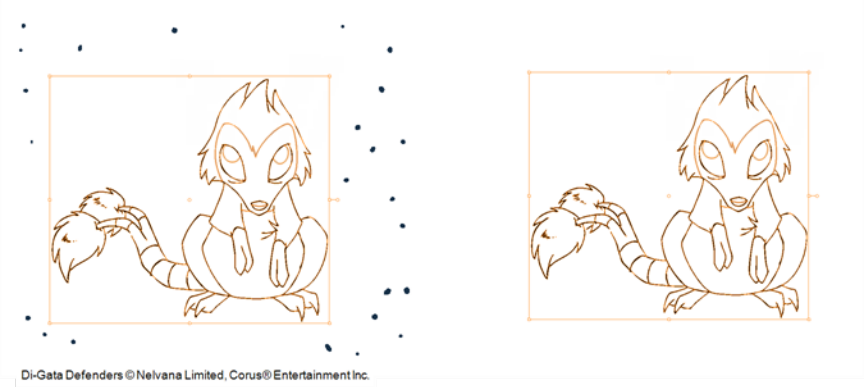
Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

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.

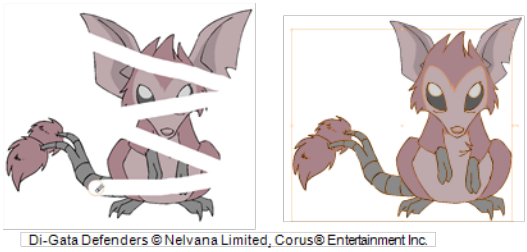
During this process, the dirt that will be removed is highlighted in red.

Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

The Remove Art Outside Selection option lets you remove any art existing outside a selection. It is recommended that you clean your Colour Art level as well. If you have a stroke accumulation in your Colour Art, it can result in large output files, especially if you work in high-definition resolutions.

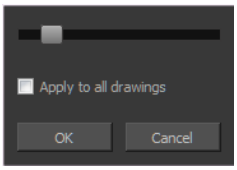


If there are some marks that cannot be removed with the automated tools, you can erase them with the Eraser tool or select them with the Select tool and then delete them. It is always safer to select and delete them than to erase them, so you do not overlook anything.



How to use the Remove Dirt tool

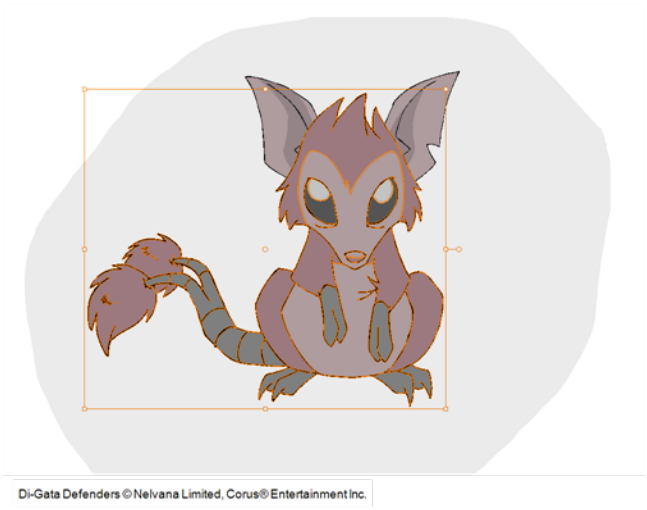
1. Do one of the following:
   - From the top menu, select **Drawing > Clean Up > Remove Dirt**.
   - From the Camera View menu, select **Drawing > Clean Up > Remove Dirt**.
   - Press Shift + D.



2. Increase the Remove Dirt value by moving the slider to the right.
3. Enable the Apply to All Drawings if you want to operation to be apply to all drawings in the layer.

How to clean dirt with Remove Art Outside Selection

1. In the Tools toolbar, select the Select tool.
2. In the Tool Properties view, enable the **Permanent Selection** option.
3. Draw a selection around the animation making sure to include the entire animation sequence.



4. In the Camera View menu, select **Drawing > 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.

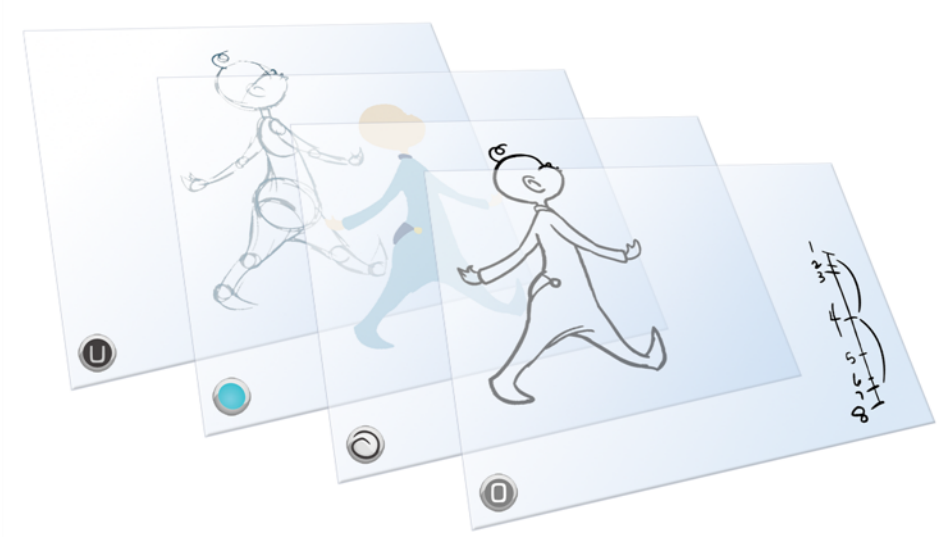
How to access the Eraser tool

- From the Tools toolbar, click the Eraser button.
- From the top menu, select **Drawing > Drawing Tools > Eraser**.
- From the Camera View menu, select **Drawing Tools > Eraser**.
- Press Alt + E.

How to access the Select tool

- From the Tools toolbar, click the Select button.
- From the top menu, select **Drawing > Drawing Tools > Select**.
- From the Camera View menu, select **Drawing Tools > Select**.
- Press Alt + S.

Art Layers



Art layers give you the possibility to divide the artwork in your drawing on different layers. For example, you can separate the outline and colour fill on two art layers, similar to 1950s traditional cell animation. These art layers are contained within a single drawing as opposed to the timeline layers or Xsheet columns where individual drawings with individual timing are stacked one on top of the other—see Creating Strokes on page 337.

Toon Boom Harmony drawings include two layers in Advanced Art mode.

- Line Art below
- Colour Art on the next page

You can access the Art layers through the Camera and Drawing views bottom toolbar. By default, the art layers are hidden. Everything is drawn on the Line Art layer. You need to enable the Use Advanced Art Mode option.

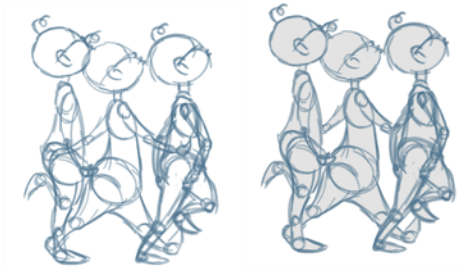
Each layer can be used for separate hand-drawn animation tasks, letting you organize your work and facilitate creation and revision.

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 to somebody 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 making them opaque. This process is fast and easy and allows you to send easy-to-understand movies.

How to enable the Use Advanced Art Mode preference

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

How to switch between drawing layers

1. In the Art Layer toolbar, click the Line Art or Colour Art buttons. When switching art layer, it will allow you to edit the select layer without affecting the other one.

2. Click the Preview All Enabled Art Layers button to display both layers together. Even when the Preview mode is enabled, you will only be able to edit the select art layer. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You will only be able to see the select art layer by itself if you enable the Current Drawing on Top option located in the Camera bottom toolbar.

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.

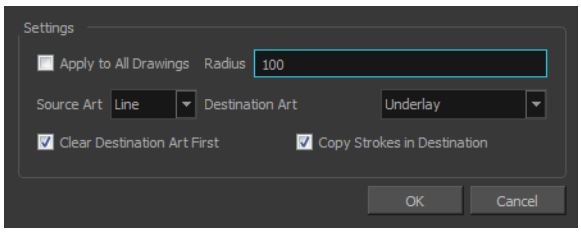
How to generate a matte

1. Do one of the following:
   - In the Tools toolbar, select the Select tool.
   - Press Alt + S.
2. In the Camera view, select the drawing you want to create a matte for.

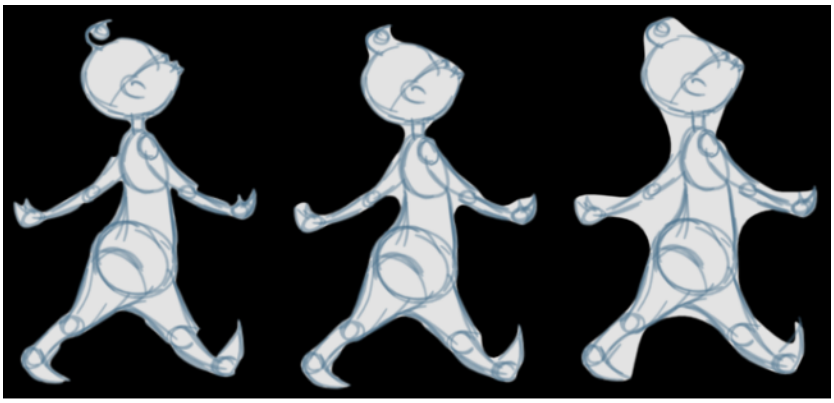
You can also apply the operation to all the drawings in the layer at the same time.

3. Do one of the following:
   - In the Camera view menu, select **Drawing > Generate Auto-Matte**.

   The Auto-Matte dialog box opens.



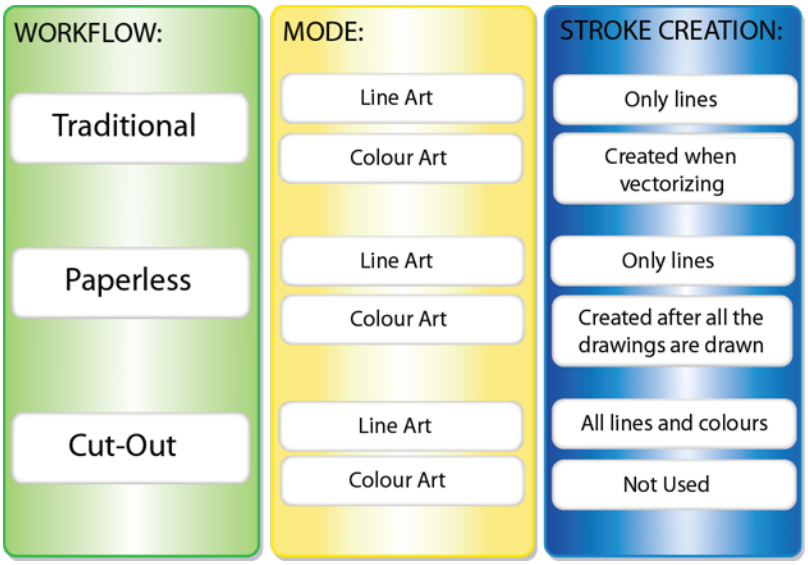
4. If you want to create a matte for all the drawings included in your layer, select the **Apply to Multiple Drawings** option.
5. Depending on how precise or rough your line is, increase or decrease the radius value. The lower the value is, the closer to your lines' contours the matte will be shaped. The higher the value is, the looser the matte will be shaped.



6. In the Source Art menu, select the layer from which you want the matte created: **Line Art** or **Colour Art**.
7. In the Destination Art menu, select the layer you want the matte to be created on: **Line Art** or **Colour 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**.

Creating Strokes

A drawing is composed of Line and Colour filling layers. Lines and colours can be separated or kept together, depending on which animation process you use. The following diagram presents Line Art and Colour Art recommendations based on the selected animation workflow.



When a traditional drawing is scanned, strokes are automatically created in the Colour Art from the Line Art when drawings are vectorized unless you specified otherwise.

When working with Cut-out animation, we recommend that you do all of the work in the Line Art.

Once the drawing sequence is completed for paperless drawings, you can proceed with creating Colour Art strokes if you plan to paint the animation in the Colour Art. Use the Create Colour Art from Line Art option to create strokes from your lines.

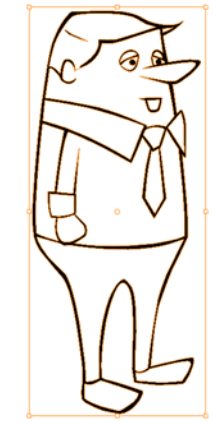
You can create strokes in the Colour Art during the following stages:

- After the full drawing is completed in Line Art
- While drawing in Line Art

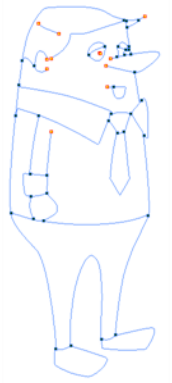
You may have some traditional drawings that need to be fixed; for example, needing extra lines to patch gaps. Use the Auto-Create Colour Art from Brush option to create the strokes at the same time as the lines are drawn. This creates strokes from the lines and brush strokes created in the Line Art while you draw and is useful for fixing drawings. However, if you are drawing a new sketch, it is better to create the strokes afterward using the Create Colour Art from Line Art option.

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

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Tool Properties view, enable the Permanent Selection option if you want to apply the operation on all drawings in the layer.
3. In the Camera 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. From the Camera View menu, select **Drawing> Create Colour Art from Line Art** or press *.

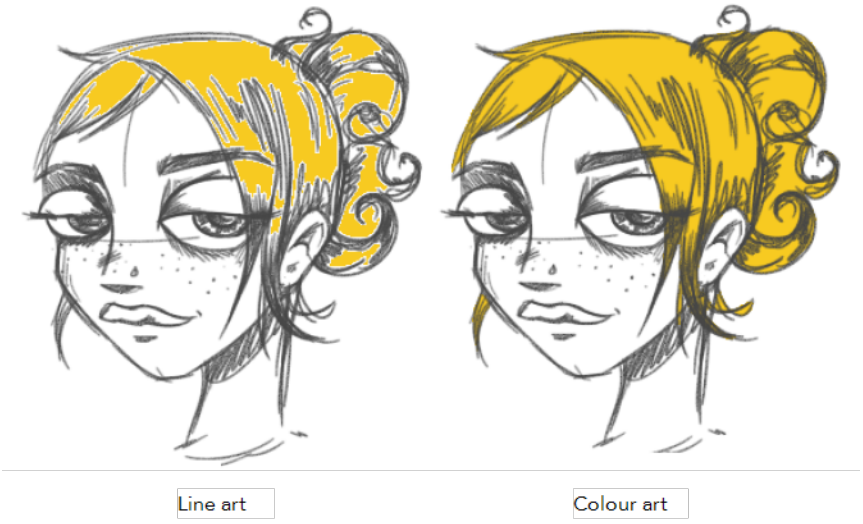


Painting

You can choose to paint your animation in the Line Art or Colour Art level. You can paint in Line Art, but for traditional and paperless animation, you should fill your colour zones in Colour Art. You can access the art layers through the Art Layer toolbar—see Art Layers on page 420.

There are many advantages to separating the lines and colour zones, but the main one concerns the painting process. To paint very quickly, it is useful to not worry about painting over the lines. If the lines are separated, you can fill the zones very quickly and you will never accidentally paint the lines. Conversely, if you are inking the lines, you will not repaint the colour zones either.

If you have transparent lines, bitmap lines or textured lines with transparency, it is better to have your colour zones bleeding under your lines to avoid seeing the backgrounds and other elements through the lines.

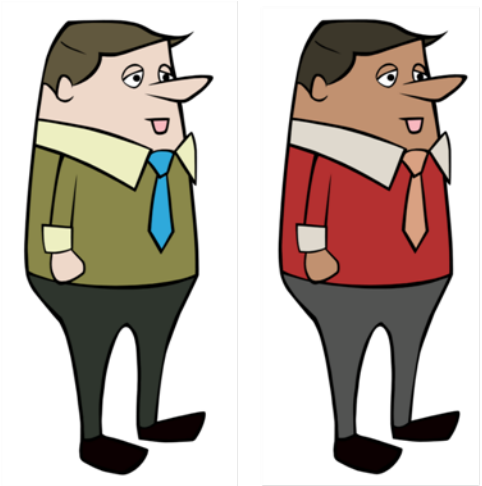


To avoid painting in Line Art by mistake, turn off the Preview mode. Press P to turn the mode on or off.

This section is divided as follows:

- Painting Using the Paint Tool on the next page
- Advanced Painting Features on page 341
- Selecting a Colour in a Drawing on page 344
- Editing Gradients and Textures on page 345
- Closing Gaps on page 350
- Protecting Colours on page 352
- Highlighting the Selected Colour on page 352
- Inverting a Colour Selection on page 353

Painting Using the Paint Tool



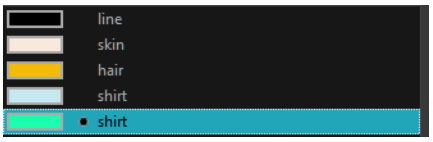
The main tool you will use to paint your drawings with is the Paint tool. The Paint tool can be used in several different modes, which can be customized in the Tool Properties view.

The Paint tool paints closed zones, including brush strokes and pencil lines. If there are gaps in the lines defining a zone, you must close them using the Brush, Pencil, or Close Gap tools or the Automatic Close Gap option.

How to paint with the Paint tool

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

2. Do one of the following:
   - In the Tools toolbar, click the Paint tool.
   - Press Alt + I.
3. In the Colour view, select a colour.



4. In the Camera view, start painting. You can click on a zone or pencil line to paint it, or you can trace a lasso or marquee selection to paint several zones or pencil lines at once.

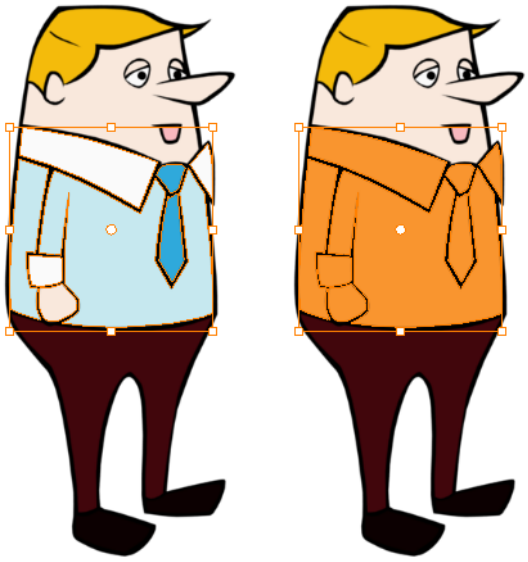
The last colour you select while using the Paint tool will be remembered the next time you select the Paint tool if you are using the unlocked painting tools in the Colour view.

Advanced Painting Features

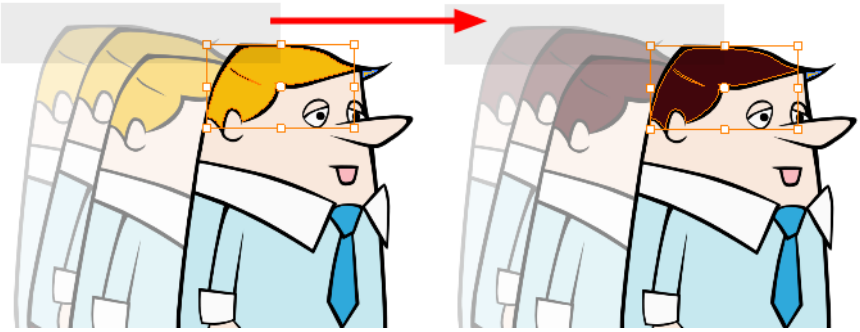
The following advanced painting features are available in Toon Boom Harmony and are described in this section:

- Repaint Selection
- Repaint Selection On All Drawings
- Repaint Outside Selection
- Repaint Outside Selection On All Drawings
- Unpaint Selection
- Unpaint Selection On All Drawings
- Unpaint Outside Selection
- Unpaint Outside Selection On All Drawings

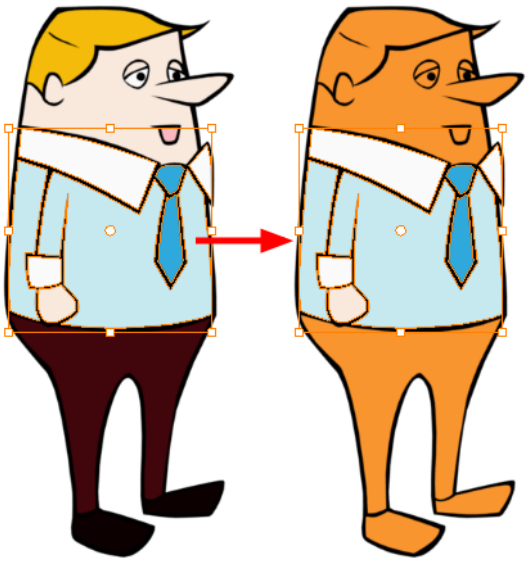
The Repaint Selection command is used to repaint any art inside a selection. You must first draw a selection using the Select tool in order for this command to be available.



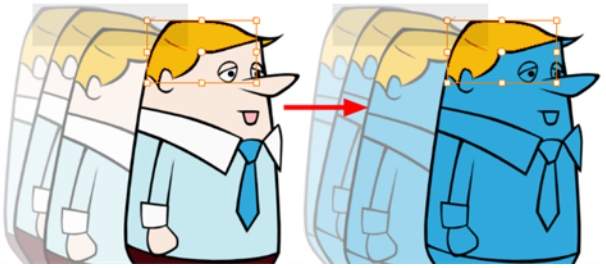
The Repaint Selection On All Drawings command is used to repaint any art inside a selection on all the drawings contained within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



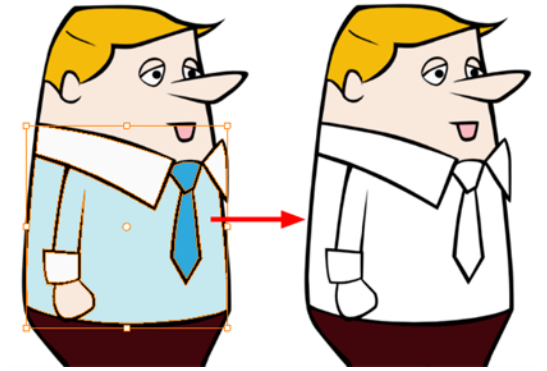
The Repaint Outside Selection command is used to repaint any art outside a selection. If no selection has been drawn using the Select tool, the entire drawing will be repainted.



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.

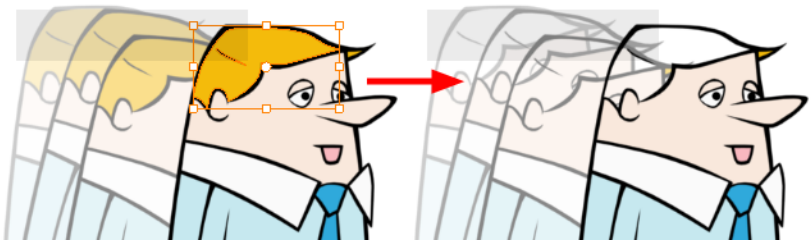


The Unpaint Selection command is used to unpaint any art existing inside a selection. You must first draw a selection using the Select tool in order for this command to be available.

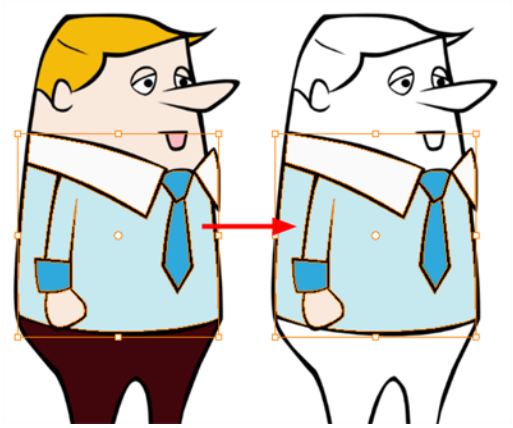


The Unpaint Selection on All Drawings command is used to unpaint all art contained inside a selection on all the drawings within the same layer.

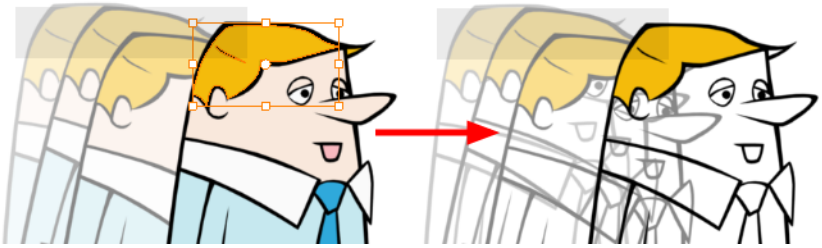
You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



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 access the Repaint Selection command

- From the Camera view menu, select **Drawing > Paint > Repaint Selection**.

How to access the Repaint Selection On All Drawings command

- From the Camera view menu, select **Drawing > Paint > Repaint Selection On All Drawings**.

How to access the Repaint Outside Selection command

- From the Camera view menu, select **Drawing > Paint > Repaint Outside Selection**.

How to access the Repaint Outside Selection on All Drawings command

- From the Camera view menu, select **Drawing > Paint > Repaint Outside Selection on All Drawings**.

How to access the Unpaint Selection command:

- From the Camera view menu, select **Drawing > Paint > Unpaint Selection**.

How to access the Unpaint Selection On All Drawings command:

- From the Camera view menu, select **Drawing > Paint > Unpaint Selection On All Drawings**.

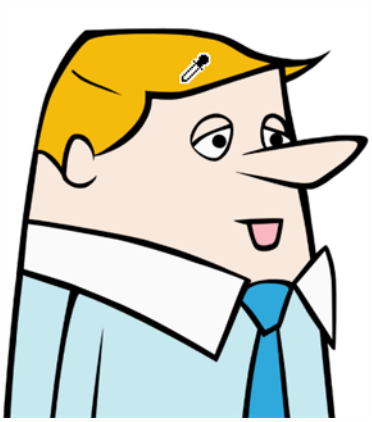
How to access the Unpaint Selection command

- From the Camera view menu, select **Drawing > Paint > Unpaint Outside Selection**.

How to use the Unpaint Outside Selection On All Drawings command

- From the Camera view menu, select **Drawing > Paint > Unpaint Outside Selection On All Drawings**.

Selecting a Colour in a Drawing



While working in your Camera view, you can use the Dropper tool to pick a colour from your drawing without going to the Colour view.

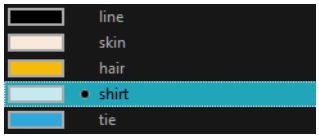
How to use the Dropper tool

1. Do one of the following:
   - In the Tools toolbar, select the Dropper tool.
   - Press Alt + D.

2. In the Camera view, click on the desired colour.
   - If you are 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, Toon Boom Harmony will return to your previous tool. You may also want to select the zones painted with the colour currently selected in the Colour view. This can be useful for removing rough lines from a clean drawing.

How to select the zones painted with the current colour

1. In the Colour view, select the colour you want to select the corresponding zones from.



2. Do one of the following:
   - Press Ctrl + Shift + A (Windows/Linux) or ⌘ + Shift + A (Mac OS X).

Editing Gradients and Textures

If you paint a zone with a gradient or texture colour, you can use the Edit Gradient/Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you want to match the colour to the animation, set the first texture position and copy the Edit Gradient/Texture position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

If you are painting a hand-drawn animation or if your want the Brush tool and Paint tool to use your gradient's position, angle and scale settings instead of the default ones, you can store your own settings and reuse them afterward.

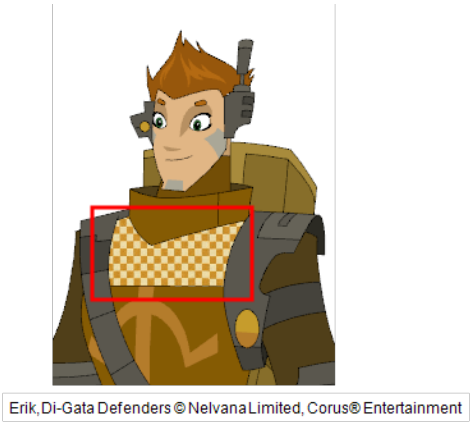
This way of editing a texture using the Edit Gradient/Texture tool also works with pencil lines drawn with textured "brushes". If you then paint your textured pencil line with a gradient, you can do so and then edit both elements independently at the same time.

How to use Edit Gradient/Texture tool

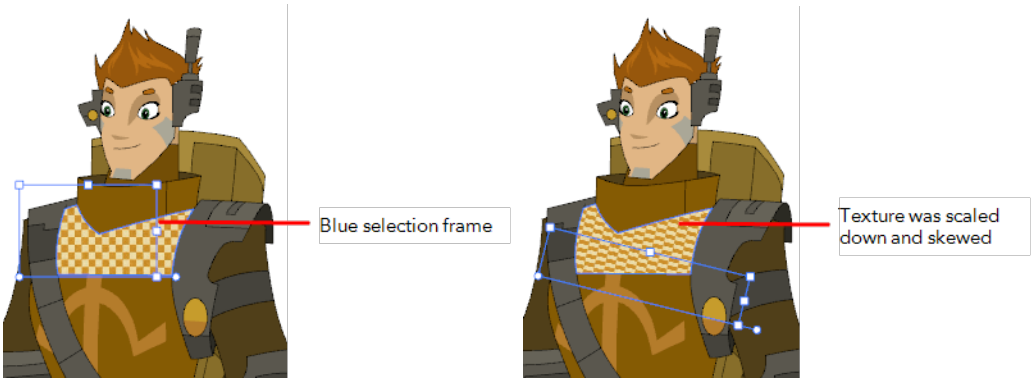
1. Do one of the following:
   - In the Tools toolbar, click the Edit Texture tool.
   - From the Camera View menu, select **Drawing Tools > Edit Gradient/Texture**

- Press Shift + F3.

2. Click the gradient or texture colour to modify.



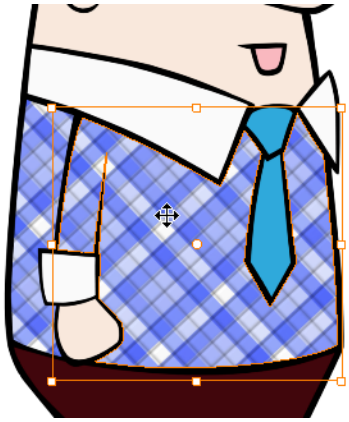
A blue selection frame surrounds the selected gradient or texture.



3. Edit the gradient or texture by adjusting the control handles around the selection frame.

How to store your gradient and texture settings

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Camera view, select the gradient or texture zone to store.



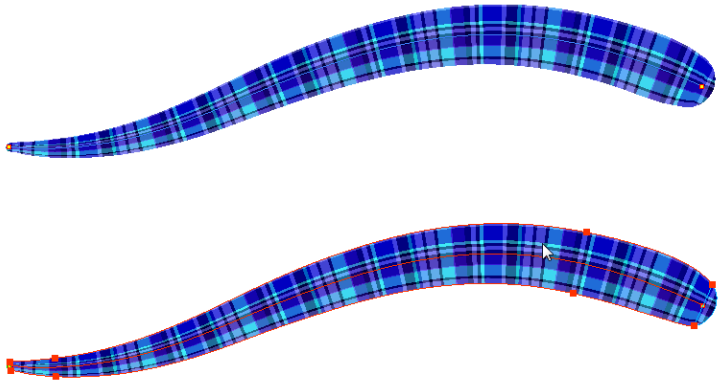
3. In the Tool Properties view, click the Store Colour Gradient button.

How to use the stored gradient and texture settings

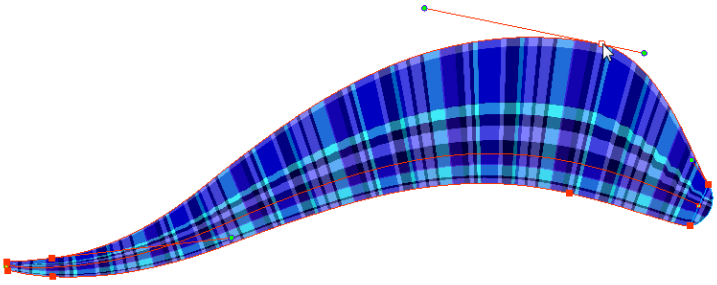
1. In the Tools toolbar, select the Brush or Paint tool.
2. In the Tool Properties view, click the Use Stored Colour Gradient button.
3. In the Camera view, draw and paint.

How to use Pencil Editor tool to edit the texture or gradient on a pencil line

1. Do one of the following:
   - In the Tools toolbar, select the Pencil Editor tool.
   - Press Alt + W.
2. Click on the pencil line to be modified to bring up its contour envelope.

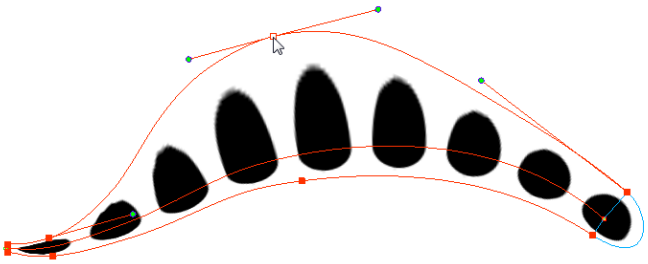


3. Select one of the contour points around the envelope and move its position to change the size of the tiled texture or gradient. You can also pull directly on the lines of the contour envelope or play with the Bezier handles of any given point in order to continue to modify the envelope form.



Expanding the width of the envelope parallel to the pencil line's central vector will cause the tiled texture to be stretched. Conversely, reducing the envelope's width will cause the tiled texture to look squashed.

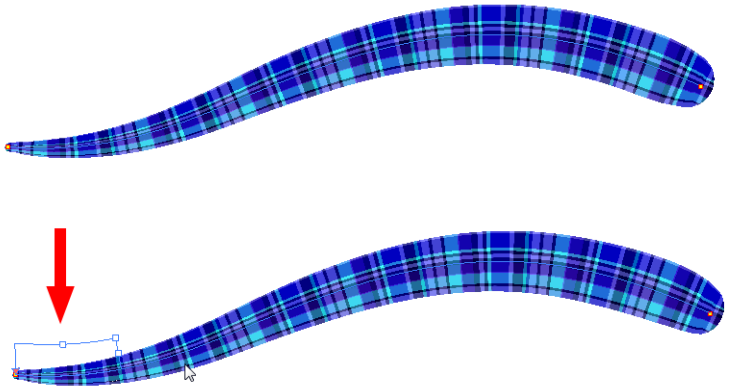
Reducing the contour's width perpendicular to the pencil line's central vector will reduce the number of tiles, while expanding it will increase the number of tiled images.



This editing technique does not just work on texture fills, but can also be applied to pencil lines drawn with a textured "brush".

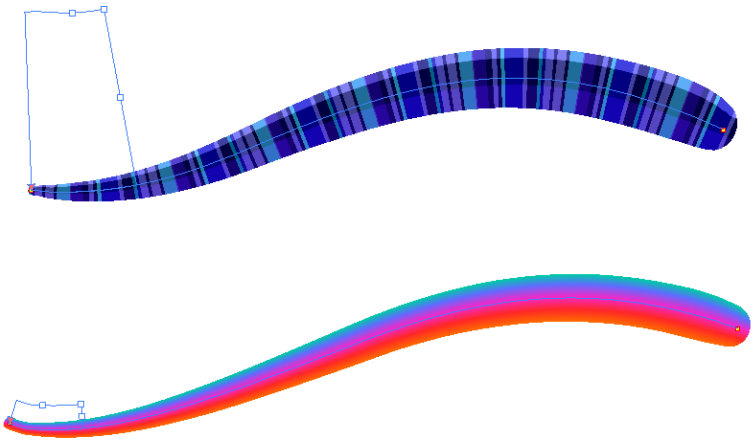
How to use Edit Gradient/Texture tool to edit the texture or gradient on a pencil line

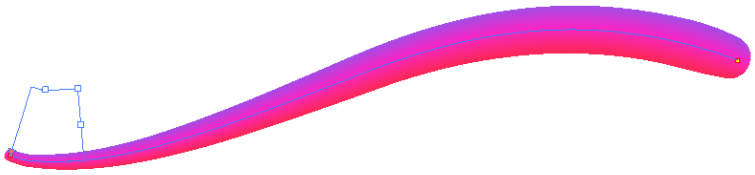
1. In the Tools toolbar, select the **Edit Gradient/Texture** tool. You can also press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.



