

# **ArtiosCAD 16.0 - Basics**

## Training Guide

30 SEP 2016

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# 1. In this ArtiosCAD Basics Training Guide

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## ArtiosCAD

Welcome to the Esko ArtiosCAD Basics Training Guide, a step-by-step guide that covers the basics of ArtiosCAD.

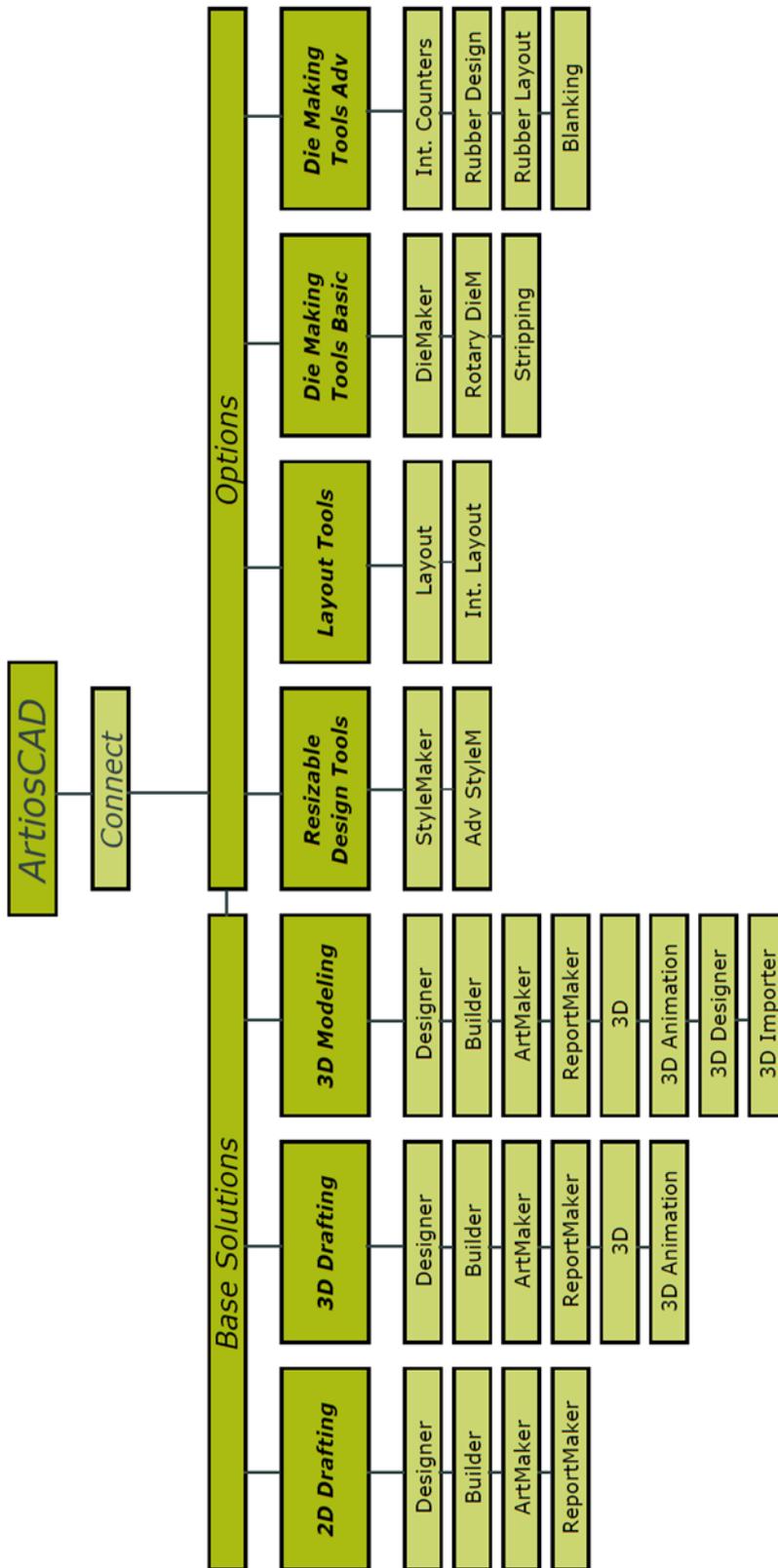
With dedicated tools specifically designed for packaging professionals for structural design, product development, virtual prototyping and manufacturing, ArtiosCAD increases productivity throughout your company.

ArtiosCAD is the ideal product for all corrugated, folding carton and POP, POS, FSDU display designers.

## Modules

The following figure gives an overview of the different modules of ArtiosCAD. The modules require separate licenses.

## Notes



Here is an overview of which of these modules are covered in the ArtiosCAD Basics Training:

## Notes

Module	Chapter(s)
Connection Plus	<ul style="list-style-type: none"> <li>• <i>Outputs</i> on page 223</li> <li>• <i>Exports</i> on page 245</li> <li>• <i>Basic Customization</i> on page 256</li> <li>• <i>DataCenter</i> on page 264</li> </ul>
Designer	<ul style="list-style-type: none"> <li>• <i>Views and Selections</i> on page 41</li> <li>• <i>Geometry</i> on page 61</li> <li>• <i>Construction Lines</i> on page 91</li> <li>• <i>Annotations and Layers</i> on page 97</li> <li>• <i>Edit Tools</i> on page 123</li> <li>• <i>Adjust Tools</i> on page 171</li> <li>• <i>Canvas</i> on page 210</li> </ul>
Builder	<i>Geometry Macros and Rebuild</i> on page 31

### Training Guide

The Training Guide is designed to assist structural designers during a trainer-led **ArtiosCAD Basics** course. It is by no means a complete reference that describes all ArtiosCAD features, nor can it replace the standard course.

### Let us know what you think

Do you have an idea for making this a better Training Guide?

 Send all your comments and suggestions to [academy@esko.com](mailto:academy@esko.com).

## 1.1 Location and Copyright

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For use with ArtiosCAD 16 or greater.

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## 1.2 ArtiosCAD Basics: 2D Design

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### Goal

In this course, structural designers learn to master the key functionalities of **ArtiosCAD Basics**.

### Learning targets

After completion of the **ArtiosCAD Basics** course, the trainees can:

- Complete a structural design (for packaging / sign & display)
- Generate different output and export types based on the design
- Customize the ArtiosCAD defaults (basics)
- Manage the ArtiosCAD DataCenter (basics)

### Requirements

Before attending this course, you should have the following knowledge:

- Microsoft Windows
- Structural design

### Course components

The ArtiosCAD Basics course is composed of three, mutually dependent components:

- The training
- This Training Guide
- The training files

Each component is incomplete without the other two.

The Training Guide contains a complete list of lessons to be covered during the training. But, not all of these lessons contain complete information (e.g. not all of the tools that are introduced during the training will be covered in the tutorials) and some may be just empty placeholders.

You can also use this Training Guide for note taking.

### Training Guide components

#### ***About lessons, tutorials, and exercises***

This Training Guide contains a number of lessons, most of which consist of concise concepts followed by hands-on tutorials

## Notes

and exercises. While tutorials provide you with step-by-step instructions, the exercises will allow you to put the acquired skills into practice. The tutorials and exercises are set in a specific context and have to be done with the training files used in this Training Guide. These training files are distributed by the trainer at the start of the course.

Even though the Training Guide will always provide a context in which you will perform a certain task, this does not entail that each of the tutorials reflects a realistic situation. Sometimes the emphasis is on explaining how the tool works as opposed to explaining in what situation you would use the tool.

### ***Important note on defaults***

All defaults are assumed to be the standard defaults. This includes settings and key commands as well. If settings have been modified, some commands or reactions to commands may be different.

### ***About the training files***

With one exception, all the lessons with tutorials start from a single training file. This file is modified in each successive tutorial.

The set of training files contains one with the initial situation (characterized by the number 00), one with the final situation, and files for each intermediate state.

### ***Working with training files***

In principle you will only need the training file with the initial situation (XXX\_00.ARD). The other files are for reference purpose only.

If necessary, you can also open the intermediate file to begin the tutorial. This can also be useful if you don't complete the lesson in one session.

At the beginning of each tutorial, mention is made of which intermediate training file you can use.

It is always a good idea to keep a backup version of the training files. This way, you can always restore the original situation.

It is also recommended to save your design at the end of each tutorial. You can choose **File > Save As** to assign file names of your choice.

**Note:** *Be careful with choosing **Save** since that way you risk having to restart the whole lesson.*

### ***Outline***

The following lessons and training files make up this Training Guide:

## Notes

Lesson		Training File(s)
<b>Structural design</b>	<i>Working Environment</i> on page 19	-
	<i>Geometry Macros and Rebuild</i> on page 31	GeMaRe_00.ARD
	<i>Views and Selections</i> on page 41	VIEW_00.ARD
	<i>Geometry</i> on page 61	<ul style="list-style-type: none"> <li>• GEO_00.ARD</li> <li>• GeMaRe_03.ARD</li> </ul>
	<i>Construction Lines</i> on page 91	-
	<i>Annotations and Layers</i> on page 97	DIM_00.ARD
	<i>Edit Tools</i> on page 123	<ul style="list-style-type: none"> <li>• EDI_00.ARD</li> <li>• EDI_AD00.ARD</li> <li>• EDI_AD01.ARD</li> <li>• EDI_AD02.ARD</li> <li>• EDI_AD03.ARD</li> <li>• EDI_AD04.ARD</li> </ul>
	<i>Adjust Tools</i> on page 171	ADJ_00.ARD
	<i>Canvas</i> on page 210	<ul style="list-style-type: none"> <li>• CONVERTING AND AUTOSPACE DESIGN.ARD</li> <li>• Example Saving File.ACD</li> </ul>
		<i>Outputs</i> on page 223
	<i>Exports</i> on page 245	EXP_00.ARD
	<i>Basic Customization</i> on page 256	CUS_00.ARD
	<i>DataCenter</i> on page 264	DAT_00.ARD

Lesson	Training File(s)
<a href="#">Advanced Features at a Glance</a> on page 270	-

## Notes

## 1.3 Icons

In this Training Guide the following standard icons will be used for specific items:

### Information types

Icon	Item
	Prerequisites
	Continued from previous tutorial
	Goal
	Steps
	Step or Sub-step result
	Tutorial result
	Information from the User Guide

### Dialog

Icon	Item
	Dialog [followed by its name]
	Tab [followed by its name]
	Close the dialog

### Mouse actions

Icon	Item
	Click the mouse button
	Double-click
	Right-click
	Choose from a list
	Select the checkbox

### Keyboard actions

Icon	Item
	Press (keyboard key)
	Enter text

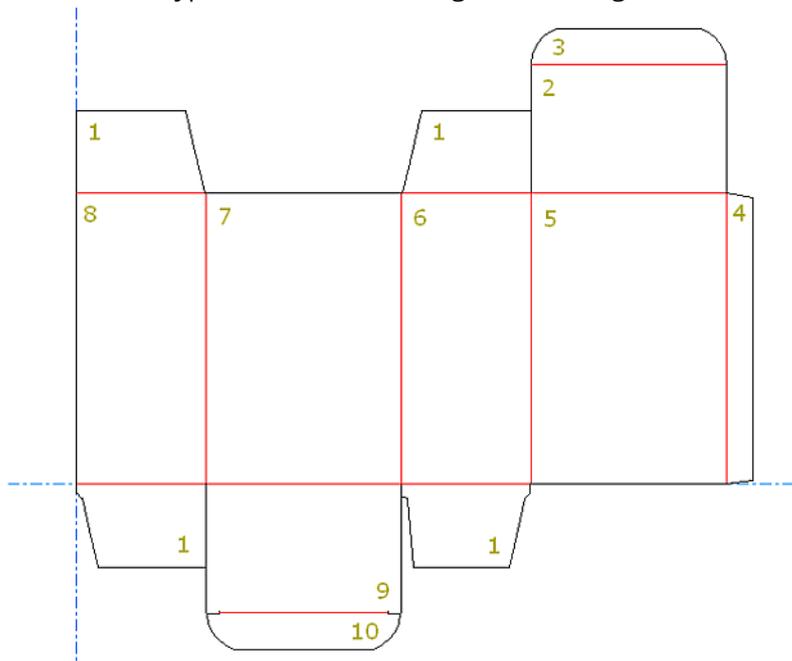
### Notes

## 1.4 Terminology

In this Training Guide a standard vocabulary will be used for referring to different parts of the design.

### Design areas

These are the typical areas in a folding carton design:



Area	Term
1	Dust flap
2	Top closure panel
3	Upper tuck flap
4	Glue flap
5	Rear panel
6	Right side panel
7	Front panel
8	Left side panel
9	Bottom closure panel
10	Lower tuck flap

## 2. Structural Design

---

## Notes

In this lesson you will learn to master the structural design tools.

### Overview

You will learn how to build structural designs using the following two ArtiosCAD modules:

- Builder
- Designer

### Builder



See **Builder > What is Builder?**

Builder is the component of ArtiosCAD which allows you to create new designs based on standards. By itself, Builder does not allow you to modify the geometry of the created design by changing existing lines or creating new lines.

### Designer



See **Designer > Introduction to Designer**

There will be times when you need to create a design from scratch instead of using an entry from a Standards Catalog. ArtiosCAD handles those situations by providing sophisticated design tools that empower you to quickly and easily turn your ideas into reality.

These tools are available on systems with the Designer option. Certain other modules provide access to some of the tools. Systems with only the Builder option cannot use these tools.

### Lessons

In order to learn how to use the structural design tools, you will study the following lessons:

- [Working Environment](#) on page 19
- [Geometry Macros and Rebuild](#) on page 31
- [Views and Selections](#) on page 41
- [Geometry](#) on page 61
- [Construction Lines](#) on page 91
- [Annotations and Layers](#) on page 97
- [Edit Tools](#) on page 123
- [Adjust Tools](#) on page 171

- [Canvas](#) on page 210

## Notes

## Notes

### 2.1 Working Environment

---

In this lesson you will learn about the ArtiosCAD working environment.

#### Topics

The following topics are covered in this lesson:

- [Tutorial: Starting up](#) on page 20
- [Single Design Settings](#) on page 21
- [Design Window Elements](#) on page 22
- [Toolbars](#) on page 26
- [Tutorial: Opening a Toolbar](#) on page 28
- [Tutorial: Running a Standard](#) on page 29

### 2.1.1 Tutorial: Starting up

There are different ways of starting up ArtiosCAD:

- **Start > All Programs > Esko > ArtiosCAD >** 
-   on your desktop.

## Notes

### 2.1.2 Single Design Settings

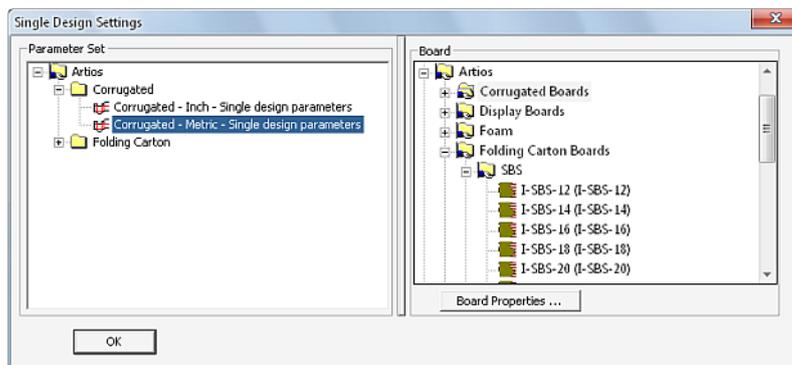
For each new design you can choose a **Parameter Set** and a **Board**.

📖 See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Parameter sets**

Parameter sets are collections of settings that govern aspects of the current design or manufacturing file. The collection can be based on anything – by customers, by machines, or however else you want to group information.

Single design parameter sets allow you to assign different values to different sets for the following entries:

- Default bridging formulae to use
- Flute/grain setting
- Side up
- Bleed and Varnish offsets

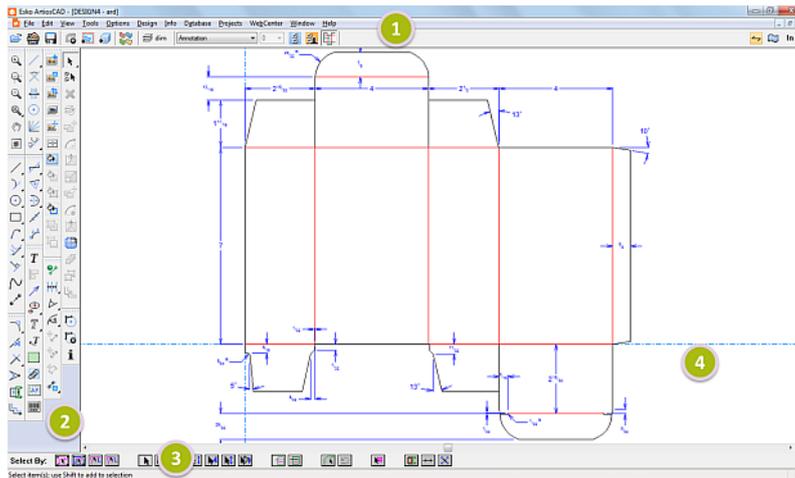


### 2.1.3 Design Window Elements

#### Design window

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements**

The ArtiosCAD Design window contains four functional areas:



1. The menu bar, the view bar, and the toolbar master controls
2. The toolbars
3. The status bar
4. The drawing area

#### The Menu bar

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The menu bar**

The menu bar contains commands available in the current module. Not all commands on all menus are available; availability depends on the options purchased and the active tool.



#### The View bar

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The View bar**

The View bar provides one-click access to commonly used features.

# Notes



Each button on the View bar displays a ToolTip if the pointer hovers over it for a few seconds.

In the first group of controls on the View bar, the first button opens the Open dialog box. The second button opens the Design browser. The third button saves the current design. The fourth button rebuilds the current design. The fifth converts the current design to a Manufacturing file. The sixth button converts the current design to a 3D file. The seventh button converts a single design to a canvas. The eighth button creates a print item. The ninth button adds, deletes, and modifies layers.

To the right of the **View** bar, you find these three buttons:



Button	Description
	This button displays the <b>Structural Orientation</b> dialog box.
	The second button displays the current side up (printed or unprinted), and changes it when clicked.
mm	The third button displays the units of the current design - In for imperial format and mm for metric format.

## The Toolbar Master Controls

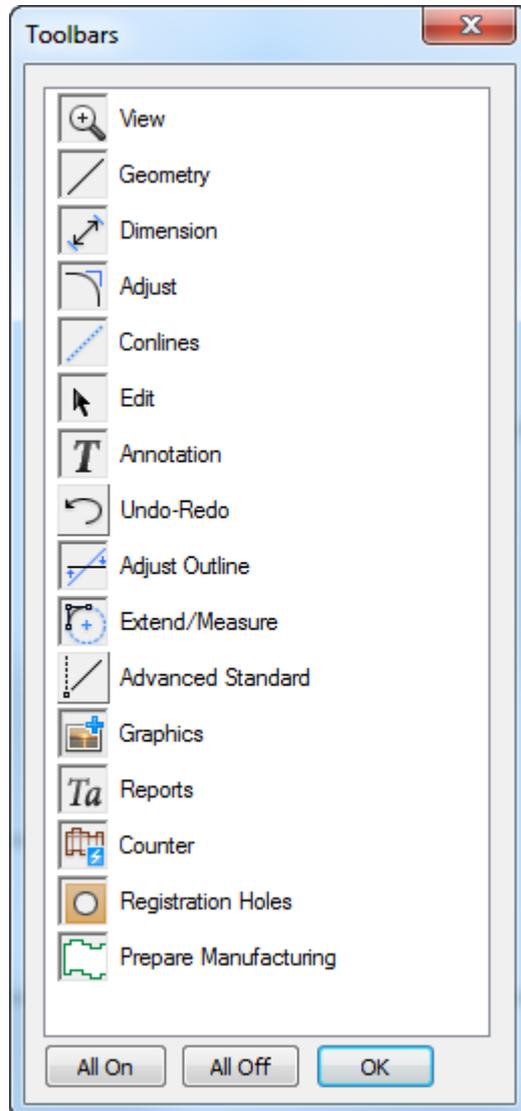
See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The Toolbar Master Controls and toolbars**

 The Toolbar Master Controls let you turn toolbars on and off in Designer and Manufacturing. The first button controls which standard toolbars are shown. The second button controls which customized toolbars are shown.

## The Designer toolbars

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > Designer toolbars**

Shown below is the Toolbar Master Control for standard toolbars in Design.



### The Status bar

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The Status bar**

The fields and messages on the Status bar are the primary ways ArtiosCAD prompts for information needed to complete a task.



The **Status** bar above shows the prompts for the **Line Angle/Offset** tool.

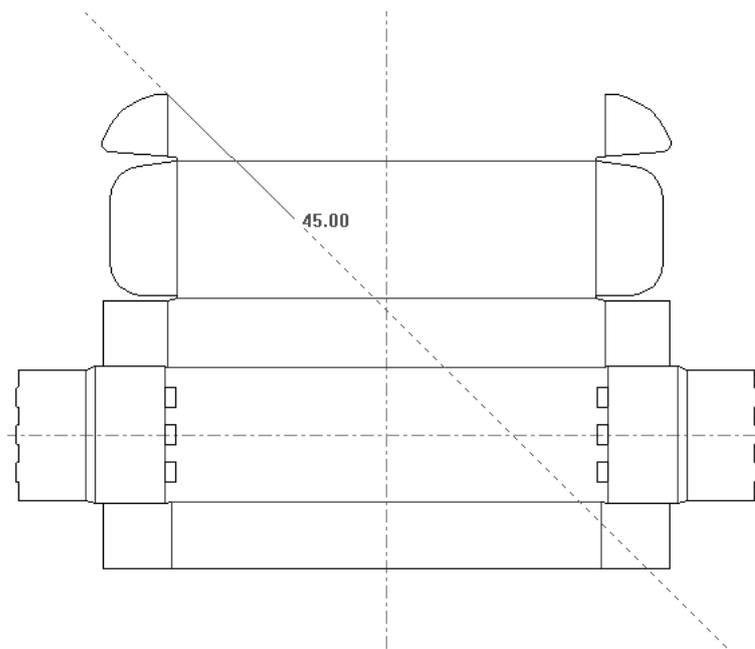
## Notes

## Notes

### The drawing area

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The drawing area**

The drawing area is where the work is done. Think of it as a piece of paper onto which you are drawing a design. The **View Mode** command on the View menu (and on the Zoom toolbar) controls what objects are displayed and how they are displayed in the drawing area. Shown below is a picture of a design in the drawing area.



### 2.1.4 Toolbars

#### Pre-defined and customized toolbars

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > The Toolbar Master Controls and toolbars**

Initially the toolbars appear to the left of the drawing area, but each toolbar can be independently detached, or docked in a different position if desired.

**Note:** *When a toolbar is activated for the first time, it will appear undocked outside the ArtiosCAD window. Drag it to the desired position inside ArtiosCAD.*

Sixteen predefined toolbars are controlled by the Toolbar Master Control for standard toolbars in Designer. Up to 10 customized toolbars are controlled by the Customized Toolbar Master Control; it depends how many are defined in Defaults.

#### Save the positions of the toolbars

See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > Toolbar positions**

ArtiosCAD toolbar positions are saved automatically when ArtiosCAD is exited, but you can save them manually by clicking **View > Save Toolbar configuration**. You can then click **View > Restore Toolbar configuration** if they ever appear in the wrong place. Toolbar positions are stored in the Registry on a per-user basis.

#### Working with flyout toolbars

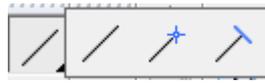
See **Getting started with ArtiosCAD > Concepts and Ideas in ArtiosCAD > Design window elements > Flyout toolbars**

Some tool icons have small black triangles in the lower right corner.



This indicates that there are related tools available on a flyout toolbar. Clicking and holding the mouse button will make the flyout toolbar appear, and dragging and releasing over a tool will select it.

Shown below is the **Line** tool with its flyout toolbar activated.



When a tool on a flyout toolbar is selected, it becomes the tool shown on the regular toolbar.

## Notes

### 2.1.5 Tutorial: Opening a Toolbar

- ② In most of the tutorials, after having opened one of the training files, you will need to open a specific toolbar.

①②③

1. On the **View** bar at the top of your screen: 
2.  **Toolbars**: activate the toolbar by clicking the icon next to the name.

**Note:** You can also choose **All On** or **All Off** by clicking the corresponding buttons.

3. 

**Note:** You can drag and drop the toolbar to a preferred location.

- ③ You have opened the toolbar you need.

## Notes

## 2.1.6 Tutorial: Running a Standard

- ③ You want to create a new design based on the **FEFCO F0411** design. For this, you will run a **Standard**.

①②③

**1. File > Run a Standard**

**2. Select the standard:**

- a.  **Standards Catalog:** in the left column, expand **Corrugated > 2. FEFCO > 400 Series** .

- b.  **F0411**

- c. 

**3. Choose the parameter set and board for the standard:**

- a.  **Single Design Settings:** in the left column, expand **Corrugated**.

- b.  **Corrugated - Metric - Single design parameters**

- c. In the right column, expand **Artios > Corrugated Boards > C**.

- d.  **M-32/200C (M-32/200 C Kraft)**

- e. 

**4. Set the measures for your design:**

- a.  **F0411W:**  1200 for **L**

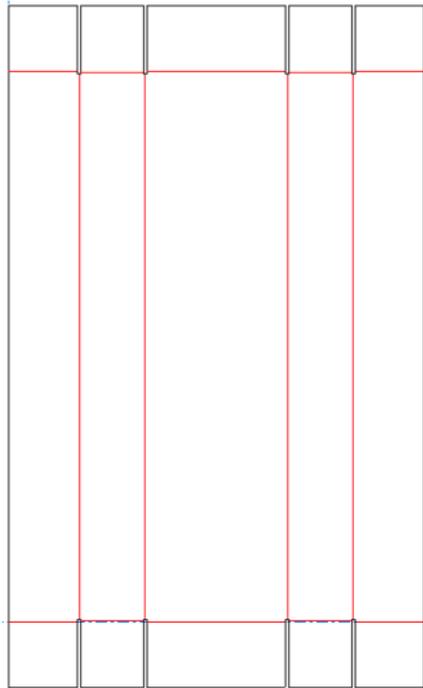
- b.  305 for **W**

- c.  140 for **D**

- d. 

-  By using the **FEFCO F0411** standard, you have created a new design.

Notes



## Notes

### 2.2 Geometry Macros and Rebuild

In this lesson you will learn to master **Geometry Macros** and rebuilding.

#### Geometry Macros

**Geometry Macros** offer a step-by-step approach for adding predefined geometrical shapes to a design.

#### Rebuild

The **Rebuild** tool can be used for making changes to a parametric design based on a standard. This tool will automatically reinitialize the parameters that are affected by a change.

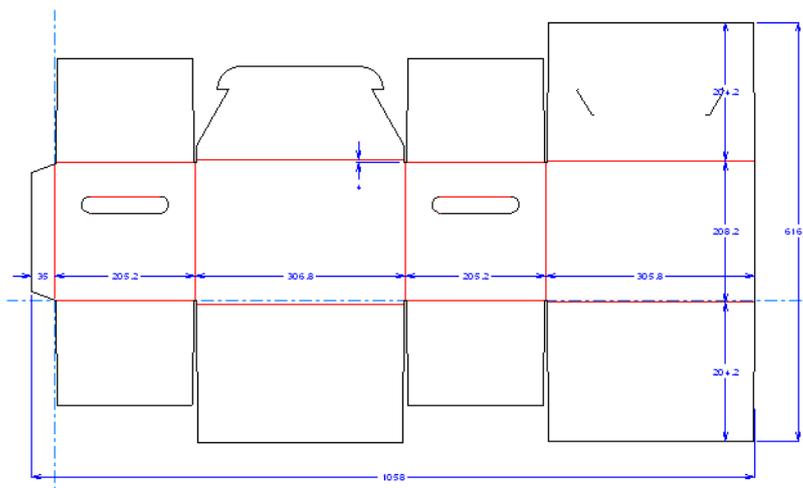
#### Tutorials

Based on a design contained in a single training file, you will follow three separate tutorials:

- [Tutorial: Adding Handholds with the Utilities Macro](#) on page 32
- [Tutorial: Changing the Width with Rebuild](#) on page 34
- [Tutorial: Changing the Board with Rebuild](#) on page 36

In principle you only need the training file with the initial situation (GeMaRe\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

At the end of the lesson, your design will have the following aspect:



### 2.2.1 Tutorial: Adding Handholds with the Utilities Macro



**For this tutorial you need the training file 'GeMaRe\_00.ARD'.**

- ☉ You want to add two handholds to an existing design. For this, you will use a **Geometry Macro** of the **Utilities** type.

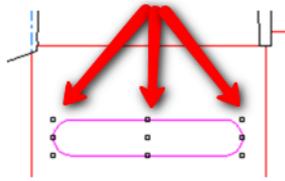


1. 'GeMaRe\_00.ARD'
2. Select the macro:
  - a. **Tools > Geometry Macros...**
  - b. **Geometry Macros Catalog**: expand **Utilities**.
  - c. **Handhold (container)**
  - d.
3. Set the variables for the chosen macro:
  - a. **Geometry Macros Variables: Next>**
  - b. 127 for **Width (W)**
  - c.
4. Position your handholds while making sure that the second handhold has the same offset value as the first:
  - a. **Geometry Macro Placement Options** status bar:  **Repeat Placement**.
  - b. the first top red horizontal line starting from the left.
  - c. Drag the handhold downwards until the **Offset** value is 50 and

**Note:** Or **Geometry Macro Placement Options** status bar: 50 for **Offset** and **Enter**

  - d. *A first handhold has been inserted.*
  - e. the third top red horizontal line starting from the left.
  - f. one of the three points at the top of the first handhold:

## Notes



**Note:** *The point will change to a square.*

③ *A second handhold has been inserted with the same offset as the first one.*

④ By using a **Utilities Geometry Macro**, you have added two handholds to the original design.



## 2.2.2 ☺ Tutorial: Changing the Width with Rebuild



If necessary, you can open the file 'GeMaRe\_01.ARD'.

- ☉ You will change the width of the design. Since this will affect other parts of the design, you decide to rebuild it.

1|2|3

1. Do one of the following to open the **Rebuild** dialog:

- **View** bar at the top of your screen:

**OR**

- **F5**

**OR**

- **Design > Rebuild Design...**

2. : make sure the **Automatically reinitialize subsequent variables** option is not selected.

**Note:** *If you select this option the variables will automatically be reinitialized. In that case you will not get an overview of which variables are affected.*

3. Change the width of the design:

- a. **203.20** for **W** in the **Inside dimensions** column.

b.

☹

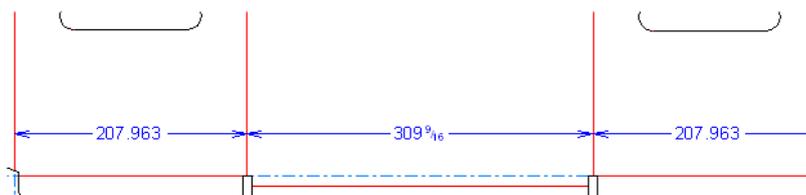
**Rebuild Conflicts:** *the variables that need to be reinitialized are listed.*

4.  the **GFD** variable to include it in the reinitialization.

5.



You have changed the width of the design. To ensure that all the necessary variables were reinitialized, you have used the **Rebuild** tool. You can verify that the measurements of the parts determining the width have been changed (from **157.16** to **207.963**).



