

# Studio Toolkit for Boxes

User Guide

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# 1. Copyright Notice

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## 2. Why Use Studio Toolkit for Boxes?

### About Studio and Visualizer

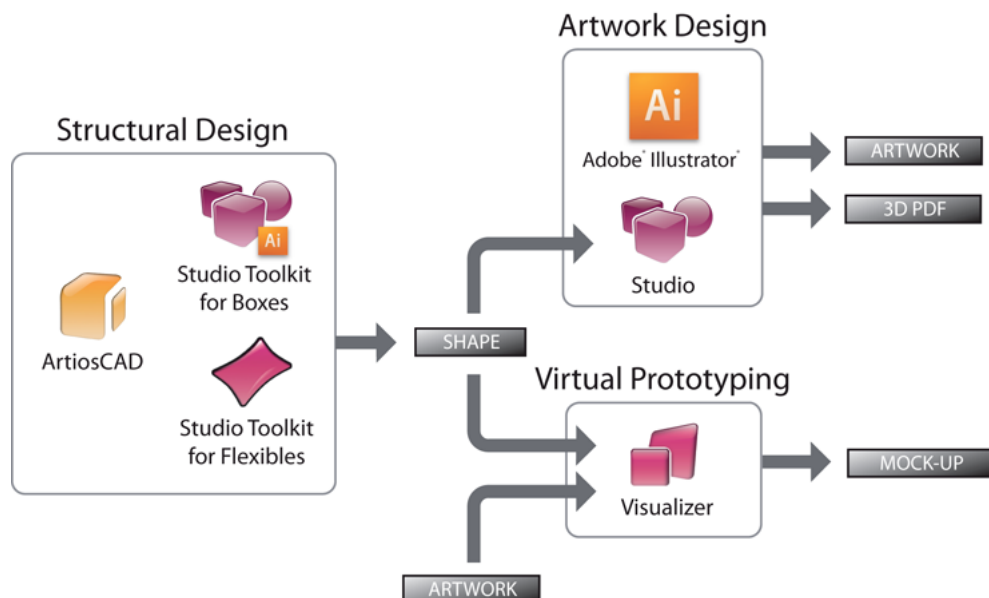
Studio is a plug-in for Illustrator for interactive 3D packaging design. Visualizer is an application for high-end 3D visualization of packaging, including materials and special finishing effects. Both products need a structural design file to describe the shape of the package. For a structural design file of flexible packaging, you use Studio Toolkit for Flexibles. For folding carton or corrugated packaging, the shape can be supplied by ArtiosCAD, but also by Studio Toolkit for Boxes. Also Collada files with printable areas can be used.

### About Studio Toolkit for Boxes

With this Toolkit, there are several ways to make or modify a box:

- "Create a Basic Box: With this feature you can make a very basic box by specifying width, height and depth.
- "If you already have a die-drawing, you can clean it and fold it into a 3D shape. With this feature you can make just about any folding carton or corrugated structure.
- If you have a 3D shape already, you can use this Toolkit to change some fold angles of the 3D shape

The result of Studio Toolkit for Boxes is actually an ArtiosCAD (ARD) file. This file can then be used as the Structural design file in Studio or Visualizer. See the "Studio" and "Visualizer" documentation for more details on how to work with structural design files.



## 3. Trial and Licenses

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### Local Licenses

This software is protected against unauthorized use. You can try the software for free for 30 days. If you want to use the software after that, you need to purchase and activate a license. To purchase a license, please visit <http://www.esko.com/store> . The Esko Plug-ins window is where you can start the free 30 day trial or activate a purchased license. If this window does not pop up automatically when starting Illustrator, please select **Help > Esko > Esko Plug-ins...** from the Illustrator menu. There is also a more advanced tool to manage your licenses and trials: the Esko Local License Manager. This application is installed in your Applications folder (Mac) or see **Start > Programs > Esko > Local License Manager > Manage Local Licenses...** (PC).

### Network Licenses

If you purchased a network license sever (site floating license server), make sure to configure it by selecting **Help > Esko > Esko Plug-ins...** . Select the **Network License Setup** button at the bottom of the Esko Plug-ins dialog.

Please note that you need to activate network licenses in the Esko Server License Manager on your Network License server.

## 4. Getting Started

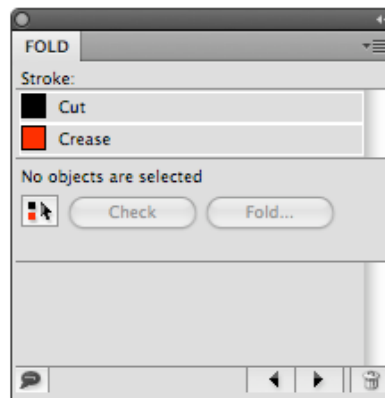
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To introduce you to some of the possibilities of Studio Toolkit for Boxes , these five simple steps show you how to fold your own box and make a 3D PDF file out of it.

**Note:**

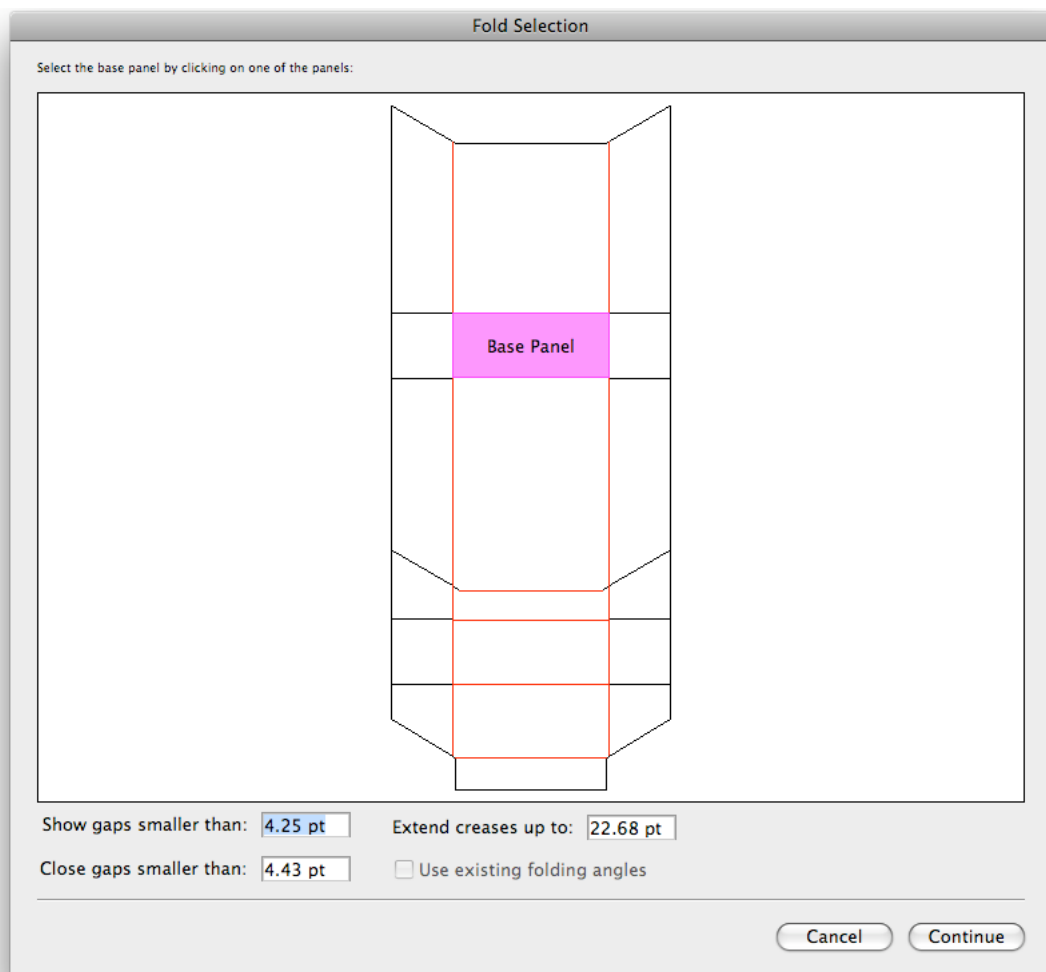
For the last two steps, you also need the Studio plug-in.

