

XSHEET



Toon Boom Harmony 10.3 Toon Boom Xsheet User Guide

Legal Notices

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Chapter 1: Introduction

The Harmony Xsheet is part of the Toon Boom Harmony solution. The Xsheet Module takes care of all of your timing needs, from pasting cycles, to setting Tempo Markers, to printing your Xsheet. The Xsheet Module combines drawing, function, timing and annotation columns for maximum freedom and performance.

The Xsheet Module is mainly used for traditional animation when reproducing paper exposure sheet. It only covers Harmony Stage's timing features. This way, the user does not have to deal with all the other advanced animation features and can focus on his exposure sheet work.



In all Harmony Xsheet documentation, the default keyboard shortcuts that are used are the Harmony shortcuts.

About Timing and Exposure Sheet

The exposure of a drawing is the length of time that it stays on the screen. In animation, a second often can be divided as follows; 24, 25 or 30 images depending on the used format. We also call these images frames.

Broadcast Standards

There are two main broadcast standards used; the one selected will determine the frame rate. In North America, Japan and some other parts of Asia, the NTSC (National Television System Committee) format is used. This format is 30 images (frames) per second.

In most of Europe, PAL (Phase Alternating Line) format is the broadcast standard. This format is 25 frames per second.

The human brain is able to process an animation as slow as 12 drawings per second. Therefore, the amount of drawings per second should be between 12 and 30. The general standard is 24 or 25 frames per second, so these 12 drawings are set on double exposure. This means that each drawing stays on the screen for two frames. If a drawing is exposed for 24 frames, it means that it will appear to the eye for one second.

Xsheet

The Xsheet also known as the Exposure Sheet, or Dope Sheet is used when an animator is planning a scene: the animator creates an individual column for each element in the scene, the name of the drawings and their exposure into the Xsheet. The Xsheet allows the user to see the timing in detail.

The Xsheet is composed of columns corresponding to the different layers. Each column is split into rows representing the frames in the scene. A paper Xsheet usually has eighty to a hundred rows and ten columns. This enables the animator to associate a column with a certain element and record at which frame each drawing will appear.

The traditional paper Xsheet was mainly created for the animator to communicate with the cameraman regarding the scene's timing, the camera moves and element trajectories. It is still used today to express the same information to the compositors and the person working on the digital Xsheet.

Topics Covered

- [Getting Started](#) on the next page
- [Interface](#) on page 23

Chapter 1: Getting Started

Once the software is installed, you are ready to launch the application and set the timing for your animations.




Topics Covered

- [Launching the Harmony Xsheet on the facing page](#)
- [Setting the Scene Length on page 14](#)
- [Scene Settings on page 15](#)
- [Verifying Project Integrity on page 21](#)

Launching the Harmony Xsheet

You can run the software on Mac OS X, Windows or Linux operating systems.

To open the Xsheet Module, do one of the following:

1. Launch Harmony Xsheet:
 - ▶ **Mac OS X:** Double-click on the Harmony Xsheet  icon or select **Applications > Toon Boom Harmony 10 > Xsheet**
 - ▶ **Windows/Linux:** Double-click on the Harmony Xsheet  icon or select **Start > Programs > Toon Boom Harmony 10 > Xsheet**
 - ▶ **Linux:** Double-click on the Harmony Xsheet  icon or select **Applications > ToonBoom-Harmony_10 > Xsheet**

or type in the command line

```
cd /usr/local/ToonBoomAnimation/harmony_10/lrx86/bin./Stage -xsheet
```

The **Harmony Xsheet** opens, displaying the Welcome Screen.

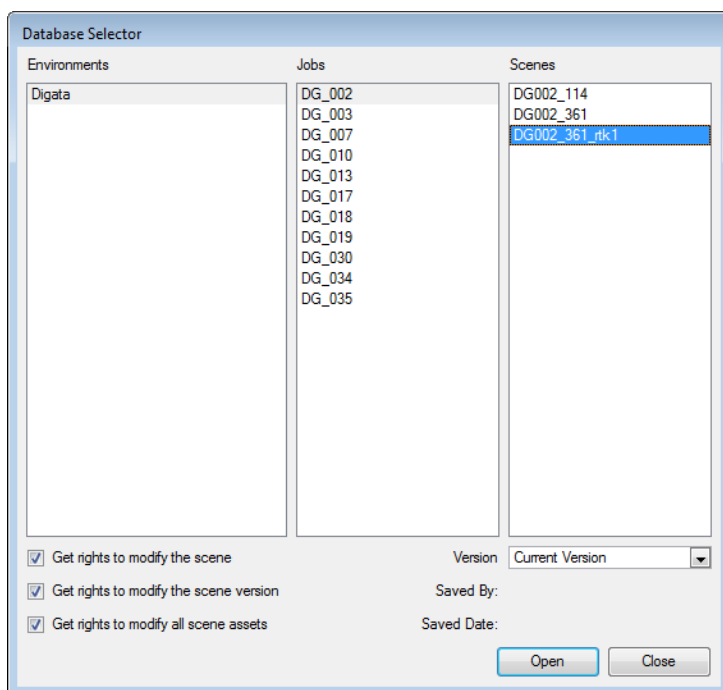
2. Enter your User Name in the user name field.



Your project manager or system administrator should already have created a user name for you.

3. Click Login.

The **Database Selector** opens.



4. Select an **Environment** (for example, this could be the name of a cartoon series), the name of the **Job** (for example, the name or number of an episode in that series) and then the **Scene** (for example, a specific scene in that particular episode).
5. Select one of the following three options:
 - **Get rights to modify the scene:** Allows the user to modify the selected version of the scene and have access to the version manager during the opened session.
 - **Get rights to modify the scene version:** Allows the user to modify the currently selected scene version but locks access to the version manager during the opened session.
 - **Get rights to modify all scene assets:** Automatically gets all the edit rights for the selected version of the scene. This option is only recommended if you are certain that the selected scene can not be opened for editing by several users at the same time. Large studios should avoid this option.
6. Click on the **Open** button.



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

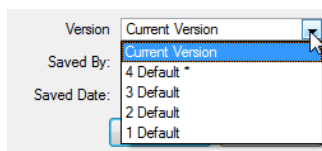
To set the scene's rights after the scene is loaded:

1. Select **File > Rights to Modify Scene**.



Note that it is not possible to acquire the rights to modify the scene assets once the scene is loaded. This process is done during the initial loading process of the scene.

2. From the **Version** drop-down menu, select the version you wish to work on.




3. The **Saved By** and **Saved Date** fields display the user who was the last to save the selected scene and the date of the last save.
4. Click on the **Open** button.

Related Topics

- [Using the File Menu on the facing page](#)

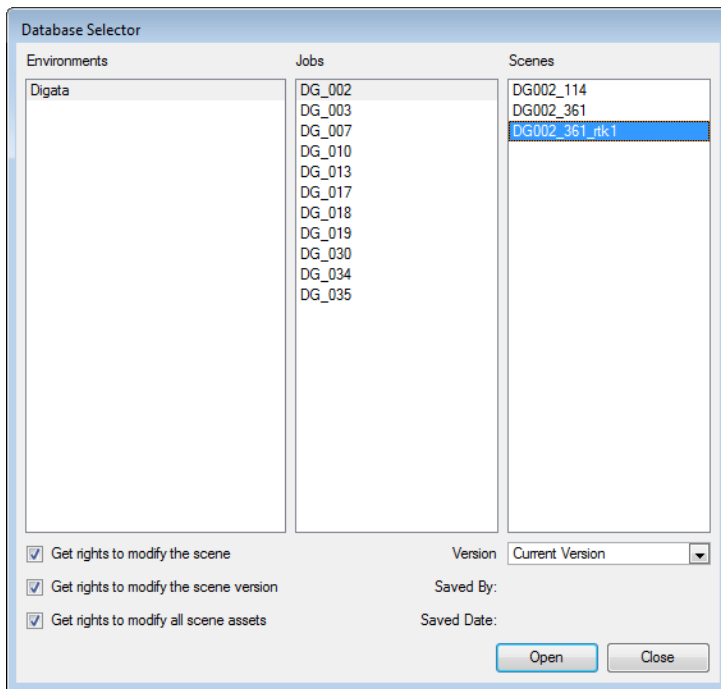
Using the File Menu

To open a scene from the File menu:

1. Select **File > Open**. You can also click on the **Open**  button in the **File** toolbar. The [Ctrl] + [O] (Windows/Linux) or [⌘] + [O] (Mac OS X).

The **Open Scene** browser opens.

The **Database Selector** opens.



2. Select an **Environment** (for example, this could be the name of a cartoon series), the name of the **Job** (for example, the name or number of an episode in that series) and then the **Scene** (for example, a specific scene in that particular episode).
3. Select one of the following three options:
 - ▶ **Get rights to modify the scene:** Allows the user to modify the selected version of the scene and have access to the version manager during the opened session.
 - ▶ **Get rights to modify the scene version:** Allows the user to modify the currently selected scene version but locks access to the version manager during the opened session.
 - ▶ **Get rights to modify all scene assets:** Automatically gets all the edit rights for the selected version of the scene. This option is only recommended if you are certain that the selected scene can not be opened for editing by several users at the same time. Large studios should avoid this option.
4. Click on the Open button.

Related Topics

- [Launching the Harmony Xsheet on page 11](#)

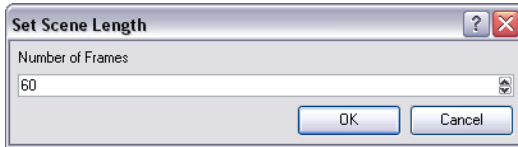
Setting the Scene Length

You can set the scene length from the top menu.

To set the scene length from the top menu:

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

The Set Scene Length dialog box opens.



2. In the **Number of Frames** field, set the number of frames needed and click OK.



Refer to the [Timing on page 51](#) topics to learn more about adding and removing frames and extending the scene's length.

Related Topics

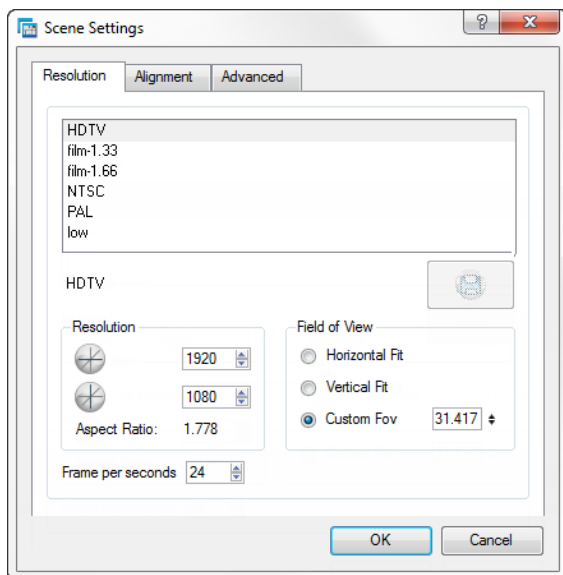
- [Getting Started on page 10](#)
- [Launching the Harmony Xsheet on page 11](#)
- [Scene Settings on the facing page](#)
- [Verifying Project Integrity on page 21](#)

Scene Settings

You can set up both the scene's resolution and alignment. You can do this by going to the top menu and selecting

Scene > Scene Settings.

The **Scene Settings** dialog box opens.



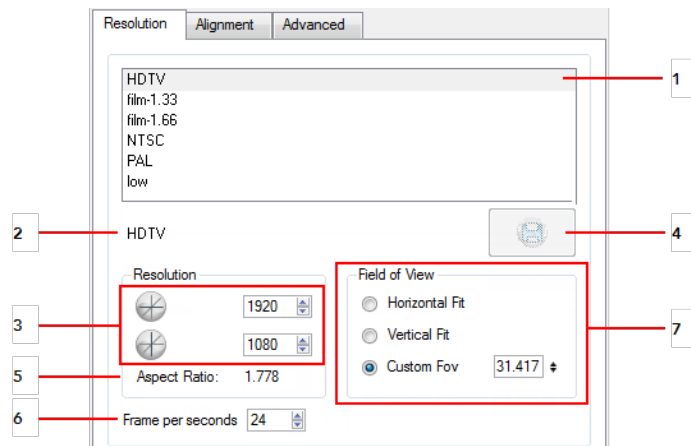
The different Scene Settings options are separated into three tabs:

- [Resolution Tab](#) on the next page
- [Alignment Tab](#) on page 18
- [Advanced Tab](#) on page 19

Related Topics

- [Getting Started](#) on page 10
- [Launching the Harmony Xsheet](#) on page 11
- [Setting the Scene Length](#) on the previous page
- [Verifying Project Integrity](#) on page 21

Resolution Tab



1. Project Resolution Type
2. Scene Resolution Setting
3. Pixel Dimensions
4. Save Custom Resolution
5. Aspect Ratio
6. Project Frame Rate
7. Field of View

Resolution

1. You can select your project's resolution type from this area so it matches your intended output.
 - ▶ **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 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 drawing grid is fit into the camera 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 grid with the top and bottom of the camera frame.
 - ▶ **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 grid is fit into the camera 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 grid with the top and bottom of the camera 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.

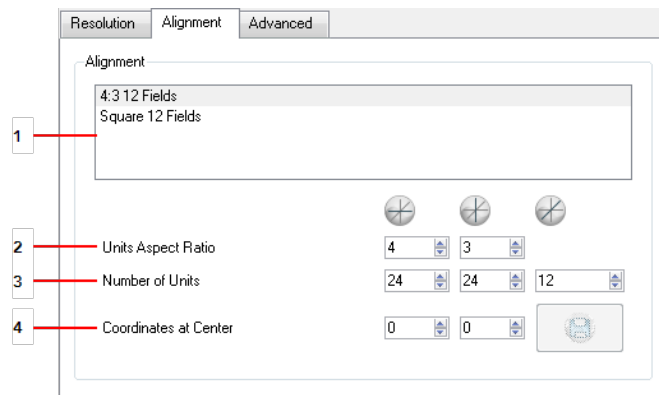
- **Low:** This format is ideal for videos destined for the web, where size and fast download of a video file might take precedence over quality.
2. Displays the scene resolution setting selection.
 3. Displays the pixel dimensions for your resolution selection.

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 make it active (4). It will then appear in the resolution selection list (1).
 4. Click **Save** to save and create your custom resolution as a setting. This button becomes active when you create a custom resolution type (3).
 5. The aspect ratio is the ratio between the horizontal and vertical dimensions of the Camera framing. Each resolution setting has a preset aspect ratio that cannot be changed.
 6. Select the frame rate for your project. The higher the frame rate, for example 30 fps, the smoother your animation will look, but the heavier it will become, the lower the frame rate, for example 12 fps, the choppier your animation may look, but the lighter it will be.
 7. Use these options to define the FOV of the camera and how the drawing elements (and drawing grid) align to the camera. The drawing grid is always scaled proportionally to a 4:3 (1.33) ratio, 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 drawing grid is fitted to the vertical (side) edges of the Camera view, so that the width of the grid matches the width of your project resolution.
 - **Vertical Fit:** The drawing grid is fitted to the horizontal (top and bottom) edges of the Camera view, so that the height of the grid matches the height of your project resolution.
 - **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.

Related Topics

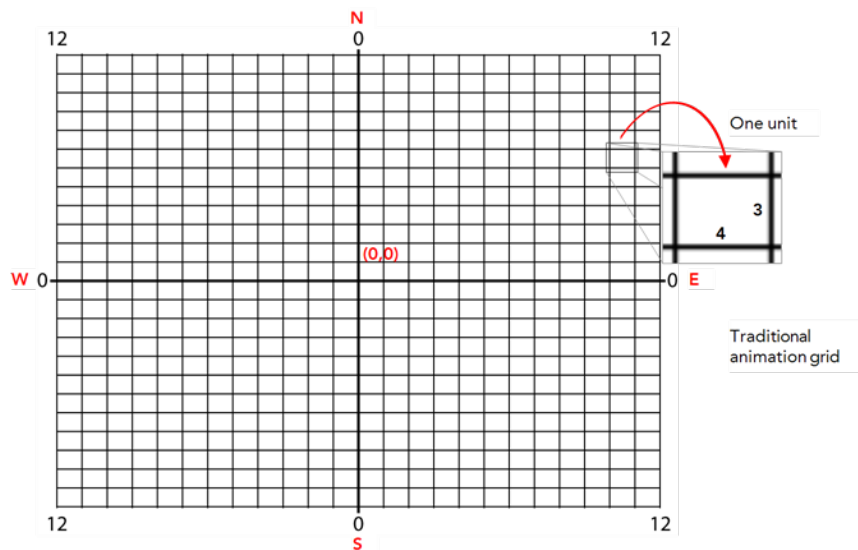
- [Scene Settings on page 15](#)
- [Alignment Tab on the next page](#)
- [Advanced Tab on page 19](#)

Alignment Tab



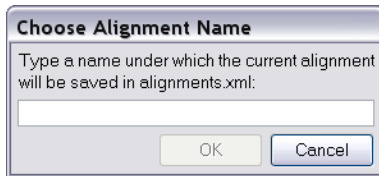
1. Alignment Presets
2. Units Aspect Ratio
3. Number of Units
4. Coordinates at Centre

Alignment Rules



1. 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.
2. 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.
3. 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.
 4. 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.
 5. Click **Save** button to save your current Alignment settings and be able to select them later from the list.
 The Choose Alignment Name dialog box opens.

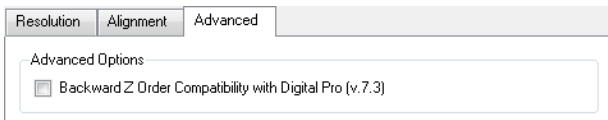


Type in a name for your new alignment settings and click **OK**.

Related Topics

- [Scene Settings on page 15](#)
- [Alignment Tab on the previous page](#)
- [Advanced Tab below](#)

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.

Related Topics

- [Scene Settings on page 15](#)

- [Resolution Tab](#) on page 16
- [Alignment Tab](#) on page 18

Verifying Project Integrity

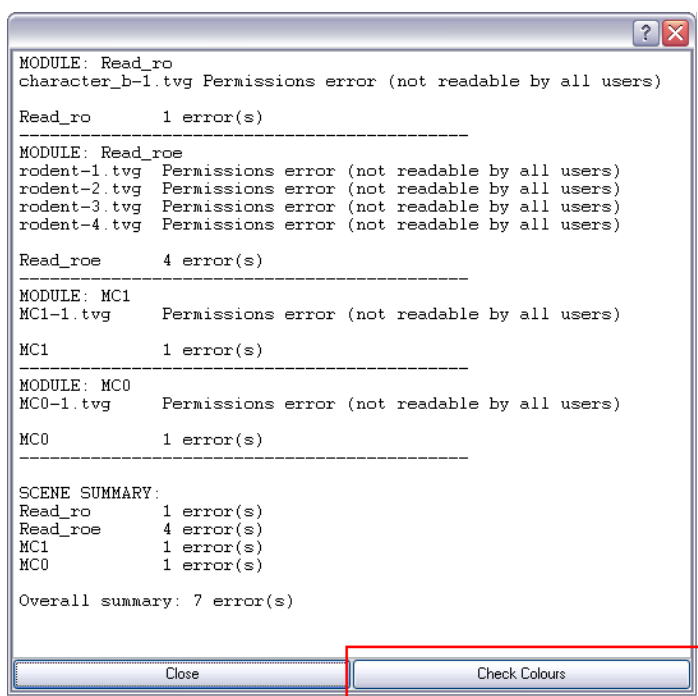
The **Check Files** command verifies the integrity of the drawing and palette files in your project.

To open the **Check Files** dialog box:

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

Check Files

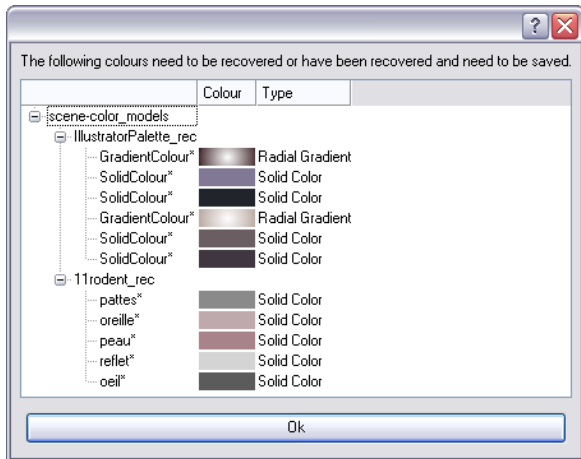
Use the **Check Files** dialog box to verify that the data is consistent, correct, and accessible.



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

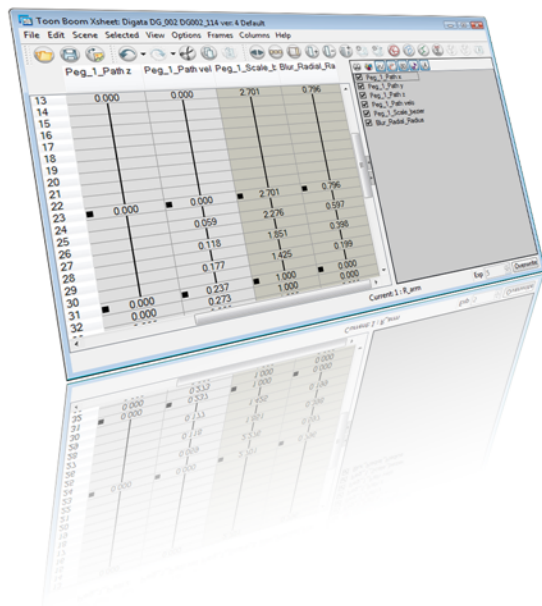
Check Colours

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



- [Launching the Harmony Xsheet on page 11](#)
- [Launching the Harmony Xsheet on page 11](#)
- [Setting the Scene Length on page 14](#)
- [Scene Settings on page 15](#)

Chapter 1: Interface



Knowing how to manage the Harmony Xsheet interface helps you to work efficiently and organize your workspace conveniently. There are a series of features and tools you can use as you perform different operations. Each user has a preferred way of working in the interface and which features and tools they will use. In this chapter, you will learn about the main elements of the interface and how to manage them.