# Notes

### 2.2.3 ☹ Tutorial: Changing the Board with Rebuild



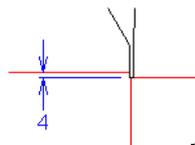
If necessary, you can open the file 'GeMaRe\_02.ARD'.

- ☉ You will adapt your design by changing the board to be used: you decide to change the C flute corrugated board to E flute **M-26/125E (M-26/125 E Kraft)**. Since changing the board will also affect other parts of the design, you decide to rebuild it.

1|2|3

1. **View** bar at the top of your screen:
2. : make sure the **Automatically reinitialize subsequent variables** option is not selected.
3. Change the board of your design:
  - a. **<Previous**
  - b. In the **Board Selection** column, expand **Artios > Corrugated Boards > E**
  - c. **M-26/125E (M-26/125 E Kraft)**
  - d. **Next>**
  - e.
4. **Rebuild Conflicts:** *you can see the variables that need to be reinitialized.*

- ☹ You have changed your design by changing the C flute corrugated board to an E flute. Since changing the board type has an impact on other aspects of your design, you have used the **Rebuild** tool. You can verify that the height difference between the top closure panel and the third flap has been changed (from **9.53** to **4**).



## Notes

### 2.2.4 Recap Exercise - Folding Carton

For this exercise you start from a situation where no file has as yet been opened.

#### Start situation

You have started up ArtiosCAD.

#### Tasks

- Create a new design based on a standard.
- Add a cutout window to the front panel of your design.

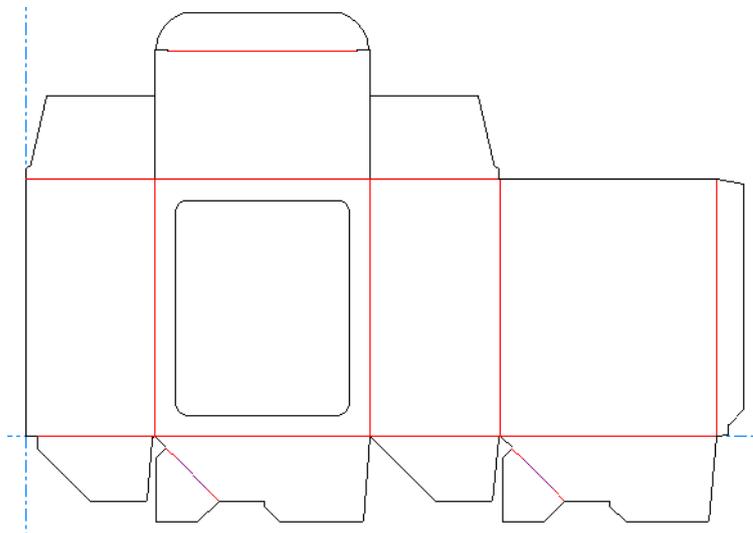
#### Tools

You can use the following tools to complete this exercise:

- A Standard: **Folding carton - 1. ArtiosCAD Folding carton - D. Standard slit lock top - Inturn Auto Bottom - Tuck Top on 2nd panel**
- A Geometry Macro: **Utilities - Rectangular Window**

#### End situation

This is what your design should look like at the end of the exercise:



#### Values

Your design should have the following values:

Parameter	Value
<b>Parameter Set</b>	Folding Carton - Metric - Single design parameters

## Notes

Parameter	Value
<b>Board</b>	M-SBS-300 (M-SBS-300)
<b>L</b>	127
<b>W</b>	76
<b>D</b>	152

The rectangular window inside the front panel should have the following values:

Parameter	Value
<b>Width of the rectangular window</b>	101
<b>Height of the rectangular window</b>	127
<b>Corner radius (R)</b>	12
Offset form the center of the top line of the second panel	75

## Notes

### 2.2.5 Recap Exercise - Corrugated

For this exercise you start from a situation where no file has as yet been opened.

#### Start situation

You have started up ArtiosCAD.

#### Tasks

- Create a new design based on a standard.
- Add a cutout window to the first panel of your design.

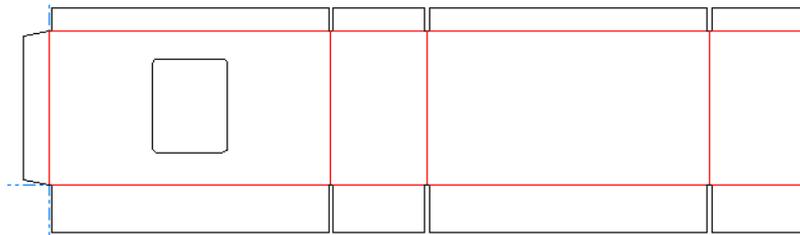
#### Tools

You can use the following tools to complete this exercise:

- A Standard: **Corrugated - 2. FEFCO - 200 Series - F0209**
- A Geometry Macro: **Utilities - Rectangular Window**

#### End situation

This is what your design should look like at the end of the exercise:



#### Values

Your design should have the following values:

Parameter	Value
<b>Parameter Set</b>	Corrugated - Metric - Single design parameters
<b>Board</b>	M-32/200B (M-32/200 B Kraft)
<b>L</b>	380
<b>W</b>	130
<b>D</b>	210

The rectangular window inside the first panel should have the following values:

Parameter	Value
<b>Width of the rectangular window</b>	100
<b>Height of the rectangular window</b>	127
<b>Corner radius (R)</b>	12
Offset form the center of the top line of the first panel	100

## Notes

## Notes

## 2.3 Views and Selections

In this lesson you will learn to master different ways of viewing and selecting items on the workspace.

### Viewing

The way items on the workspace are presented can be determined by the tools that you find on the **View** toolbar. Choosing a different way of viewing is often a key step in correctly performing design steps.

### Selecting

The **Select By:** Status bar offers a wide variety of possibilities for making different types of selections. You activate this Status bar by clicking the **Select** button on the **Edit** toolbar.

### Toolbars and buttons

#### View toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Zoom Rectangle</b>
	<b>Scale to Fit</b>
	<b>Scale to Fit with Border</b>
	<b>Center-Point Zoom</b>
	<b>Zoom Out</b>
	<b>Pan/Zoom</b>
	<b>View Mode</b>

#### Extend/Measure toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Extend</b>
	<b>Clear Extend</b>

#### Edit toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Select</b>
	<b>Select by Example</b>

#### Select By: Status bar



**Note:** This Status bar is activated when you click the **Select** button.

During this lesson, you will use the following buttons:

Button	Name
	<b>Normal selection (entire groups)</b>
	<b>Selection ignoring groups</b>
	<b>Selection of connected lines across intersections</b>
	<b>Selection of connected lines stopping at intersections</b>
	<b>Select only design lines</b>
	<b>Select design and construction lines</b>
	<b>Select only construction lines</b>
	<b>Select only text items</b>

## Notes

Button	Name
	Select only dimensions
	Select only graphics items
	Select items crossing
	Select items inside
	Use Polygon
	Select all items

### Tutorials

Based on a design contained in a single training file, you will follow five separate tutorials:

- [Tutorial: Viewing](#) on page 44
- [Tutorial: Using Points](#) on page 48
- [Tutorial: Changing the View Mode](#) on page 52
- [Tutorial: Selecting](#) on page 54
- [Tutorial: Selecting by Example](#) on page 59

In principle you only need the training file with the initial situation (VIEW\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

These tutorials on viewing and selecting will not change your design.

## 2.3.1 Tutorial: Viewing



**For this tutorial you need the training file 'VIEW\_00.ARD'.**

- ② You will explore the different possibilities offered by the **View** toolbar to change the way the design is displayed: you will zoom in and out, scale, and move the view. You will learn how to work with the **CloseUp** window: moving it around the workspace with and without dynamic content, changing its properties, and finally using it to measure a distance between a point inside and outside of it.

①②③

1.  'VIEW\_00.ARD'
2. Zoom in, and scale by using these tools on the **View** toolbar:
  - a.  and  the center of the circle.
    - ⊖ *You have zoomed in on the area around the circle.*
  - b. .
    - ⊖ *The design fits the workspace.*
  - c.  and draw a rectangle around the circle while holding down the mouse button.
    - ⊖ *You have zoomed in on the circle.*
  - d. 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



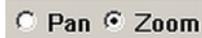
- ⊖ *The design is placed at the center of the workspace and is surrounded by a border.*
3. Zoom in and out, and move the view by using these tools on the **View** toolbar:
    - a.  and draw a rectangle around the bottom left flap while holding down the mouse button.

**Note:** You draw the rectangle starting from its center point.

## Notes

- b.  a number of times until you see the whole design.
- c.  and drag the design to the center of the workspace while holding down the mouse button.

- d. **Pan/Zoom** status bar:  **Zoom**:



- e.  near the center of the design and drag upwards while holding down the mouse button to zoom in.

**Note:** You can also zoom out by dragging downwards.

- f.  to deactivate the **Pan/Zoom** tool.

4. **View** toolbar: .

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



5. Do one of the following to activate the **CloseUp** window:

- **View > CloseUp** and click a random point in the workspace.

**OR**

-  **Ctrl+Space** and  a random point in the workspace.

**OR**

- Click a random point in the workspace with the mouse wheel.

**Note:**

You can now use the mouse wheel to zoom in or out within the **CloseUp** window.

You can drag the **CloseUp** window around the design to zoom in on different parts.

6. Change the **CloseUp** window options:

- a. Put the **CloseUp** window in front of the circle.
- b.  the magnifying glass icon in the left corner of the title bar.
- c.  **Options**

- d.  **CloseUp Options:**  3 for **Scale**.
  - e.  **Tab**
  - f.  the **CloseUp Options** dialog.
  - g. If necessary, move the **CloseUp** window until you see the bottom of the circle.
7. Move the **CloseUp** window without changing what it displays:
    - a.  the magnifying glass icon in the left corner of the title bar.
    - b.  **Dynamic** to deactivate it.
    - c. Drag the **CloseUp** window to the right.
  8. Measure a distance from a point inside the **CloseUp** window to a point outside of it:
    - a. **Dimension** toolbar: .
    - b.  **Use Dimensions Layer?:**
    - c.  the bottom point of the circle, in the **CloseUp** window.
    - d.  the bottom middle point of the front panel.
    - e.  the same point once more to fix the position of the dimension.
    - f.  **CloseUp**

 Starting from an existing design, you have used these buttons from the **View** toolbar:

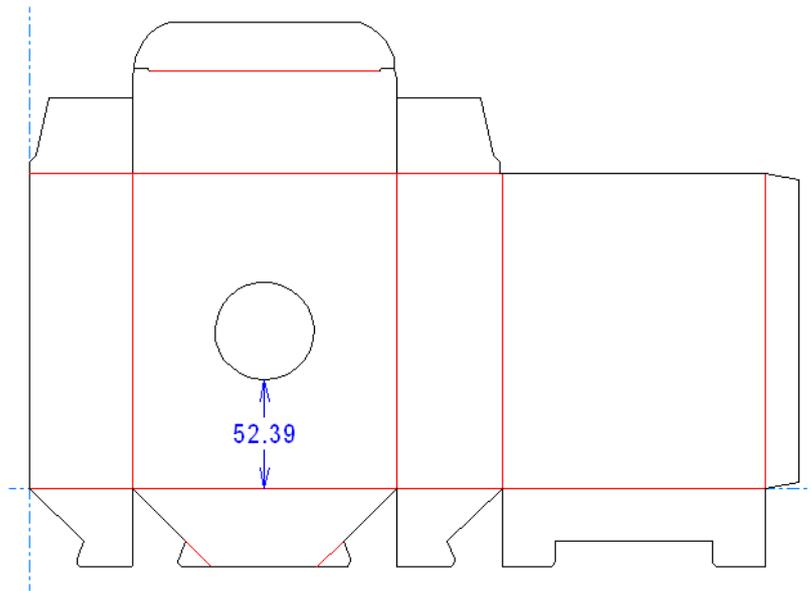
Button	Action
 <b>(Zoom Rectangle )</b>	Zooming in
 <b>(Scale to Fit)</b>	Scaling
 <b>(Scale to Fit with Border)</b>	Scaling with outside borders
 <b>(Center-Point Zoom)</b>	Zooming in
 <b>(Zoom Out)</b>	Zooming out
 <b>(Pan/Zoom)</b>	Moving or zooming

## Notes

You have also explored the possibilities of the **CloseUp** window:

- Creating
- Moving with and without dynamic content
- Changing the options for the scaling
- Creating a distance measurement from a point inside of the **CloseUp** window to a point outside of it

This is what your design looks like at the end of this tutorial.



## Notes

## 2.3.2 ☺ Tutorial: Using Points



If necessary, you can open the file 'VIEW\_01.ARD'.

- ☉ On lines, arcs and circles you can use a set of commonly used points for geometry tasks such as drawing or adding dimensions. In this tutorial, you will explore some of the ways of working with these points. More specifically, you will:
  - Display points and use them as snap points
  - Use different ways of displaying or hiding the middle points of a line
  - Activate and deactivate points on an arc
  - Display points simultaneously on different parts of the design

Using these possibilities you will add a measurement between two specific points of the design: the right middle point of the front panel and the right of the circle.

①②③

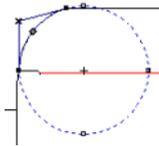
1. Display points on a line:
  - a. **Dimensions** toolbar: if necessary, 

**Note:** Whether the points are displayed depends on the tool you have activated.

  - b. Place the pointer over a line.
    - ☉ *The end points and the middle points are displayed.*
  - c. Place the pointer close by one of the three points.
    - ☐ *The point changes into a square. This indicates that you are near the snap point.*
2. Display only end points on a line:
  - a. **Options > Snap...**
  - b.  **Snap options:** deselect **Middle Points of Lines or Arcs.**
  - c. 
  - d. Place the pointer over a line.

## Notes

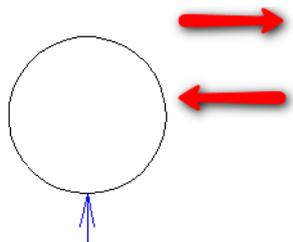
- ⊖ Only the end points are displayed.
3. Re-activate the display of middle points:
- a. **View > Snap Options > Snap to middle points**
- Note:** You can also repeat step 2.
- b. Place the pointer over a line.
- ⊖ The middle points and the end points are displayed.
4. Ⓜ a random point on the workspace to deactivate the **Distance Dimension** tool.
5. Activate and deactivate the points on an arc:
- a. **Extend/Measure** toolbar: 
- b. Ⓜ the left arc on the upper tuck flap.
- ⊖ The following points are displayed:



- c. **Extend/Measure** toolbar: 

**Note:** You can also  **Ctrl + Alt + X**

6. Activate simultaneously the points on the right line of the front panel and the circle:



- a. **Extend/Measure** toolbar: 
- b. Ⓜ the right line of the front panel.

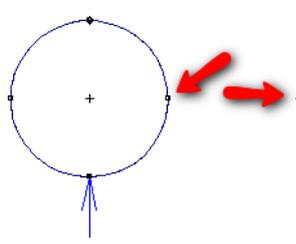
**Note:** A conline extending the three points is also added.

- c. **Extend/Measure** toolbar: 

**Note:** You can also press and hold down **Shift** to keep the **Extend** tool active.

d.  the circle.

7. Use the active points to measure the distance between the middle of the right line of the front panel and the right of the circle:



a. **Dimensions** toolbar: 

b.  the middle point of the right line of the front panel.

c.  the rightmost point of the circle.

d.  the same point once more to fix the position of the dimension.

**Note:** *As soon as you have completed the action, the points are automatically cleared.*

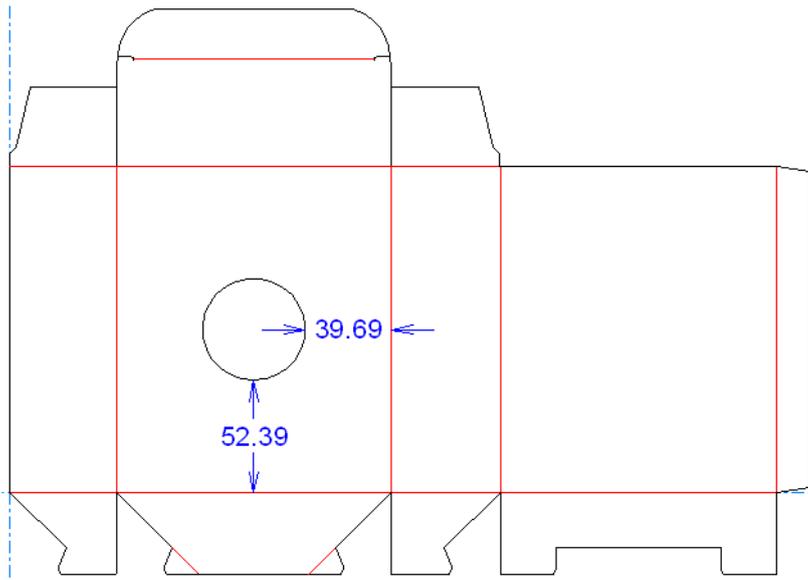
 You have seen which points appear on a line and how you can eliminate and reintroduce the middle point from those shown.

You have experienced which points are shown on an arc by activating them with the **Extend** tool. You have removed those points with the **Clear Extend** tool.

You have tested another possibility of the **Extend** tool by displaying at the same time the points on the right line of the front panel and on the circle. Using the middle point of the line and the rightmost point of the circle, you have added a distance measurement to your design.

## Notes

# Notes



### 2.3.3 ☺ Tutorial: Changing the View Mode



If necessary, you can open the file 'VIEW\_02.ARD'.

- ☺ You will not make any changes to the design. Instead, you will see how you can use the **View Mode** to change what is displayed on the workspace.

You will make all the end points visible. You will add a center point to the arcs and the circle. You will choose to display only specific types of lines: cut lines first, then crease lines.

1|2|3

1. Do one of the following to open the **View Mode** dialog:

- **View** toolbar:

**OR**

- **View > View Mode...**

2. **View Mode:**

- a.  **End points** and  to check the result.

**Note:** You can click **Minimize** << to hide part of the dialog. Click **Maximize** >> to reverse this.

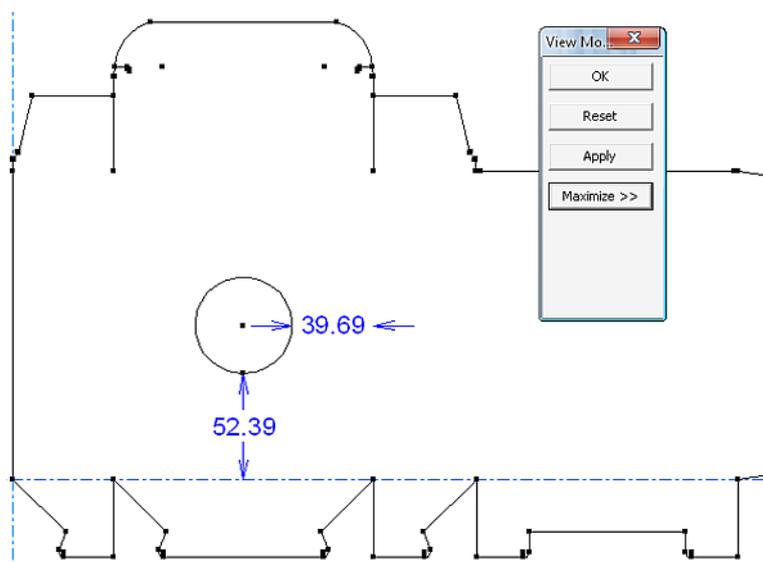
- b.  **Center point of arcs** and

- c.  **Line Type**

- d. **Cut** for **Line Type** and

☹ At this stage, if you minimize the **View Mode** dialog, your workspace displays the following details:

## Notes



e.  **Crease** for **Line Type** and

f. **Reset**

g.

 You have opened the **View Mode** dialog to explore some of its possibilities. For each of the modes you have tested, you were able to see the effect by clicking the **Apply** button and, if necessary, minimizing the dialog. You have tested the following modes:

- Displaying end points
- Displaying center points of arcs
- Displaying specific types of lines:
  - Cut lines
  - Crease lines

2.3.4  Tutorial: Selecting

If necessary, you can open the file 'VIEW\_02.ARD'.

-  You will explore the different possibilities of selecting one or more particular items of the design.
- As far as **lines** are concerned, you will use different tools to select:
- One line
  - More than one line
  - A group
  - One or more lines from a group
  - Connected lines across or stopping at intersections
- As far as **items** are concerned, you will use different tools to select:
- All the lines of the design
  - Only the design lines
  - Only the construction lines
  - Only text
  - Only dimensions
  - Only graphics
- As far as **selection method** is concerned, you will use different tools to select:
- Everything crossing a selection rectangle
  - Everything inside a selection rectangle
  - Everything inside a selection polygon



1. Select with the **Normal selection (entire groups)** tool:
  - a. **Edit** toolbar: 
  - b. **Select By** status bar: if necessary, 

## Notes

- c.  the top line of the design to select it.

**Note:** A selected line is displayed in magenta.

- d.  the rightmost line of the design while holding down **Shift** or **Ctrl**.

 The two lines are selected.

- e.  one of the bottom lines of the design.

 The whole group is selected.

2. Select with the **Selection ignoring groups** tool:

- a. **Select By** status bar: 

- b.  one of the bottom lines of the design.

 Only that line and not the whole group is selected.

**Note:** By holding down **Shift** or **Ctrl**, you can select more than one line from the group.

3. Select with the **Selection of connected lines across intersections** tool:

- a. **Select By** status bar: 

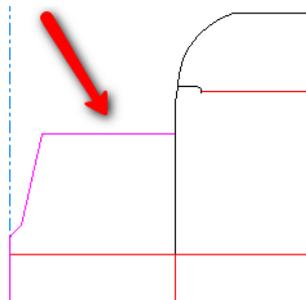
- b.  the left line of the design.

 Except for the top closure panel and the upper tuck flap, all the outside lines of the design are selected: these are all connected.

4. Select with the **Selection of connected lines stopping at intersections** tool:

- a. **Select By** status bar: 

- b.  the top line of the top left dust flap:



**Note:** With the **Normal selection** tool, only the top line would be selected.

5. Activate all the layers:

- a. **View** bar:  Main Design

b.  **Layers:** 

c. 

d. **View** toolbar: 

6. Test the result of selecting the whole design using different tools:

a. **Select By** status bar: 

b. **Select By** status bar: if necessary,  and draw a rectangle around the whole design.

**Note:** *Instead of drawing a rectangle around the design,*



*is also possible.*

⊖ *Except for the construction lines, all the lines are selected.*

c. **Select By** status bar:  and draw a rectangle around the whole design.

⊖ *All the lines are selected.*

d. **Select By** status bar:  and draw a rectangle around the whole design.

⊖ *All the construction lines are selected.*

e. **Select By** status bar:  and draw a rectangle around the whole design.

⊖ **Example Text to select** *is selected.*

f. **Select By** status bar:  and draw a rectangle around the whole design.

⊖ *All the dimensions are selected.*

g. **Select By** status bar:  and draw a rectangle around the whole design.

⊖ *All the graphical items, viz. the logos, are selected.*

7. Select lines using the **Select items crossing** or the **Select items inside** tool:

a. **Select By** status bar: 

b. **Select By** status bar: if necessary, 

c. Draw a rectangle around this part of the lines at the top of the design:

## Notes



☹️ *The six lines are selected.*

d. **Select By** status bar:

e. Draw a similar rectangle as previously.

☹️ *The three smallest lines are selected.*

8. Select two of the four stars at the top of the design:

a. **View** toolbar:

b. Draw a rectangle around the four stars at the top of the design.

c. **Select By** status bar:

d. Draw a polygon around the two stars on the right.

9. Restore the original workspace view:

a. a random point on the workspace to deselect the two stars.

b. **View** bar:

c. **Layers**:

d.

e. **View** toolbar:

☹️ You have explored different ways of selecting lines or items, and the use of a rectangle or a polygon in selecting. The tools that you have used are summarized in this table. The table follows the order in which you have tested the tools.

Tool	Selection
<b>Normal selection (entire groups)</b>	One or more lines or groups
<b>Selection ignoring groups</b>	One or more lines within a group
<b>Selection of connected lines across intersections</b>	Connected lines not stopping at intersections

## Notes

Tool	Selection
<b>Selection of connected lines stopping at intersections</b>	Connected lines stopping at intersections
<b>Select only design lines</b>	Design lines
<b>Select design and construction lines</b>	Design and construction lines
<b>Select only construction lines</b>	Construction lines
<b>Select only text items</b>	Text
<b>Select only dimensions</b>	Dimensions
<b>Select only graphics items</b>	Graphics
<b>Select items crossing</b>	Lines crossing the selection rectangle
<b>Select items inside</b>	Lines inside the selection rectangle
<b>Use Polygon</b>	Lines inside the polygon

**Note:** As is illustrated during the course of the tutorial, some of these tools can be combined. For instance, you can choose **Select only design lines** in combination with **Use Polygon**.

## Notes

## 2.3.5 ☺ Tutorial: Selecting by Example

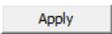


If necessary, you can open the file 'VIEW\_02.ARD'.

- ☺ You will choose one of the dimensions to function as a selection example. This means that a selection will be made based on certain attributes of the dimension chosen. You will explore how the selection changes if you remove or change certain attributes, viz. the font size, and the font type.

1|2|3

1. Activate the **Dimensions** layer:
  - a. **View bar:** 
  - b.  **Layers:**  the left column next to the **Dimensions** layer.
    - ☹ *An eye is shown in the column.*
  - c. 
2. Do one of the following to open the **Select by Example** tool:
  - **Edit** toolbar: 
  - OR**
  - **Edit > More Select > Select by Example**
3. Make a selection based on the height dimension of the front panel:
  - a.  the **152.4** inside the circle.
  - b.  **Select by Example:** 
    - ☹ *The three dimensions with the same attributes as the example are selected.*

**Note:** You can click **Minimize** << to hide part of the dialog. Click **Maximize** >> to reverse this.
4. Change the attributes used for the selection:
  - a. Deselect **Text size**.
  - b. 
    - ☹ *Three more dimensions have been added to the selection.*
  - c.  **Garamond** for **Font**.

- d.   
⊖ *The three dimensions with this font type are selected.*
- e. Deselect **Font**.
- f.   
⊖ *All the dimensions have been added to the selection.*
- g.

⊖ You have activated the **Dimensions** layer and chosen the height dimension of the front panel to function as an example. You have used this example to make a selection of items with the same attributes.

Then you have changed some of the attributes and seen the corresponding change in selection. More specifically you have:

- Removed **Text Size** as an attribute
- Changed the **Font** attribute
- Removed **Font** as an attribute

In the end, all the dimensions were selected.

## Notes

## 2.4 Geometry

In this lesson you will learn to master a number of **Geometry** tools.

### Geometry tools

In the **Designer** module, **Geometry** tools allow you to create or modify structural designs and other components. More specifically, you can use them to add geometrical figures to your design, such as lines, rectangles, circles, and arcs.

**Note:** *Dimensions, annotations, and graphics are not considered geometry.*

### Toolbars and buttons

#### Geometry toolbar



During this lesson, you will use the following buttons:

Button	Name
	Move to point
	Line Angle/Offset
	Arc Start Angle
	Arc End Point
	Arc Center
	Arc through point
	Line Join
	Arc Join
	Tangent Arc
	Line at angle from line
	Bezier

**View toolbar**

During this lesson, you will use the following buttons:

Button	Name
	<b>Scale to Fit</b>
	<b>Zoom Rectangle</b>

**Tutorials**

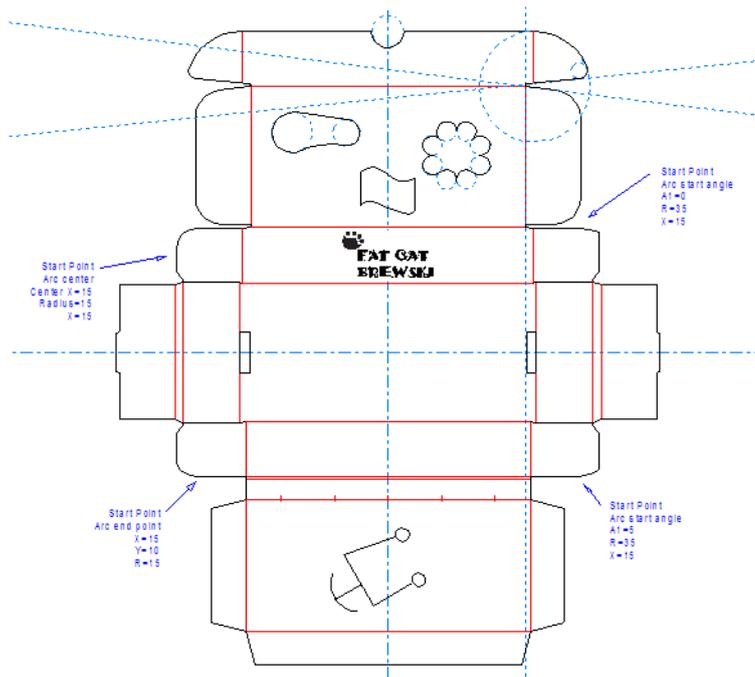
Based on a design contained in a single training file, you will follow seven separate tutorials to practice some of the **Geometry** tools:

- [Tutorial: Measuring](#) on page 64
- [Tutorial: Using Properties to Change Line Types](#) on page 66
- [Tutorial: Using the View Bar to Change Line Types](#) on page 68
- [Tutorial: Drawing a Line of a Specific Type](#) on page 69
- [Tutorial: Drawing Arcs](#) on page 72
- [Tutorial: Drawing Arcs Through a Point](#) on page 76
- [Tutorial: Drawing with Special Geometry Tools](#) on page 79

In principle you only need the training file with the initial situation (GEO\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

At the end of the lesson, your design will have the following aspect:

# Notes



There is moreover an additional tutorial, based on the result of the lesson on '**Geometry Macros and Rebuild**':

*Tutorial: Using Dynamic Drafting* on page 86

## 2.4.1 Tutorial: Measuring



**For this tutorial you need the training file 'GEO\_00.ARD'.**

- ① With the **Measure** tool, you can quickly check various types of measurements of your design without having to use the **Dimension** layer. In this tutorial you will use this tool to measure a line or an arc, a distance, the position of a pixel in a bitmap, and the distance between two pixels.

①②③

1.  'GEO\_00.ARD'
2. Do one of the following to activate the **Measure Tool**:
  - **Extend/Measure** toolbar: 
  - OR
  -  **Control + G**
  - OR
  - **Info > Measure Tool**
3. Obtain measurement information for a line or an arc:
  - a. Use the pointer to hover over a line or an arc.
    - ⊖ *An information window appears next to the pointer, specifying:*
      - (When you point at a line) **Angle, Length, X, and Y**
      - (When you point at an arc) **Start angle, Length, X, Y, Radius, and End angle**
  - b. Move the mouse to make the information window disappear.
  - c. Place the pointer on a line or an arc and 
    - ⊖ *The information window does not disappear when you move the pointer.*
  - d.  the information window.
4. Measure a distance:
  - a.  a point.

**Note:** *The pointer changes to a square when you are near a point.*

## Notes

- b. Draw a line by moving the pointer to a second point and 
    -  *The information window appears.*
  - c.  the information window.
5. Obtain position information for a pixel in the bitmap image:
- a. Hold down **Control** and use the pointer to hover over the pixel.
    -  *An information window appears next to the pointer, specifying **X** and **Y**.*
  - b. Release **Control** and move the mouse to make the information window disappear.
6. Measure a distance between two pixels:
- a. Hold down **Control** and  a pixel.
  - b. Draw a line by moving the pointer to a second point while holding down **Control**, and 
    -  *The information window appears.*
  - c.  the information window.
7.  to deactivate **i**

 You have used the **Measure** tool to measure a line or an arc, a distance, the position of a pixel in a bitmap, and the distance between two pixels.