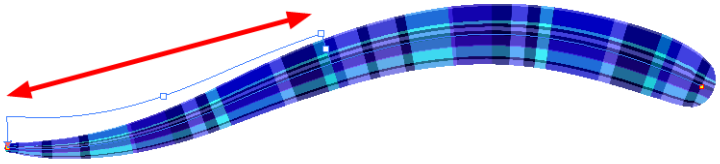
3. The editor controls delineate a single tile in the texture. For gradients, this is less applicable. Pull on the top of the editor controls to stretch the tiled texture throughout the length of the stroke.

   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.



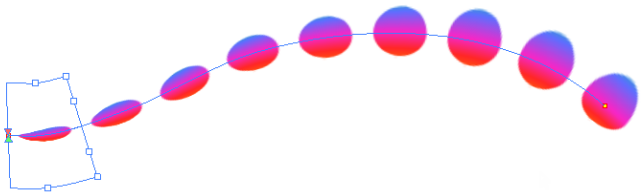


4. Drag the editor control perpendicular to the stroke. You will feel it glide along the strokes central vector line. This is another way to resize the texture tile. Instead of stretching or shrinking it vertically, this motion stretches or shrinks it vertically. As gradients are parallel to the pencil line's central vector, stretching them vertically gives no visual result.

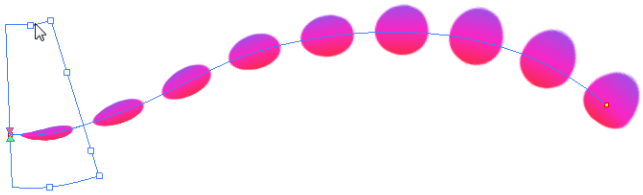


How to use Edit Gradient/Texture tool to edit both the texture and the gradient of a pencil line

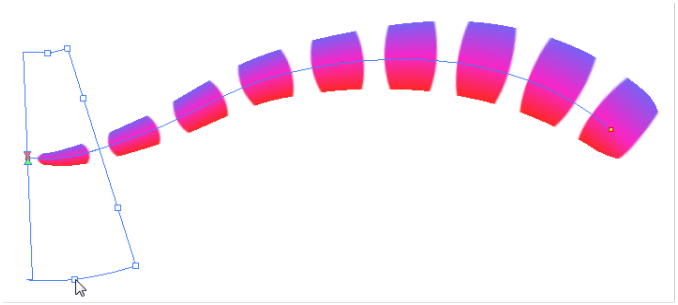
1. Do one of the following:
   - In the Tools toolbar, select the Edit Gradient/Texture tool.
   - Press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.

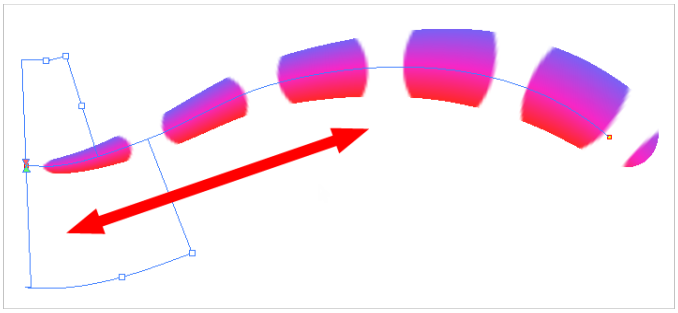


3. Use the top editor controls edit the gradient.

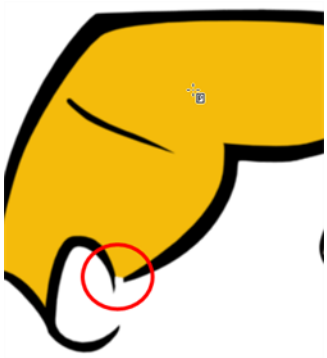


4. Use the bottom controls edit the "brush" texture.





Closing Gaps



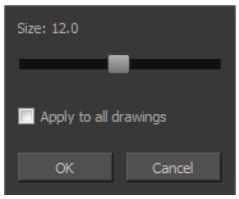
When painting, you may notice that some drawing areas are not closed. To close the zone, you can either draw the missing line with the Brush or Pencil tool, or close the gap with an invisible line using the Close Gap tool.

The Close Gap tool lets you close small gaps in a drawing by creating small, invisible strokes between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimeters away. The two closest points automatically close the gap.

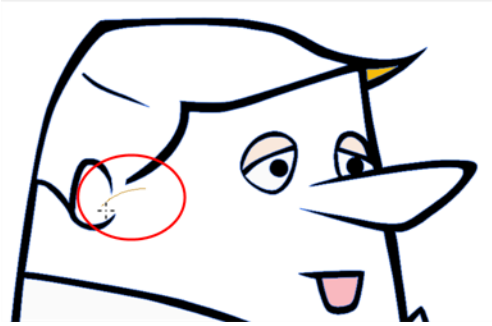
How to close gaps

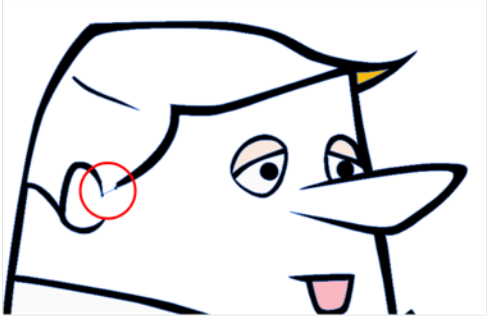
1. From the top menu, select **View >Show Strokes** or press K to see a preview of the result.
2. Enable the Auto-Flatten option in the Tool Properties view if you want the strokes you draw to be flattened in your drawing instead of being on top.

   The Close Gaps dialog box opens.
3. Adjust the slider to set the size of the gap you want to be closed.



4. In the Tools toolbar, select the Close Gaps tool.
5. In the Camera view, trace a line near the gap to be closed. Your strokes will be invisible
   The gap automatically closes.





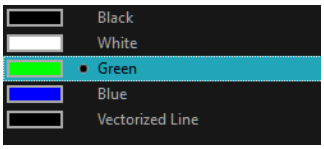
Protecting Colours

When you are finished painting some zones, you can protect the colour swatch they are associated with, so the work cannot be accidentally painted over.

When you are done inking one colour, you can lock it so that if you ever paint over it accidentally, the work already done will not be affected. You can also use the Protect Colour feature to block the filling colours if you painted all of the animation in Line Art and you plan to repaint the lines.

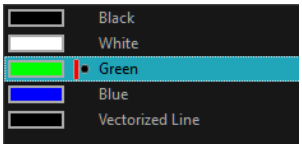
How to protect colours

1. In the Colour view, select the colour to be protected.



2. Do one of the following:
   - Right-click and select **Protect Colour**.
   - From the Colour view menu, select **Colours > Protect Colour**.

   A red bar appears beside the colour to indicate that it is locked.



Respecting Protected Colours

When painting, the Respect Protected Colour option is enabled by default. In the Colour view, you can protect a colour swatch to avoid repainting or unpainting the zones linked to that swatch. If you disable this option, the Paint tool will not follow the protect colour rule and you will repaint or unpaint the protected colours on your drawings until you enable the option again.

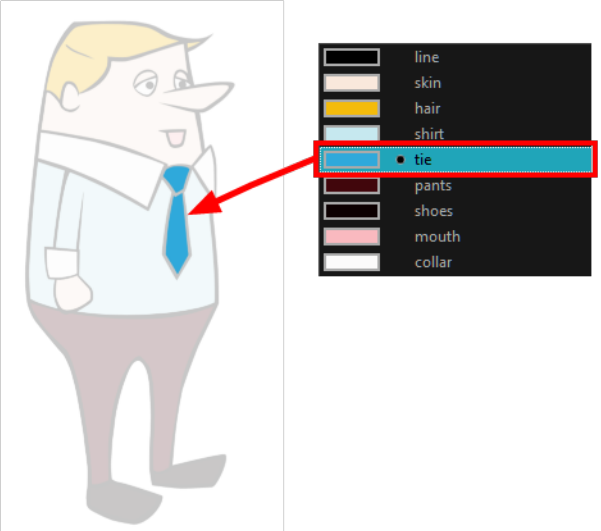
How to toggle the Respect Protected Colours option

Do one of the following:

- Paint tool properties, click the Respect Protected Colour button.
- Press Shift + S.

Highlighting the Selected Colour

The Highlight Selected Colour option is used to identify colour swatch used in a drawing. For example, if you have unnamed colours in your palette and want to know if a particular colour was used on the current model or drawing, you can select the colour and use the Highlight Selected Colour option. Harmony will dim all the colours in the drawing except the selected one, so it stands out and can be identified. You can rename it accordingly.



How to use the Highlight Selected Colour option

1. In the Colour view, select the colour you want to highlight.
2. From the Camera menu, select **View > Show > Highlight Selected Colour**.

Inverting a Colour Selection

When you need to select all colour swatches but one, or select only a few swatches here and there, it might be faster to select the only colour you do not need, in order to select and invert the selection.

How to invert a colour swatch selection in the Colour view

1. In the Colour view, select the colour swatch you **DO NOT** want to have in your final selection.

2. Do one of the following:
   - From the Camera View menu, select **Edit > Invert Selection**
   - Press Ctrl + Shift + I (Windows/Linux) or ⌘ + Shift + I (Mac OS X).

Inking the Lines

Some animation styles require you to paint the lines, a process also be called *inking*. To ink your lines, you must be in Line Art mode. You can repaint any type of lines including the texture lines—see Art Layers on page 420.

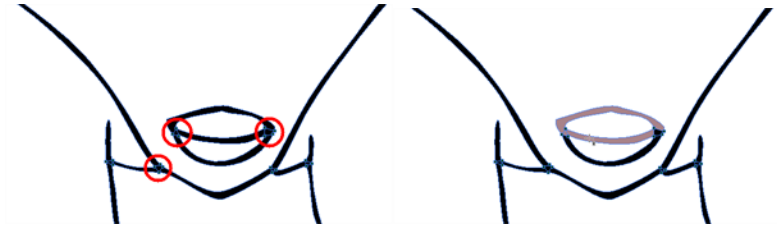
Unless you are repainting all of the lines on the whole animation sequence, do not use the Apply Tool to All Drawings option. Since the line positions change a lot over time, you risk painting lines that are not supposed to be painted.

These are the main tools used to ink the lines:

- Repaint Tool
- Repaint Brush Tool
- Ink Tool
- Protecting Colours

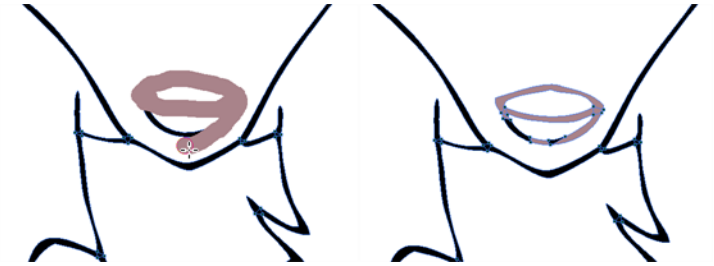
The main tool used to ink the lines is the Repaint tool. As the colour filling is probably done in the Colour Art, you will not have to worry about not touching it. The Repaint tool will not paint empty zones either.

During the vectorization process on traditional scanned drawings, triangles are added on the lines' intersections to break the artwork in segments. This way, when you paint a line, it will not repaint the whole drawing, only the relevant segment.



The Repaint Brush tool is used to paint a section by manually painting over the lines. This is useful when the vectorization triangles are not placed as you would like or you simply need to repaint a section of a segment. It is also useful for paperless animation, where there are no triangles. So, the Repaint Brush is used to paint a certain area. It acts like the Brush tool, but will only show on painted areas that are already painted.

Unlike the Brush tool, the Repaint Brush flattens automatically. The brush strokes are not added one on top of each other.



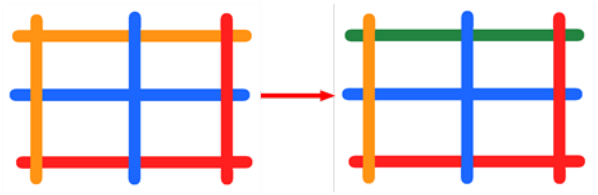
When you are done inking one colour, you can lock it so if you ever paint over it accidentally, the work already done will not be affected. You can also use the Protect Colour feature to block the filling

colours if you painted all of the animation in Line Art and you plan to repaint the lines—see Protecting Colours on page 352.

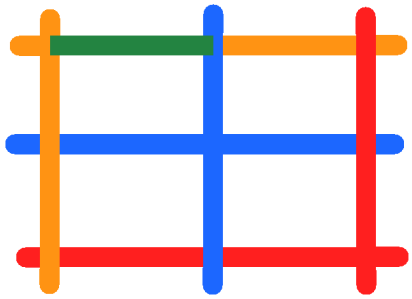
The Brush tool is often the most intuitive and rapid tool for creating rough sketches and clean lines. A single colour, such as black, is often used when tracing a clean version of a rough sketch. However, when it comes time to soft trace the lines in different colours, the flattened or unflattened clean brush strokes can suddenly become time consuming to ink.

Toon Boom Harmony lets you create triangular breaks at natural line intersections. These intersections are the probable locations where colour line breaks may occur, such as where a sleeve meets a hand.

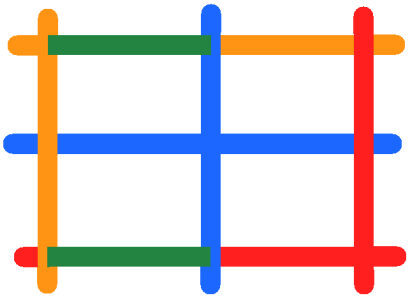
Although pencil lines can be painted in much the same way as closed zones, you can use the Paint, Repaint, Repaint Brush, and Ink tools to make painting segmented lines easier. Normally when you have a drawing, such as the one below, and you use the Paint tool to paint one of the lines, the entire line is painted.



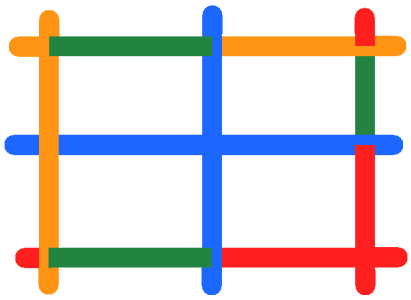
However, if you select the Ink tool instead and click on the same pencil line, only the segment that you clicked on between two intersections will be painted.



The newly inked segment will always be moved to the front of all other pencil strokes, even if it was behind all other pencil strokes before it was inked.



That is, unless you hold down Alt while clicking a segment. Then the opposite becomes true. The inked segment will be sent to the back, even if it was in front of all other segments to begin with.



Painting and Inking can be used in combination depending on what it is that you need to paint. If you need to ink a character's outline in black, it might be easier to use the Paint tool. If you need to paint the outline of a character's neck with a tan colour and its shirt outline blue and both the neck and shirt belong to the same continuous outline, then the Ink tool might prove more useful.

How to select the Repaint Tool

1. In the Tools toolbar, select the Repaint tool located in the Paint tool drop-down menu.

How to select the Repaint Brush

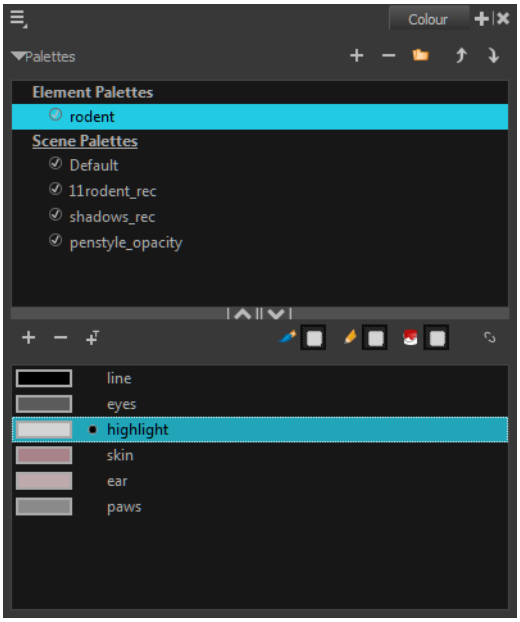
1. In the Tools toolbar, select the Brush tool.
2. In the Tool Properties view, enable the Repaint Brush mode.

How to select the Ink Tool

1. In the Tools toolbar, select the Ink tool located in the Paint tool drop-down menu.

How to protect colours

1. In the Colour view, select a colour to lock.



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.

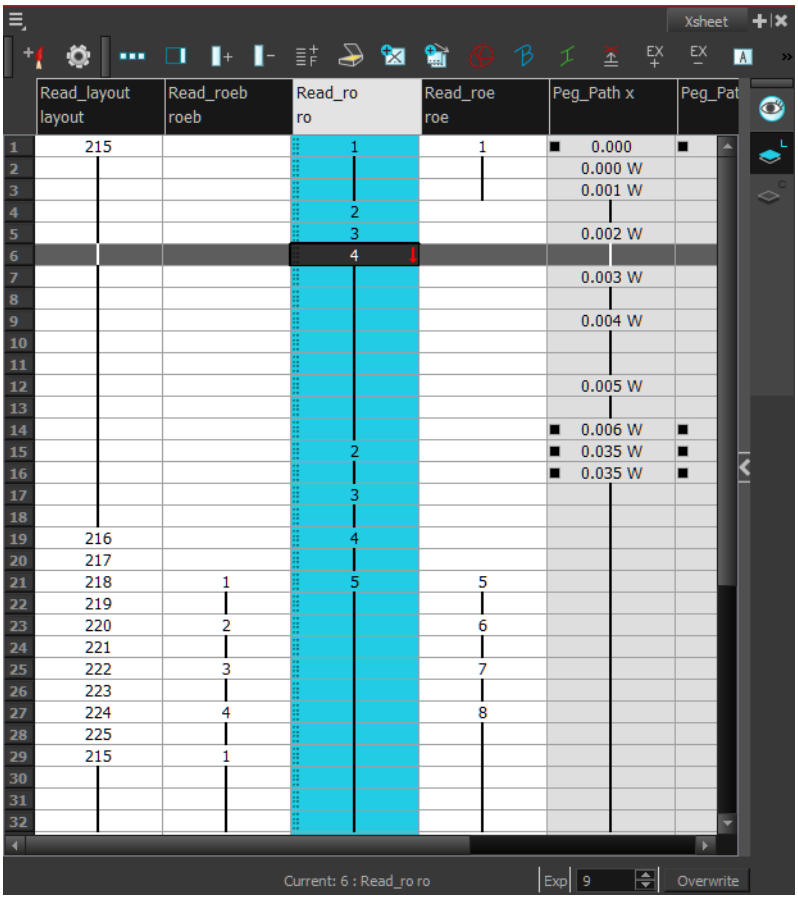
Verifying the Zones are Painted

When the ink and paint process is completed, it is 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.

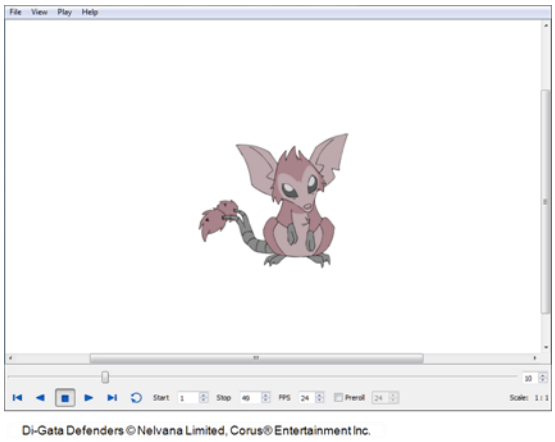
How to preview drawings from the Xsheet

1. First, save your scene.
2. Do one of the following:
   - From the top menu, select **File> Save**.
   - Click the Save button.
   - Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
3. In the Xsheet view, select the range of drawings or the whole column to preview.

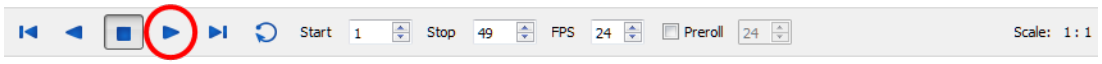


4. In the Xsheet View menu, select **View > Preview Selected Drawings** or press Alt + P.

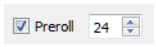
   The Play window opens.



5. Play your drawings.



6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.



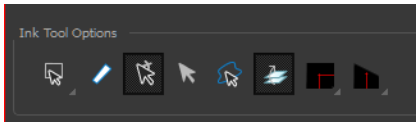
Ink and Paint Tool Properties

The Ink and Paint tool properties contain many options that will help you along with your task.

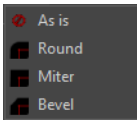
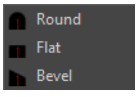
- Ink Tool Properties below
- Paint Tool Properties on the facing page

Ink Tool Properties

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

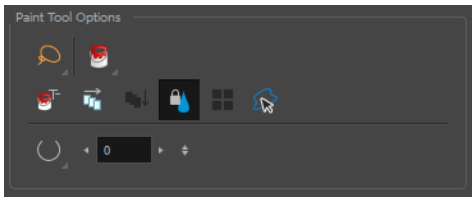


Icon	Tool Name	Tool
	Lasso and Marquee	The Lasso and Marquee options let you choose the type of selection the current tool will perform. The default selection mode is Marquee. • Lasso lets you draw a custom selection box around zones. • Marquee makes a rectangle selection box. Hold down the Alt key to switch to the opposite mode of your selection. **How to invert a selection** 1. Do one of the following: ‣ From the top menu, select **Edit > Invert Selection**. ‣ From the Camera menu, select **Edit > Invert Selection**. ‣ Press Ctrl + Shift + I (Windows/Linux) or ⌘ + Shift + I (Mac OS X).
	Show Inkable Lines	Highlights all pencil lines (no brush strokes) on the selected layer. Pencil line segments that are already inked with the selected swatch colour from the colour palette are also not highlighted.

	Be Smart on Connecting Lines	As you hover and move the cursor across intersecting pencil lines, the path that you create will be highlighted. When you click on your mouse or stylus the highlighted segments are inked. With this option disabled, all the intersecting segments that your cursor comes near will be highlighted and become part of the selection, even if they were not situated in the direction of the chosen path. **Note**: This option only works if the Ink tool is in Hover mode.
	Select Mode	Use this mode instead of the Hover Mode. In the Hover Mode, any potentially inkable pencil line will have its central vector line highlighted as the Ink tool's cursor hovers over it. Use Ctrl (Windows/Linux) or ⌘ (Mac OS X) to toggle between the two modes.
	Select Newly Painted, Repainted, Unpainted Contours and Lines	Keeps a selection highlighted around the latest painted zone after using the Paint, Repaint, Unpaint, or Paint Unpainted tool.
	Arrange Ink Lines	Brings all newly-inked lines to the front. Disable this option if you want all newly-inked lines to be sent to the back. Press Alt to toggle between the two options.
	Mitre	As you hover over two perpendicular or nearly perpendicular segments, a highlighted path with a corner is created. Clicking on these highlighted segments inks both segments and makes them appear as a single stroke with a corner or bend. Click the Mitre button to choose from As is, Round, Mitre, and Bevel. 
	Tip Style	Lets you customize the edge of the Ink tool. Options include: Round, Flat, and Bevel. 

Paint Tool Properties

When you select the Paint tool, its properties and options appears in the Tools Properties view.



Icon	Tool
	Lasso and Marquee below
	Painting Modes below
	Paint and Remove Texture on page 364
	Apply to Multiple Drawings on page 364
	Paint Tool Properties on the previous page
	Respect Protected Colour on page 365
	Select Newly Painted/Repainted/Unpainted Contours/Lines on page 365
	Automatic Close Gap on page 366

Lasso and Marquee

The Lasso and Marquee options let you choose the type of selection the current tool will perform. The default selection mode is Marquee.

- Lasso lets you draw a custom selection box around zones.
- Marquee makes a rectangle selection box.

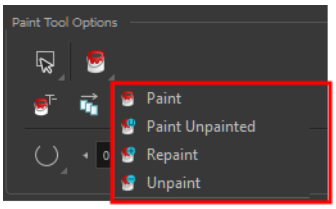
Hold down the Alt key to switch to the opposite mode of your selection.

How to invert a selection

1. Do one of the following:
   - From the top menu, select **Edit > Invert Selection**.
   - From the Camera menu, select **Edit > Invert Selection**.
   - Press Ctrl + Shift + I (Windows/Linux) or ⌘ + Shift + I (Mac OS X).

Painting Modes

The Paint tool has four different modes available:

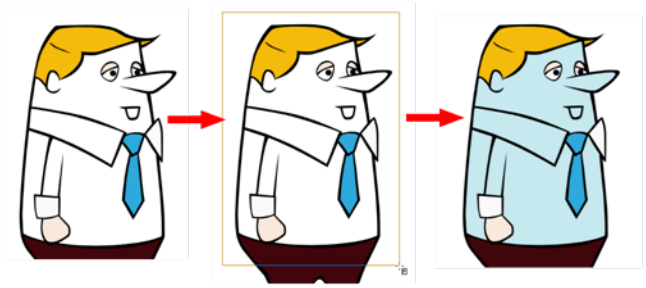


You can also find these tools directly in the Tools toolbar and in the Drawing Tools menu.

Paint Mode

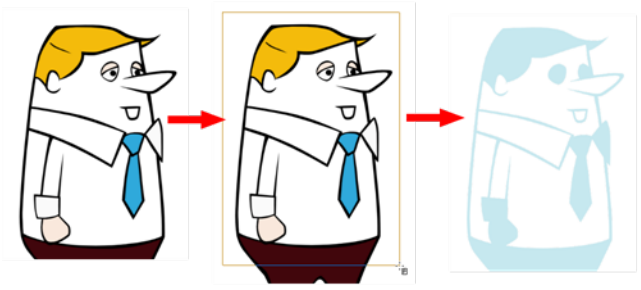
The Paint mode paints everything it touches, including empty and filled zones.

Paint Unpainted Mode



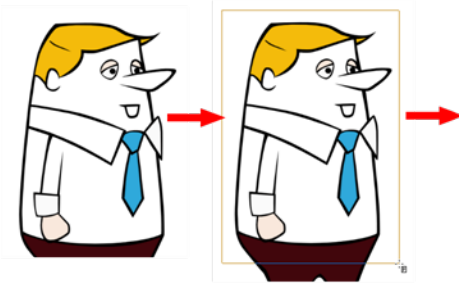
The Paint Unpainted mode paints only empty zones. Any line or filled zone will remain unchanged.

Repaint Mode



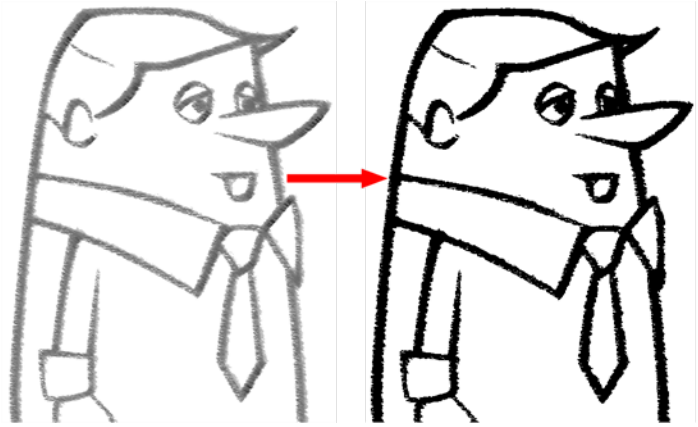
The Repaint mode paints everything it touches except empty zones. Any zone that is not painted will remain intact.

Unpaint Mode



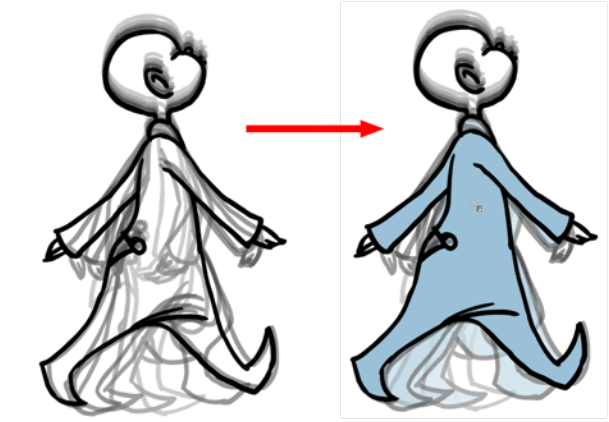
The Unpaint mode unpaints everything it touches, including empty and filled zones.

Paint and Remove Texture



The Paint and Remove Texture option is used when you vectorized images as greyscale texture style. An image vectorized as texture is a mix of bitmap filling encapsulated in a vector-based frame. Painting a textured zones with the Paint tool will change the tint of the textured lines. Painting the textured zones using the Paint and Remove Texture option transforms the bitmap filling into a 100% vector based zone and fills it with a solid colour.

Apply to Multiple Drawings



The Apply to Multiple Drawings option is used for fast painting in hand-drawn animation. When you want to paint several drawings in a same layer at once, such as a walk cycle, you can enable this option and make a selection in your Camera or Drawing view. All the closed zones located within your Paint tool selection are painted with the selected colour swatch.

You do not need to enable the Onion Skin preview to use this option. The option will stay enabled only for the next action. If you want to use it again, you must click on the Apply to Multiple Drawings button again, or press Alt + A.

The Apply to All Visible Drawings option is used to paint several drawings on separated layers on the current frames. If you have a character broken in several layers, you can enable this option to paint all your layers at once. The operation is only applied on the current frame. This option will stay enabled only for the next action. If you want to use it again, you must click on the Apply to All Visible Drawings button again.

This option is only available in the Camera view and does not affect symbols.

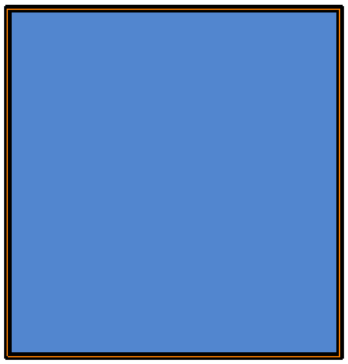
Respect Protected Colour

The Respect Protected Colour option is enabled by default. In your Colour view, you can protect some colour swatches to avoid repainting or unpainting the zones linked to that swatch.

If you disable this option the Paint tool will not follow the protect colour rule and will repaint or unpaint the protected colours on your drawings until you enable the option again—see Protecting Colours on page 352.

When you paint a zone with a gradient or textured colour swatch, the gradient or texture's position is set relative to the size of the zone your are painting. If you want the Paint tool to use a particular size and position, you must first store your desired position and size using the Select tool and then enable the Use Stored Colour Gradient option in the Paint tool Tool Properties view—see Editing Gradients and Textures on page 345.

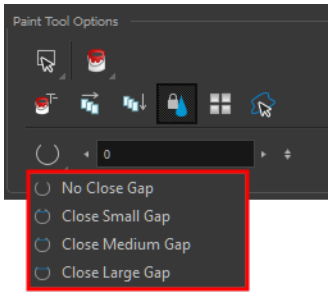
Select Newly Painted/Repainted/Unpainted Contours/Lines



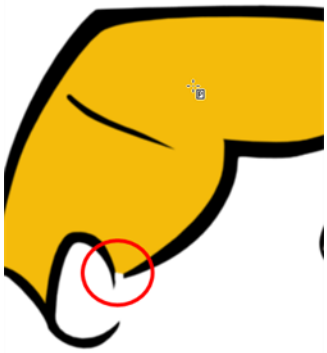
In the Paint tool Tool Properties view, enabling this option will keep a selection highlighted around the latest painted zone after using the Paint, Repaint, Unpaint, or Paint Unpainted tool.

Automatic Close Gap

The Automatic Close Gap option has four modes available:



The Automatic Close Gap options are used while painting drawings with small gaps. Instead of having to close them manually with the Brush tool or Close Gap tool, Toon Boom Harmony will analyze the drawing and close the gaps while you paint according to the selected mode. The automated gap closing should be done using the zoom function setting of your Camera or Drawing view. If your eye does not see the gap, Toon Boom Harmony won't either—see Closing Gaps on page 350.



Chapter 13: Paperless Animation

Toon Boom Harmony is a powerful paperless animation software that incorporates animation and drawing tools to make your work easier and more efficient.

Although it is a digital process, paperless animation is still hand-drawn and the fundamental principles of animation still apply.

One of the advantages of working with paperless animation is that you do not lose time scanning elements in and testing them because everything is already digital. You can simply draw your animation and play back your line test right away. This also saves the substantial amount of paper required by traditional animation. Another practical advantage is the ability to undo and redo some actions that are often difficult on paper, such as erasing brush strokes.

This chapter is divided as follows:

- Preparation on page 369
- Rough Animation on page 379
- Secondary Animation on page 383
- Bringing Your Animation on Model on page 387
- Animation Clean-up on page 389
- Tools on page 395
- Advanced Tools on page 411
- Paperless Animation Preferences on page 427

Preparation

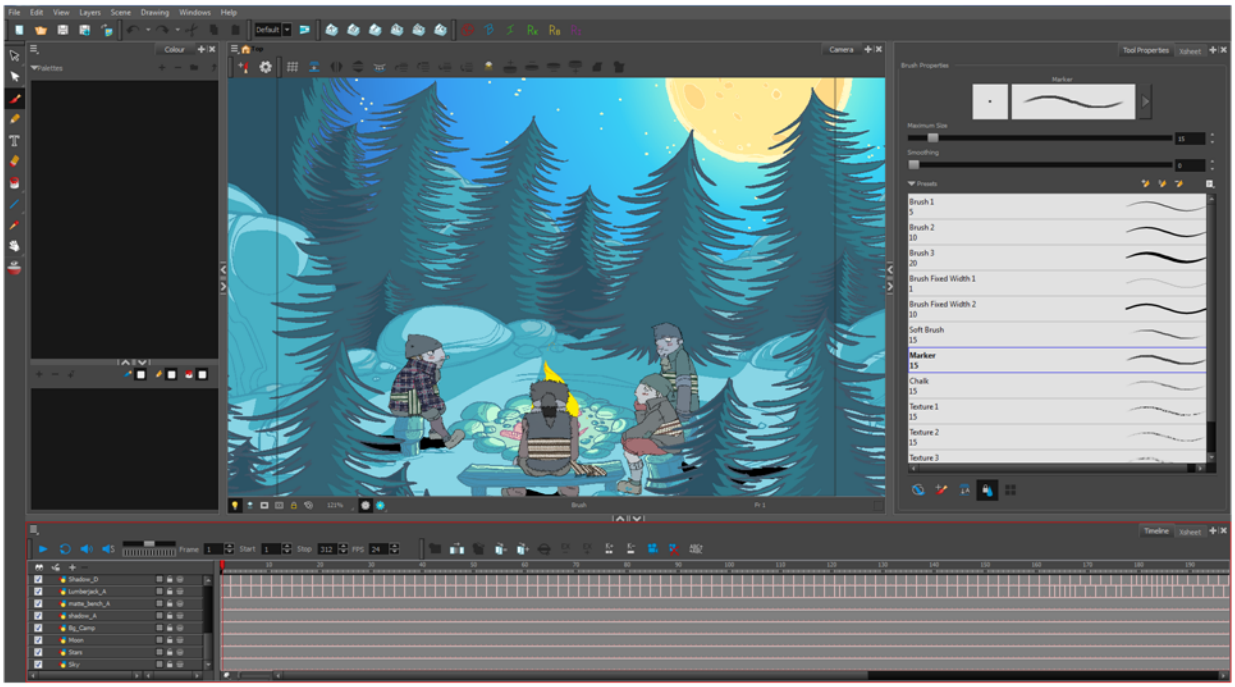
To prepare for paperless animation with Harmony, you will need to complete the following tasks.

- Setting Up Your Workspace below
- Setting the Scene Resolution and Length below
- Importing the Layout, Storyboard and Animatic on page 371
- Importing the Background Elements on page 374
- Creating the Drawing Elements on page 374

Setting Up Your Workspace

To sketch the animation directly in Harmony, you will mostly frequently need the Camera or Drawing view, the Xsheet or Timeline view, and the Tool Properties and Colour views.