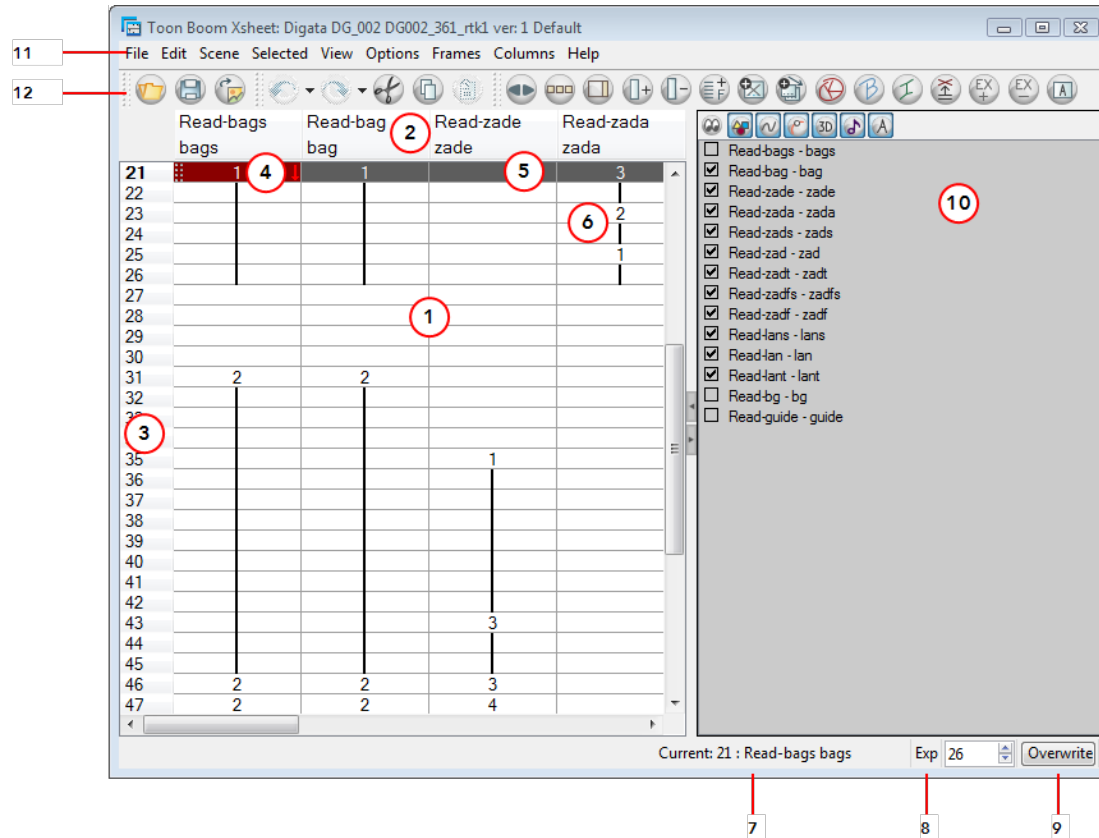
Topics Covered

- [User Interface on the next page](#)
- [Menu on page 34](#)
- [Toolbars on page 36](#)
- [Interface Navigation on page 43](#)
- [Preferences on page 46](#)

User Interface

This section takes you through the most common elements of the user interface.

The Harmony Xsheet has two views and a row of tools that are available at the top of the interface or view.



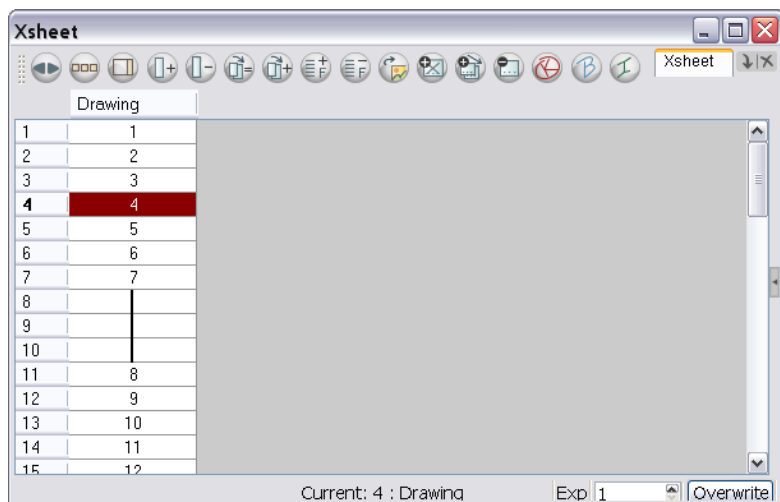
1. Xsheet Main Section	2. Column Header
3. Frame Numbers	4. Current Drawing
5. Current Frame	6. Drawing Exposure
7. Current Frame Display	8. Increase/Decrease Exposure
9. Overwrite/Insert Modes	10. Column List
11. Menu	12. Toolbars

Related Topics

- [Xsheet Main Section](#) on the facing page
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28

- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31
- [Column List](#) on page 32

Xsheet Main Section



The Xsheet view has two sections. Only the main section is visible by default. It displays the drawing columns.

When using advanced compositing and animation techniques, unconnected functions (motion paths) also appear in the main section. Unconnected functions mean that some motion paths are not attached to any particular layer.

	Drawing	Peg_x	Peg_y	Peg_z	Peg_velo
1	1	■ 0.000	■ 0.000	■ 0.000	■ 1.000
2	2				
3	3				
4	4				
5	5				
6	6				
7	7				
8					
9					
10					
11	8				
12	9				
13	10				
14	11				
15	12				

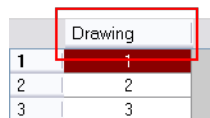


When you reconnect functions to a layer they are still visible in the main section.

Related Topics

- [Column Header](#) below
- [Frame Numbers](#) on the facing page
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31
- [Column List](#) on page 32

Column Header

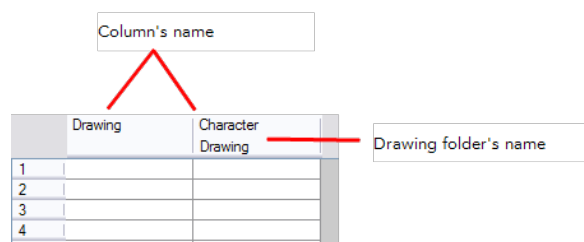


	Drawing
1	1
2	2
3	3

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.

In Harmony, the column header shows the layer's name and the name of the drawing folder to which it is linked. If the name of the layer is the same as the drawing folder, the drawing folder's name will not be displayed. For example; when you link a Timing column to a certain element (and thereby the Element's folder).



	Drawing	Character Drawing
1		
2		
3		
4		

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

Related Topics

- [Xsheet Main Section](#) on the previous page
- [Frame Numbers](#) on the facing page
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28

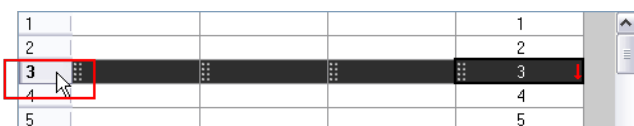
- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31
- [Column List](#) on page 32

Frame Numbers

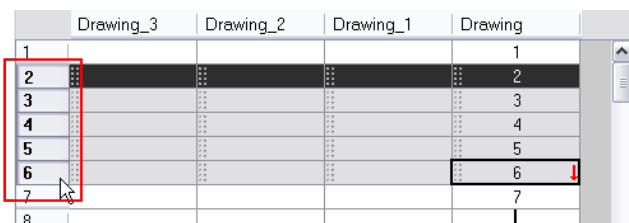
1
2
3
4
5
6
7
8
9
10
11
12

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.



Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on the previous page
- [Current Drawing](#) on the next page
- [Current Frame](#) on the next page
- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30

- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31
- [Column List](#) on page 32

Current Drawing

1
2
3
4
5

A cell selected in dark red indicates that the cell is currently selected.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on the previous page
- [Current Frame](#) below
- [Drawing Exposure](#) on the facing page
- [Current Frame Display](#) on the facing page
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31
- [Column List](#) on page 32

Current Frame

	Drawing_3	Drawing_2	Drawing_1	Drawing
1				1
2				2
3				3
4				4
5				5
6				6

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

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on the previous page
- [Current Drawing](#) above
- [Drawing Exposure](#) on the facing page

- [Current Frame Display](#) below
- [Increase/Decrease Exposure](#) on the next page
- [Overwrite/Insert Modes](#) on the next page
- [Function Column](#) on page 31
- [Column List](#) on page 32

Drawing Exposure

	Drawing
1	1
2	1
3	2
4	3
5	4
6	4
7	4
8	5
9	6
10	7
11	
12	

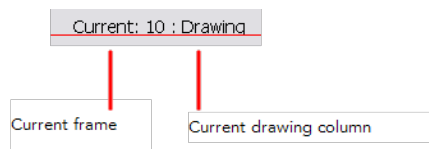
Diagram illustrating Drawing Exposure in an Xsheet. The table shows frame numbers (1-12) and drawing names (1-7). A vertical black line indicates exposure continuity. A red box highlights the exposure of drawing 4 across frames 5, 6, and 7. Labels with arrows point to specific cells: 'Drawing exposure' points to cell (1,1), 'Drawing exposed over 3 cells' points to the red box, and 'Blank cell' points to cell (11,1).

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.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on the previous page
- [Current Frame](#) on the previous page
- [Current Frame Display](#) below
- [Increase/Decrease Exposure](#) on the next page
- [Overwrite/Insert Modes](#) on the next page
- [Function Column](#) on page 31
- [Column List](#) on page 32

Current Frame Display

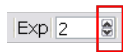


At the bottom of the Xsheet view, you can see the current cell number as well as the name of the column containing the currently selected cell.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on the previous page
- [Increase/Decrease Exposure](#) below
- [Overwrite/Insert Modes](#) below
- [Function Column](#) on the facing page
- [Column List](#) on page 32

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.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on the previous page
- [Current Frame Display](#) on the previous page
- [Overwrite/Insert Modes](#) below
- [Function Column](#) on the facing page
- [Column List](#) on page 32

Overwrite/Insert Modes

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

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on the previous page
- [Function Column](#) below
- [Column List](#) on the next page

Function Column

	Transparency_1	
1	50.000	Keyframe
2	62.500	
3	75.000	Interpolation
4	87.500	
5	100.000	
6	87.500	
7	75.000	
8	62.500	
9	50.000	
10		
11		Held value
12		
13		
14		
15		

The function columns are displayed in the Functions section of the Xsheet view. They represent the motion and rotation you applied to your drawing layer. Only the function columns related to the selected layer are displayed.

A function column can also be related to an effect. Selecting your effect layer shows you the corresponding function column in the Xsheet view.

The function columns display the position value or effect value on each cell. If there is a keyframe on a cell, a black square is displayed. Holding the same value for several frames displays a vertical black line.

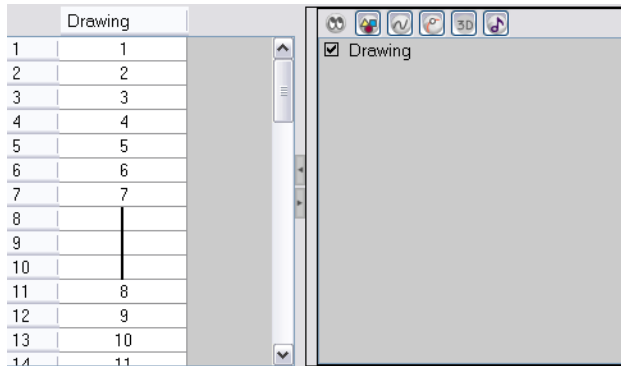
Holding the same value for several frames displays a vertical black line.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on page 29

- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Column List](#) below


Column List

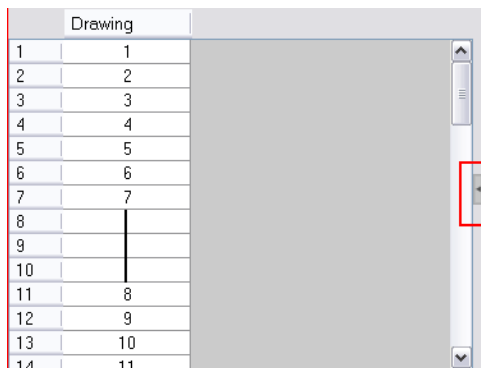


The Column List section allows you to show and hide columns from your Xsheet view.

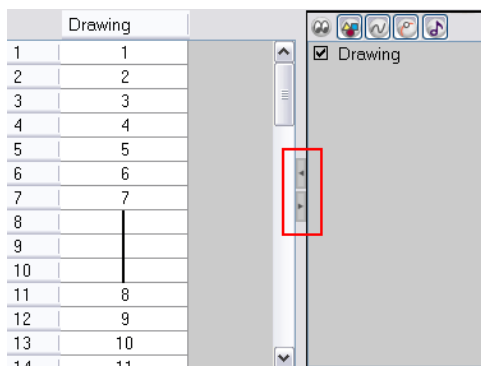
You can use the Column List to show or hide individual columns or hide an entire column type (drawing or function) from your Xsheet view. By default, the Functions section is hidden.

To display the Column List section:







1. In the Xsheet view, click on the Expand button located 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 Xsheet, you can also go to the Xsheet View menu and select **View > Show Column List**.



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




The types of columns that you can show or hide by clicking on the buttons are:

<ul style="list-style-type: none">  Drawing columns 	<ul style="list-style-type: none">  3D rotation columns
<ul style="list-style-type: none">  Function columns 	<ul style="list-style-type: none">  Sound columns
<ul style="list-style-type: none">  3D path columns 	<ul style="list-style-type: none">  Annotation columns



For more information regarding column types, please refer to the Toon Boom Harmony User Guide.

You can also show/hide columns by checking or unchecking the column name under the Show/Hide icon . You can use various combinations of the column type buttons and Show/Hide check boxes to reduce the amount of visual clutter in your Xsheet.

Related Topics

- [Xsheet Main Section](#) on page 25
- [Column Header](#) on page 26
- [Frame Numbers](#) on page 27
- [Current Drawing](#) on page 28
- [Current Frame](#) on page 28
- [Drawing Exposure](#) on page 29
- [Current Frame Display](#) on page 29
- [Increase/Decrease Exposure](#) on page 30
- [Overwrite/Insert Modes](#) on page 30
- [Function Column](#) on page 31

Menu

File Edit Scene Selected View Options Frames Columns Help

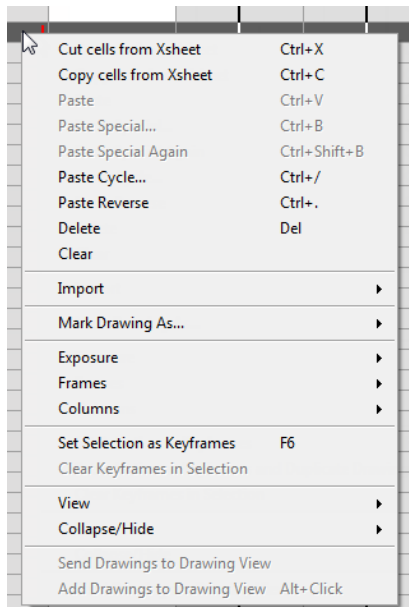
Stage File Edit Scene Selected View Options Frames Columns Help

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 user interface.

The top menu contains the following categories:

- File
- Edit
- Scene
- Selected
- View
- Options
- Frames
- Columns
- Help

Quick Access Menu



Each view has a quick menu containing recurring actions. The Quick Menu is accessed by right-clicking anywhere in the view.

Related Topics

- [Interface on page 23](#)

Toolbars

The Xsheet Module user interface contains toolbars which, by default, are located at the top of the interface. These toolbars can be moved around. You can reposition the toolbars to suit your work style or hide unused ones.




Related Topics

- [File Toolbar](#) below
- [Edit Toolbar](#) on the facing page
- [Xsheet Toolbar](#) on the facing page
- [Moving Toolbars](#) on page 40
- [Toolbar Manager](#) on page 41

File Toolbar



Use the commands from this toolbar to perform basic file functions.

-  Use the **Open** button to bring up the Database Selector dialog box. Select a new Environment, Job or Scene. The [Ctrl] + [O] (Windows/Linux) or [⌘] + [O] (Mac OS X).
-  Use the **Save** button to save all changes made to the open scene. The [Ctrl] + [S] (Windows/Linux) or [⌘] + [S] (Mac OS X).
-  Use the **Import Images** button to open the Import Images dialog box. Use this dialog box to bring in a single image or multiple images. Harmony Xsheet supports JPEG, BMP, PNG, TGA, PSD, IFF, SGI, TVG, OMF, PAL and SCAN.



For a detailed description of all the options available in the Import Images dialog box, please refer to the Toon Boom Harmony User Guide.






Related Topics

- [Edit Toolbar](#) on the facing page
- [Xsheet Toolbar](#) on the facing page
- [Moving Toolbars](#) on page 40
- [Toolbar Manager](#) on page 41

Edit Toolbar



Use the commands from this toolbar to perform basic editing functions.

-  Use the **Undo** command to remove the last change made. The Harmony Xsheet supports multiple undos, so you can reverse changes you have made in the order that you made them. The [Ctrl] + [Z] (Windows/Linux) or [⌘] + [Z] (Mac OS X).
-  Use the **Redo** command when you have undone an operation that you decide to keep. The **Redo** command becomes active only after you use the **Undo** command. The [Ctrl] + [Shift] + [Z] (Windows/Linux) or [⌘] + [Shift] + [Z] (Mac OS X).
-  Use the **Cut** command to remove selected cells, groups of cells or all the cells in a column. You can then **paste** the cells into another column in the **Xsheet** view. The [Ctrl] + [X] (Windows/Linux) or [⌘] + [X] (Mac OS X).
-  Use the **Copy** command to copy a selected cell and cell properties. The [Ctrl] + [C] (Windows/Linux) or [⌘] + [C] (Mac OS X).
-  Use the **Paste** command to place cells you cut or copied into the new location you select in the **Xsheet** view. The [Ctrl] + [V] (Windows/Linux) or [⌘] + [V] (Mac OS X).

Related Topics

- [File Toolbar](#) on the previous page
- [Xsheet Toolbar](#) below
- [Moving Toolbars](#) on page 40
- [Toolbar Manager](#) on page 41


Xsheet Toolbar

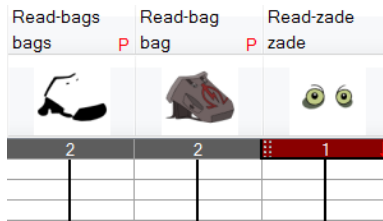



The Xsheet view has its own toolbar where you can find the most common features. This toolbar is displayed by default. Use the commands from this toolbar to perform drawing exposure functions.



You can customize the Xsheet view toolbar: refer to the [Toolbar Manager on page 41](#) topic for a detailed explanation.


-  **Show Thumbnails:** displays a thumbnail image of the drawing that is being referred to by the selected column frame at the top of the column, just under the column header.

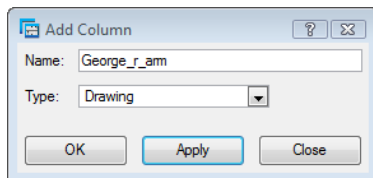






-  **Show Column List:** Expands and collapses the Column List section and the Main Xsheet View so that they can be displayed in the interface, or hidden from view.

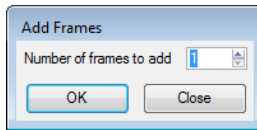


Refer to the [Column List on page 32](#) topic for a detailed example.

-  **Add Column:** Adds a column to the Xsheet to the left of the selected column. The **Add Column** dialog box appears, allowing you to type in the column name and chose the column type from the drop-down menu. If you wish to add multiple columns in one go, click on the **Apply** button instead of **OK**.



-  **Delete Column:** Deletes the selected column. Click on the column header to make your selection.
-  **Clone Column:** Provides you with a copy of the selected column that uses the same drawings as the original. If you modify a drawing in the cloned or original column, it is updated in both layers. You can modify the timing of each column independently, one apart from the other, but the drawings remain linked.
-  **Duplicate Column:** Provides you with an independent copy of the drawings and their exposure. You can modify anything you want in the duplicated column without affecting the original version.
-  **Add Frame:** Brings up the **Add Frames** dialog. Enter the number of frames that you would like to add to a column either by typing it in, or by using the up and down arrows and then click **OK**. The number of frames entered will appear under the selected row in every column.



- **Remove Frame:** Removes the selected frames.
- Use the **Import Images** button to open the Import Images dialog box. Use this dialog box to bring in a single image or multiple images. Harmony Xsheet supports JPEG, BMP, PNG, TGA, PSD, IFF, SGI, TVG, OMF, PAL and SCAN.
- **Create Empty Drawing:** The **Create Empty Drawing** command automatically creates a drawing in the selected cell in the Xsheet view, replacing any drawing that may already be exposed in that cell and the following ones until it meets another drawing.
 - **To create an Empty Drawing:**
 1. In the Timeline or Xsheet view, select the cell you want to create an empty drawing in.
 2. In the Xsheet View toolbar, click on the **Create Empty Drawing** button.
 3. The new drawing will be created in the Xsheet.

1		1	K
2		2	
3			
4		4	K

- **Duplicate 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 drawing is not deleted.
- **Delete:** Deletes the exposure of the selected frames or columns.
- **Mark as Key Drawing:** Allows you to mark the key drawings by inserting a **K** in that drawing's cell. This is useful for a traditional animation style work environment when pauses need to be added to the timing of a character's action. It helps to keep the Xsheet organized while animating.
- **Mark as Breakdown Drawing:** Allows you to mark the breakdown drawings by inserting a **B** in that drawing's cell.
- **Mark as In-between Drawing:** There is no icon displayed in the cell for the Mark as In-between Drawing option, as it is used to remove the marker of a drawing identified as a key or breakdown drawing and revert it to a normal in-between drawing.