### 2.4.2 ☺ Tutorial: Using Properties to Change Line Types



If necessary, you can open the file 'GEO\_00.ARD'.

- ☉ The default type for every line that you draw in a design is **Cut**. You can change the line type of multiple lines at once, by changing their **Properties**. In this tutorial, you will change the type of the inside vertical **Cut** lines of the drawing to **Crease**.

1|2|3

1. 'GEO\_00.ARD'
2. Select these four inside vertical **Cut** lines of the drawing:

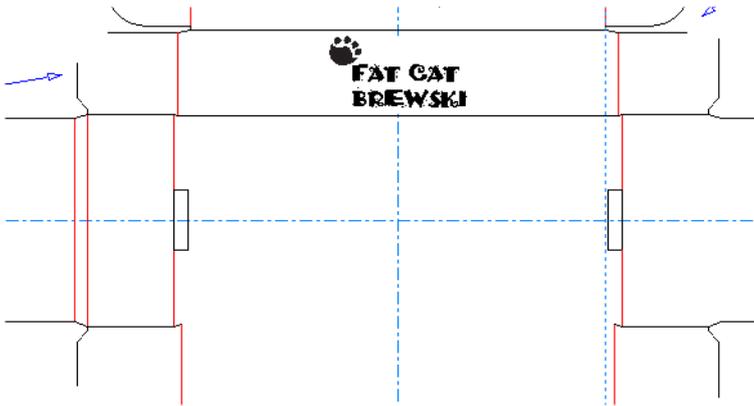


- a. a vertical line.
  - b. Hold down **Shift** (or **Control**) and the three remaining lines that you want to change.
3. Do one of the following to open the **Properties** dialog:
    - **Edit** > **Properties...**
    - OR
    - **Alt + Enter**
    - OR
    - Hold down **Shift** and one of the selected lines twice.
    - OR
    - and select **Properties...**
  4. **Properties**, **Geometry**: **Crease** for **Type**.

**Note:** *Crease lines are displayed in red.*

5.
6.  a random point in the workspace to deselect the lines.

 You have changed the inside vertical **Cut** lines to **Crease** lines. For this, you have used their **Properties**.



## Notes

### 2.4.3 ☺ Tutorial: Using the View Bar to Change Line Types



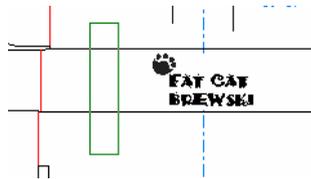
If necessary, you can open the file 'GEO\_01.ARD'.



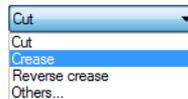
In the **View** bar at the top, a menu allows you to change the type of selected lines. In this tutorial, you will change the type of the inside horizontal **Cut** lines to **Crease**.



1. Draw a rectangle across the two inside horizontal **Cut** lines to select them:



2. View bar: ☺ **Crease**, for **Line Type Set**:



3. ☺ a random point in the workspace to deselect the lines.



The inside horizontal lines have been changed from **Cut** to **Crease** lines.



## Notes

## 2.4.4 ☺ Tutorial: Drawing a Line of a Specific Type



If necessary, you can open the file 'GEO\_02.ARD'.



Instead of the default **Cut** line, you can directly choose to draw a line of a specific type. In this tutorial, you will complete two panels by adding **Crease** lines and one additional **Cut** line.

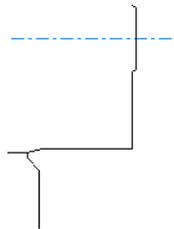


1. Complete the panel on the right:

a. **Geometry** toolbar:

**Note:** You can also **Ctrl + W**.

b. this starting point for the line:



c. **Geometry** toolbar:

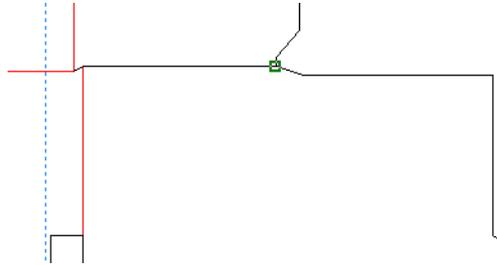
d. this end point:



e. View bar:  **Crease** for **Line Type Set**.

f. **Geometry** toolbar: 

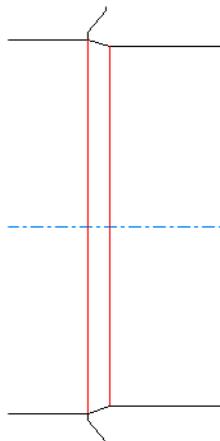
g.  this starting point for the second line:



h. With  still active, draw this **Crease** line:



i. Repeat the previous three substeps to draw the second crease line in the roll-over:



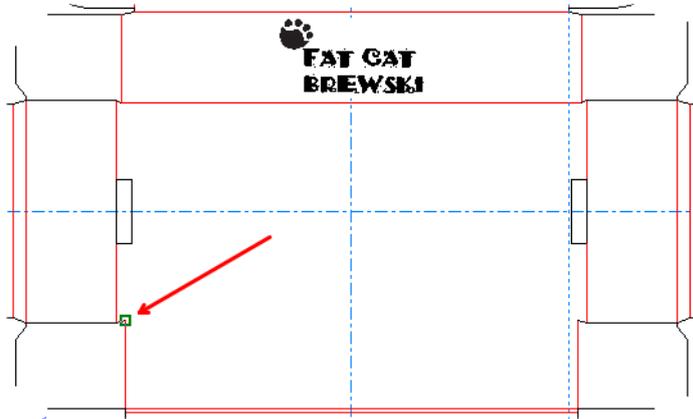
## Notes

☹ You have added one cut line and two crease lines to complete this panel.

2. Complete the bottom panel:

a. **Geometry** toolbar: 

b.  the bottom left point of the bottom panel:



c. With  still active,  to bottom right point of the bottom panel.

☹ You have drawn a crease line.

3.  to de-activate the tool.

☹ You have completed two panels by drawing **Cut** and **Crease** lines:



## 2.4.5 ☺ Tutorial: Drawing Arcs



If necessary, you can open the file 'GEO\_03.ARD'.



You will complete four flaps and a thumb hole by adding five arcs to the drawing. For each of the arcs you will use a different method or a different tool. You will use the following tools: **Arc Start Angle**, **Arc End Point**, **Arc Center**, and **Arc through point**.



1. Draw an arc for the top right dust flap using the **Arc Start Angle** tool:
  - a. **Geometry** toolbar:
  - b. the starting point for the arc as indicated by the annotation.
  - c. **View** bar: **Cut** for **Line Type Set**.
  - d. **Geometry** toolbar:

**Note:** You can also choose **Tools > Geometry > Arc Start Angle**.

- e. Draw an arc, with the following characteristics, **A1**: 0; **Radius**: 35; **X**: 15. Choose one of the following methods:
  - Drag the pointer to the right until the value displayed is 0 and :



Drag the pointer downwards until the value displayed is 35 and

the end point.

- **OR**

## Notes

Drag the pointer to the right. **A1** status bar:  0 for **Angle**, and  **Enter**.

Drag the pointer downwards. **Arc Start Angle** status bar:  35 for **Radius**, and  **Enter**.

**Arc Start Angle** status bar:  15 for **X**, and  **Enter**.

2. Repeat the previous step for the bottom right dust flap, but this time use an **A1** (slightly *above* the starting point) of 5 degrees.
3. Draw an arc for the bottom left dust flap using the **Arc End Point** tool:
  - a. **Geometry** toolbar:  and  the starting point.

- b. **Geometry** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- c. Draw an arc, with the following characteristics, **X**: 15; **Y**: 10; **Radius**: 15. Choose one of the following methods:
  - Drag the pointer to the left until the value displayed is 15 and  the end point.
  - **OR**
  - Drag the pointer to the left. **Arc End Point** status bar:  15 for **X**, and  **Enter**.
  - Drag the pointer upwards. **Arc End Point** status bar:  10 for **Y**, and  **Enter**.
  - Drag the pointer slightly downwards. **Arc End Point** status bar:  15 for **Radius**, and  **Enter**.
4. Draw an arc for the top left dust flap using the **Arc Center** tool, with the following characteristics, **Center X**: 15; **Radius**: 15, **X**: 15.
  - a. **Geometry** toolbar:  and  the starting point.
  - b. **Geometry** toolbar: 

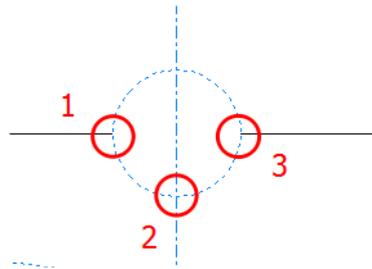
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- c. Drag the pointer to the right until the value displayed is 15 and  $\ominus$

**Note: Arc Center status bar:** for this and the following two substeps, you can also enter the value and  $\text{Enter}$ .

- d. If necessary, move the pointer until the value displayed is 15 and  $\ominus$
- e.  $\ominus$  the end point.
5. Complete the thumb hole, using the **Arc through point** tool.
- a. **Geometry** toolbar:  $\square^{\square}$  and  $\ominus(1)$ :



- b. **Geometry** toolbar: 

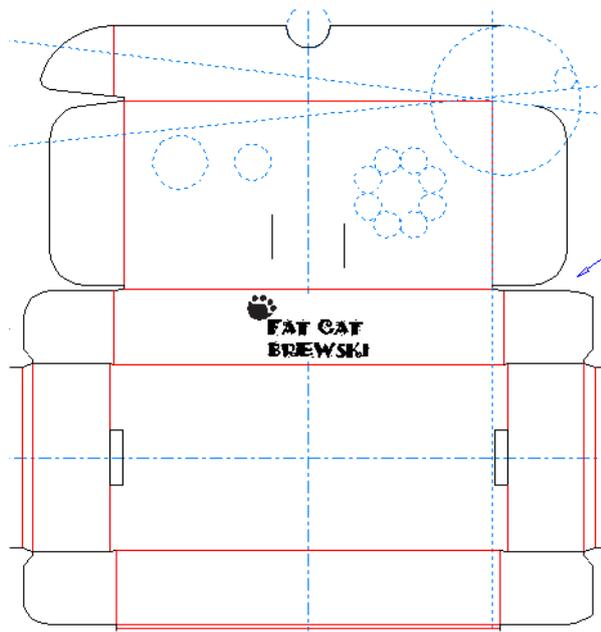
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- c.  $\ominus(2)$  to select the **through point**.
- d.  $\ominus(3)$  to select the **end point**.
- e.  $\ominus$  to deactivate the tool.

 You have completed four flaps and the thumb hole by adding different arcs to the drawing. For this, you have used **Arc Start Angle** (twice), **Arc End Point**, **Arc Center**, and **Arc through point**.

# Notes



## 2.4.6 ☺ Tutorial: Drawing Arcs Through a Point



If necessary, you can open the file 'GEO\_04.ARD'.

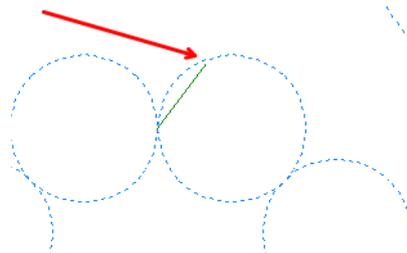
- ☉ You will first add a cutout shape to your design based on a number of arcs through points. Next, you will use the same tool for drawing a curve composed of two arcs.

1|2|3

1. Prepare your workspace for the first drawing:
  - a. **View** toolbar:
  - b. Draw a rectangle around the eight construction line circles in the top panel.

**Note:** Construction lines are the blue lines.

- c. **Geometry** toolbar:
  - d. a point where two of the circles touch.
2. Make a first drawing based on arcs through a point:
  - a. **Geometry** toolbar:
  - b. a point on the adjoining conline circle near the outer rim of the eight circles:

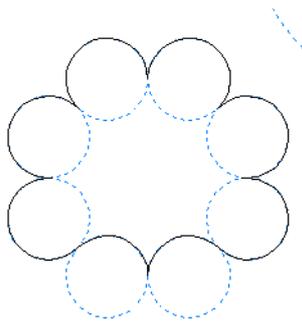


- c. Continue the arc until you reach the next point where two of the circles touch,

**Note:** The point will change to a square when the pointer comes near it. This is the end point for the **Arc through point** tool.

- d. You have drawn the first arc.
- d. Repeat the previous two steps, following either the outer or the inner rim, seven times until you have completed the drawing in this fashion:

## Notes



e.  to deactivate 

3. Prepare your workspace for the second drawing:

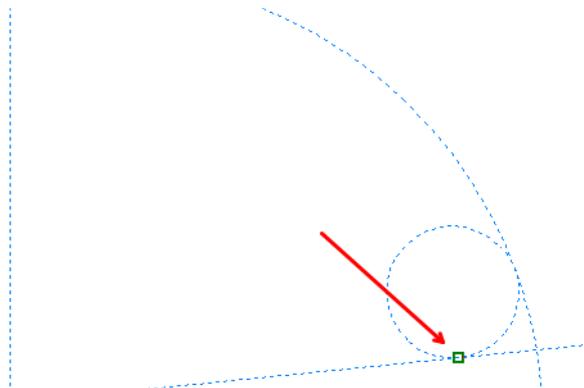
a. **View** toolbar: 

b. **View** toolbar: 

c. Draw a rectangle around the currently missing right locking ear.

d. **Geometry** toolbar: 

e.  the point where the small conline circle touches the diagonal conline:



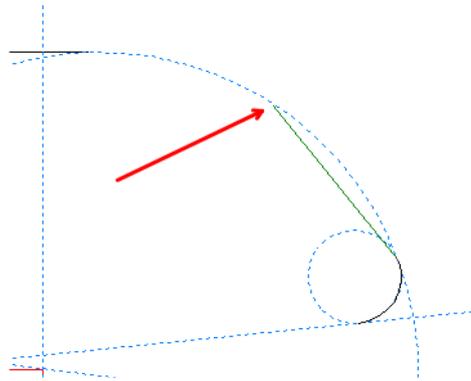
4. Make a second drawing with the **Arc through point** tool:

a. **Geometry** toolbar: 

b. Move the pointer upwards and to the right and  the small conline circle at a point between the start point and the point where the two conline circles touch.

c.  the point where the two conline circles touch, to choose this as the end point.

- d.  the big conline circle at a point between the start point and its top:

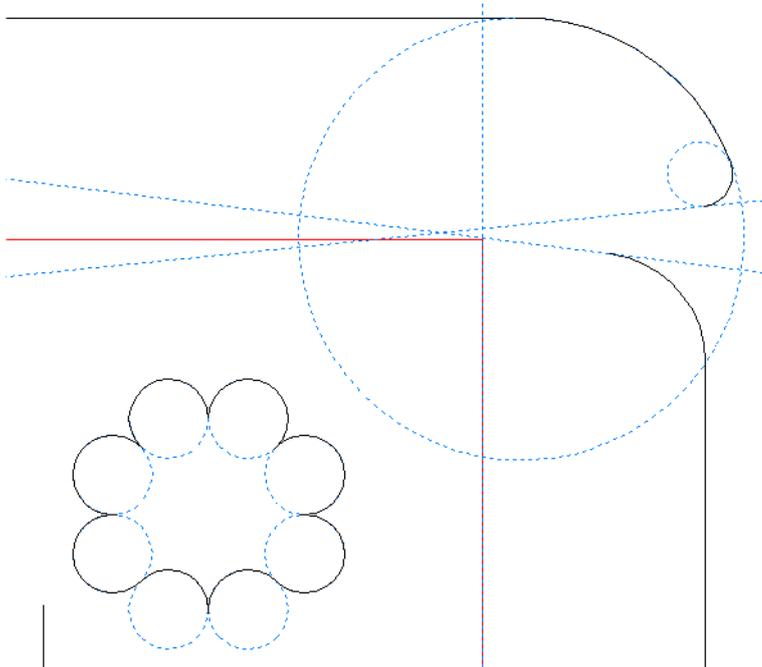


- e.  the top of the big conline circle, to choose this as the end point.

5.  to deactivate 

6. **View** toolbar: 

 You have created two drawings based on arcs through points:



## Notes

## 2.4.7 ☺ Tutorial: Drawing with Special Geometry Tools



If necessary, you can open the file 'GEO\_05.ARD'.

- ☉ In this tutorial you will create a number of drawings using these geometry tools: **Line Join**, **Arc Join**, **Tangent Arc**, and **Bezier**.

①②③

1. Join the two small conline circles at the left side of the lid using the **Line Join** tool:

**Note:** If necessary, use  to zoom in on the two conline circles.

- a. **Geometry** toolbar: 
- b.  the top half of the biggest circle.
- c.  the top half of the smallest circle.

**Note:** Avoid clicking the extend point of the circle since this will snap the line to these points rather than being tangential to the circles.

2. Join the two circles with **Arc Join**:

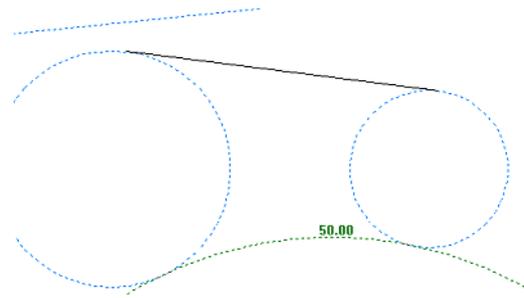
- a. **Geometry** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- b.  the biggest circle.
- c.  the bottom half of the smallest circle.
  - ⊖ You can now determine the radius and the orientation of the arc.
- d. Move the pointer until you obtain an downward arc.
- e. **Arc Join** status bar:  50 for **Radius**, and  **Enter**

## Notes



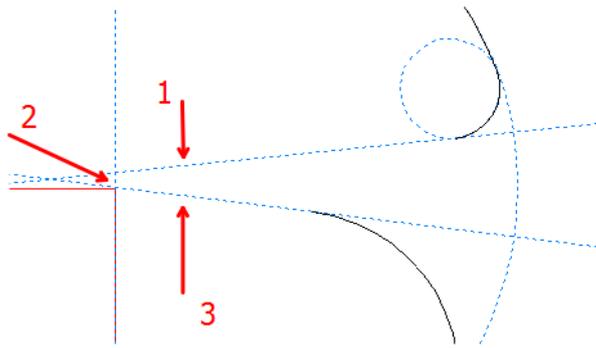
3. Complete the cutout shape with two arcs along the conline circles:
  - a. **Geometry** toolbar: 
  - b.  a point on the right half of the adjoining smallest conline circle.
  - c. Continue the arc until you reach the tangent line, 
    -  *You have drawn the first arc.*
  - d. **Geometry** toolbar: 
  - e.  the leftmost point of the tangent line.
  - f.  a point on the left half of the biggest conline circle.
  - g. Continue the arc until you reach the start of the **Arc Join** line, 
  - h.  to deactivate 
4. Add a tangent arc and two cut lines to the incomplete right locking ear:
  - a. **View** toolbar: 
  - b. Draw a rectangle around the big conline circle in the top right corner.
  - c. **Geometry** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- d.  these three conlines in the order indicated:

# Notes



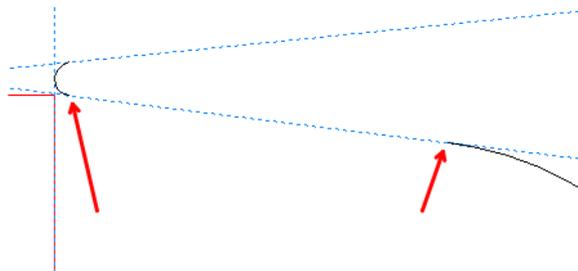
**Note:** The chosen conline will change to green.

⊖ You have drawn an arc joining the three conlines, following the order in which you have clicked these.

e. **Geometry** toolbar:

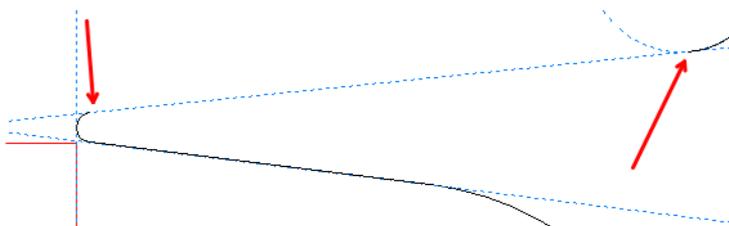
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

f. these two points one after the other:



**Note:** You don't have to move to the start point and this tool has the added advantage that it snaps to end points.

g. these two points one after the other:

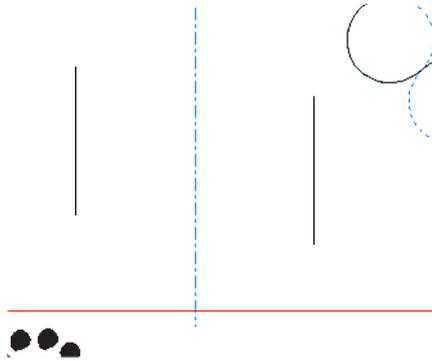


h. **View** toolbar: 

5. Create a cutout by joining two lines with beziers:

a. **View** toolbar: 

b. Draw a rectangle around this area:



c. **Geometry** toolbar: 

d.  the top point of the left line.

e. **Geometry** toolbar: 

f.  the top point of the right line.

 *You have defined the end point of your bezier. You can now define the curves, using two consecutive handles.*

g. Drag the first handle upwards and 

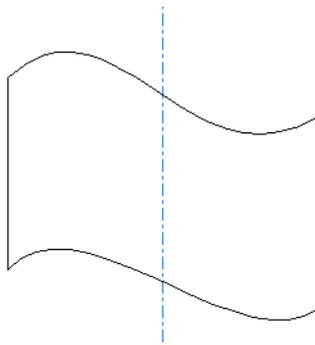
 *You now have control of the second handle.*

h. Drag the second handle downwards and 

 *You have drawn a bezier between the two lines.*

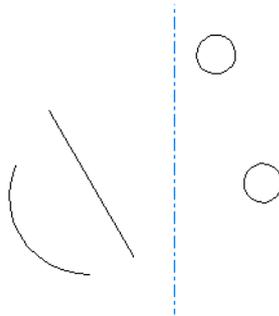
i. Repeat the previous substeps in order to draw a similar bezier at the bottom of two lines.

 *You have created an additional cutout shape in the top panel:*



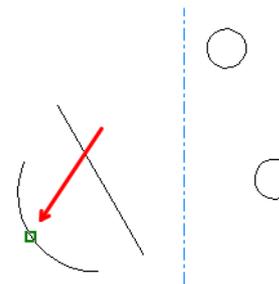
## Notes

6. Join the shapes in the 'insert' panel with lines at a specific angle to a line:
- Scroll down until you see this area:



- Geometry** toolbar:

- the center point of the arc inside the bottom panel



- Geometry** toolbar:

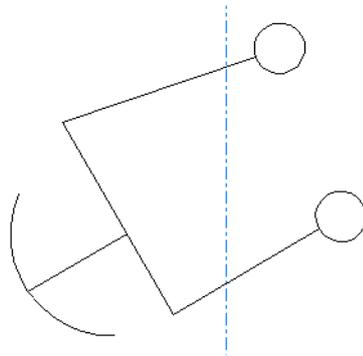
- the line to the right of the arc.
- Drag the pointer until the value displayed is 90 and

**Note:** :On the status bar you can also 90, and confirm with **Enter**

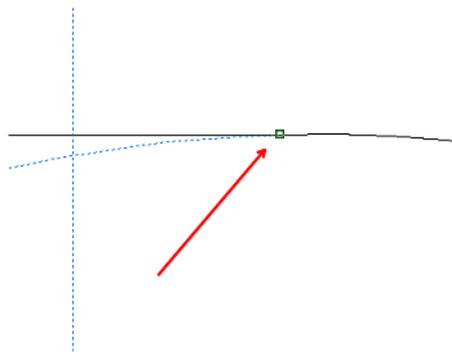
- Geometry** toolbar:

- the top of the line to the right of the arc
- the topmost of the two small cutout circles.
  - The line automatically snaps to the closest point on the arc.
- Repeat the previous three substeps to join the line with the lowermost of the two circles.

⊖ You have created a new cutout shape with lines at an angle to a line:

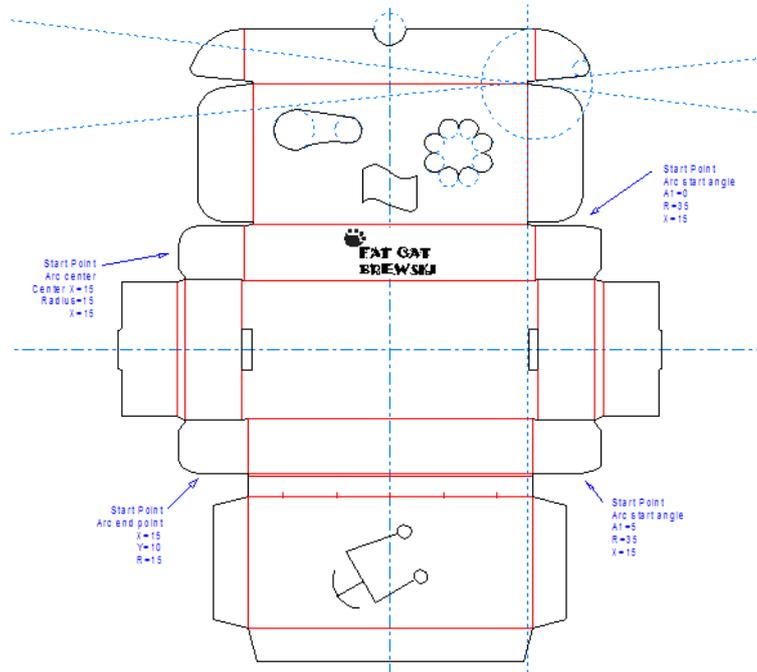


7. Complete your design by adding a crease line to the top right locking ear:
  - a. **View** toolbar:
  - b. **View** toolbar:
  - c. Draw a rectangle around the conline circle in the top right corner.
  - d. **Geometry** toolbar:
  - e. the point where the conline circle intersects with the cut line at the top:



- f. **View** bar: **Crease** for **Line Type Set**.
- g. **Geometry** toolbar:
- h. Draw a vertical downwards line with an **Angle** of 0 degrees and .
- i. the bottom diagonal cut line of the top right locking ear.
- j. to deactivate the tool.

Using the Geometry tools, **Line Join**, **Arc Join**, **Tangent Arc**, and **Bezier**, you have completed your design:



## Notes

## 2.4.8 ☺ Tutorial: Using Dynamic Drafting



**For this tutorial you need the training file 'GeMaRe\_03.ARD', this is the end result of *Geometry Macros and Rebuild* on page 31.**



See **Getting started with ArtiosCAD > Concepts and ideas in ArtiosCAD > Entering information in ArtiosCAD > Using drag > Dynamic Drafting overview**

Dynamic Drafting enhances drag so that you get more feedback about aligning to points related to the cursor's location. As you move the cursor around with Dynamic Drafting enabled, ArtiosCAD displays horizontal and vertical alignment lines to points on the screen.



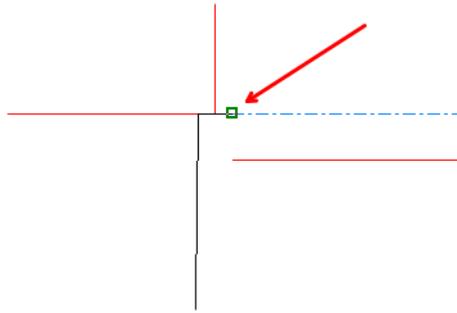
You will apply some of the possibilities offered by the **Dynamic Drafting** tool. More specifically, you will:

- Draw a bottom panel based on an existing one
- Add a cutout shape at the center of a panel without additional conlines
- Easily position a **Flute Direction Geometry Macro**



1.  'GeMaRe\_03.ARD'
2. Delete the bottom panel beneath the front panel:
  - a. If necessary, **Edit** toolbar: 
  - b. Draw a rectangle across the panel.
  - c.  **Delete**
3. Draw the left line of the new bottom panel:
  - a. **Geometry** toolbar: 
  - b.  this starting point:

## Notes



c. **Geometry** toolbar: 

**Note:** Make sure that you are working in the **Main Design** layer and that you are drawing a **Cut** line.

d. Drag the pointer downwards. On the status bar:  0 for **Angle**, and  **Enter**.

e. Status bar:  24 for **Y**, and  **Enter**

 You have drawn a cut line without using the **Dynamic Drafting** tool.

4. Add the next four lines of the bottom panel, mirroring the top panel:

a. If necessary, on the **View** bar at the top of your screen:

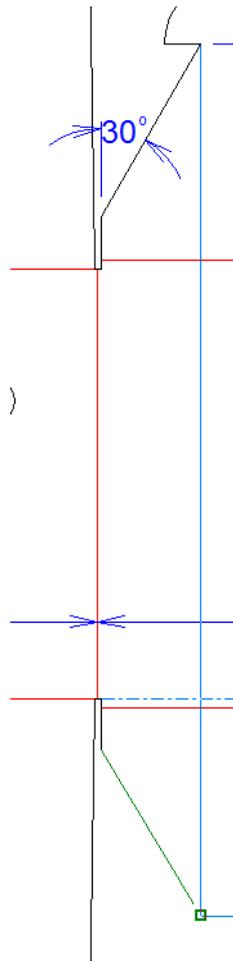


**Note:** You can also  **Shift + D**

 You have activated the **Dynamic Drafting** tool.

b. Drag the cursor downwards and to the right until both the diagonal and vertical alignment lines - referring to the corresponding point of the top panel - are displayed as full lines, then .

## Notes



- c. Drag the cursor horizontally to the left until the vertical alignment line - referring to the corresponding point of the top panel - is full, then



⊖ You have defined the end point.

- d. **Geometry** toolbar:



**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- e. Drag the cursor downwards and to the right until the vertical alignment line - referring to the corresponding point of the top panel - is full, then



⊖ You have defined the end point of your arc.

## Notes

- f. Drag the cursor slightly to the left and upwards until the value displayed is 34, then 
  - g. Drag the cursor slightly upwards until the value displayed is 34, then 
  - h. **Geometry** toolbar: 
  - i. Drag the cursor horizontally to the right until the vertical alignment line - referring to the corresponding point of the top panel - is displayed as a full line, then 
5. Complete the right part of the bottom flap, working in a similar fashion as for the left part and taking full advantage of the **Dynamic Drafting** tool.
6. Add a cutout square at the exact center of the front panel:
- a. **Geometry** toolbar: 
  - b.  the center of the front panel.

**Note:** If the cursor is right in the center of the panel, the horizontal and vertical alignment lines are full:



- c. **Geometry** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



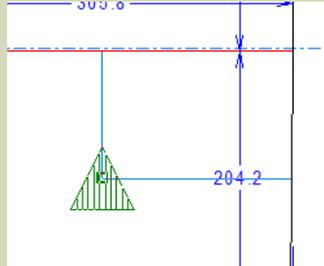
- d. Status bar:  5 for **Blend** and  **Enter**, 50 for **X**, and  **Enter**, and 50 for **Y** and  **Enter**.
  - e.  to de-activate the tool.
7. Add the flute direction:
- a. **Tools > Geometry Macros...**
  - b.  **Geometry Macros Catalog**: expand **Utilities**
  - c.  **Flute Direction (European)** and 

d.  **Geometry Macro Variables:**  50 for **Size** and



e.  the center of the bottom right closure panel.