While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it **`Paperless Animation`**, for example.



For more information on setting up your workspace, refer to Chapter 2: Interface in the Fundmentals Guide.

Setting the Scene Resolution and Length

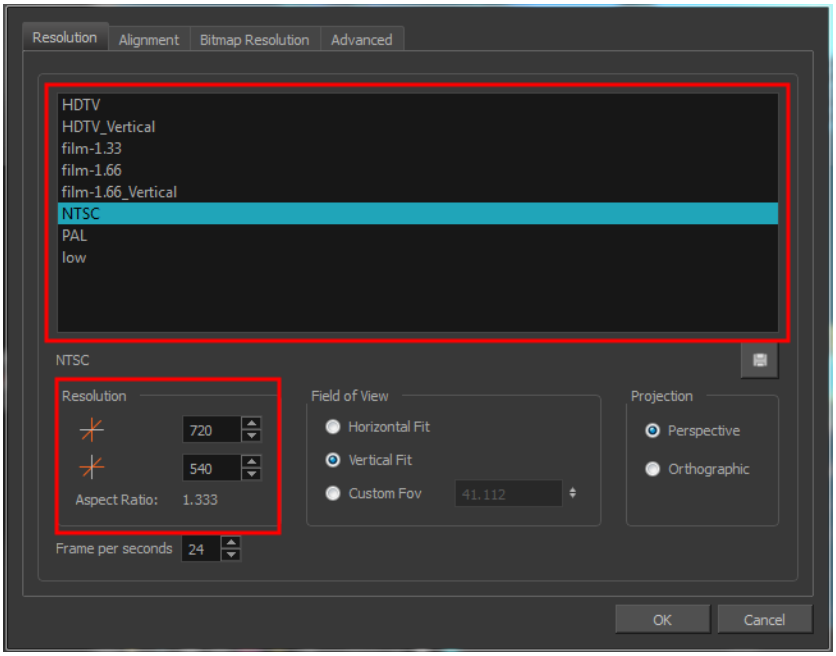
If the scene resolution was not already set by the digital layout artist or by a Toon Boom Storyboard Pro import, it is the next step to be accomplished. The layout artist, scene planner or animator will often take care of this task prior to the animation when working with paperless and cut-out animation.

How to set the resolution and frame rate

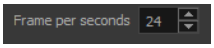
1. From the top menu, select **Scene > Scene Settings**.

The Scene Settings dialog box opens.

2. Choose a resolution from the list or enter a new one.



3. Set your frame rate.



4. Click **OK**.

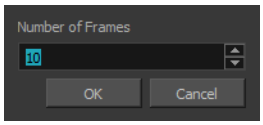
It is important to set the resolution before you begin to set positioning and camera moves, as it may affect the ratio and composition.

Once you have set the resolution and frame rate, you must set the scene length by adding the right number of frames to the scene. You can set the scene length from the top menu. If you do not yet know the number of frames that will be needed, simply add some frames so you can draw different poses. However, if you only need to draw a background and one pose, you do not need to add more frames.

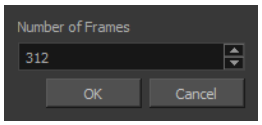
You do not need to do this step if you are importing your animatic in the QuickTime movie file format. The QuickTime import feature takes care of the scene length at the same time as the movie import.

How to set the scene length

1. From the top menu, select **Scene > Scene Length**.
   The Set Scene Length dialog box opens.



2. Type the scene duration in the Number of Frames field.



3. Click **OK**.

Importing the Layout, Storyboard and Animatic

To animate a scene, you need to import your layout, storyboard or animatic, depending on which technique you are using. The most popular method is the animatic.

If you created a digital layout prior to the scene animation, you will animate directly in that scene. In this case, there is no need to import references since they are already there.

Importing the Animatic

If you have an animatic available, you can import it. The animatic will give you the right timing to expose your animation poses.

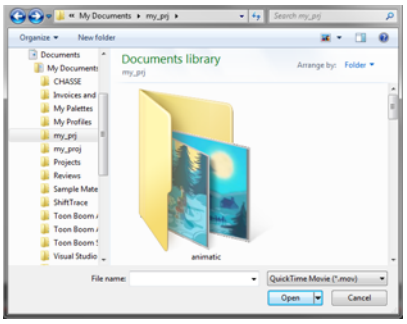
There are three ways to import an animatic in a scene.

How to import a QuickTime animatic

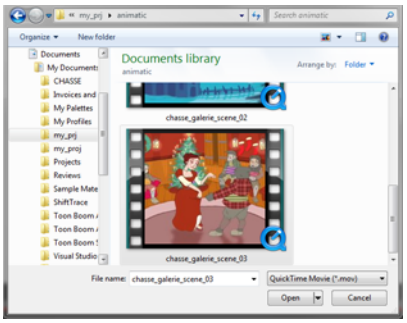
Toon Boom lets you import QuickTime movie files in the scene, cut them as image sequences and import the sound as an independent soundtrack.

1. From the top menu, select **File > Import > Movie**.

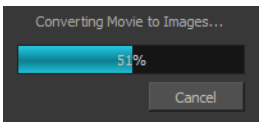
   The Select QuickTime Movie window opens.



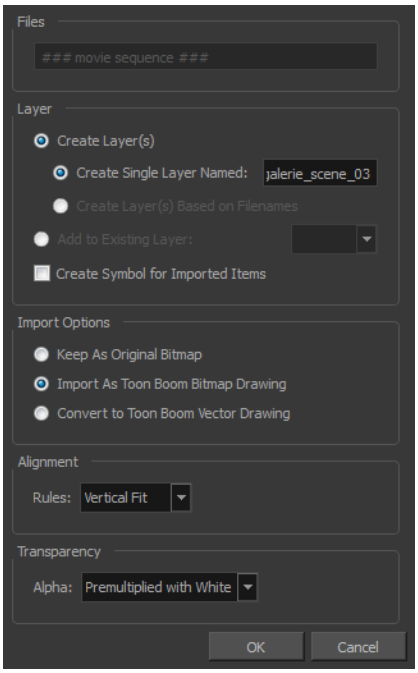
2. Browse to your animatic.



3. Click **Open**.
4. The Import Movie window displays the conversion progress.



When the conversion is complete, the Import Images dialog box opens.



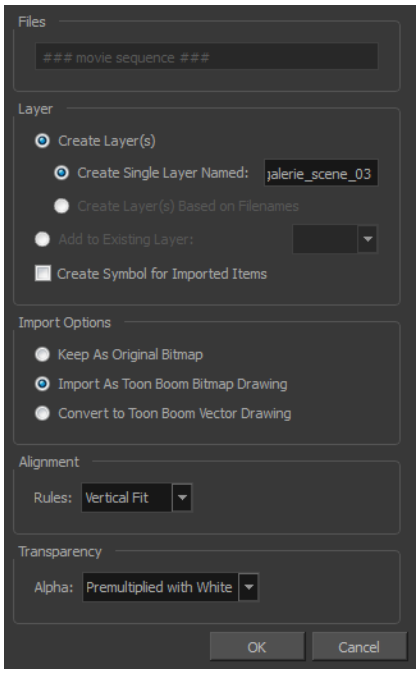
5. Click **OK**.

How to import an image sequence animatic

You can also import an animatic composed of a sequence of bitmap images that were created in a third-party software by using the Import Images feature.

Use the same technique to import layouts and poses that were created on paper and scanned in third-party software.

1. From the top menu, select **Import > Images**.
2. The Import Images dialog box opens.



3. Click **OK**.

How to import a Toon Boom Storyboard Pro animatic

If the animatic was created with Toon Boom Storyboard Pro, you need to create an Export to Toon Boom function from that software. This will create your scenes and import your layout and posing and camera moves. This must be done at the beginning of the production. When you work in Harmony, use the same technique as you would in any QuickTime animatic.

If your project was created using Toon Boom Storyboard Pro, the animatic and camera moves are already set in your scene and you can go ahead and import the background elements.

Importing the Background Elements

Once the layout or animatic is set, you can import the background elements.

There are two types of background elements you can import: bitmap and vector-based.

Bitmap background

You can import external bitmap background elements to your scene using the Import Images dialog box. Be sure to deselect the Convert to Toon Boom Vector Drawing option to retain your elements as bitmaps and preserve your colours.

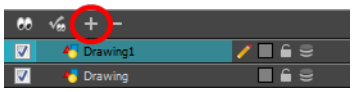
To import a bitmap background, follow the procedure to import an image sequence animatic—see Importing the Animatic on page 371. For in-depth information on importing bitmap images, refer to Chapter 7: How to Import Bitmap Images in the Getting Started Guide.

Creating the Drawing Elements

Before beginning to draw in the Camera view, you must add a drawing element to the Xsheet or Timeline view. You will also need to select the appropriate cell in your drawing element.

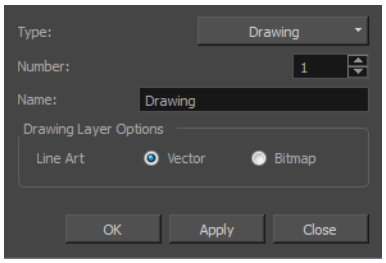
How to add a drawing element from the Timeline view

1. Do one of the following:
   - In the Timeline View menu, select **Insert > Drawing**.
   - In the Timeline view toolbar, click the Add Layers button.

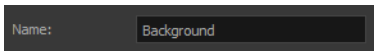
     

   - Press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer dialog box opens.



2. In the Name field, enter a relevant element name.



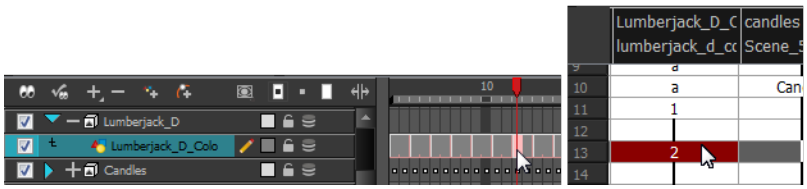
3. Do one of the following:
   - Click **OK** to add the layer and close the dialog box.
   - Click Apply to add the layer and keep the dialog box open to add another layer.
   - Click **Close** to cancel the operation.

   The new drawing element appears in the Timeline and Xsheet Views.

To learn more about creating new elements, see See "Adding New Drawing Elements" on page 96.

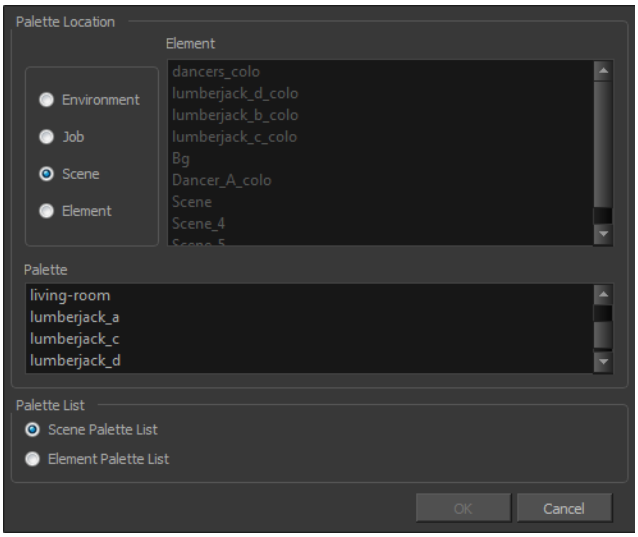
How to add a palette to your element

1. In the Timeline view or Xsheet view, select the cell in the drawing element that you plan to animate.

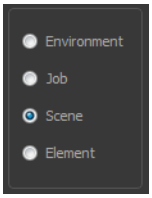


2. Do one of the following:
   - From the Colour view menu, select **Palettes > Link**.
   - Click the Link Palette button.

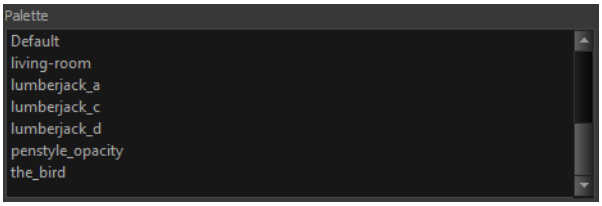
   The Palette Browser window opens.



3. Select the level in which the palette file is stored (usually Element or Scene).



4. Select the palette from the list.



5. Click **OK**.

Creating the Drawings

Once your drawing elements have been created and your palettes are loaded, you are ready to create drawings for your animation. But before creating the drawings, you should familiarize yourself with the following operations.

There are two different ways to create drawings. You can create drawings automatically by letting Harmony do it for you or by typing names (Typing mode) in the Xsheet cells.

How to automatically create a drawing

1. From the Timeline or Xsheet view, select the appropriate cell and start drawing in the Camera view.

   Harmony creates the drawing and names it using the next available number. If there is no existing drawing, then it will be named "1", then "2" and so on—see Paperless Animation Preferences on page 427 to learn more about the Use Current Frame As Drawing Name option.

How to create a drawing using the Typing mode

1. To insert a drawing name in a column cell, double-click on the cell and type the name using alphanumeric values: **0-9**, **a-z**, **underscore** (_) and **dash** (-). By default, if you press the Enter/Return key, the cursor will move on to the next cell. If you press the Esc key, it will quit the typing mode and return to normal mode—see See "Typing Exposure" on page 111 to learn more about the Typing mode.

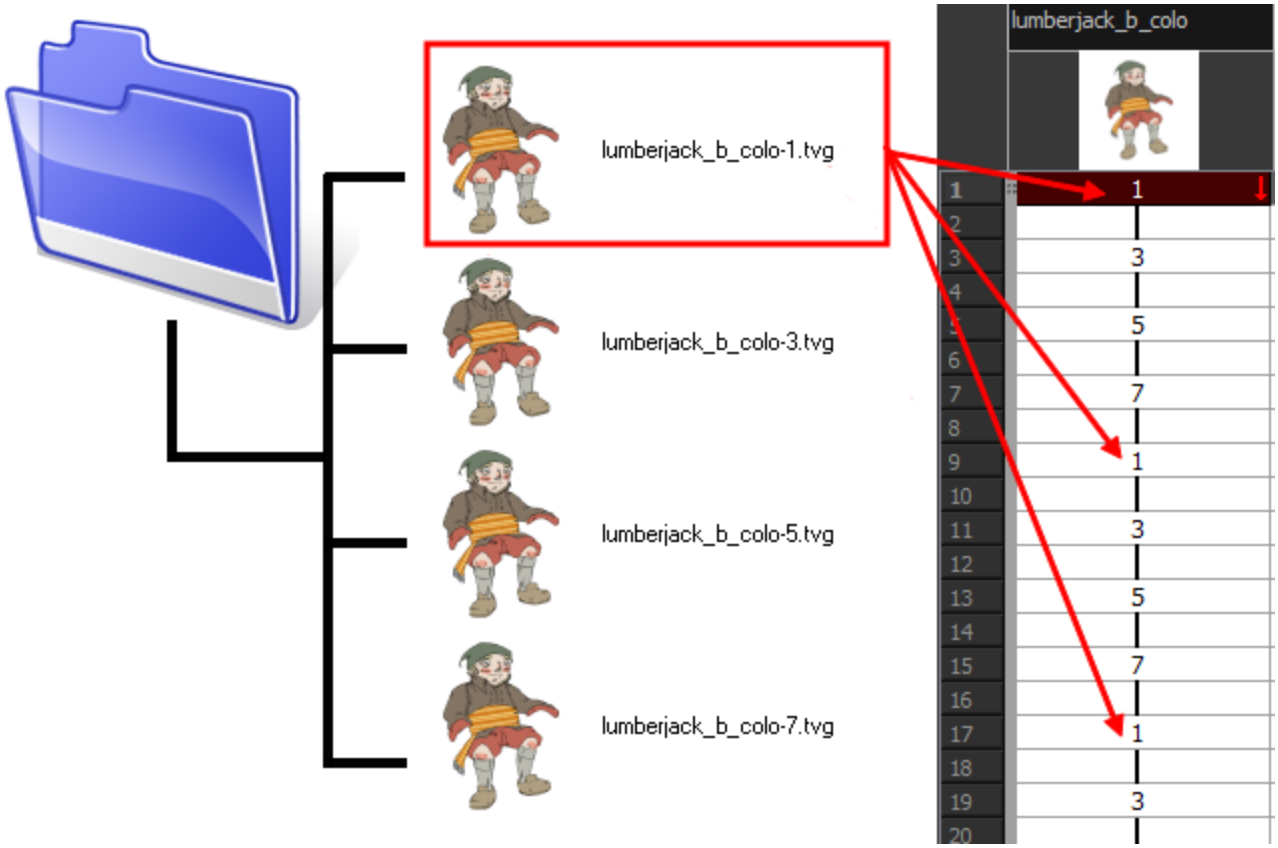
Drawing Concept

When you add a drawing element to your scene, a folder is automatically added to the scene directory. This folder is named the same as the drawing element. Its purpose is to store all the drawings related to this drawing element. For example, when working with cut-out animation, a character can have many hands available. All of these hand drawings will be contained in this folder even if they are not exposed in the Timeline or Xsheet view. In other words, there is always a drawing container associated with a drawing element (layer, column).

All the drawings that were scanned in or created directly in Harmony will be saved in this directory. This means that when a value or drawing name is entered in the column, the Harmony will search the

directory for the corresponding drawing to display. If it is unable to find it, a new drawing will be created. The column cells are not storage places, but simply links to the corresponding directory. If you remove a drawing from the column exposure, it will not be deleted; it is simply not displayed. You can always access it again.

When you create a drawing cycle, all repeated drawings are linked to the same original files. So when you modify, repaint or correct drawing 1, the entire cycle will be updated; every time drawing 1 appears, it is accessed from a single file.



Renaming a Drawing

When you want to rename a drawing, use the Rename Drawing command. Do not double-click on the frame and write a new name, as this will create a new drawing and hide your actual drawing. Note that your drawing will not be deleted; it is still contained inside the element folder. Simply re-enter the name and it will reappear.

To learn how to rename a sequence of cells by prefix or by frame position, see See "Renaming a Drawing" on page 132.

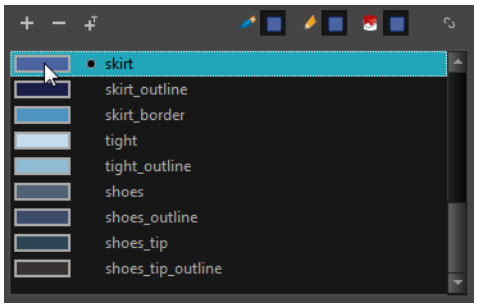
Rough Animation

The first step to complete a traditional paperless animation is the rough construction, which is the skeleton of your animation. You would usually start with the main action. For example, to animate a walk cycle, you will start with the torso motion and the legs. Head, arms and clothes will be added later during the secondary animation.

For a satisfactory animation, complete the main action before adding all the details. If you start animating all the details right away, you will lose a lot of time if you have to make corrections. Your animation will often look too rigid.

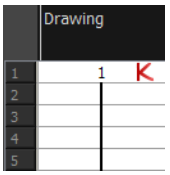
How to animate

1. Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X) to open the Preferences dialog box.
2. Select the **Exposure Sheet** tab.
3. Select the **Use Current Frame as Drawing Name** option. When this preference is enabled, drawings will be named like the frame they are created on (frame number).
4. In the Tools toolbar, select the Brush tool or press Alt + B.
5. In the Colour view, select a colour for the brush. It is a good idea to choose a light colour for your rough animation. This will help you in the task that follows, the clean up process.

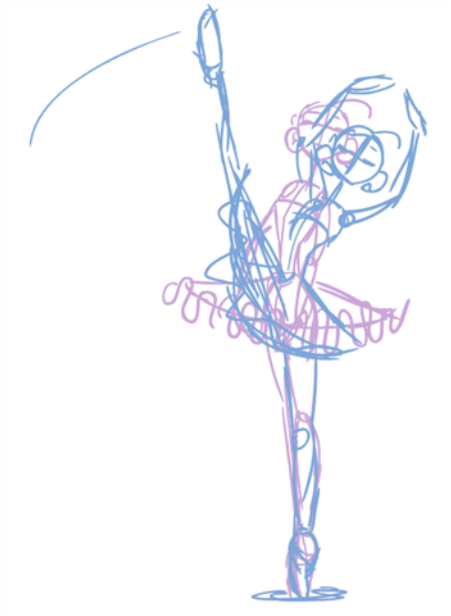


6. In the Timeline or Xsheet view, select the cell where the first drawing will appear.
7. In the Camera view, draw the first key drawing.

8. With your first cell still selected, do one of the following to mark your drawing as a key drawing. This will help you stay organized.
   - In the Mark Drawing toolbar, click the Mark Selected Drawings as Key button.
   - In the Xsheet view, select **Drawings > Mark Drawing As > Key Drawing**.
   - In the Timeline view, select **Drawings > Mark Drawing As > Key Drawing**.



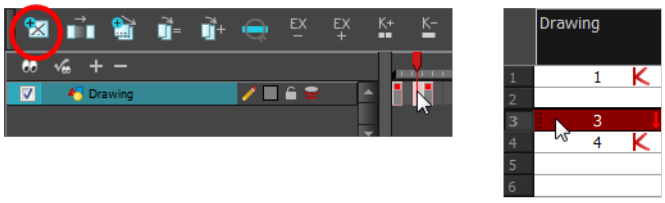
9. In the Tools toolbar, click the Onion Skin button. The Onion Skin feature displays your previous and next drawings as visual references to help you draw your new pose.
10. In the Camera view, press either the Onion Skin Reduce One Drawing or Onion Skin Add One Next Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
11. In the Timeline or Xsheet view, select the cell where your next key drawing will appear.
12. In the Camera view, draw your second key drawing.



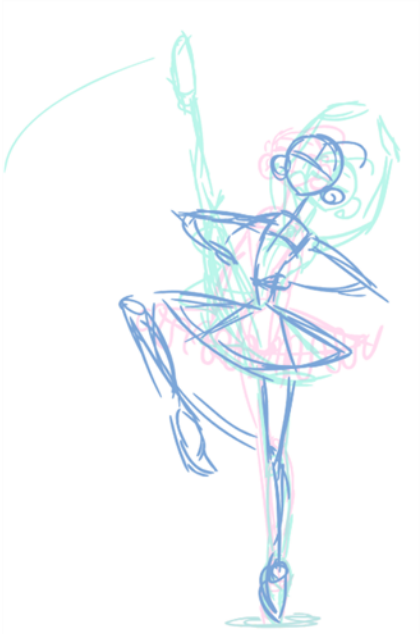
13. In the Xsheet or Timeline view, identify the drawing as a key drawing.

14. In the Xsheet view, select a cell between the two key drawings.

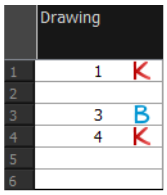
15. From the Timeline View toolbar, click to create an empty drawing or press Alt + Shift + R.
    - In the Xsheet view, right-click and select **Drawings > Create Empty Drawing** or press Alt + Shift + R.



16. In the Camera view, draw your new pose.



17. If necessary, in the Xsheet or Timeline view, identify the new drawing as a key, breakdown or in-between drawing using the Mark Drawing toolbar.



18. In the Timeline or Xsheet view, select a new cell and repeat the previous steps for each new drawing.
19. In the Timeline view, disable the layers you do not want to show during playback by disabling the check box.
20. In the Playback toolbar, click the Loop button if you want the playback to loop.
21. In the Playback toolbar, click the Play button to start the animation.

Secondary Animation

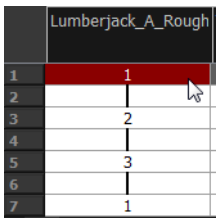
Once your rough animation is correct, you can start adding extra details, such as arms, clothes or hair.

You can add the extra details on the same layer with the same colour or you can also create a new colour so that you can always see your original sketch.

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.

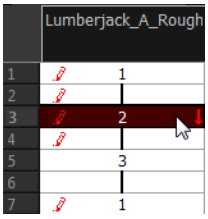
How to create secondary animation on the same layer

1. In the Xsheet View, select the cell in which you want to add new details.

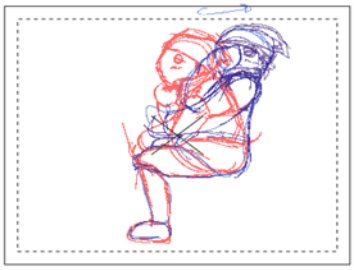


2. In the Colour view, create a new colour (give it the same name and add the prefix *_2* or *_sec*, for example) or select the same rough colour as before.
3. In the Drawing Tools toolbar, select your drawing tool.
4. In the Camera view, draw the secondary animation.

5. Do one of the following:
   - In the Xsheet View, select the next cell in which you want to draw.
   - In the Camera or Xsheet view, press F and G to navigate between your drawings.



6. Do one of the following:
   - In the top, Camera View menu, select **View > Onion Skin > Show Onion Skin**.
   - In the Timeline view menu, select **Onion Skin > Show Onion Skin**.
   - Press Alt + O.
7. In the Camera view, draw the secondary animation.



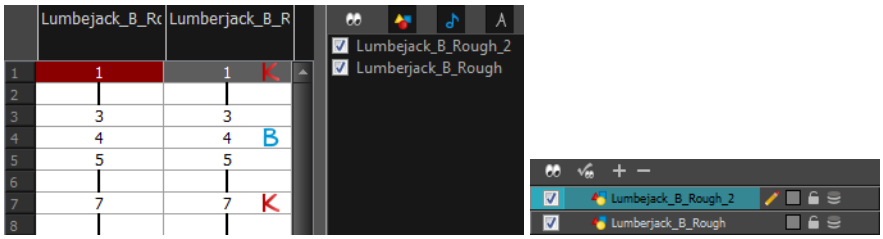
8. Use the Flip and Easy Flipping toolbars to review your animation. You can also use the Playback toolbar to play the animation in real time.

How to create your secondary animation on an extra layer

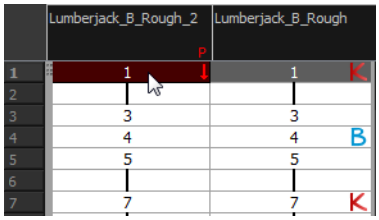
1. In the Xsheet view or Timeline view, add a new drawing element and name it properly.
2. In the Timeline or Xsheet view, select the rough layer's timing.

3. Copy the timing and in the top menu, select **Edit > Paste Special** or Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).
4. Choose Never create drawing files from the options to paste the timing but not the drawing files.

5. Do one of the following:
   - In the Xsheet view, click the Columns List Panel button to view and disable columns.
   - In the Timeline view, on its left-hand side, disable the extra columns.

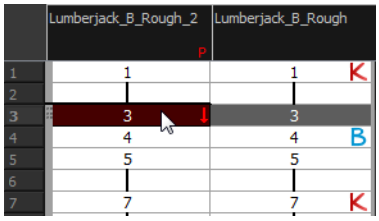


6. In the Xsheet View, select the cell where you want to add the new details.

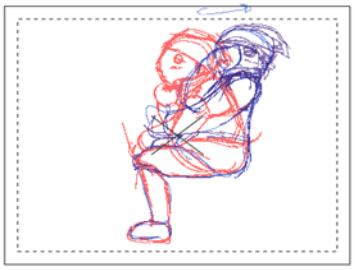


7. In the Colour Palette, create a new colour (give it the same name and add the prefix *_2* or *_sec*, for example) or select the same rough colour as before.
8. In the Drawing Tools toolbar, select your drawing tool.
9. In the Camera view, draw the secondary animation.

10. Do one of the following:
    - In the Xsheet View, select the next cell in which you want to draw.
    - In the Camera or Xsheet view, press F and G to navigate between your drawings.



11. Do one of the following:
    - In the top 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. In the Camera view, draw the secondary animation.



13. Use the Flip and Easy Flipping toolbars to review your animation.

You can also use the Playback toolbar to play the animation in real time.

Bringing Your Animation on Model

If your primary and secondary animation were done as a rough drawing, it is now time to put your drawing on model. This means that you have to review your animation and ensure that every single detail is on model and there is no volume distortion. You can do this directly on the original sketch layer or on a new layer.

If your primary and secondary animation was done quite on model, you can proceed directly to the animation clean-up. If not, proceed the same way as you did for the secondary animation task to bring your animation on model.

Animation Clean-up

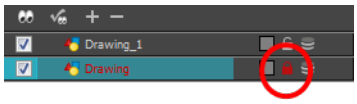
When your rough animation is ready, it is time to clean it up and ink it. The clean-up is also called *tracing*. It consists of tracing solid and clean lines over the rough animation to get closed zones. This is the final paperless animation step before the ink and paint step.

You will need to add a new drawing layer to create your cleaned up drawing. This is the equivalent of adding a sheet of paper and tracing the rough using the animation disk.

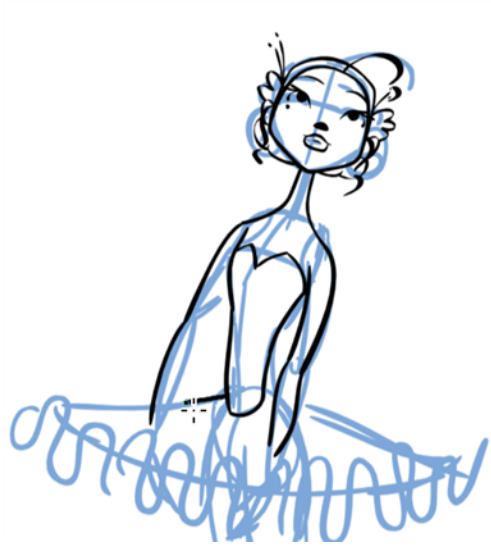
Tracing in a New Layer

How to trace your animation in a new layer

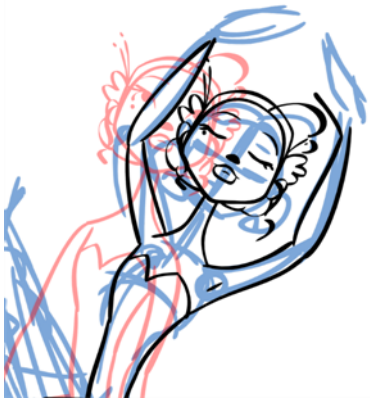
1. In the Timeline View toolbar, click the Add Drawing Layer button.
2. In the Timeline view, click the Lock button of the layer containing your rough animation to avoid selecting the layer in the Camera view.



3. In the Timeline or Xsheet view, in the new layer, select the cell corresponding to the first key drawing of your rough animation.
4. In the Tools toolbar, select the drawing tool of your choice. The Pencil tool is recommended.
5. In the Colour view, select a colour for tracing your animation. A dark bold colour, such as black, would ensure that it contrasts well with the light colour of your rough animation.
6. In the Camera 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 Camera view, press either the Onion Skin Reduce One Drawing or Onion Skin Add One Next Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
9. In the Timeline or Xsheet view, select the next cell corresponding to a rough drawing.
10. In the Camera view, trace your next drawing.



11. Repeat the previous steps for each drawing.

This method allows you to keep the roughs and the cleans intact. You only need to disable the rough layer to prevent it from appearing in the scene.

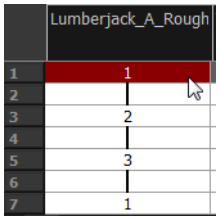
Tracing Directly Over

Tracing or cleaning directly over means to clean your drawing in the same cell. This method avoids adding too many layers to your scene or demanding too much power from a low performance graphics card when using the light table or onion skinning. However, the rough animation has to be removed.

This technique is the equivalent of sketching on paper with a blue animator pencil and then inking directly onto it in black. Harmony allows you to select all the zones using a certain colour from your palette. Then you can trace over your sketch with a different colour. Once you are done, you can select all the zones painted with the sketch colour and delete them, keeping only the clean drawing.

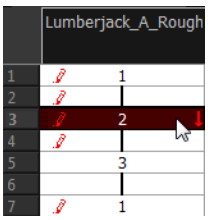
How to trace directly over your rough animation

1. In the Timeline or Xsheet View, select the first rough drawing to clean.

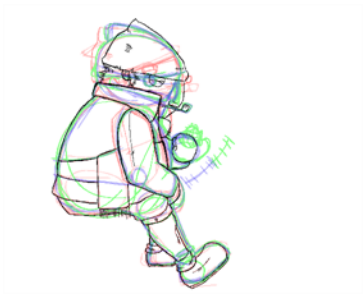


2. Do one of the following:
   - In the Colour view, if you have already made a palette for this character, select its outline colour.
   - Create a new colour in your palette and select it. It is recommended to name it *Clean* or *Trace*.
3. Select a drawing tool.
4. In the Camera View, trace over your rough model.

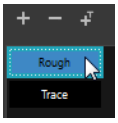
5. Do one of the following:
   - In the Camera view menu, select **View > Onion Skin > Show Onion Skin**.
   - In the Timeline view menu, select **Onion Skin > Show Onion Skin**.
   - Press Alt + O.
6. In the Camera view, press either the Onion Skin Reduce One Drawing or Onion Skin Add One Next Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
7. Do one of the following:
   - In the Xsheet View, select the next cell in which you want to draw.
   - In the Camera or Xsheet view, press F and G to navigate between your drawings.



8. In the Camera view, trace your next drawing.

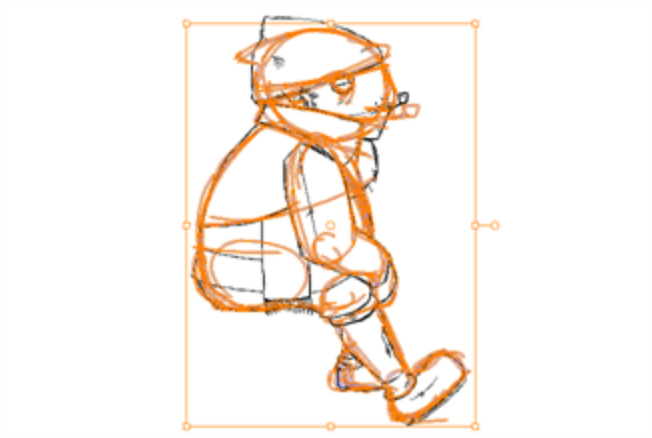


9. Repeat steps 6 and 7 for each drawing.
10. Use the Flip and Easy Flipping toolbars to review your animation. You can also use the Playback toolbar to play the animation in real time.
11. Once the drawings are completed, select the rough colour from the Colour view.



12. Do one of the following:
   - In the Camera View menu, select **Edit > Select Strokes With Current Colour**.

- Press Ctrl + Shift + A (Windows/Linux) or ⌘ + Shift + A (Mac OS X).



13. In the Camera View, Press Delete to delete the selected zone.

14. Repeat steps 10 to 13 for each drawing.

Tools

To understand paperless animation, you must first discover the tools available. There are, of course, drawing tools, but also practical features such as setting a drawing as a key, breakdown or in-between.

When you create hand-drawn animation digitally, there are certain tools you require in order to work efficiently, as you would with an animation table, paper and pencils.

The onion skin and light table are used to preview previous and next drawings, cells, elements and frames. When designing or animating, it is very useful to see your previous drawings. Just as if you were building a cut-out puppet, you want to view other drawing elements to know where to draw the new element.

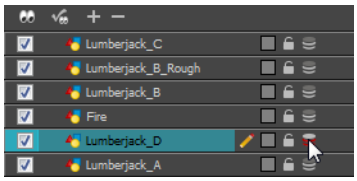
Onion Skin

The Onion Skin tool lets you preview the previous and next drawings. By default, the previous drawings appear in a shade of red and the next drawings are displayed with a shade of green. You can change these colours in the Preferences dialog box.

In the Drawing view, onion skinned drawings are based on the actual number of drawings before and after the current drawing. In the Camera view, onion skinned drawings can be based on actual drawings or the drawings in the frames before and after the current drawing.

How to enable onion skinning

1. Do one of the following:
   - From the top menu, select **View > Onion Skin > Show Onion Skin**.
   - In the Timeline view, click the Onion Skin button on a layer. When enabled, the icon turns red.



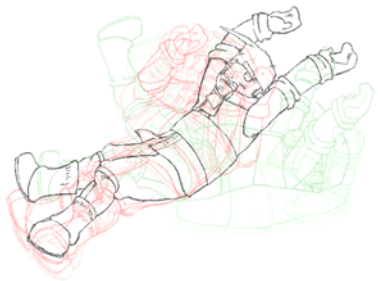
- In the Tools toolbar, click the Onion Skin button.
- Press Alt + O.