1. On the installation disk image (on Macintosh, on PC see **Start > Programs > Esko > Studio > Studio Toolkit for Boxes Sample Files** ) you will find a folder **Sample Files** . Open **Cigarette Box.ai** in Illustrator.
2. Mark the Cut and Crease lines: :
  - a) Choose **Windows > Esko > Studio Toolkit for Boxes > Show Fold Window** .  
The Fold palette appears.



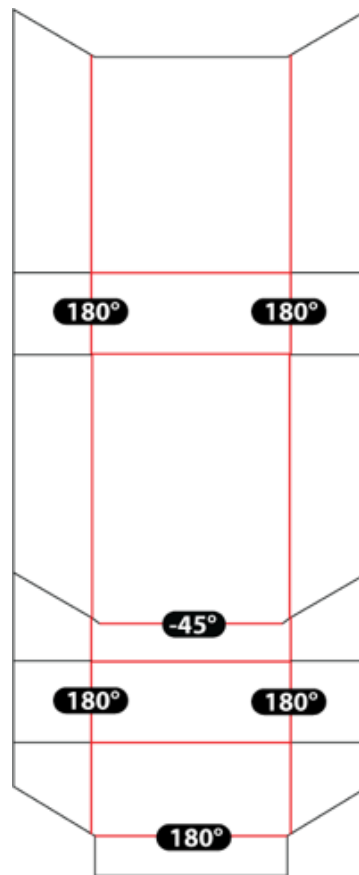
- b) Select all the solid lines and click the **Cut** swatch.
- c) Select all the dashed lines and click the **Crease** swatch.
- d) Select the complete die drawing and click the **Fold** button.

The Fold Selection window appears.



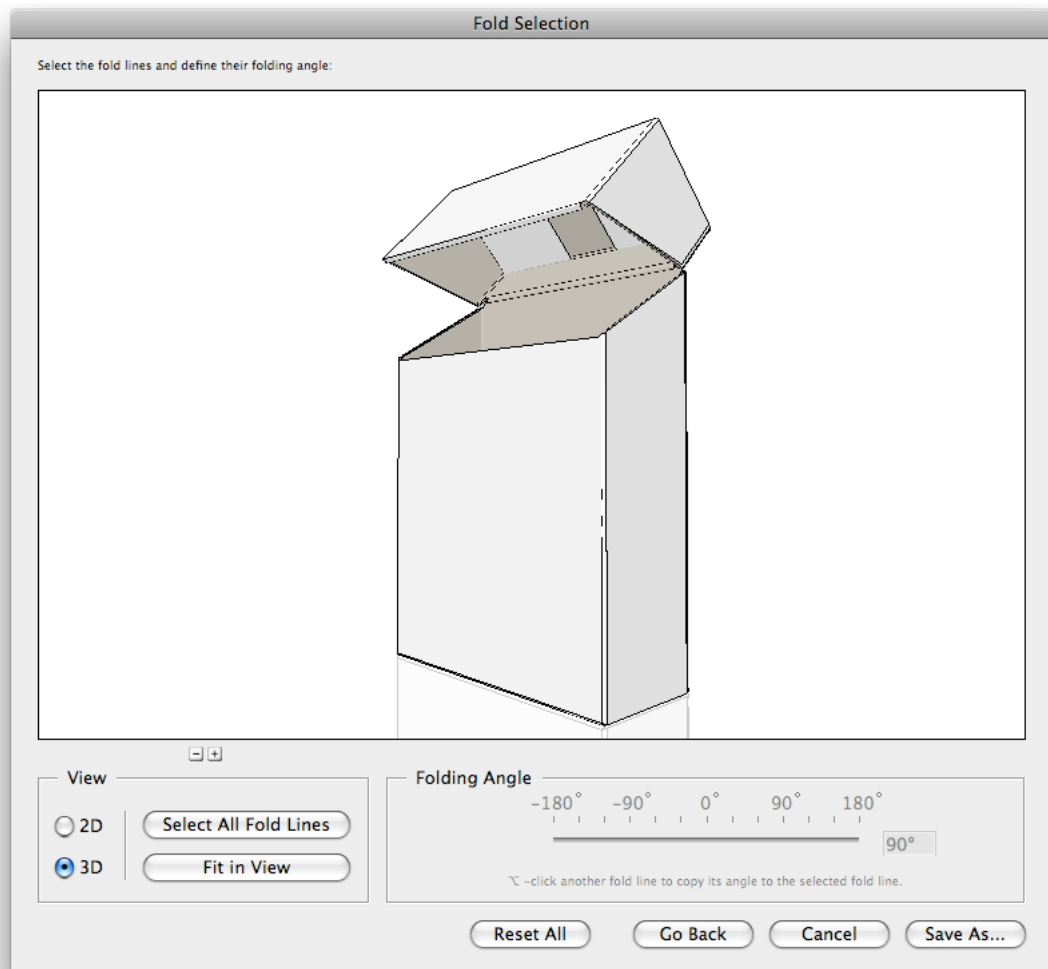
3. Select the base panel as indicated above and click **Continue** .
4. Select a **Board** and fill in the **Board Thickness** .
5. Fold the box. To fold the box, set the fold angle of each crease line.
  - a) Simply select one or more crease lines and set the proper angle. Most crease lines should be folded 90 degrees.
  - b) The exceptions are shown below.



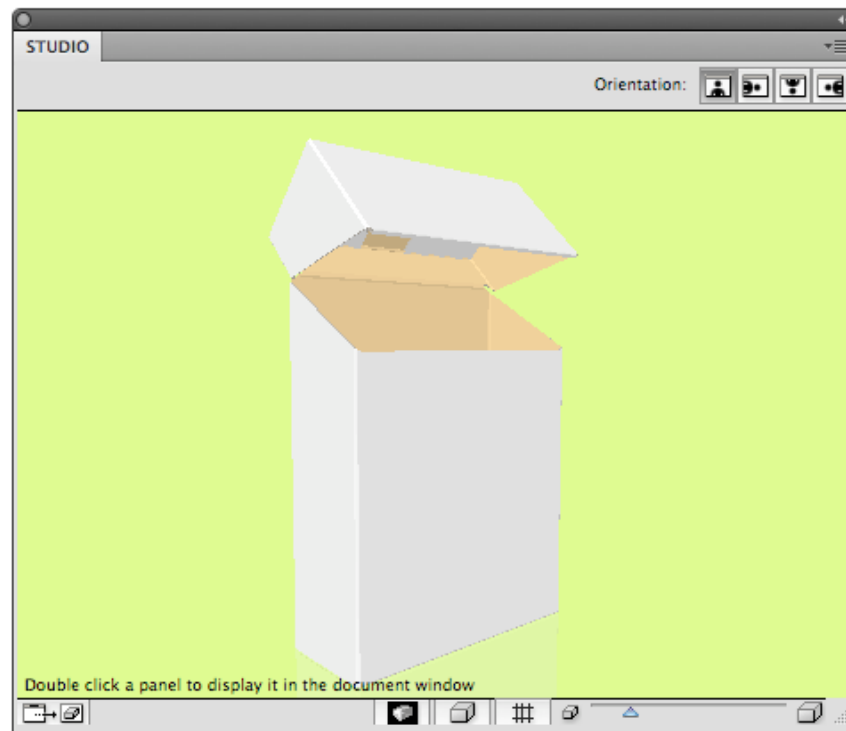


**Tip:** If you find it hard to find the right crease line, you can switch to 2D view, select the crease line, switch back to 3D view and set the fold angle.