Related Topics

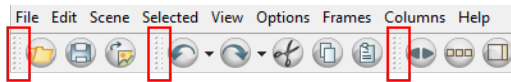
- [File Toolbar on page 36](#)
- [Edit Toolbar on page 37](#)
- [Moving Toolbars on the next page](#)
- [Toolbar Manager on page 41](#)

Moving Toolbars

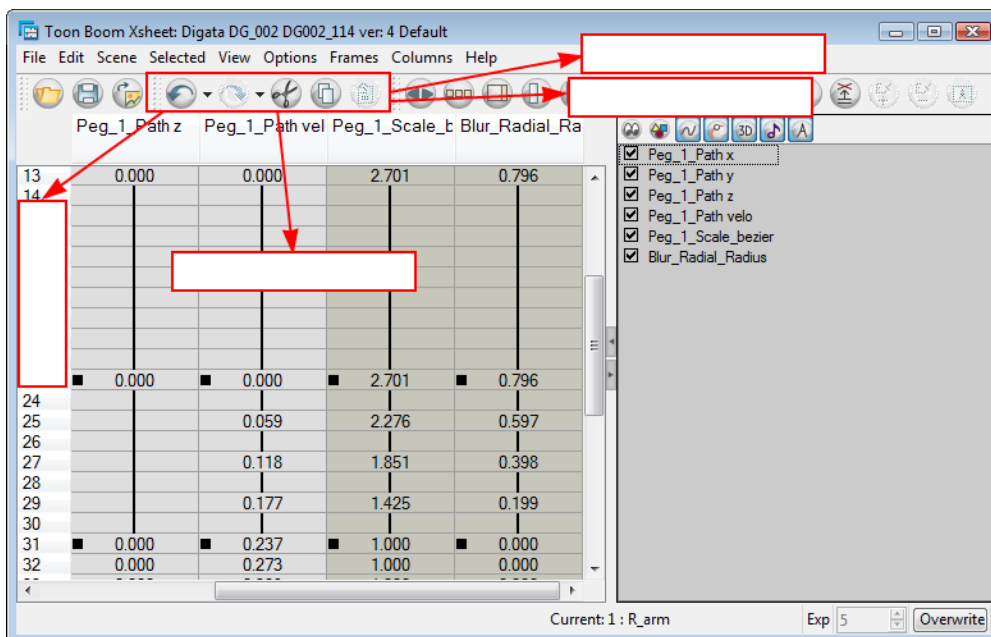
You can drag and reposition the toolbars around the interfaceso that they are more convenient for you to use.

To move a toolbar:

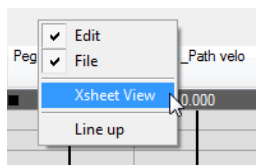
1. Select the toolbar you want to move by clicking on its anchor point  and dragging it into a view toolbar area or another position in the top or side interface toolbar area.



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



If you close a floating toolbar and would like to bring it back, simply right-click on the empty toolbar space at the top of the interface and select the missing toolbar.



Related Topics

- [File Toolbar](#) on page 36
- [Edit Toolbar](#) on page 37
- [Xsheet Toolbar](#) on page 37
- [Toolbar Manager](#) on the facing page

Toolbar Manager

The View toolbars can be customized to contain your favourite tools and options. Use the **Toolbar Manager** window to organize your different toolbars to suit your working preferences.

To customize your toolbars:


1. Right-click on the chosen toolbar's anchor point.

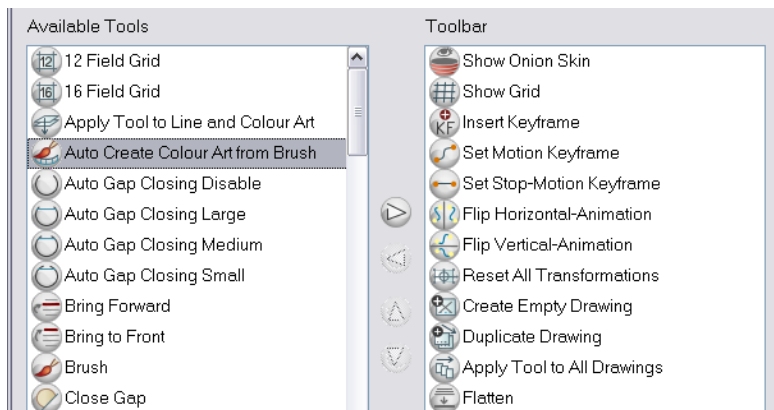
A pop-up menu appears.


2. Select **Customize** from the pop-up menu.

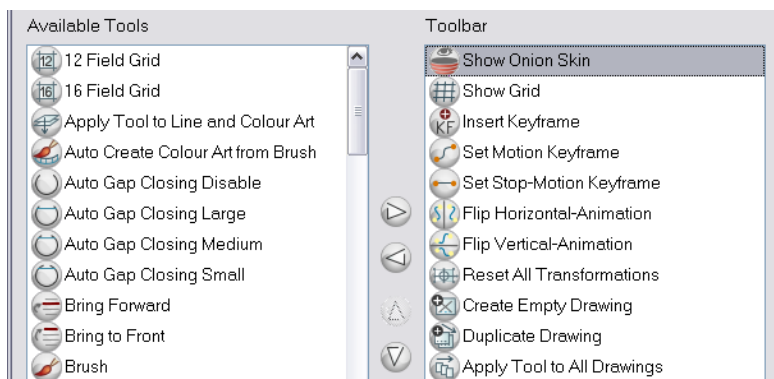
The **Toolbar Manager** window opens



3. To add a new icon to your toolbar, select the tool or command from the **Available Tools** list and click on the

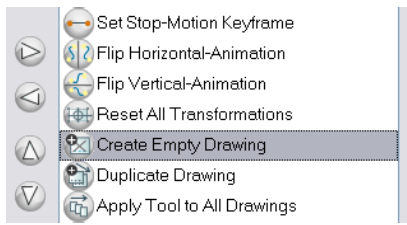
Right  Arrow button to add it to the **Toolbar** list.



4. To remove an icon from your toolbar, select the tool or command in the **Toolbar** list and click on the Left  Arrow button to send it back to the Available Tools list.



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



6. Click on the **OK** button when you are finished.

Related Topics

- [File Toolbar](#) on page 36
- [Edit Toolbar](#) on page 37
- [Xsheet Toolbar](#) on page 37
- [Moving Toolbars](#) on page 40

Interface Navigation

Topics Covered

- [View Commands](#) below
- [Resizing a View](#) below
- [Column Colours](#) on the next page

View Commands

- **Zoom In:** Zooms into the view. From the top menu, select **View > Zoom In**. The [2].
- **Zoom Out:** Zooms out of the view. From the top menu, select **View > Zoom Out**. The [1].
- **Reset Zoom:** From the top menu, select **View > Reset Zoom**.
- **Reset Pan:** If you are scrolled far down across all your columns in the **Xsheet** view and would like to return to the first column, select **View > Reset Pan**. The [Shift] + [N].
- **Reset View:** If you have zoomed in or out of your **Xsheet** view and would like to return to the 100% view, select **View > Reset View**. The [Shift] + [M].

Related Topics

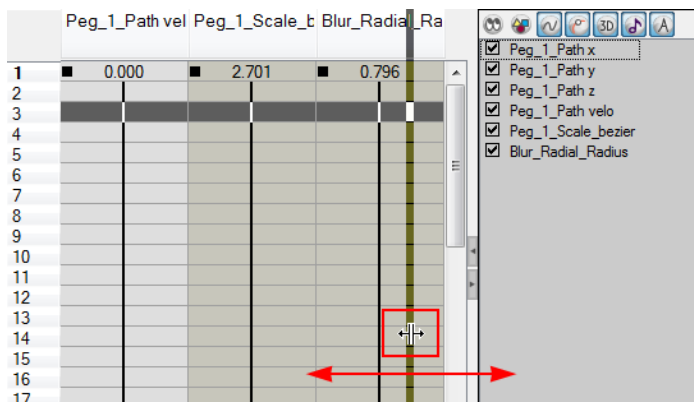
- [Resizing a View](#) below
- [Column Colours](#) on the next page

Resizing a View

To change the width and height of the views in the workspace, drag the side of the view.

To resize a view:

1. In the interface, position your cursor on the edge of the view you want to resize.
2. When you see the Resizing \pm 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.

To temporarily hide a view:

1. On the edge of the window you want to hide click on the Collapse/Expand button. The view is compressed and only the Collapse/Expand button is visible.
2. Click on the same Collapse/Expand button to display the view again.

Related Topics

- [View Commands on the previous page](#)
- [Column Colours below](#)

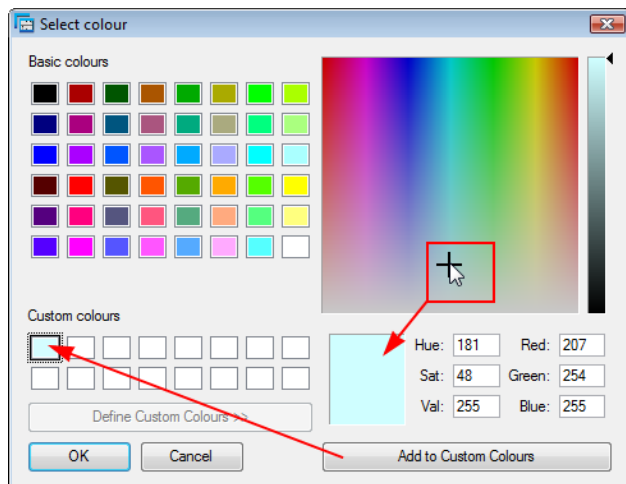
Column Colours

When you are dealing with many different types of columns (such as drawing, function and 3D paths) or perhaps when you are dealing with a many of the same type of columns (such as the various body parts of a character), sometimes it is helps to colour your columns. By changing the column colours to different shades to indicate different types of groupings, you can better visually organize your Xsheet space.

To change the colour of a column:

1. In the Xsheet view, select one or more columns to modify.
2. Right-click on the Column header of the column and from the pop-up menu, select **Colour > Change Column Colour**.

The **Select Colour** window appears.



3. Click in the colour spectrum. A black cross-hair shape appears. Use your cursor to move the black cross around until you find a suitable colour. You will be able to see a more precise sample of the selected colour in the rectangle frame below.
4. If you intend to use the same shade for multiple columns, click on the Add to Custom Colours button. This will add the colour swatch to the Custom colours section in the Select colour window. If you then continue to make other colour selections, you can always go back to that saved colour swatch, even after the Select colour window has been closed.
5. When you are through, click on the OK button.

The body of the column now appears coloured with the selected shade.

R_arm	R_arm_patch	R_forearm
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	

When you are finished your scene, you might decide that you want to eliminate all your personal column colours.

To bring your column colours back to their default white state:

1. In the Xsheet view, select one or more columns to modify.
2. Right-click on the column header and from the pop-up menu select **Colour > Default Column Colour**.

The coloured columns revert back to their default white colour in the Xsheet view.

Related Topics

- [View Commands](#) on page 43
- [Resizing a View](#) on page 43

Preferences

An important feature in the Harmony Xsheet is the **Preferences** panel. From here you can customize your interface, tool behaviour and keyboard shortcuts. In this section you will learn how to access the Preferences panel and also find a general description of its functionality.

The **Preferences** panel is divided into the following tabbed sections:

- Shortcuts
- General
- Exposure Sheet

Accessing the Preferences Panel

To access the Preferences panel:

1. In the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X). The [Ctrl] + [U] (Windows/Linux) or [⌘] + [U] (Mac OS X).



Some preferences require you to exit and restart the application or to close a view and reopen it.



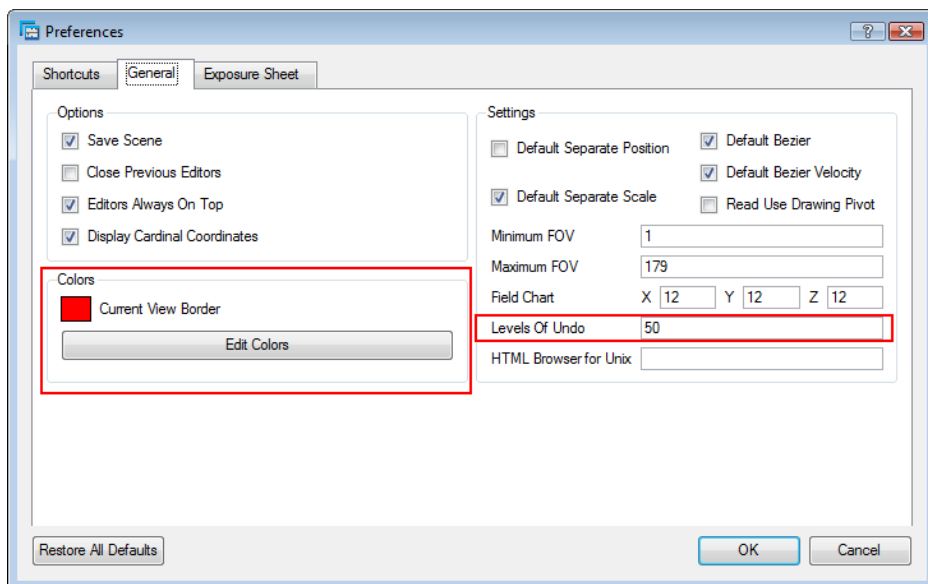
For details about the preferences available in the **Exposure Sheet** tab, please refer to the [Timing on page 51](#) topic.

Related Topics

- [User Interface Preferences below](#)
- [Keyboard Shortcuts on page 48](#)

User Interface Preferences

To customize your interface, you will use some of the preferences located in the General category.



Levels Of Undo

The **Levels Of Undo** preference determines the number of actions retained by the Undo List. By default, the system stores 50 actions in the list. You can alter this number if you want to.



This preference does not require you to restart the application.

Colours

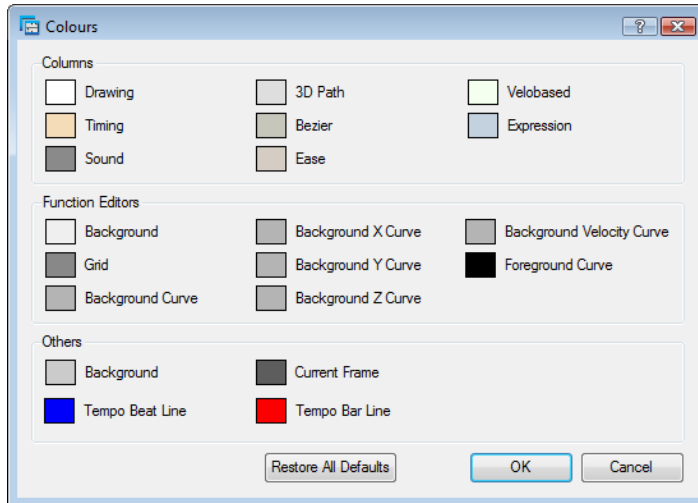
The **Colours** preference allows you to modify the colours of the different elements in the Xsheet. For example, you can change the colour of a Timing Column from peach to pale green.

- **Current View Border**

The **Current View Border** preference sets the colour of the frame around the workspace view you are currently using, also known as focus. By default, the colour is red. Click on the red colour swatch to select a new colour in the **Select Colour** window.

- **Edit Colours Button**

Click on the Edit Colours button to open the **Colours** window.



In the Colours window, you can modify any of the colours from the list.

- ▶ To restore all of the default interface's colours, click on the **Restore All Defaults** button.
- The **Colours** window is divided in three categories:
- Columns
 - Function Editors
 - Others
- ▶ Click on any of the colour swatches and select a new colour from the **Colour Picker** window.

Related Topics

- [Preferences on page 46](#)

Keyboard Shortcuts

To speed up your work, all of the Harmony Xsheet's keyboard shortcuts can be customized and you can even choose other software keyboard shortcut sets.

Topics Covered

- [Selecting a Keyboard Shortcut Set below](#)
- [Customizing a Keyboard Shortcut on the facing page](#)

Selecting a Keyboard Shortcut Set

In the Xsheet Module, you can choose a set of default keyboard shortcuts you are familiar with. You can choose between the following:

- Adobe Flash

- Toon Boom Harmony
- Toon Boom Studio

To switch keyboard shortcut sets:

1. Open the **Preferences** panel. The [Ctrl] + [U] Windows/Linux) or [⌘] + [U] (Mac OS X).
2. In the **Preferences** panel, go to the **Shortcuts** tab.
3. In the **Shortcut Set** drop-down menu, select the desired set.



Related Topics

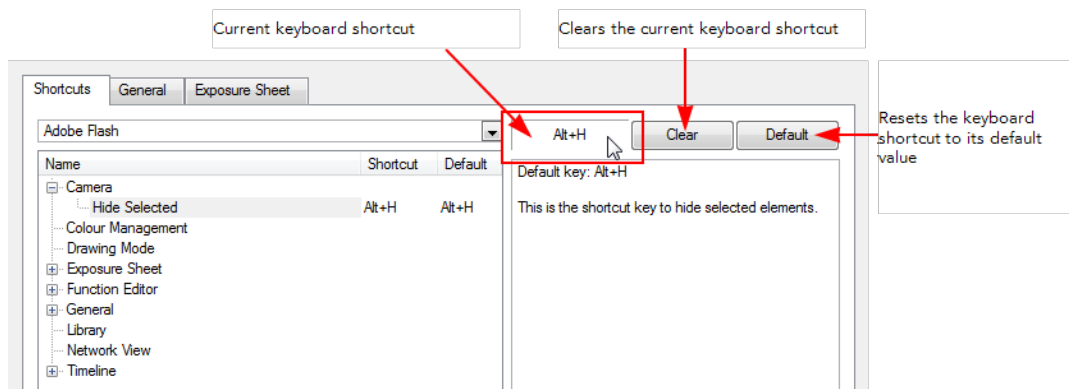
- [Keyboard Shortcuts on the previous page](#)
- [Customizing a Keyboard Shortcut below](#)

Customizing a Keyboard Shortcut

You can also customize most of the shortcuts by opening the **Preferences** panel and going to the **Shortcuts** tab.

To set a shortcut:

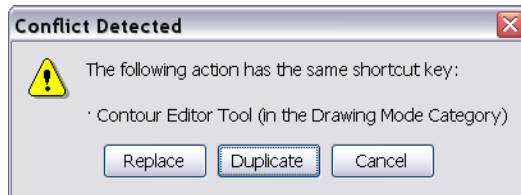
1. Open the **Preferences** panel. The [Ctrl] + [U] Windows/Linux) or [⌘] + [U] (Mac OS X).
2. In the **Preferences** panel, go to the **Shortcuts** tab.
3. In the left window, select the command to modify.
4. Click on the shortcut rectangle (above the right window).



5. On your keyboard, click on the desired shortcut.
 - To reset a command's default keyboard shortcut, click the **Default** button.
 - To remove any keyboard shortcut associated to a command, click the **Clear** button.
6. Click OK.



If a keyboard shortcut is already in use, the **Conflict Detected** dialog box will appear notifying you of the command to which it is already associated. You can continue to associate the shortcut or cancel the operation and choose another command.

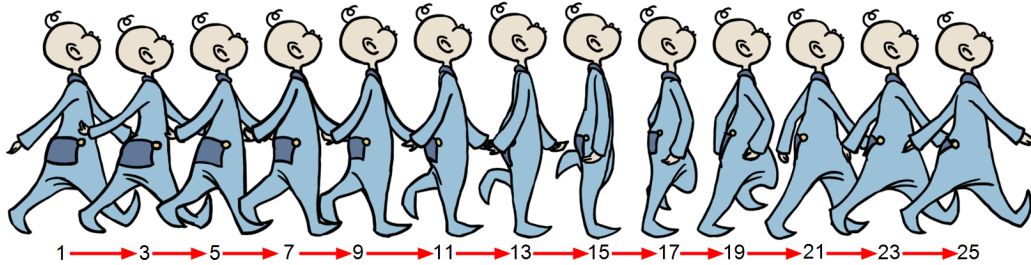


- The **Replace** button associates the selected keyboard shortcut and removes it from any command already using it.
- The **Duplicate** button associates the selected keyboard shortcut with the command and allows other commands in the list to use the same one.
- The **Cancel** button stops the operation and lets you select another keyboard shortcut.

Related Topics

- [Keyboard Shortcuts on page 48](#)
- [Selecting a Keyboard Shortcut Set on page 1](#)

Chapter 1: Timing



When you create hand-drawn animation, it is important to know how to set and modify the timing of your drawings. You can adjust the timing in both the Timeline and Xsheet views, depending on which technique you are used to working with. If you are a digital animator, you will probably use the Timeline view. If you are more of a traditional animator, you will probably work with the Xsheet view (exposure sheet). Harmony offers you both.

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.

Topics Covered

- [Understanding the Timeline View](#) on page 1
- [Understanding the Xsheet View](#) on page 1
- [Frames](#) on the next page
- [Layers and Columns](#) on page 57
- [Filling Exposure](#) on page 78
- [Navigating between Frames and Columns](#) on page 100
- [Managing Drawings](#) on page 102
- [Tempo Markers](#) on page 106
- [Annotation Columns](#) on page 108
- [Printing the Xsheet](#) on page 114
- [Element Manager](#) on page 116
- [Timing Preferences](#) on page 117

Frames

One of the first things to learn in Toon Boom Harmony is how to add or delete frames in your scene.

Related Topics

- [Adding Frames below](#)
- [Deleting Frames on page 54](#)

Adding Frames

There are several ways to add frames to your scene using Toon Boom Harmony.

Related Topics

- [Setting the Scene Length below](#)
- [Extending the Timeline View below](#)
- [Adding Frames Before or After a Selection on the facing page](#)
- [Adding Frames to the Beginning or at the End of a Scene on the facing page](#)

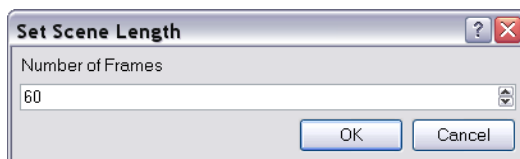
Setting the Scene Length

You can set the global scene length from the top menu.

To set the set scene length:

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

The Set Scene Length dialog box opens.



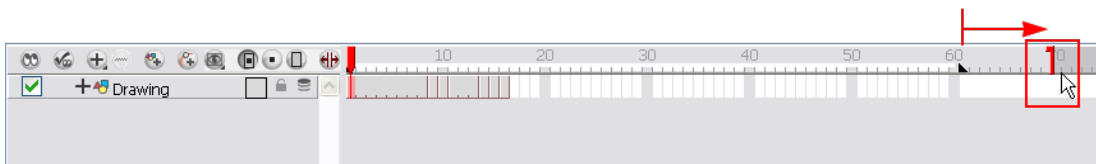
2. In the Number of Frames field, type how many frames are needed.

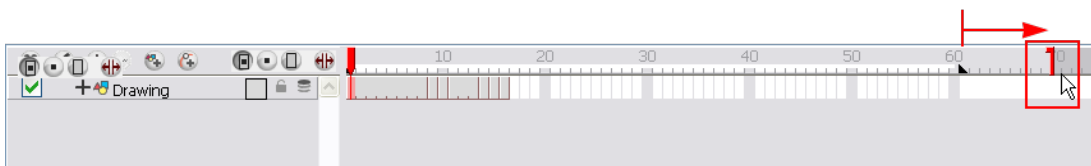
Extending the Timeline View

You can quickly extend your scene length in the Timeline view.