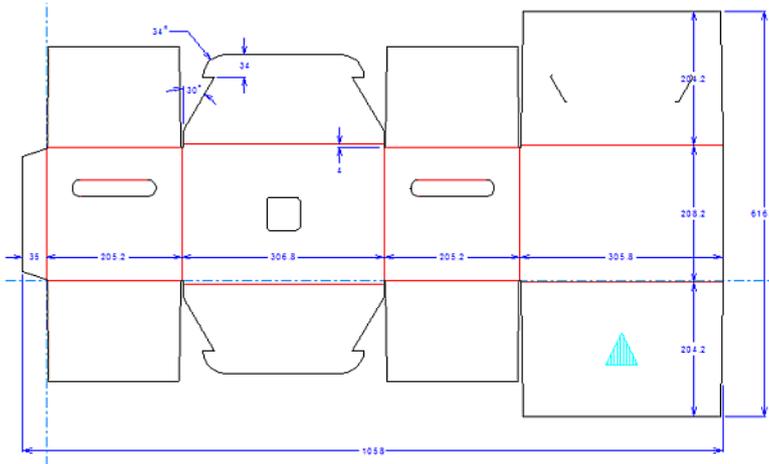
**Note:** *If the cursor is right at the center of the panel, the horizontal and vertical alignment lines are full:*



 You have experienced the advantage of using the **Dynamic Drafting** tool while:

- Creating a bottom panel that mirrors an existing top panel
- Adding a cutout shape to the front panel
- Adding a flute direction symbol

Your design is now complete:



## Notes

## 2.5 Construction Lines

---

In this lesson you will learn how to use construction lines to help you with the design process.

### Construction lines

 See **Designer > Creating geometry > Construction lines**

Construction lines are special lines used as drafting aids. They are not considered geometry, but they are used to make geometry.

### Purpose

 See **Designer > Creating geometry > Construction lines > How and when to use construction lines**

Use construction lines when you want to reference points that are not part of the geometry of a design. For example, if you want to go to a point that is a third of the way down a line, an easy way to do this is to divide the line in thirds using the **Conline Division/ Midpoint** tool. Once the construction lines intersect with the actual line, you can move the current position to one of those intersections.

### Topics

The following topics are covered in this lesson:

- [Construction Line Tools](#) on page 92
- [Construction Line Types](#) on page 93

## 2.5.1 Construction Line Tools

### Conlines toolbar



The following buttons are directly available on the **Conlines** toolbar.

Button	Name
	<b>Conline Offset/Angle</b>
	<b>Conline At Angle From Line</b>
	<b>Conline Division/Midpoint</b>
	<b>Conline Radius</b>
	<b>Conline Angle Divide</b>
	<b>Conline Join</b>

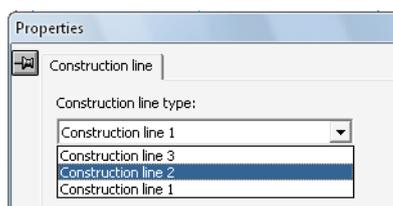
## Notes

### 2.5.2 Construction Line Types

See **Designer > Creating geometry > Changing construction lines**

Each plotting style contains three construction line definitions.

Double-click a construction line with the **Select Conlines** tool to change its type in its Properties dialog box. To change the type of many construction lines at once, select them all and then press **ALT-Enter** to open the Properties dialog box.



### 2.5.3 Recap Exercise

For this exercise you start from a newly opened file. You can choose both the **Parameter Set** and **Board**.

#### Start situation

Your workspace is empty.

#### Tasks

Create a sleeve design with an added tuck without using a standard.

#### Tools

You can use the following tools to complete this exercise:

- **Rectangle Horiz/Vert**
- **Rectangle From Line**
- **Move to point**
- **Line Angle/Offset**
- Change line type
- **Conline Offset/Angle**
- **Conline Join With Concircle**
- **Arc through point**
- **Circle Radius**
- **Rectangle from Center**

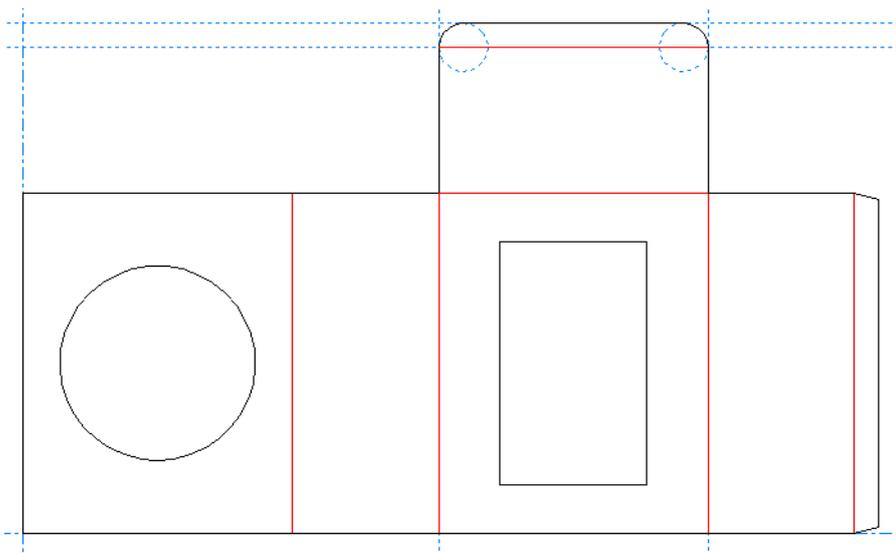
#### **Note:**

*Save your result as `Recap01.ARD`. You will need this file for the next recap exercise.*

#### End situation

This is what your design should look like at the end of the exercise:

## Notes



## Values

Your design should have the following values:

Item	Parameter	Value
Rear panel	<b>X</b>	140
	<b>Y</b>	178
Left side panel	<b>X</b>	76
Front panel	<b>X</b>	140
Right side panel	<b>X</b>	76
Top and bottom lines glue flap	<b>Angle</b>	15
	<b>X</b>	13
First horizontal conline	<b>Offset</b> (from top of panels)	76
Second horizontal conline	<b>Offset</b> (from first horizontal conline)	13
Concircles	<b>Radius</b>	13
Cutout circle	Position	Center of first panel
	<b>Radius</b>	51
Cutout rectangle	Position	Center of third panel
	<b>X</b>	76

Item	Parameter	Value
	Y	127

Notes

## 2.6 Annotations and Layers

---

In this lesson you will learn to master annotations (dimensions, text, details, and line type labels), and layers.

### Annotations

Any addition to the design that does not affect the final outcome of it, is an annotation.

### Annotation types

More specifically you will learn to add and change the following annotation types:

- Dimensions
- Text
- Details
- Line type labels

### Dimensions



See **Builder > Annotations and Dimensions**

*Dimensions* are measurements showing the length of lines, the sweep of angles, the radii of arcs, and so forth. The tools on the Dimension toolbar control the creation, placement, and properties of dimensions.

You will explore the following possibilities more in detail:

- Changing the layout of existing dimensions
- Adding temporary dimensions
- Using the auto dimension tools

### Layers



See **Designer > Working with non-geometric elements > Layers**

ArtiosCAD uses the concept of layers to build a complete design. Think of a piece of paper with a drawing of a basic container. Then on top of that, add transparencies. One transparency could contain dimensions, another could contain art, and yet another could contain additional design geometry such as a window or an optional flap. A design may have up to 100 layers. All designs have one layer called Main Design. Designs made using standards may have many layers depending on the complexity of the standard.

Since annotations are normally stored in a separate layer of the design, you will become familiar with the following layer actions:

- Creating
- Naming
- Hiding

## Toolbars and buttons

### Dimension toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Distance Dimension</b>
	<b>Auto Aligned Distance Dimension</b>
	<b>Radius Dimension</b>
	<b>Angle Dimension</b>
	<b>Diameter to Circle Dimension</b>
	<b>Temporary Dimensions</b>
	<b>Auto Dimension</b>
	<b>Auto Dimension Window</b>

### Annotation toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Text</b>
	<b>Detail</b>
	<b>Adjust Detail</b>
	<b>Line type label</b>

## Notes

Button	Name
	<b>Hatch</b>

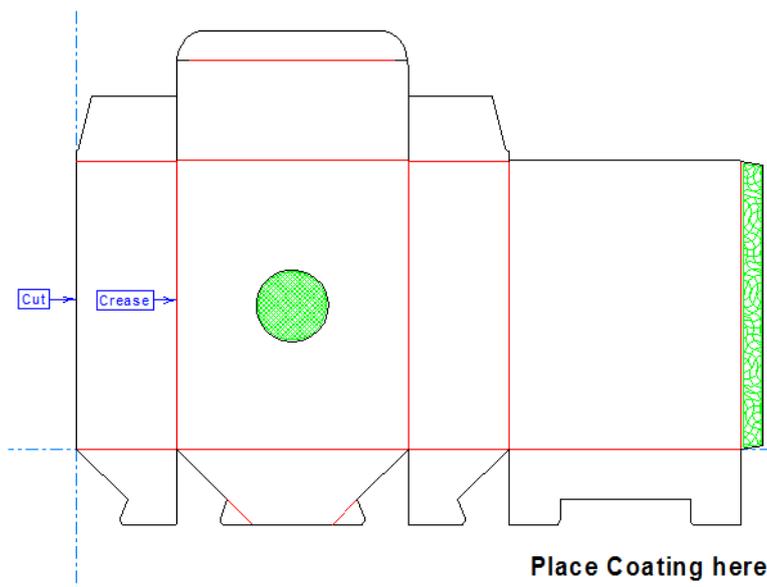
## Tutorials

Based on a design contained in a single training file, you will follow eight separate tutorials:

- [Tutorial: Changing the Layout of Dimensions](#) on page 100
- [Tutorial: Adding Dimensions](#) on page 102
- [Tutorial: Adding Temporary Dimensions](#) on page 106
- [Tutorial: Adding Dimensions with the Auto Dimension Tools](#) on page 108
- [Tutorial: Adding Text](#) on page 112
- [Tutorial: Adding a Detail](#) on page 114
- [Tutorial: Adding Line Type Labels](#) on page 117
- [Tutorial: Hatching](#) on page 119

In principle you only need the training file with the initial situation (DIM\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

At the end of the lesson, your design will have the following aspect:



## 2.6.1 Tutorial: Changing the Layout of Dimensions



**For this tutorial you need the training file 'DIM\_00.ARD'.**

- ① You will make the dimensions of the design visible, change the appearance of one particular dimension and move its position.

①②③

1.  'DIM\_00.ARD'
2. Make the dimensions visible:

- a. **View** bar: 

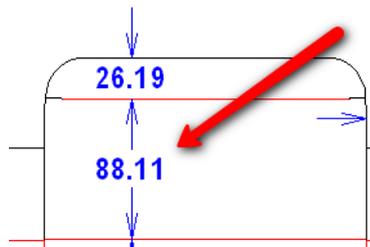
**Note:**  **Layers:** as you can see, **Main Design** is currently the active layer.

- b.  the **Main dimensions** layer.

- c.

 **'Main dimensions'** is now the active layer and a number of dimensions are displayed.

3. Change the layout of the height indication below the crease line of the top closure panel:

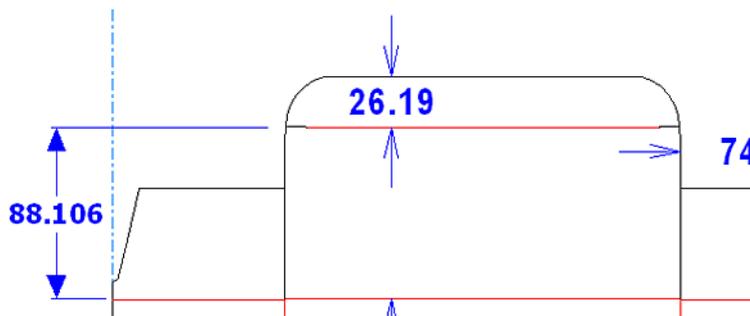


- a.  the dimension to select it.
- b. **Edit > Properties...**
- c.  **Properties**,  **Dimension:**  **Verdana** for **Font**.
- d.  **44.00** for **Size**.
- e.  **3** for **mm Format**.
- f.  the final type in the list for **Arrowhead type**.
- g.

## Notes

4. Move the changed dimension:
  - a. If necessary,  the dimension to select it.
  - b. Drag and drop it to a position to the left of the drawing.

 After making the **Main dimensions** layer active, you have changed the layout of the height indication below the crease line of the second top flap: you have changed the type of font and its size, and you have chosen a different arrowhead. Next, you have changed the way the numbers are displayed. Finally, you have moved the position of that dimension.



## 2.6.2 ☺ Tutorial: Adding Dimensions



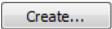
If necessary, you can open the file 'DIM\_01.ARD'.

- ☺ You will create a separate layer for adding another set of dimensions to your design. Then you will set the default font size of dimensions to 48. Finally, you will add a number of dimensions based on each of these tools:

- **Distance Dimension**
- **Auto Aligned Distance Dimension**
- **Radius Dimension**
- **Angle Dimension**
- **Diameter to Circle Dimension**
- 

①②③

1. Create a **Dimensions** layer:

- a. **View** bar: 
- b.  **Layers**: 
- c.  **Create Layer**: ☺ **Dimensions** for **Class**.
- d. 
- e.  **Layers**: ☺ the eye next to the **Main Dimensions** layer to hide it.
- f. 

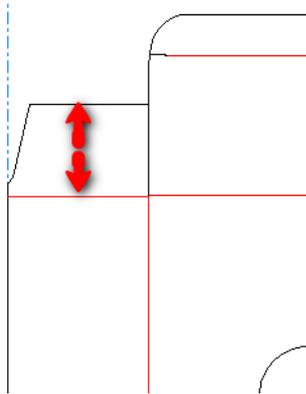
**Note:** The **Line Type** has been set to **Annotation**, the preferred type for dimensions.

## 2. Change the default font size of dimensions:

- a. **Edit** > **Property Defaults...**
- b.  **Properties Defaults**,  **Dimensions**: ☺ **48.00** for **Size (points)**.
- c.  **Properties Defaults**

## 3. Add a height dimension to this dust flap:

## Notes



- a. **Dimension** toolbar: 
  - b.  the top line of the dust flap.
  - c.  the bottom line of the dust flap.
  - d. Move the mouse to the left or the right to change the position of the dimensions: choose a position near the center of the flap, then 
4. Add width dimensions to each of the central parts of your design:
    - a. **Dimension** toolbar: 

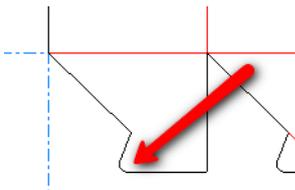
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



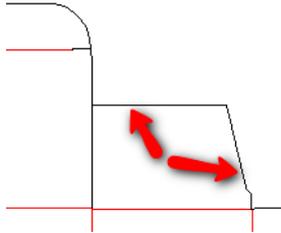
- b.  the leftmost line of the design.
- c.  the rightmost line.

**Note:** Every time the pointer moves across a line, a dimension is added.

- d. Move the mouse up or down to change the position of the dimensions: choose a position near the top of the main panels of the design, then 
5. Add a radius dimension to the arc of this dust flap:



- a. **Dimension** toolbar: 
  - b.  the arc of the dust flap.
  - c. Move the mouse up or down to change the position of the dimension that is added: choose a position below and to the left of the arc, then 
6. Add an angle dimension to this dust flap:



- a. **Dimension** toolbar: 
- b.  the top line of the dust flap.
- c.  the right line.
- d. Move the mouse downwards to ensure that the inner angle is calculated, then 

**Note:** The value is 103°.

7. Add the diameter dimension to the circle cutout:

- a. **Dimension** toolbar: 

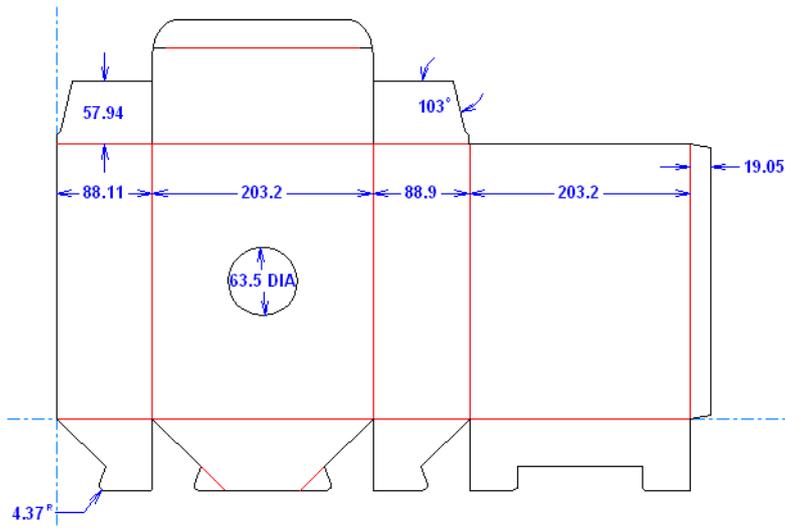
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- b.  a point on the circle.
- c. Move the mouse to change the position of the dimension that is added: place it within the circle, then 

 First, you have added a layer to your design for displaying the dimensions. In the process, you have hidden another layer displaying dimensions. Then you have changed the default font size for the dimensions: you have set it to 48. To conclude, you have added a number of specific dimensions to your design, as shown in the end result:

# Notes



### 2.6.3 ☺ Tutorial: Adding Temporary Dimensions

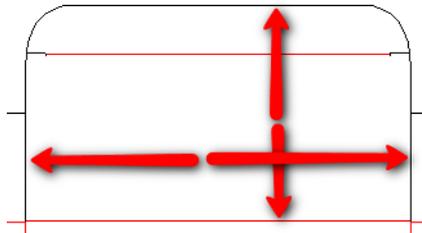


If necessary, you can open the file 'DIM\_02.ARD'.

- ☉ You will add and remove temporary height and width dimensions for the top closure panel and the upper tuck flap of the design. Temporary dimensions can be added to the **Main Design** layer; there is no need to put them in a **Dimensions** layer.

①②③

1. Activate the **Main Design** layer:
  - a. **View bar:** Dimensions
  - b. **Layers:** ☺ **Main Design**
  - c.
2. Add temporary height and width dimensions to the top closure panel and the upper tuck flap:



- a. **Dimension toolbar:**
- b. **Dimension toolbar:**

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

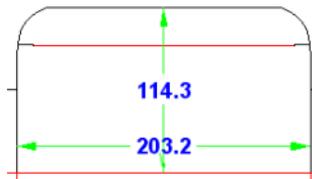


- c. ☉ the top line of the upper tuck flap.
- d. ☉ the bottom line of the top closure panel.
- e. Move the mouse to the left or the right to change the position of the dimension: choose a position near the center of the panel, then ☉

## Notes

**Note:** Temporary dimensions have green arrows.

- f.  the left line of the top closure panel.
  - g.  the right line of the top closure panel.
  - h. Move the mouse upwards or downwards to change the position of the dimensions: choose a position near the bottom of the panel, then 
-  You have added temporary dimensions to the top closure panel and the upper tuck flap:



3. **Dimension** toolbar:  to remove the temporary dimensions.

 You have added temporary dimensions for the height and the width of the top closure panel and the upper tuck flap. Afterwards you have removed them again.

### 2.6.4 ☹ Tutorial: Adding Dimensions with the Auto Dimension Tools



If necessary, you can open the file 'DIM\_02.ARD'.

- ☉ The auto dimension tools allow you to create dimensions in a quick and efficient way. In this tutorial, you will start with creating a dedicated layer. You will automatically add the main dimensions of the design. This tool will start with the largest panels and avoid to dimension identical flaps. Next you create a new layer for trying out the **Auto Dimension Window** tool. With this tool, you will add dimensions for width, height, and for the radius of an arc.

1|2|3

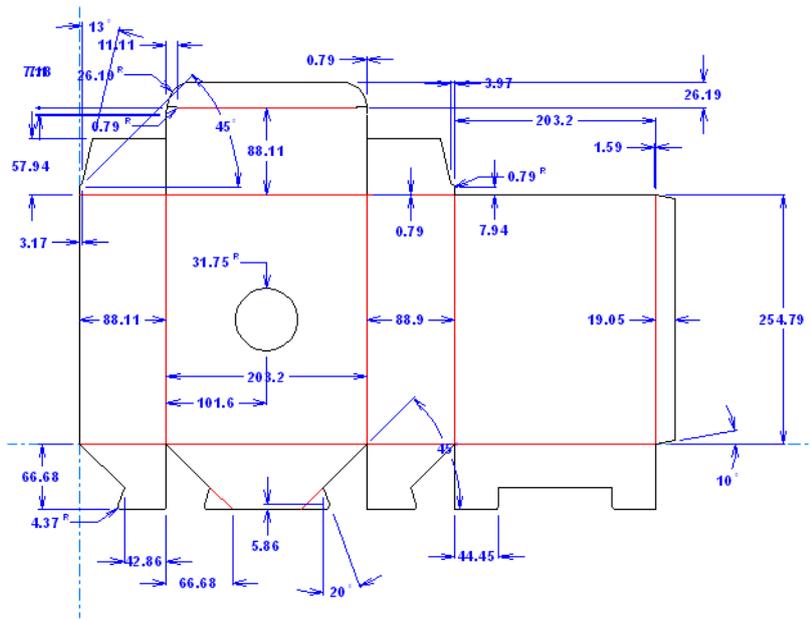
#### 1. Create an **AutoDim1** layer:

- a. **View** bar: Main Design
- b. **Layers**:
- c. **Create Layer**: ☹ **Dimensions** for **Class**.
- d. AutoDim1 for **Name**.
- e.
- f. **Layers**: ☹ the eye next to the **Dimensions** layer to hide it.
- g.

#### 2. Create auto dimensions for the design:

- a. **Dimension** toolbar:
- b. ☹ a point outside the top right corner of your design to choose as an extension point.
  - ☹ You have added auto dimensions:

## Notes

3. Create an **AutoDim2** layer:

- a. **View bar:** 
- b. **Layers:** 
- c. **Create Layer:**  **Dimensions** for **Class**.
- d.  AutoDim2 for **Name**.
- e.
- f. **Layers:**  the eye next to the **AutoDim1** layer to hide it.
- g.

4. Add some dimensions using the **Auto Dimension Window** button:

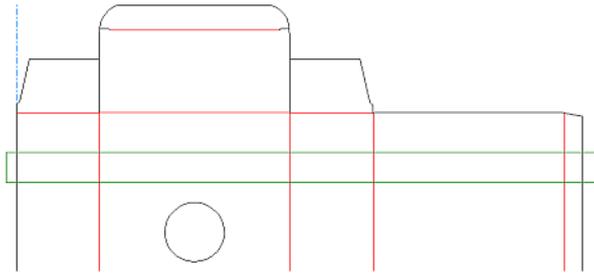
- a. **Dimension** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



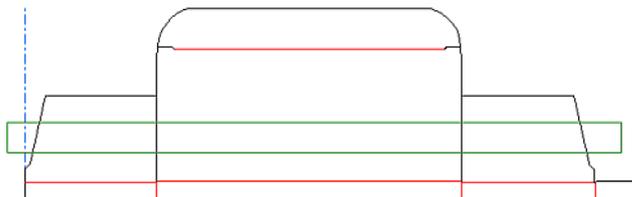
- b. Draw a rectangle across the vertical lines of the central panels, including the glue flap:

## Notes



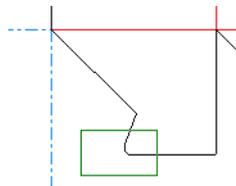
⊖ You have added the width dimensions.

- c. Draw a rectangle across the top closure panel and dust flaps:



⊖ You have added the width dimensions for the top closure panel and dust flaps.

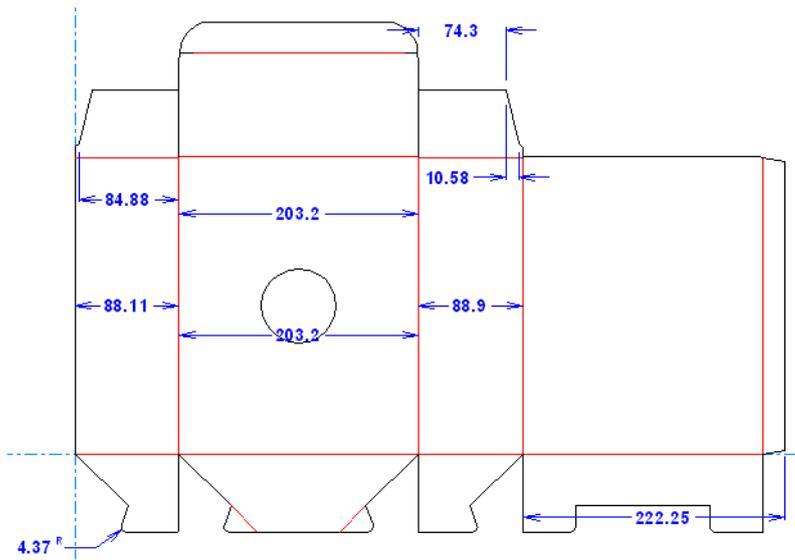
- d. Draw a rectangle around the bottom left corner of the design to add a radius dimension for the arc:



⊖ In the currently hidden **AutoDim1** layer, you have first added the main dimensions of the design with the **Auto Dimension** tool.

Next, you have added the width dimensions of the central panels and the top closure panel and dust flaps, and the radius dimension of the bottom left arc. You have done this in a separate layer, **AutoDim2**, and by using the **Auto Dimension Window** tool.

# Notes



## 2.6.5 ☺ Tutorial: Adding Text



If necessary, you can open the file 'DIM\_03.ARD'.

- ☺ You will create a separate **Annotation** layer for adding text to your design. In this layer, you will add the text `Place UV Coating here`. You will choose the size and the color of the text, and put it in bold. You will subsequently move the text and change it to `Place Coating here`.

①②③

1. Create an **Annotation** layer:

- a. **View bar:** AutoDim2
- b. **Layers:** Create...
- c. **Create Layer:** ☺ **Annotation** for **Class**.
- d.
- e. the eye next to the **AutoDim2** layer to hide it.
- f.

**Note:** *The Line Type has been set to Annotation.*

2. Add the text `Place UV Coating here`:

- a. **Annotation** toolbar: **T**
- b. in the white space below the design.
- c. **Paragraph Text:** ☺ **72.00** for **Size**.
- d. black for **Color**.
- e.
- f. `Place UV Coating here` for **Text**.
- g.

## 3. Move the position of the text to the right:

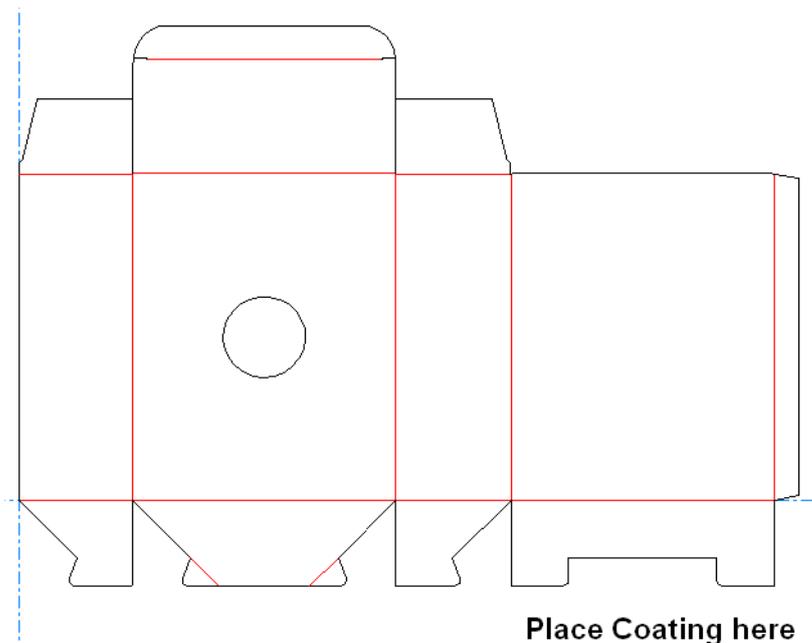
- a. **Edit** toolbar:
- b. inside the text to select it.
- c. Hold down **Shift** and drag the text to the right.

## Notes

**Note:** You use **Shift** to move a selection along a straight line.

4. Change the existing text:
  - a. **Edit > Properties...**
  - b.  **Properties:** delete UV in the **Text** field.
  - c. 
5.  a random point on the workspace to deselect the text.

 You have added an **Annotation** layer to your design. In this layer, you have at first added the text `Place UV Coating here`. You have put this text in bold and in black, and given it a size of **72.00** points. You have moved your text along a straight line to the right. Finally, you have deleted a word, `UV`, from your text.



## 2.6.6 ☺ Tutorial: Adding a Detail



If necessary, you can open the file 'DIM\_04.ARD'.



See **Builder > Annotations and Dimensions**

*Details* are magnifications of a user-defined area of the design that show the construction in detail.



A detail is composed of:

- A **Clipping window**, containing the part of the design that you want to see magnified
- A **Detail window**, containing the magnification itself

You will add such a detail for the top right corner of the upper tuck flap of your design. You will change the accompanying name of the **Detail window** and its layout. At the same time, you will change the scale of the magnification. You will move the **Detail window**. You will add two dimensions to it: one for height and one for the radius of the arc.

1 2 3

1. Create a **Detail** layer:

a. **View** bar: Annotation

b. **Layers**:

c. **Create Layer**: **Annotation** for **Class**.

d. **Detail** for **Name**.

e.

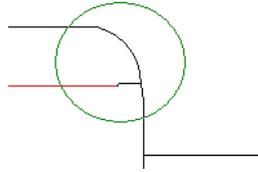
f. **Layers**:

2. Add the detail:

a. **Annotation** toolbar:

b. Draw a circle around the right, arched corner of the upper tuck flap, including a part of the top line and of the crease line, to create the **Clipping window**:

## Notes



- c. Draw a second, bigger circle to the top and the right of the **Clipping window** to create the **Detail window**.

**Note:** The default name for the **Detail window** is **Detail**.

3. Change the name of the **Detail window** and its layout:
- the detail.
  - Properties**, **Text**: **B**
  - 56 for **Font Size**.
  - Slit Lock x 5 for **Text**.
  -
4. Change the magnification scale:
- the detail.
  - Properties**, **Detail**: 5 for **Scale**.
  -
5. Move the **Detail window**:
- Annotation** toolbar:

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- Adjust Detail** status bar:  **Move Detail**
  - Drag the **Detail window** slightly upwards.
6. Add a height and a radius dimension to the detail:
- Dimension** toolbar:
  - Use Dimensions Layer?**:
  - In the **Detail window**, the top line.

- d.  the crease line.
- e. Move the mouse to the left or the right to change the position of the dimension: choose a position near the left of the window, then 

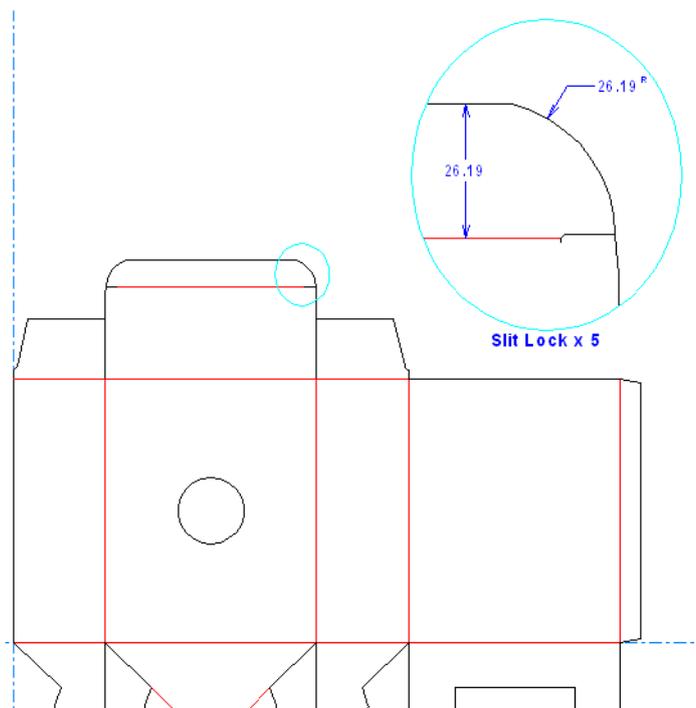
- f. **Dimension** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- g.  the arc.
- h. Move the mouse to change the position of the dimension: choose a position outside the flap, then 

 By using a detail, you have added a magnification of the central top flap of your design. You have changed the **Detail window** name and its layout. You have also changed the scale of the magnification. You have moved the **Detail window** upwards. Finally, you have added two dimensions inside the detail: a height and the radius of the arc.