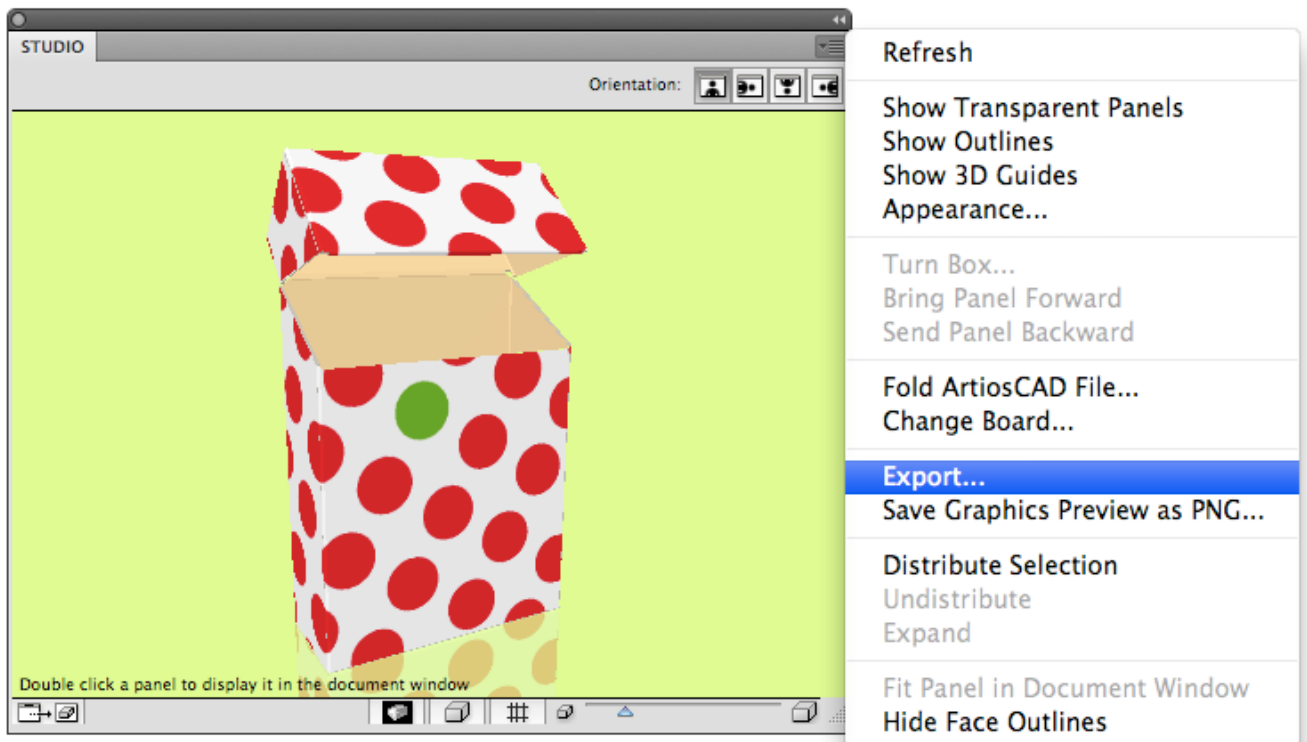
The result should look like a half-open flip-top cigarette box



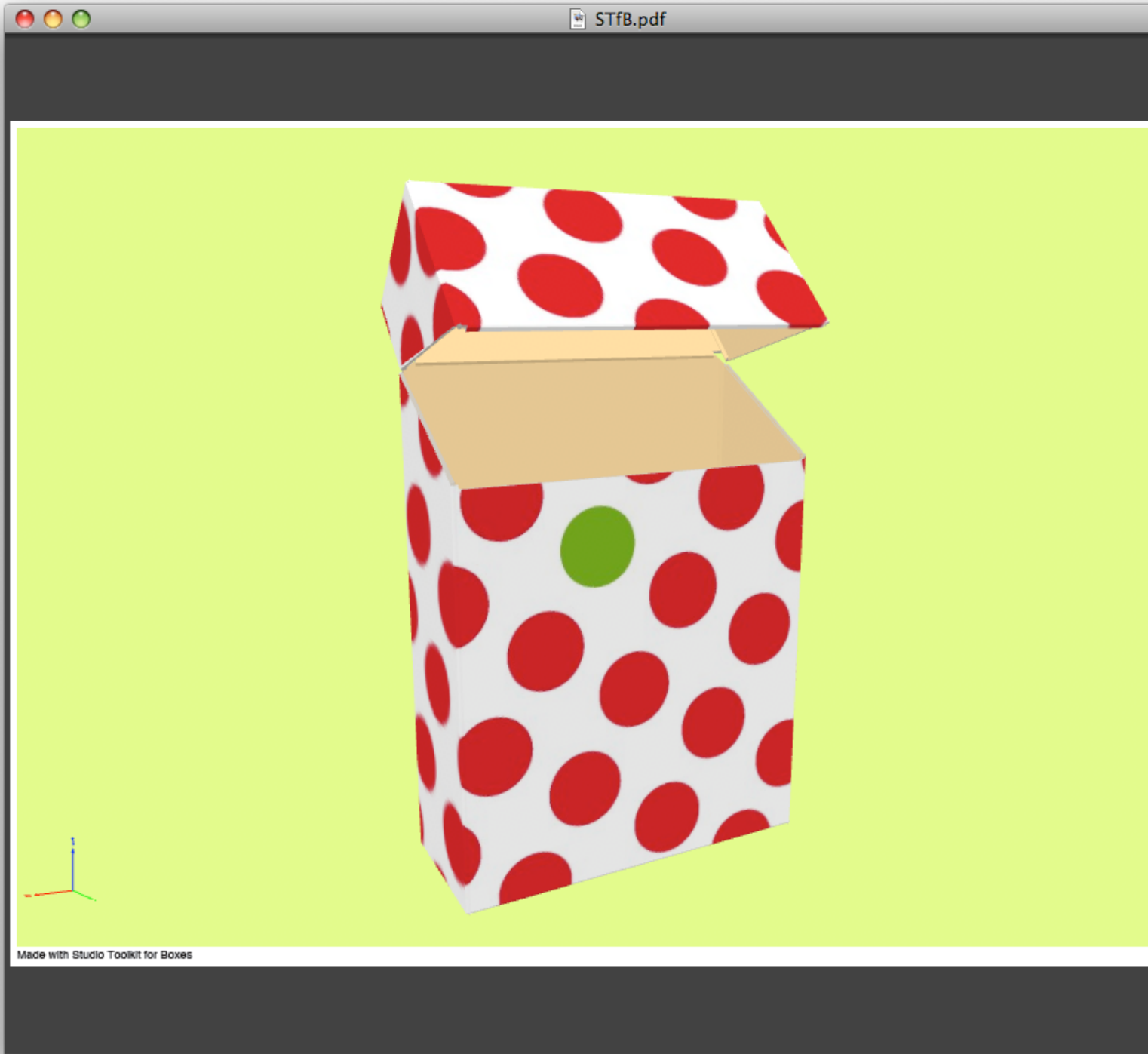
- c) When you're done, click **Save As** and select a file name for the ArtiosCAD file.
6. Design the artwork with Studio.
- a) Choose **Window > Esko > Studio > Show Studio**



- b) Create an empty layer and start drawing some nice artwork for the box.
  - c) You can use the Studio Window as a 3D navigator: click and drag to spin; double-click a panel to fit it in the Illustrator document window, and click the Refresh button ( ) to update the artwork.
7. Export the finished design:
- a) Select **Export...** in the Studio fly-out menu.



- b) In the **Export** dialog, set **File type** to **PDF with 3D Design** and save your 3D PDF file
- c) Open the PDF in Adobe Reader and spin it around!