To extend your 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.





Adding Frames Before or After a Selection

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

To add frames before or after selection:

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

	Drawing_3	Drawing_2	Drawing_1	Drawing
1	13	15	1	1
2	14		2	
3	1		3	
4			4	
5		1	5	
6		2	6	
7		3		
8	2	4		

2. Do one of the following:

- Select **Scene > Frame > Add Frames Before Selection** or **Add Frames After Selection**.
- Press [Ctrl] + [G] and [Ctrl] + [H] (Windows/Linux) or [⌘] + [G] and [Ctrl] + [H] (Mac OS X).


*In Harmony Xsheet, select **Frame > Add Frames Before Selection** or **Add Frames After Selection**.*

The Add Frames dialog box opens.



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



To add new frames after your selection, you can also use the **Add Frames**  button in the Xsheet

View toolbar.

Adding Frames to the Beginning or at the End of a Scene

You can add some frames to the beginning or at the end of the scene.

To add frames at start or at end:

1. Select **Scene > Frame > Add Frames at Start** or **Add Frames at End**.


*In Harmony Xsheet, select **Frame > Add Frames at Start** or **Add Frames at End**.*

The Add Frames dialog box opens.



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



To add new frames at the end of your scene, you can also use the **Add Frames**  button found in the **Xsheet View** toolbar.

Related Topics

- [Deleting Frames below](#)

Deleting Frames

There are three ways to delete frames from your scene:

- [Reducing the Timeline Length below](#)
- [Removing Selected Frames on the facing page](#)
- [Deleting a Selected Frame Range on the facing page](#)



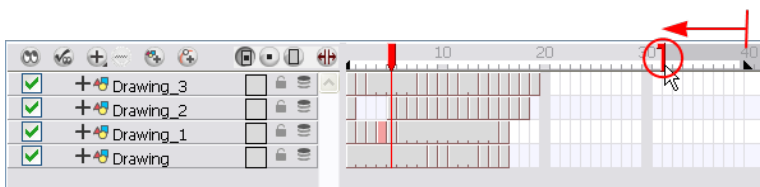
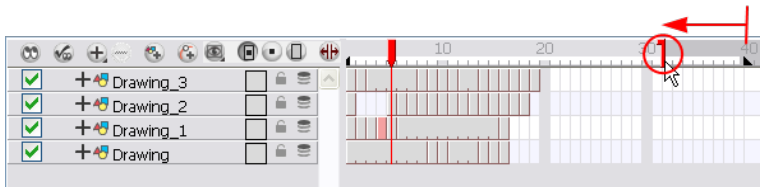
When you remove frames from the end of your scene, the exposed drawings and symbols are not deleted. If you extend your scene afterwards, these drawings and symbols are still available.

Reducing the Timeline Length

You can quickly reduce your scene length in the Timeline view.

To reduce your scene in the Timeline view:

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



Removing Selected Frames

You can remove any selected frame in your Xsheet view, such as the last frame of your scene.

To remove a selected frame:

1. In the Xsheet view, select a frame in a given column.
2. In the Xsheet View toolbar, click the **Remove Frames**  button. To remove several frames, click the button repeatedly.

You can also select **Scene > Frame > Remove Selected Frames** from the top menu.

*In Harmony Xsheet, select **Frame > Remove Selected Frames** from the top menu.*


Deleting a Selected Frame Range

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

To delete a frame range:

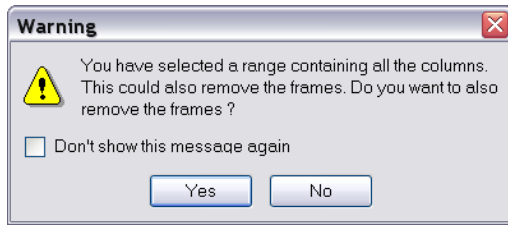
1. In the Xsheet view, select a frame range by clicking the first frame's number and then dragging the selection highlight down to the last frame to delete.

	Drawing_3	Drawing_2	Drawing_1	Drawing
1	13	15	1	1
2	14		2	
3	1		3	
4			4	
5		1	5	
6		2	6	
7		3		
8	2	4		
9	3	5		2
10	4	6		3
11	5	7		4
12	6	8		
13		9		
14	7	10		5
15	8	11		6
16	9	12	7	7
17	10	13		8
18	11	14		
19	12			
20				
21				

2. Do one of the following:
 - ▶ Press [Delete] to delete the selection.
 - ▶ From the top menu, select **Scene > Frame > Remove Selected Frames**.
 - ▶ Click **Remove Frames**  button.

*In Harmony Xsheet, go to **Frame > Remove Selected Frames**.*

The **Warning** dialog box opens.



3. To complete the operation:

- ▶ Click **Yes** to delete the selection.
- ▶ Click **No** to only delete 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.

Related Topics

- [Adding Frames on page 52](#)

Layers and Columns

In Toon Boom Harmony there are two ways to see your layers:

- As horizontal layers in the Timeline view
- As vertical columns in the Xsheet view

In Harmony, you can also see your layers displayed in the Network view as modules.

Whether you work in the Timeline or Xsheet view, they are the same and any modification you do to one or the other will be applied to both.

Related Topics

- [Layer and Column Concepts](#) below
- [Adding New Drawing Layers](#) on page 60
- [Deleting Layers and Columns](#) on page 65
- [Modifying Layers](#) on page 67
- [Duplicating Layers and Columns](#) on page 71
- [Cloning Layers And Columns](#) on page 72
- [Xsheet Thumbnails](#) on page 73
- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on page 74
- [Modifying the Look of the Column](#) on page 75



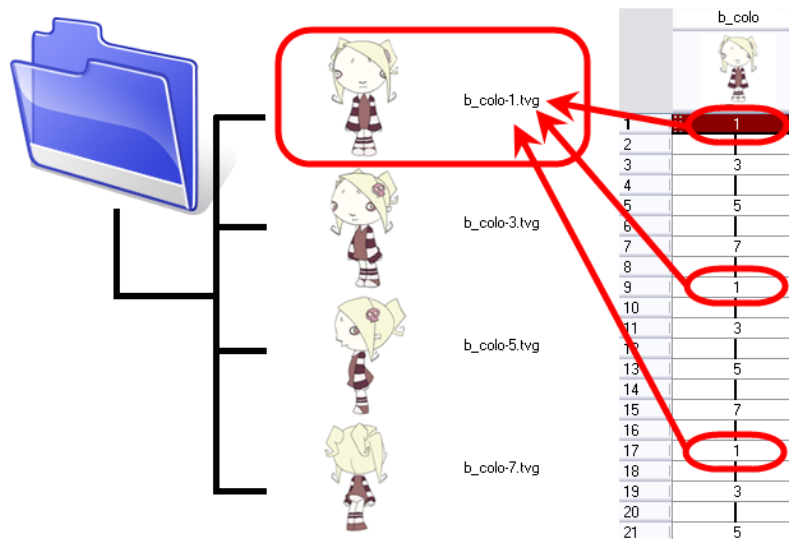
When working in Harmony Xsheet, only the Xsheet view and its functionalities are available.

Layer and Column Concepts

In order to understand what happens when you duplicate a drawing, extend an exposure, create cycles or delete a drawing, it is important to know how a layer works.

Each layer is linked to a directory, this is the location where all of that layers' drawings are saved. This directory has the same name as the layer. When a value or drawing name is typed in a layer's cell, the system looks in the layer's directory for the corresponding drawing to display. If there is no corresponding drawing, a new one is created.

The layer's cells are not used for storage, but are linked to the drawings contained in the layer's directory. If you remove a drawing from the layer exposure, it is not deleted, but is simply not displayed.



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.

Related Topics

- [Layers and Columns](#) on the previous page
- [Layer Types](#) on page 1
- [Advanced Column Types](#) below
- [Layer Content](#) on page 1
- [Adding New Drawing Layers](#) on page 60
- [Deleting Layers and Columns](#) on page 65
- [Modifying Layers](#) on page 67
- [Duplicating Layers and Columns](#) on page 71
- [Cloning Layers And Columns](#) on page 72
- [Xsheet Thumbnails](#) on page 73
- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on page 74
- [Modifying the Look of the Column](#) on page 75
- [Duplicating a Drawing](#) on page 103

Advanced Column Types

In the **Xsheet** view, you can add several advanced column types:

- **Timing** column
- **3D Path** column

- **3D Rotation** column
- **Bezier Curve** column
- **Ease Curve** column
- **Expression** column
- **Annotation** column

These columns are used to create particular animation paths. When you create those columns, they are not linked to any particular drawing layer. You can create a motion path using these column and then attach several drawing or peg layers to it.

Related Topics

- [Timing Columns below](#)
- [Annotation Columns on page 108](#)


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. An example of how this feature can be used is if you have many 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.



The danger with this type of dynamic linking is that if the project file is moved, or the folder that the column is linked to is moved, then the link is broken and the images that were in that folder will disappear in Toon Boom Harmony.

To use a Timing column:

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

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

	Drawing	<unused> Timing
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

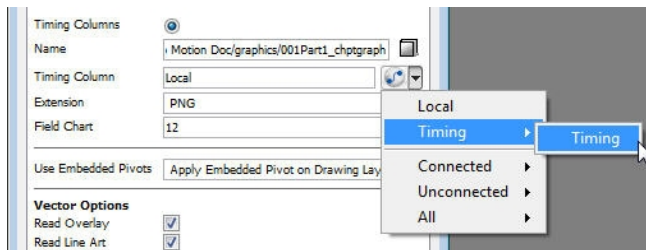
4. In the Network view, add a new element module.

5. Open the **Layer Properties** editor by clicking on the yellow square.
6. In the Drawing tab, select the **Timing Columns** option.
7. In the Name field, enter the path of the folder you want to access. If you use the Browse button to locate a folder, you will have to select a file in the folder you want and then delete the dash and the suffix (for example, **background-01** should be renamed to background) from the file name in the field. If you leave the full file name selected, Stage will display that file for the entire duration of the scene, regardless of the contents of the Timing Column field.



This means that all the images in the folder that you are linking to are named using the naming convention described above. If for some reason you are unable to access a certain directory, type the directory extension directly in the path extension field at the top of the Browser window.

8. In the Timing Column field, click the **Arrow** button to create a new timing column, or select the name of the column from the drop-down list. If you have an element directory selected in the Name field, the Timing Column will indicate which files are called up from that element directory. Remember that the file displayed at each frame is based on the element name, the cell label, and the extension. If the element is toto, the timing column is labeled 1, 2, and 3, and the extension is TVG, Stage will display drawings **totobody-1.tvg**, **totobody-2.tvg**, and **totobody-3.tvg** at the selected frames.



In the Xsheet, the <unused> should now have changed to the name of your module in the Network view.

9. From the Extension drop-down list, select the extension of the files you want to display.
10. Click **OK** when you are done.
11. In the Xsheet, in your Timing column, type in the number that corresponds to the suffix of the drawing file that you wish to expose to make it appear in the Camera view.

Related Topics

- [Layers and Columns on page 57](#)
- [Layer and Column Concepts on page 57](#)
- [Advanced Column Types on page 58](#)
- [Timing Columns on the previous page](#)
- [Linking your Layer to an External Image](#)

Adding New Drawing Layers

In this section, you will learn the different ways to add a drawing layer to your project. By default, when you create a new scene there is one Drawing layer included in your Timeline view.

This topic is divided as follows:


- [Adding Drawing Layers in the Timeline View](#) below
- [Adding a Drawing Layer from the Top Menu](#) on the next page
- [Adding Drawing Columns in the Xsheet View](#) on the next page

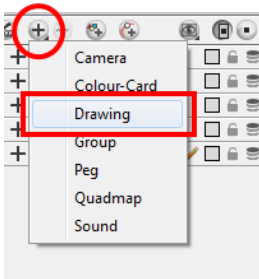
Adding Drawing Layers in the Timeline View

You can add a new layer in the Timeline view in several different ways:

- Using the Layer toolbar
- Using the Add Layers dialog box
- Go to the Timeline view menu and select **Insert > Drawing**.

To add a Drawing layer using the Timeline's Layer toolbar:

1. In the Timeline's Layer toolbar, click the **Add Layers**  button or press [Ctrl] + [R] (Windows/Linux) or [⌘] + [R] (Mac OS X).
2. In the drop-down menu, select the **Drawing** option.



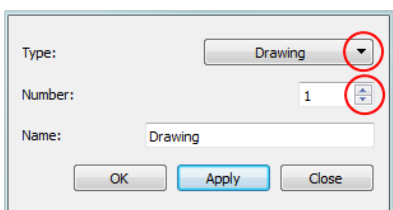
A new layer appears in the Timeline and Xsheet views.



You can also click on the Add Drawing Layer button in the Timeline's Layer toolbar or press [Ctrl] + [R] (Windows/Linux) or [⌘] + [R] (Mac OS X).

To add drawing layers using the Add Layers dialog box:

1. In the Timeline view's layer section, right-click and select **Insert > Add Layer(s)**.
The Add Layers dialog box opens.



2. In the Type drop-down menu, select the **Drawing** option.
3. In the Number field, use the up and down arrows or type the number of layers you want to add at once.

4. In the Name field, type the name of the layer you want to add. If you are adding more than one layer at once, all of the layers use that name with a numerical suffix added.
5. 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 another layer.
 - ▶ Click **Close** to cancel the operation.

Adding a Drawing Layer from the Top Menu


You can add a new layer from the top menu.

To add a new layer from the top menu:

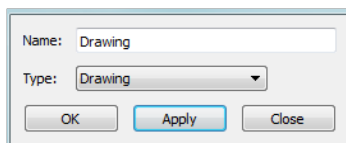
1. In the top menu, select **Insert > Drawing**.
A new layer appears in the Timeline and Xsheet views.

Adding Drawing Columns in the Xsheet View

To add a drawing column:

1. Do one of the following:
 - ▶ In the Xsheet view, right-click and select **Columns > Add Column**.
 - ▶ In the Xsheet View toolbar, click the **Add Columns**  button or press [Shift] + [C].
 - ▶ To quickly add a Drawing column, press [Ctrl] + [R] (Windows/Linux) or [⌘] + [R] (Mac OS X).

The Add Columns dialog box opens.



The screenshot shows a dialog box with the following fields and buttons:
Name: Drawing
Type: Drawing (dropdown menu)
Buttons: OK, Apply, Close

2. In the Column Name field, name your column accordingly.
3. In the Column Type field, select **Drawing**.



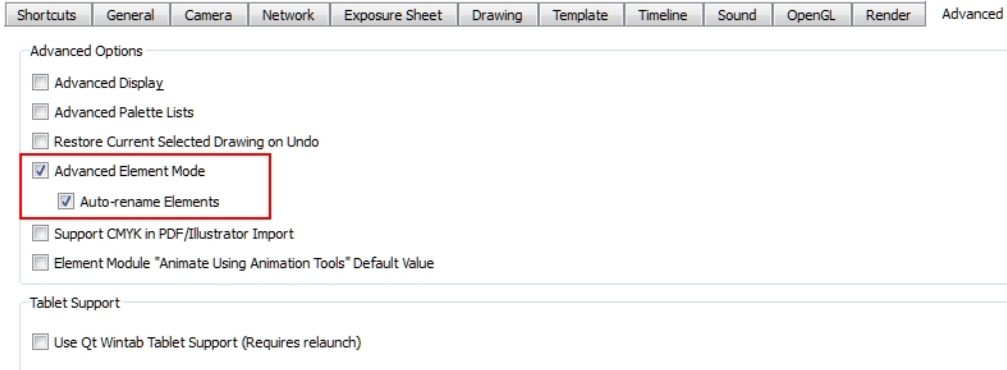
Refer to the topic [Layer Types on page 1](#) to know more about the different column types available.

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.

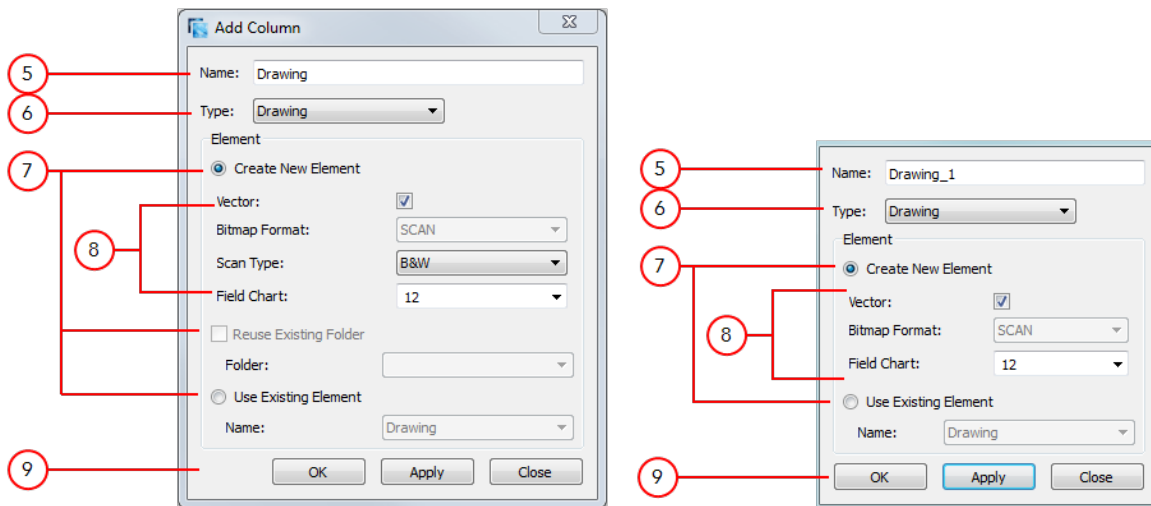
In Harmony, you can use the advanced Add Column dialog box, with more file format and field size options, to insert the column.

To create a column in Toon Boom Harmony using the advanced Add Column dialog box:

1. Select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences (Mac OS X)** and select the **Advanced** tab.
2. In the Advanced Options section, select the **Advanced Element Mode** option to access the advanced Add Column dialog box.



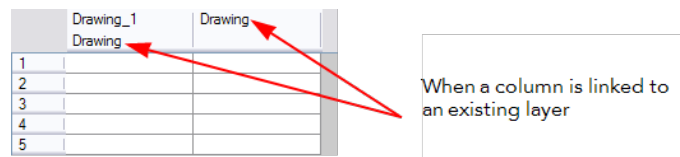
3. Click OK.
4. In the Xsheet View menu, select **Columns > Add Column** or press [Shift] + [C].
The Add Column dialog box opens.



5. In the Name field, type the new column's name.
6. In the Type drop-down menu, select the **Drawing** type.
7. In the Element section select if you either want to create a new column or link the new column to an existing one:
 - ▶ **Create New Element:** Select this option if you want your column to be an independent column with its own drawing folder.
 - ▶ **Reuse Existing Folder:** Select this option if you want to link your column to an existing folder within the Element folder of your scene.
If you select the **Reuse Existing Folder** option, in the Folder drop-down field, select the folder to which you want to link your new column.
 - ▶ **Use Existing Element:** Select this option if you want your column to use drawings from an existing column. Both columns will be attached to the same set of drawings, but their timing will remain

independent from one another. If you modify one of the drawings, it will be modified in both columns. This is the same principle as the Clone column.

If you select the **Use Existing Element** option, in the Name drop-down field, select the column to which you want to link your new column.



8. If you select the **Create New Element** option:

- ▶ Deselect the **Vector** option if you want your layer to contain bitmap images or enable it if you want the layer to contain vector drawings. Most of the time, the **Vector** option will be enabled.
- ▶ If you deselected the **Vector** option, from the **Bitmap Format** drop-down list, select which type of bitmap image you wish to insert in the column. Select the **SCAN** type if you are planning to scan drawings using Toon Boom Harmony's scan module.
- ▶ If you deselected the **Vector** option and you chose the **SCAN** type, from the **Scan Type** drop-down, select what kind of scanning you wish to achieve.
- ▶ In the **Field Chart** field, when importing traditional animation, indicate the size of paper on which the animation or background was drawn. If you are not using perforated animation paper, leave the 12 field default value as is.

9. Do one of the following:

- ▶ Click **OK** button to create the new column and close the dialog box.
- ▶ Click **Apply** to create the new column but keep the dialog box opened to create other new columns.

Related Topics


- [Layers and Columns](#) on page 57
- [Layer and Column Concepts](#) on page 57
- [Advanced Column Types](#) on page 58
- [Layer Content](#) on page 1
- [Adding New Drawing Layers](#) on page 60
- [Deleting Layers and Columns](#) on the facing page
- [Modifying Layers](#) on page 67
- [Duplicating Layers and Columns](#) on page 71
- [Cloning Layers And Columns](#) on page 72
- [Xsheet Thumbnails](#) on page 73
- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on page 74
- [Modifying the Look of the Column](#) on page 75

Deleting Layers and Columns

You can delete layers from your projects in two different locations:

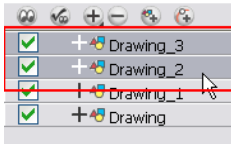
- Deleting a layer from the Timeline view
- Deleting a column from the Xsheet view


Deleting a Layer from the Timeline View

There are two ways to delete a layer in the Timeline view, using the **Delete Layers**  button and via the quick access menu. This will also delete the associated modules from the Network view.

To delete layers in the Timeline view:

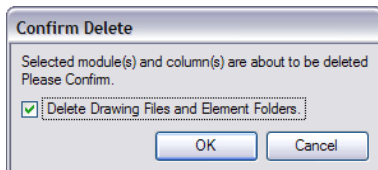
1. In the Timeline view, select the layers to be deleted.



2. In the Timeline's Layer toolbar, click the **Delete Layers**  button.


You can also right-click on the selection and select **Delete**.

The Confirm Delete dialog box opens.



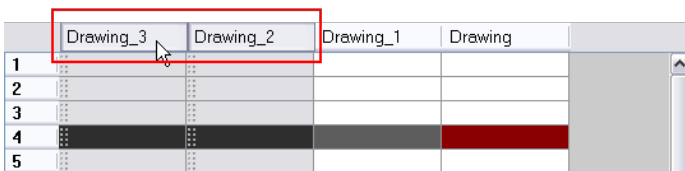
- ▶ Select the **Delete Drawing Files and Element Folders** option to delete all drawings and folder linked to this layer.
3. Select the **Delete Xsheet Columns** option if you also want to delete the existing column in the Xsheet view.

Deleting a Column from the Xsheet View

There are two ways to delete a layer in the Xsheet view, using the **Delete Columns**  button and via the quick access menu.