## Notes

## Notes

## 2.6.7 ☹ Tutorial: Adding Line Type Labels



If necessary, you can open the file 'DIM\_05.ARD'.

- ☉ You will add a line type label for two of the lines in the design. During the process, you will change the layout of the labels.

①②③

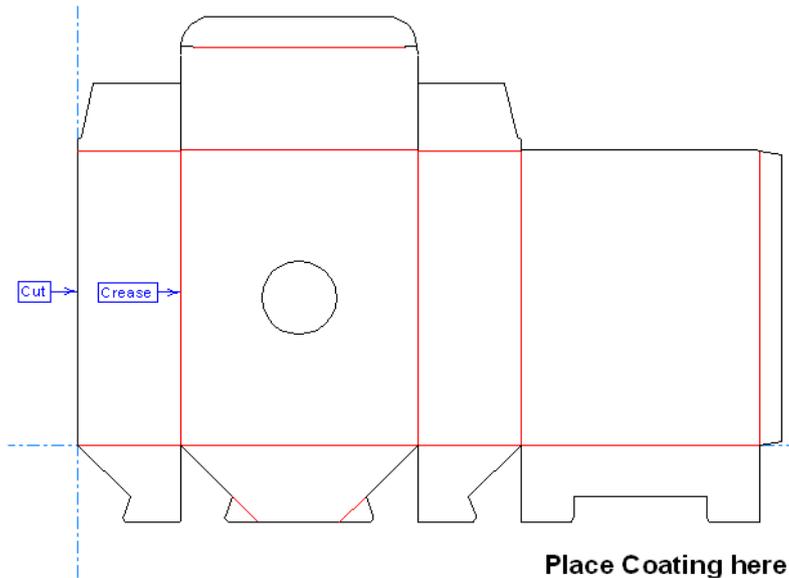
1. Activate the **Annotation** layer:
  - a. **View** bar:
  - b. **Layers**: ☹ **Annotation**
  - c. the eye next to **Detail** to hide this layer.
  - d.
2. **View** toolbar:
3. Choose a layout for the line type labels:
  - a. **Annotation** toolbar:
  - b. **Line type label** status bar:
  - c. **Line type label properties**: ☹ 40 for **Font Size**.
  - d.  **Border**
  - e. Click the **Update Property Defaults** button to apply this layout for every line type label that you will add.
  - f.
4. Label a cut line:
  - a. the leftmost cut line.
  - b. Move the mouse to position the line label: choose a position to the left of the line.

**Note:** Afterwards you can still change the position by using the **Select** button on the **Edit** toolbar: depending on where you click, you can move the arrow, the text box, or both at once.

- c.

5. Repeat step 4 to label the first crease line to the right of the cut line you have just labeled.

 Having first determined the layout of the line type labels, you have added two of them: one for a cut line and one for a crease line.



## Notes

## Notes

## 2.6.8 ☺ Tutorial: Hatching



If necessary, you can open the file 'DIM\_06.ARD'.

- ☉ Hatching is used to single out an area of the design, for instance to mark it as a glue assist area.

In this tutorial, you will create two hatched areas:

- Inside a cutout shape
- Inside a glue flap, with specific hatch properties

①②③

1. Create a hatched area inside the inner area of the cutout shape in the front panel:

a. **Annotation** toolbar: 

b. **Hatch** status bar: 

**Note:** You can also select a specific hatch from a catalog by selecting it from the <custom> menu.

c.  **Hatch Properties:**  **Crosshatch.**

d.  3 for **Width between.**

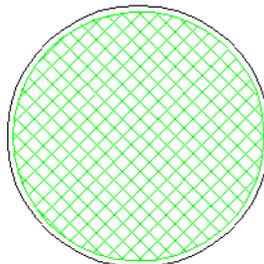
**Note:** You can also select a specific hatch from a catalog by enabling **Catalog.**

e. 

f. **Hatch** status bar:  1.5 for **Offset from cuts.**

g.  inside the cutout shape.

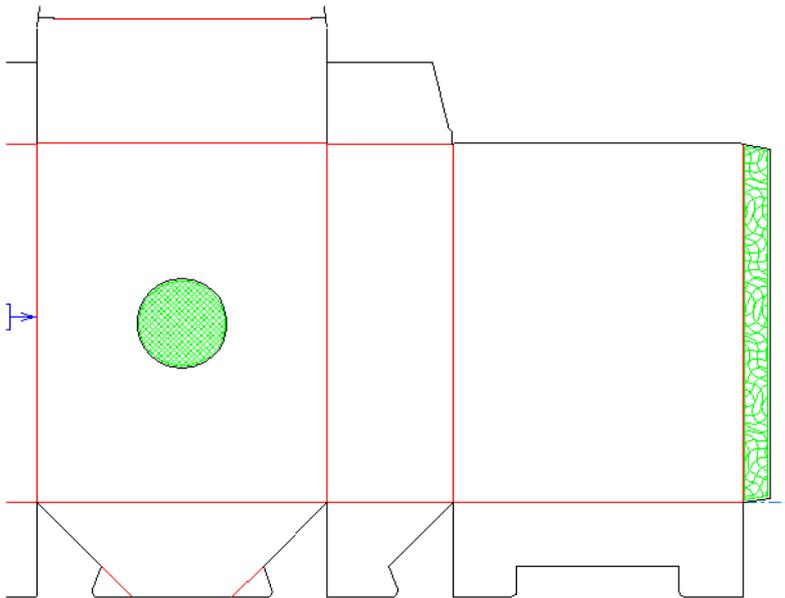
You have created this hatched area:



2. Create a hatched area with specific properties inside the glue flap:
  - a. **Hatch** status bar:  Wave for <custom>.
  - b.  inside the glue flap.
  - c.  **Hatch Layer Warning:**  Create "Annotation" layer appropriate for the hatch
  - d. 

*The hatch will be placed in the **Annotation (2)** layer.*

 You have added a hatched area inside a cutout shape in the front panel by using the **Hatch** tool. Before actually creating the hatched area, you have changed the properties by choosing for a crosshatch and by changing the distance between the hatch lines and the distance from the cut line. Then you have added a hatched area with a wave pattern to the glue flap of the main design.



## Notes

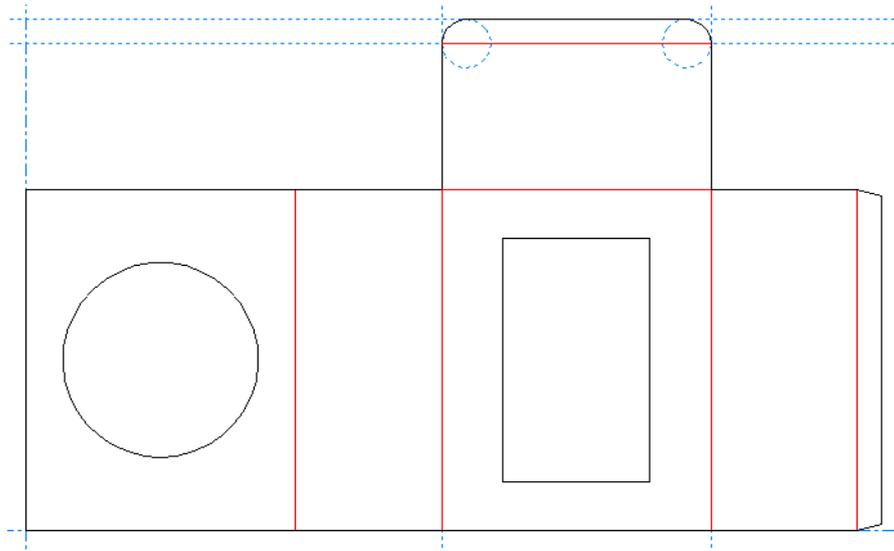
## Notes

## 2.6.9 Recap Exercise

For this exercise you start from the result of the previous recap exercise, saved as `Recap01.ARD`.

**Start situation**

This is what your design looks like at the start of the exercise:

**Tasks**

Add the following layers:

- **Annotation**
- **Dimensions**

Add the dimensions shown in the end situation below to the **Dimensions** layer.

Add the texts and the arrows as shown in the end situation below to the **Annotation** layer.

Change the first and the third vertical crease line to **10 10 perf.**

Add the line type labels as shown in the end situation below to the **Annotation** layer.

**Tools**

You can use the following tools to complete this exercise:

- **Layers**
- **Auto Aligned Distance Dimension**
- **Distance Dimension**
- **Text**

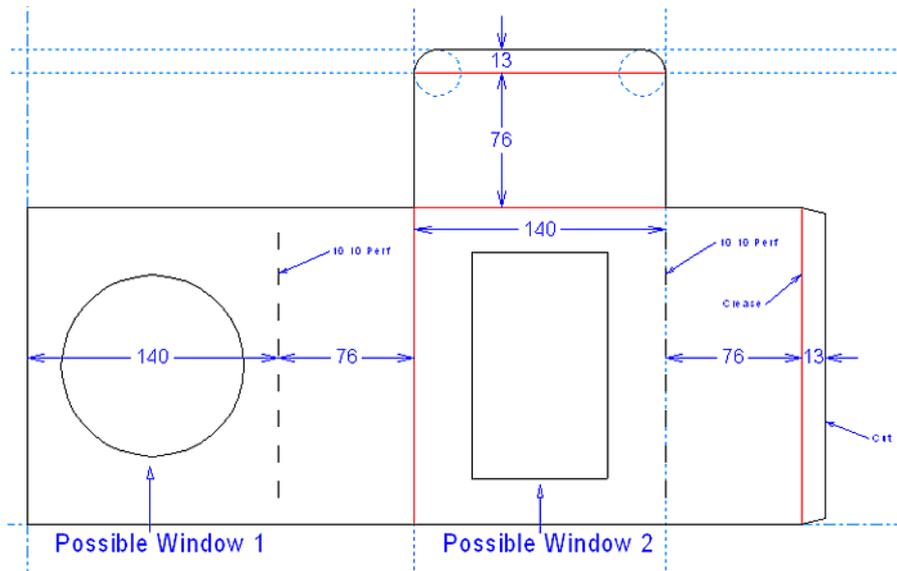
- Arrow
- Line type label

**Note:**

Save your result as *Recap02.ARD*. You will need this file for the next recap exercise.

**End situation**

This is what your design should resemble at the end of the exercise:

**Values**

Your design should have the following values:

Item	Parameter	Value
Text	Size	40

## 2.7 Edit Tools

---

In this lesson you will learn about a number of different ways of editing design objects.

### Changing physical properties

 See **Designer > Changing geometry > Changing physical properties**

Changing physical properties of objects means copying, rotating, moving, mirroring them, or making any other change that affects their physical placement. The Edit toolbar and the Adjust toolbar contain most of the commands used to change physical properties. Most tools on the Edit toolbar are disabled until at least one item is selected.

### Editing

In this lesson you will review a number of editing actions and their corresponding tools:

- Moving
- Copying
- Scaling
- Grouping

Apart from these fundamental editing actions, a separate tutorial will be included to cover the action of distributing objects to different layers.

### Moving

The action of moving objects can be performed in a great number of different ways adapted to specific design needs. You will become familiar with:

- Moving to a layer
- Mirroring
- Rotating

### Copying

As with moving, the copying tools provide you with a wide range of specialized tools and options. You will become familiar with copying:

- With an offset value
- While rotating

- With repeated copies
- While mirroring
- While mirroring about a line
- Quarter or half designs to create full ones

## Toolbar and buttons

### Edit toolbar



During this lesson, you will use the following buttons:

Button	Name
	<b>Move To Layer</b>
	<b>Move</b>
	<b>Vertical Mirror about Center</b>
	<b>Mirror about Vertical</b>
	<b>Copy Mirror about Vertical</b>
	<b>Repeated Copy</b>
	<b>Offset Lines</b>
	<b>Scale</b>
	<b>Differential Scale</b>
	<b>Copy Times Rotate</b>
	<b>Copy Times Offset</b>
	<b>Group</b>
	<b>Ungroup</b>
	<b>Copy Mirror about Line</b>
	<b>Rotate Left 90</b>
	<b>Rotate Right 90</b>

## Notes

Button	Name
	<b>Copy Mirror about Horizontal</b>
	<b>Copy</b>
	<b>Complete design from half/quarter</b>
	<b>Rotate 180</b>

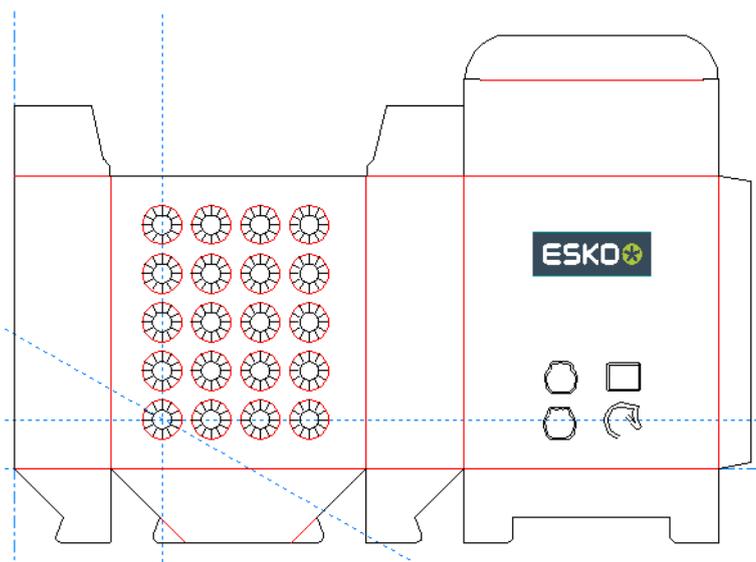
## Tutorials

Based on designs contained in a single training file, you will first follow five separate tutorials:

- [Tutorial: Moving to a Layer](#) on page 127
- [Tutorial: Moving and Mirroring](#) on page 129
- [Tutorial: Creating Mirrored and Repeated Copies](#) on page 133
- [Tutorial: Copying with an Offset Value](#) on page 139
- [Tutorial: Using Special Edit Tools](#) on page 142

In principle you only need the training file with the initial situation (EDI\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

Having completed these tutorials, your design will have the following aspect:



There are moreover five additional tutorials, based on individual training files:

- [Tutorial: Creating Rotated Copies](#) on page 149

- [Tutorial: Rotating and Copying While Mirroring](#) on page 155
- [Tutorial: Copying While Mirroring About a Line](#) on page 159
- [Tutorial: Completing a Design from a Quarter](#) on page 162
- [Tutorial: Distributing Copied Objects to Layers](#) on page 164

## Notes

## Notes

## 2.7.1 Tutorial: Moving to a Layer



**For this tutorial you need the training file 'EDI\_00.ARD'.**

- ☉ You are working in a design where different types of objects appear in the same layer. This needlessly complicates the design and endangers the final outcome. You will make the design more transparent by moving the following object types to their respective layers:

- Dimensions
- A cutout
- A graphic

①②③

1.  'EDI\_00.ARD'
2. Select the dimensions:
  - a. **Edit** toolbar: 
  - b. **Select By:** status bar: 
  - c. **Select By:** status bar: 
3. Move the dimensions to a different layer:
  - a. **Edit** toolbar: 
  - b.  **Move To Layer:**  **Overall dimensions**
  - c. 
4. Select the rectangle in the left side panel:
  - a. **Select By:** status bar: 
  - b. **Select By:** status bar:  **(Selection of connected lines across intersections)**
  - c.  the rectangle in the first panel.
5. Move the selected rectangle to a different layer:
  - a. **Edit** toolbar: 
  - b.  **Move To Layer:**  **Window and Cutouts**
  - c. 
6. Select the graphic in the rear panel:

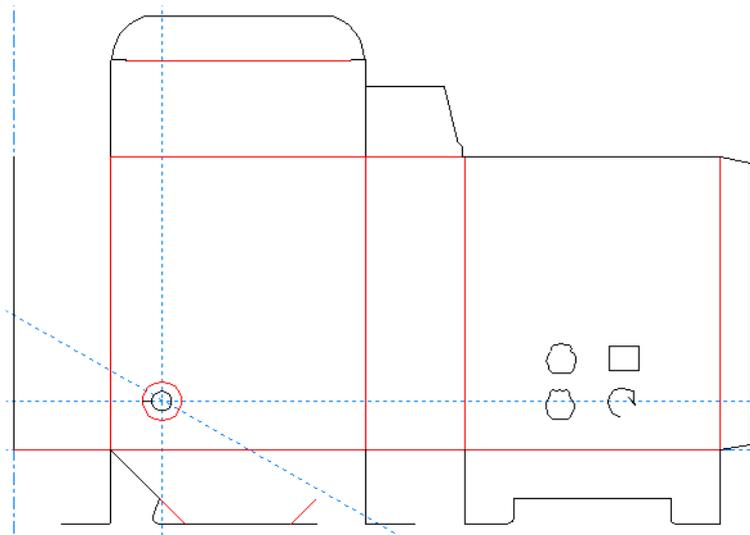
## Notes

- a. **Select By:** status bar: 
  - b.  the edge of the graphic to select it.
7. Move the selected graphic to a different layer that does not yet exist:
- a. **Edit** toolbar: 
  - b.  **Move To Layer:**
  - c.  **Create Layer:**  **Graphics**
  - d.
  - e.  **Move To Layer:**
8. Hide the **Graphics** layer:
- a. **View** bar:  **Graphics**
  - b.  **Layers:**  **Main Design**
  - c.  the eye next to the **Graphics** layer to hide it.
  - d.

 You have used the **Move To Layer** tool for the following three tasks. You have moved:

- The dimensions to an **Overall dimensions** layer.
- A rectangular cutout to a **Window and Cutouts** layer.
- A graphic to a **Graphics** layer that you have created on the spot.

To finish, you have hidden the newly created **Graphics** layer.



## Notes

## 2.7.2 ☺ Tutorial: Moving and Mirroring



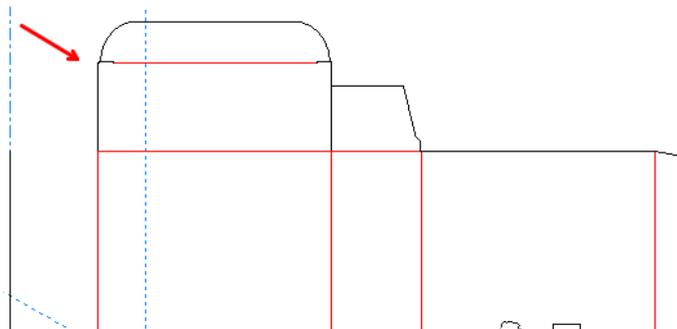
If necessary, you can open the file 'EDI\_01.ARD'.

- ☉ You need to make some changes in your design. These changes involve:
  - Moving the top closure panel and the upper tuck flap
  - Mirroring the top dust flap

The use of specialized tools allows you to perform these tasks without having to re-draw anything.

①②③

1. Prepare you selection:
  - a. **Select By:** status bar:
  - b. **Select By:** status bar:
2. Do one of the following to select the top closure panel and the upper tuck flap:

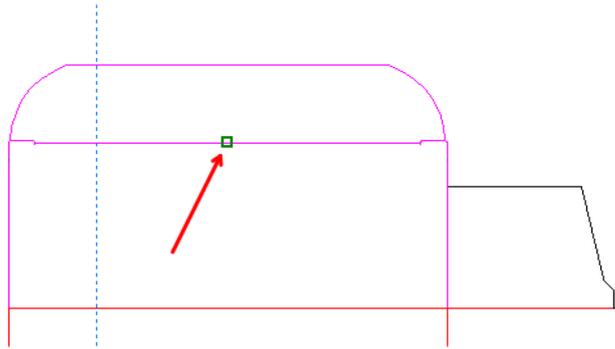


- Draw a rectangle across the top half of the top closure panel and the upper tuck flap.

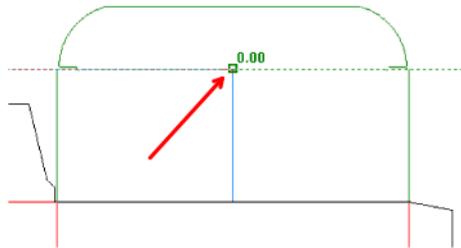
**Note:** Make sure that you don't include other lines.

- the lines of the top closure panel and the upper tuck flap one by one while holding down **Shift** or **Ctrl**.
3. Move the top closure panel and the upper tuck flap:
    - a. **Edit** toolbar:
    - b. the center point of the top crease line of the panel to select it as the **pickup point**:

## Notes



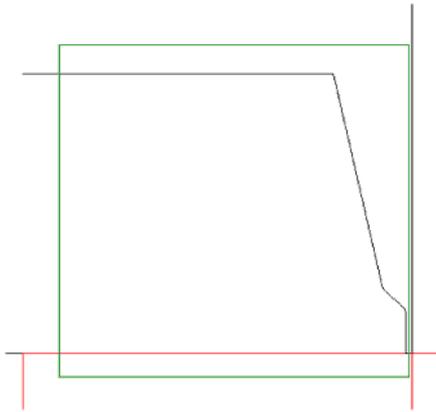
- c.  the point right above the center point of the top line of the fourth panel:



**Note:** To find this point, you can use the **Dynamic Drafting** tool.

4. Correct the line types of the front and the rear panel:
  - a.  the crease line at the top of the front panel to select it.
  - b. **View** bar:  **Cut**, for **Line Type Set**.
  - c.  the cut line at the top of the rear panel to select it.
  - d. **View** bar:  **Crease**, for **Line Type Set**.
5. Mirror the top dust flap:
  - a. Draw a rectangle across the top dust flap, including the crease line and the short cut line at the bottom right:

## Notes



**Note:** Zoom in to make sure that you have the correct selection.

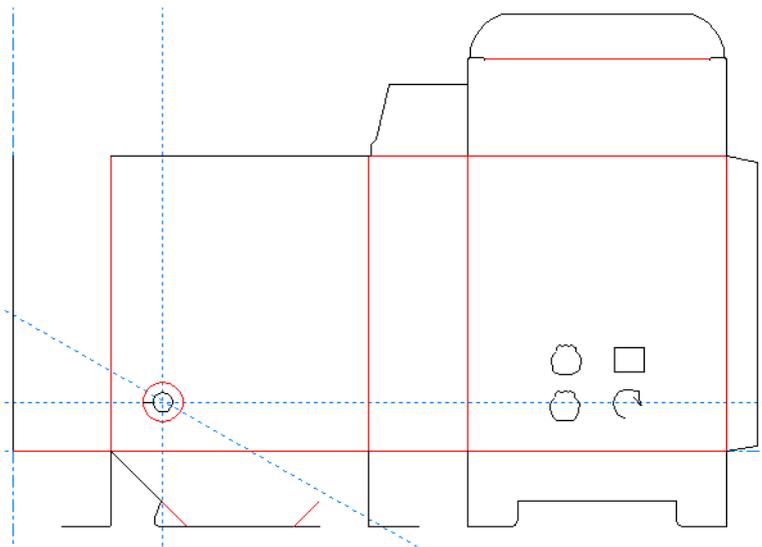
b. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



 You have changed your design by editing it as follows:

- Using the **Move** tool, you have moved the top closure panel and the upper tuck flap from above the front to above the rear panel.
- Using the **Vertical Mirror about Center** tool, you have mirrored the top dust flap.



Notes

## Notes

### 2.7.3 ☺ Tutorial: Creating Mirrored and Repeated Copies

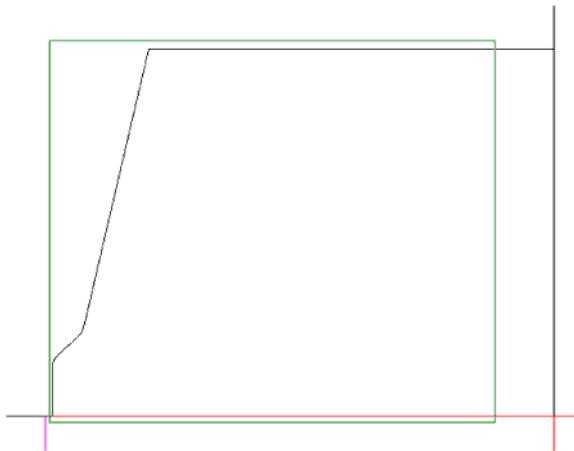


If necessary, you can open the file 'EDI\_02.ARD'.

- ☉ In your design, the top left dust flap is still missing and the bottom dust flaps are incomplete:
  - For the top left dust flap you can use a mirrored copy of the dust flap of the third panel.
  - For the bottom dust flaps you can copy, mirror and move an existing group within the second bottom flap.

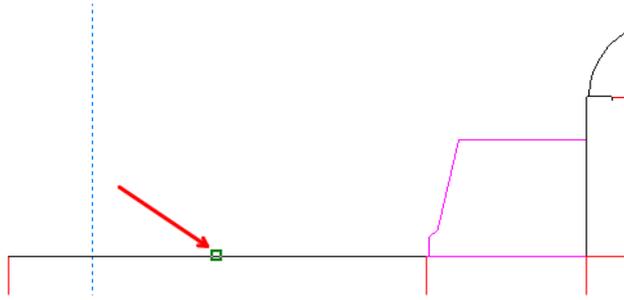
①②③

1. Start creating a top dust flap for the left side panel:
  - a. Draw a rectangle across the top dust flap, including the crease line and the short cut line at the bottom left:



- b. **Edit** toolbar: .
- c. ☉ the center point of the top line of the front panel to select it as a **pickup point**:

## Notes



d. the same point again.

*By clicking this point twice, you have ensured that the two flaps are symmetrically mirrored. This is a fast and accurate way of working.*

2. Complete the dust flap:

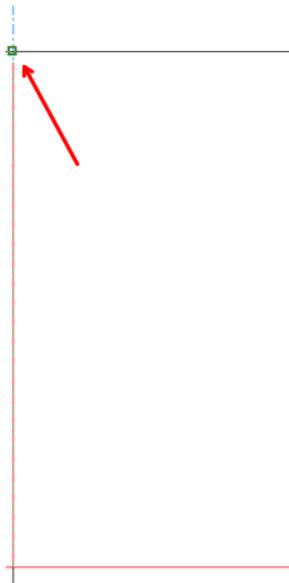
a. **Geometry** toolbar:

b. the top left point of the first panel.

c. **Geometry** toolbar:

d. **View** bar: **Cut**, for **Line Type Set**.

e. the point where the Y-axis and the top of the flap intersect:



*You still need to trim the overcut on the top line and the crease line.*

f. **Adjust** toolbar: (**Trim/Extend One Line**)

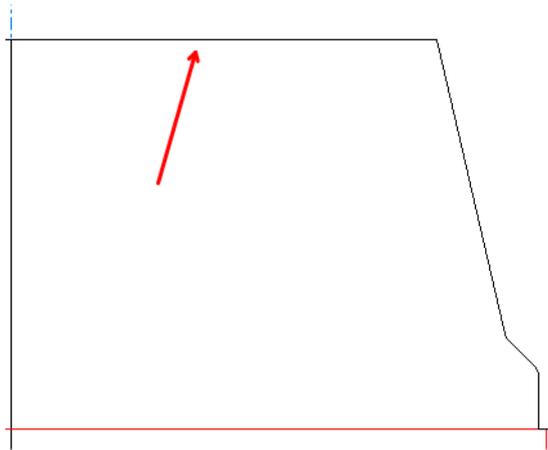
## Notes

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

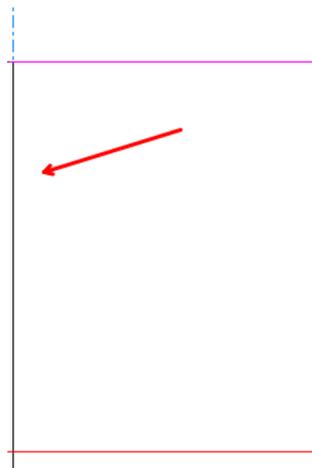


(Trim/Extend Two Lines).

- g.  the part of the cut line to the right of the Y-axis:

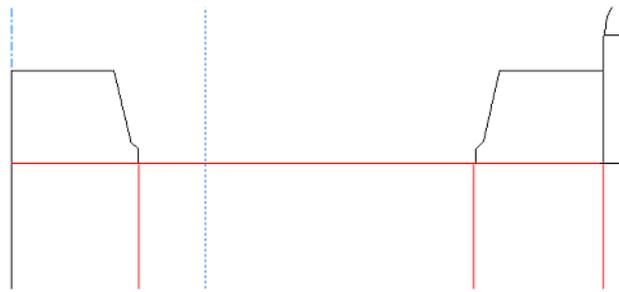


- h.  the left line of the flap:



- i.  the crease line.
- j.  the left line of the flap.
-  You have completed the dust flap:

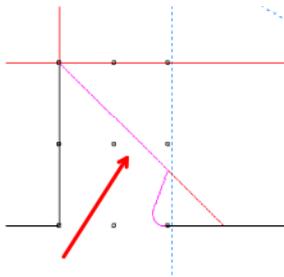
## Notes



3. Complete the bottom flaps of the first three panels:

a. **Edit** toolbar: 

b.  the left line of the second bottom flap to select the group containing the rounded corner:

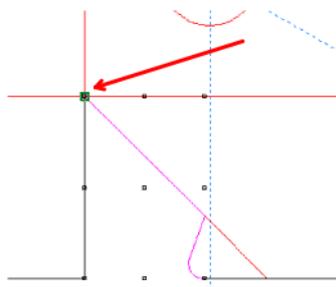


c. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

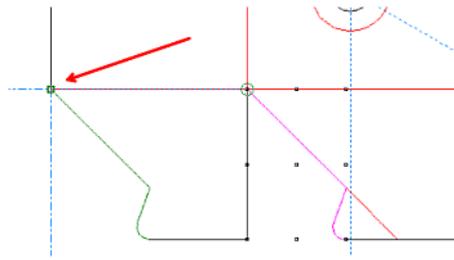


d.  the top left point of the group to select it as a **pickup point**:



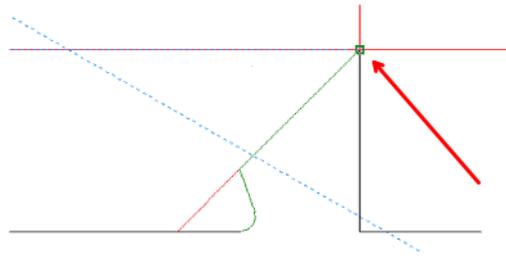
e.  the bottom left point of the first panel:

## Notes

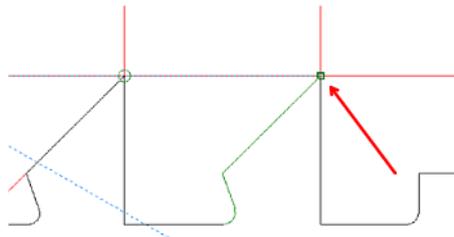


f. **Repeated Copy** status bar: 

g.  the bottom right point of the front panel:



h.  the bottom right point of the third panel:

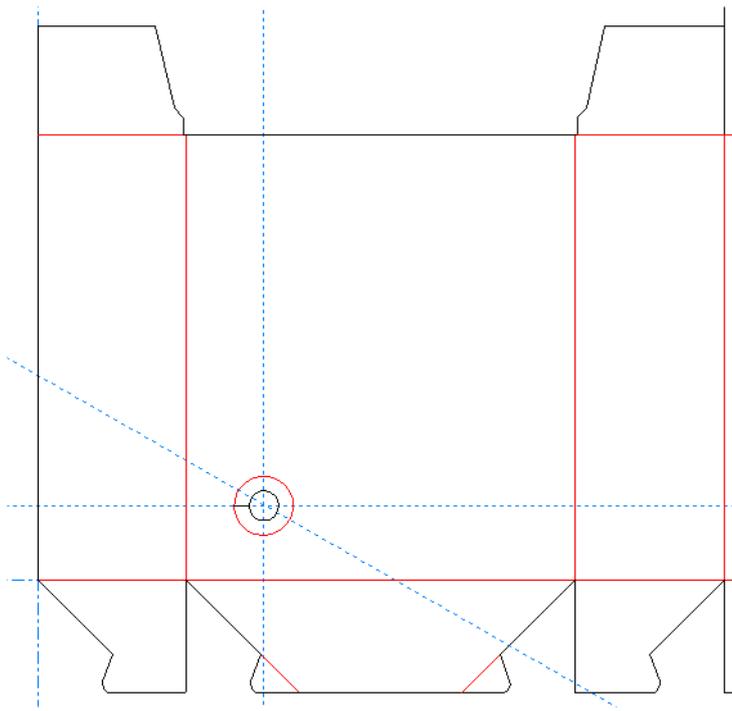


4.  to de-activate 

 You have selected the top dust flap of the right side panel. You have added a top dust flap to the left side panel by using the **Copy Mirror about Vertical** tool.