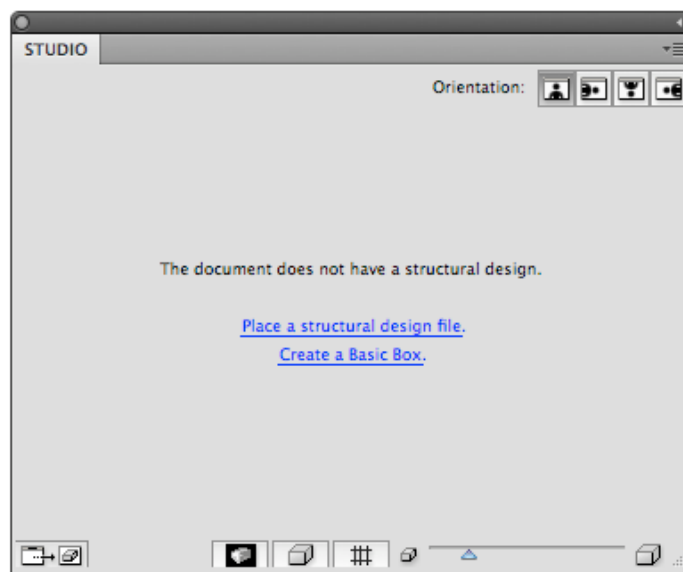
## 5. Creating a Basic Box

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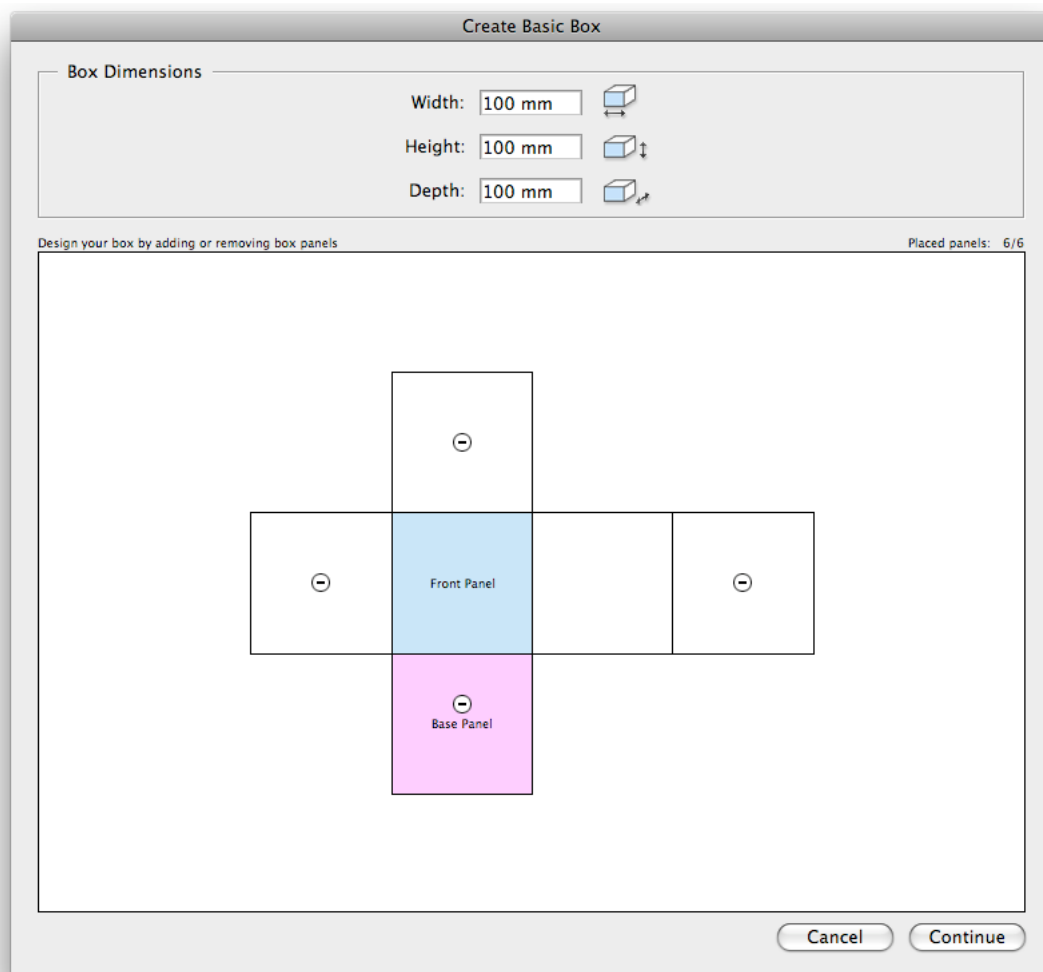
This tool lets you create a simple rectangular box. This can be used to start working on a design before you get the final die lines, or to create a simple box from within Illustrator.

1. Open the **Create Basic Box** dialog:

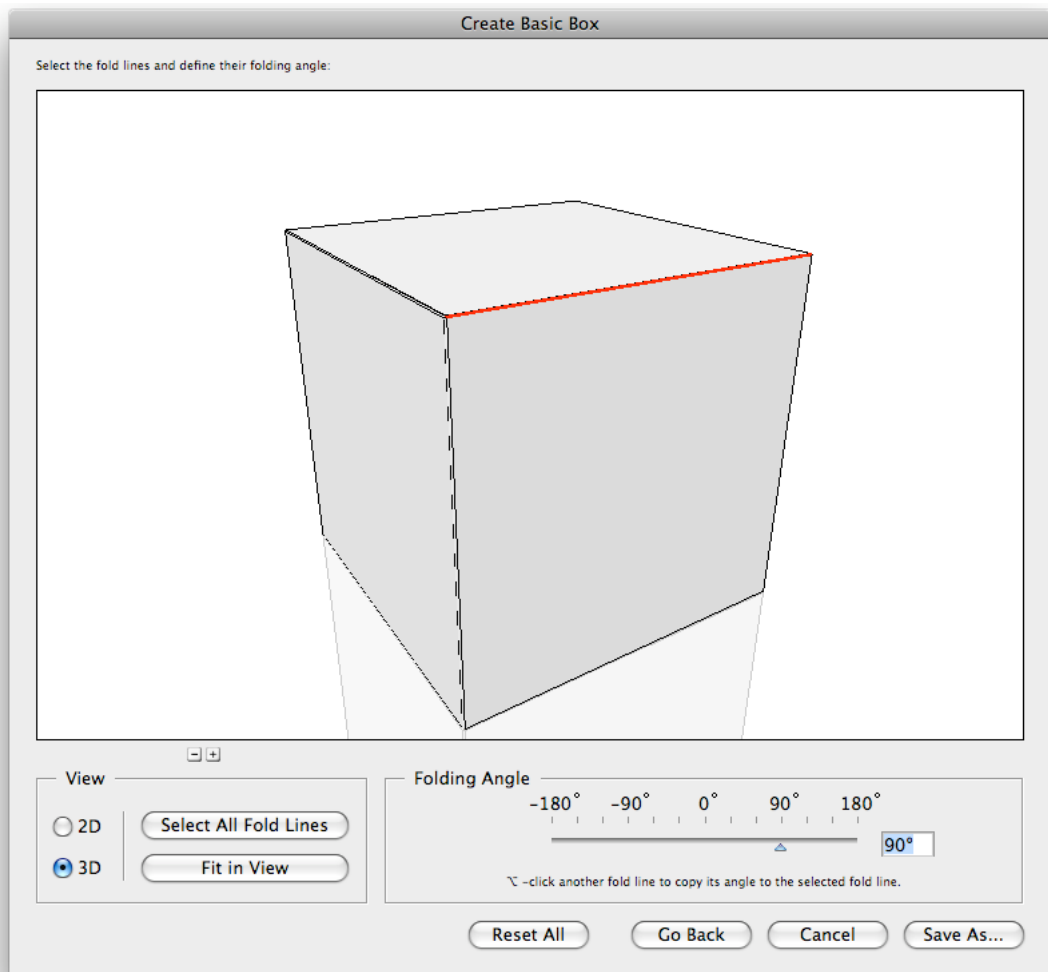
- in **Window > Esko > Studio Toolkit for Boxes > Create Basic Box**
- If you have Studio, you can access this tool from the **Studio** window, by clicking **Create Basic Box**.



The **Create Basic Box** dialog appears.



2. Fill in the **Width** , **Height** and **Depth** for the box you want to create.
  3. Define the Panels. You can choose how your box is built by adding or removing panels. The box must have 6 panels to continue.
    - Remove a panel clicking the - button
    - Add a panel clicking the + button
  4. Click **Continue** .
- You now get a 3D preview of the closed box.



5. If you want to modify the fold angles of one or more faces, select a fold line and use the slider to change the fold angle.
6. Click **Save As** to save the result as an ArtiosCAD file.
7. Define the name and location for the file.
8. You get the option to place the file directly in the document.  
If you click **Yes** :
  - the **Studio** window will show the folded ArtiosCAD file, replacing any earlier ArtiosCAD files.
  - the selected items will be moved to a locked layer.
9. You can also use the ArtiosCAD file in Visualizer.