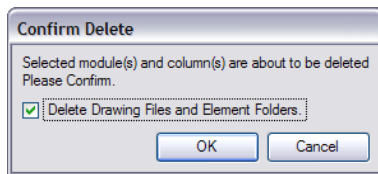
To delete layers in the Xsheet view:

1. In the Xsheet view, select the columns to be deleted by clicking on their header.

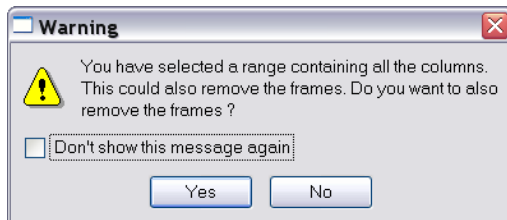


- In the Xsheet View toolbar, click the **Delete Columns**  button. You can also right-click on the selection and select **Delete Columns** or press [Delete].

The Confirm Delete dialog box opens.



- ▶ Select the **Delete Drawing Files and Element Folder** option if you want to delete the drawings and folders linked to the selected column.
- To complete the operation:
 - ▶ Click **OK** to delete the selected layers.
 - ▶ Click **Cancel** cancel the operation.



- ▶ Click **Yes** button delete all the frames from your scene.
- ▶ Click **No** button to keep the frames in your scene.
- ▶ Select the **Don't Show This Message Again** option if you do not want the dialog box to pop again in the future.

Related Topics

- [Layers and Columns on page 57](#)
- [Layer and Column Concepts on page 57](#)
- [Advanced Column Types on page 58](#)
- [Layer Content on page 1](#)
- [Adding New Drawing Layers on page 60](#)
- [Deleting Layers and Columns on the previous page](#)
- [Modifying Layers on the facing page](#)
- [Duplicating Layers and Columns on page 71](#)
- [Cloning Layers And Columns on page 72](#)
- [Xsheet Thumbnails on page 73](#)
- [Changing the Colour of a Column or Layer on page 1](#)
- [Expanding and Collapsing Layers and Columns on page 74](#)
- [Modifying the Look of the Column on page 75](#)

Modifying Layers

Once you added layers to your project, you can modify their properties, name or ordering.

Related Topics

- [Ordering Layers and Columns below](#)
- [Showing and Hiding Layers From the Timeline View on page 1](#)
- [Showing and Hiding Columns on the next page](#)
- [Layer Properties on page 1](#)
- [Renaming Layers and Columns on page 70](#)

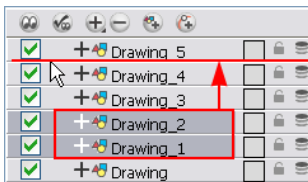
Ordering Layers and Columns

You can change the order of your layers in the Timeline and Xsheet views. When you change the order of your layers in one of these views, the other one is updated.

Reordering Layers in the Timeline View

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 and drop it in between the existing layers. Dropping the selection on an existing layer would create a hierarchy. Layers located on top of the Timeline view are displayed in front of the other ones. Layers located at the bottom are displayed behind.

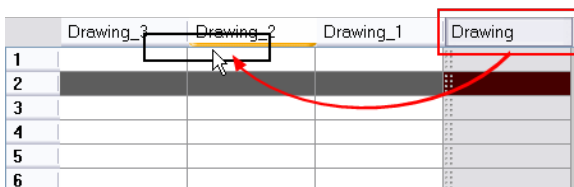


Reordering Columns in the Xsheet View

You can reorder columns in the Xsheet view using the mouse's middle button.

To reorder columns in the Xsheet view:

- In the Xsheet view, click on the column's header with the middle mouse button and drag the column to its new position.



Related Topics

- [Layers and Columns](#) on page 57
- [Modifying Layers](#) on the previous page
- [Showing and Hiding Layers From the Timeline View](#) on page 1
- [Showing and Hiding Columns](#) below
- [Layer Properties](#) on page 1
- [Renaming Layers and Columns](#) on page 70

Showing and Hiding Columns




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

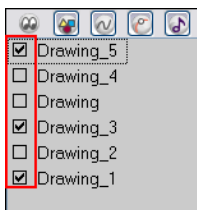
If you need to see a column after it has been hidden, you can display it directly from the Xsheet view without using the Column List section.

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.

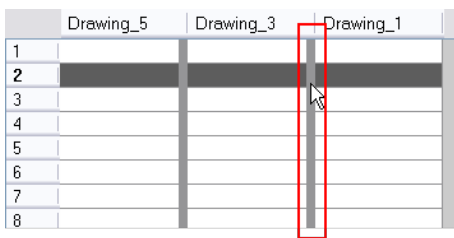
To show and hide columns in the Xsheet view:

1. In the Xsheet View toolbar, click the **Show Column List**  button.
2. Click the **Expand**  button located on the right side of the Functions section to display the Column List section.
3. In the Column List section, show or hide the columns by clicking in the column checkbox to add or remove the check mark. You can also click the **Hide Selected Column**  button located in the **Xsheet View** toolbar's extra buttons.

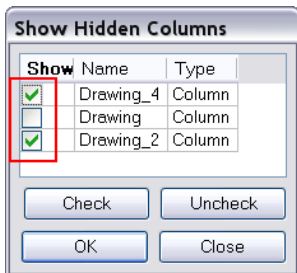


To show a hidden column from the Xsheet view:

1. In the Xsheet view, click on the thick grey line that appeared in place of the hidden column. You can also right-click on the column header and select **Show Hidden Columns**.



The Show Hidden Columns dialog box opens.

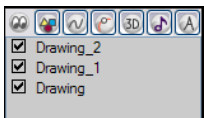









- In the Show column, enable the hidden columns you want to display in the Xsheet view.
 - Click **Check** to check all the selected columns.
 - Click **Uncheck** to uncheck all the selected columns.

In Toon Boom Harmony, in the Xsheet view menu, you can select **View > Unhide All Columns**.

To hide and entire column type:

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



- ▶ The **Show/Hide All Columns**  button shows or hides every column available in the **Xsheet** view.
- ▶ The **Show Drawing Columns**  button shows the Drawing columns.
- ▶ The **Show Function Columns**  button shows the Bezier and Ease function columns.
- ▶ The **Show 3D Path Columns**  button shows the 3D Path function columns.
- ▶ The **Show Sound Columns**  button shows the Drawing columns.
- ▶ The **Show 3D Rotation Columns**  button shows the 3D Rotation columns.
- ▶ The **Show Annotation Columns**  button shows the Annotation columns.

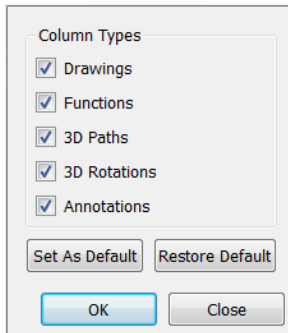
Column Types Manager

As you work in Harmony Xsheet, some columns may be in the way or are used as references. You can hide these columns to make your work area easier and less cluttered. In the Xsheet view, you have the choice of hiding or showing certain types of columns, such as Annotation and Function.

To show and hide column types:

1. In the Xsheet View menu, select **View > Column Types Manager**.

The Column Types dialog box opens.



2. Select the types of columns you want to display and disable the ones you want to hide.
3. Click **Set As Default** to make these new settings the default ones used each time you start the application. Click **Restore Default** to restore the settings used when installing the application.

Related Topics

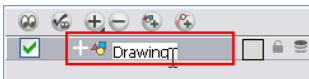
- [Layers and Columns on page 57](#)
- [Modifying Layers on page 67](#)
- [Showing and Hiding Layers From the Timeline View on page 1](#)
- [Layer Properties on page 1](#)
- [Renaming Layers and Columns below](#)

Renaming Layers and Columns

You can rename a layer in two different ways; in the Layer Properties editor or directly on the Timeline's layer.

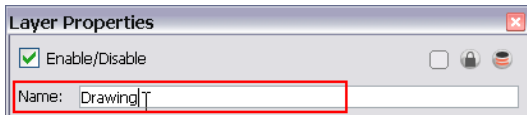
To rename a layer in the Timeline view:

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] to validate the modifications.



To rename a layer in the Layer Properties editor:

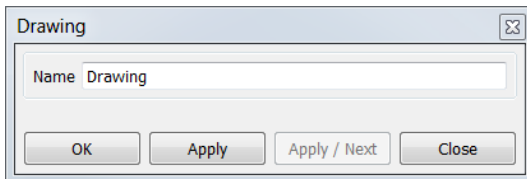
1. In the Timeline view, double-click on the layer to rename.
The Layer Properties editor opens.
2. In the Name field, rename the layer.



3. Click **Close**.

To rename a column:

1. In the Xsheet view, double-click on the column name to rename. 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 Column Editor dialog box opens.



2. In the Name field, rename the column.
3. Click **OK**.
4. Click **Apply/Next** to apply the new name and open the editor for the following column.

Related Topics

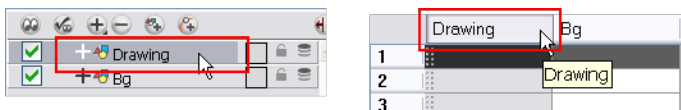
- [Layers and Columns on page 57](#)
- [Modifying Layers on page 67](#)
- [Showing and Hiding Columns on page 68](#)

Duplicating Layers and Columns

Duplicating a layer provides you with an independent copy of the drawings and their exposure. You can modify anything you want in the duplicated layer without affecting the original one. In the Network view, you can duplicate the selected modules in the same way.

To duplicate a layer:

1. In the Timeline or Xsheet view, click the layer you want to duplicate.



2. Select **Edit > Duplicate** or click the **Duplicate Layer**  button in the Xsheet View toolbar and TimelineView toolbar.

*In Harmony Xsheet, select **Edit > Duplicate Selected Element**.*

The new duplicated layer or column appears.

Related Topics

- [Layers and Columns on page 57](#)

- [Layer and Column Concepts](#) on page 57
- [Advanced Column Types](#) on page 58
- [Layer Content](#) on page 1
- [Adding New Drawing Layers](#) on page 60
- [Deleting Layers and Columns](#) on page 65
- [Modifying Layers](#) on page 67
- [Cloning Layers And Columns](#) below
- [Xsheet Thumbnails](#) on the facing page
- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on page 74
- [Modifying the Look of the Column](#) on page 75

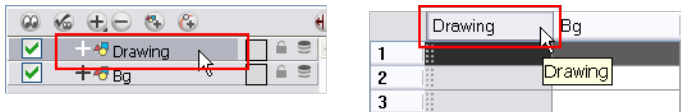
Cloning Layers And Columns


Cloning a layer provides you with a copy of the selected layer that uses the same drawings as the original. If you modify a drawing in the cloned or original layer it is updated in both layers. You can modify the layers' timing independently one from the other, but the drawings 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.

To clone a layer:

1. In the Timeline or Xsheet view, click on the layer you want to clone.



2. Select **Edit > Clone** or click the **Clone Layer**  button in the Xsheet View toolbar and Timeline View toolbar.

*In Harmony Xsheet, select **Edit > Clone Selected Columns**.*

The new cloned layer or column appears.

Related Topics

- [Layers and Columns](#) on page 57
- [Layer and Column Concepts](#) on page 57
- [Advanced Column Types](#) on page 58
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- [Adding New Drawing Layers](#) on page 60
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- [Duplicating Layers and Columns](#) on page 71
- [Xsheet Thumbnails](#) below
- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on the next page
- [Modifying the Look of the Column](#) on page 75

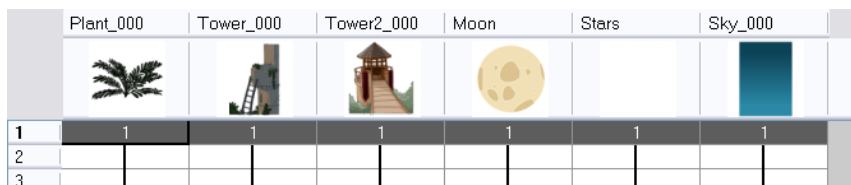
Xsheet Thumbnails

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.

To display the thumbnails:

1. In the Xsheet view, click the **Show Thumbnails**  button.

The thumbnails appear.





Related Topics

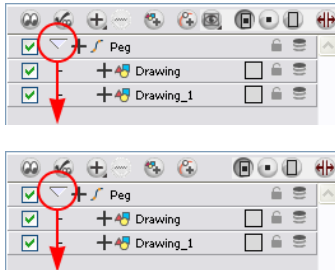
- [Layers and Columns](#) on page 57
- [Layer and Column Concepts](#) on page 57
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- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on the next page
- [Modifying the Look of the Column](#) on page 75

Expanding and Collapsing Layers and Columns

To simplify the look of your Timeline and Xsheet view, you can collapse and expand your layers. If some layers are parented to other ones, you can collapse the parent layer to hide all of its children. You can also collapse 3D Path columns in the Xsheet view.


To collapse/expand a layer selection in the Timeline view:

1. In the Timeline view, select the layer(s) to collapse or expand.
2. Do one of the following:
 - ▶ Right-click on the selection and select **Collapse/Expand > Collapse/Expand**.
 - ▶ Click the **Expand Children Arrow**  button on the parent layer.
 - ▶ Press [Ctrl] + [I] (Windows/Linux) or [⌘] + [I] (Mac OS X).
 - ▶ Click the **Collapse/Expand**  button in the Timeline View toolbar's extra buttons.






To collapse or expand all layers in the Timeline view:

Do one of the following:

- ▶ Right-click on the layers and select **Collapse/Expand > Expand All** or **Collapse All**.
- ▶ Press [0] and [9].
- ▶ Click the **Collapse All**  or **Expand All**  buttons in the **Timeline View** toolbar's extra buttons.

To collapse and expand 3D Path columns in the Xsheet view:

1. In the Xsheet view, display the Functions section by clicking the **Show Column List**  button.
2. In the Functions section, select the header of the **3D Path** column to collapse.
3. Do one of the following:
 - ▶ Right-click on the column's header and select **Expand/Collapse > Collapse Selection**.
 - ▶ To expand a collapsed column, select the column's header, right-click on the selection and select **Expand/Collapse > Expand Selection**.
 - ▶ Click the **Collapse Selection**  or **Expand Selection**  buttons in the **Xsheet View** toolbar's extra buttons.

To collapse or expand all 3D Path columns in the Xsheet view:

Do one of the following:

- ▶ Right-click on any column's header and select **Collapse/Expand > Expand All** or **Collapse All**.

- ▶ The [0] and [9].
- ▶ Click the **Collapse All**  or **Expand All**  buttons in the Xsheet View toolbar's extra buttons.

Related Topics

- [Layers and Columns](#) on page 57
- [Layer and Column Concepts](#) on page 57
- [Advanced Column Types](#) on page 58
- [Layer Content](#) on page 1
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- [Changing the Colour of a Column or Layer](#) on page 1
- [Modifying the Look of the Column](#) below
-

Modifying the Look of the Column

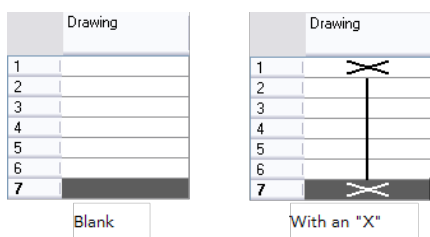
In Toon Boom Harmony 10.3, you can modify the way the column displays drawings, empty cells and the column width.

You can modify the following elements:

- Empty Cells
- Row Units
- Held Exposure
- Column Width

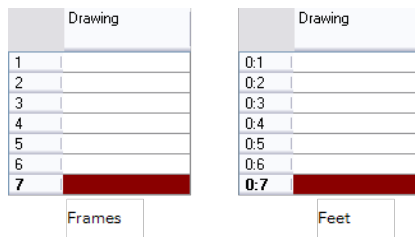
To modify the look of an empty cells:

- ▶ In the **Xsheet View** menu, select **View > Empty Cells > With an "X"** or **Blank**.

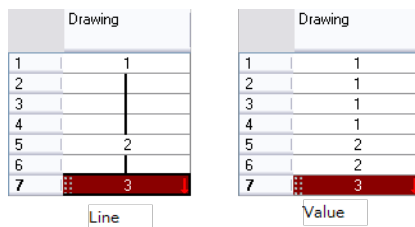


To modify the row units:

- ▶ In the Xsheet View menu, select **View > Row Units > Frames or Feet**.

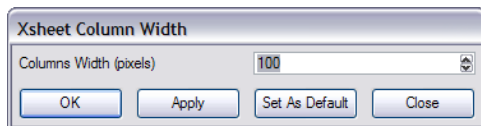
**To modify the held exposure's look:**

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

**To modify the column's width:**

1. In the Xsheet view, select any column to modify the width.
2. In the Xsheet view menu, select **View > Set Columns Width**.

The Xsheet Column Width dialog box opens.



3. In the Column Width field, type the desired width in pixel.
4. To end the operation:
 - ▶ Click on the **OK** button to validate and close the dialog box.
 - ▶ Click on the **Apply** button to validate the operation and keep the dialog box opened to adjust the next column's width.
 - ▶ Click on the **Set As Default** to create all the new columns to this width.
 - ▶ Click on the **Close** button to cancel the operation.
5. To restore all columns to the default value, in the Xsheet view menu, select **All Columns to Default Width**.

Related Topics

- [Layers and Columns on page 57](#)
- [Layer and Column Concepts on page 57](#)
- [Advanced Column Types on page 58](#)
- [Layer Content on page 1](#)

- [Adding New Drawing Layers](#) on page 60
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- [Changing the Colour of a Column or Layer](#) on page 1
- [Expanding and Collapsing Layers and Columns](#) on page 74

Filling Exposure

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

Related Topics

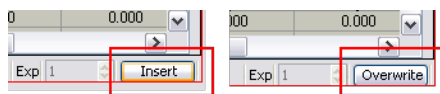
- [Filling Exposure Mode](#) below
- [Typing Exposure](#) on the facing page
- [Holding Exposure](#) on page 81
- [Extending a Single Exposure](#) on page 82
- [Extending an Exposure Sequence](#) on page 82
- [Dragging Cells](#) on page 83
- [Increasing and Decreasing Exposure](#) on page 86
- [Inserting Blank Cells](#) on page 90
- [Setting the Exposure](#) on page 91
- [Filling a Selection with a Single Exposure](#) on page 92
- [Filling a Selection with a Sequence](#) on page 93
- [Filling a Selection Randomly](#) on page 95
- [Creating Cycles](#) on page 96

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.

To toggle between Overwrite and Insert modes:

- ▶ In the Xsheet view's right bottom corner, click the **Overwrite/Insert** button or press [I].



Overwrite Mode

By default, the Xsheet view is set to Overwrite mode. Add a new value or a new value sequence overwrites existing ones. The existing timing sequence remains in the same place and is not pushed further down the column.

Drawing	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	
12	
13	
14	
15	
16	
17	

Drawing	
1	1
2	2
3	3
4	100
5	
6	
7	
8	
9	9
10	10
11	
12	
13	
14	
15	
16	
17	

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.

Drawing	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	
12	
13	
14	
15	
16	
17	

Drawing	
1	1
2	2
3	3
4	100
5	4
6	5
7	6
8	7
9	8
10	9
11	10
12	
13	
14	
15	
16	
17	

Related Topics

- [Filling Exposure on the previous page](#)
- [Filling Exposure Mode on the previous page](#)

Typing Exposure

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

- [Typing a Value in the Timeline View below](#)
- [Typing a Value in the Xsheet View on the next page](#)


Typing a Value in the Timeline View

If you want to type an exact drawing name or value into the Timeline view, you must use the Data view section of the Timeline.



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

To type a value in the Timeline view:

1. In the Timeline view, click the **Show Data View**  button.



2. In the Drawing Substitution field, type the name of the drawing you want to create, and press [Enter/Return].

Typing a Value in the Xsheet View

To enter a value in a column's cell, double-click in the cell and type the numbers or letters.

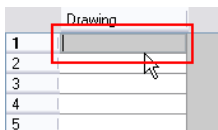


You can only use alphanumeric values. (0-9, a-z, underscore (_) and dash (-)).

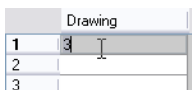
- Press [Enter/Return] to move on to the next cell.
- Press [Esc] to exit the typing mode and return to normal mode.

To type values in the Xsheet view:

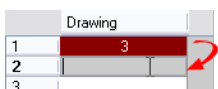
1. In an Xsheet column, double-click on one cell.



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



3. Press [Enter/Return] to move on to the next cell.



- Press [Esc] to quit the typing mode.

Drawing	
1	3
2	
3	

Related Topics

- [Filling Exposure on page 78](#)

Holding Exposure

Drawings in an animation 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. A drawing can also be exposed for three, four, five cells and so on. To prevent mistakes and to save time, the Xsheet lets you hold your cells automatically as you type.

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



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

To hold exposure:

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

*In the Harmony Xsheet, select **Option > Hold 2 Cells**.*

- 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.

Drawing	
1	3
2	
3	
4	
5	4
6	
7	
8	
9	
10	

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

Set Exposure to:



Related Topics

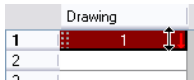
- [Filling Exposure on page 78](#)

Extending a Single Exposure

The **Extend Exposure** feature allows you to select an Xsheet's cell containing a value and to pull it down to the desired frame.

To extend a cell exposure:

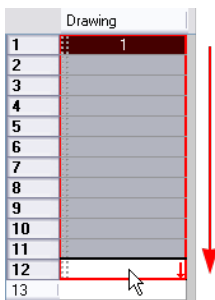
1. In the Xsheet view, select the red arrow  in the cell's right side. Make sure you see the drag down  cursor.



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.



Related Topics

- [Filling Exposure on page 78](#)

Extending an Exposure Sequence

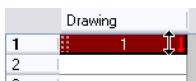
You can extend and create a sequence using almost the same procedure as you would when you extend a single exposure. The only differences being that the selected cell must only contain numbers and that you need to press the [Shift] key while pulling down on the selection.



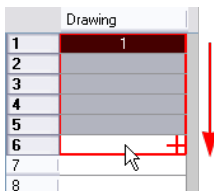
The creation of the sequence only works with numbers in the selected cell, not letters.

To create a sequence:

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

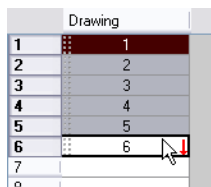


3. Hold down the [Shift] key. Make sure a plus (+) sign appears.
4. Pull down the selection box to the desired frame.



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

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



You can also select a cell and select **Animation > Cell > Extend Exposure** or press [F5]. In the dialog box, type the frame number you want to extend the cell to.