You have used the **Repeated Copy** tool to complete the bottom flaps of your design. In order to create the bottom flaps for the second and third panel you had to use an option on the **Repeated Copy** Status bar: **Mirror vertically**.

Notes



## Notes

## 2.7.4 ☺ Tutorial: Copying with an Offset Value



If necessary, you can open the file 'EDI\_03.ARD'.

- ☉ You want to change your design by adding a number of copies of existing objects with an offset value. More specifically you want to create a bigger copy:
  - Of a shape
  - Of a shape that was drawn using beziers
  - Of a rectangle, while at the same time creating rounded corners
  - Of a shape with a sharp corner

①②③

1. **View** toolbar:  and draw a rectangle around the cutout shapes in the rear panel.
2. Create a bigger copy of the top left shape:
  - a. **Select By:** status bar:  (**Selection of connected lines across intersections**)
  - b.  the shape to select it.
  - c. **Edit** toolbar: 
  - d. Drag the pointer to the outside of the shape until the offset value is set to 1.
  - e. 
3. Create a bigger copy of the bottom left shape:
 

**Note:** *This shape was drawn with beziers.*

  - a.  the shape to select it.
  - b. **Edit** toolbar: 
  - c. Drag the pointer to the outside of the shape until the offset value is set to 1
  - d. 
4. Create a bigger copy with rounded corners of the rectangle:
  - a.  the rectangle to select it.

- b. **Edit** toolbar: 
- c. **Offset Lines** status bar:  **Round corners**
- d. Drag the pointer to the outside of the rectangle until the offset value is set to 1

**Note:** *If you were to create a smaller version of the rectangle, the corners would not be rounded.*

- e. 
5. Create a bigger copy of the bottom right shape:
- a.  the shape to select it.
- b. **Edit** toolbar: 
- c. Drag the pointer to the outside of the shape until the offset value is set to 2.00
- d. 

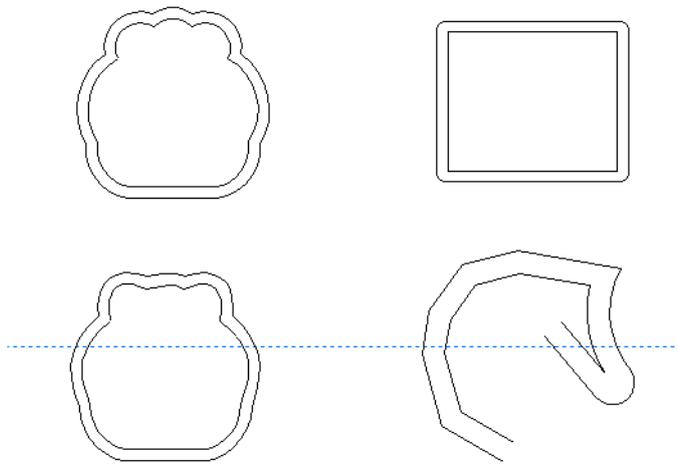
**Note:** *Notice how, even without **Round corners** selected, there is one rounded corner in the offset shape. This happens because a sharp corner there would be more than twice the offset distance.*

6. **View** toolbar: 

 You have created four bigger copies of existing shapes. This allowed you to explore the following aspects of the **Offset Lines** tool:

Shape	Aspect
Top left	Creating a copy with an offset value of an existing shape
Bottom left	Creating a copy with an offset value of an existing shape that was drawn with beziers
Top right	Creating a rounded-corner copy with an offset value of an existing shape
Bottom right	Enforced rounded corner to keep the offset shape within a 200% differential of the defined offset value

## Notes



## 2.7.5 ☺ Tutorial: Using Special Edit Tools



If necessary, you can open the file 'EDI\_04.ARD'.

- ☺ You will fit a graphic to a print registration rectangle. In order to do this, you will have to scale it differentially. Next, you will complete a shape by creating rotated copies of an existing line. You want to make three copies of the shape along a horizontal line. Finally, you want to add three copies of the four shapes along a vertical line. For this, you will need to group the initial four shapes.

①②③

1. Prepare your workspace:
  - a. **View bar:** 
  - b. **Layers:**  the left column next to the **Print Registration** layer to display it.
  - c.  the left column next to the **Graphics** layer to display it.
  - d. 
2. Scale the graphic:
  - a. Draw a rectangle around the graphic in the rear panel to select it.

- b. **Edit toolbar:** 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



**Note:** With the **Scale** tool, you would keep the logo undistorted, but you could not make it exactly match the print registration rectangle.

- c.  the center point of the graphic to select it as the **fixed point:**

## Notes



- d.  the top left point of the graphic to select it as the **handle point**:

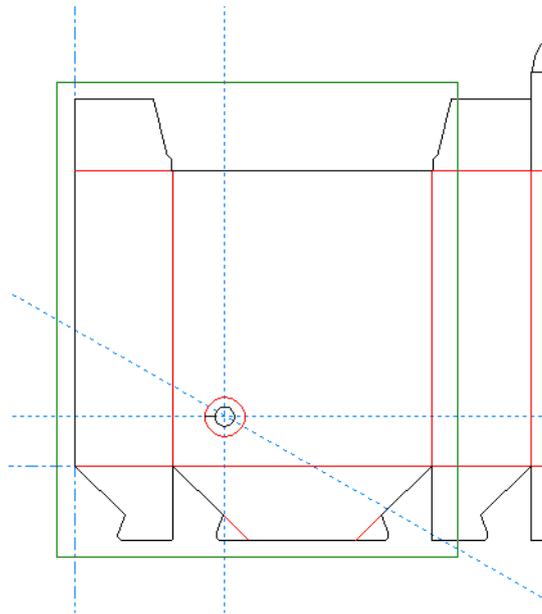


- e. Drag the **handle point** to the top left point of the print registration rectangle and then 
-  *You have fixed the horizontal scale.*
- f.  the same point a second time to fix the vertical scale.
-  *The graphic now perfectly fits the print registration rectangle.*

**Note:** *Differential scale should be used with caution, since it will distort pictures and create 'funny' shapes out of geometry such as arcs and beziers. For artistic work it can be great.*

3. Complete the shape in the front panel:
- View** toolbar: 
  - Draw a rectangle around the two panels on the left:

## Notes



c.  the horizontal line between the two circles to select it.

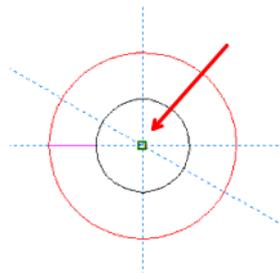
d. **Edit** toolbar: .

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



e. **Copy Times Rotate** status bar:  11 for **Number of copies** and  **Enter**.

f.  the center point of the circles to select it as the **fixed point**:

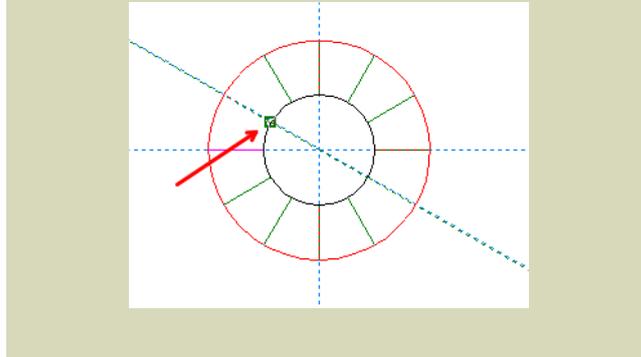


g.  the rightmost point of the horizontal line to select it as the **handle point**.

h. **Copy Times Rotate** status bar:  30 for **Angle** and  **Enter**.

## Notes

**Note:** You can also  the point where the diagonal conline intersects with the smaller of the two circles:



4. Group the newly created shape:
  - a. Draw a rectangle around the biggest the of two concentric circles to select all the elements.

- b. **Edit** toolbar:  (**Group**)

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



(**Ungroup**).

 By grouping the lines, you obtain useful handle points for further actions. You also eliminate the risk of missing lines when selecting it.

5. Create three copies of the shape along a horizontal line:

- a. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

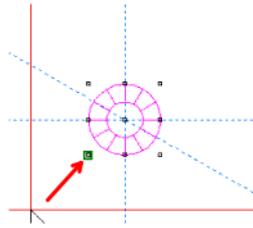


- b. **Copy Times Offset** status bar:  3 for **1st number of copies** and  **Enter**.

**Note:** You can make two sets of copies by entering values for both the **1st number of copies** (X axis) and **2nd number of copies** (Y axis).

- c.  the bottom left point of the design to select it as the **pickup point**:

## Notes



- d. Drag the pointer slightly to the right.
- e. **Copy Times Offset** status bar:  0 for **Angle** and  **Enter**.
- f. **Copy Times Offset** status bar:  25 for **X** and  **Enter**.

**Note:** Each one of these copies is also grouped.

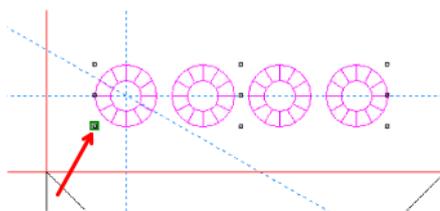
6. Group the four shapes and create three copies of the group along a vertical line:
  - a. Add the original shape to the selection by clicking it while holding down **Shift** or **Ctrl**.

**Note:** **Select by:** status bar: make sure  is active.

- b. **Edit** toolbar:  (**Group**)

**Note:** You have now created a group that contains a subgroup (the individual shape that is itself composed of multiple objects). This process is known as nesting groups. In the **Group Tools** flyout toolbar, you have buttons for **Ungroup** and **Ungroup All**, in order to ungroup respectively a single level of nested groups or all the levels.

- c. **Edit** toolbar: 
- d. **Copy Times Offset** status bar:  4 for **1st number of copies** and  **Enter**.
- e.  the bottom left point of the group to select it as the **pickup point**:



- f. Drag the pointer slightly upwards.

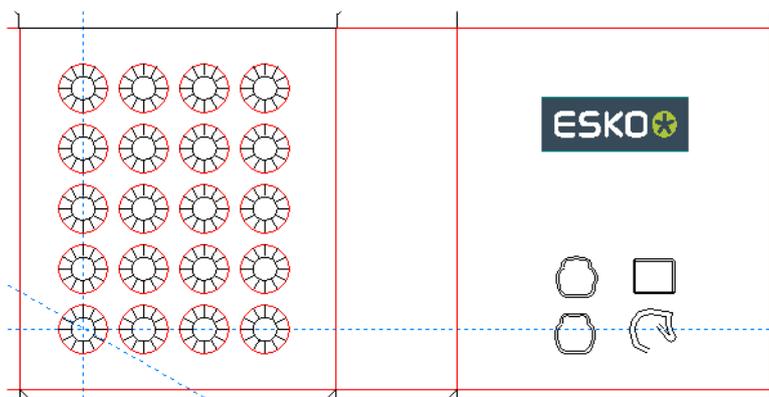
# Notes

- g. **Copy Times Offset** status bar:  0 for **Angle** and  **Enter**.
- h. **Copy Times Offset** status bar:  25 for **Y** and  **Enter**.
- 7. Group the four lines of each four shapes:
  - a.  while holding down **Shift** or **Ctrl** the original line to add it to the selection.
  - b. **Edit** toolbar: .
- 8. **View** toolbar: .

 You have used the **Differential Scale** tool in order to scale a graphic to make it fit a print registration rectangle

You have created a group consisting of 20 shapes that are based on a shape that was already in the design. To achieve this, you had to use a number of tools:

Action	Tool
Copied an existing cut line 11 times and rotated these copies between the outer and the inner circle with an angle of 30 degrees	<b>Copy Times Rotate</b>
Add three copies of the shape along a horizontal line	<b>Copy Times Offset</b>
Group the four shapes thus obtained	<b>Group</b>
Add three copies of the group along a vertical line	<b>Copy Times Offset</b>
Group the four lines thus obtained	<b>Group</b>



Notes

## Notes

## 2.7.6 Tutorial: Creating Rotated Copies



**For this tutorial you need the training file 'EDI\_ADD00.ARD'.**

- ① You want to create two linked shapes for your design. These shapes are identical so that you can create a first one and then make a copy.

The shapes are composed of six pentagons: a central one and five others grouped around it. Having first made an exact copy of the central pentagon, you will copy and rotate it.

The central pentagon is entirely based on the repetition of a single line that needs to be copied and rotated simultaneously a number of times.

①②③

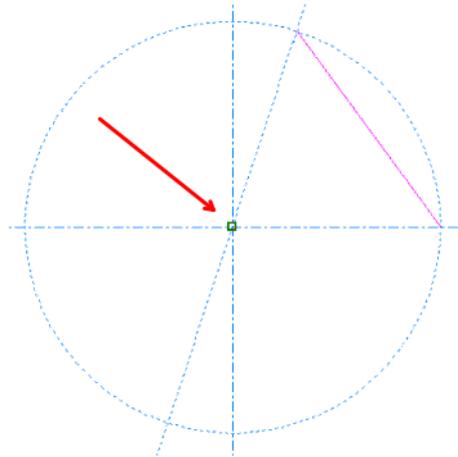
1.  'EDI\_AD00.ARD'
2. Prepare your workspace:
  - a. **View** toolbar:  a couple of times until you see the full conline circle.
  - b.  the cut line to select it.
3. Create a first pentagon:
  - a. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

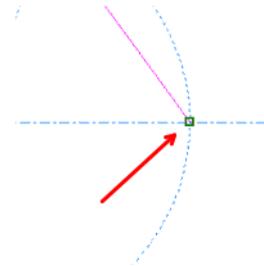


- b. **Copy Times Rotate** status bar:  4 for **Number of copies** and  **Enter**.
- c.  the intersection of the two axes to select this point as the **fixed point**:

## Notes



- d.  the bottom point of the line to select it as the **handle point**:



- e.  the top point of the line.  
 You have created a pentagon.

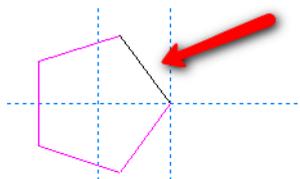
4. Create a second pentagon:

- a. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



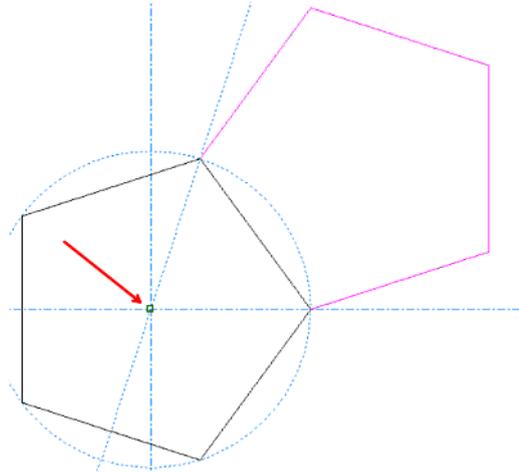
- b.  the one line that is not selected:



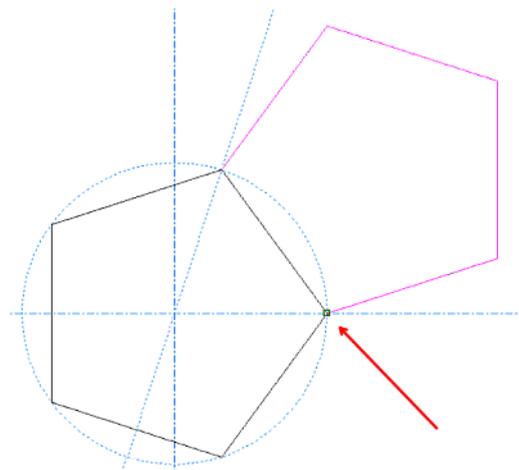
5. Create a first shape based on six polygons:

## Notes

- a. **Edit** toolbar: 
- b. **Copy Times Rotate** status bar:  4 for **Number of copies** and  **Enter**.
- c.  the intersection of the two axes to select this point as the **fixed point**:

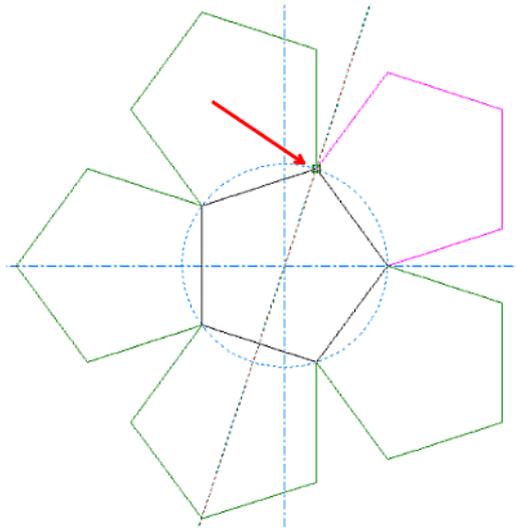


- d.  the bottom point of the one side the two pentagons have in common to select this point as the **handle point**:



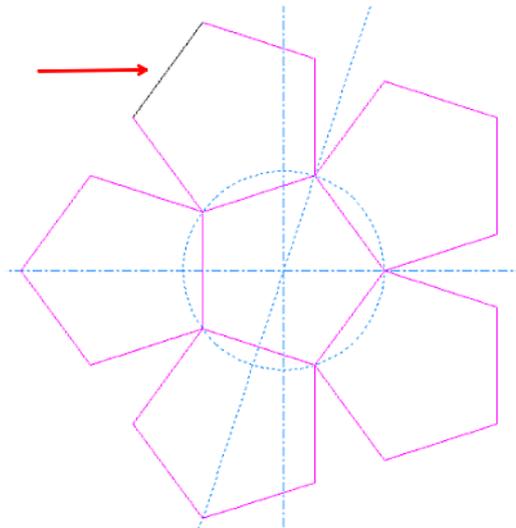
- e.  the top point of the one side the two pentagons have in common:

## Notes



6. Change the interior lines of the shape from cut to crease lines:
  - a.  the interior lines one by one while holding down **Shift** or **Ctrl**.
  - b. **View** bar at the top:  **Crease** for **Line Type Set**.
7. Create a second shape based on six pentagams:
  - a. Draw a rectangle around the shape to select it.
  - b.  the top left line of the shape while holding down **Shift** or **Ctrl** to deselect it.

**Note:** If necessary, first click .



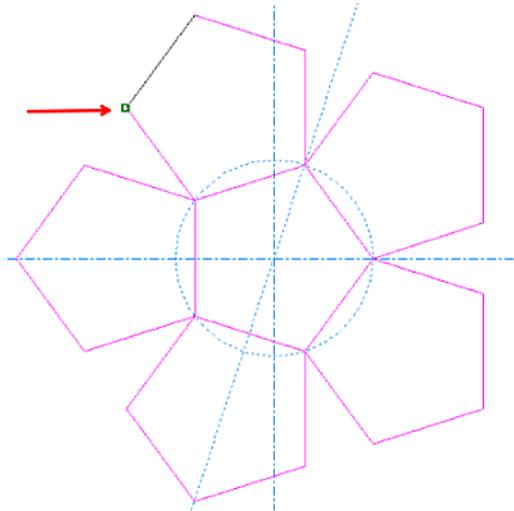
- c. **Edit** toolbar: .

## Notes

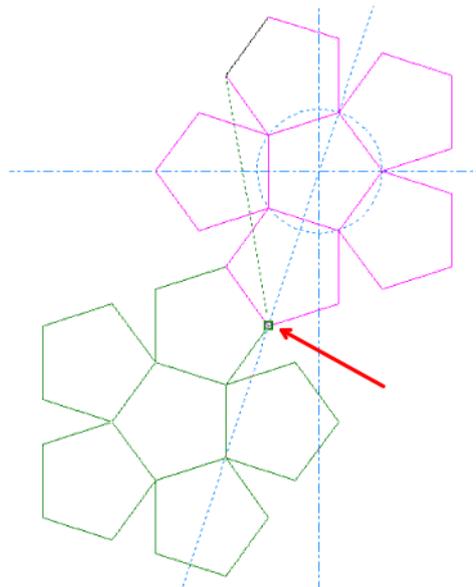
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- d.  the bottom point of the unselected line to select it as the **pickup point**:



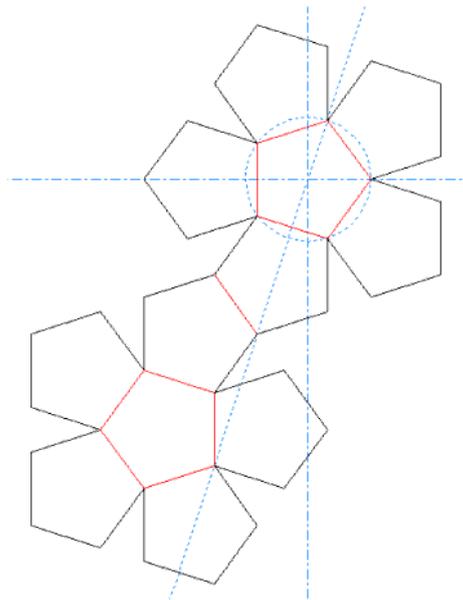
- e.  the bottom point of the shape:



8. Change the one side the two shapes have in common from a cut to a crease line:

- a.  the line to select it.
- b. **View** bar at the top:  **Crease** for **Line Type Set**.

 Using the **Copy Times Rotate** tool, you have copied and mirrored an existing line to create a pentagon. With the **Copy Mirror about Line** tool you have created a copy of the first pentagon. You have started from this second pentagon to create a first shape with the **Copy Times Rotate** tool. You have then created an adjoining copy of the first shape with the **Copy Mirror about Vertical** tool. While creating these two shapes, you have changed some of the lines from cut to crease lines.



## Notes

## Notes

## 2.7.7 Tutorial: Rotating and Copying While Mirroring



**For this tutorial you need the training file 'EDI\_AD01.ARD'.**

- ① You are working in a design that has one top flap for the first panel. Inside the flap an arrow has been drawn that needs to be rotated so that it points to the left instead of to the top.

You also want to add three copies of this flap: one to the bottom of the first panel, one to the top of the fourth panel, and one to the bottom of the fourth panel. Given the irregular shape of the flap and the fact that you want the arrows to point to the left for the first panel and to the right for the fourth panel, you will copy and mirror the entire flap at the same time.

①②③

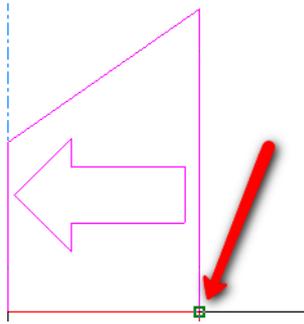
1.  'EDI\_AD01.ARD'
2. Rotate the arrow in the top flap:
  - a. **Select By:** status bar:  (**Selection of connected lines across intersections**)
  - b.  the arrow.
  - c. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



3. Select the top flap including the arrow:
  - a. **Edit** toolbar: 
  - b. **Select By:** status bar: 
  - c. Draw a rectangle around the top flap and its arrow.
4. Create a mirrored copy of the top flap and its arrow and add it to the top of the fourth panel:
  - a. **Edit** toolbar: 
  - b.  the bottom right point of the flap to select it as the **pickup point**:

## Notes



- c.  the top left point of the fourth panel:



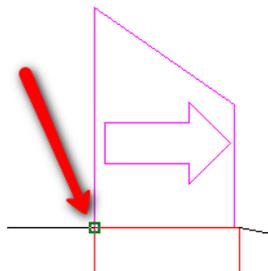
5. Create a mirrored copy of the newly created top flap and its arrow and add it to the bottom of the fourth panel:

- a. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

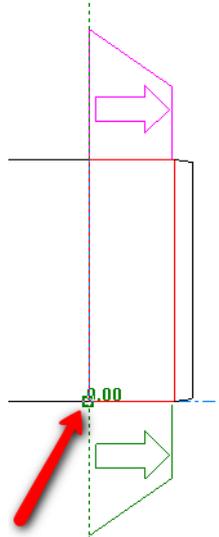


- b.  the bottom left point of the flap to select it as the **pickup point**:



**Note:** If necessary, you can adjust your zoom settings, for instance by using the mouse wheel.

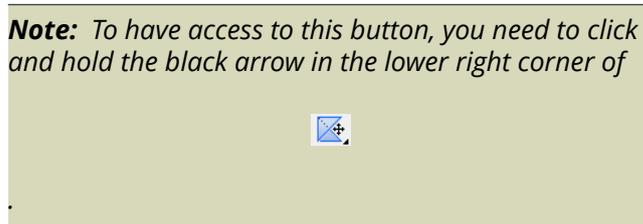
- c.  the bottom left point of the fourth panel:



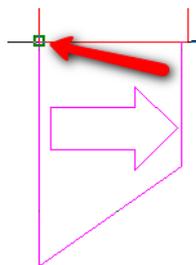
6. Create a mirrored copy of the bottom flap and its arrow and add it to the bottom of the first panel:

- a. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- b.  the top left point of the flap to select it as the **pickup point**:



- c.  the bottom right point of the first panel:

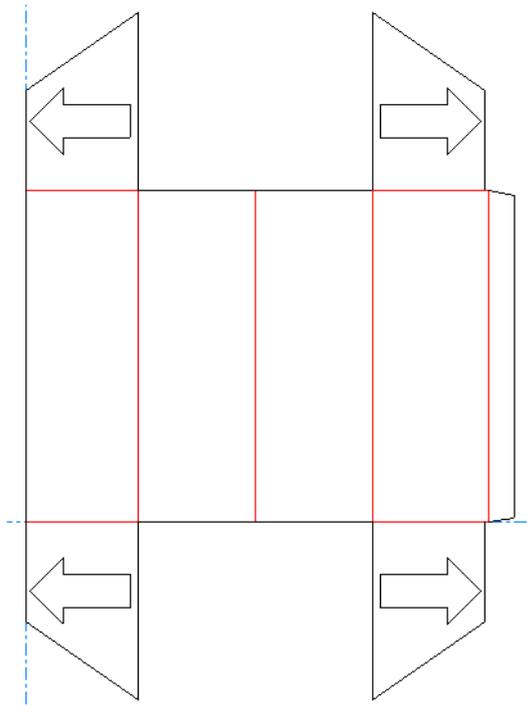
## Notes



## Notes

 You have used the **Rotate Left 90** tool to change the direction of the arrow. You have then created a mirrored copy of the top left flap and placed it on top of the fourth panel. For this you have used the **Copy Mirror about Vertical** tool. Next you have added two flaps to the bottom of the design, starting each time from the newly created flap:

- A flap to the bottom of the fourth panel using the **Copy Mirror about Horizontal** tool
- A flap to the bottom of the first panel using the **Copy Mirror about Vertical** tool



## Notes

## 2.7.8 Tutorial: Copying While Mirroring About a Line



**For this tutorial you need the training file 'EDI\_AD02.ARD'.**

☉ You are working in a design that is nearly finished. All you need to do is:

- Add a flap to the right
- Complete the top flap

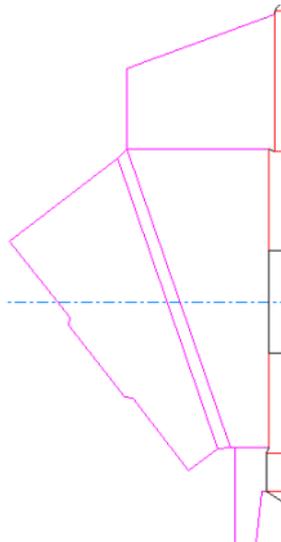
Given the symmetrical nature of the design, you can save a lot of time by working with mirrored copies of:

- The left flap, along a vertical line
- The bottom line of the bottom flap, along a horizontal line

The Y-axis can serve as the vertical line, but you will have to add a conline for the horizontal line.

①②③

1.  'EDI\_AD02.ARD'
2. Create a vertically mirrored copy of the left flap and add it as the right flap:
  - a. Draw a rectangle around the left flap to select it:



- b. **Edit** toolbar: 

## Notes

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



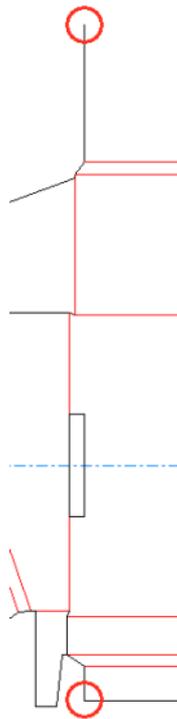
- c.  the Y-axis.

**Note:** This line is used as if it indicated the position of the plane mirror.

3. Create the construction line needed for copying and mirroring the bottom line of the bottom flap:

- a. **Conlines** toolbar: 

- b.  the two points indicated by red circles in the image below:



4. Create a horizontally mirrored copy of the bottom line of the bottom flap and add it to the top flap:

- a. **Edit** toolbar: 

- b. Draw a rectangle across the bottom line to select it:

## Notes

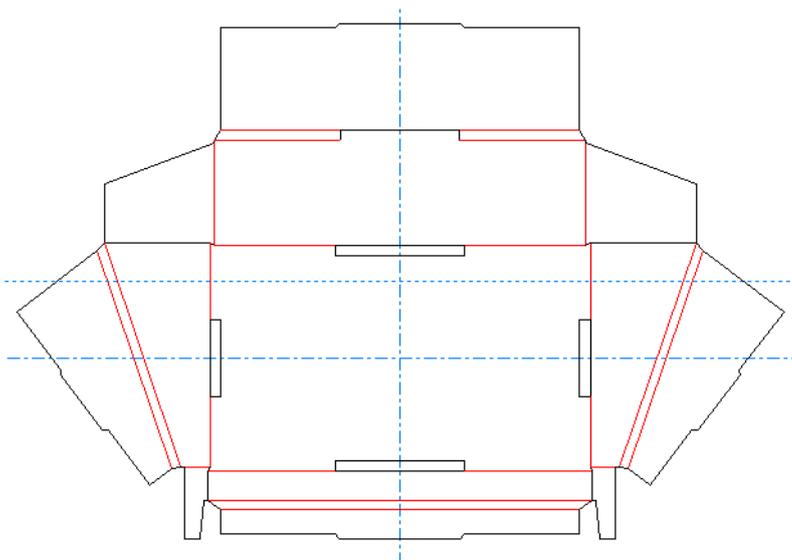


c. **Edit** toolbar: 

d.  the conline you have created in the previous step.