How to onion skin by drawing in the Camera view

1. Do one of the following:
   - From the top menu, select **View > Onion Skin > Onion Skinning by Drawing**.
   - In the Camera view menu, select **View > Onion Skin > Onion Skinning by Drawing**.
   - In the Timeline view menu, select **Onion Skin > Onion Skinning by Drawing**.
2. Click an icon, menu operation or keyboard shortcut to edit the display.

View > Onion Skin Menu Command	Tools toolbar icon	Keyboard Shortcut
No Previous Drawing		~
Previous Drawing		!
Previous Two Drawings		@
Previous Three Drawings		#
No Next Drawing		Ctrl + ` (Windows/Linux) or ⌘ + ` (Mac OS X)
Next Drawing		Ctrl + 1 (Windows/Linux) or ⌘ + 1 (Mac OS X)
Next Two Drawings		Ctrl + 2 (Windows/Linux) or ⌘ + 2 (Mac OS X)
Next Three Drawings		Ctrl + 3 (Windows/Linux) or ⌘ + 3 (Mac OS X)

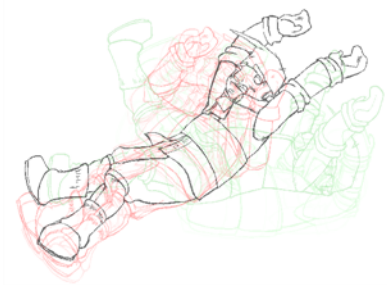
3. In the Camera view, the previous and next drawings appear with the current one.



Onion skinning by frame in the Camera view

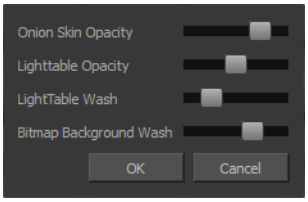
1. If they are not visible, display the blue onion skin markers in the Timeline view by doing one of the following:
   - From the top menu, deselect **View > Onion Skin > Onion Skinning by Drawing**.
   - In the Camera view menu, deselect **View > Onion Skin > Onion Skinning by Drawing**.
   - In the Timeline view menu, deselect **Onion Skin > Onion Skinning by Drawing**.
2. In the Timeline view, drag the blue onion skin markers to select the number of previous and next drawings to display.

3. In the Camera view, the previous and next drawings appear with the current one.



Using the top light to modify onion skin settings

1. In the Camera or Drawing View toolbar, click the Top Light button.
   The Top Light dialog box opens.



2. Adjust the **Onion Skin Opacity** slider to modify the opacity value of the onion skin display.
3. Click **OK**.

Using the Light Table

The light table is used to preview the previous and subsequent active layers in washed-out colours. It is useful for seeing the other layers when designing, animating or cleaning up your animation.

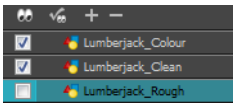
In the Camera view, when the light table is activated, all layers but the currently selected one are shown washed-out. The display returns to the normal mode when the Select tool or a scene setup tool is selected.

Only the currently selected drawing is displayed by default in the Drawing view. When enabling the light table, the other layers appear as a washed-out display and are used as a reference. You can not select or manipulate them.

How to enable the light table

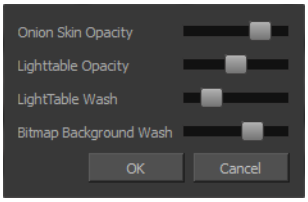
1. Do one of the following:
   - In the top menu, select **View > Light Table**.
   - In the bottom Camera View toolbar, click the Light Table button.
   - Press Shift + L.
2. The drawings for the other layers are displayed as washed-out colours in the Camera view.

3. In the Timeline view, you can deselect the layers you want to hide from the light table.



Using the top light to modify light table settings

1. In the Camera View toolbar, click the Top Light button.
   The Top Light dialog box opens.



2. Adjust the **Light Table Opacity** slider to modify the opacity value of the light table display.
3. Adjust the **Light Table Wash** slider to modify the washed-out value of the light table display.
4. Use the **Bitmap Background Wash** to modify the washed-out value of bitmap images in the scene.
5. Click **OK**.

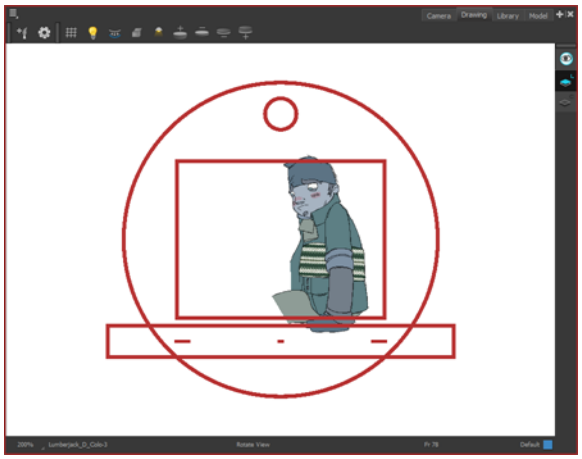
Using the Rotary Table

Use the rotary table (animation disk) to rotate your Camera view while you draw for increased flexibility. The rotary tables in each view are independent; if you switch to the Camera view, you can use the rotary table in that view and rotate it to a different angle without affecting the settings in the other view.

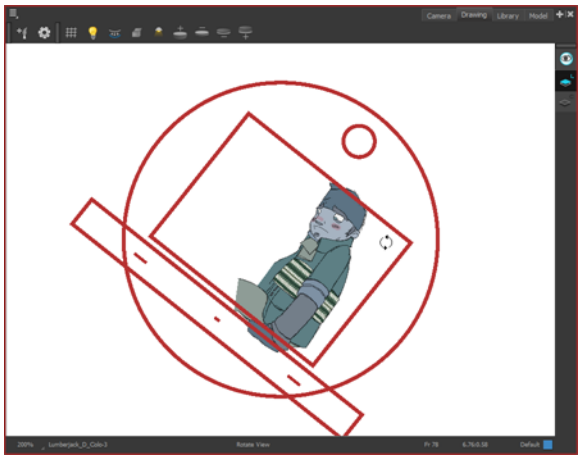
How to use the rotary table

1. Do one of the following:
   - In the Camera view, press Ctrl + Alt (Windows/Linux) or ⌘ + Alt (Mac OS X)
   - In the Tools toolbar, click the Rotate View button.

   The rotary table appears.



2. Rotate the view to the desired angle.



3. Release the keyboard shortcut or switch to a new drawing tool.
4. Press Shift + X to reset the rotation.

Drawing Identification

The Drawing Identification tool can help you stay well organized and save time when identifying key, breakdown or in-between drawings in the Xsheet and Timeline view.

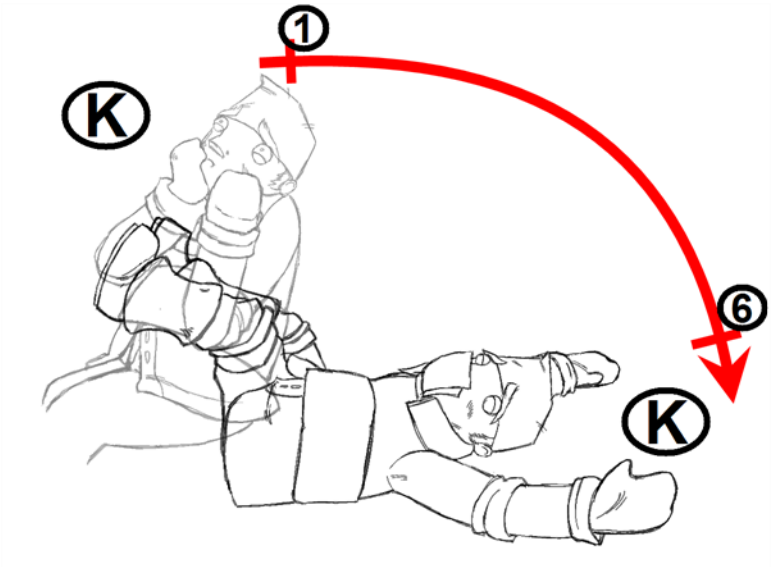
With this tool, you the animator can retain some habits from traditional paper animation, but feel just as comfortable animating in a paperless environment.

When working with several animators, directors, or even other studios, the necessity for retakes will often arise. You can also mark your new drawings as either Retake Key, Retake Breakdown, or Retake In-betweens.

If your production requires that you mark your drawing with a custom marker, you also have the option to create your own.

Key Drawing

A key drawing is a visually significant pose in a movement, often an extreme position. For example, if a character that is sitting down falls on his back, the key poses would be the character sitting and the character on his back. Of course, it may vary from one animation to another.

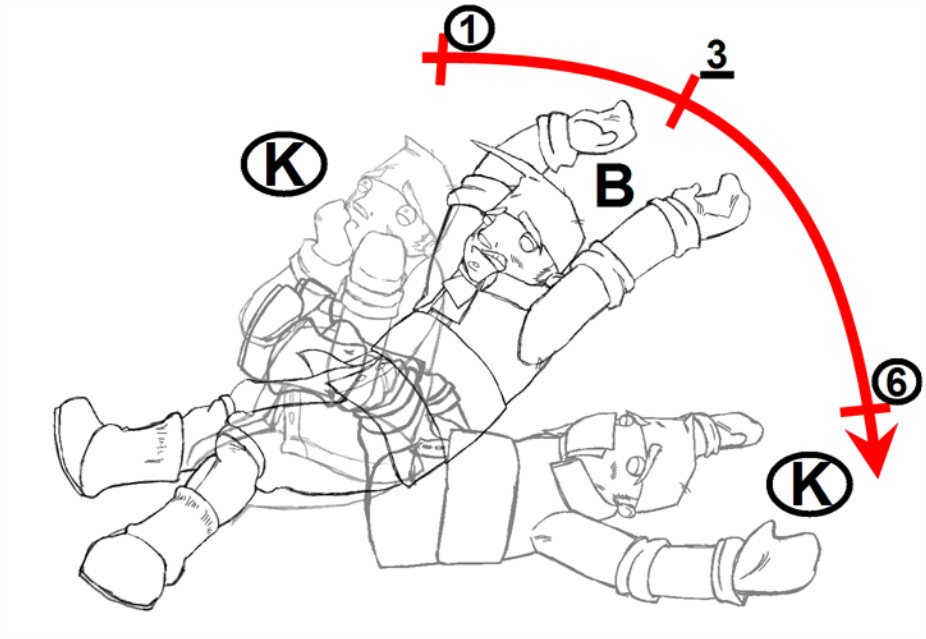


Breakdown Drawing

A breakdown drawing is a pose somewhere between two key poses that better shows the movement. Most animation moves are arcs, such as an arm waving, somebody bending, or a leg walking. All of these movements are rotations. The breakdown pose is used to describe this curve better.

The breakdown drawing is then used to indicate secondary poses, also called the *follow-through*. These actions can be a big stomach jiggle as somebody jumps, a cloak floating behind somebody that is running, or arms moving after the main body action. These moves will generally have a different timing than the primary action. They will mainly start later and finish later. So, the breakdown drawings are used to complete the key drawings.

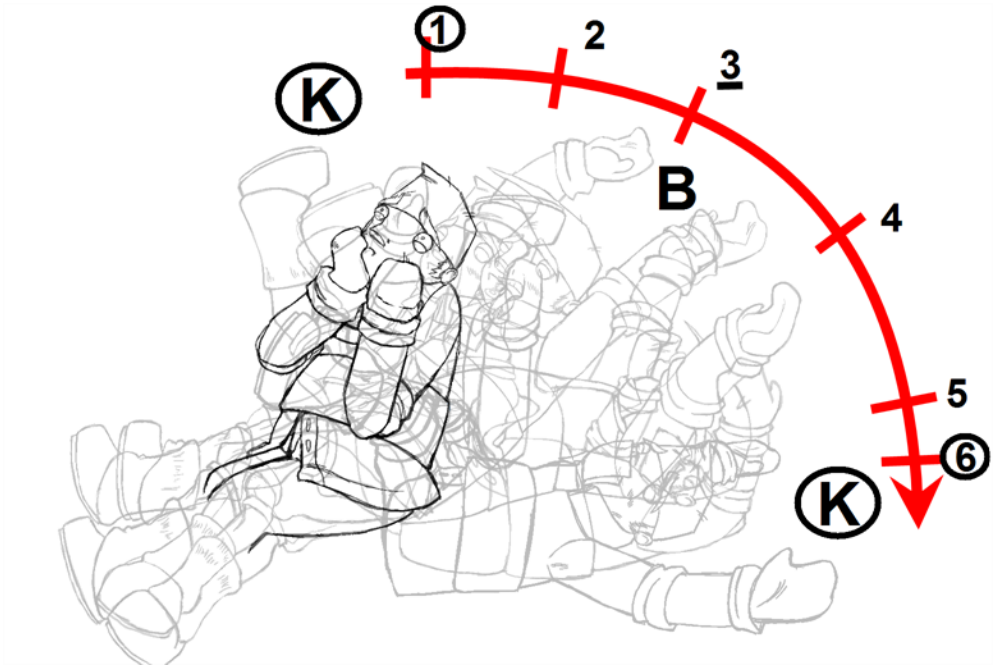
Note that a breakdown drawing is not always placed exactly in the middle of two keys. It will often be closer to one or the other depending on the timing and the action. Also, you can have more than one breakdown pose between two keys.



In-between Drawing

In-between drawings can be considered the filling drawings. Once the timing is established by the key and breakdown poses, the in-between drawings will be added to complete the animation and make it more fluid.

In-betweens do not necessarily need to be placed exactly in the middle of two other poses. They can be placed closer to one or the other to create ease in or ease out of the movement.



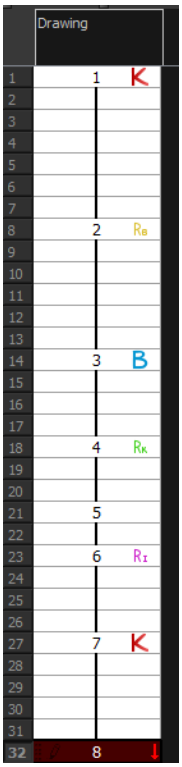
How to display the Mark Drawing toolbar

1. In the top menu, select **Windows > Toolbars > Mark Drawing**.
   The Mark Drawing Toolbar appears.

How to mark a drawing as a key, breakdown or in-between

1. In the Xsheet view or Timeline view, select the cell that you want to mark.
2. Do one of the following:
   - In the Mark Drawing toolbar, select an icon.
   - In the Xsheet or Timeline view menu, select a command in **Drawing > Mark Drawing**.
   - Right-click the selection and select **Drawings > Exposure > Mark Drawing**.

Mark Drawing Commands	Mark Drawing toolbar icon	Colour of marker in Timeline
Key Drawing		Red (default)
Breakdown Drawing		Blue (default)
In-between Drawing		Not applicable
Retake Key		Green
Retake BD		Yellow
Retake IB		Purple



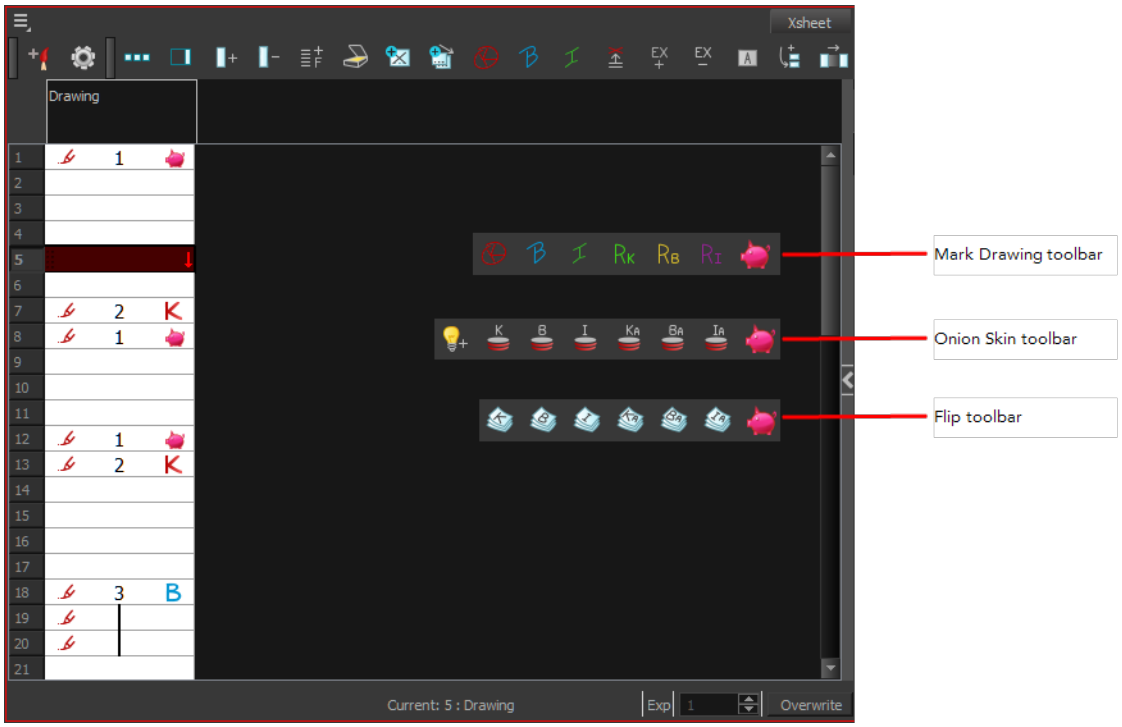
If you mark an in-between drawing, there is no icon displayed in the cell since it is used to remove a key or breakdown marker.

You can change the colour of the key and breakdown markers in the Timeline view. Refer to the Preferences Guide to learn how to customize timeline markers.

You can create your own custom shortcuts for the Drawing Identification options. Refer to the Preferences Guide to learn how to customize keyboard shortcuts.

Custom Marks in the Xsheet View

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 toolbar, but also in the Onion Skin and Flip toolbars.



How to create your 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. Once your icons are ready, go to the Toon Boom Harmony**resources/drawingTypes.d** directory:
4. Paste your icons in the **resources/drawingTypes.d**directory.
5. In that same directory, open the **drawingTypes.xml** file in a text editor.
6. For each custom icon you want to create, add the following line. Ensure it is placed before the closing **</DrawingTypes>** tag.
   - **<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.

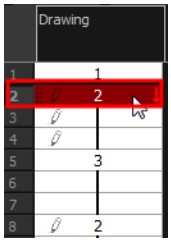
Note that no marker will appear in the Xsheet view for an in-between drawing. The in-between drawing is a regular drawing. The option is mainly used to remove a key or breakdown identification marker from a drawing.

Create Empty Drawing

The Create Empty Drawing command automatically creates a drawing in the selected cell, replacing any drawing that may already be exposed in that cell and the following ones until it meets another drawing or a blank cell.

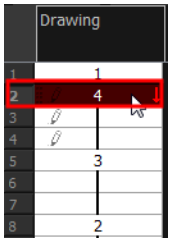
How to create an empty drawing

1. In the Timeline or Xsheet view, select the cell in which you want to create an empty drawing.

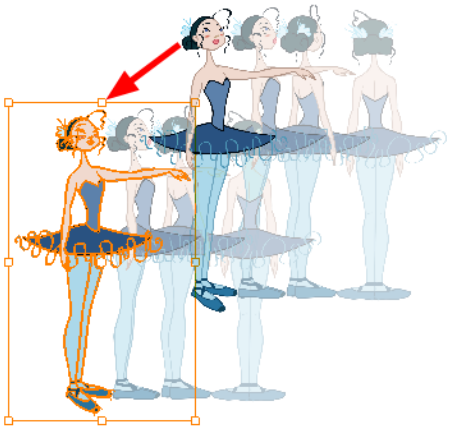


2. Do one of the following:
   - In the Xsheet view menu, select **Drawings > Create Empty Drawing**.
   - In the Xsheet View toolbar, click the Create Empty Drawing button.
   - Press Alt + Shift + R.

   The new drawing is created in the Xsheet and Timeline views.



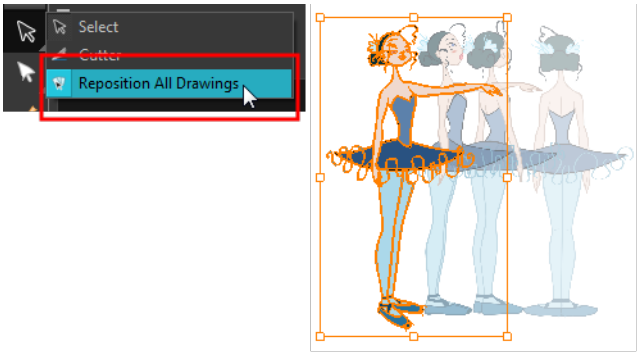
Reposition All Drawings



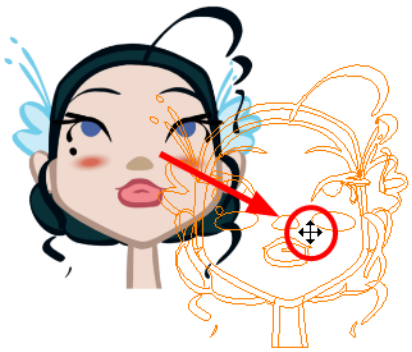
The Reposition All Drawings option is used to reposition, scale, rotate or skew all drawing strokes on every drawing included in a layer.

How to reposition all drawings

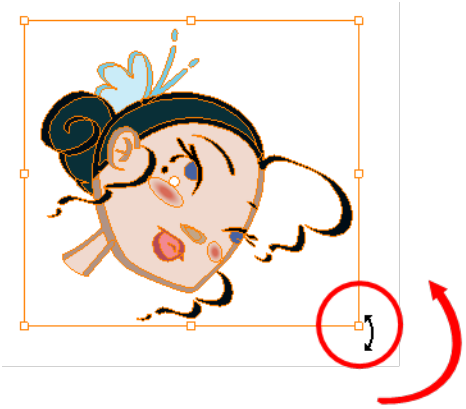
1. From the Tools toolbar, select the Reposition All Drawings tool. This also automatically selects every stroke in your drawing in the Camera view.



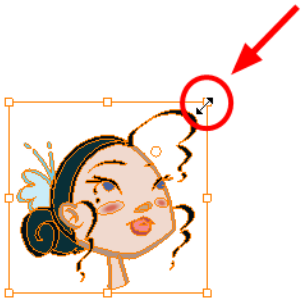
2. Do any of the following:
   - To reposition, click and drag your selection to a new area.



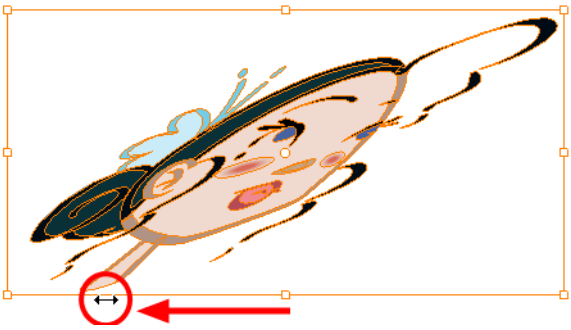
- To rotate, rotate the selection box handle.



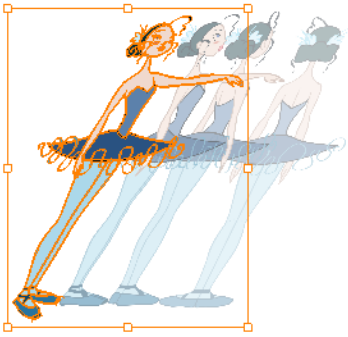
- To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to maintain the selection's ratio.



- 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.



Tips and Tricks

Here are some tips and tricks that you can use to feel more comfortable while drawing:

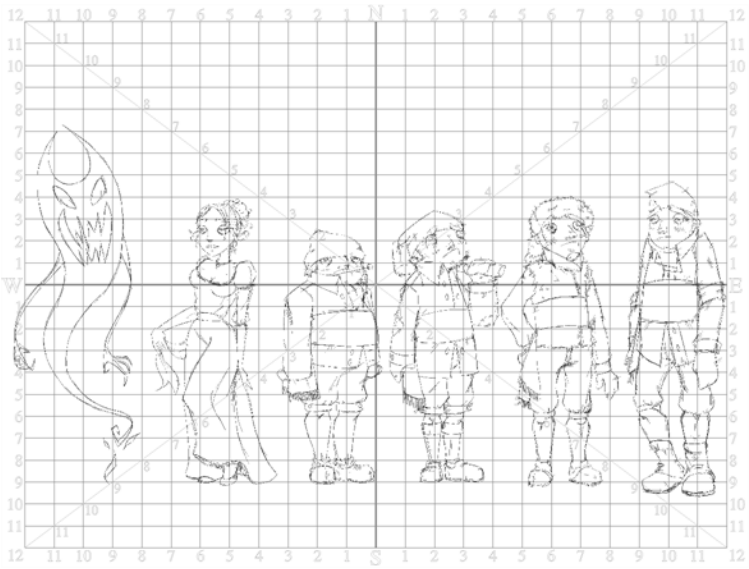
Texture Pen and Transparent Pen

Use the texture pen or a transparent colour for a paper sketch effect.

Pen Tablet

Use a pen tablet to draw with a pen instead of the mouse. This allows for increased dexterity and speed, and accounts for pressure sensitivity.

Field Chart



Toon Boom Harmony also has a field chart included in its Camera view. It is a useful tool to set the height of characters and props.

Advanced Tools

Harmony has many useful features such as the Flipping toolbar, enhanced onion skin, extra drawing layers, and automated matte generation.

This section is divided as follows:

- Flipping and Easy Flipping Toolbars on page 413
- Onion Skin Toolbar on page 415
- Drawing Identification on page 416
- Art Layers on page 420
- Previewing Drawings on page 425

Flipping and Easy Flipping Toolbars

Toon Boom Harmony allows you to rapidly flip through drawings in the Drawing view just as you do with paper drawings. You can flip through the key, breakdown or in-between drawings individually, or view a combination.

How to flip through drawings

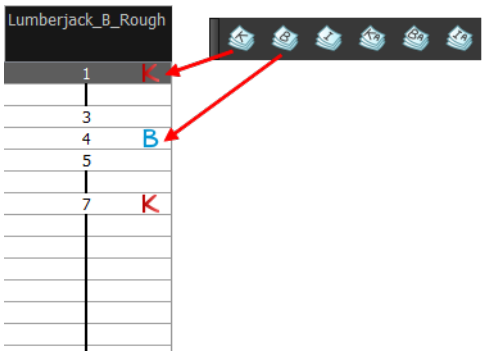
1. Do one of the following:
   - In the top menu, select **Windows > Toolbars > Easy Flipping**.

   - Select **Windows > Toolbars > Flip**.

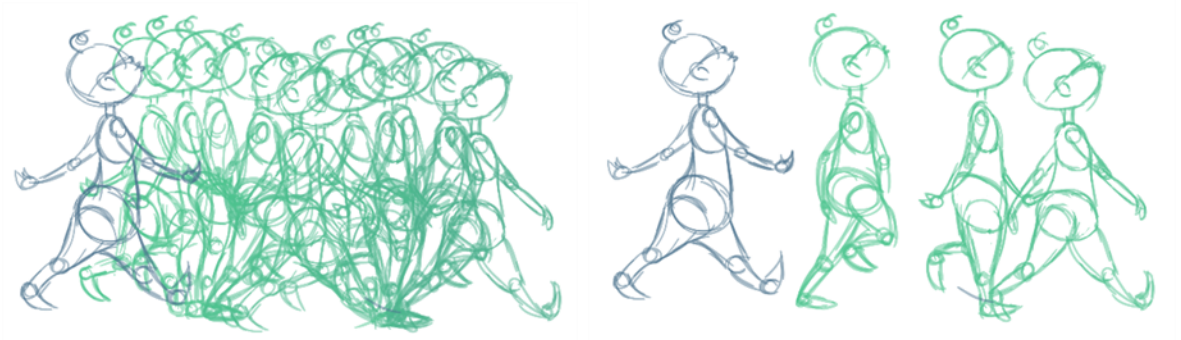
2. In the Easy Flipping toolbar, click the Previous or Next button to see the previous or next drawing of your animation.
3. To display drawings in the first frame after you reach the last frame of your animation, select the **Loop** option.

4. Move the slider to the right to flip forward and to the left to flip backward through your drawings.

   - The further you move the slider to the left or right, the faster the drawings will flip.
5. If you marked some of your drawings, you can flip through the markers and avoid seeing all the in-betweens. Enable the Flip Key, Breakdown or In-between buttons in the Flip toolbar to see only one type or a combination—see See "Drawing Identification" on page 400



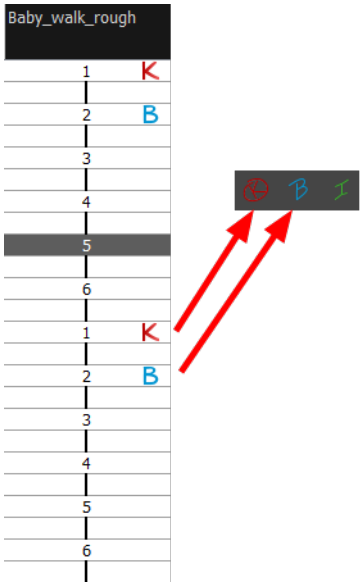
Onion Skin Toolbar



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 Camera view, press either the Onion Skin Reduce One Drawing or Onion Skin Add One Next Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
4. In the Onion Skin toolbar, enable the markers you want to see in your Onion Skin preview.

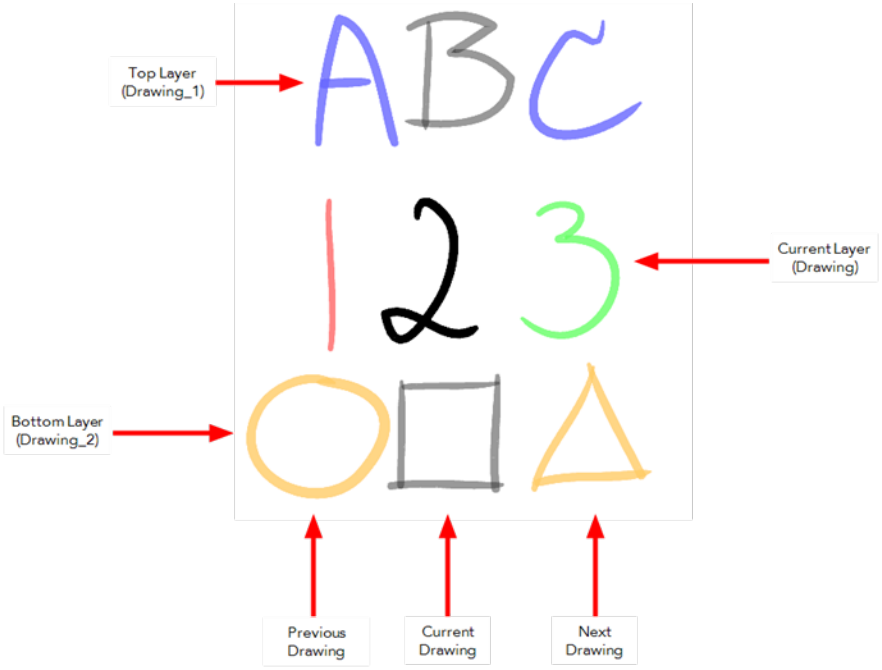


How to enable the onion skin in other layers

You might need to refer to previous and next drawings in other layers than the current one.

1. In the top menu, select **Windows > Toolbars > Onion Skin**.

2. In the Tools toolbar, click the Onion Skin button.
3. In the Camera view, press either the Onion Skin Reduce One Drawing or Onion Skin Add One Next Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
4. 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.

You can change default onion skin display colours in the Preferences dialog box.

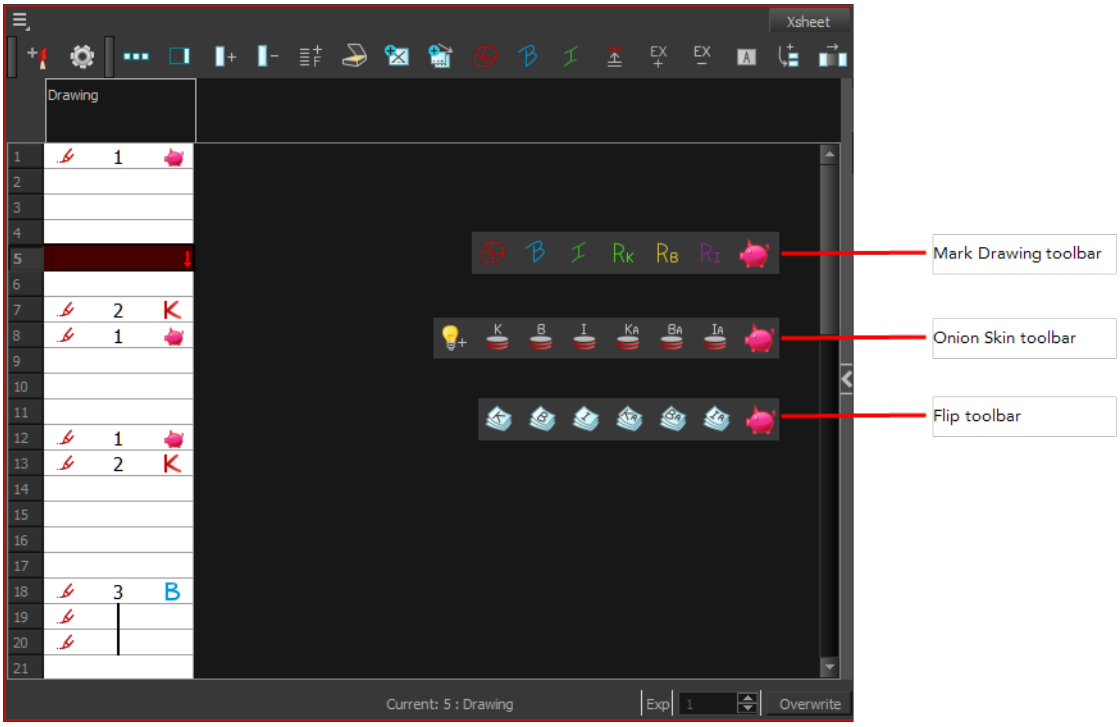
Drawing Identification

In the Xsheet view, you can identify drawings as Key, Breakdown or In-between. This helps to keep the Xsheet well organized while animating.

When working with several animators, directors, or even other studios, the necessity for retakes will often arise. Harmony also gives you the possibility to mark new drawings as either Retake Key, Retake Breakdown, or Retake Inbetweens.

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.

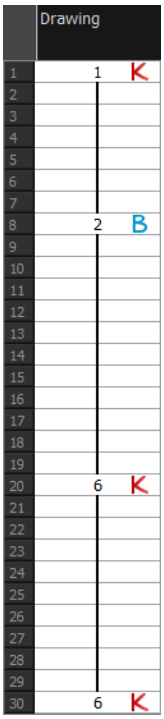


You can create custom shortcuts for the Drawing Identification options in the Preferences dialog box.

How to mark a drawing as Key, Breakdown or In-between

1. From the top menu, select **Windows > Toolbars > Mark Drawing.**
   The Mark Drawing toolbar displays.

2. In the Xsheet view, select the cell you want to identify. This option is not available in the Timeline view.
3. In the Mark Drawing toolbar, click one of these buttons: Mark as Key Drawing, Mark as Breakdown Drawing or Mark as In-between Drawing . In the Xsheet View 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.



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.

If the **`drawingTypes.d`** folder does not exist, you must create it. To do so, copy the **`resources`** folder from the following location.