Related Topics

- [Filling Exposure on page 78](#)

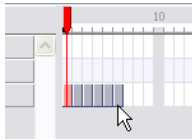
Dragging Cells

To readjust your timing, you can drag one or several cells to a new location in both the Timeline and Xsheet views.

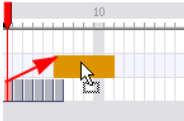
You can drag a cell to any other frame in the same column or into another column.

To drag a cell to another location in the Timeline view:

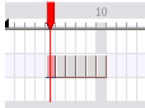
1. In the Timeline view, select one or several cells to move.



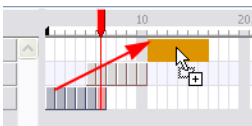
2. Click on the cells selection and drag it to the new location.



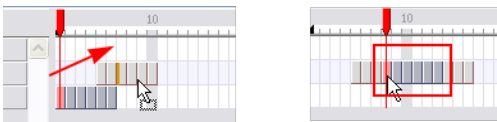
- ▶ If you drop the selection, it overwrites the existing cells.



- ▶ If you hold [Ctrl] (Windows/Linux) or [⌘] (Mac OS X) while dropping the selection, the cells are copied and not moved.




- ▶ If you press [Shift] while dropping, the selection is inserted between the existing frames.

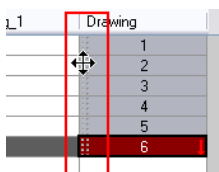


To drag a cell to another location in the Xsheet view:

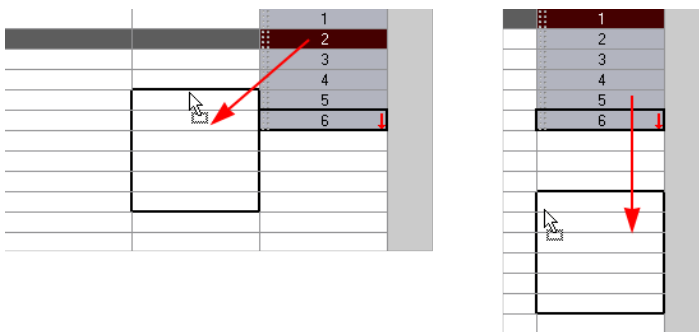
1. In the Xsheet view, select one or more cells.

	Drawing_2	Drawing_1	Drawing
1			1
2			2
3			3
4			4
5			5
6			6
7			
8			
9			

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



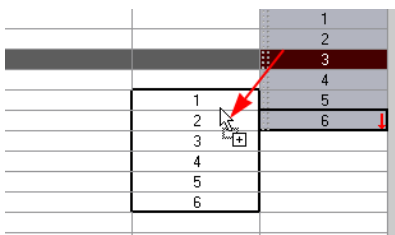
3. Drag the selection to any other cell in the same column or in another column.



- ▶ If you drop the selection, it overwrites the existing cells.

	Drawing_2	Drawing_1	Drawing
1		1	
2		2	
3		3	
4		4	
5		1	
6		2	
7		3	
8		4	
9		5	
10		6	
11		11	
12		12	
13		13	
14			

- ▶ If you hold [Ctrl] (Windows/Linux) or [⌘] (Mac OS X) while dropping the selection, the cells are copied and not moved.



- ▶ If you press [Shift] while dropping, the selection is inserted between the existing frames.

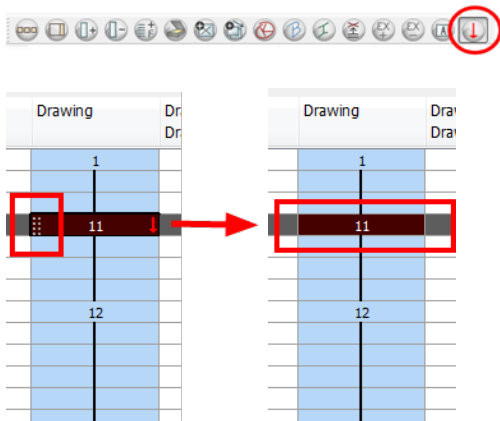
	Drawing_2	Drawing_1	Drawing
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		1	
9		2	
10		3	
11		4	
12		5	
13		6	
14		8	
15		9	
16		10	
17		11	
18		12	
19		13	
--			

You can turn off the Gestural Drag Mode for the Xsheet view to prevent drawings from being dragged from one location to another. A Toggle Gestural Drag Mode button is available for this feature, accessible by customizing the Xsheet View toolbar. Otherwise, access it by right-clicking on a cell or the Xsheet's Edit menu.

To turn off the Gestural Drag mode:

- ▶ In the **Xsheet** view, right-click and deselect the **Gestural Drag Mode** option.

- ▶ You can also customize the Xsheet View toolbar and display the **Toggle Gestural Drag** mode button to enable and disable this option.



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



This feature does not apply for Annotation columns.

Related Topics

- [Filling Exposure on page 78](#)

Increasing and Decreasing Exposure

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

Related Topics

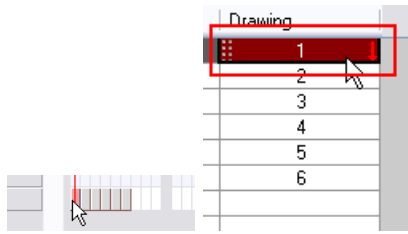
- [Increasing Exposure below](#)
- [Decreasing Exposure on the facing page](#)
- [Increase/Decrease Exposure Field on page 88](#)
- [Clear Exposure and Pull on page 88](#)


Increasing Exposure

Increasing the exposure adds one more exposure to a selected cell, repeating this action adds an extra cell every time. This is a quick way of extending a drawing exposure and is always set in the Insert mode. Increasing an exposure always pushes the existing exposure down.

To use Increase Exposure:

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



2. Do one of the following:
 - ▶ In the top menu, select **Animation > Cell > Increase Exposure**.
 - ▶ Right-click on the selected cell and select **Exposure > Increase Exposure**.
 - ▶ Press [+].
 - ▶ *In Harmony Xsheet, select **Selected > Increase Exposure**.*
 - ▶ Click the **Increase Exposure**  button in the Xsheet View and Timeline View toolbars' extra buttons.
3. Repeat this action to add more cells to your drawing's exposure.

Related Topics

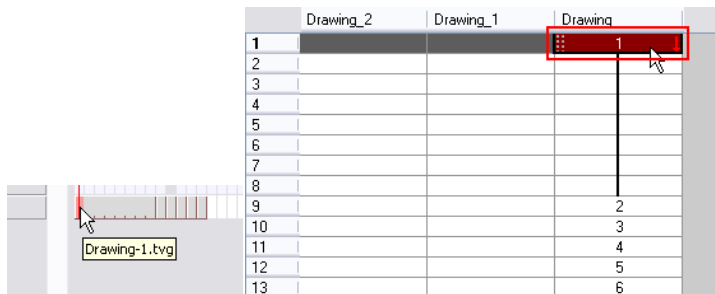
- [Decreasing Exposure below](#)
- [Increase/Decrease Exposure Field on the next page](#)


Decreasing Exposure

Decreasing the exposure removes one exposure from a selected cell. Repeating this action removes an extra cell every time. This is a rapid way to reduce a drawing exposure and remove the exposed drawing.

To decrease exposure:

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



2. Do one of the following:
 - ▶ In the top menu, select **Animation > Cell > Decrease Exposure**.
 - ▶ Right-click on the selected cell and select **Exposure > Decrease Exposure**.
 - ▶ Press [-].
 - ▶ *In Harmony Xsheet, select **Selected > Decrease Exposure**.*
 - ▶ Click the **Increase Exposure**  button in the Xsheet View and Timeline View toolbars' extra buttons.
3. Repeat this action to decrease more cells to your drawing's exposure.

Related Topics

- [Increasing and Decreasing Exposure on page 86](#)
- [Clear Exposure and Pull below](#)

Increase/Decrease Exposure Field

Another technique you can use to quickly increase or decrease the exposure of a selected drawing is by making use of the Increase/Decrease Exposure field available in the Xsheet view.

To increase and decrease exposure using the Increase/Decrease Exposure field:

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

	Drawing_2	Drawing_1	Drawing
1			1
2			
3			
4			
5			
6			
7			
8			
9			2
10			3
11			4
12			5
13			6

2. In the Xsheet's bottom-right corner, increase or decrease the drawing's exposure by clicking the up or down arrows. To increase the exposure, press [+]. To decrease the exposure, press [-].

	Drawing_2	Drawing_1	Drawing
1			1
2			
3			
4			
5			
6			
7			
8			
9			2
10			3
11			4
12			5
13			6

Current: 1 : Drawing Exp. 8 Overwrite

Click on the small arrows here to increase or decrease the drawing's exposure

Related Topics

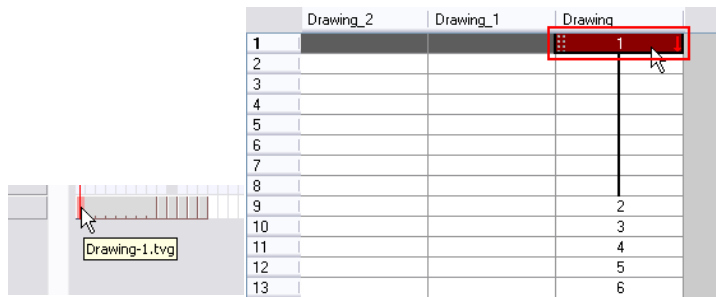
- [Increasing and Decreasing Exposure on page 86](#)
- [Decreasing Exposure on the previous page](#)
- [Clear Exposure and Pull below](#)


Clear Exposure and Pull

You can reduce a drawing's exposure using the Clear Exposure and Pull option.

To use the Clear Exposure and Pull feature:

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



2. Do one of the following:
 - ▶ In the top menu, select **Animation > Cell > Clear Exposure and Pull**.
 - ▶ Right-click on the selected cell and select **Exposure > Clear Exposure and Pull**.
 - ▶ *In Harmony Xsheet, select **Selected > Clear Exposure and Pull**.*
 - ▶ Click the **Clear Exposure**  button in the Xsheet View and Timeline View toolbars' extra buttons.
 - ▶ Press [Z].

Related Topics

- [Increasing and Decreasing Exposure on page 86](#)

Deleting Exposure


You can delete a drawing's exposure in several simple ways. Note that when you delete a drawing's exposure from the Timeline or Xsheet view, you are not deleting the actual drawing file. You can always bring it back 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.

To delete selected exposures:

1. In the Timeline or Xsheet view, select the exposure you want to delete.
2. Right-click on the selection and select **Delete** or press [Delete].

To completely clear the 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 top menu, select **Animation > Cell > Clear Exposure**.
 - ▶ In the Timeline view, right-click on the selection and select **Exposure > Clear Exposure**.
 - ▶ Click the **Clear Exposure**  button in the **Timeline View** toolbar's extra buttons.

Related Topics

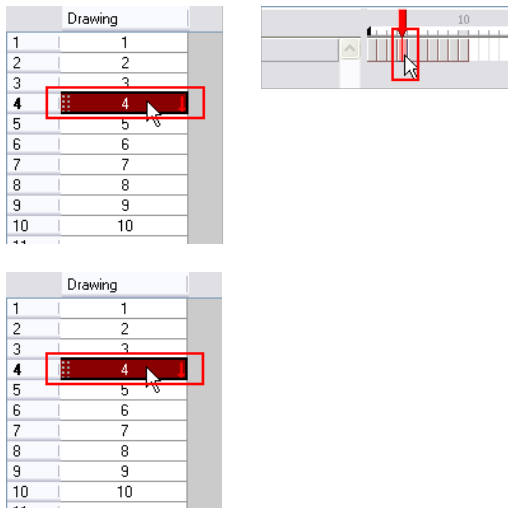
- [Filling Exposure on page 78](#)
- [Layer and Column Concepts on page 57](#)

Inserting Blank Cells


Use the Insert Blank Cell option to 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.

To insert blank cells:

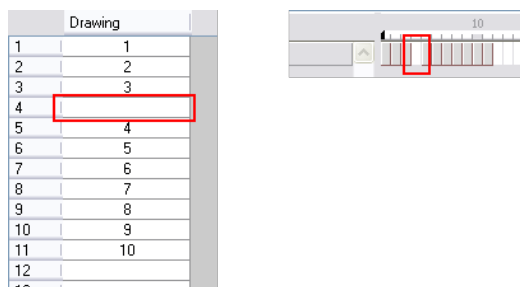
1. In the Xsheet or Timeline view, select the cell where you want to insert a blank cell.



2. Do one of the following:

- ▶ In the top menu, select **Animation > Cell > Insert Blank Cell**.
- ▶ In *Harmony Xsheet*, select **Selected > Insert Blank Cell**.
- ▶ Right-click on the selected cell and select **Exposure > Insert Blank Cell**.
- ▶ Press [Shift] + [J].
- ▶ Click the **Insert Blank Cell**  button in the **Timeline View** and **Xsheet View** toolbars' extra buttons.

The blank cell is inserted.



To clear a selected cell range without changing the exposure and timing:

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

Drawing	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	
12	
13	
14	
15	
16	

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

Drawing	
1	1
2	2
3	
4	
5	
6	
7	
8	
9	3
10	4
11	5
12	6
13	7
14	8
15	9
16	10
17	

Related Topics

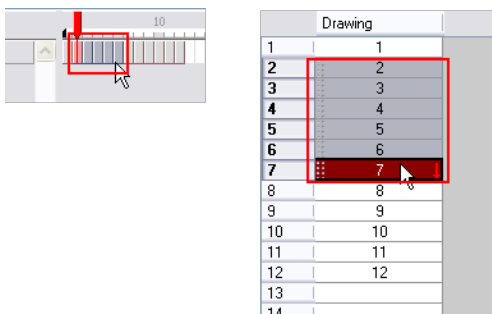
- [Filling Exposure](#) on page 78

Setting the Exposure

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

To set the exposure:

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



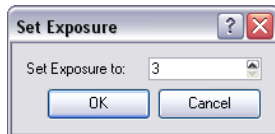
- In the top menu, select one of the following:
 - **Animation > Cell > Set Exposure > Set Exposure to 1.**
 - **Animation > Cell > Set Exposure > Set Exposure to 2.**
 - **Animation > Cell > Set Exposure > Set Exposure to 3.**
 - **Animation > Cell > Set Exposure.**

You can also click the **Set Exposure**     buttons in the **Timeline View** toolbar's extra buttons or right-click the selected cells and choose .

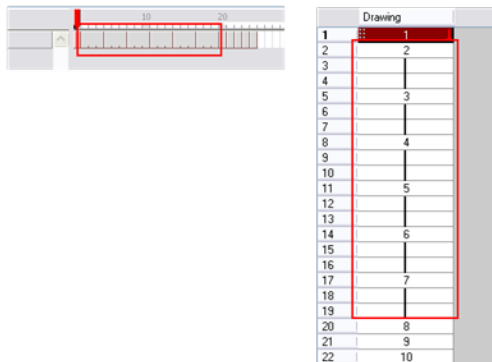
3. In *Harmony Xsheet*, right-click and select **Exposure > Set Exposure** to and then select one of the following:

- **Set Exposure to 1**
- **Set Exposure to 2**
- **Set Exposure to 3**
- **Set Exposure**

If you choose 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.



Related Topics

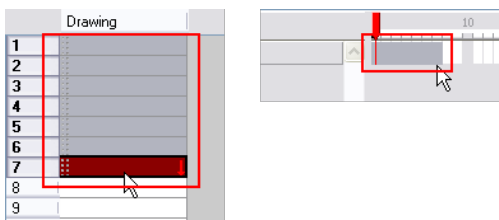
- [Filling Exposure on page 78](#)

Filling a Selection with a Single Exposure


The Fill Selection option is used to fill the same value all over a 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 entire columns. You can use numbers, words, letters or any alphanumeric value.

To use Fill Selection:

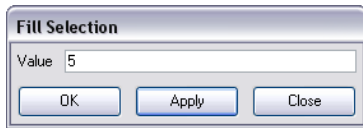
1. In the Xsheet or Timeline view, select a cell range.



2. Do one of the following:

- ▶ Select **Animation > Cell > Fill Selection**.
- ▶ Press [Ctrl] + [T] (Windows/Linux) or [⌘] + [T] (Mac OS X).
- ▶ In Harmony Xsheet, right-click and select Exposure > **Fill Selection** or press [Ctrl] + [T] (Windows/Linux) or [⌘] + [T] (Mac OS X).
- ▶ Click the **Fill Selection**  button in the **Xsheet View** and **Timeline View** toolbars' extra buttons.

The Fill Selection dialog box opens.



3. In the Value field, type the desired value and click OK.



Related Topics

- [Filling Exposure on page 78](#)


Filling a Selection with a Sequence

The Sequence Fill option is used to create a number sequence over a selection. The sequence can be forward, backward, single, double or higher increment, as a cycle, etc. The selection can be over one cell, a cell range in one or more columns, an entire column, or several entire columns.

To fill a selection with a sequence:

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



2. If you are working in the Xsheet view, select **Animation > Cell > Sequence Fill**. Click the **Sequence Fill**  button in the **Xsheet View** toolbar's extra buttons.

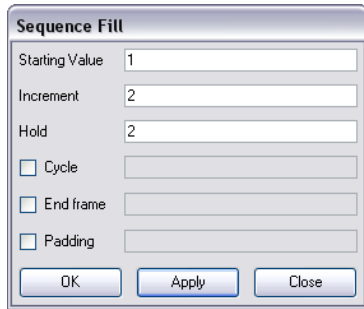
*In Harmony Xsheet, select **Selected > Sequence Fill**. You can also click on the **Sequence Fill**  button available in the **Xsheet View** toolbar's extra buttons.*

OR

If you are working in the **Timeline** view, right-click and select **Exposure > Sequence Fill**.

- ▶ Press [Ctrl] + [M] (Windows/Linux) or [⌘] + [M] (Mac OS X).

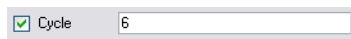
The Sequence Fill dialog box opens.



The image shows the 'Sequence Fill' dialog box with the following fields and options:

- Starting Value: 1
- Increment: 2
- Hold: 2
- Cycle
- End frame
- Padding
- Buttons: OK, Apply, Close

- In the Starting Value field, type the starting number for the number sequence.
- In the Increment field, type the increment to which the number will change from frame to frame. (1-2-3-4, 1-3-5-7, 10-9-8-7-6-5-4-3-2-1). The value can be positive or negative.
- In the Hold field, choose an exposure holding value.
- Select the **Cycle** option if you want a cycle; type the number of cells for this cycle's duration.



The image shows the 'Cycle' option selected with a checkmark and the value '6' entered in the adjacent field.



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

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



The image shows the 'End frame' option selected with a checkmark and the value '20' entered in the adjacent field.

- 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. Also, you can type a letter or word in the field for it to be added in front of the drawing number.



The image shows the 'Padding' option selected with a checkmark and '###' entered in the adjacent field.

- Click OK.

Drawing	
1	mouth1
2	
3	mouth3
4	
5	mouth5
6	
7	mouth1
8	
9	mouth3
10	
11	mouth5
12	
13	mouth1
14	
15	mouth3
16	
17	mouth5
18	
19	mouth1
20	
21	

Related Topics

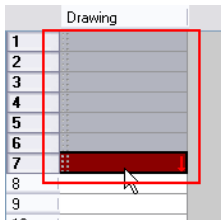
- [Filling Exposure on page 78](#)

Filling a Selection Randomly

The Fill Cells Randomly option is used to 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, a cell range over many columns or an entire column or several entire columns.


To use Fill Cells Randomly:

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

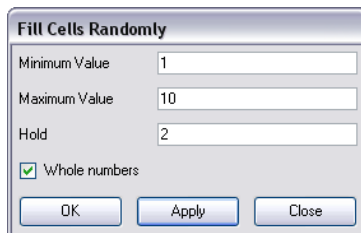


2. Select **Animation > Cell > Fill Cells Randomly**.

*In Harmony Xsheet, right-click and select **Exposure > Cell > Fill Cells Randomly**.*

- ▶ You can also click on the **Fill Cells Randomly**  button available in the **Xsheet View** toolbar's extra buttons.

The **Fill Cells Randomly** dialog box opens.



3. In the Minimum Value field, type a minimum value.
4. In the Maximum Value field, type a maximum 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.

	Drawing
1	5
2	
3	3
4	
5	9
6	
7	2
8	
9	
10	
11	

Related Topics

- [Filling Exposure on page 78](#)

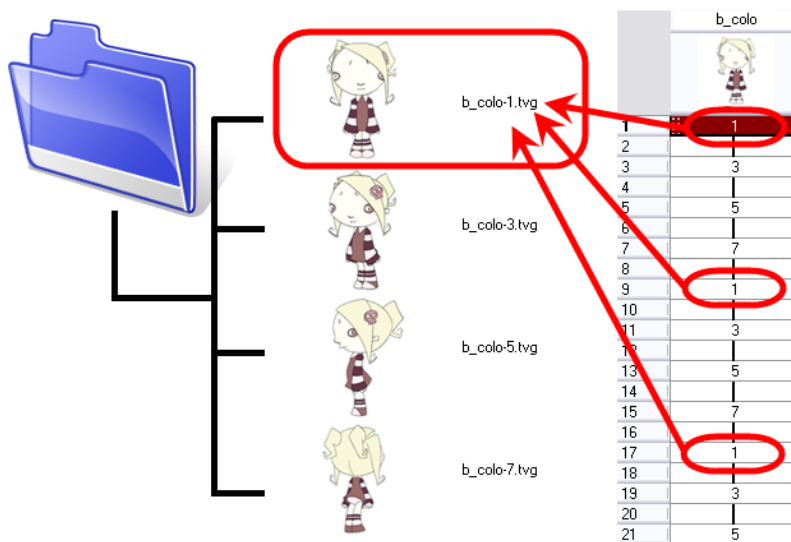
Creating Cycles

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:

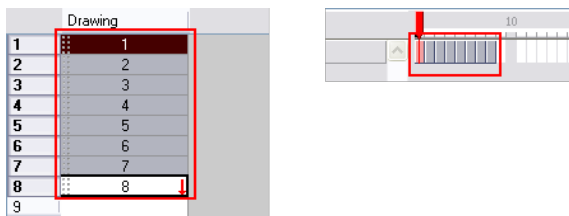
- Paste Cycle
- Paste Reverse
- Create Cycle

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.