 You have used the **Copy Mirror about Line** tool to make a copy of the left flap and mirror it using the Y-axis as the mirror plane.

For completing the top flap, you have first added a conline in the middle between the bottom and the top target points. Next you have once again used the **Copy Mirror about Line** tool to make a copy of the bottom line of the bottom flap and mirror it using the new conline as the mirror plane.



## 2.7.9 Tutorial: Completing a Design from a Quarter



**For this tutorial you need the training file 'EDI\_AD03.ARD'.**

- ② You intend to make a design that is constructed out of four identical quarters. You already made the initial quarter and in this tutorial you will add the remaining three. Instead of working with a number of mirrored copies, you can work with a dedicated tool.

①②③

1. 'EDI\_AD03.ARD'
2. **View** toolbar: three times.
3. Complete the design from the existing quarter:
  - a. **Edit** toolbar:
  - b. **Complete design from half/quarter** status bar: verify that the **Copy quarter** button is selected.

**Note:** The other two buttons copy a half either horizontally or vertically.

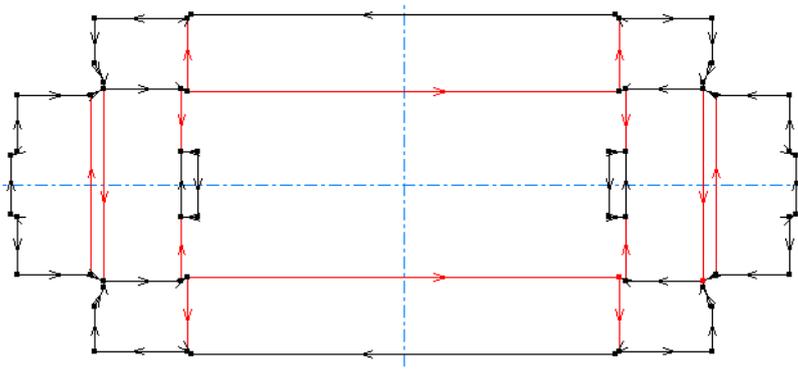
c.

4. **View** toolbar:
  5. Verify how the completed design is constructed:
    - a. **View** toolbar:
    - b.  **View Mode:**  **Direction**
    - c.
- ⊖ You are now able to verify that:
- There are no split lines across the quarters
  - The direction of the horizontal lines was mirrored around the Y-axis
  - The direction of the vertical lines was mirrored around the X-axis



By using the **Complete design from half/quarter** tool, you have completed a design based on an existing quarter.

# Notes



## 2.7.10 Tutorial: Distributing Copied Objects to Layers



**For this tutorial you need the training file 'EDI\_AD04.ARD'.**

- ① Sometimes you will copy objects that are distributed on different layers. When you do this, you are likely to want to maintain the distribution of objects across layers when pasting the copied objects.

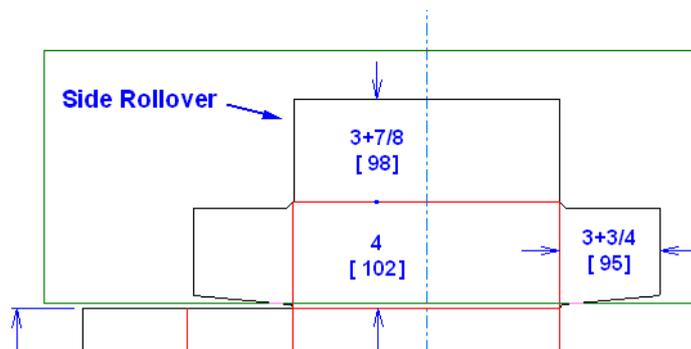
You will create a mirrored copy of the top flaps in the design. In this copy you will include design, dimension, and text objects that are situated on different layers. You want to have the same distribution when adding the copies as bottom flaps.

Next you will, with the same distribution to layers requirement, create a mirrored copy of the two left flaps with dimensions and text.

Finally you will copy and paste the whole design while maintaining the overall distribution across layers for all the objects.

①②③

1.  'EDI\_AD04.ARD'
2. **View** toolbar:  twice.
3. Copy and mirror the top flaps, including the dimensions and the text, to create bottom flaps:
  - a. Draw a rectangle around the top flaps, the dimensions, and the text to select them:



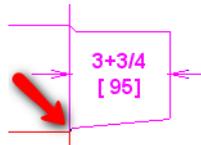
- b. **Edit** toolbar: .

# Notes

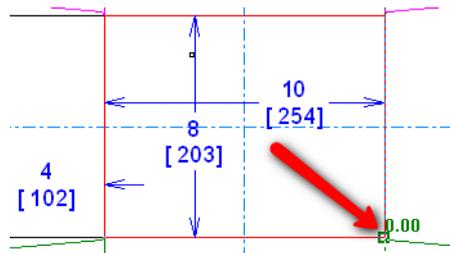
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- c. **Copy Mirror about Horizontal** status bar: make sure that **Distribute to layers** is selected.
- d.  the bottom right point of the selection to select it as the **pickup point**:



- e.  the bottom right point of the design:



**Note:** The dimensions will automatically be righted.

 The design objects, the dimensions and the text in the copy have been distributed to their respective layers.

- 4. Right the copied text:
  - a.  inside the text to select it.
  - b. **Edit** toolbar: 

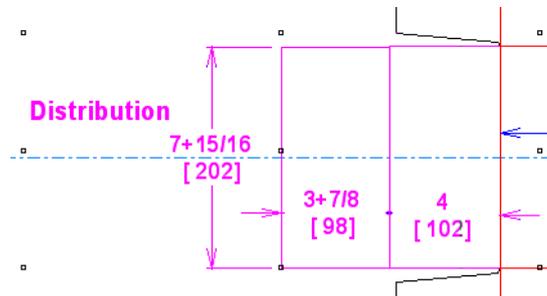
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- 5. Copy and mirror the two central left flaps, including the dimensions and the text, to create right flaps:
  - a. **Edit** toolbar: 

## Notes

- b. Draw a rectangle around the two left flaps, the dimensions, and the text to select them:



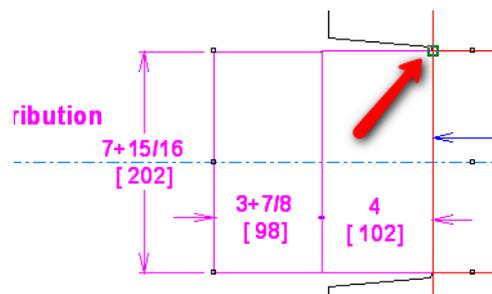
**Note:** If you have included unnecessary lines in your selection, you can deselect them by clicking them while holding down **Shift** or **Ctrl**.

- c. **Edit** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

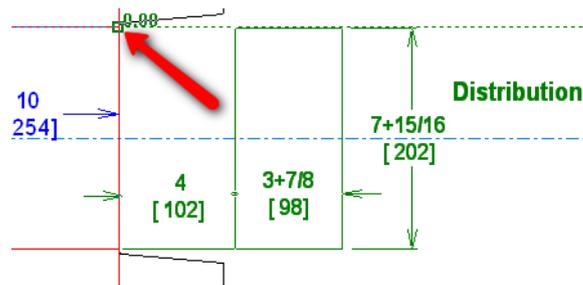


- d. **Copy Mirror about Vertical** status bar: make sure that **Distribute to layers** is selected.
- e.  the top right point of the selection to select it as the **pickup point**:



- f.  the top right point of the central flap:

## Notes



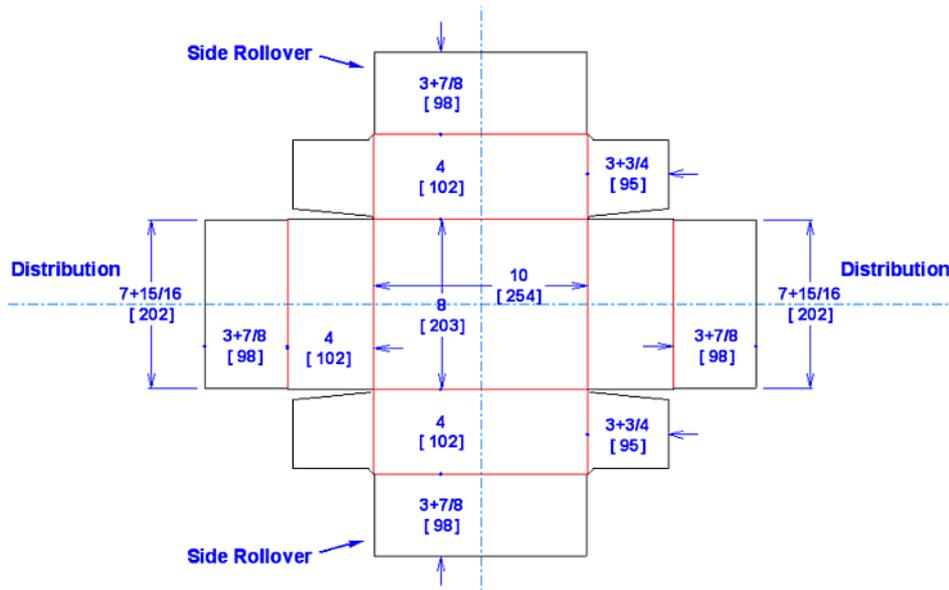
6. Create a copy of the entire design:
  - a. Draw a rectangle around all the objects to select them.
  - b.  **Ctrl + C**
  - c.  **Ctrl + V**
  - d.  **Distribution**: make sure **Distribute to layers** is selected.
  - e. 

 You have created a copy on top of the original with all the objects distributed across the same layers as in the original.
7.  a random point in the workspace to deselect everything.

 You have explored the possibilities of maintaining copied objects in their original layers by performing the following tasks:

- You have copied and mirrored the top flaps to the bottom of the design: while the objects were distributed across their layers and the dimensions were righted automatically, you still had to rotate the text
- You have copied and mirrored the left flaps to the right of the design: the objects were automatically distributed to their respective layers
- You have copied the entire design while ensuring that the original distribution across layers was maintained

## Notes



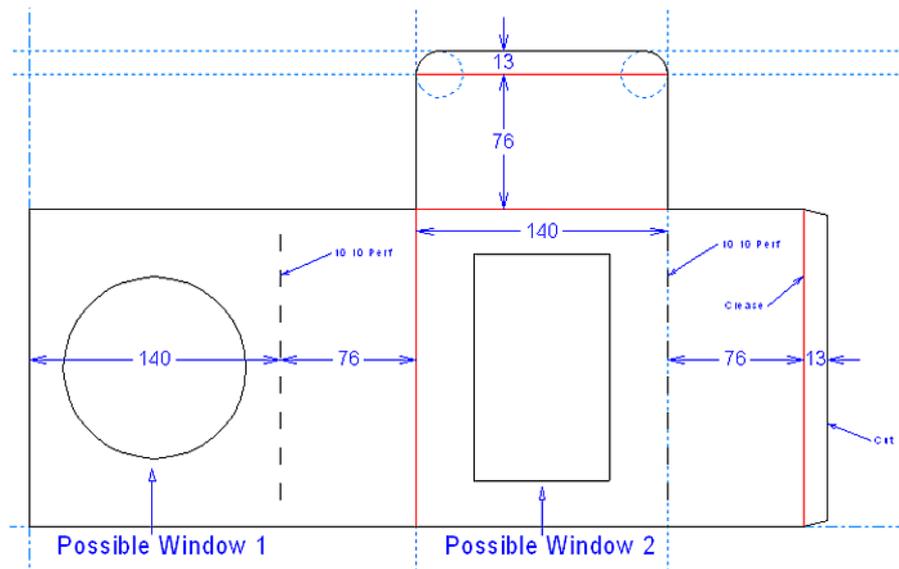
## Notes

## 2.7.11 Recap Exercise

For this exercise you start from the result of the previous recap exercise, saved as `Recap02.ARD`.

## Start situation

This is what your design looks like at the start of the exercise:



## Tasks

Add the following layers:

- **Window and Cutouts**, called `Window 1`
- **Window and Cutouts**, called `Window 2`

Move the circular and the rectangular windows to the **Window 1** and **Window 2** layers respectively.

In the **Main Design** layer, make a mirrored copy of the top closure panel and upper tuck flap, and position it at the bottom of the third panel.

As shown in the end situation below:

- Add the hatched rectangle to the **Annotation** layer.
- In the **Annotation** layer, rearrange the existing annotations and add the text.
- Add the hatched area dimensions to the **Dimensions** layer.

## Tools

You can use the following tools to complete this exercise:

- **Layers**



## 2.8 Adjust Tools

In this lesson you will learn to master different ways of adjusting design objects.

### Adjusting

During the design process you may need to slightly adapt existing design objects to reflect changes in another part of the design. This process is known as adjusting. Typical examples are having to extend a line in order to join it with another line, or having to stretch a panel.

### Bleed and Coating free area

Two additional tools that will be discussed during this lesson are those for creating bleeds and coating free areas.

#### Bleed

See **Designer > Changing geometry > Preparing for Manufacturing > Bleed tool**

 Bleeds are used to define the area of ink bleed when the sheet moves through the printing press. To use the Bleed tool, create the design that will have a Bleed outline, and click the **Bleed** tool. If you are not in a Bleed Outline layer and there are none already created, you will be asked if you wish to create one.

#### Coating free area

See **Designer > Changing geometry > Preparing for Manufacturing > Coating Free Area tool**

 The second tool on the Prepare for Manufacturing toolbar is the **Coating Free Area** tool. The **Coating Free Area** tool defines panels on the box that will not receive a coating as the sheet passes through the printing press.

### Toolbars and buttons

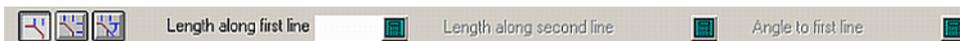
#### Adjust *toolbar*



During this lesson, you will use the following buttons:

## Notes

Button	Name
	Trim/Extend Two Lines
	Trim/Extend One Line
	Extend line
	Trim Interior
	Trim Against Selection
	Blend
	Split Line
	Blend Three Lines
	Chamfer
	Stretch by Polygon
	Stretch Point
	Follow

**Chamfer Status bar**

**Note:** This Status bar is activated when you click the **Chamfer** button.

During this lesson, you will use the following buttons:

Button	Name
	Chamfer equal distances
	Chamfer 2 distances
	Chamfer distance/angle

**Follow Status bar**

## Notes

**Note:** This Status bar is activated when you click the **Follow** button.

During this lesson, you will use the following buttons:

Button	Name
	<b>Negative offset</b>
	<b>Delete last path</b>
	<b>Direct path to point</b>
	<b>Follow Left</b>

### Prepare Manufacturing *toolbar*



During this lesson, you will use the following buttons:

Button	Name
	<b>Bleed</b>
	<b>Coating Free Area</b>

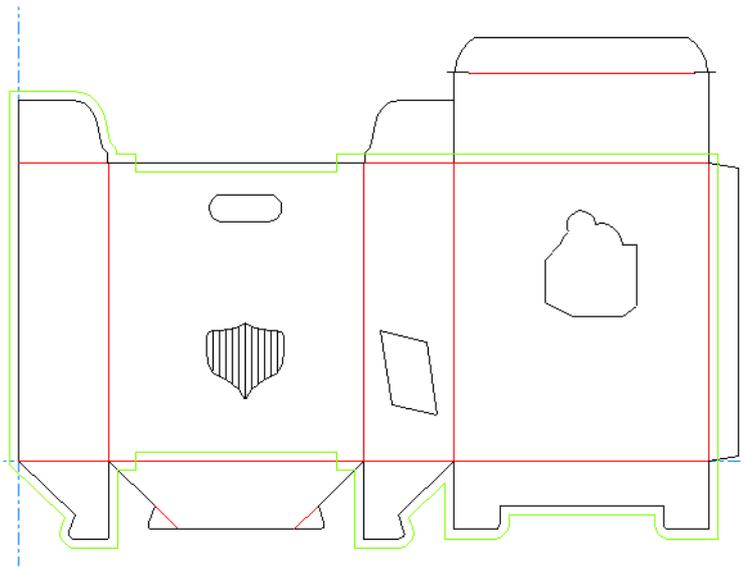
### Tutorials

Based on a design contained in a single training file, you will follow six separate tutorials:

- [Tutorial: Trimming and Extending](#) on page 175
- [Tutorial: Blending and Splitting](#) on page 181
- [Tutorial: Chamfering](#) on page 185
- [Tutorial: Stretching](#) on page 188
- [Tutorial: Adding Bleeds and Coating Free Areas](#) on page 198
- [Tutorial: Following with an Offset Value](#) on page 202

In principle you only need the training file with the initial situation (ADJ\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial. At the end of the lesson, your design will have the following aspect:

# Notes



## Notes

## 2.8.1 Tutorial: Trimming and Extending

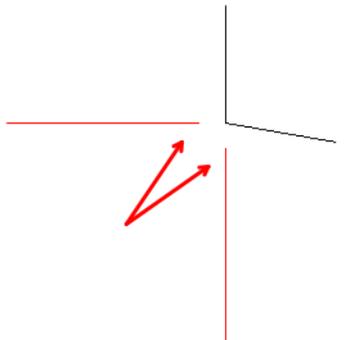


**For this tutorial you need the training file 'ADJ\_00.ARD'.**

- ⦿ While creating your design some minor errors, related to line length and superfluous lines inside a cutout area, have cropped up. You decide to eliminate these errors. More specifically, you will:
- Extend one line and two lines
  - Trim one line and two lines
  - Extend lines by a specific length
  - Trim an interior section
  - Trim lines outside of a selected shape

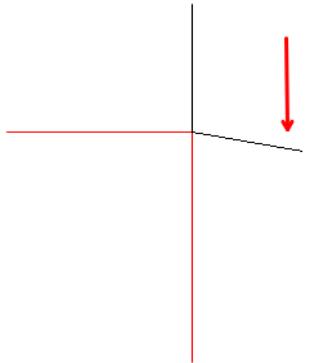
①②③

1.  'ADJ\_00.ARD'
2. Extend the two crease lines in the top right corner of the rear panel:



- a. **Adjust** toolbar: 
  - b.  the horizontal crease line.
  - c.  the vertical crease line.
3. Extend the cut line at the top of the glue flap:

## Notes



- a. Adjust toolbar:  (Trim/Extend One Line)

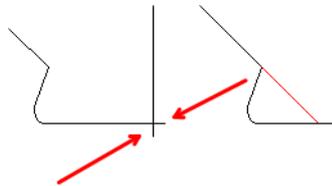
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



(Trim/Extend Two Lines).

- b.  the top line.  
c.  the vertical line.

4. Trim two cut lines of the bottom left closure panel:



- a. Adjust toolbar:  (Trim/Extend Two Lines).

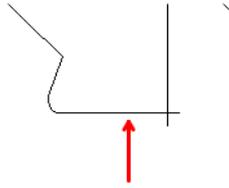
**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



(Trim/Extend One Line).

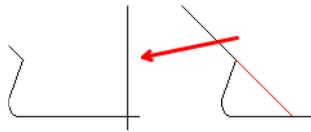
- b.  the left part of the horizontal line:

## Notes

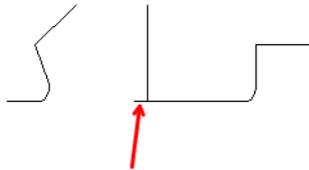


**Note:** When trimming a line you always need to indicate the part of the line that you want to keep.

- c.  the top part of the vertical line above the intersection:



5. Trim a cut line of the bottom right closure panel:



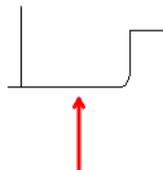
- a. **Adjust** toolbar:  (**Trim/Extend One Line**)

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



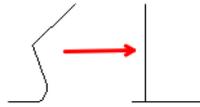
(**Trim/Extend Two Lines**).

- b.  the right part of the horizontal line:

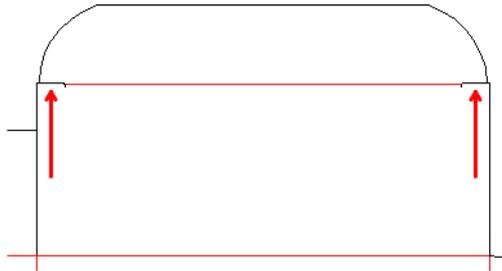


- c.  the left vertical line of the panel:

## Notes



6. Extend the two horizontal cut lines of the top closure panel with a specified length:



- a. **Adjust** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- b. **Extend line** status bar:  4 for **Extend distance**.

- c.  the leftmost part of the left cut line.

**Note:** The extension will be added to the end point that is closest to the part of the line that you clicked.

- d.  the rightmost part of the right cut line.

7. Trim the interior lines of the cutout shape in the rear panel:

- a. **Adjust** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- b.  the interior lines one by one.

8. Trim the lines outside of the bottom cutout shape in the front panel:

- a. **Edit** toolbar: 

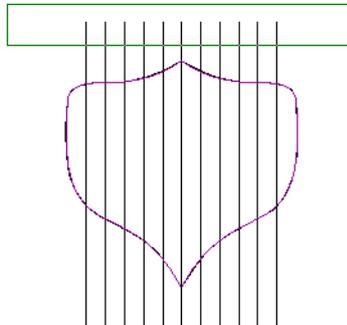
## Notes

- b. **Select By:** status bar: 
- c.  the shield-shaped cutout shape in the front panel to select it.
- d. **Adjust** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of



- e. Draw a rectangle across the top of the vertical lines:



- f. **Trim Against Line** status bar:  **Reverse trim**

- g. **Trim Against Line** status bar:  **Trim**

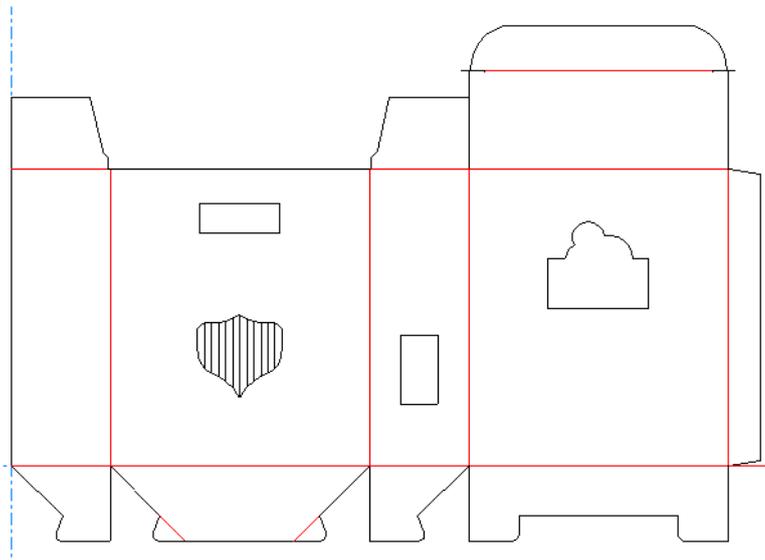
 The parts of the vertical lines outside of the cutout shape have been deleted.

 The tools you have used and the corresponding actions you have performed with them, have been summarized in the following table:

Tool	Action
<b>Trim/ Extend Two Lines</b>	<ul style="list-style-type: none"> <li>Extending the two crease lines in the top right corner of the rear panel</li> <li>Trimming two cut lines of the bottom left closure panel</li> </ul>
<b>Trim/ Extend One Line</b>	<ul style="list-style-type: none"> <li>Extending the cut line at the top of the glue flap</li> </ul>

## Notes

Tool	Action
	<ul style="list-style-type: none"><li>Trimming a cut line of the bottom right closure panel</li></ul>
<b>Extend line</b>	Extending the two horizontal cut lines of the top closure panel with a specified length
<b>Trim Interior</b>	Trimming the interior lines of the cutout shape in the rear panel
<b>Trim Against Selection</b>	Trimming the part of the vertical lines that went outside of the bottom cutout shape in the front panel



## Notes

## 2.8.2 ☹ Tutorial: Blending and Splitting

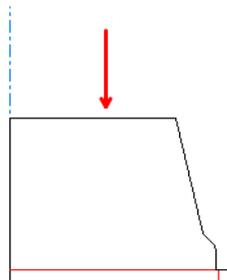


If necessary, you can open the file 'ADJ\_01.ARD'.

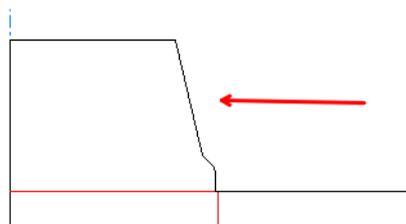
- ☉ You will further adjust your design by focusing on the following aspects:
  - For the dust flaps, you want to have two identical rounded corners.
  - You need to delete part of the crease line at the bottom of the panels.
  - You want to have arcs on the left and on the right for the top cutout shape in the front panel.

①②③

1. Create rounded corners for the dust flaps:
  - a. **Adjust** toolbar: 
  - b. **Blend** status bar:  13 for **Radius of blend**.
  - c.  the top line of the left dust flap:



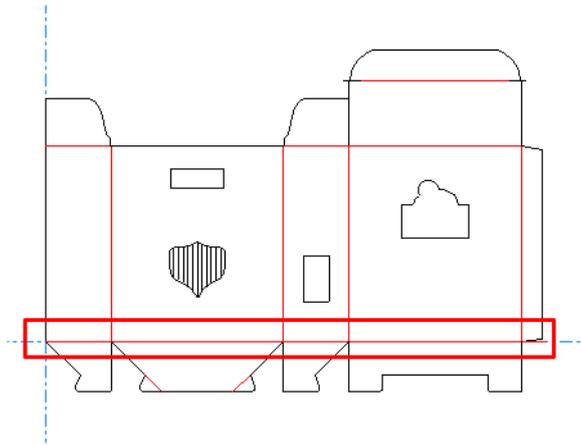
- d.  the diagonal line to the right:



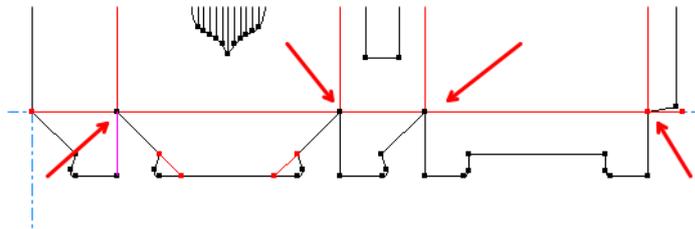
- e.  *You have created a first rounded corner.*
    - f.  the top line of the right dust flap.

## Notes

- f.  the diagonal line to the left.
2. Split the crease line at the bottom of the panels and then delete part of it:
- a. **Adjust** toolbar: 
- b.  the crease line at the bottom of the panels:



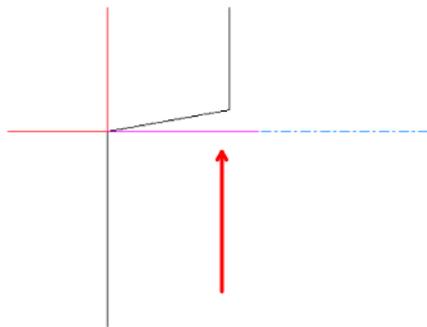
- c.  each of the four intersection points one by one:



 *The crease line has been split at each of the intersections.*

- d. **Edit** toolbar: 

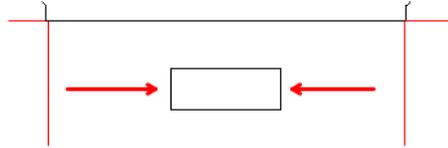
- e.  the newly created rightmost crease line:



## Notes

f.  **Delete**

3. Blend the left and right side of the top cutout shape in the front panel:



a. **Adjust** toolbar: 

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

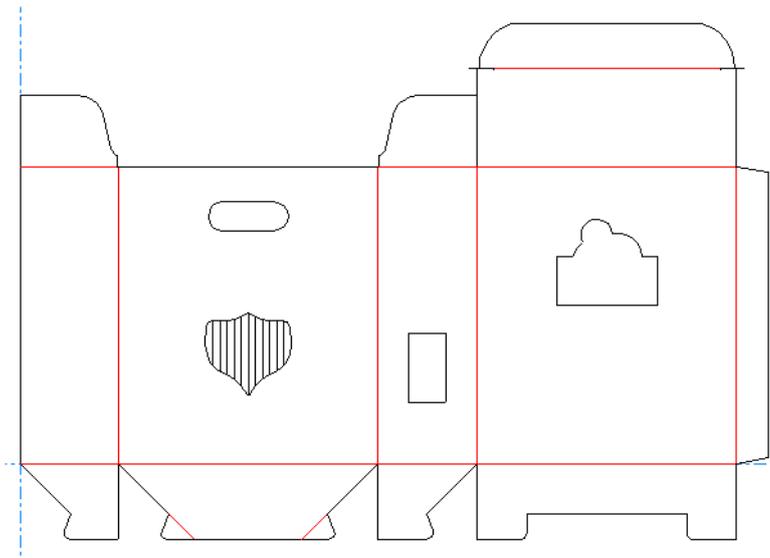


- b.  the top line.
- c.  the left line.
- d.  the bottom line.
-  You have created the left arc.
- e.  the top line.
- f.  the right line.
- g.  the bottom line.

 You have explored the possibilities of blending and splitting by performing the following actions:

- Using the **Blend** tool, you have created two rounded corners for the top dust flaps with a radius of 13.
- Using the **Split Line** tool, you have split up the bottom crease line so that you could delete the right part
- Using the **Blend Three Lines** tool, you have turned the four straight corners of the top cutout shape in the front panel into two arcs

Notes



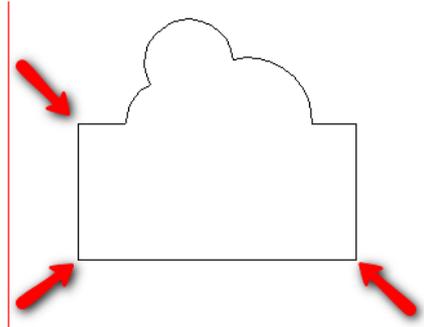
## Notes

## 2.8.3 ☺ Tutorial: Chamfering



If necessary, you can open the file 'ADJ\_02.ARD'.

- ☉ You want to create three different chamfers for the cutout shape in the rear panel:



These chamfers should have the following characteristics:

Location	Chamfer
Top left corner	With equal distances
Bottom left corner	With unequal distances
Bottom right corner	With specified distance and angle

①②③

1. Create the chamfer for the top left corner:

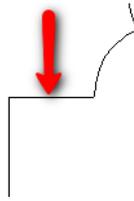
- a. **Adjust** toolbar:

**Note:** To have access to this button, you need to click and hold the black arrow in the lower right corner of

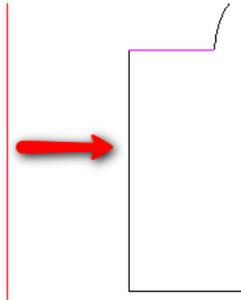


- b. **Chamfer** status bar: if necessary,
- c. **Chamfer** status bar: 8 for **Length along first line**.
- d. the horizontal line of the top left corner:

## Notes



e.  the vertical line:



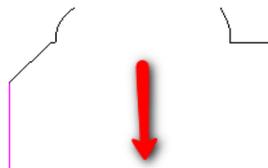
2. Create the chamfer for the bottom left corner:

a. **Chamfer** status bar: 

b. **Chamfer** status bar:  16 for **Length along second line**.

c.  the vertical line.

d.  the horizontal line:



3. Create the chamfer for the bottom right corner:

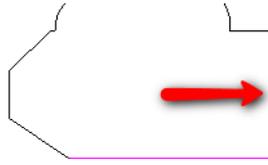
a. **Chamfer** status bar: 

b. **Chamfer** status bar:  35 for **Angle to first line**.