- Windows: C:/Program Files (x86)/Toon Boom Animation/Harmony 11.1/resources/drawingTypes.d
- Mac OS X: /Applications/Harmony 11.1/resources/drawingTypes.d
- Linux: /usr/local/ToonBoomAnimation/ProductNameVersion/resources/drawingTypes.d

---

Stand-alone

- Windows: **`C:\Users\USERNAME\AppData\Roaming\Toon Boom Animation\Toon Boom Harmony\full-1100-pref\drawingTypes.d`**
- Mac OS X: **`/Users/USERNAME/Library/Preferences/Toon Boom Animation/Toon Boom Harmony/full-1100-pref/drawingTypes.d`**

The Library folder is usually hidden in the Finder. To see all the hidden folders and files, type the following in a terminal window:

```
defaults write com.apple.Finder AppleShowAllFiles YES
```

- Linux: **/home/USERNAME/Toon Boom Animation/Toon Boom Harmony/full-1100-pref/drawingTypes.d/**

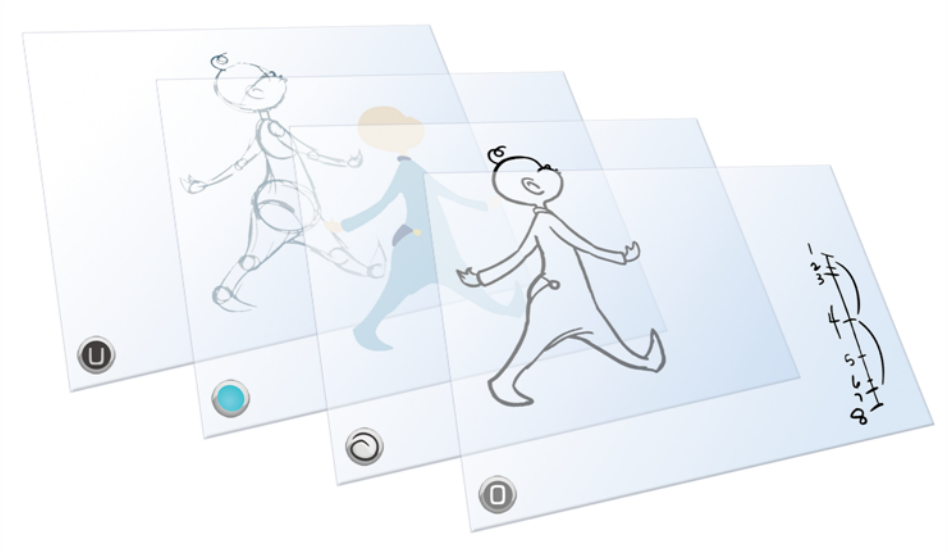
Network

In Harmony Network, the path is global for all users so you must create the folder and place in /USA_DB.

- **/USA_DB/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.

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 timeline layers or Xsheet columns where individual drawings with individual timing are stacked one on top of the other—see Creating Strokes on page 337.

Toon Boom Harmony drawings include two layers in Advanced Art mode.

- Line Art below
- Colour Art on the facing page

You can access the Art layers through the Camera and Drawing views bottom toolbar. By default, the art layers are hidden. Everything is drawn on the Line Art layer. You need to enable the Use Advanced Art Mode option.

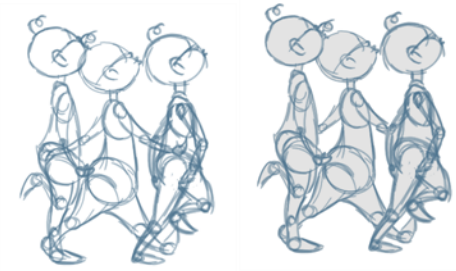
Each layer can be used for separate hand-drawn animation tasks, letting you organize your work and facilitate creation and revision.

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 to somebody 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 making them opaque. This process is fast and easy and allows you to send easy-to-understand movies.

How to enable the Use Advanced Art Mode preference

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

How to switch between drawing layers

1. In the Art Layer toolbar, click the Line Art or Colour Art buttons. When switching art layer, it will allow you to edit the select layer without affecting the other one.

2. Click the Preview All Enabled Art Layers button to display both layers together. Even when the Preview mode is enabled, you will only be able to edit the select art layer. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You will only be able to see the select art layer by itself if you enable the Current Drawing on Top option located in the Camera bottom toolbar.

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 generate a matte

1. Do one of the following:
   - In the Tools toolbar, select the Select tool.
   - Press Alt + S.
2. In the Camera view, select the drawing you want to create a matte for.

You can also apply the operation to all the drawings in the layer at the same time.

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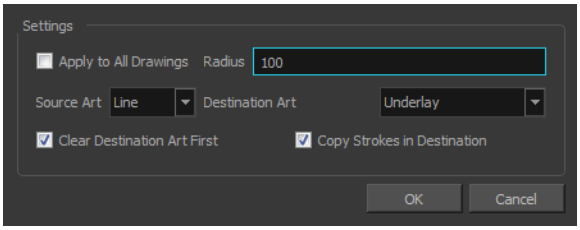
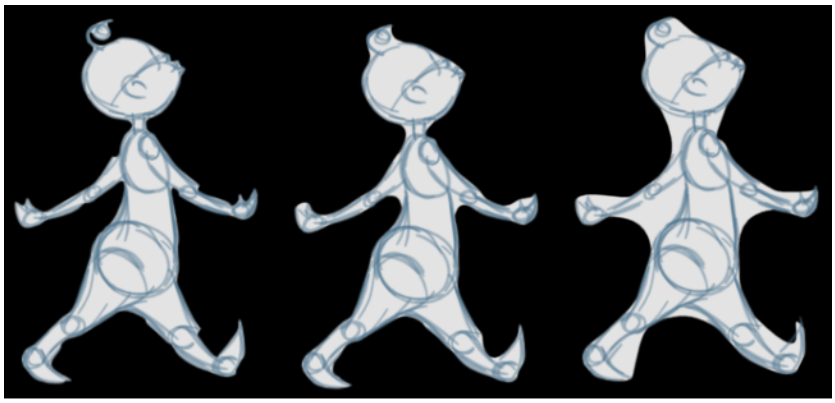
3. Do one of the following:
   - In the Camera view menu, select **Drawing > Generate Auto-Matte**.

   The Auto-Matte dialog box opens.



4. If you want to create a matte for all the drawings included in your layer, select the **Apply to Multiple Drawings** option.
5. Depending on how precise or rough your line is, increase or decrease the radius value. The lower the value is, the closer to your lines' contours the matte will be shaped. The higher the value is, the looser the matte will be shaped.



6. In the Source Art menu, select the layer from which you want the matte created: **Line Art** or **Colour Art**.
7. In the Destination Art menu, select the layer you want the matte to be created on: **Line Art** or **Colour 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**.

Previewing Drawings

It is a good idea to preview your drawings to check your animation ink and paint, verify that there are no colour mistakes, or to play your animation in real time. You can do this by scrolling through your drawings or pressing F and G. You can also use the Preview option in the Xsheet view.

How to preview drawings from the Xsheet view

1. Save your scene.
2. Do one of the following:
   - From the top menu, select **File > Save**.
   - Click the Save button.
   - Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
3. In the Xsheet view, select the range of drawings or the whole column to preview.
4. In the Xsheet view menu, select **View > Preview Selected Drawings**.

   Toon Boom Play opens.
5. In the Play window, press the Play button to play back your drawings.
6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.

Paperless Animation Preferences

When working in paperless animation, there are some preferences you can set in the Preferences dialog box to make your work easier and faster.

How to open the Preferences dialog box

- Windows/Linux: Select **Edit > Preferences**.
- Mac OS X: Select **Stage > Preferences**.
- Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

Task	Tab	Section	Option, button or parameter
You can change the colours for the onion skin and other elements. You can also change the colour of the key and breakdown markers displayed in the Timeline view.	General	Colours	Edit Colours
	Drawing	Colours	Edit Colours
When naming your drawings in the Xsheet or Timeline view, you can set a preference to name your drawings based on their frame positions, which facilitates the creation of key poses (for example, a drawing created on frame 1 is named "1", a drawing created on frame 5 is named "5").	Exposure Sheet	Drawing Creation	Use Current Frame as Drawing Name
In the Camera view, you can work in Line Art and Colour Art once you enable the Advanced Art mode.	Advanced	Advanced Options	Support Line and Colour Arts

Refer to the Preferences Guide for complete descriptions of each option, button and parameter.

Chapter 1: 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 and PDF files. You can also scan your images and import them as bitmap or vectorize them.

This chapter contains the following topics:

- Importing Bitmap Images on the next page
- Importing PSD Files as Separate Layers on page 441
- Importing QuickTime Movies on page 456
- Custom Vectorization Parameters on page 458

For sound import, refer to Importing a Sound File on page 474.

Importing Bitmap Images

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 formats: JPEG, BMP, PNG, TGA, PSD, TIFF, SGI, TVG, OMF, PAL, SCAN.

When importing images and 3D models and linking images, your settings are saved in your user settings.

In this section, you will cover the following topics:

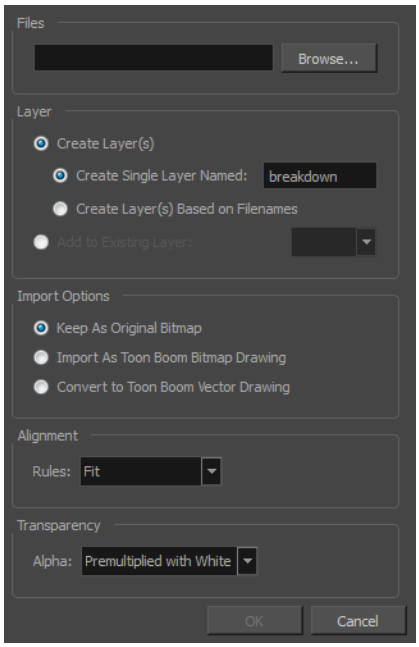
- Importing a Bitmap Image Without Vectorization below
- Importing and Vectorizing Bitmap Images on page 438

Importing a Bitmap Image Without Vectorization

How to open the Import Images dialog box

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**.

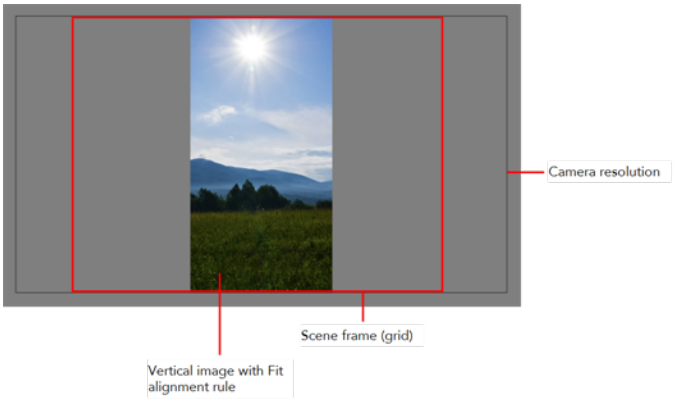
   The Import Images dialog box opens.

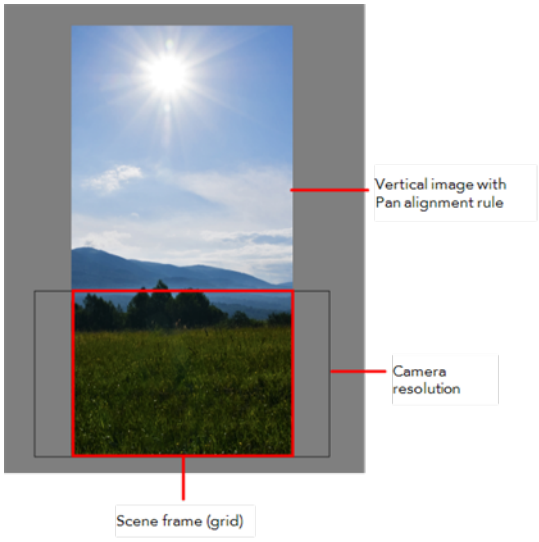


How to import a bitmap image in its original format

1. In the Files section of the Import Images dialog box, click **Browse** to find and select one or more images on your computer.
2. Decide if the bitmap image will go on a new layer or an existing layer. To add the bitmap image to a new layer, go to step 4. To add the bitmap image to an existing layer, go to step 5.
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 layer you can name.
   - **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers name "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three filenames, all three drawings will be inserted in the new layers.
4. Select the **Add to Existing Layer** option if you want to place the bitmap image on a layer you select from the list. If only vector layers are available in your scene, they will not be displayed in the list. You can choose to encapsulate the bitmap in a symbol by selecting the **Create Symbols for Imported Items** option.
5. In the Import Options section, select the **Keep As Original Bitmap** option. 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 be scaled to the point where all its individual pixels become visible. There are three options available in the Alignment section:

Parameter	Description
Fit	Enlarges or shrinks (but not distorts) the image height to match the full height of the scene grid.

	 If the image orientation is landscape, this will enlarge or shrink (but not distort) your image width to match that of the scene grid. Note that the Fit alignment rule equals the Center Fit rule in the layer properties.
Pan	This is the opposite of the Fit parameter. If the image orientation is portrait, its width will be made to match the width of the scene grid. As a result, part of the image's height will extend beyond the height of the frame. This can be useful if you want to make your background move up and down, or from left to right to make it appear as if the camera is panning, or to actually perform a camera pan.

<table>
<tr>
<td></td>
<td>


The opposite will apply to a landscape image. Its height will be fit to the scene grid, therefore it is possible that the image will extend beyond the scene grid's boundaries.

Note that the Pan alignment rule equals the Center First Page rule in the layer properties.</td>
</tr>
<tr>
<td>Project Resolution</td>
<td>Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution.

 </td>
</tr>
</table>

	Note that the Project Resolution alignment rule is equal to the As Is rule in the layer properties.

6. In the Transparency section, select one of the following from the Alpha menu:

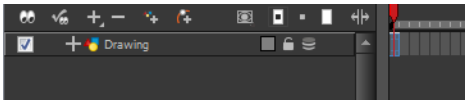
Parameter	Description
Premultiplied with White	Individual pixels at the edge of an image are blended with white.
Premultiplied with Black	Semi-transparent pixels in the original image are blended with black.
Straight	Pixels at the edge of an image are blended with black, white and greys.
Clamp Colour 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, 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.

7. Click **OK**.

Adding Images to a Bitmap Layer

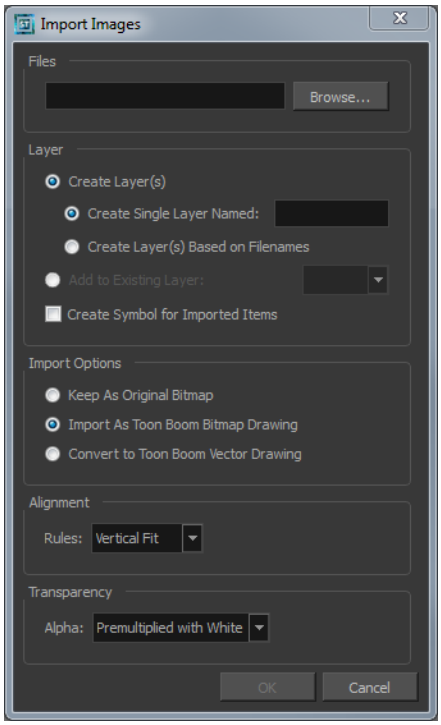
How to add more bitmap images to an existing bitmap layer

1. In the Timeline view, if the bitmap image is contained in a symbol, double-click on the bitmap symbol cell to edit the symbol. Otherwise, if the bitmap image is on a bitmap layer, leave it as is.

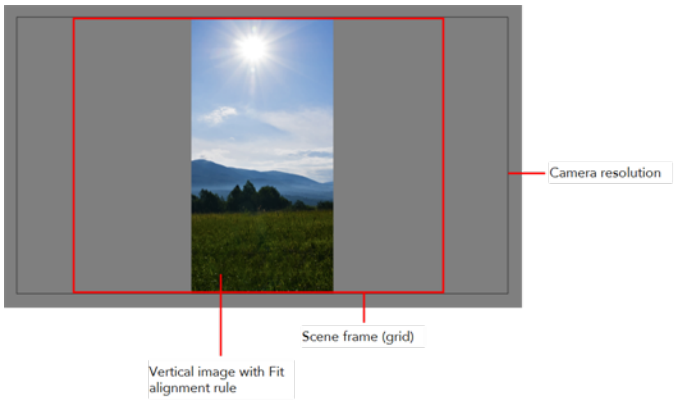


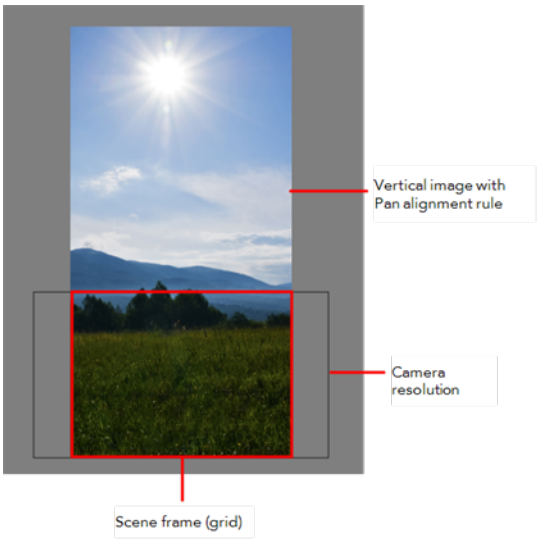
2. If necessary, in the Timeline view, pull on the red bracket to extend the exposure.
3. From the top menu, select **File > Import > Images** or click the Import Image button.

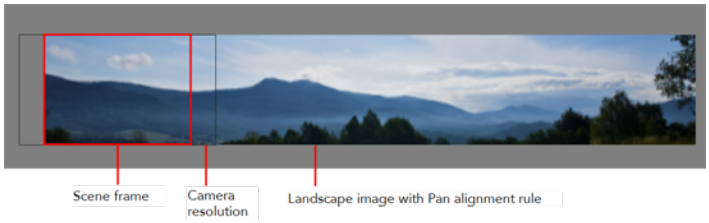
   The Import Images dialog box opens.



4. Click **Browse** to find and select one or several images on your computer.
5. In the Layer section, select the **Add to Existing Layer** option and select an existing bitmap layer from the menu.
6. Deselect the **Create Symbol for Imported Items** option.
7. In the Import Options section, select the **Keep As Original Bitmap** option. 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. There are three options available in the Alignment section:

Parameter	Description
Fit	Enlarges or shrinks (but not distorts) the image height to match the full height of the scene grid.  If the image orientation is landscape, this will enlarge or

	shrink (but not distort) your image width to match that of the scene grid. Note that the Fit alignment rule equals the Center Fit rule in the layer properties.
Pan	This is the opposite of the Fit parameter. If the image orientation is portrait, its width will be made to match the width of the scene grid. As a result, part of the image's height will extend beyond the height of the frame. This can be useful if you want to make your background move up and down, or from left to right to make it appear as if the camera is panning, or to actually perform a camera pan.  The opposite will apply to a landscape image. Its height will be fit to the scene grid, therefore it is possible that the image will extend beyond the scene grid's boundaries.

	 Note that the Pan alignment rule equals the Center First Page rule in the layer properties.
Project Resolution	Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution. Note that the Project Resolution alignment rule is equal to the As Is rule in the layer properties.

8. In the Transparency section, select one of the following from the Alpha menu:

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.

9. Click **OK**.

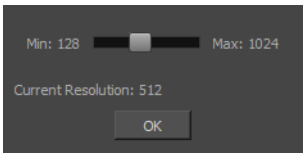
Bitmap Image Quality

If the bitmap images that you imported look blurry or slightly pixelated, you can clean up the image. You can change the quality of the preview in the Camera view and it will not affect the final render.

How to change the bitmap image quality

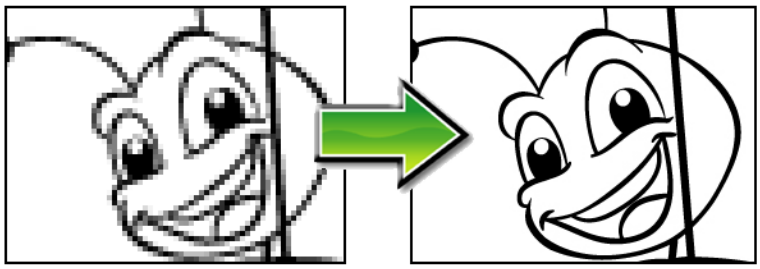
1. In the Camera view, double-click on the bitmap image to enter its symbol if the image is encapsulatesd or simply select the bitmap image layer in the Timeline view if it is not.
2. From the Camera menu, select **View > Bitmap File Quality** or press Ctrl + Q (Windows/Linux) or ^ + Q (Mac OS X).

   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 and Vectorizing Bitmap Images

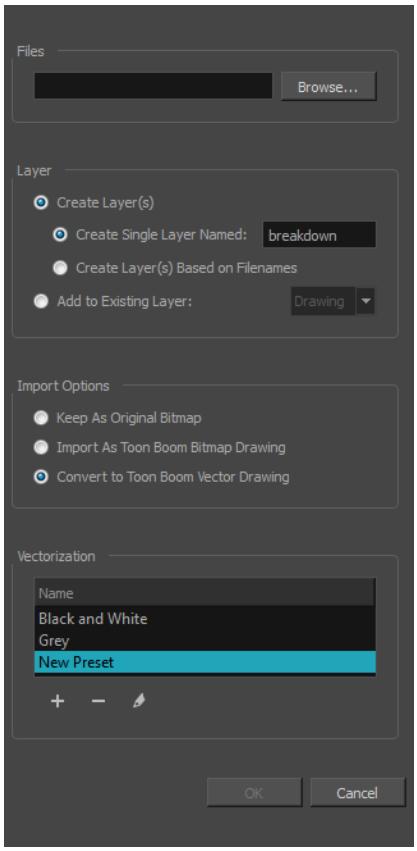


You can turn bitmap images into vector drawings, while maintaining the sketchiness of a pencil line or into vector images with a bitmap fill. Both options can add life to an animation, which straight vectorization with smoothing does not usually afford.

How to import and vectorize a bitmap image

1. From the top menu, select **File > Import > Images** or click the Import Image button in the File toolbar.

   The Import Images dialog box opens.



2. Click **Browse** to locate images.
3. In the Layer section, decide if the scanned or imported image will be placed on a new layer or existing layer.
   - **Create Layer**: Scans or imports the image into a new layer. Select one of the following options:

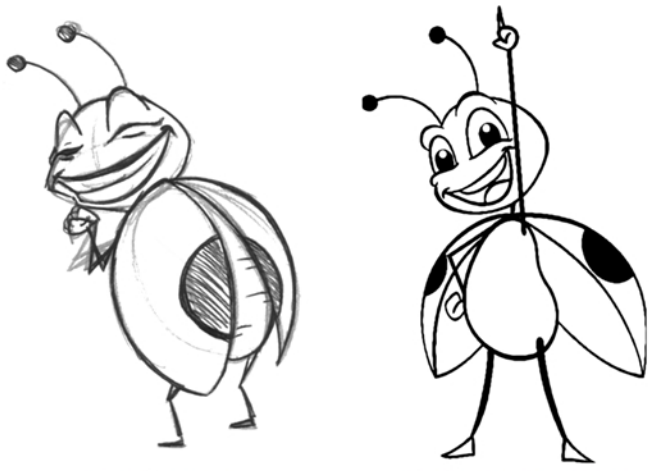
Parameter	Description
Create Single Layer Named	Creates a layer you can name.
Create Layer(s) Based on Filenames	Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers named "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three file-names, all three drawings will be inserted in the new layers.

   - **Add to Existing Layer**: Scans or imports the image into an existing layer. Select a layer from the Layer list. You must scan into the same layer type if you are using an existing layer.
   - **Create Symbol for Acquired Items**: Encapsulates the bitmap image in a symbol. To mix bitmap images with vector drawings on the same layer, the bitmap image must be encapsulated in a symbol and vice versa. Symbols will also be automatically added to the Symbol folder in the Library view.
4. In the Import Options section, select the **Convert to Toon Boom Vector Drawing** option.
5. In the Vectorization section, decide whether you want to import your image in colour, black and white, or grey.In the Vectorization section, decide whether you want to import your image in colour, black and white, grey, or if you want to add a new preset.

- **Black and White**: Vectorizes drawings as a solid black line; creates a 100% vector-based drawing.
- **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.
- **New Preset**: The New Preset + button lets you create custom vectorization parameters via the Vectorization Parameters interface.

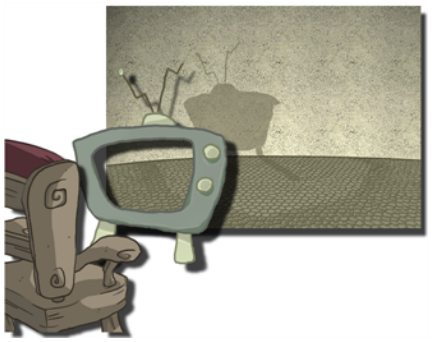
The vectorized images are painted with the Vectorize Line colour swatch from the colour palette.

6. Click **OK**.



A symbol or new layer contains the vector drawing. For images contained in a symbol, double-click on the image's first cell in the Timeline view to enter the symbol so you can edit the image.

Importing PSD Files as Separate Layers

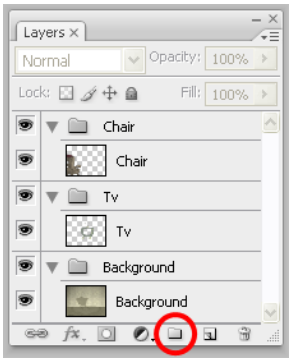


PSD files (a format exportable exclusively from Adobe Photoshop) are unique in that they are able to retain multiple layers. This is advantageous as the image remains fully editable in terms of any colour correction, effects, masking, transparency, or compositing that were made to the PSD file in Adobe Photoshop.

Note that your PSD image file must be set to RGB mode within Adobe Photoshop prior to being imported into Harmony.

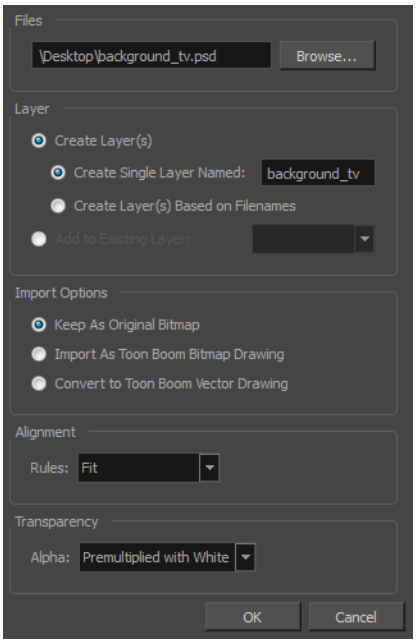
How to import the separated layers of a PSD file

1. Organize your Adobe Photoshop 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.



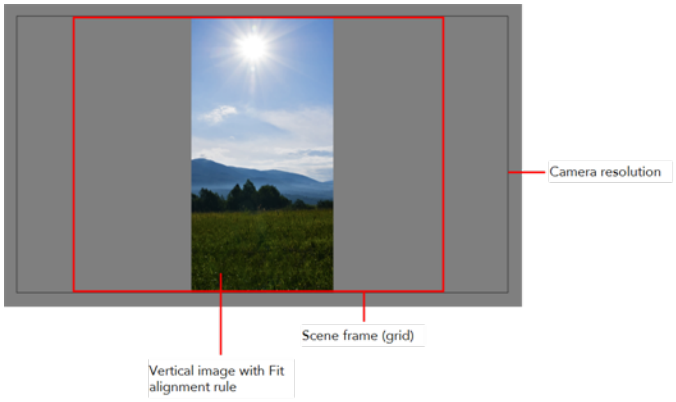
2. In Harmony, go to the top menu and select **File > Import > Images** or click the Import Image button.

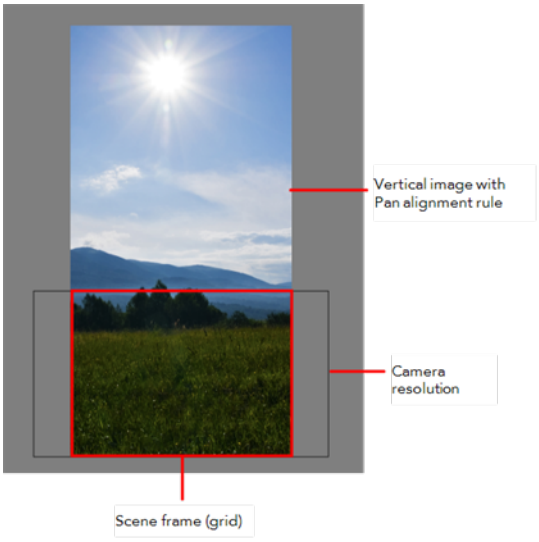
   The Import Drawings dialog box opens.



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 layer you can name.
   - **Create Layer(s) Based on Filenames:** Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers name "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three filenames, all three drawings will be inserted in the new layers.
5. In the Import Options section, select one of the following:
   - **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. There are three options available in the Alignment section:

Parameter	Description
Fit	Enlarges or shrinks (but not distorts) the image height to match the full height of the scene grid.

	 If the image orientation is landscape, this will enlarge or shrink (but not distort) your image width to match that of the scene grid. Note that the Fit alignment rule equals the Center Fit rule in the layer properties.
Pan	This is the opposite of the Fit parameter. If the image orientation is portrait, its width will be made to match the width of the scene grid. As a result, part of the image's height will extend beyond the height of the frame. This can be useful if you want to make your background move up and down, or from left to right to make it appear as if the camera is panning, or to actually perform a camera pan.

<table>
<tr>
<td></td>
<td>


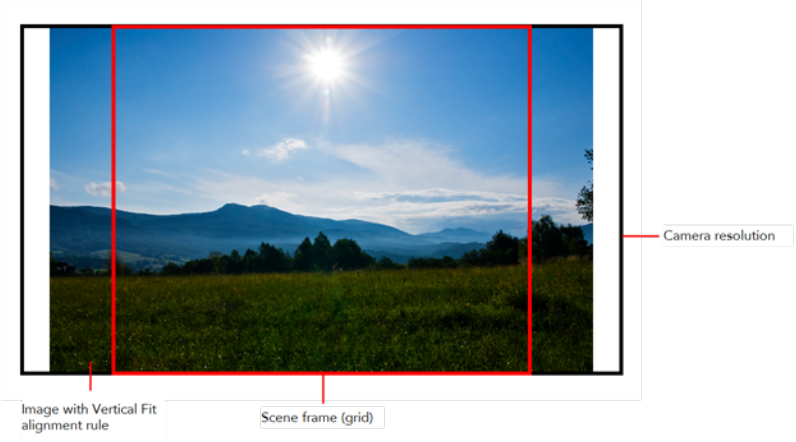
The opposite will apply to a landscape image. Its height will be fit to the scene grid, therefore it is possible that the image will extend beyond the scene grid's boundaries.

Note that the Pan alignment rule equals the Center First Page rule in the layer properties.</td>
</tr>
<tr>
<td>Project Resolution</td>
<td>Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution.

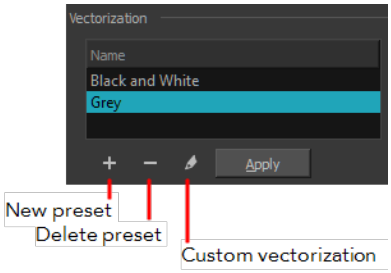
 </td>
</tr>
</table>

	Note that the Project Resolution alignment rule is equal to the As Is rule in the layer properties.

- **Import As Bitmap Drawing**: Imports a drawing into a vector layer where you can edit the image using the drawing tools. In the Alignment section, select one of the following:

Parameter	Description
Vertical Fit	Enlarges or shrinks (but not distort) to your image height to match the full height of the scene frame (alignment grid). 
Horizontal Fit	Enlarges or shrinks (but not distort) to your image height to match the full width of the scene frame (alignment grid).
Actual Size	Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution.

- **Convert to Toon Boom Vector Drawing**: Imports a drawing and converts it to a Toon Boom vector drawing. In the Vectorization section, select one of the following:



Black and White: Vectorizes drawings as a solid black line; creates a 100% vector-based drawing.

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 Creating a Vectorization Style on page 466.

6. Decide whether to select **Vectorize Imported Items** option.

If you decide to use the Vectorize Imported Items option, see Importing and Vectorizing Bitmap Images on page 438 to learn more about vectorization settings.

If you disable the Vectorize Imported Items options, the Transparency and Alignment settings will appear in place of the Vectorization settings—see Importing a Bitmap Image Without Vectorization on page 430.

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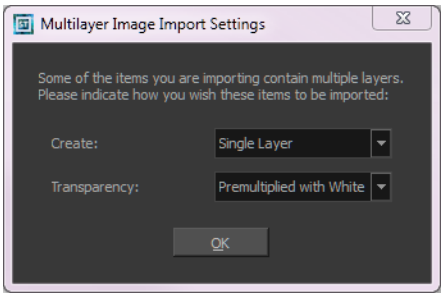
7. Click **OK**.

The Multilayer Image Import Settings dialog box opens.



8. 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.
9. From the Transparency menu, select one of the following if applicable:

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.

10. Click **OK**.

    Your image appears as separate layers in the Timeline view, corresponding to the PSD layer group folders.

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.

Scanning Images

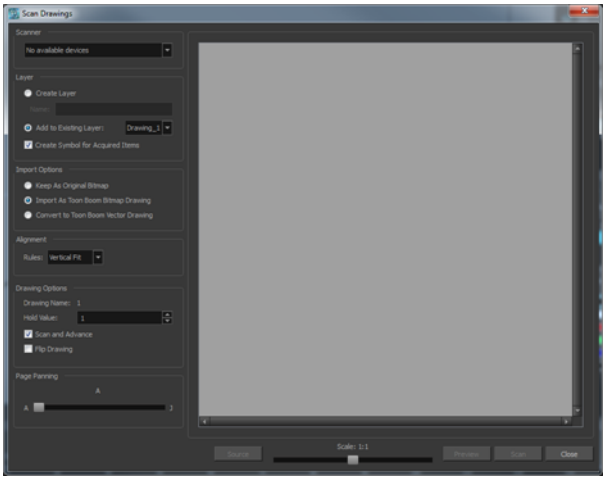
Toon Boom Harmony can receive images from any TWAIN device such as scanners and digital cameras. These images can either be loaded into your scene as bitmaps or converted into vector-based images that can be edited using Toon Boom Harmony.

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 open the Scan Drawings window and set your scanner

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 is 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.

How to scan an image in its original format

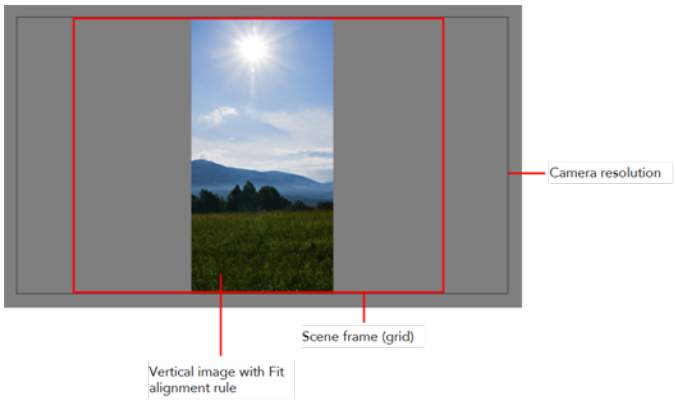
3. In the Layer section, decide if the scanned or imported image will be placed on a new layer or existing layer.

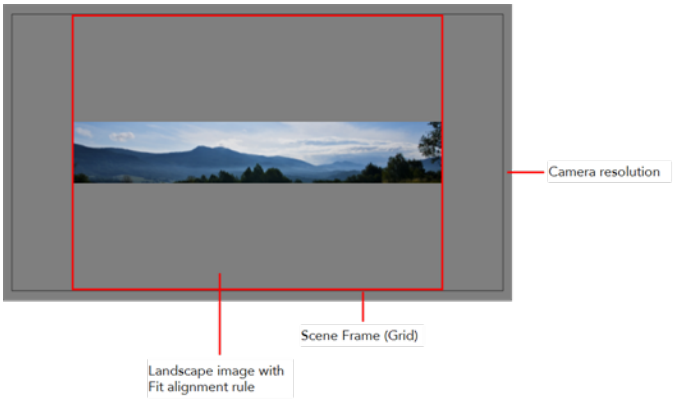
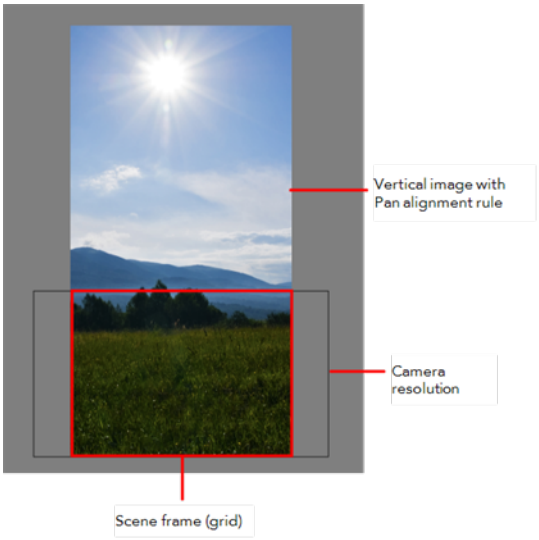
- **Create Layer**: Scans or imports the image into a new layer. Select one of the following options:

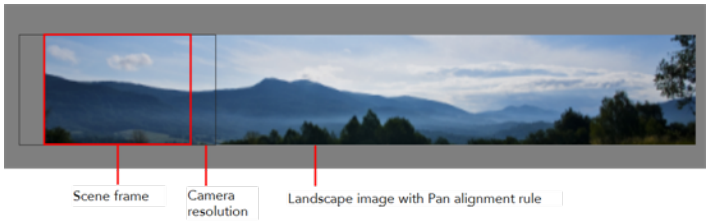
Parameter	Description
Create Single Layer Named	Creates a layer you can name.
Create Layer(s) Based on Filenames	Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers named "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three filenames, all three drawings will be inserted in the new layers.