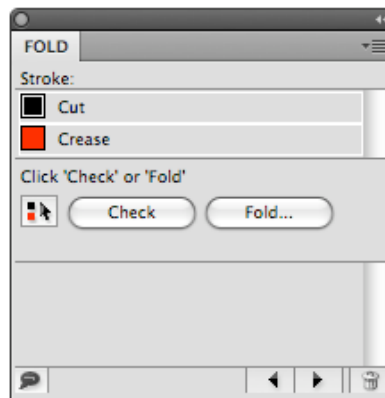


## 6. Create a box based on die lines

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You can create a box starting from a die drawing. This can be any die drawing that you imported in Illustrator.

To fold a die drawing to a folded box, you use the **Fold** window: choose **Window > Esko > Studio Toolkit for Boxes > Show Fold Window** .



The **Fold** window assists you in all necessary steps to fold a die:

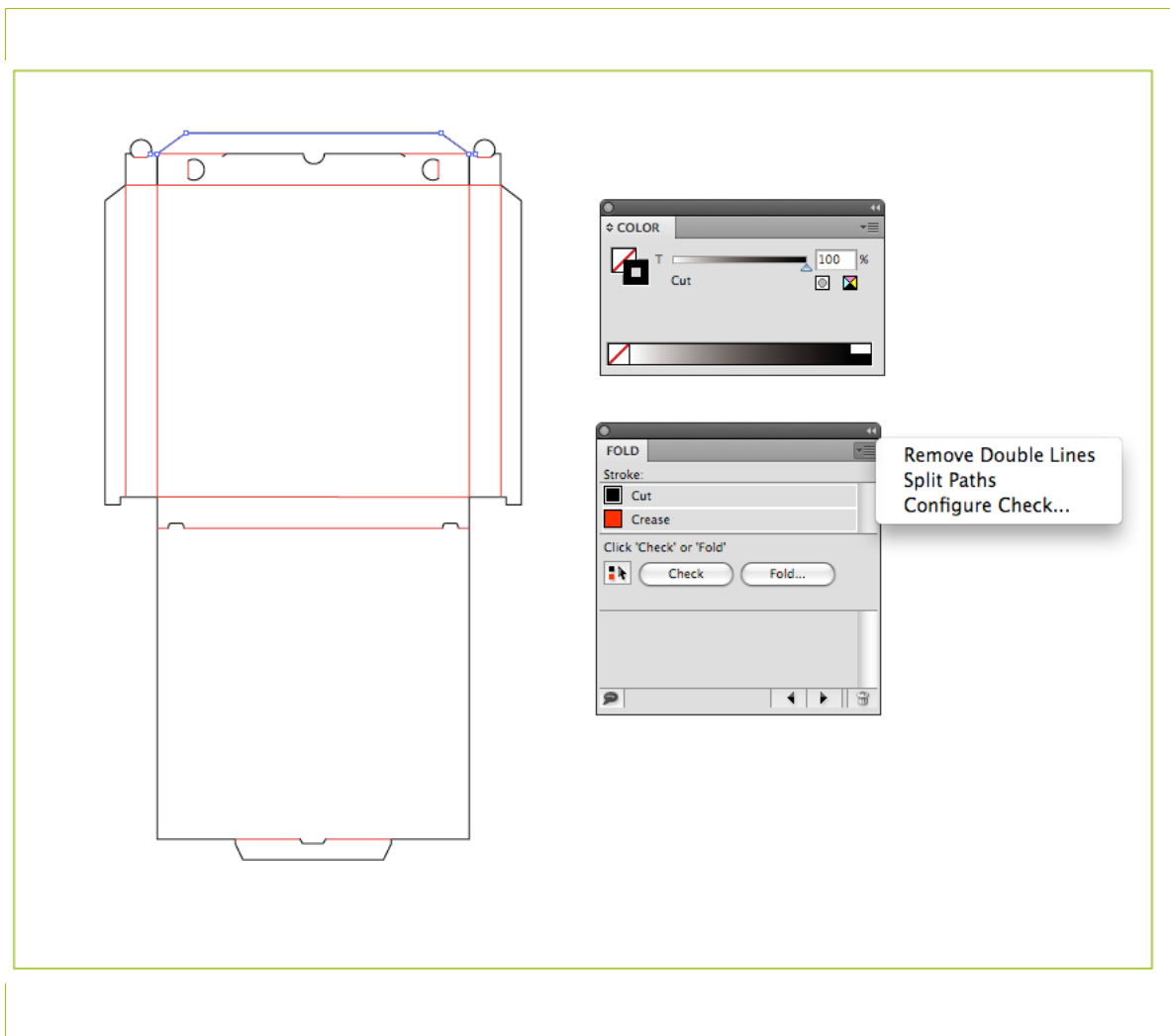
1. Assign fold and cut lines.
2. Fold the design, using the **Fold** button.
3. Sometimes a die-drawing fails to fold properly because of inaccuracies in the die drawing. In that case, you need to check the die and solve any inaccuracies:
  - by going back one step and using the **Check** function and manual correction;
  - by using **Automatic Correction** in the **Fold Selection** window.
4. Select a base panel.
5. Select a board and fill in the board thickness.
6. Set the fold angles.
7. Click **Save As** to save the result as an ArtiosCAD file.
8. Define the name and location for the file.
9. You get the option to place the file directly in the document.  
If you click **Yes** :
  - the **Studio** window will show the folded ArtiosCAD file, replacing any earlier ArtiosCAD files.
  - the selected items will be moved to a locked layer.
10. You can also use the ArtiosCAD file in Visualizer.

## 6.1 Assign fold and cut lines

After importing a die drawing into Illustrator, you have to indicate which lines represent a cut and which lines represent a fold line or “crease”.


A line is indicated to be a cut line by applying the designated ink named “Cut”. A line is indicated to be a crease line by applying the designated ink named “Crease”.

- Select the proper paths, and click the **Cut** or **Crease** swatches in the **Fold** window.
- If you want a single path to be partially a cut path and partially a fold line, select the path, and select **Split Paths** from the flyout menu in the **Fold** window. This will split the selected path in different segments, so that the fold lines can be selected apart from the cut lines.
- With some die drawings it is hard to assign cut and crease strokes to the lines because the die drawing consists of rectangles on top of each other. This creates double lines. **Remove Double Lines** in the flyout menu of the **Fold** window will remove the double lines in the selection. This will take all lines in the selection into account, irrespective of the stroke color they have.