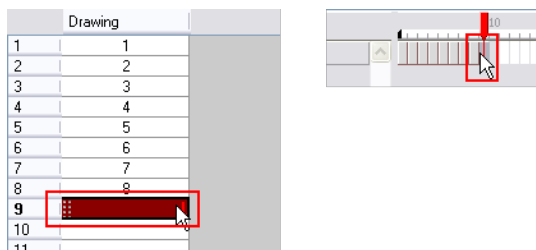


To use the Paste Cycle command:

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



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

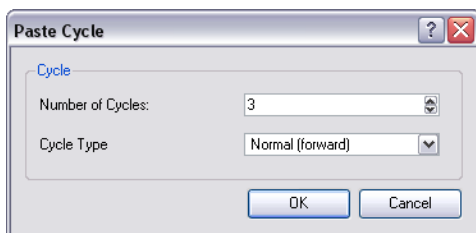


4. In the top menu, select **Edit > Paste Cycle**.

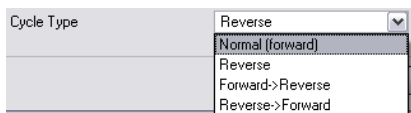
*In Harmony Xsheet, right-click and select **Paste Cycle**.*

- ▶ The [Ctrl] + [/] (Windows/Linux) or [⌘] + [/] (Mac OS X).

The Paste Cycle dialog box opens.



5. In the Number of Cycles field, use the up and down arrow to increase or decrease the amount of cycles you want to paste. You can also directly type the value.
6. In the Cycle Type drop-down menu, select the type of cycle you want to paste.

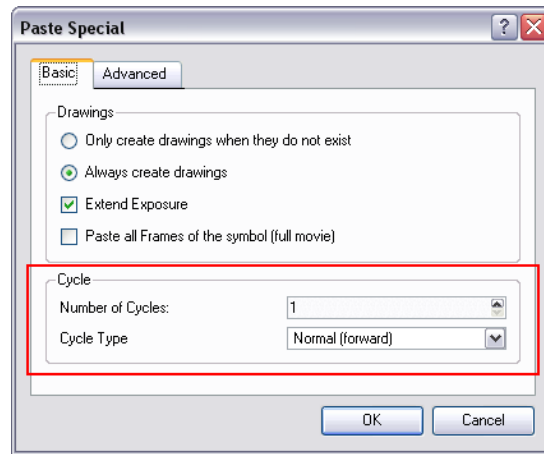


- ▶ **Normal (forward)**: Pastes your selection as it is, starting with the first cell and ending with the last one.
- ▶ **Reverse**: Pastes your selection reversed, starting with the last cell and ending with the first one.
- ▶ **Forward -> Reverse**: Pastes your selection as a yo-yo, starting with the first cell, going to the last one and ending with the first cell.
- ▶ **Reverse -> Forward**: Pastes your selection as a reversed yo-yo, starting with the last cell, going to the first one and ending with the last cell.

7. Click OK.

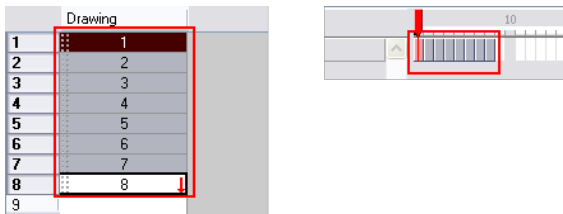


You can do the same operation using the Paste Special dialog box. To open the Paste Special dialog box, select **Edit > Paste Special** or press [Ctrl] + [B] (Windows/Linux) or [⌘] + [B] (Mac OS X).

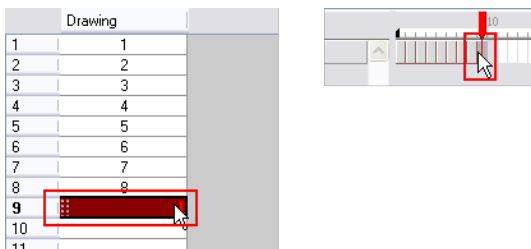


To use the Paste Reverse command:

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



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

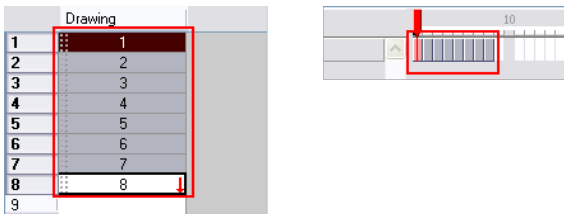


4. In the top menu, select **Edit > Paste Reverse**.
*In Harmony Xsheet, right-click and select **Paste Reverse**.*
 - Press [Ctrl] + [.] (Windows/Linux) or [⌘] + [.] (Mac OS X).

Drawing	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	8
10	7
11	6
12	5
13	4
14	3
15	2
16	1
17	

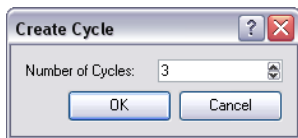
To use the Create Cycle command:

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



2. In the Timeline View toolbar, click on the **Create Cycle**  button located in the toolbar's extra buttons.

The Create Cycle dialog box opens.



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

Related Topics

- [Filling Exposure on page 78](#)

Navigating between Frames and Columns

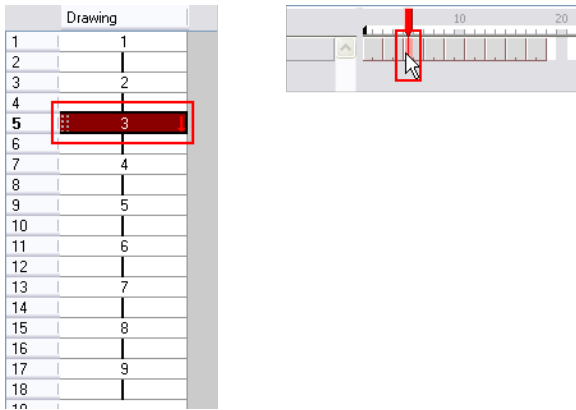
Once a cell is selected in the Timeline or Xsheet view, you can navigate between the layers, frames and drawings using keyboard shortcuts that are effective in the Camera, Drawing, Timeline and Xsheet view.

You can navigate through:

- Columns
- Drawings
- Frames

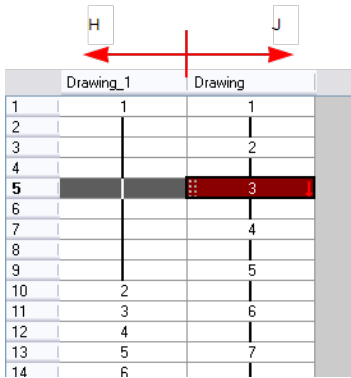
To navigate through the drawings, frames and columns:

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

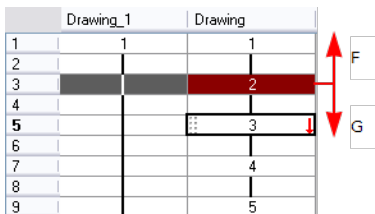


2. Once the cell is selected, you can navigate between:

- ▶ Previous and next layers from the top menu, you can select **Edit > Previous Layer** and **Next Layer**. You can also press [H] and [J].




- ▶ Previous and next drawings, from the top menu, select **Edit > Previous Drawing** and **Next Drawing** or **Drawing > Previous Drawing** and **Next Drawing**. You can also press [F] and [G].



- ▶ Previous and next frames, from the top menu, select **Play > Previous Frame** and **Next Frame**. You can also press [,] and [.]

	Drawing_1	Drawing
1	1	1
2		
3		2
4		
5		3
6		
7		4
8		
9		5
10	2	



Managing Drawings

Drawings that are created in Toon Boom Harmony are not encapsulated 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.



You also have the option of marking your drawing as Key, Breakdown and In-betweens—see [Drawing Identification on page 1](#) to learn more about this feature.

Related Topics

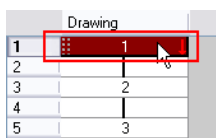
- [Renaming a Drawing below](#)
- [Renaming Drawings by Frame Position on page 1](#)
- [Deleting a Drawing on page 1](#)
- [Duplicating a Drawing on the facing page](#)
- [Copying and Pasting Drawings on page 104](#)
- [Drawing Identification on page 1](#)

Renaming a Drawing



To rename a drawing, you do not type the new name in the cell. You need to select the cell containing the drawing and use the Rename Drawing command.

To rename a drawing:

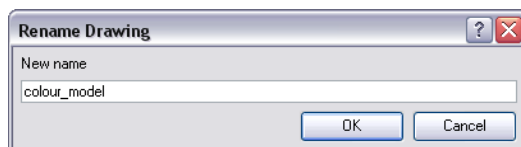
1. In the Timeline or Xsheet view, select the drawing to rename.



2. Do one of the following:

- In Harmony Stage's top menu, select **Drawing > Rename Drawing** or press [Ctrl] + [D] (Windows/Linux) or [⌘] + [D] (Mac OS X).
- Click the **Rename Drawing**  button in the **Timeline View** or **Xsheet View** toolbars' extra buttons.
- In Harmony Xsheet, use the **Rename Drawing**  button in the **Xsheet View** toolbars' extra buttons.

The Rename Drawing dialog box opens.



- In the New Name field, type the new drawing name.

Related Topics

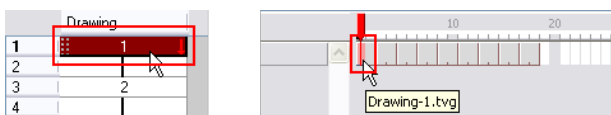
- [Managing Drawings on the previous page](#)
- [Renaming Drawings with a Prefix on page 1](#)
- [Renaming Drawings by Frame Position on page 1](#)
- [Deleting a Drawing on page 1](#)
- [Duplicating a Drawing below](#)
- [Copying and Pasting Drawings on the next page](#)


Duplicating a Drawing

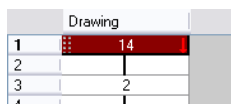
If you want to modify a drawing that already exists, but keep the original drawing intact, you can duplicate the drawing and work on the copy. When duplicating a drawing, the selected cell is replaced with the new drawing. The exposure of the original drawing that was on the current cell is removed. The drawing is not deleted.

To duplicate a drawing:

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



- In the Xsheet View toolbar, click the **Duplicate Drawing**  button.
- In Harmony Stage's top menu, select **Drawing > Duplicate Drawing** or press [Alt] + [Shift] + [D].



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 your drawings without affecting the original drawing.

Related Topics

- [Managing Drawings on the previous page](#)
- [Renaming a Drawing on the previous page](#)
- [Renaming Drawings by Frame Position on page 1](#)
- [Deleting a Drawing on page 1](#)
- [Duplicating a Drawing above](#)
- [Copying and Pasting Drawings on the next page](#)

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 two main ways to paste your selected drawings with the Paste Special dialog box:

- **Always Create Drawings**

This option pastes all of your drawings as they are. If a drawing has the same name as an existing one, it is renamed and duplicated.

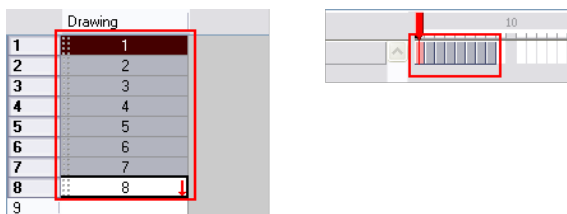
- **Only Create Drawings When They Do Not Exist**

This option only 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 duplicating drawings in your layers.

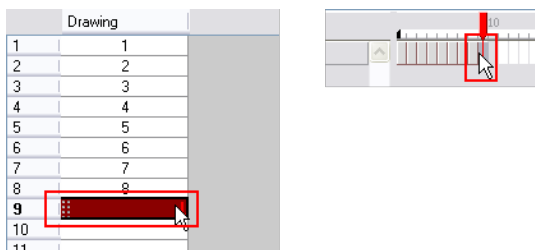
This option is useful when you are pasting cut-out character templates containing drawings you may already have in your scene and some new ones. Using this option, you only paste the new drawings and are not duplicating all of the other parts you already have.


To paste drawings with the Paste Special command:

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



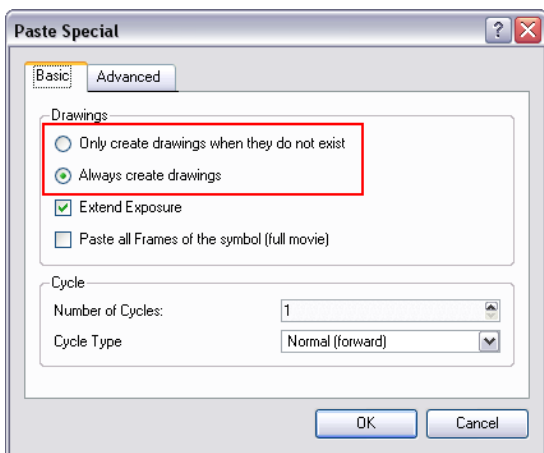
2. In the Timeline or Xsheet view, select the cell where you want your pasted selection to start.



3. In the top menu, select **Edit > Paste Special** or press [Ctrl] + [B] (Windows/Linux) or [⌘] + [B] (Mac OS X). You can also click the **Paste Special**  button in the Timeline View and Xsheet View toolbars' extra

buttons.


The Paste Special dialog box opens.



4. Select the **Basic** tab.
5. In the Drawings section, select the **Always Create Drawings** or the **Only Create Drawings When They Do Not Exist** option depending on what you need.



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 of the Paste Special command. This feature paste your selection using the same settings you used in your last paste special without opening the Paste Special dialog box.

To use the Paste Special Again command, select **Edit > Paste Special Again** or press [Ctrl] + [Shift] + [B] (Windows/Linux) or [⌘] + [Shift] + [B] (Mac OS X). You can also click the **Paste Special Again** 

button in the Timeline View and Xsheet View toolbars' extra buttons.

Related Topics

- [Managing Drawings on page 102](#)
- [Renaming a Drawing on page 102](#)
- [Renaming Drawings with a Prefix on page 1](#)
- [Renaming Drawings by Frame Position on page 1](#)
- [Deleting a Drawing on page 1](#)
- [Duplicating a Drawing on page 103](#)

Tempo Markers

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

	Drawing	Limpa_Colour	01_Next_Exit
1	1	1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
17	2	17	
18	3	18	
19	4	19	
20	5	20	
21	6	21	
22	7	22	
23	8	23	
24	9	24	
25	10	25	
26	11	26	
27	12	27	
28	13		
29	14		
30	15		
31	16		
32	17		
33	18		

To set the Tempo Markers:

1. In the Xsheet View menu, select **View > Set Tempo Marker**.
1. In the Xsheet view, 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:** Type 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) 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) a tempo marker will appear in the Xsheet view.
3. Click OK.

Related Topics

- [Timing on page 51](#)

Annotation Columns


The Annotation columns are a more than just a useful tool. They allow you to mark actions, corrections or any other information related to your animation that you would like to draw or write. This way, you can print your Xsheet, take it back to your animation table and work with the annotations.

Related Topics

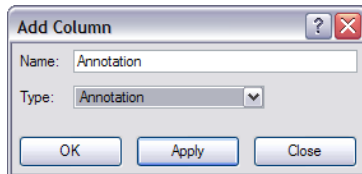
- [Adding an Annotation Column below](#)
- [Drawing and Typing in the Annotation Column on the facing page](#)
- [Changing the Drawing Settings on page 112](#)
- [Importing an Annotation File on page 113](#)

Adding an Annotation Column

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 Columns dialog box opens.



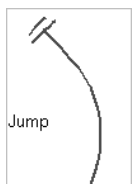
2. In the Column Name field, name your column accordingly.
3. In the Column Type field, select **Annotation**.
4. Click OK.

The new column appears.

Related Topics

- [Annotation Columns above](#)
- [Drawing and Typing in the Annotation Column on the facing page](#)
- [Changing the Drawing Settings on page 112](#)
- [Importing an Annotation File on page 113](#)

Drawing and Typing in the Annotation Column



In the annotation column, you can not only type in your notes and relevant information, but also draw sketches and ideas which will be useful in producing your animation.

- [Drawing in the Annotation Column](#) below
- [Typing in the Annotation Column](#) on the next page
- [Erasing Annotation Column Content](#) on the next page




Drawing in the Annotation Column

Before you can draw in the annotation column, you must first activate the Enable Drawing option. Once this is done, you can start drawing using the mouse or the pen tablet.



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

To enable drawing in the annotation column:

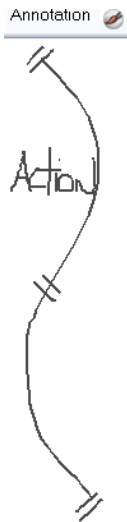
1. In the Xsheet View menu, select **Annotation > Enable Drawing**. You can also click on the column's header icon to toggle the Drawing, Selection and Erasing modes.
 - ▶ The Select  icon indicates that the Select mode is enabled.
 - ▶ The Brush  icon indicates that the Drawing mode is enabled.
 - ▶ The Eraser  icon indicates that the Erasing mode is enabled.



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

To draw in the annotation column:

- ▶ To draw in an annotation column, simply use your mouse or pen tablet.

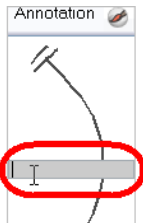


Typing in the Annotation Column

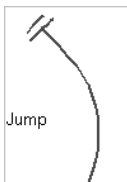
Typing in an annotation column is independent from the Drawing mode. You can be in either mode and the typing will work.

To type in an annotation column:

1. In the annotation column, press [Ctrl] (Windows/Linux) or [⌘] (Mac OS X) on the cell where you want to write. By pressing [Ctrl] + [Shift] + click (Windows/Linux) or [⌘] + [Shift] + click (Mac OS X) in the annotation column, you will enter the editing mode in the cell at the current frame.



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



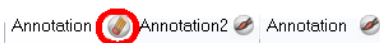
Refer to the topic [Typing Exposure on page 79](#) to get more information about typing values in the Xsheet view.

Erasing Annotation Column Content

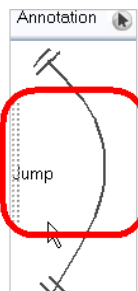
You can erase part or all of the annotation column's content.

To erase the annotation content:

1. In the Xsheet view, enable the **Erasing** mode by clicking on the mode icons.



2. In the Xsheet view, select the cell range you want to clear from text or images. Do not select any cells if you plan to clear everything.



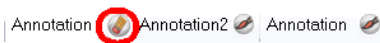
3. In the Xsheet view, right-click in the annotation column and select:
 - ▶ **Annotation > Erase All** to erase completely the content of the column.
 - ▶ **Annotation > Erase Selected Images** to erase the images contained in the selected cell range. Make sure to disable the Drawing mode to do so.
 - ▶ **Annotation > Erase Selected Texts** to erase the text contained in the selected cell range. Make sure to disable the Drawing mode to do so.



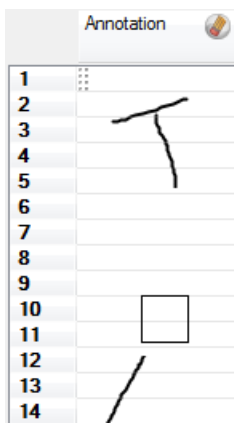
Tip: You can also use the Erasing mode to erase part of a drawn annotation.

To erase part of a drawn annotation using Erasing mode:

1. In the Annotation column's header, enable the **Erasing** mode.



2. In the column, click and drag the cursor on top of the drawn annotation to erase parts of it.





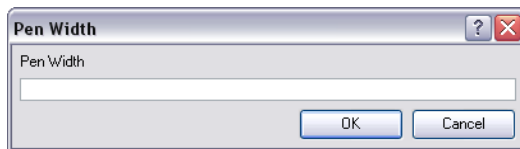
Annotations that you type in are not erased using this method.

Changing the Drawing Settings

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

To change the pen width:

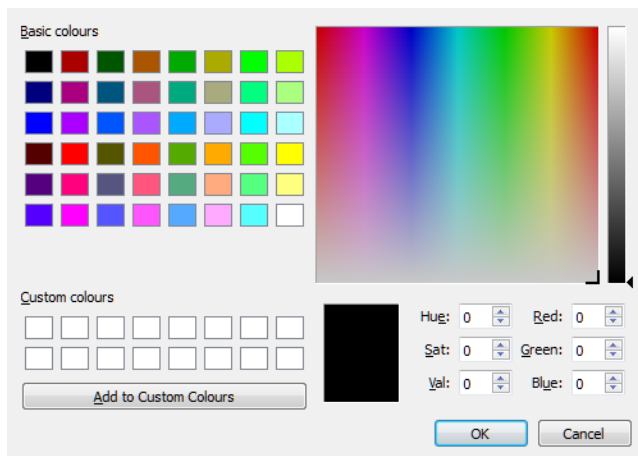
1. In the Xsheet View menu, select **Annotation > Pen Width > 1, 2, 3, 4** or **Change Current**.
If you selected the Change Current option, the Pen Width dialog box opens.



2. In the Pen Width field, type the amount of pixel you want the pen size to be.

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.

Related Topics

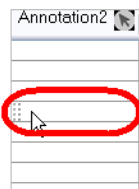
- [Annotation Columns](#) on page 108
- [Adding an Annotation Column](#) on page 108
- [Drawing and Typing in the Annotation Column](#) on page 109
- [Importing an Annotation File](#) on the facing page

Importing an Annotation File

If you scanned your paper exposure sheet's annotations or if you need to place some pictures or drawings in your annotation columns, you can easily import them.