- **Add to Existing Layer**: Scans or imports the image into an existing layer. Select a layer from the Layer list. You must scan into the same layer type if you are using an existing layer.
- **Create Symbol for Acquired Items**: Encapsulates the bitmap image in a symbol. To mix bitmap images with vector drawings on the same layer, the bitmap image must be encapsulated in a symbol and vice versa. Symbols will also be automatically added to the Symbol folder in the Library view.

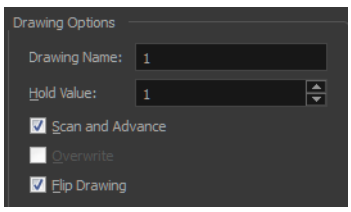
4. In the Import Options section, select the **Keep As Original Bitmap** option.
5. In the Alignment section, decide on the size and placement of your scanned image within the camera frame. Depending on the scene settings (the height and width, in pixels, that you chose for your project), an image that you scan may be scaled to the point where all its individual pixels become visible.

Parameter	Description
Fit	Enlarges or shrinks (but not distorts) the image height to match the full height of the scene grid.  If the image orientation is landscape, this will enlarge or shrink (but not distort) your image width to match that of the scene grid.

	 Note that the Fit alignment rule equals the Center Fit rule in the layer properties.
Pan	This is the opposite of the Fit parameter. If the image orientation is portrait, its width will be made to match the width of the scene grid. As a result, part of the image's height will extend beyond the height of the frame. This can be useful if you want to make your background move up and down, or from left to right to make it appear as if the camera is panning, or to actually perform a camera pan.  The opposite will apply to a landscape image. Its height will be fit to the scene grid, therefore it is possible that the image will extend beyond the scene grid's boundaries.

	 Note that the Pan alignment rule equals the Center First Page rule in the layer properties.
Project Resolution	Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution. Note that the Project Resolution alignment rule is equal to the As Is rule in the layer properties.

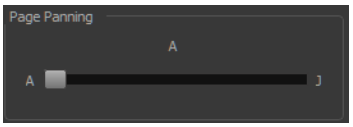
6. In the Drawing Options section, set the following options if desired:



- **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.

How to scan an image as a Toon Boom bitmap drawing

1. In the Import Options section, select the **Import as Toon Boom Bitmap Drawing** option.
2. In the Layer section, decide if the scanned or imported image will be placed on a new layer or existing layer.
   - **Create Layer**: Scans or imports the image into a new layer. Select one of the following options:

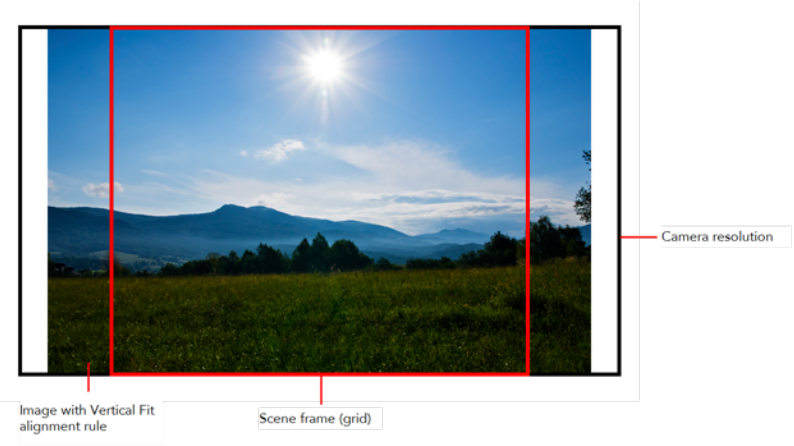
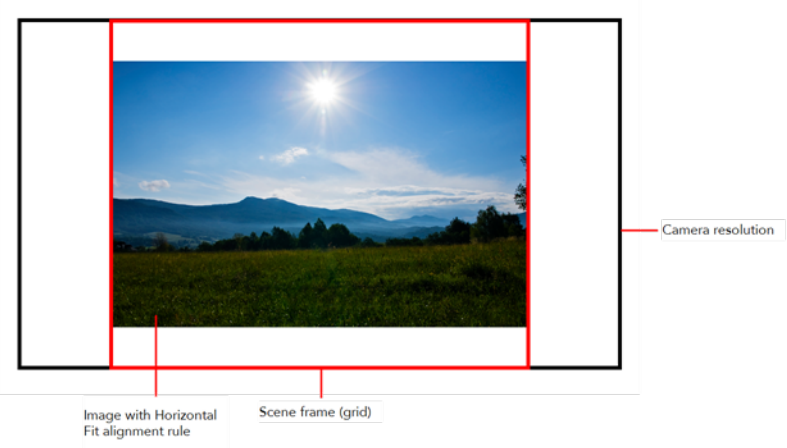
Parameter	Description
Create Single Layer Named	Creates a layer you can name.
Create Layer(s) Based on Filenames	Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers named "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three filenames, all three drawings will be inserted in the new layers.

   - **Add to Existing Layer**: Scans or imports the image into an existing layer. Select a layer from the Layer list. You must scan into the same layer type if you are using an existing layer.
   - **Create Symbol for Acquired Items**: Encapsulates the bitmap image in a symbol. To mix bitmap images with vector drawings on the same layer, the bitmap image must be encapsulated in a symbol and vice versa. Symbols will also be automatically added to the Symbol folder in the Library view.
3. 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.

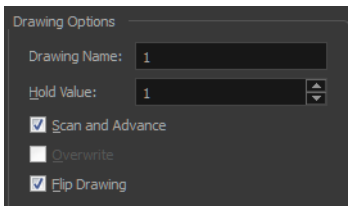
Make sure you are in the Camera view's Render Mode when judging an imported image, otherwise it may appear blurry.

The following three Alignment Rules options are available:

Parameter	Description
Vertical Fit	Enlarges or shrinks (but not distort) to your image height to match the full height of the scene frame (alignment grid).

	
Horizontal Fit	Enlarges or shrinks (but not distort) to your image height to match the full width of the scene frame (alignment grid). 
Actual Size	Scales the image in proportion to the scene's resolution. The system looks at the resolution of the bitmap image, for example 4000 x 2000, then compares it to the scene's resolution, for example 1920 x 1080, and adjusts the scale factor in proportion. So, in this example, the bitmap would appear at 208% (4000/1920). If you import a bitmap that is 960 x 540, it will be displayed at 50% (960/1920) of the size of the project resolution.

4. In the Drawing Options section, set the following options if desired:

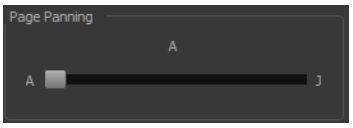


- **Drawing Name**: Name of the drawing to import.
- **Hold Value**: Type the number of frames that the drawing will be exposed.

- **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.

5. Adjust the **Scale** control and sliders in the Preview Image window until you are satisfied with the view.

6. Click **Scan** to scan your drawing.
7. If you are scanning panoramic drawings, in the Page Panning section, move the slider to the next letter to capture your next frame.



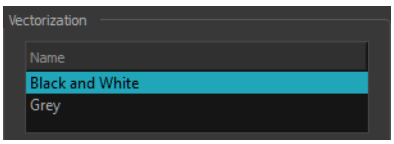
8. If you have more than one drawing, set the next drawing in place and click **Scan** again. Repeat until you have finished scanning all your drawings.

How to scan an image and convert it to a Toon Boom vector drawing

1. In the Import Options section, select the **Convert to Toon Boom Vector Drawing** option. You can choose to encapsulate the image in a symbol by selecting the **Create Symbols for Imported Items** option.
2. In the Layer section, decide if the scanned or imported image will be placed on a new layer or existing layer.
   - **Create Layer**: Scans or imports the image into a new layer. Select one of the following options:

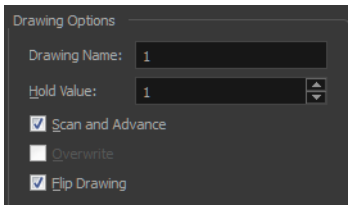
Parameter	Description
Create Single Layer Named	Creates a layer you can name.
Create Layer(s) Based on Filenames	Creates a layer based on each unique filename prefix. For example, the filenames a-1.tga, a-2.tga and b-1.tga will create layers named "a" and "b", where "a" has two drawings and "b" has one. When creating a single layer from these three file-names, all three drawings will be inserted in the new layers.

   - **Add to Existing Layer**: Scans or imports the image into an existing layer. Select a layer from the Layer list. You must scan into the same layer type if you are using an existing layer.
   - **Create Symbol for Acquired Items**: Encapsulates the bitmap image in a symbol. To mix bitmap images with vector drawings on the same layer, the bitmap image must be encapsulated in a symbol and vice versa. Symbols will also be automatically added to the Symbol folder in the Library view.
3. In the Vectorization section, decide whether you want to import your image in black and white or grey.



Parameter	Description
Black and White	Vectorizes drawings as a solid black line; creates a 100% vector-based drawing.
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.

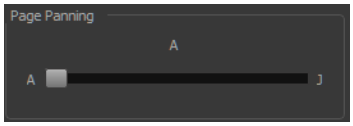
4. In the Drawing Options section, set the following options if desired:



   - **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.

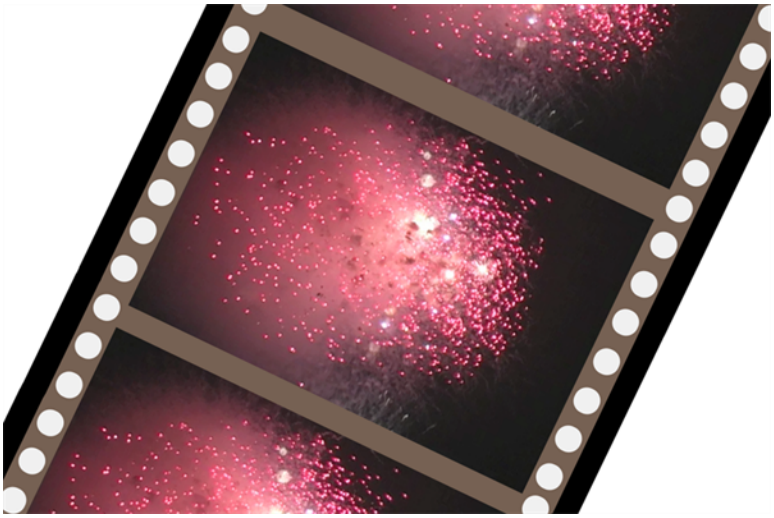
5. Adjust the **Scale** control and sliders in the Preview Image window until you are satisfied with the view.

6. Click **Scan** to scan your drawing.
7. If you are scanning panoramic drawings, in the Page Panning section, move the slider to the next letter to capture your next frame.



8. 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.

Importing QuickTime Movies



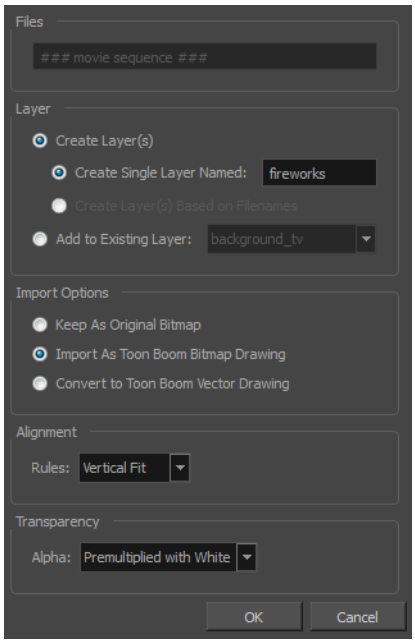
When creating an animation, it is not unusual to embed moving elements saved as videos within the animation. Toon Boom Harmony allows you to import QuickTime movies into your project.

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 Drawings dialog box opens.

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 Importing a Bitmap Image Without Vectorization on page 430.
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.

Custom Vectorization Parameters

You can create your own vectorization settings with Harmony.

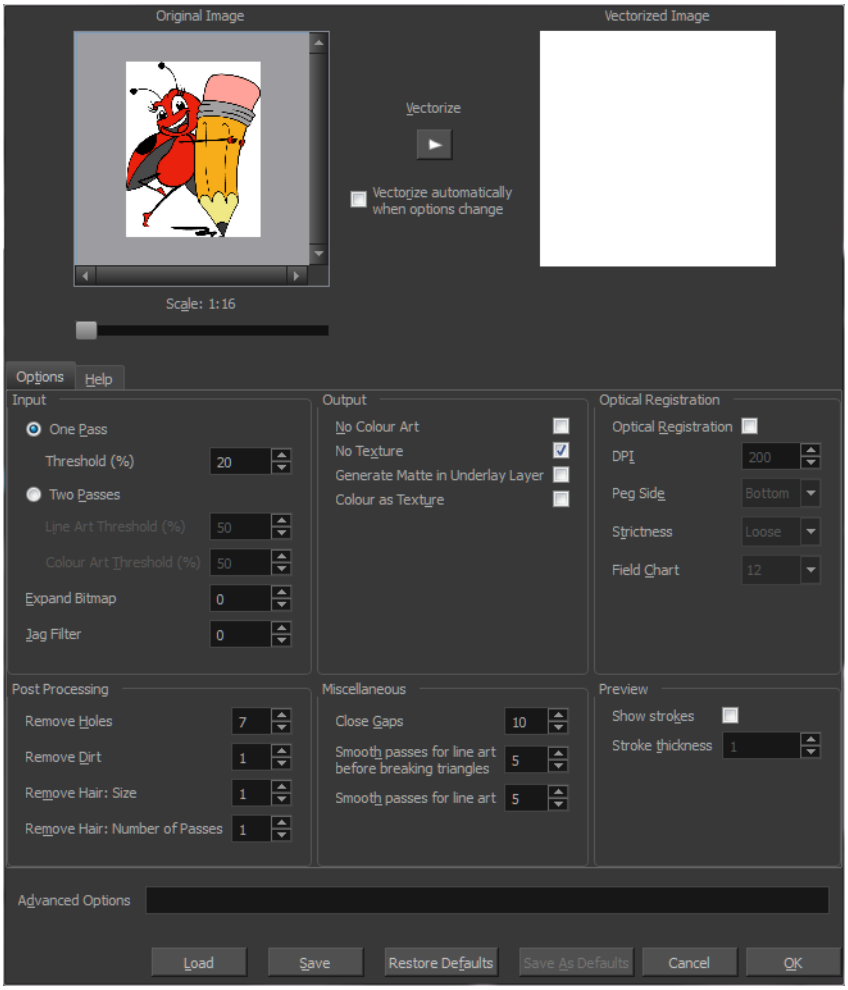
The vectorization parameters you will create here can be saved, shared and also inserted into the **`VectOptions.conf`** file used by the Harmony Scan and Control Center modules when scanning or vectorizing a series of drawings.

You can use an interface to select and test the different options and you can also type in some advanced settings.

How to open the Vectorization Parameters dialog box

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. Select your file, decide on the layer options, and click **Preview**.
3. In the Vectorization section, click the New Preset button.

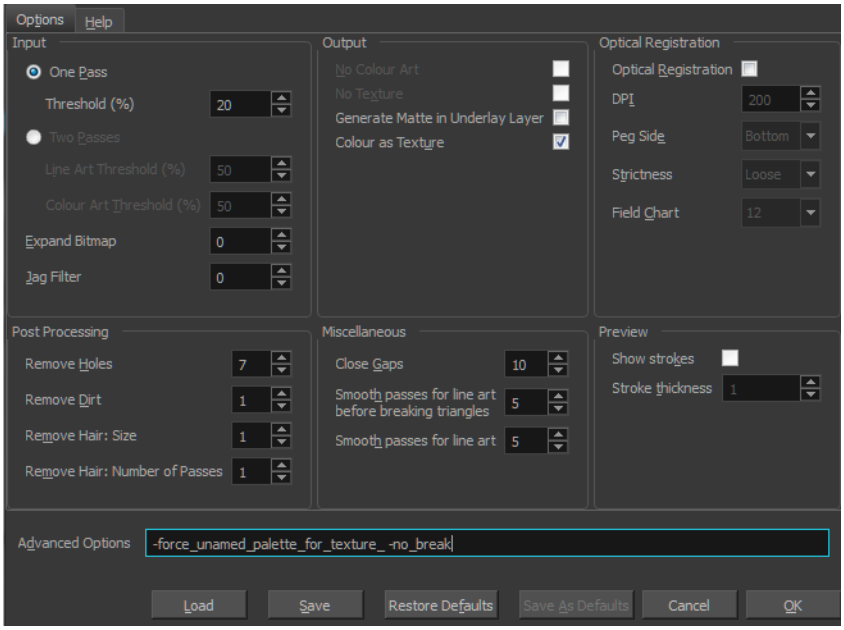
   The Vectorization Parameters dialog box opens.



- Options Tab below
- Help Tab on page 461

Options Tab

The Options tab contains the main vectorization settings. More settings are available in the Help tab.



Parameter	Description
Input	The input filters are applied to the bitmap image before it is vectorized.
	One Pass: One threshold value is applied to both the Line and Colour Art. For drawings with distinct vector-style lines of mattes, you only need one pass.
	Two Passes: Applies a different threshold value to each layer.
	For greyscale drawings, you may want to perform the vectorization process twice to apply different threshold values to the Line and Colour Art layers.
	Threshold: Determines which values in the scanned image are considered part of the Line or Colour Art layer and what will be eliminated from the vectorized drawing; 0% is white and 100% is black. The threshold is between these two values.
	Expand Bitmap: Lets you enter a value to scale the bitmap to detect small variations in the line. Use this option if you scanned a greyscale image and want to preserve small variations in the texture to apply to the line art.
	Jag Filter: Lets you enter a value to scale back the bitmap to remove some of the line's roughness. This is useless when you have a drawing that appears quite rough; the Jag filter will

	eliminate excess strokes in the final drawing.
Output	The output filters are applied during the vectorization process.
	No Colour Art: Does not generate filling zones in the Colour Art layer.
	No Texture: Does not generate texture in the Line Art in the final images. Select this option to create solid lines in the final line art.
	Generate Matte in Underlay Layer: Creates an opaque zone behind your drawing's lines to avoid seeing through the layers.
	Colour as Texture: Converts colour values into a texture layer.
Optical Registration	The optical registration options are used to automatically align drawings based on the position of the peg holes on the animation paper. The peg holes must appear in the scanned drawings for the optical registration to work.
	DPI: Lets you enter the dots-per-inch value of your image. You must enter the same value as the DPI used to scan the image.
	Peg Side: Lets you select the position of the peg holes on your drawings. Identify whether they are on the top, bottom, left or right.
	Strictness: Determines how exact the location of the peg holes must be for the software to recognize them. You have two values to choose from: • **Strict**: The peg holes must be in a tightly defined area to be recognized. • **Loose**: The peg holes can be recognized somewhere in a larger area. This is the recommended setting.
	Field Chart: Lets you indicate the size of the animation paper; 12 or 16.
Post Processing	The Post Processing filters are applied to the final vector images.
	Remove Holes: Removes holes of a specified value that might make painting difficult.
	Remove Dirt: Removes stray marks and dirt of a specified value. Try a value around 500.
	Remove Hair: Removes small strokes that have no line art.
	Remove Hair: Number of Passes: The number of times the drawing will be analyzed to identify hair marks.
Miscellaneous	**Close Gaps**: Closes gaps in the Colour Art so that you can paint it.
	Smooth Passes for Line Art before Breaking Triangles: The number of times the smoothing operation runs before creating

	the triangles that break lines in your drawing. If unnecessary triangles are appearing in your drawing, increase this value.
	Smooth Passes for Line Art: The number of times the smoothing operation is performed after the triangles have been created. This further smooths the Line Art.
Preview	**Show Strokes**: Shows the strokes in the Vectorized Image panel.
	Stroke Thickness: Shows the size of the strokes.

Help Tab

The Help tab contains the most advanced vectorization settings which you type in the Advanced Option fields at the bottom of the Options tab.

File IO Options

-**file** <filename (including extension)> [options]

-**infile** <filename (including extension)>; same as -file

-**outfile** <filename>; alternate output file

-**informat** <format>; the input format. Used if reading from stdin

-**debug**; turn on debug mode

-**noforce**; don't force output if image is inconsistent

-**version**; print version information and quit

-**output_version** <version>; output files of this version. Valid versions can be: 0 or 604

-**force_unamed_palette_for_texture**; will generate a texture in TVG's internal palette

Registration Options

-**register** <dpi side strictness>; perform optical registration.

- Side can be one of left, right, top, bottom or l, r, t, b.
- Strictness can be either loose, strict or l, s.

-**register_center_peg_holes**; will use only round holes in 16 fields page

-**rcph**; short form of register_center_peg_holes

-**registration_looseness_factor** <factor>; registration looseness factor (default 2.000000)

-**rlf**; short form of registration_looseness_factor

-**rdebug**; output registration debug messages

-**pegpitch** <inch (default 8.000000)>; distance between peg bars

-**threshr** < (default 0.500000)>; threshold for optical registration; range 0.0 to 1.0

-**rmargin** <inch (default 1)>; region size where to look for peg bars

-**peg_distance_from_center** <inch (default 5.25)>; peg distance from centre of the image

-**pdfc**; short form of -peg_distance_from_center

-**out_peg_position** <side (default same)>; wanted position of the peg on the drawing.

- Can be one of right, left, top, bottom (or r, l, t, b) or same.
- A rotation will be performed if it is different from the side passed to -register.

-**output_peg_matrix**; output the peg transformation matrix on standard output.

-**scanner_calibrate**; < (default 1.0000 1.0000) > x and y scale factors to be applied to scanner image.

Filtering Options

-**pixel** <pixel_shape (default '4x3')>; Valid values: 4x3

-**gap** <worldUnits (default 10)>; close gaps up to this big

-**pencil**; generate line art only

-**keep_dirt**; don't filter out dirt

-**thresh** <threshold (default 0.2)>; range 0.0 to 1.0

-**rmv_hairs** <worldUnits (default 1)> <passes (default 1)>

- remove hairs of size smaller than "size" in "passes" passes

-**rmv_holes** <area (default 7)>; remove holes smaller than "area"

-**rmv_dirt** <area (default 1)>; remove dirt smaller than "area"

- try values between 100 and 500 for rmv_holes and rmv_dirt. The area is in world units squared

-**rmv_triangles** <worldUnits (default 30.000000)>; remove triangles at "pixels"

- distance from each other. Use -no_break to remove all triangles

-**no_texture**; don't generate textured strokes

-**color_as_texture**; will vectorize the alpha channel and put the RGB colour in a textured colour

-**noclosegap**; disable all gap closing algorithms

-**no_break**; disable the breaking of line art

-**jag_filter** <pixels (default 0>; expand the pixels in the vectorization bitmap

-**expand_bitmap** <pixels (default 0>; expand the pixels in the vectorization bitmap

-**fit_errorc** <error (default 1.000000>; fitting error for the colour art

-**fit_errorl** <error (default 1.000000>; fitting error for the line art

-**smoothl** <passes (default 1>; number of smooth passes for line art

-**smoothc** <passes (default 1>; number of smooth passes for colour art

-**first_smooth** <passes (default 0>; number of smooth passes for line art before breaking triangles

-**first_smoothl** <passes (default 0>; number of smooth passes for line art before breaking triangles

-**first_smoothc** <passes (default 0>; number of smooth passes for line art in colour art pass (needs -2pass)

-**2pass**; specify two sets of parameters; one for line art "l", one for colour art "c"

(-thresh, -rmv_holes and -rmv_dirt will be overridden by -threshl, threshc, -rmv_holesl,

-rmv_holesc, -rmv_dirtl and -rmv_dirtc)

-**threshl** <threshold for line art (default 0.5)>; range 0.0 to 1.0

-**threshc** <threshold for color art (default 0.5)>; range 0.0 to 1.0

-**jag_filterl** <pixels (default 0>; expand the pixels in the vectorization bitmap for line art

-**jag_filterc** <pixels (default 0>; expand the pixels in the vectorization bitmap for colour art

-**expand_bitmapl** <pixels (default 0>; expand the pixels in the vectorization bitmap for line art

-**expand_bitmapc** <pixels (default 0>; expand the pixels in the vectorization bitmap for colour art

-**rmv_holesl** <area (default 7)>; remove line art holes smaller than "area"

-**rmv_holesc** <area (default 7)>; remove colour art holes smaller than "area"

-**rmv_dirtl** <area (default 1)>; remove line art dirt smaller than "area"

-**rmv_dirtc** <area (default 1)>; remove colour art dirt smaller than "area"

try values between 100 and 500 for rmv_holesl, rmv_holesc, rmv_dirtl and rmv_dirtc. The values are in world units squared

-**margins** <inch (default 0.25)>; remove margin around bitmap

-**top_margin** <inch (default 0.25)>; remove margin at top of bitmap

-**bottom_margin** <inch (default 0.25)>; remove margin at bottom of bitmap

-**left_margin** <inch (default 0.25)>; remove margin at left of bitmap

-**right_margin** <inch (default 0.25)>; remove margin at right of bitmap

-**remove_peg_bars**; remove the peg bar holes

-**field_size** <fields (default 12 or use value in scan file)>; set the drawing to this field size

-**fs**; short hand for -field_size

-**peg_bar_size** <inch (default 1)>; the size of the peg bar region

-**noframe**; do not put a frame around the colour art

-**frame_fields** <default -1.000000>; put a frame of the specified dimension around the colour art

-**downscale_input** <default 1>; downscale the raw input by this integer factor

-**downscale_texture** <default 1>; downscale the output texture by this integer factor

-**buildmatte**; generate a matte on underlay for line test

-**buildmatte_colourart**; generate a matte on colour art for line test

Note: -buildmatte and -buildmatte_colourart are mutually exclusive

-**copystrokes**; copy original strokes when building matte.

Options for bitmap that has no registration information

-**pixel_margins** <inch (default 0)>; remove margin around bitmap

-**top_pixel_margin** <inch (default 0)>; remove margin at top of bitmap

-**bottom_pixel_margin** <inch (default 0)>; remove margin at bottom of bitmap

-**left_pixel_margin** <inch (default 0)>; remove margin at left of bitmap

-**right_pixel_margin** <inch (default 0)>; remove margin at right of bitmap

-**dpi** <(default -1)>; dpi information of input bitmap

RGB Keying Options

-**rgb**; generate separate zones for red, green and blue lines

-**rgb_alpha** <value (default 255)>; generate red, green and blue colour with alpha of this value

-**no_red**; ignore red colour in vectorization

-**no_green**; ignore green colour in vectorization

-**no_blue**; ignore blue colour in vectorization

-**flatten**; flatten the drawing after generating colours

-**rmv_rgb_dirt** <threshold area default 0.0>; remove red, green and blue regions smaller than area

-**expand_bitmap_rgb** <pixels (default 0>; expand the pixels in the vectorization bitmap for rgb

-**threshrgb** <value> <threshold for rgb vectorization default 0.200000>;

-**threshsv** <saturation threshold default 0.500000> <value threshold default 0.500000>; thresholds on saturation and value to consider a pixel to be grey

Colour Vectorization Options

-**color_vectorize**; perform a colour vectorization

-**file2** <colour art filename>; specify the colour art bitmap

-**penstyle** <center alpha (0.0-20.0)> <edge alpha (0.0-20.0)> <gamma (0-10)><centre pressure effect (0.0-1.0)> <edge pressure effect (0.0-1.0)><texture bitmap downscaling (0.2-20)> <texture bitmap file (valid filename or " " if no file)>; generate brush texture for the line art

-**pressure_variation** <strategy (0, 1 or 2)> <min pressure (0.0-1.0)> <max pressure (0.0-1.0)> <max variation (0.0-1.0)>; specify a pressure strategy for the centre line.

-**blur_radius** <pixels (default 0)>; blur the penstyle texture generated

-**color_contour_smooth_passes** <times (default 3)>; perform number of smooth passes on contour before computing texture

-**ccsp** <times (default 3)>; short for -color_contour_smooth_passes

-**color_rmv_holesl** <world units (default 0.000000)>; remove holes of this size when computing texture

-**color_fill_holesl** <world units (default 0.000000)>; fill holes of this size for colour line art

Bubble Usage (implemented only for colour vectorization's line art)

-**create_bubbles**; add bubbles into the LineArt. Implemented for colour vectorization only

-**bubble_gap** <value (default 3)>; max number of colour art points between 2 bubbles

-**bubble_length** <value (default 10)>; max number of circles in a bubble

-**min_radius** <value (default 1.5000)>; min radius of a circle in a bubble relative to the line thickness (must be >= 1.0)

-**max_radius** <value (default 3.5000)>; max radius of a circle in a bubble relative to the line thickness (must be >= 1.0)

-**uniform_gap**; the space between bubbles is constant

4 Colour Vectorization

-4colours [key:value] ... [key:value] ; The key value list can be empty. The list of keys is:

rgbdiff:value ; between [0.0-1.0] or [0-255]

dark:value ; between [0.0-1.0] or [0-255]

grey:value ; between [0.0-1.0] or [0-255]

white:value ; between [0.0-1.0] or [0-255]

dirt:value ; dirt area. 200 is a good value

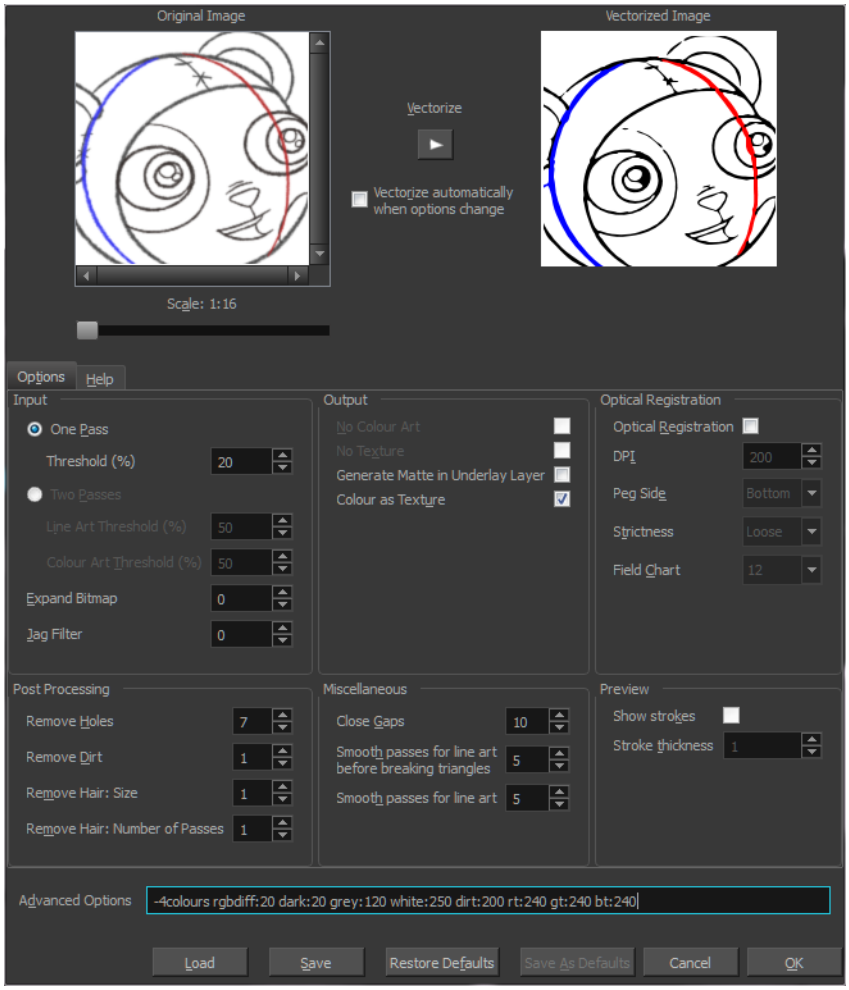
rt:value ; between [0.0-1.0] or [0-255]

gt:value ; between [0.0-1.0] or [0-255]

bt:value ; between [0.0-1.0] or [0-255]

There must be no space between the colon and the key/value. For example: -4colours rgbdiff:20 dark:20 grey:120 white:250 dirt:200 rt:240 gt:240 bt:240

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 a Vectorization Style

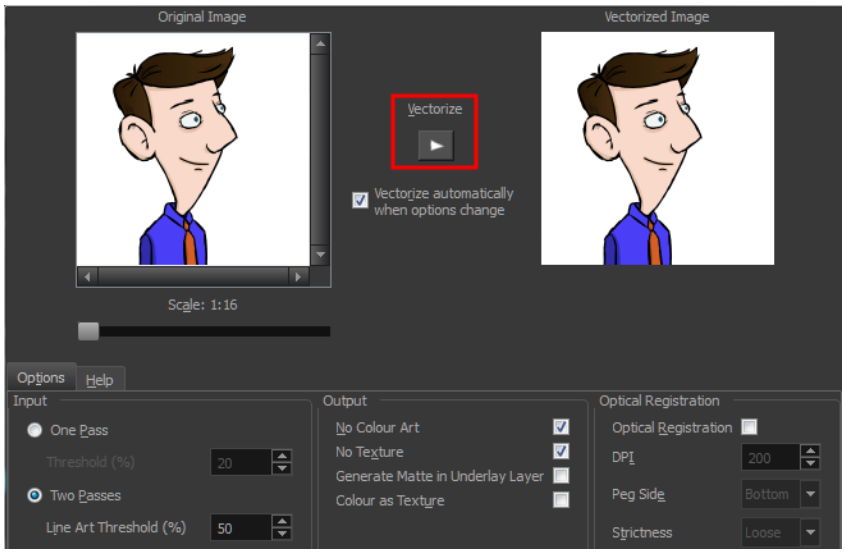
With Harmony, you have the possibility to create custom vectorization parameters that can be saved and reused.

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 Custom Vectorization Parameters on page 458.

How to create or modify the vectorization parameters

1. Set the different options available in the Vectorization Parameters dialog box.



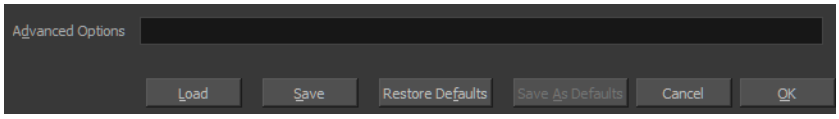
2. Click the **Vectorize** button to update the Vectorized Image preview.

   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 Options dialog box. These are applied during the vectorization process.

3. To set advanced parameters, read the information on the Help tab, then type in the Advanced Options field at the bottom of the Options tab.

4. 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**.

5. In the Browser window, name and save the file.



6. To save the current settings as your default settings, click **Save As Default**. To restore the default settings, click **Restore Defaults**.

7. To load a vectorization style, click **Load** and locate the existing **`*.vof`** file.

8. Click **OK**.

Setting 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.