## 6.2 Select the Base Panel

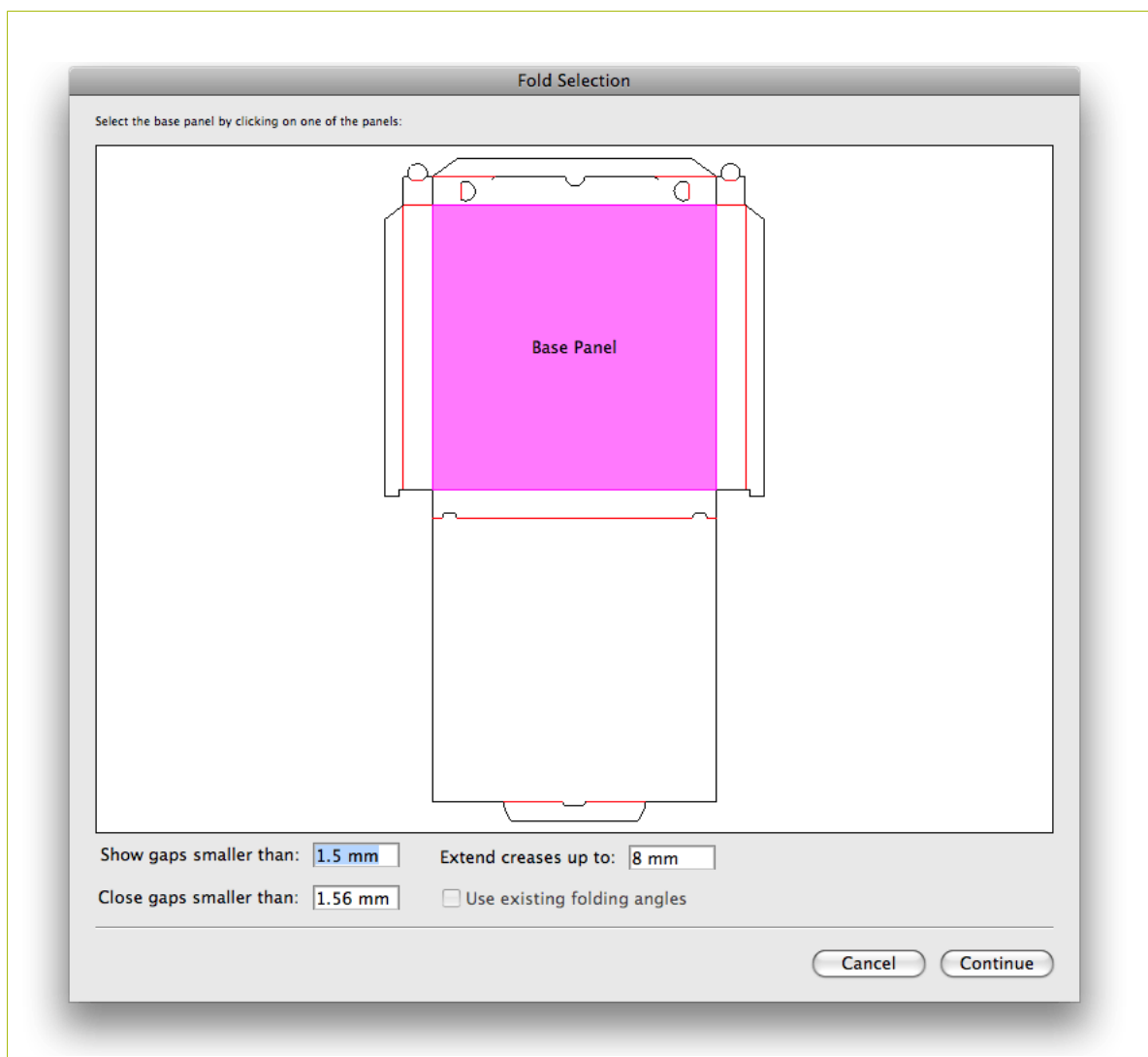
The Base Panel is the panel that will be facing down. All other panels are folded relative to this base panel.

1. Select all cut and crease lines by clicking the **Select All Cuts and Creases** button in the **Fold** window. 

2. Click the **Fold** button.

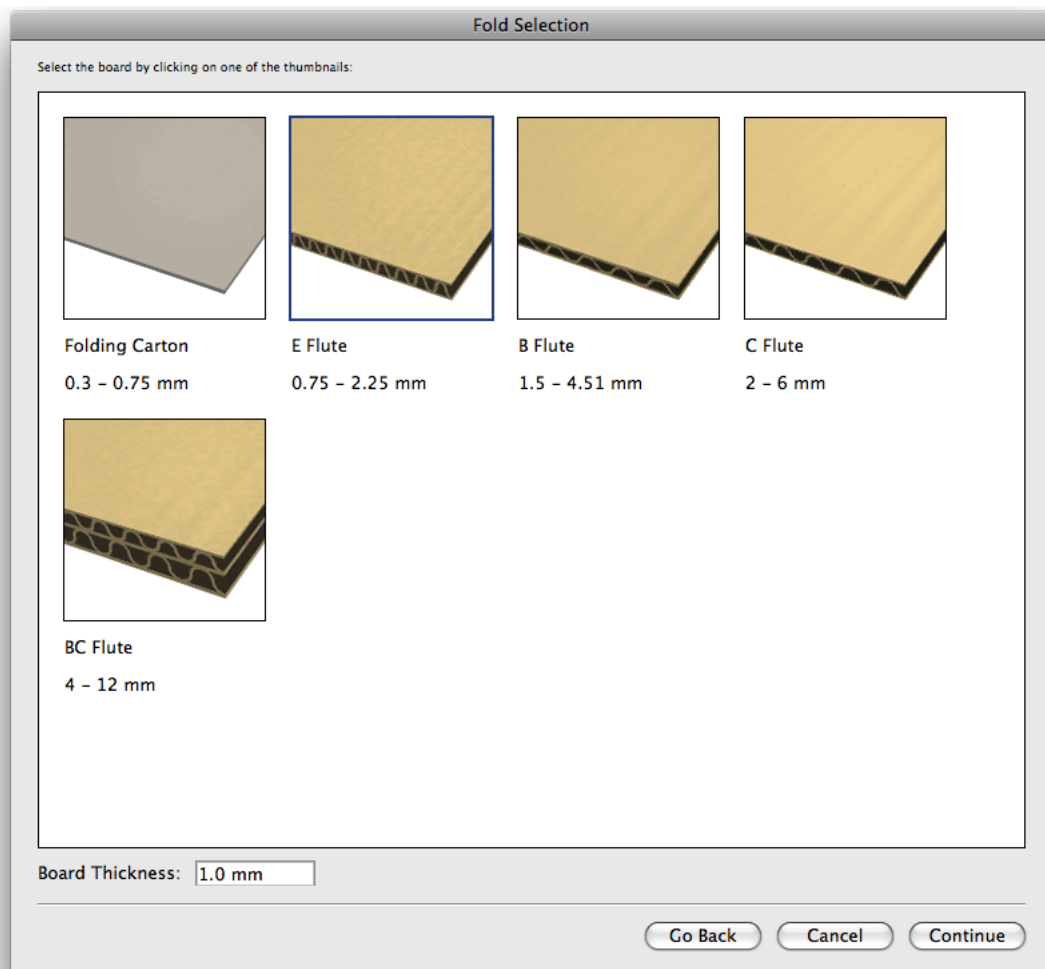
**Note:** If you don't see all the panels, or if you are not able to select the base panel you had in mind, there could be inaccuracies in the die. In that case you need to check the die and resolve any inaccuracies.

3. Select a Base Panel.
4. Click **Continue** .



## 6.3 Select the Board and Board Thickness

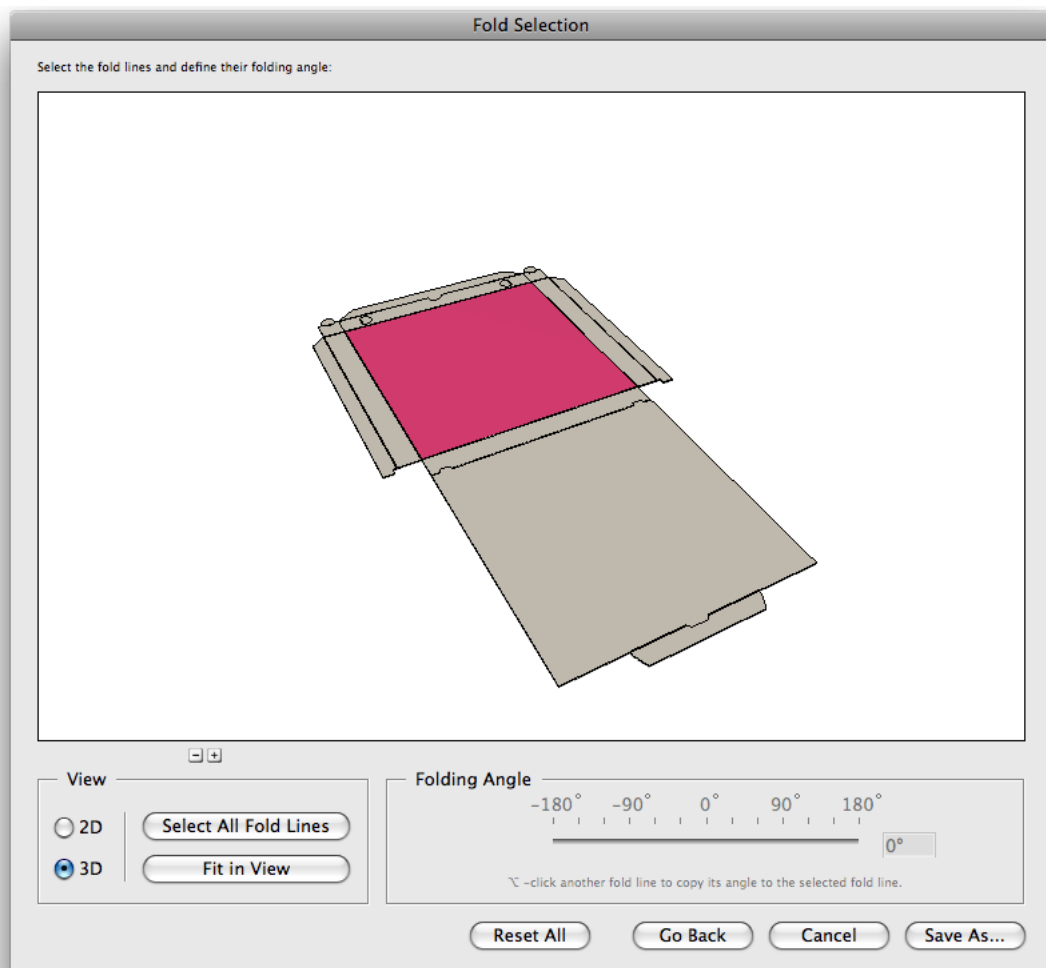
1. Select the correct board by choosing one of the boards and fill in the board thickness.
2. Click **Continue** .