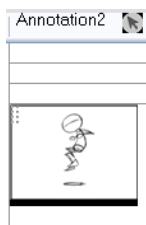
To import annotation files:

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



2. In 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.



Related Topics

- [Annotation Columns](#) on page 108
- [Adding an Annotation Column](#) on page 108
- [Drawing and Typing in the Annotation Column](#) on page 109
- [Changing the Drawing Settings](#) on the previous page

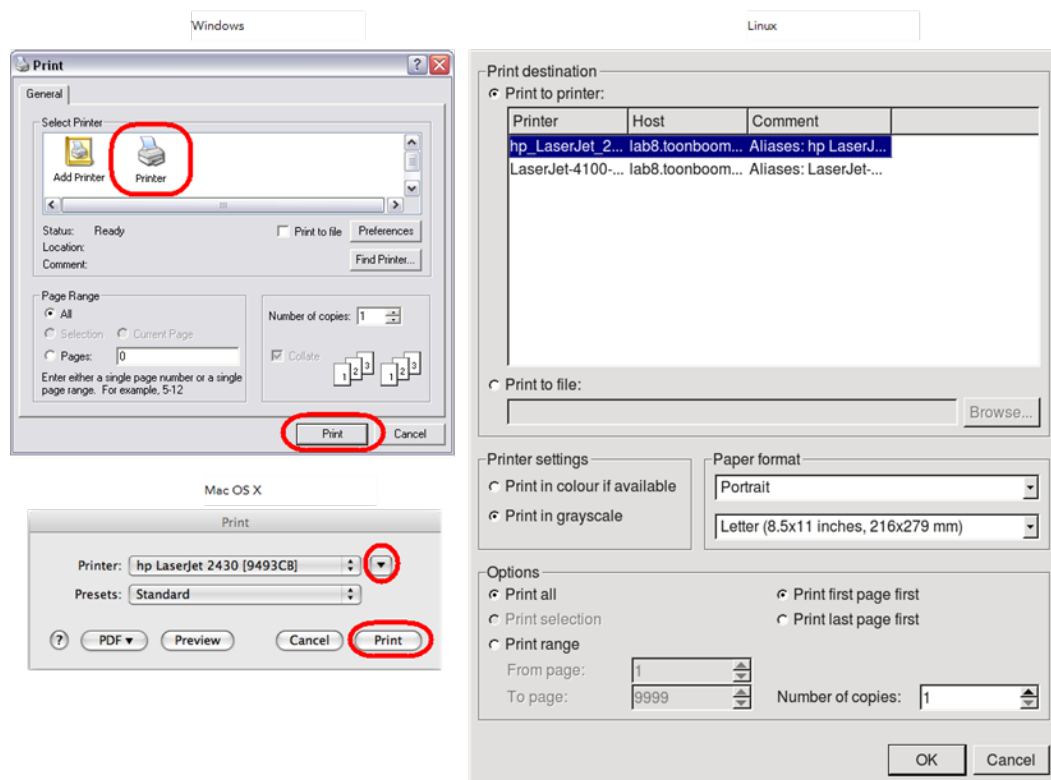
Printing the Xsheet

Once your line test is completed and you have marked all the information, corrections and timing you want in your **Xsheet** view, you can print out your exposure sheet. Printing out the **Xsheet** allows you to take it with you to your animation table or to give a copy to the animator. You can also use it to create your **Xsheet** skeleton directly in Toon Boom Harmony.


To print your exposure sheet:

1. Select **File > Print > Xsheet**.

The **Print** dialog box opens.



2. To setup your print:

- ▶ **Windows:** In the **Select Printer** section, select your printer and adjust the rest of the printing settings. Refer to the printer user guide to learn more about its options.
- ▶ **Linux:** In the **Print Destination** section, select your printer and adjust the rest of the printing settings. Refer to the printer user guide to learn more about its options.
- ▶ **Mac OS X:** In the **Printer** section, select your printer and adjust the rest of the settings by clicking on the Parameters  button. You can also click on the **PDF** button and select an option from the drop-down menu if you want to save a PDF version of your exposure sheet.



Refer to the printer user guide to learn more about its options.

3. Click on the **Print** button.

	A	B	C	D	Annotation
1	1	001	6	1	
2	2	001	6	1	
3	3	001	9	1	
4	4	001	9	1	
5	5	001	9	1	
6	6	001	9	1	
7	7	001	1	1	
8	8	001	1	1	
9	9	001	3	1	
10	10	001	3	1	
11	11	001	1	1	
12	12	001	1	1	
13	13	001	5	1	
14	14	001	5	1	
15	15	001	2	1	
16	16	001	2	1	
17	17	001	7	1	
18	18	001	7	1	
19	19	001	2	1	
20	20	001	2	1	
21	21	001	7	2	
22	22	001	7	3	
23	23	001	4	4	
24	24	001	4	5	
25	25	001	9	6	
26	26	001	9	7	
27	27	001	2	8	
28	28	001	2	9	
29	29	001	4	10	

Related Topics

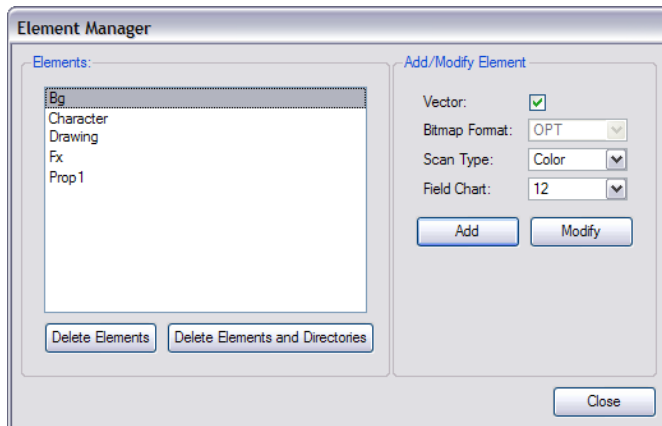
- [Timing on page 51](#)

Element Manager

Use the **Element Manager** to add, delete or modify elements (drawing folders) in your scene. If you have drawing folders that are not linked to a column in your scene, use the **Element Manager** to delete them if need be.

To open the **Element Manager** dialog box:

- ▶ Select **Scene > Element Manager**.



- **Elements:** Displays a list of the elements contained in your scene.
- **Delete Elements:** Press this button to delete the selected elements.
- **Delete Elements and Directories:** Press this button to delete the selected layer, as well as its directories (drawing folder).
- **Add/Modify Element:** Use the options contained in this area to add or modify an element.
 - **Name:** Type a new name in this field to create an element or to rename the selected element.
 - **Vector:** Check this box if the new element is a vector drawing or if you want to enable the parameters on the selected element in the Elements list.
 - **Bitmap Format:** Select the file format of the bitmap layer from the drop-down list.
 - **Scan Type:** If you are planning to scan elements with Toon Boom Harmony's Scan module, select the scan type from the drop-down list.
 - **Field Chart:** If you are importing traditional animation, select the size of the paper on which the animation was drawn.
- **Add:** Press this button to create a new element with the current parameters entered in the **Add/Modify Element** section.
- **Modify:** Press this button to apply the parameter changes made to the selected element.

Related Topics

- [Timing on page 51](#)

Timing Preferences

When adjusting your timing in the **Timeline** and **Xsheet** view, you may want to set some preferences.

This section covers the preferences related to timing, **Timeline** and **Xsheet** view.



The preferences related to Harmony Xsheet can be found under the **Exposure Sheet** tab only.

You will find the preferences listed under the following tabs:

- **Exposure Sheet**
- **Timeline**
- **Advanced**

To open the Preferences panel:

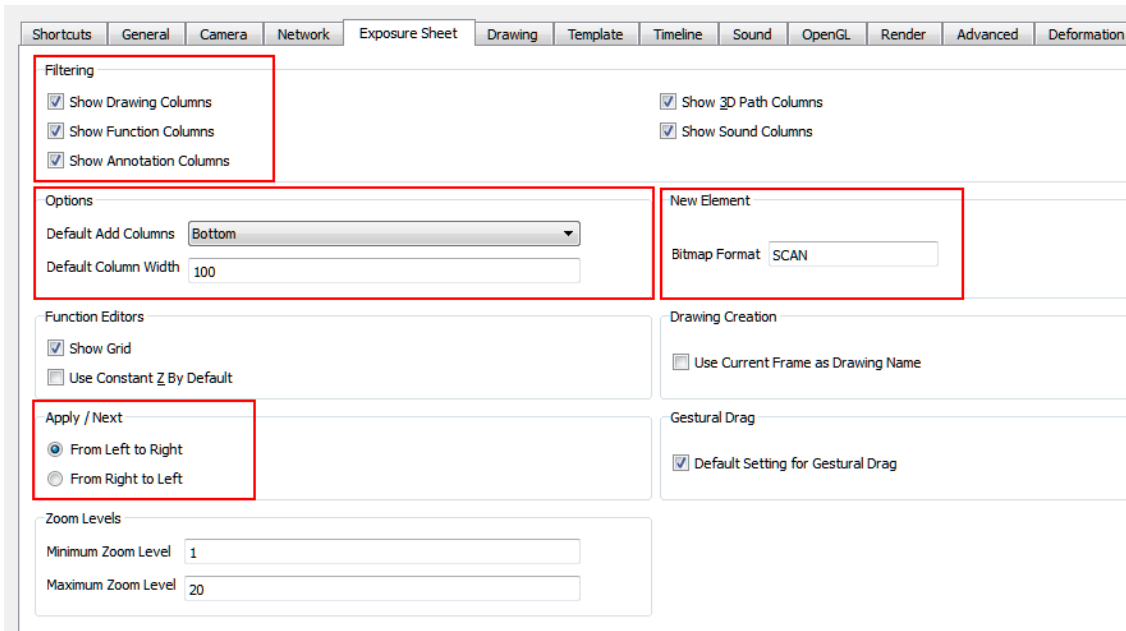
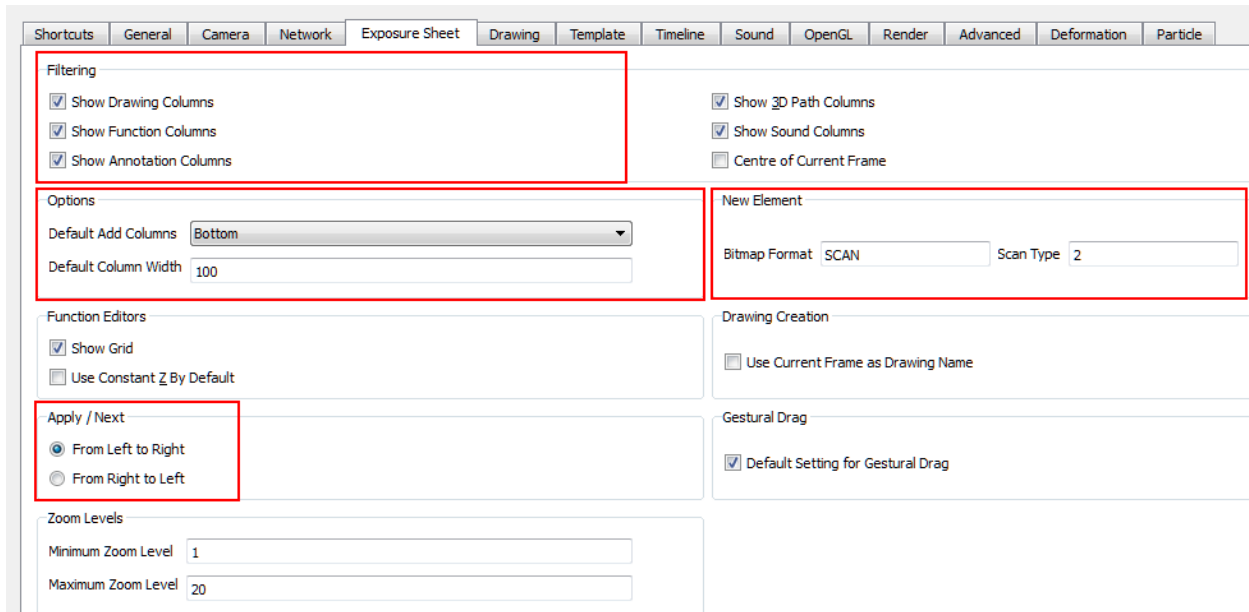
- Windows/Linux: Select **Edit > Preferences**.
- Mac OS X: Select **Stage > Preferences**.
- The [Ctrl] + [U] (Windows/Linux) or [⌘] + [U] (Mac OS X).

Related Topics

- [Exposure Sheet Preferences](#) below
- [Timeline Preferences](#) on page 120
- [Advanced Preferences](#) on page 120

Exposure Sheet Preferences

This is the Exposure Sheet preferences tab.



Filtering

These preferences are used to display or hide certain layer types in the Xsheet view.

- **Show Drawing Columns:** Displays the Drawing layers in the Xsheet view.
- **Show Function Columns:** Displays the Function columns layers in the Xsheet view.
- **Show Annotation Columns:** Displays the Annotation columns layers in the Xsheet view.
- **Show 3D Path Columns:** Displays the 3D Path columns in the Xsheet view.
- **Show Sound Columns:** Displays the Sound columns in the Xsheet view.

- **Centre of Current Frame:** Turns auto-centering on or off when playing back a scene. Auto-centering is to be used during sound breakdown with the ShuttleXpress device.

Options

- **Default Add Columns:** The default position where the new column will be added.
- **Default Column Width:** The default width value for the new column being created.

Element Manager

- **Pixmap Format:** By default, when you create a new empty bitmap column, it will use the file format indicated in the field as the new column format. The default value is SCAN, which means that it is set for scanned-in drawings.
- **Scan Type:** By default, the Scan Type is set to 2 which indicates that the element is a TVG vector drawing. This function returns a string that is the scan type of the element. The scan type is COLOR, GRAY_SCALE or BW.
- **Vector Type:** By default, the Vector Type is set to 2 which indicates that the element is a TVG vector drawing. This function returns the vector type for the given element. In theory, there is support for multiple types of vector drawing. In practice, only TVG has been implemented. The value 0: indicates that the element is NOT a vector drawing. It is an IMAGE type.

New Element

- **Bitmap Format:** By default, when you create a new empty bitmap column, it will use the file format indicated in the field as the new column format. The default value is SCAN, which means that it is set for scanned-in drawings.
- **Scan Type:** By default, the Scan Type is set to 2 which equals vector import. This means that the imported bitmap images will be placed into a Drawing layer. Scan type 1 is bitmap import.

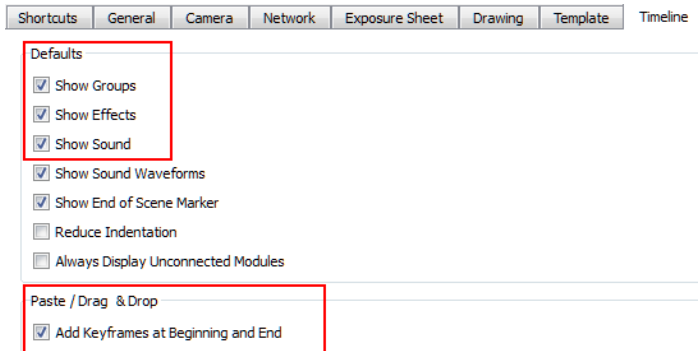
Apply/Next

- **From Left to Right:** When clicking on the **Apply/Next** button in the **Xsheet** view **Column Properties**, the next column to be displayed in the **Column Properties** will be the one on the right.
- **From Right to Left:** When clicking on the **Apply/Next** button in the **Xsheet** view **Column Properties**, the next column to be displayed in the **Column Properties** will be the one on the left.

Related Topics

- [Timing Preferences](#) on page 117
- [Timeline Preferences](#) on the next page
- [Advanced Preferences](#) on the next page

Timeline Preferences



Defaults

- **Show Groups:** Displays the Group layers in the Timeline.
- **Show Effects:** Displays the Effect layers in the Timeline.
- **Show Sound:** Displays the Sound layers in the Timeline.

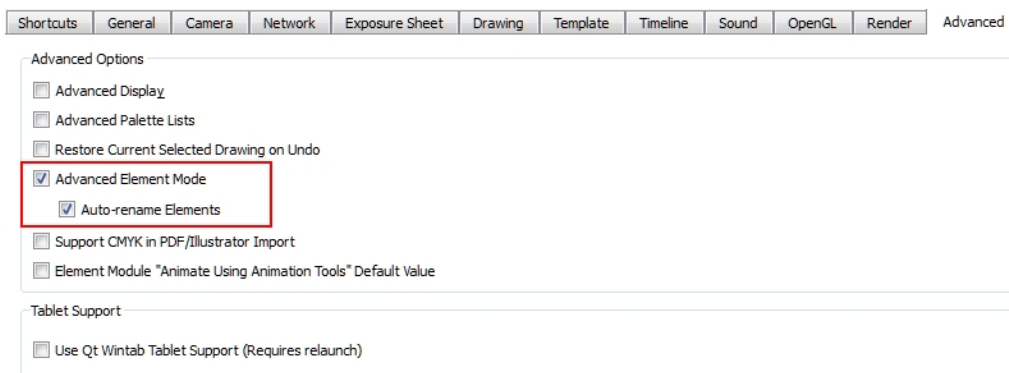
Paste/Drag & Drop

- **Add keyframes at beginning and end:** Select this option to copy and paste a set of frames that includes an interpolated sequence between two keyframes, but only extracts a partial section. Under normal circumstances, cutting and pasting a function without either the start or end keyframe would render the function null. This option caps the partial function with a new keyframe when you perform the paste.

Related Topics

- [Timing Preferences](#) on page 117
- [Exposure Sheet Preferences](#) on page 117
- [Advanced Preferences](#) below

Advanced Preferences



- **Advanced Element Mode:** Displays more options in the **Add Column** dialog box and the **Column Properties** dialog box.
- **Auto-rename Elements:** Controls whether to rename the element whenever the corresponding module name in the Network view or layer name in the Timeline view is changed.

Related Topics

- [Timing Preferences](#) on page 117
- [Exposure Sheet Preferences](#) on page 117
- [Timeline Preferences](#) on the previous page

Keyboard Shortcuts For Harmony Xsheet

This document lists default keyboard shortcuts for Harmony Xsheet.



The Harmony keyboard shortcuts set is used throughout the Harmony Xsheet module documentation.

To use a shortcut, press the key and the character simultaneously. The + sign, is not part of the sequence. If there is no shortcut allocated to a command it is left blank.

General					
COMMAND	FLASH		HARMONY		CUSTOM
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Add Frame After Selection	Ctrl+H	^+H	Ctrl+H	^+H	
Add Frame At End					
Add Frame At Start					
Advanced Save	Ctrl+Shift+S	⌘ +Shift+S	Ctrl+Shift+S	⌘ +Shift+S	
Add Frame After Selection	Ctrl+H	^+H	Ctrl+H	^+H	
Copy	Ctrl+C	⌘ +C	Ctrl+C	⌘ +C	
Cut	Ctrl+X	⌘ +X	Ctrl+X	⌘ +X	
Delete	Del	Del	Del	Del	
Delete (secondary key)	Backspace	Backspace	Backspace	Backspace	
Deselect All	Esc	Esc	Esc	Esc	
Go to Next Column	J	J	J	J	
Go to Next Drawing	G	G	G	G	

General					
COMMAND	FLASH		HARMONY		CUSTOM
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Go to Previous Column	H	H	H	H	
Go to Previous Drawing	F	F	F	F	
Help	F1	F1	F1	F1	
Open	Ctrl+O	⌘ +O	Ctrl+O	⌘ +O	
Paste	Ctrl+V	⌘ +V	Ctrl+V	⌘ +V	
Paste Special	Ctrl+Shift+-B	⌘ +Shift+-B	Ctrl+B	⌘ +B	
Paste Special Again	Ctrl+Alt+B	⌘ +Alt+B	Ctrl+Shift+-B	⌘ +Shift+B	
Preferences	Ctrl+U	⌘ +U	Ctrl+U	⌘ +U	
Redo	Ctrl+Y	⌘ +Y	Ctrl+Shift+-Z	⌘ +Shift+Z	
Reset Pan	Shift+N	Shift+N	Shift+N	Shift+N	
Reset View	Shift+M	Shift+M	Shift+M	Shift+M	
Reset Zoom					
Save	Ctrl+S	⌘ +S	Ctrl+S	⌘ +S	
Undo	Ctrl+Z	⌘ +Z	Ctrl+Z	⌘ +Z	
Zoom In	Ctrl+=	⌘ +=	2	2	
Zoom Out	Ctrl+-	⌘ +-	1	1	

Xsheet					
COMMAND	FLASH		HARMONY		CUSTO M
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Add Columns	Shift+C	Shift+C	Shift+C	Shift+C	
Add Drawing Column	Ctrl+R	⌘ +R	Ctrl+R	⌘ +R	
Clear Exposure and Pull	Z	Z	Z	Z	
Clear Selected Cells					
Clone Selected Columns					
Collapse					
Collapse All	0	0s	0	0	
Decrease Exposure	-	-	-	-	
Delete Selected Columns					
Delete Selected Drawings					
Duplicate Selected Columns	Ctrl+D	⌘ +D			
Expand					
Expand All	9	9	9	9	
Fill Randomly					
Fill Selection	Ctrl+T	⌘ +T	Ctrl+T	⌘ +T	
Gestural Drag Mode					
Hide Selected Column	Alt+H	Alt+H	Alt+H	Alt+H	
Increase	+	+	+	+	

Xsheet					
COMMAND	FLASH		HARMONY		CUSTOM
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Exposure					
Insert Blank Cell	X	X	Shift+J	Shift+J	
Insert Keyframe	Ctrl+F6	⌘ +F6	F6	F6	
Insert/Overwrite Mode	I	I	I	I	
Paste Cycle	Ctrl+/ /	⌘ +/ /	Ctrl+/ /	⌘ +/ /	
Paste Reverse	Ctrl+.	⌘ +.	Ctrl+.	⌘ +.	
Preview	Alt+P	Alt+P	Alt+P	Alt+P	
Sequence Fill	Ctrl+M	⌘ +M	Ctrl+M	⌘ +M	
Set Custom Hold Cell					
Set Hold 1 Cell	Ctrl+1	⌘ +1	Ctrl+1	⌘ +1	
Set Hold 2 Cell	Ctrl+2	⌘ +2	Ctrl+2	⌘ +2	
Set Hold 3 Cell	Ctrl+3	⌘ +3	Ctrl+3	⌘ +3	
Set Hold 4 Cell	Ctrl+4	⌘ +4	Ctrl+4	⌘ +4	
Show Column Types					
Show Hidden Columns	Alt+Shift+H	Alt+Shift+H	Alt+Shift+H	Alt+Shift+H	
Thumbnails					

Function Editor					
COMMAND	FLASH		HARMONY		CUSTOM
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Edit Next Function	PgDown	PgDown	PgDown	PgDown	

Function Editor					
COMMAND	FLASH		HARMONY		CUSTOM
	Win/Linux	Mac OS X	Win/Linux	Mac OS X	
Edit Previous Function	PgUp	PgUp	PgUp	PgUp	
Insert Point	l	l	l	l	
Lock/Unlock Point					
Select Left Handle	[[[[
Select Right Handle]]]]	
Toggle Grid	G	G	G	G	
Toggle Stop-Motion Segment	S	S	S	S	
Zoom In X	4	4	4	4	
Zoom In Y	6	6	6	6	
Zoom Out X	3	3	3	3	
Zoom Out Y	5	5	5	5	