This section deals with setting the VectOptions.conf file on:

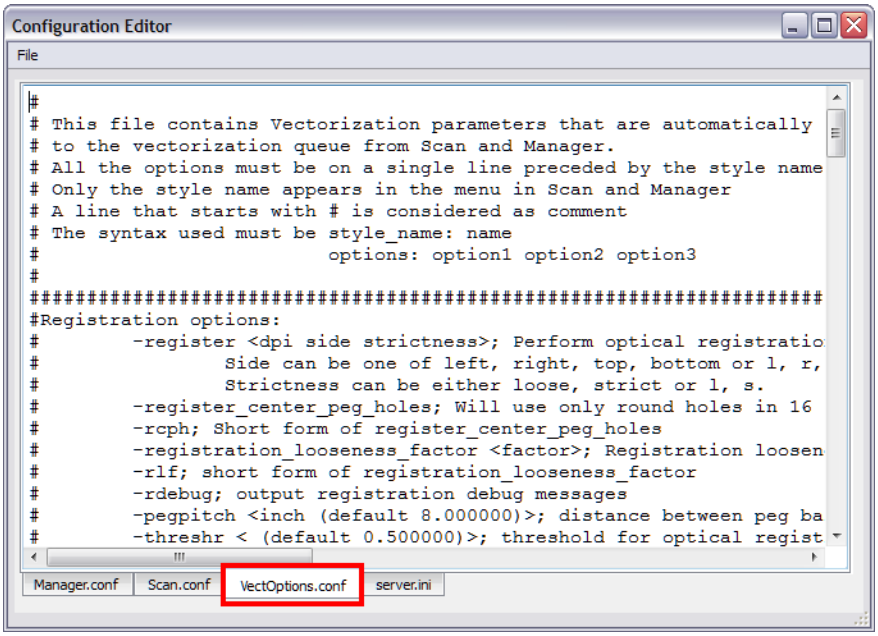
- Setting the VectOptions.conf File on Windows and Mac OS X below
- Setting the VectOptions.conf File on Linux on page 470

Setting the VectOptions.conf File on Windows and Mac OS X

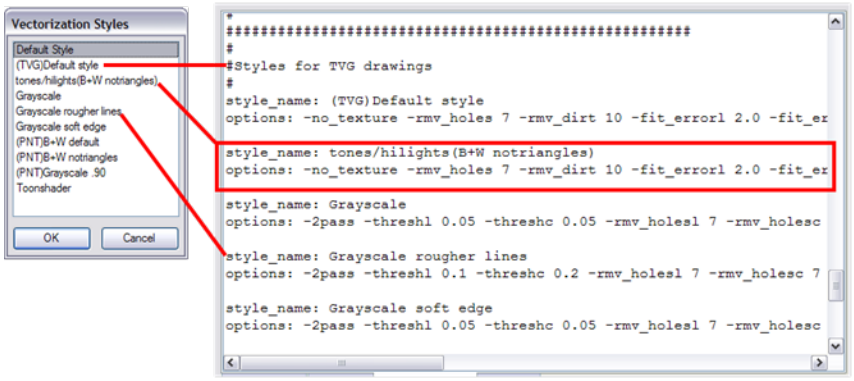
How to set the VectOptions.conf file on Windows or Mac OS X

1. Open the vectOptions.conf file:
   - Windows: Select **Programs / All Programs > Harmony 11.1 > Tools > Configuration Editor**.
   - Mac OS X: Select **Applications > Harmony 11.1 > Tools > Configuration Editor**.

   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 Creating a Vectorization Style on page 466
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:`

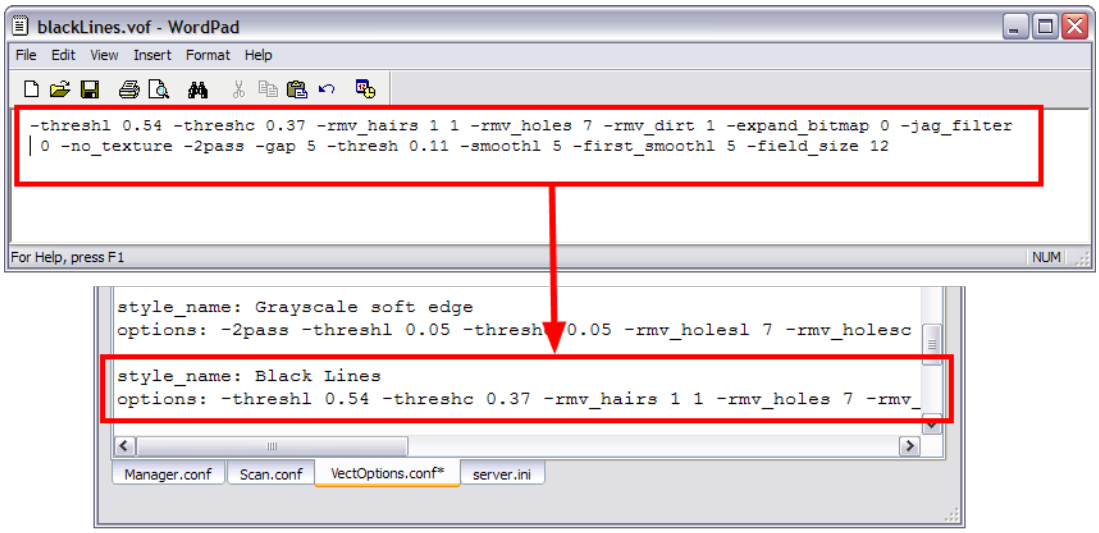
   This should be followed by the name of your new style. For example: **`style_name: Black Lines`**.

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.

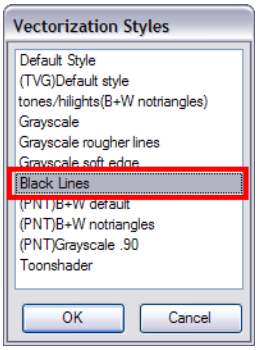


8. In the Configuration Editor's top menu, select **File > Save**.

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**.

If you are using the batch processing method available with Toon Boom Harmony Server to scan and vectorize your drawings, the selected style must be available on all the machines included in the batch processing list.

Refer to the Control Center Guide to learn more about setting up and using batch processing.



Setting the VectOptions.conf File on Linux

These are the two methods used to edit the **`VectOptions.conf`** file on Linux.

- Using the "vi" text editor
- Using the "gedit" text editor

How to set the VectOptions.conf file on Linux using the "vi" text editor

1. Open a Terminal window:
   Menu: **Applications > System Tools > Terminal**
2. Open the etc folder inside the installation directory:

   ```
   $ cd /usr/local/ToonBoomAnimation/harmony_11.0/etc
   ```

3. Change your user to "root":

   ```
   $ su
   ```

   - If your user is part of the sudoers list, enter the following command and go to See "Open the 'VectOptions.conf using the "vi" text editor:" on page 470:

     ```
     $ sudo vi VectOptions.conf
     ```

4. Enter the "root" password.
5. Open the 'VectOptions.conf using the "vi" text editor:

   ```
   $ vi VectOptions.conf
   ```

6. To start editing, press the [i] key on your keyboard to enter Insert mode.
7. Once you are done editing the file, press Esc to exit Insert mode.
8. To save the changes made to the file, type the following and press Enter/Return:

   ```
   $ :w!
   ```

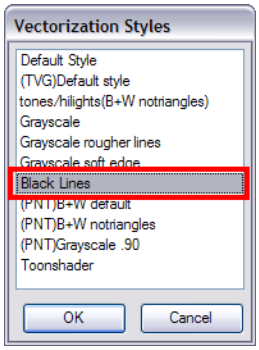
9. To exit the "vi" editor and return to the Terminal, type the following and press Enter/Return:

```
$ :q
```

10. 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**.

If you are using the batch processing method available with Toon Boom Harmony Server to scan and vectorize your drawings, the selected style must be available on all the machines included in the batch processing list.

Refer to the Control Center Guide to learn more about setting up and using batch processing.



How to set the VectOptions.conf file on Linux using the "gedit" text editor

1. Open a Terminal window:
   Menu: **Applications> System Tools> Terminal**
2. Open the etc folder inside the installation directory:

```
$ cd /usr/local/ToonBoomAnimation/harmony_11.0/etc
```

3. Change your user to "root":

```
$ su
```

   - If your user is part of the sudoers list, enter the following command and go to See "Open the 'VectorOptions.conf using the "gedit" text editor:" on page 471:
     `$ sudo gedit VectOptions.conf`

4. Enter the **root** password.
5. Open the 'VectorOptions.conf using the "gedit" text editor:

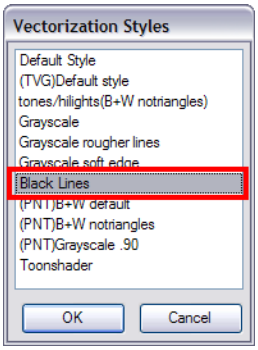
```
$ gedit VectOptions.conf
```

6. Edit the parameters of the **VectOptions.conf** file like you would do in most text editor application.
7. Select **File > Save.**
8. Select **File > Quit**.

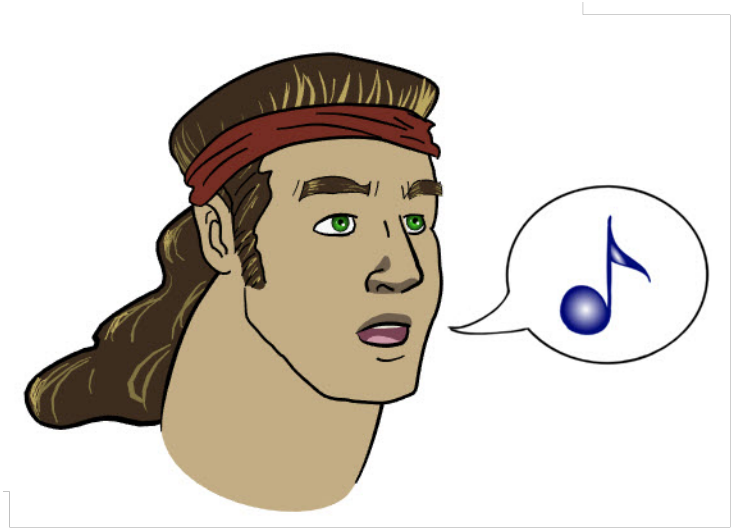
9. If you have Harmony Scan on your computer, you can start the application and verify that the new style appears in the Vectorization Style list under **Edit > Vectorization Style**.

If you are using the batch processing method available with Toon Boom Harmony Server to scan and vectorize your drawings, the selected style must be available on all the machines included in the batch processing list.

Refer to the Control Center Guide to learn more about setting up and using batch processing.



Chapter 2: Sound



With Harmony, you can import soundtracks and dialogue into your animation to make it more engaging and entertaining.There are several sound editing features you can use to synchronize sounds to individual frames or moments in time. You can also use 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 lip-sync tools. 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.

This chapter contains the following topics:

- Importing a Sound File on the next page
- Sound Element Editor on page 475
- Sound Displays on page 476
- Sound Playback on page 478
- Sound Scrubbing on page 479
- Editing a Sound File on page 482
- Adding an Empty Sound Layer on page 490

Importing a Sound File

If you decide to add sound to your movie, you must first prepare the sound outside of Harmony. Once this is done, you must add a sound element in Harmony to the organize the sound files in your animation. Sound will play in the movie until it reaches the end of the file or a stop frame that you have created in the Sound Element Editor.

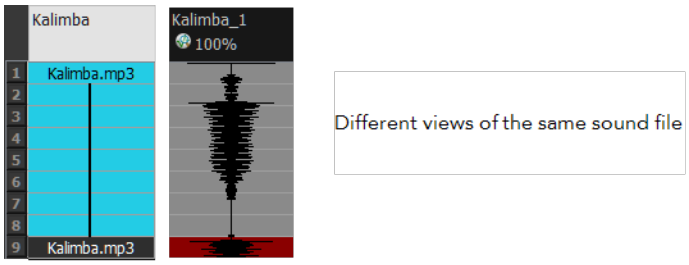
You can import WAV, AIFF or MP3 sound files.

How to import a sound file

1. Do one of the following:
   - From the top menu, select **File > Import > Sounds.**
   - In the Xsheet view, right-click anywhere in the frame area of the Xsheet view and select **Import > Sounds**.
   - From the Xsheet view menu, select **File > Import > Sounds**.
   - From the Timeline view menu, select **Import > Sounds**.

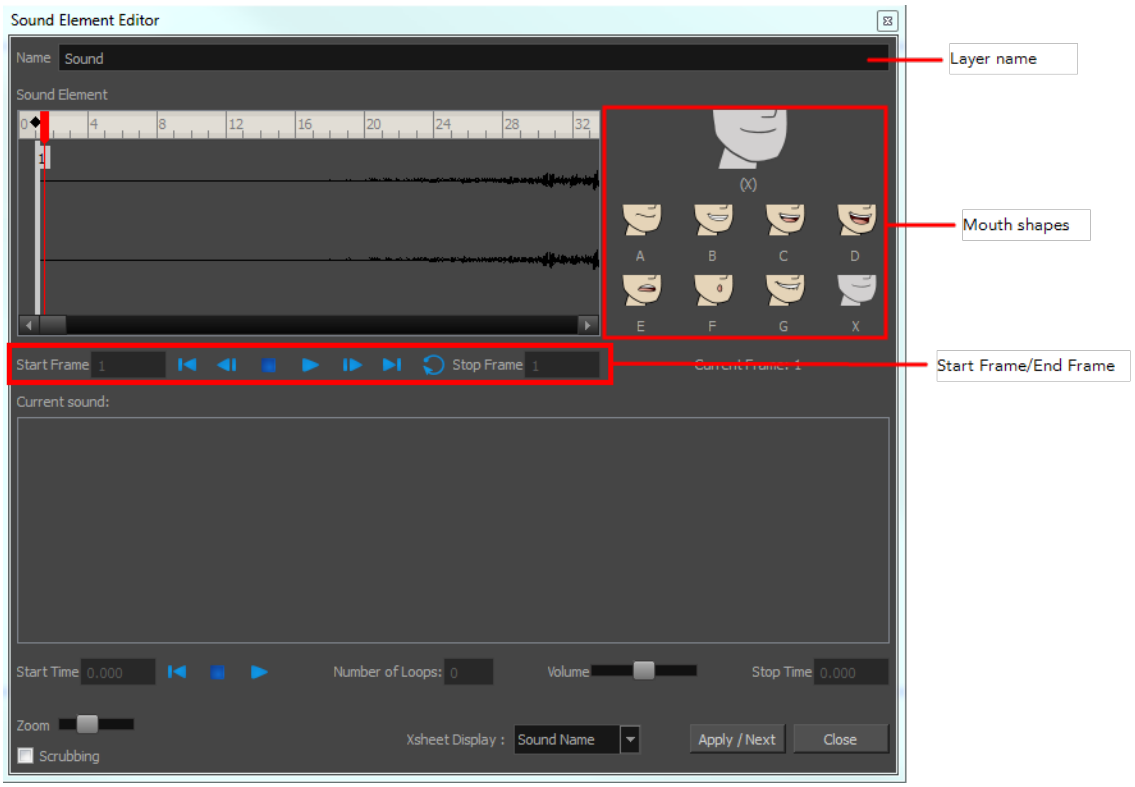
   The Select Sound File dialog box opens.
2. From the Select Sound File dialog box, find and select a sound file.

   The sound file appears as a layer in the Timeline and Xsheet views.



Sound Element Editor

When you select a sound layer in the Timeline view, the options related to that layer appear in the Sound Element Editor when you double click on the layer.



- **Layer Name:** This field displays the layer's name.
- **Start Frame/End Frame:** These fields determine the start and end frame of the sound file.
- **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.

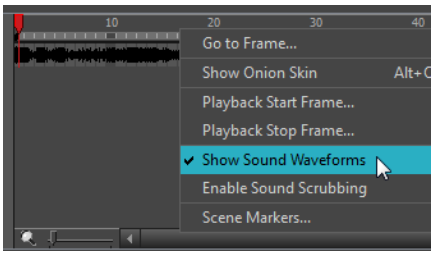
Sound Displays

Within the Xsheet view, you can display the sound file in different ways, depending on your sound editing needs.

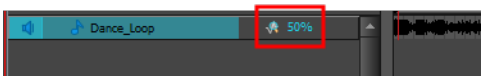
You can show or hide the waveform in the Timeline view by selecting the Waveform button in the Timeline View toolbar. You must customize the toolbar to display this button because it is not included in this toolbar by default.

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**.

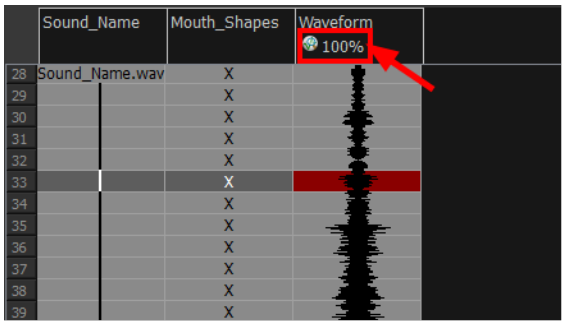


- You can change the waveform scale using the Zoom Waveform icon on individual sound layers in the Timeline view's left side.



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.

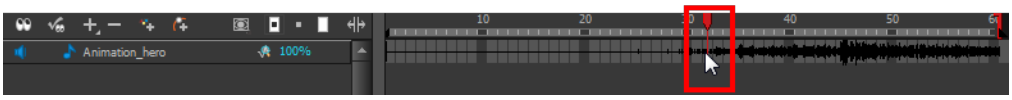

Sound_Name
Mouth_Shapes
Waveform
100%
28 Sound_Name.wav X
29 X
30 X
31 X
32 X
33 X
34 X
35 X
36 X
37 X
38 X
39 X

Sound Playback

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.

How to play back sound

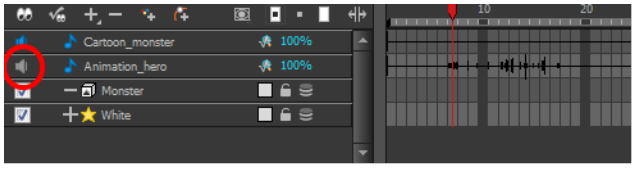
1. To select a starting point:
   - In the Xsheet view, click on a cell in the sound column.
   - In the Timeline view, click on a cell in the sound layer. You can also slide the red playhead to the correct cell.



2. In the Playback toolbar, activate the 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 Scene Forward** 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**.

Mute

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 Mute Sound button on the sound name layer in the Timeline view.

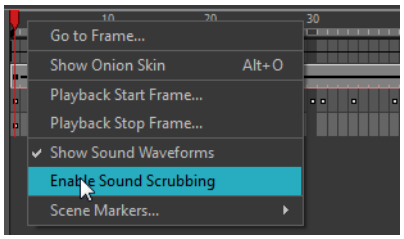


Sound Scrubbing

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:
   - In the Playback toolbar, enable the Sound Scrubbing button.



2. At the top of the Timeline view, drag the red playhead to hear the sound at each frame.

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.

Refer to the device's manual to configure its functionality with Harmony.

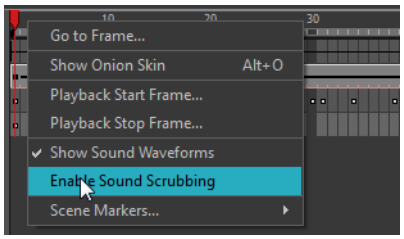
Performing an Analog Sound Scrub in Harmony

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:
   - In the Playback toolbar, enable the Sound Scrubbing button.



2. In the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage> Preferences** (Mac OS X).
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.

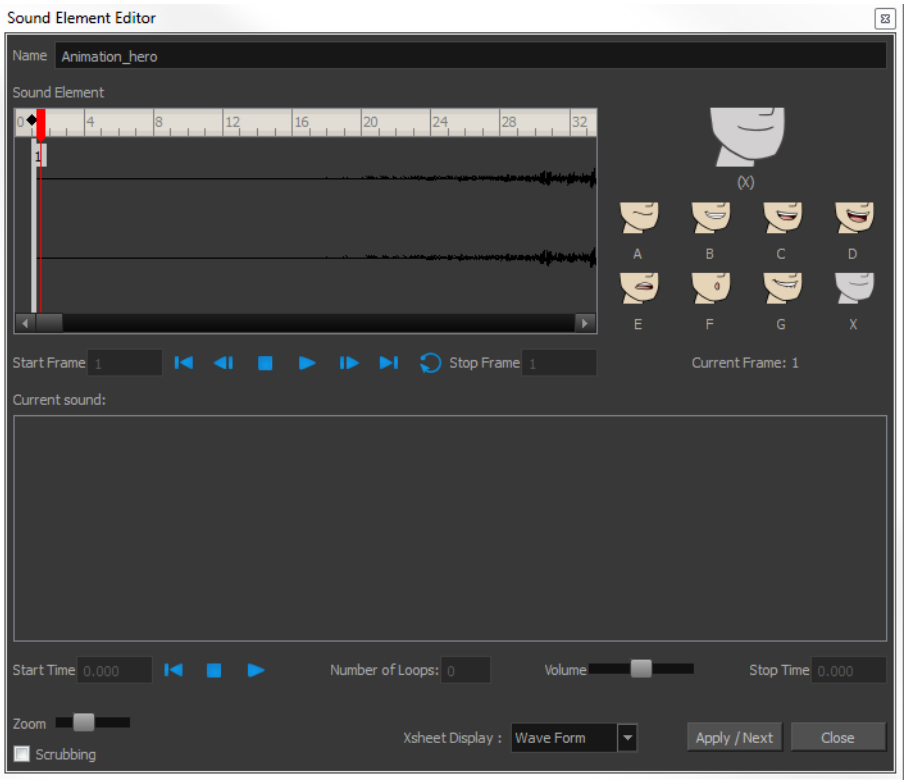
Editing a Sound File

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.

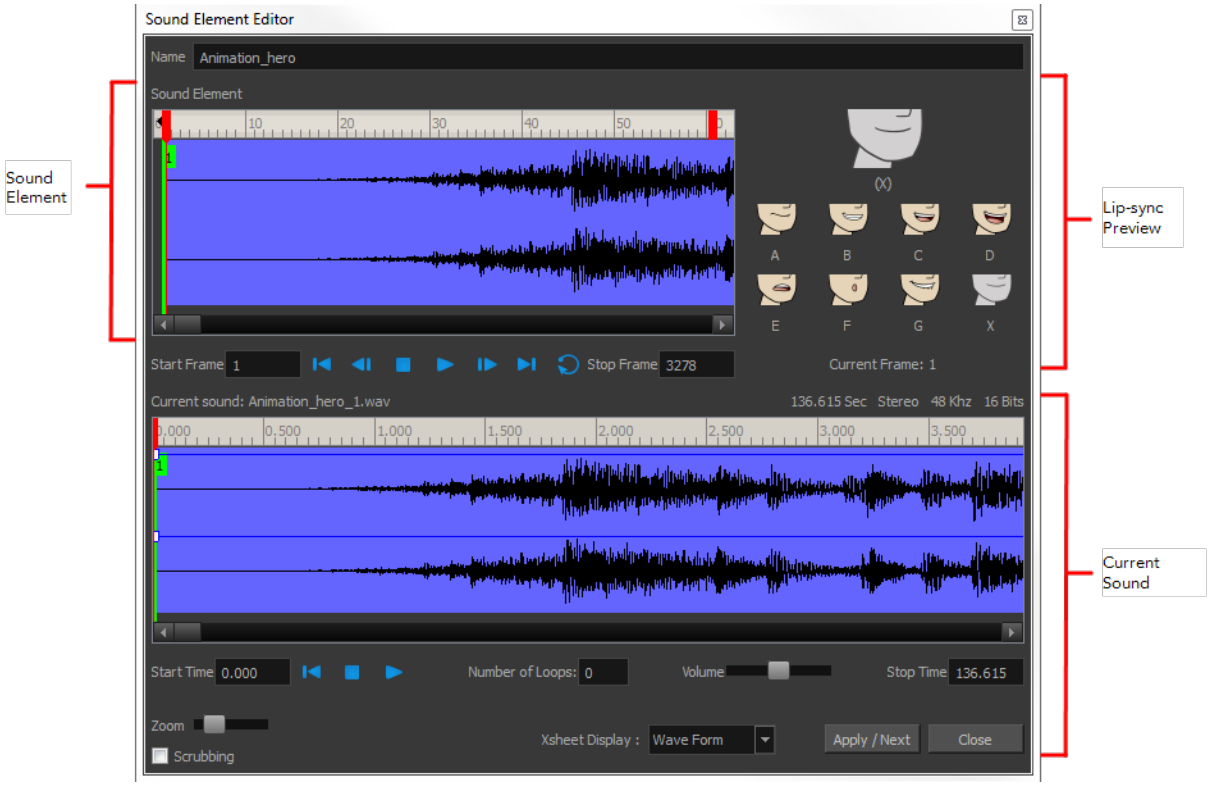
How to open the Sound Element editor

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.

You can accomplish the following tasks in the Sound Element Editor:

- Changing the Start or End Frame of a Sound below
- Trimming the Start and End of a Sound File on page 485
- Looping a Sound on page 486
- Mixing the Sound Volume on page 487
- Customizing the Playback Range on page 488
- Recomputing the Mouth Chart on page 497

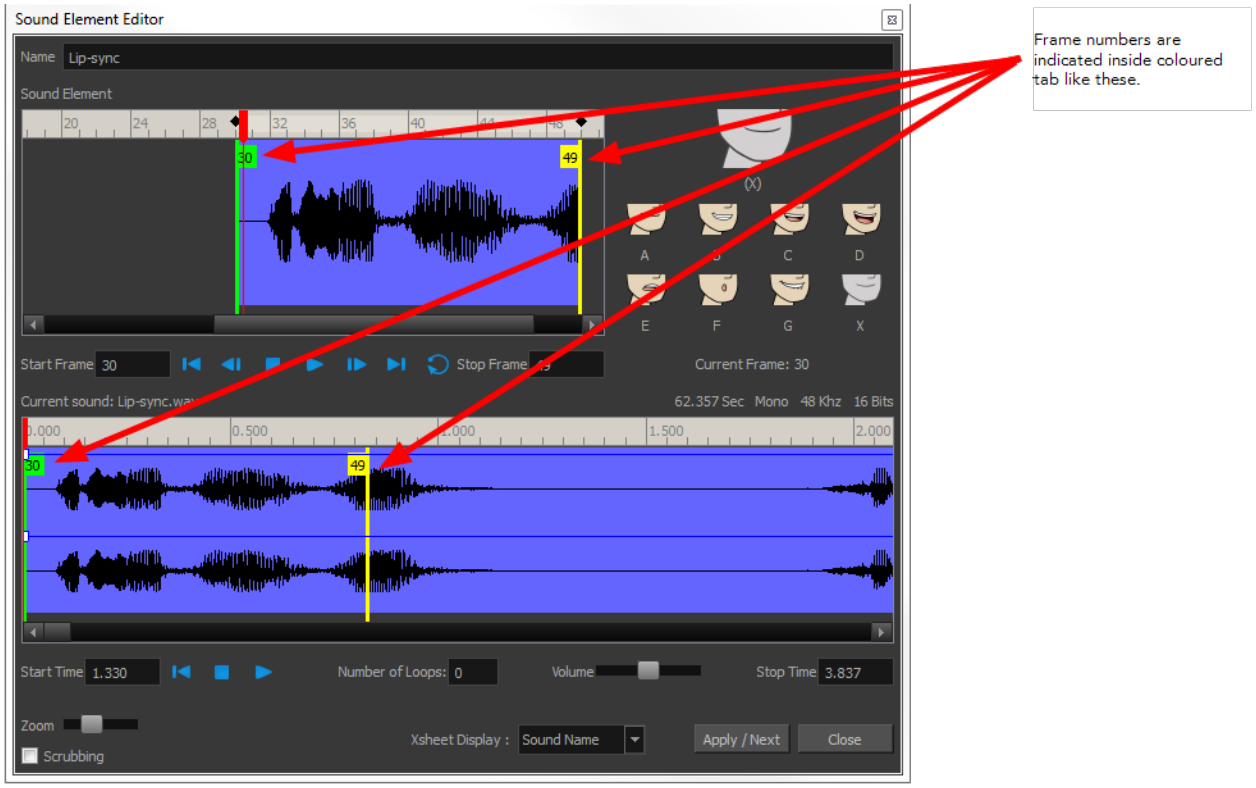
Changing the Start or End Frame of a Sound

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.

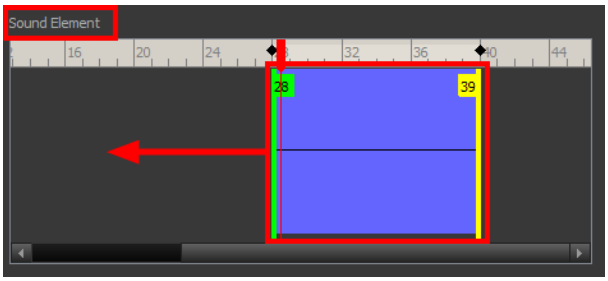
In the Sound Element panel you will see some coloured tabs, these tabs represent the frames. The frame number is shown inside the tab flag marker. These tabs indicate the start and end frames of a sound segment.

How to change start or end frame of a sound

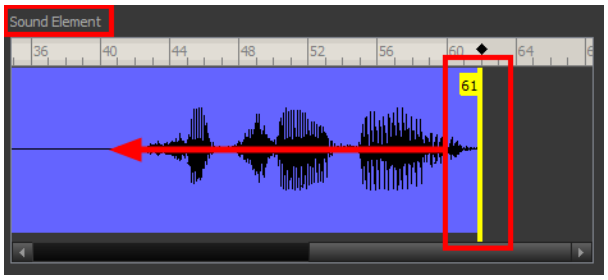
1. Double-click on the sound layer name in the Timeline view or the sound column header in the Xsheet view.
2. In the Sound Element Editor, select a sound sample from the Sound Element panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section.



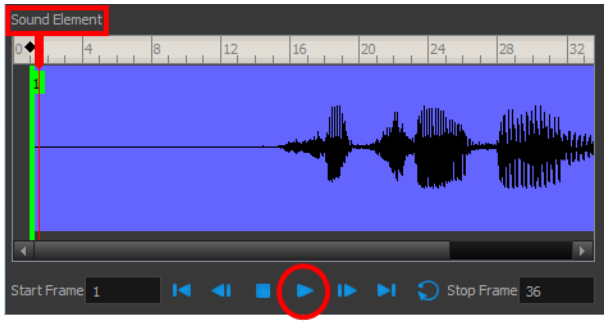
   Click the Play button in the Current Sound panel (only the selected sound plays).
3. Within the Sound Element panel, drag the selected clip to the frame number where you want it to start playing.



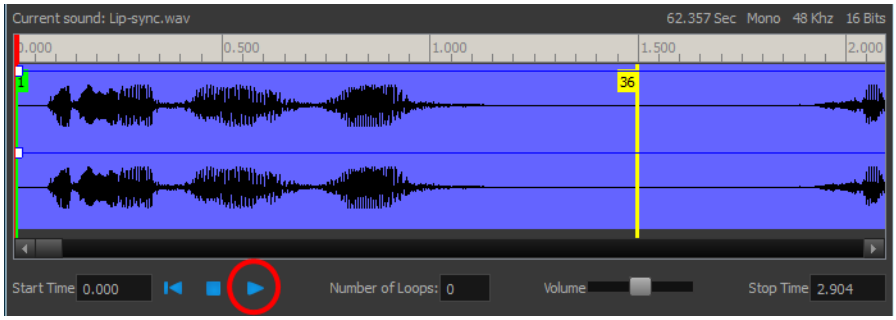
   You can only move the clip to a section that does not already contain a clip; you cannot overlap two clips in the same element.
4. To change the end frame, drag the yellow marker at the end of the waveform to the frame position.



5. To hear how all the clips fit together in the element, click the Play button in the Sound Element panel.



If you only want to hear the selected clip, click the Play button in the Current Sound panel.



6. Click **Apply/Next**.

   The Xsheet and Timeline views display the sound clip at the start frame you selected.

Trimming the Start and End of a Sound File

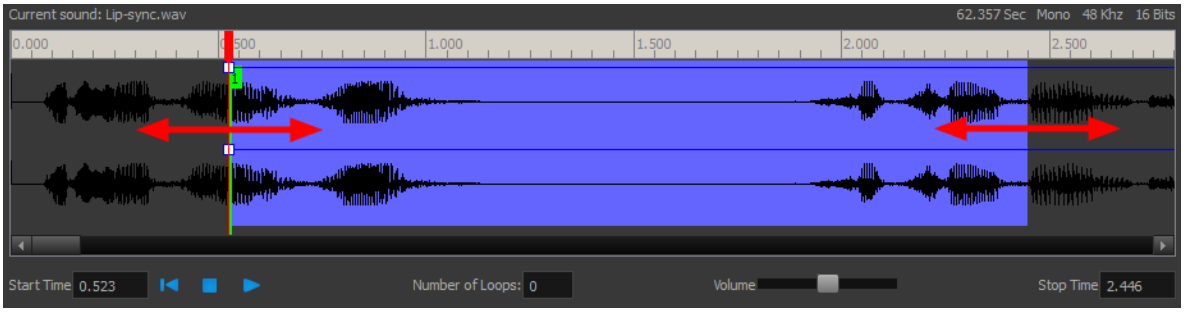
To play only a section of a sound file, use the Sound Element Editor to select the exact part you want to use. For example, if there is a bit of noise at the start of the sound, use the Sound Element Editor to cut the noise.

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.

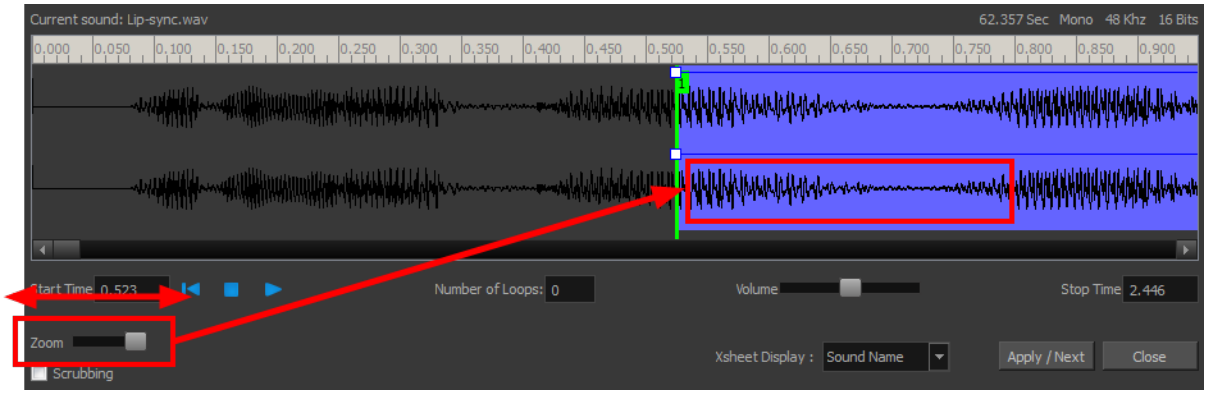
How to trim the start and end of a sound file

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 panel. 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 panel, 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 panel 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**.

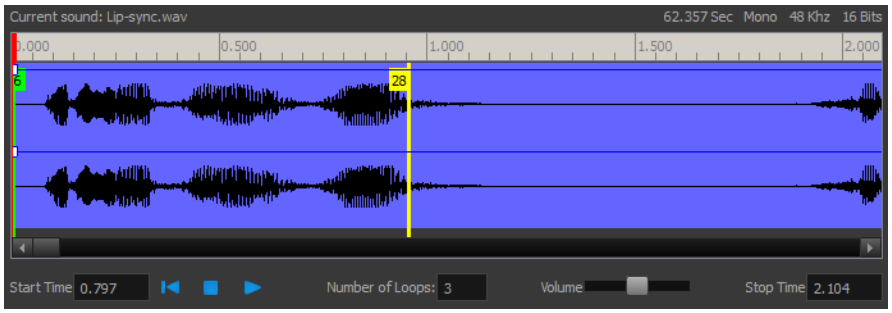
   The trimmed sound sample appears in both the Timeline and Xsheet views at the start and end positions you selected.

Looping a 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 panel, select the sound section you want to loop.
3. In the Current Sound panel, 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.

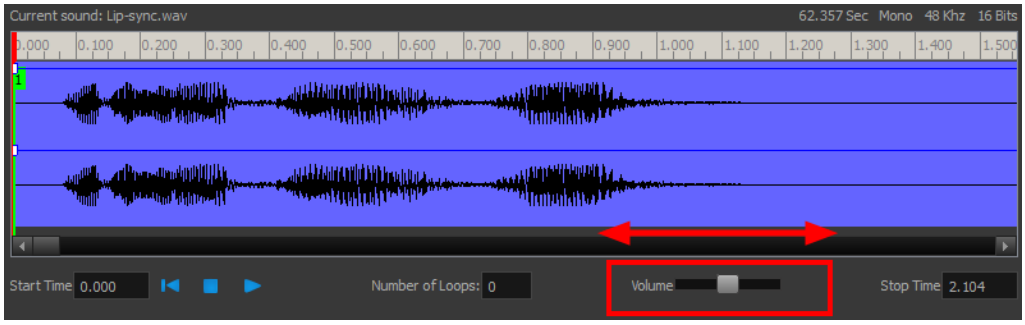
Mixing the Sound Volume

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 panel, select the sound you want to work on.