## 6.4 Set the folding angles

After selecting the cut and crease lines, defining the base panel and choosing a board you will get a preview of the design in 3D, laying flat on the floor with the backside facing up. The box can be folded by defining the fold angles for all fold lines:

- Select a fold line by clicking on it, and specify the fold angle using the slider or by entering the value in the **Folding Angle** field.
- Hold down the **Shift** key to add or remove fold lines to the selection.
- Click **Select All Fold Lines** to select and change all fold lines at once.
- You can copy the Folding Angle from one fold line to another:
  - a) Select the fold line you want to change
  - b) Hold down the **Option** key on Mac or the **Alt** key on Windows, and click on the fold line with the folding angle you want to copy
- You can change the angle of the selected fold line(s) using the arrow keys on your keyboard:
  - a) up / down changes the value in steps of one degree.
  - b) Shift + up / down changes the value in steps of ten degrees.
- Click **Reset All** to return all folding angles back to the angles you started with.



### 6.4.1 Switching between 3D and 2D view

In some cases it can be difficult to select fold lines while being in 3D view. In that case, you can switch to 2D view to select the appropriate fold line. After selecting it, you need to switch back to 3D view to change the fold angle.

1. Select **2D** to switch to 2D view.
2. Select the fold line you need. If necessary, you can navigate in the 2D view:

Action	Mac	Windows
Zoom in	Hold down the <b>spacebar</b> and the <b>command</b> key	Hold down the <b>CTRL</b> key and click
Zoom out	Hold down the <b>spacebar</b> , the <b>command</b> and the <b>Option</b> key, and click	Hold down the <b>CTRL</b> and the <b>ALT</b> key and click
Pan	Hold down the <b>spacebar</b> and click and drag	Hold down the <b>CTRL</b> and the <b>SHIFT</b> key and click and drag
View the entire box	Click <b>Fit in Window</b>	

3. Select **3D** to switch back to 3D view.
4. Set the fold angle for the selected folding line.

## 7. Check the die and solve inaccuracies

When you import a die drawing in Illustrator and define its cut and crease lines, some inaccuracies in the die lines may prevent you from generating a correct and clean fold.

For this reason, Studio Toolkit for Boxes offers a number of tools to check and correct the most common inaccuracies.

### 7.1 Checking the die

If the die drawing contains inaccuracies, these can become obvious when creating the fold:

- Panels may be missing;
- An error may appear, stating that some cut lines do not make an outline;
- Inaccuracies may be found and indicated in the **Fold Selection** window;
- ...

A more efficient way to check for inaccuracies and their location is to run a Check.



1. Select all cut and crease lines by clicking the **Select All Cuts and Creases** button in the **Fold**


window. 

2. Click the **Check** button. The die lines will be checked for double lines and for gaps.

For every inaccuracy that was found, a marker is placed on top of your document.

If double lines were found, you get the option to clean them up automatically.

Marker	Type of inaccuracy	Possible corrections
	<b>Double Line</b> marker. Double lines occur when two lines fall exactly on top of each other e.g. when the die drawing was created with rectangles against each other	<ul style="list-style-type: none"> <li>• Delete lines manually</li> <li>• Use the <b>Remove Double Lines</b> function</li> <li>• Clean up double lines automatically after a <b>Check</b></li> </ul>
	<b>Gaps</b> marker. Gaps occur if two lines don't meet exactly as they should.	<ul style="list-style-type: none"> <li>• Manually, using Illustrator path tools</li> <li>• Manually, using the <b>Trim and Extend</b> tool</li> <li>• Using the Automatic Correction values in the <b>Fold Selection</b> window</li> </ul>

Marker	Type of inaccuracy	Possible corrections
		

3. Click the entry in the **Marked Inaccuracies** list to zoom in on the first occurrence.

## Marked Inaccuracies:



Gaps < 3.5 mm

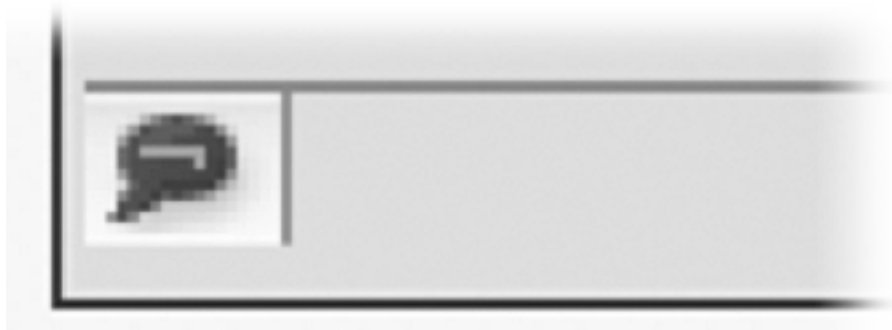
1/3

4. Use the **step buttons** in the **Fold** window to step through the markers.





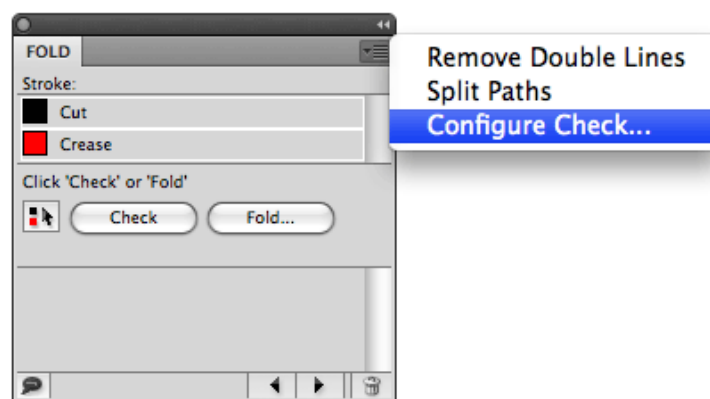
- You can hide and show the markers using the **Show Markers** button in the left bottom corner of the **Fold** window.



- You can remove all markers by clicking the trash can icon at the bottom right of the **Fold** window.

### 7.1.1 Configure Check

The **Configure Check** dialog can be opened by selecting **Configure Check** in the flyout menu of the **Fold** window, by clicking the flyout button.