   A more detailed version of the selected sound appears in the Current Sound panel.
3. In the Current Sound panel, use the Volume slider to adjust the volume.



4. Click the Play button in the Current Sound panel to verify the volume.

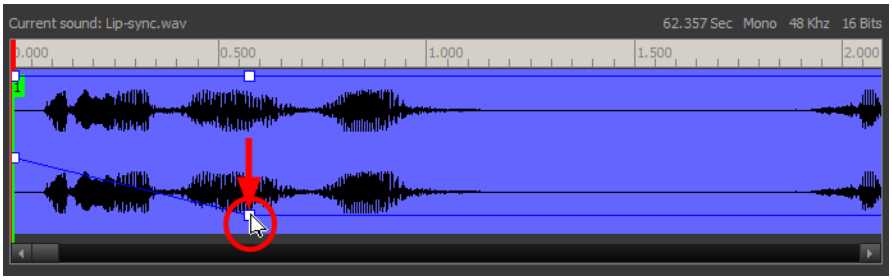
How to create the fade in/out effect on a sound clip

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 panel, select the sound you want to work on.
3. In the Current Sound panel, 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.

To create an even effect, be sure to adjust the envelope markers uniformly in both the left and right (bottom and top) channels.



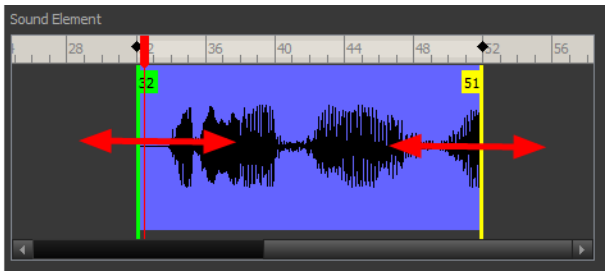
5. Click the Play button in the Current Sound panel to check the fade envelopes.

Customizing the Playback Range

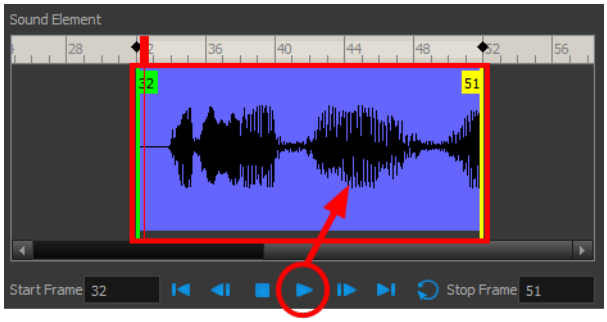
To hear a specific section of the sound element, adjust the playback range in the Sound Element Editor to start or stop at specific frames. This customized playback range does not affect the actual sound in the Sound element.

How to change the playback range in the Sound Element Editor

1. Drag the start or end range markers in the Sound Element panel 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.

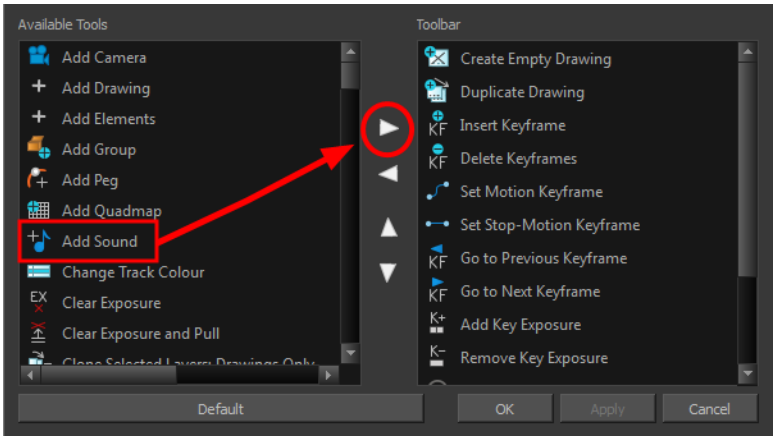
For this task, you will need an empty sound layer.

How to add an empty sound layer

1. From the top menu, select **Windows > Toolbars > Timeline View**.

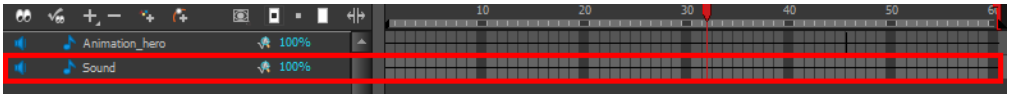
   The Timeline view toolbar appears at the top of the Timeline view.

2. Right-click on the Timeline View toolbar and select **Customize**.
3. Choose the **Add Sound** button from the Available Tools column on the left and add it to the Toolbar column on the right. Click Ok to accept the change.

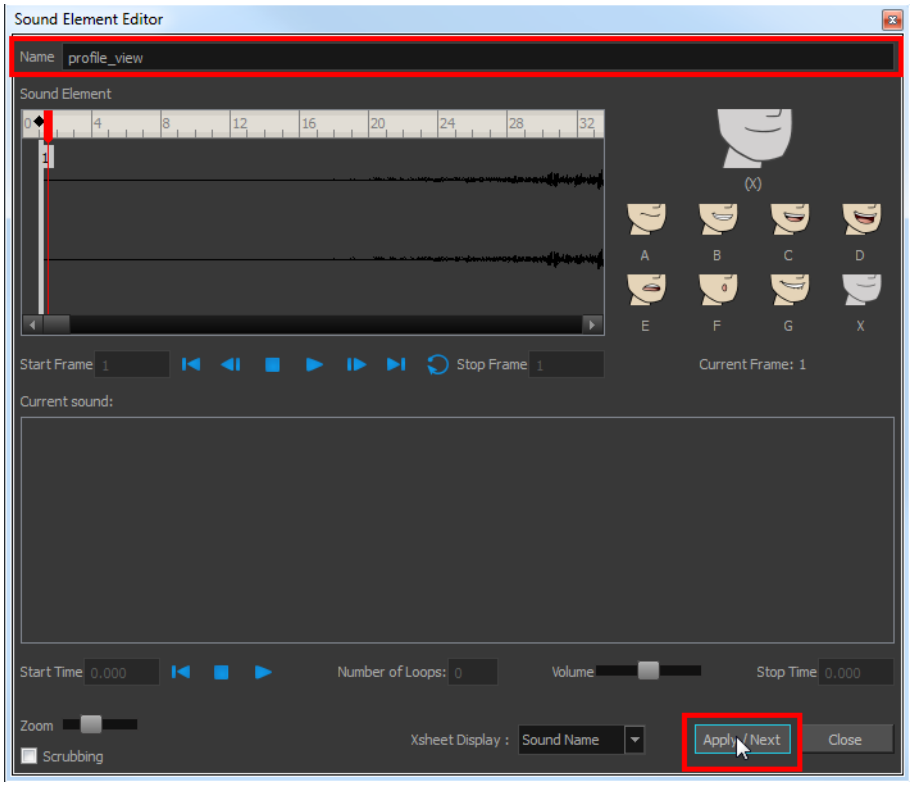


4. Click the Add Sound button.

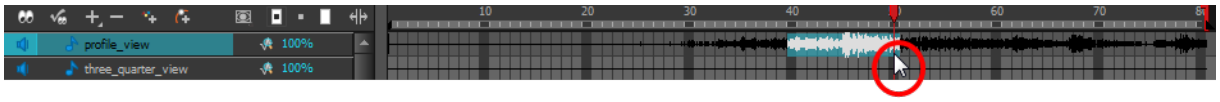
   An empty (silent) sound layer appears in both the Timeline and Xsheet views.



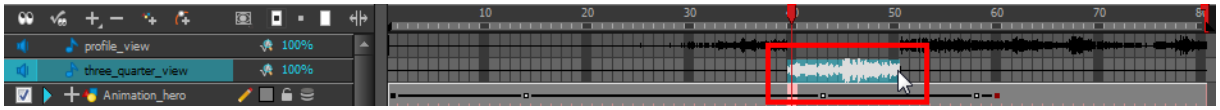
5. Rename the layers accordingly by double-clicking on the layer name and renaming it in the Sound Element Editor. Click **Apply/Next** to accept the change.



6. 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.



7. Drag the selection into the empty sound layer below.



8. 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.

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.

Lip-sync

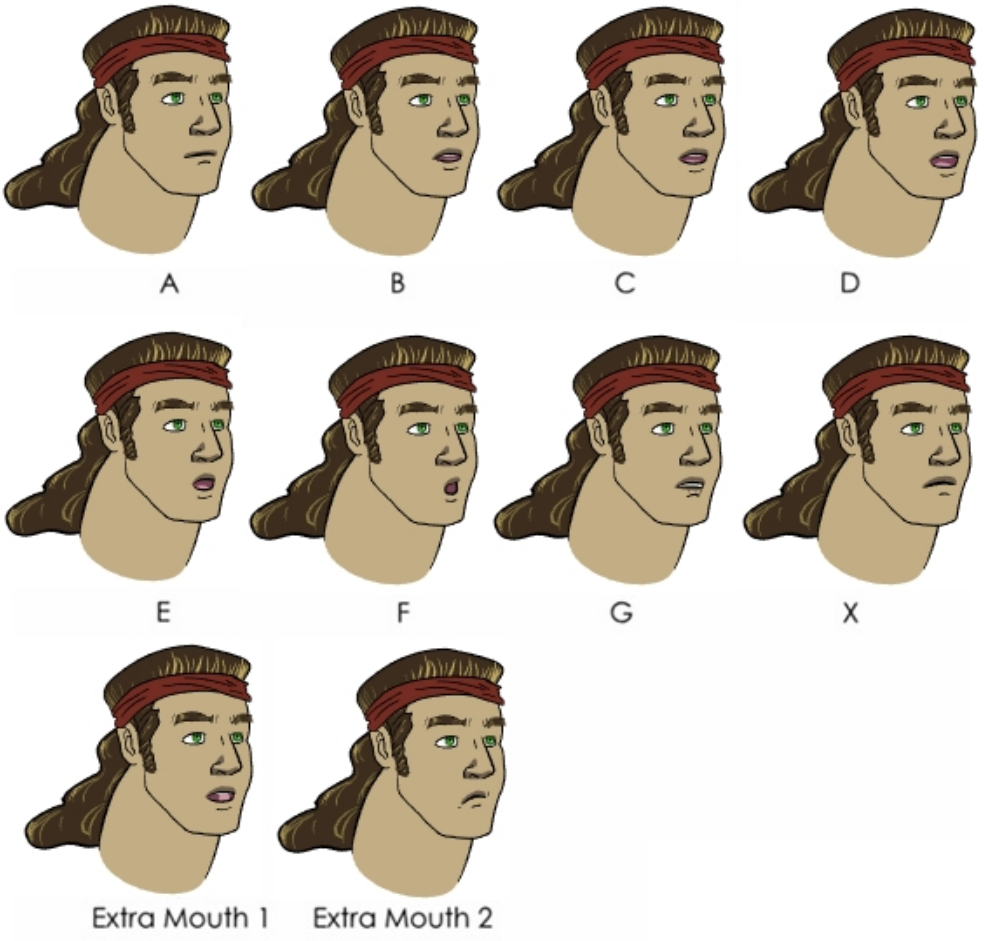
Adding a lip-sync to a project can really enhance its quality and storytelling. However, it can be difficult to shape a character's mouth to match the sound at a precise frame.

To solve this problem, Harmony provides a lip-sync feature which analyzes the contents of a sound element and generates a mouth chart (see below) based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence).

The mouth shapes used by Harmony are based on the conventional mouth chart used in the animation industry.

The letters used to represent the shapes do **NOT** correspond to an actual sound.

If you are doing cut-out animation, refer to the Cut-out Animation Guide, Character Building chapter, "Adding Extra Drawings" topic to learn how to add extra drawings to your character.



Here is an approximation of which sound each mouth shape can produce:

- **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

You can lip-sync the traditional way or let the system automatically create the basic detection.

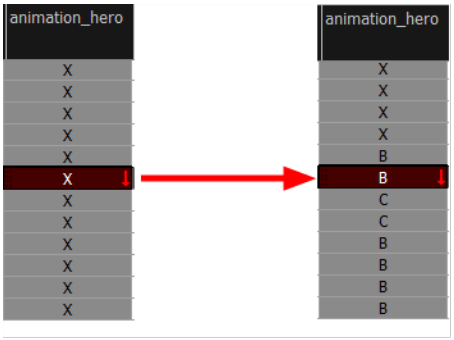
You can refer to the mouth chart positions as you draw the shape of your character's mouth.

Generating a Lip-sync Detection

There are two places where you can perform a lip-sync detection: Timeline or Xsheet views and Sound Element Editor.

How to generate a sound detection for lip-sync using the Xsheet or Timeline view

1. To show the mouth chart letters, if they are not already present in the Xsheet view,right-click on the sound column and select **Lip-Sync > Sound Display > Mouth Shapes** from the pop-up menu.
2. In the Xsheet view or Timeline view, right-click on the sound layer's cells and select **Lip-Sync > Auto Lip-Sync Detection**. You can also select **Animation > Lip-Sync > Auto Lip-Sync Detection** from the top menu.

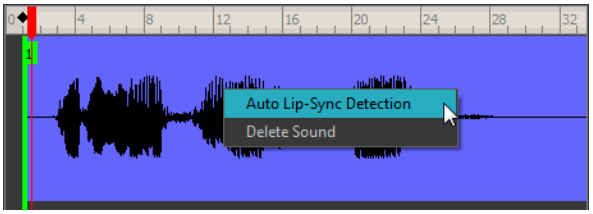


Harmony analyzes the selected sound clips and assigns a lip-sync letter to each frame. The X markers in the frame are replaced by these designated letters.

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 panel, 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 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.

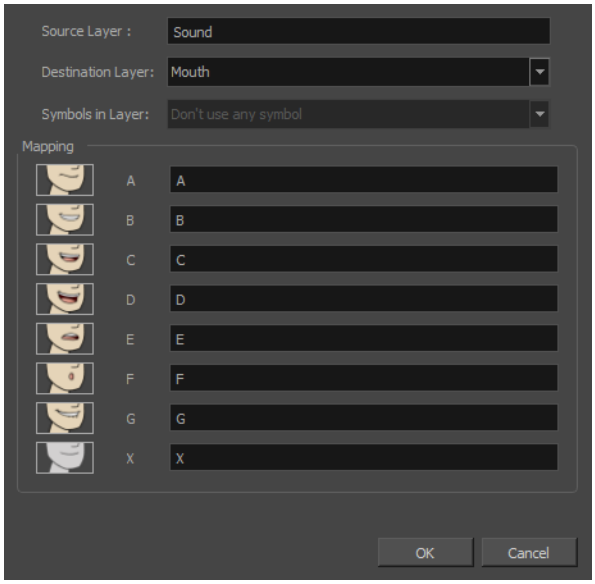
In the Lip-Sync Mapping dialog box, you can identify each lip drawing of a character. Harmony then automatically labels all of the cells in the character's element with the appropriate name.

How to automatically map lip-sync drawings to a mouth layer

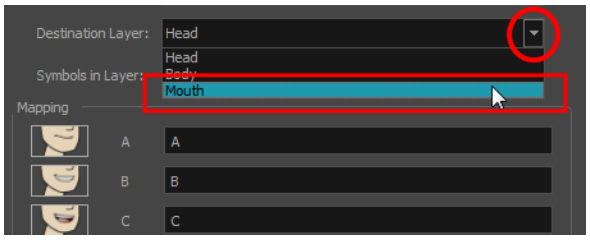
1. To open the Lip-Sync Mapping dialog box, do one of the following:

- In the Timeline view, right-click on any cell in the sound sample layer and select **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.
5. Click **OK**.
6. Press the Play button in the Playback toolbar to see and hear the results in the Camera view. To play back your scene with sound, enable the Sound button in the Playback toolbar.

Modifying the Lip-sync

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.

You can also change the mouth assignment of a sound in the Sound Element editor.

How to change the lip assignment of a sound in the Xsheet

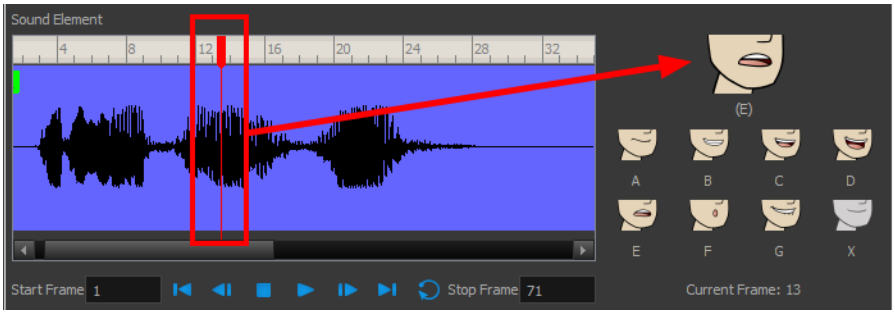
1. Right-click in the cell that contains the mouth position you want to change.
2. From the pop-up menu, select **Lip-Sync > Change Mouth Shape to** and choose the letter that reflects the mouth position you want to use for that sound. You can also select **Animation > Lip-Sync > Lip-Sync > *the desired mouth shape*** from the top menu.

   The drawing is automatically updated in the Camera view.

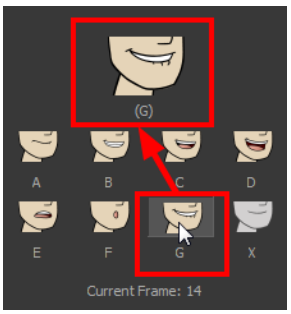
How to change the mouth position assignment of a sound from the Sound Element editor

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 panel, 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.

Note that if you modify the lip-sync detection you must remap the detection to your mouth latyer. See See "Mapping the Lip-Sync Detection" on page 494

Recomputing the Mouth Chart

When you generate the mouth chart for a sound in a sound element, you can either accept the mouth positions assigned by Harmony or assign your own lip-sync images.

However, if you change the sound's start frame or reassign its mouth position, you must reanalyze the sound and regenerate the mouth chart for it. This erases any manual modifications you may have made to the mouth assignments in the mouth chart.

To recompute the mouth chart for a selected sound from the Sound column

1. In a Sound column in the Xsheet or Timeline view,right-click on a cell that contains the sound file you want to recompute the lip-sync for. Select **Lip-Sync > Auto Lip-Sync Detection** from the pop-up menu. The mouth position assignment for each frame is recomputed, erasing any modifications you have made.

To recompute the mouth chart for a selected sound from the Sound Element Editor

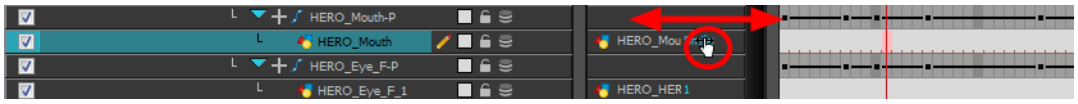
1. Double-click the sound layer name in the Timeline view or the sound column header in the Xsheet view to open the Sound Element editor.
2. Click on the waveform in the Sound Element section in the Sound Element editor.
3. Right-click and select **Auto-Lip Sync Detection**.

Manual Lip-sync

Harmony allows for the manual swapping of mouth position drawings to match a voice track. For this process, both sound scrubbing (listening to a soundwave broken up frame-by-frame) and drawing substitutions from the Library View are used.

How to perform a manual lip-sync

1. In the Playback toolbar, enable the **Sound Scrubbing** button.
2. In the Timeline view, drag the red position indicator 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 Timeline view, click on the **Expand** button to display the Data view.
5. 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.
6. 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.

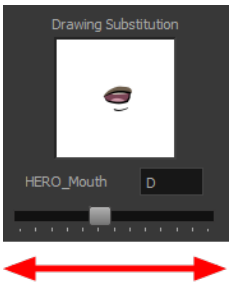


You can also use the Library view to swap drawings.

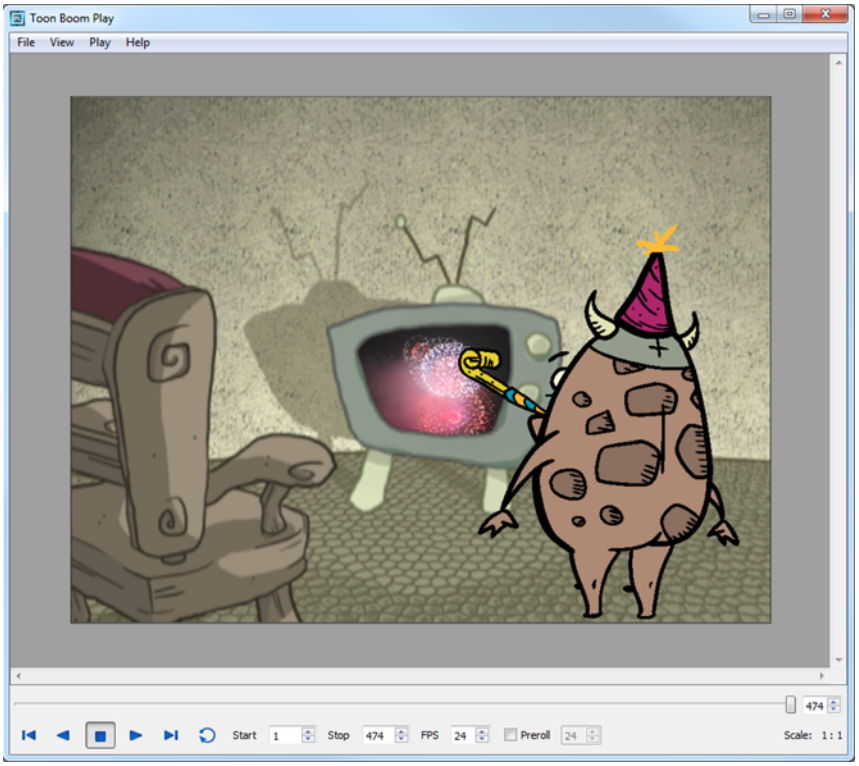
How to perform a manual lip-sync using the Library view

1. In the Playback toolbar, enable the **Sound Scrubbing** 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, click and drag the slider to choose a mouth shape. The current drawing is swapped for the one in the preview window.



Chapter 3: Export



Now that you have finished your animation, it is time to render your movie. Depending on whether you plan to further edit your movie in 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.

This chapter contains the following topics:

- Exporting a QuickTime Movie on the next page
- Exporting OpenGL Frames on page 505

Exporting a QuickTime Movie

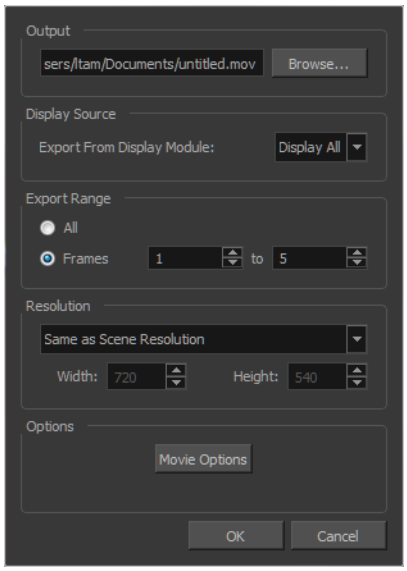
If you require a video file, you can export your animation as a QuickTime movie. To render a QuickTime movie with transparency, you need to set the Depth setting to Millions of Colours +.

If your exported video is too small or too large, change the project size from the top menu in **Scene > Scene Settings**. This will change the size of the video output.

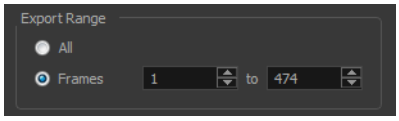
How to export a QuickTime Movie

1. From the top menu, select **File > Export > Movie**.

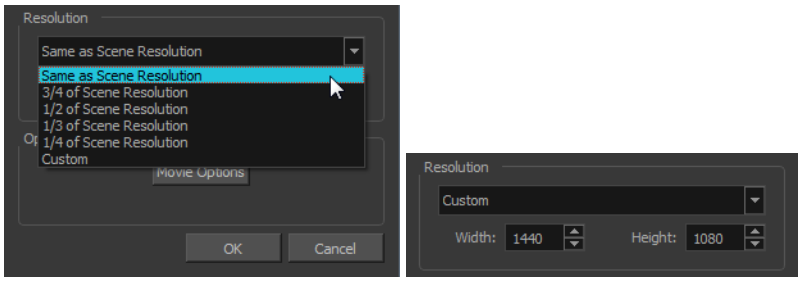
   The Export to QuickTime Movie dialog box opens.



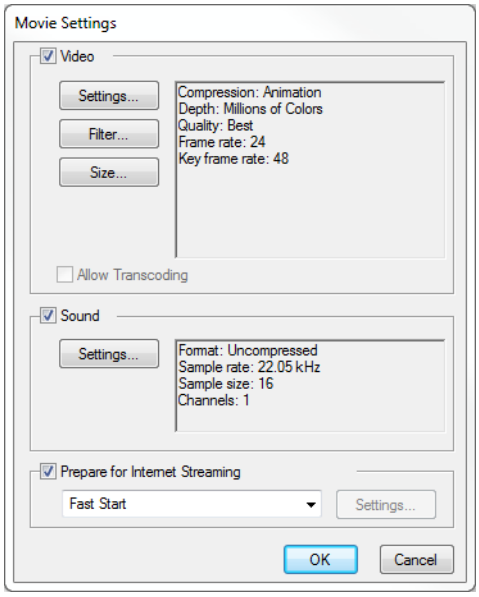
2. Click **Browse** and select a folder in which to save your movie and give it an appropriate file name for the export.
3. Click **OK**.
4. In the Display Source section, select the Display module to use for rendering your project.
5. From the Export Range section, decide whether you want to export 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.



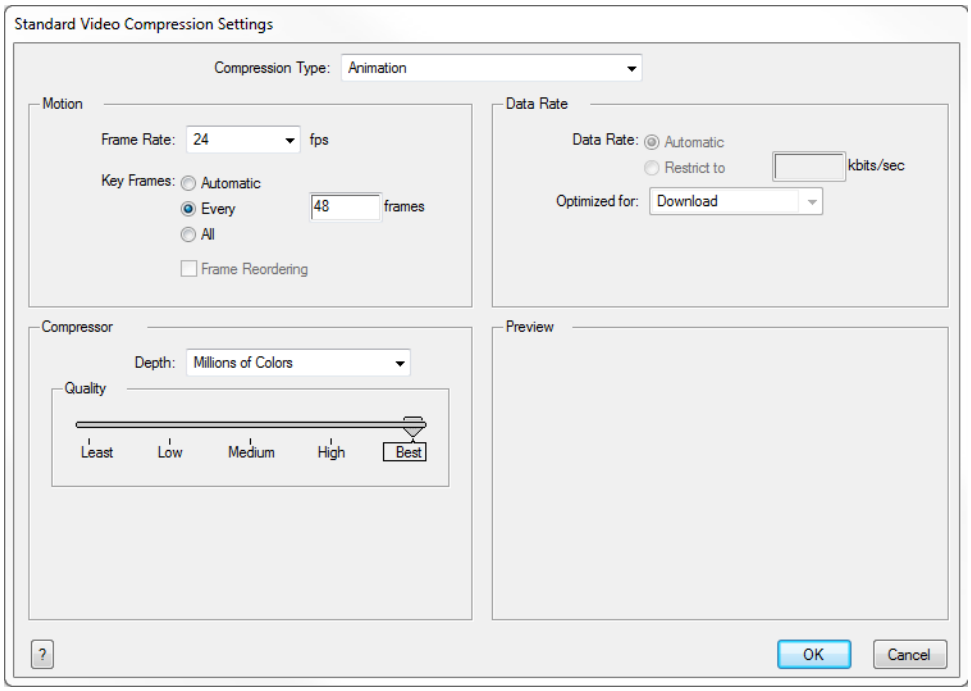
7. In the Options section, click **Movie Options**.



Parameter	Description
Video	Enables the customization of the video settings, filters and size.
	Settings: Opens the Standard Video Compression Settings dialog box (see below).
	Filter: Opens the Choose Video Filter dialog box, where you can select from a range of filters to apply to your video export.
	Size: Opens the Export Size Settings dialog box. The size settings are overridden by the Harmony's scene settings.
Sound	Check this box to enable the customization of the sound settings.
	Settings: Opens the Sound Settings dialog box (see below).
Prepare for Internet Streaming	Select this option to enable the customization of the Internet streaming options.

8. In the Video section, click **Settings**.

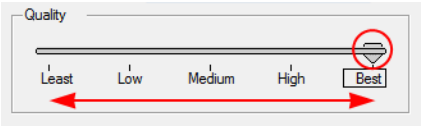
   The Standard Video Compression Settings dialog box opens.



9. From the Compression Type menu, select a codec. The availability of certain compression settings depends on the Compression Type selected. For example, Animation is the default compression type and as a result the Data Rate option is greyed out.
10. In the Motion section, choose a **Frame Rate** from the list.

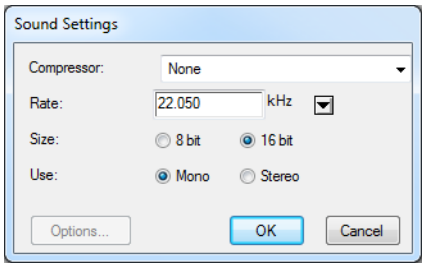
    By default, it is set to match the frames-per-second (fps) of your Harmony project. If you choose a lower frame rate, your export playback will be faster than your actual project. The reverse is also true for a higher frame rate.
11. If you want key frames inserted, select the **Every** option and set the number per frame.

    This is the option is recommended by QuickTime. Refer to the QuickTime documentation for further details.
12. In the Compressor section, choose a **Depth** based on your movie's needs. For example, Millions of Colours+ houses an alpha channel.
13. 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.



14. 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.
15. In the same section, from the Optimized For menu, select the intended viewing method for the export.
16. Click **OK**.
17. From the Movie Settings dialog box, click **Sound Settings**.

    The Sound Settings dialog box opens.



18. From the Compressor menu, select a compression type.

    The default setting is None. This will preserve your original sound file without the loss of information. However, an uncompressed sound file will inevitably add "weight" to the overall size of your video export.

19. Select a **Rate** by pressing the arrow button next to kHz.

    It is best to check and match the original properties of your sound file. 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 with higher frequencies missing.

    For a standard film sound quality, choose **44.1 kHz**, or **48 kHz** for DVD quality. Anything less will make the sound "dull" or less bright. For things like recorded voice this doesn't matter so much, but for music it can make an audible difference.

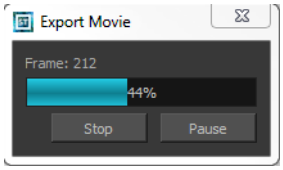
    If file size is a consideration, such as with videos for the Internet, then a lower rate might be more practical.

20. Next, choose the **Size** and the **Use**, which are related. Once again, it is advisable to check your original sound file properties. If the file was recorded in one channel (mono), there is little point in choosing the two channel (stereo) option. Although Mono can support a 16-bit channel, the extra information is unnecessary. Mono is generally paired with 8-bit and Stereo with 16-bit.

21. Click **OK**.

22. In the Export to QuickTime Movie dialog box, click **OK**.

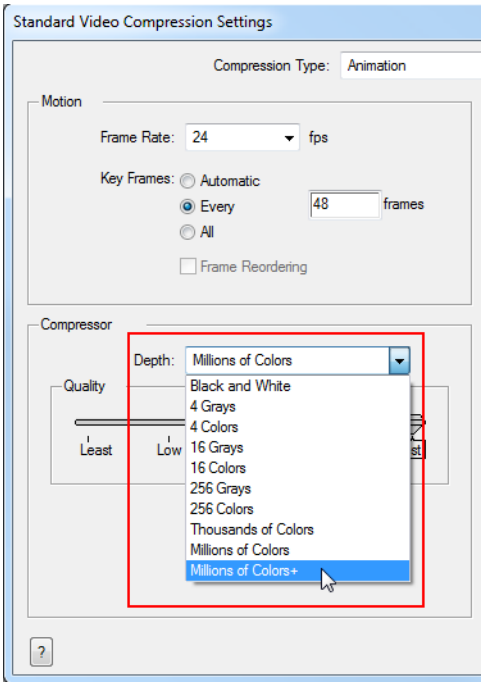
    A progress bar appears.



23. Browse to the location on your computer where you saved your QuickTime video and double-click on it to view the export.

How to set the depth to Millions of Colours + to export a QuickTime movie with transparency

- In the Standard Video Compression Settings dialog box, select **Millions of Colors+** from the Depth menu—see Exporting a QuickTime Movie on page 500.


Standard Video Compression Settings
Compression Type: Animation
Motion
Frame Rate: 24 fps
Key Frames: Automatic
Every 48 frames
All
Frame Reordering
Compressor
Depth: Millions of Colors
Quality
Least
Low
Black and White
4 Grays
4 Colors
16 Grays
16 Colors
256 Grays
256 Colors
Thousands of Colors
Millions of Colors
Millions of Colors+
?

Exporting OpenGL Frames

You can export the OpenGL frames (fast display mode) if you need a quick render for your scene. Some heavier scenes containing 3D, multiple effects and camera moves can be fairly long to export.

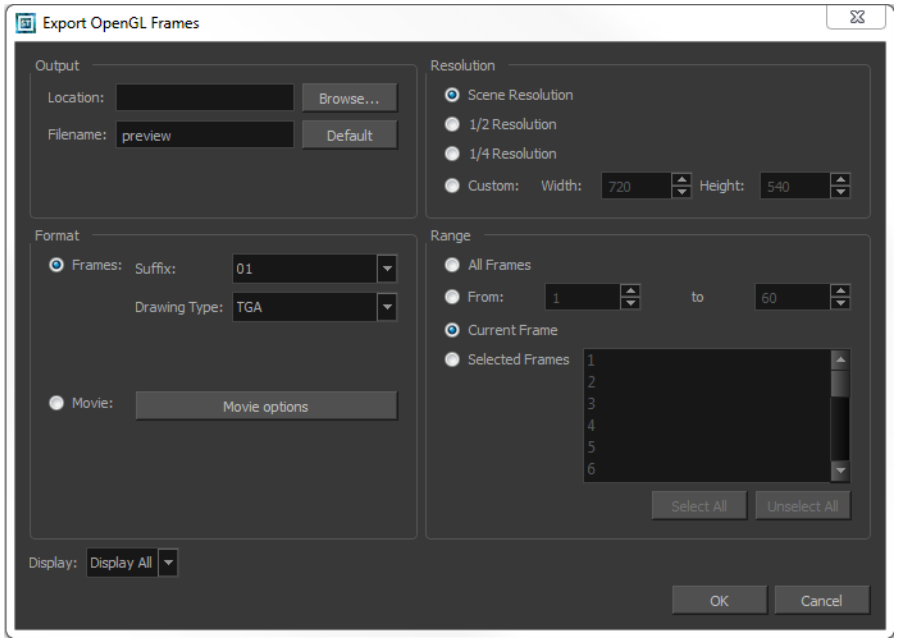
Use the Export OpenGL Frames dialog box to select the frames you want to render from the OpenGL Camera view, then save the rendered frames as image files or as a QuickTime movie.

Frames saved from OpenGL view have neither antialiasing nor special effects. To render final frames with effects, export Images or a Movie.

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, in the Location field, click **Browse** to select a folder for the frames.
3. In the Filename field, enter a name (prefix) for the frames or revert to the default name by clicking **Default**.
4. In the Format section, decide if you want to export individual image frames or a movie.
   - **Suffix**: Lets you select the desired suffix. If you intend to render only a few frames, use 1 or 01, whereas if you intend to render 1000 frames, you can select 0001.
   - **Drawing Type**: Lets you select the file type to render, such as TGA or SGI.
5. Click **Movie Options** to customize the Audio and Video settings for the *.mov export—see Exporting a QuickTime Movie on page 500.
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 time and space. You also have the option to set a Custom width and height to produce smaller or larger frames.
7. In the Range section, decide whether you want to render all your frames, a range of frames, the current frame or selected frames.

8. Use the Display menu to select a Display module to use for rendering your OpenGL frames from.
9. Click **OK**.