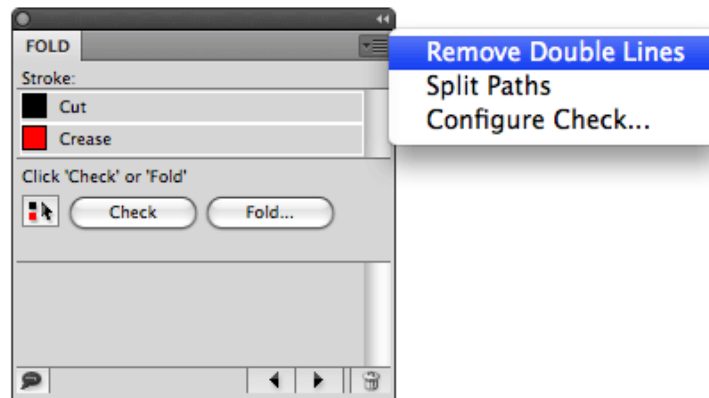


In the Configure Check dialog, you can define the **Show Gaps Smaller Than** value. Gaps larger than the **Show Gaps Smaller Than** value will not be treated as Gaps, and will thus not be shown.

## 7.2 Remove Double Lines

**Remove Double Lines** in the flyout menu of the **Fold** window will remove the double lines in the selection. This will take all lines in the selection into account, irrespective of the stroke color they have. The **Remove Double Lines** function can be applied before or after assigning the **Cut** or **Crease** swatch.

1. Make the selection in which you want double lines to be removed.
2. If the **Fold** window is not open yet, select **Window > Esko > Studio Toolkit for Boxes > Show Fold Window**.
3. Select **Remove Double Lines** from the flyout menu of the **Fold** window, by clicking the flyout button.



All double lines in the selection will be removed.

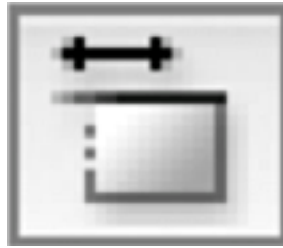
**Note:** Keep in mind that the **Remove Double Lines** function removes the bottom most line, regardless of what line it is. If you have already indicated which lines are cut lines and which are crease lines, make sure that only the appropriate lines are removed by moving them to the back of the canvas.

**Note:** Accepting to remove double lines automatically after running a **Check** works in the same way, but only affects cut and crease lines.

## 7.3 Remove gaps using the Trim and Extend tool

The **Trim and Extend** tool can be used to correct gaps in the die drawing. These gaps can be found manually or by using the **Check** function.

1. Click the **Trim and Extend** tool in the toolbox.



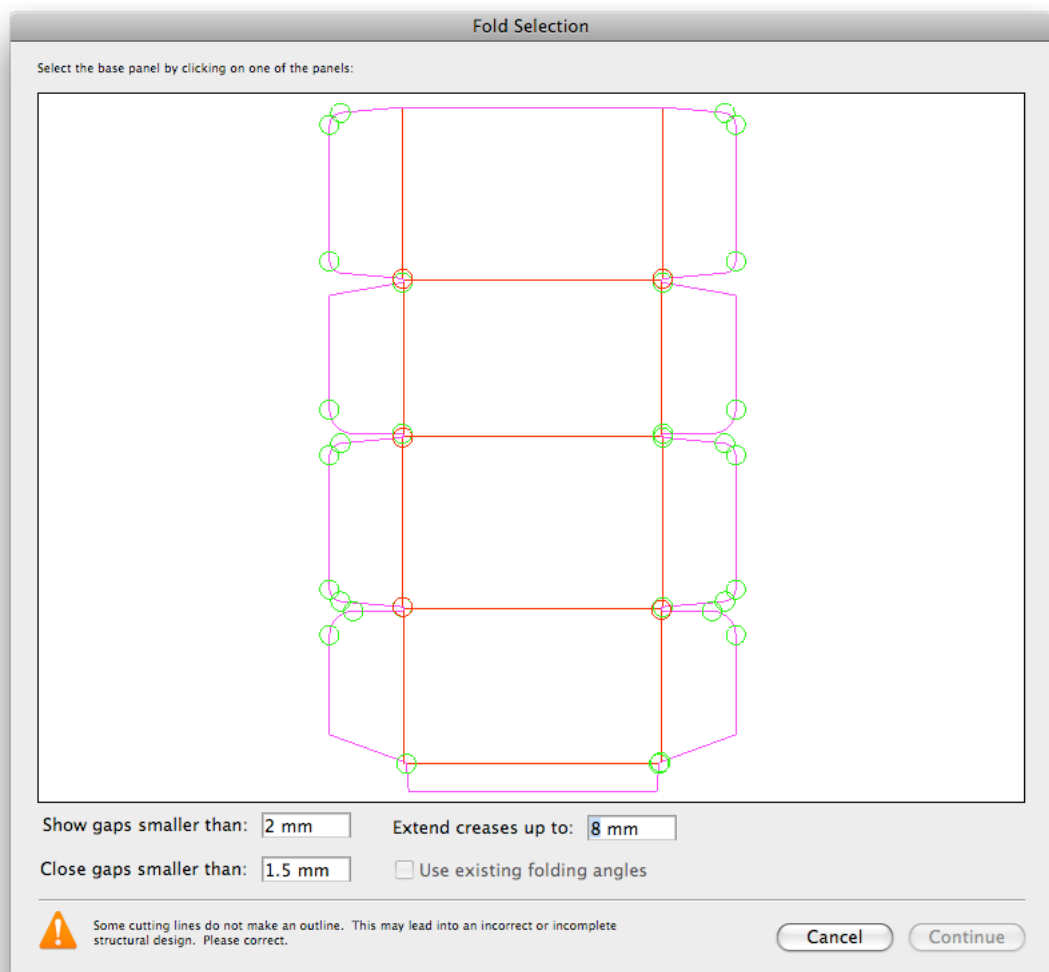
2. Click and drag the end point you want to change.
  - Release to trim or extend the line up to the point where you release the mouse.
  - Release near or on another line to snap the end point to the intersection of both lines.

## 7.4 Inaccuracies when folding the selection

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When creating a fold using the Fold function in the Fold window, the die drawing is checked. Inaccuracies can be presented in different ways:

- If the cut lines are not closed to an outline, a warning message is shown. The gaps must be fixed in order to make a fold.
- Gaps can be indicated by red and green circles in the **Fold Selection** window.
  - Green circles indicate gaps that will be solved with the **Automatic Correction** values in the **Fold Selection** window.
  - Red circles indicate gaps that need to be solved manually.



### 7.4.1 Automatic Correction

The settings at the bottom of the Fold Selection window define what gaps are shown, and how they can be corrected automatically.

#### Show Gaps Smaller Than

In the **Fold Selection** window, you can define the **Show Gaps Smaller Than** value. Gaps larger than the **Show Gaps Smaller Than** value will not be treated as Gaps, and will thus not be shown.

**Note:** This is the same setting as the **Show Gaps Smaller Than** value in the **Configure Check**. Changing the value in the **Fold Selection** window changes it in the **Configure Check** as well, and vice versa.

#### Close Gaps Smaller Than

In the **Fold Selection** window, you can define the **Close Gaps Smaller Than** value.

All gaps smaller than or equal than this value will be closed automatically. By incrementing this value, more gaps will turn green, and the fold tool will try to close them automatically. Be aware that the larger this value becomes, the more risky the outcome will be.

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**Note:** The **Close Gaps Smaller Than** value can not be higher than the **Show Gaps Smaller Than** value. Setting it to a higher value will change the **Show Gaps Smaller Than** value to the same value.

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### **Extend Creases Up To**

Gaps between Crease lines and Cut lines are common in a lot of die drawings. The **Extend Creases Up To** makes sure that these gaps are closed by extending the fold lines up to the value entered.

## 8. Fold ArtiosCAD file

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Sometimes you would like to change some fold angles of an already folded box:

1. Open the Fold Selection window:
  - Select **Window > Esko > Studio Toolkit for Boxes > Fold ArtiosCAD File...**
  - If you have the **Studio** window, you can select **Fold ArtiosCAD File...** in the flyout menu.
2. Change the fold angles as explained earlier.
3. Click **Save As** to save the result as an ArtiosCAD file.
4. Define the name and location for the file.
5. You get the option to place the file directly in the document.  
If you click **Yes** :
  - the **Studio** window will show the folded ArtiosCAD file, replacing any earlier ArtiosCAD files.
  - the selected items will be moved to a locked layer.
6. You can also use the ArtiosCAD file in Visualizer.