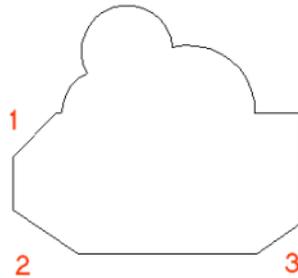
c.  the horizontal line.

d.  the vertical line:

## Notes



 Using the **Chamfer** tool, you have created three different types of chamfer for the cutout shape in the rear panel:



Chamfer	Type	Details
1	Equal distances	Distance: 8
2	Unequal distances	Distance-1: 8; Distance-2: 16
3	Specified distance and angle	Distance-1: 8; Angle: 35

## 2.8.4 ☺ Tutorial: Stretching



If necessary, you can open the file 'ADJ\_03.ARD'.

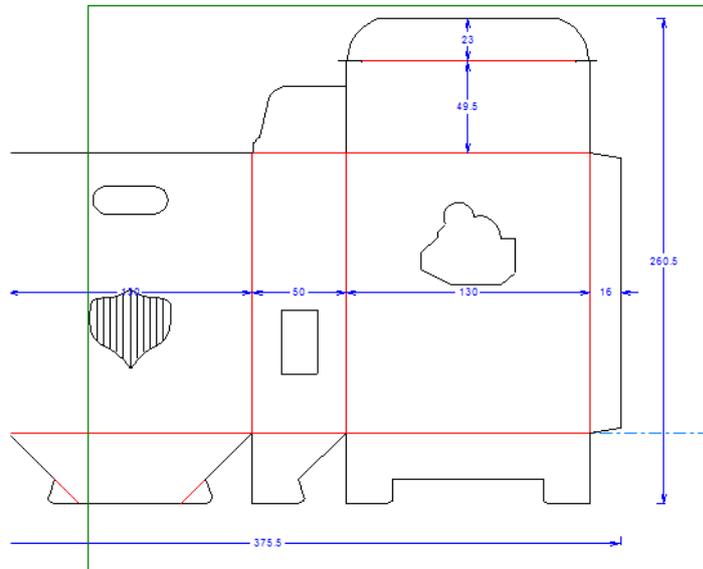
- ☉ You decide to stretch some parts of your design. You want to:
  - Make both the front and the rear panel wider by a specific amount
  - Make the whole design longer by entering its required size
  - Make the two bottom closure flaps longer
  - Make the upper tuck flap shorter without changing the radius
  - Make the two top dust flaps shorter with a fixed angle
  - Turn the rectangle in the front panel into a parallelogram

①②③

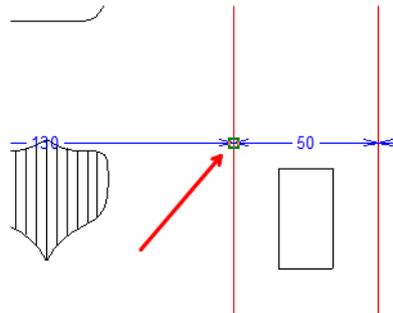
1. Display the **Overall dimensions** layer:
  - a. **View** bar: 
  - b.  **Layers:**  the left column next to the **Overall dimensions** layer.
  - c. 

 *You can now see that the width of the front panel is **130**.*
2. Widen the front panel by a specific amount:
  - a. **Adjust** toolbar: 
  - b. Draw a rectangle across the front panel as follows:

## Notes



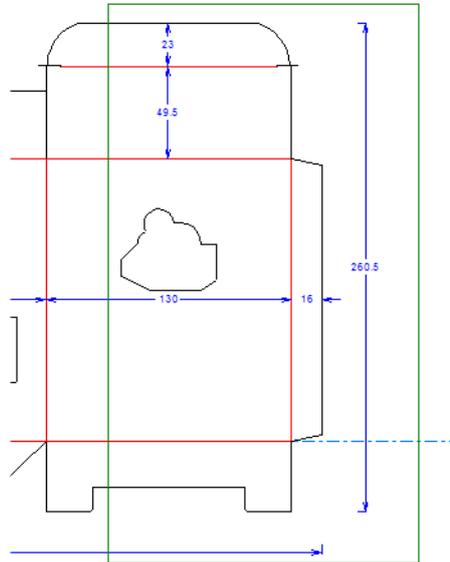
- c.  the middle point of the crease line on the right of the front panel to select it as the **reference point**:



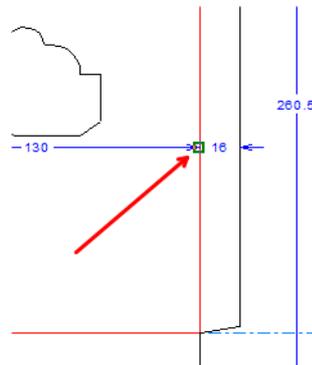
**Note:** The **reference point** is the point from where you are stretching.

- d.  the same point a second time to select it as the **pickup point** as well.
-  *By choosing the same point as **reference** and **pickup point**, you can now define the specific amount by which you want to broaden the panel.*
- e. Drag the pointer slightly to the right.
- f. **Stretch by Polygon** status bar:  0 for **Angle** and  **Enter**
- g. **Stretch by Polygon** status bar:  10 for **X** and  **Enter**
-  *The width of the front panel is now 140.*

3. Widen the rear panel by a specific amount:  
 a. Draw a rectangle across the rear panel as follows:

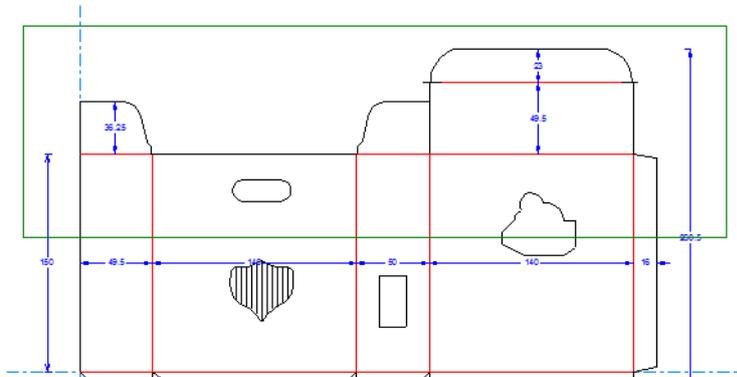


- b.  the middle point of the crease line on the right of the rear panel to select it as the **reference point**:



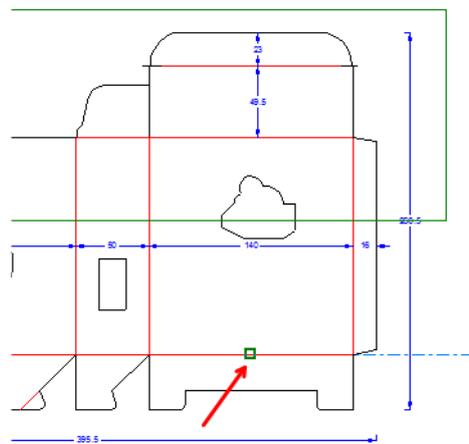
- c.  the same point a second time to select it as the **pickup point** as well.
- d. Drag the pointer slightly to the right.
- e. **Stretch by Polygon** status bar:  0 for **Angle** and  **Enter**
- f. **Stretch by Polygon** status bar:  10 for **X** and  **Enter**
-  *The width of the rear panel is now also 140.*

4. Lengthen the whole design, including the cutout shape in the rear panel, by entering its required size:
  - a. Draw a rectangle around the top half of your design:



**Note:** Make sure you don't include the cutout shape in the front panel, otherwise this will also be stretched.

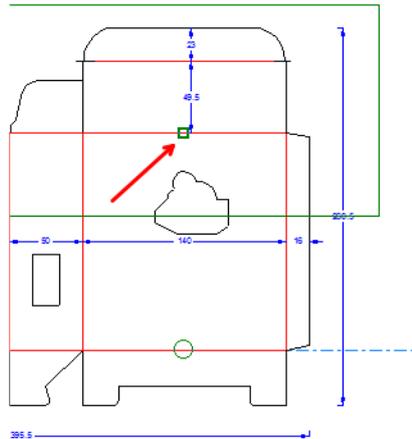
- b.  the middle point of the crease line at the bottom of the rear panel to select it as the **reference point**:



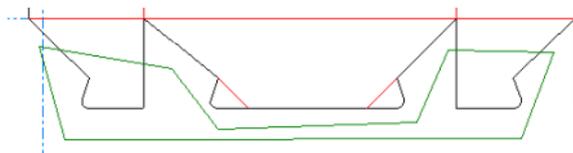
- c.  the middle point of the crease line at the top of the rear panel to select it as the **pickup point**:

## Notes

## Notes



- ⊖ By choosing different points as **reference** and **pickup point**, you can now stretch the design to obtain a specific panel size.
- d. Drag the pointer slightly upwards.
  - e. **Stretch by Polygon** status bar: 0 for **Angle** and **Enter**
  - f. **Stretch by Polygon** status bar: 165 for **Y** and **Enter**
- ⊖ The length of the whole design is now **275,5**.
5. Hide the **Overall dimensions** layer:
    - a. **View** bar: Main Design
    - b. **Layers**: the eye next to the **Overall dimensions** layer to hide it.
    - c. OK
  6. Lengthen the two bottom closure flaps preserving the angle:
    - a. With still active, draw a polygon that includes the two bottom closure flaps by defining the corner points one by one through mouse clicks:



**Note:** You should not include the top crease lines of the flaps, otherwise you would be stretching the panels above the flaps.

## Notes

b. **Stretch by Polygon** status bar: ☺ **Angle** for **Distance**.

c. Ⓜ the bottom right point of the left flap to select it as the **reference point**:



d. Ⓜ the bottom right point of the left flap a second time to also select it as the **pickup point**.

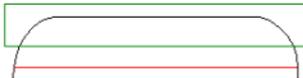
e. Drag the pointer slightly downwards.

f. **Stretch by Polygon** status bar: ☞ 0 for **Angle** and **Enter**

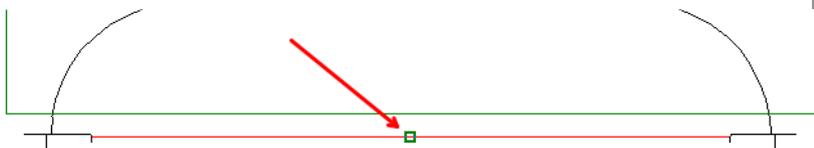
g. **Stretch by Polygon** status bar: ☞ 5 for **Y** and **Enter**

7. Shorten the tuck flap while preserving the radius:

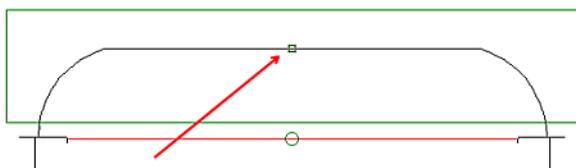
a. With  still active, draw a rectangle across the tuck:



b. Ⓜ the middle point of the crease line to select it as the **reference point**:

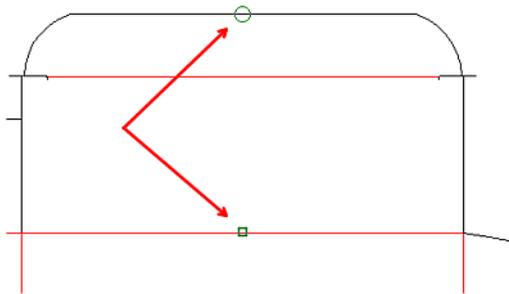


c. Ⓜ the middle point of the top line to select it as the **pickup point**:



## Notes

- d. Drag the top line downwards.
- e. **Stretch by Polygon** status bar:  0 for **Angle** and  **Enter**
- f. **Stretch by Polygon** status bar:  20 for **Y** and  **Enter**
  - ⊖ *You have diminished the length of the upper tuck while keeping the radius of the arcs fixed.*
8. Shorten the top dust flaps preserving the angle:
  - a. **Conlines** toolbar: 
  - b.  these two points one after the other:

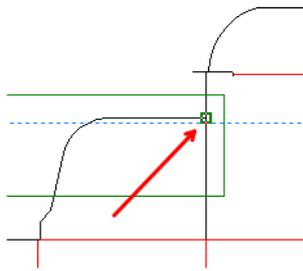


- c. **Adjust** toolbar: 
- d. Draw a rectangle across the dust flaps:

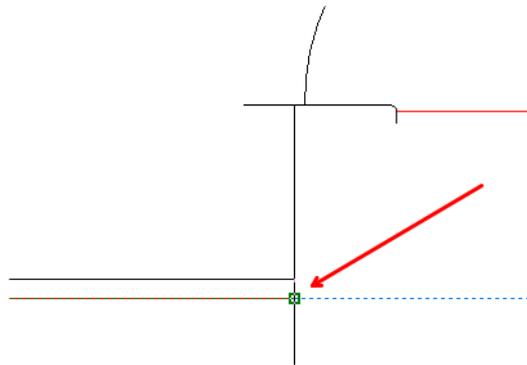


- e. **Stretch by Polygon** status bar:  **Angle** for **Distance**.
- f.  the top right point to select it as the **reference point**:

## Notes



- g.  the top right point a second time to also select it as the **pickup point**.
- h. Drag the top lines downwards.
- i.  the intersection of the conline and the left line of the top closure panel:

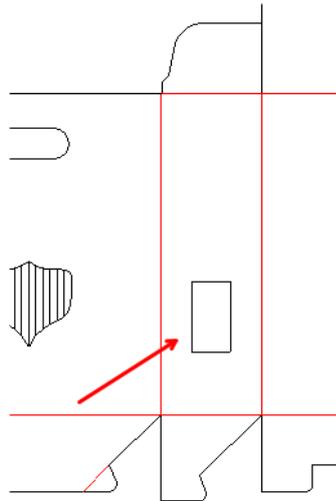


 *The dust flaps will now be exactly half the size of the lid.*

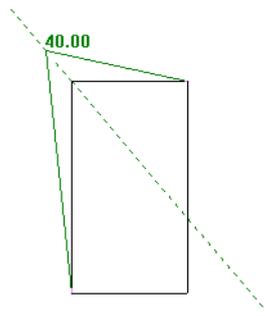
**Note:** *This is perfect for Layout.*

9. Turn the rectangle in the right side panel into a parallelogram:

## Notes



- a. **Adjust** toolbar: 
- b.  the top left point of the rectangle.
- c. Drag the pointer slightly to the top and to the left:



- d. **Stretch Point** status bar:  45 for **Angle** and  **Enter**
- e. **Stretch Point** status bar:  6 for **X** and  **Enter**
- f. Repeat steps b to e for the bottom right corner.

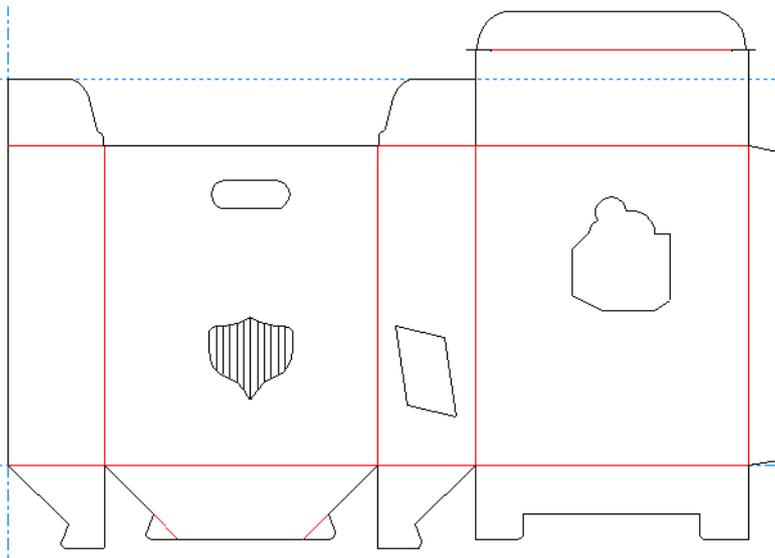
**Note:** This time you will need to drag the pointer slightly to the bottom and to the right, and enter a value for **Y**.

 You have made changes to your design using two different stretching tools.

- With the **Stretch by Polygon** tool, you have:

## Notes

- Broadened the front and the rear panels along a horizontal line by 10
- Lengthened the whole design by choosing 160 as the length of the panels
- Lengthened the two bottom closure flaps along a vertical line by 5
- Shortened the upper tuck flap to give it a height of 20
- Shortened the two top dust flaps to make them exactly half the size of the lid
- With the **Stretch Point** tool, you have stretched the top left and the bottom right point of the rectangle in the right side panel by 6 with an angle of 45, to create a parallelogram.



### 2.8.5 ☺ Tutorial: Adding Bleeds and Coating Free Areas



If necessary, you can open the file 'ADJ\_04.ARD'.

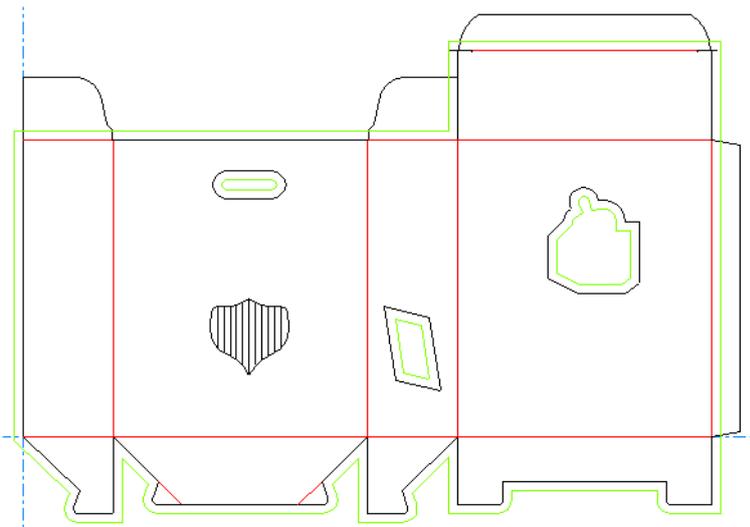
- ☉ In this tutorial you will add the following to your design:
  - An outside bleed area for the whole design with the exclusion of:
    - The cutout shapes in the panels, except for the one in the form of a shield on the front panel
    - The upper tuck and dust flaps
    - The glue flap
  - Outside coating free areas for:
    - The cutout shapes in the panels, except for the one in the form of a shield on the front panel
    - The glue flap

In the process you will also add a layer for bleeds and one for coating free areas.

①②③

1. Create a bleed for the whole design excluding three cutout shapes, the upper dust flaps, the upper tuck, and the glue flap:
  - a. **Prepare Manufacturing** toolbar:
  - b. **Use Bleed Layer?:**  **Create Outside Bleed layer.**
  - c.
  - d. *Your bleed will be added to a separate layer, **Outside Bleed.***
  - d. **Bleed** status bar: 5 for **Offset** and **Enter**
  - e. one by one: the cutout shapes except for the lower one in the front panel; the top dust flaps, the top tuck, and the right glue flap.
  - f. **Bleed** status bar:
  - You have added this bleed in a separate layer:*

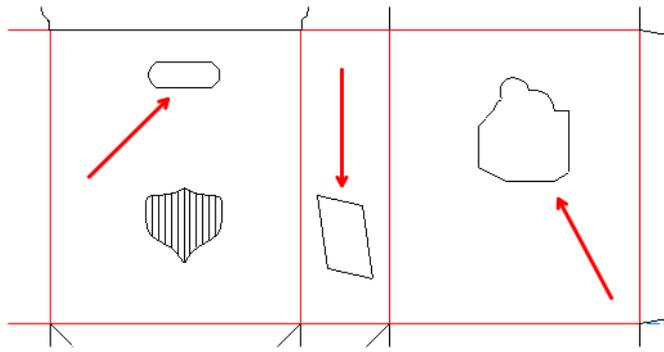
## Notes



**Note:** The created bleed lines can now be edited like any other geometry item.

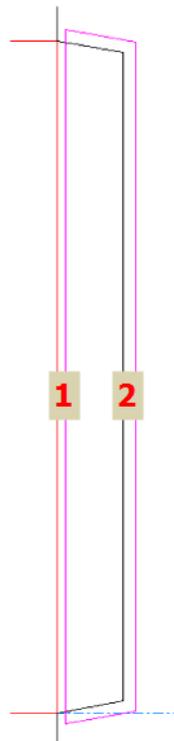
2. Hide the **Outside Bleed** layer:
  - a. **View** bar:  **Outside Bleed**
  - b.  **Layers:**  the **Main Design** layer to activate it.
  - c.  the eye next to the **Outside Bleed** layer to hide it.
  - d. 
3. Create coating free areas for three of the four cutout shapes and for the glue flap:
  - a. **Prepare Manufacturing** toolbar: 
  - b.  **Use Coating Layer?:**  **Create Outside Coating1 layer.**
  - c. 
    -  *Your bleeds will be added to a separate layer,*  
**Outside Coating1.**
  - d. **Coating Free Area** status bar:  2 for **Internal** and  **Enter**
  - e.  these three cutout shapes one by one:

## Notes



f. ☹ the glue flap.

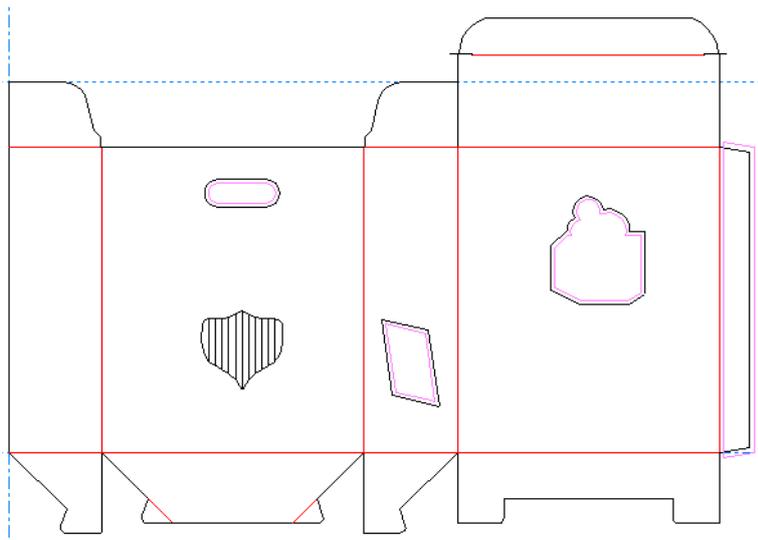
☹ You can clearly see the difference between the internal (1) and the external (2) offset:



g. Coating Free Area status bar:

☹ You have added coating free areas in a separate layer:

## Notes



4. Hide the **Outside Coating1** layer:

- a. **View bar:** 
- b.  **Layers:**  **Main Design** to activate it.
- c.  the eye next to the **Outside Coating1** layer to hide it.
- d. 

 You have added an **Outside Bleed** layer to the design containing an overall outside bleed. You have set the offset value for the bleed to 5. You have excluded three cutout shapes, the upper tuck flaps, and the glue flap from this bleed. You have hidden this layer.

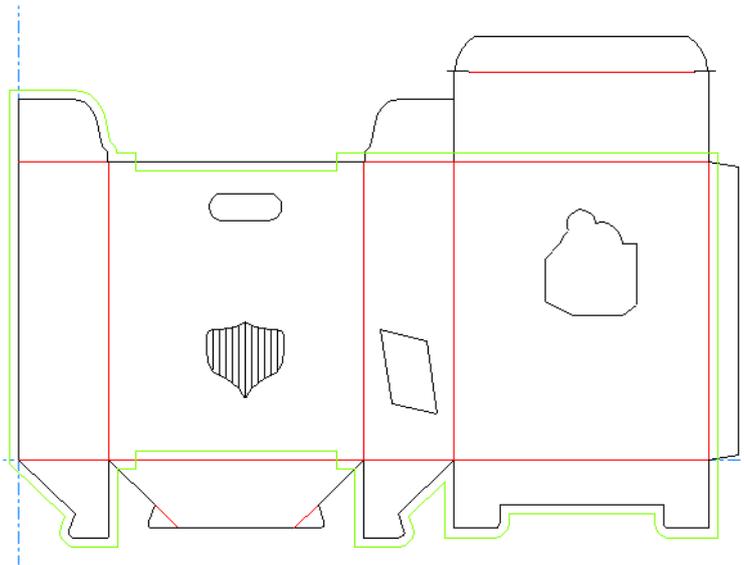
Next, you have added an **Outside Coating1** layer containing coating free areas for three cutout shapes and for the glue flap. While you have accepted the default value for the external offset, you have changed the internal offset to 2. Finally, you have hidden this layer.

## 2.8.6 ☺ Tutorial: Following with an Offset Value



If necessary, you can open the file 'ADJ\_05.ARD'.

- ☉ You want to add an irregular outside bleed to your design. This bleed does not simply follow the overall outline of the design. Nor can it be created by using such an overall bleed and then excluding specific areas. This is what the bleed should look like:



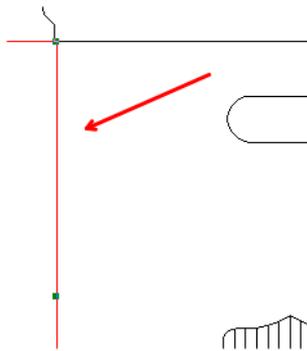
1 2 3

1. Create an additional **Outside Bleed** layer:
  - a. **View bar:** Main Design
  - b. **Layers:** Create...
  - c. **Create Layer:** ☺ **Outside Bleed** for **Class**.
  - d.
  - e. **Layers:** OK

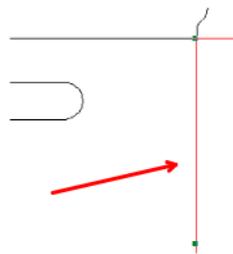
**Note:** The **Line Type** has been set to **Outside bleed**.

2. Draw the needed conlines:
  - a. **Conlines toolbar:**
  - b. the left crease line of the front panel:

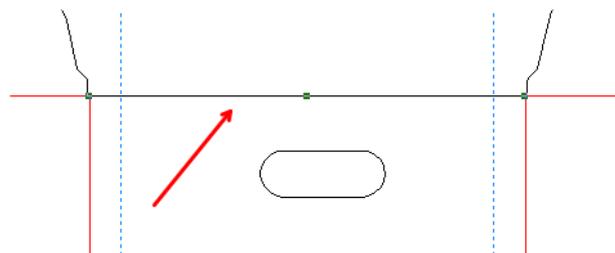
## Notes



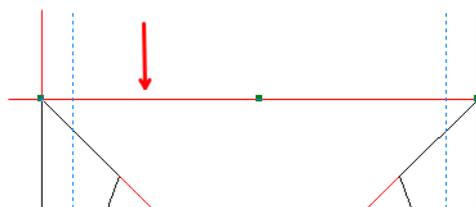
- c. Drag the pointer slightly to the **right** until the value displayed is 10, then  $\ominus$
- d. Repeat steps b and c, but this time draw a conline 10 to the **left** of the right crease line of the front panel:



- e. Repeat steps b and c, but this time draw a conline 10 **below** the top cut line of the front panel:



- f. Repeat steps b and c, but this time draw a conline 10 **above** the bottom crease line of the front panel:

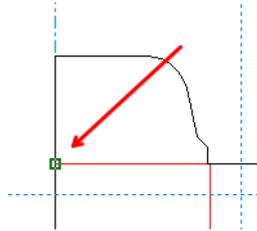


## Notes

3. Prepare drawing the bleed:

a. **Adjust** toolbar: 

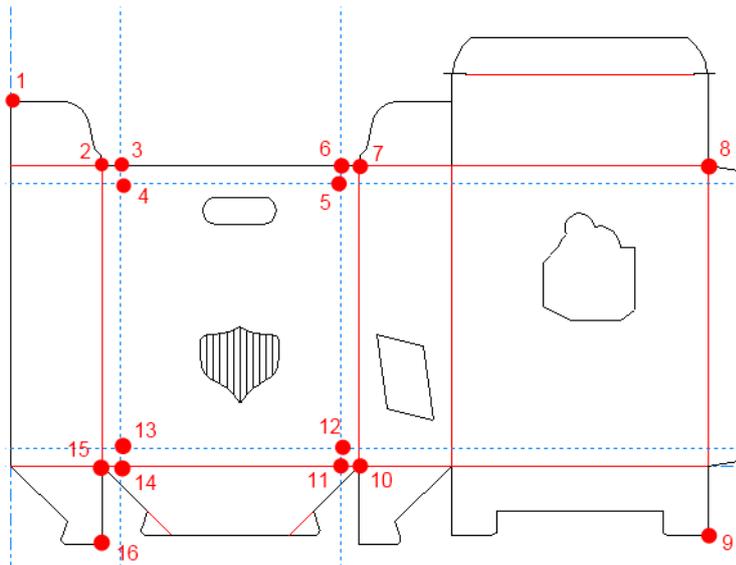
b.  the bottom left point of the top left dust flap to select it as the **start point**:



c. **Follow** status bar:  5 for **Offset**.

d. **Follow** status bar: 

4. Draw the bleed along the following points:



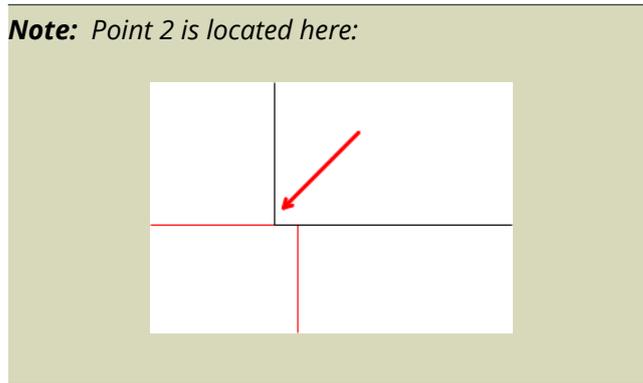
**Note:** If you accidentally clicked a wrong point, you can always click



a.  points 1 and 2.

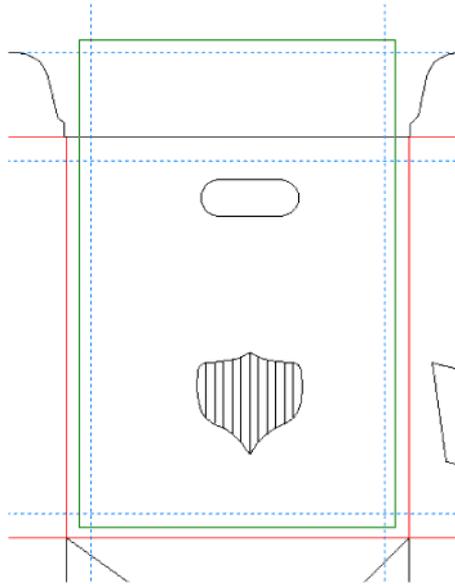
## Notes

**Note:** Point 2 is located here:



- b. **Follow** status bar:  and  points 3 to 9.
  - c.  and  point 10.
  - d.  and  points 11 to 16.
  - e.  and  the bottom left point of the top left dust flap.
5. Finish drawing the bleed:
    - a. **Follow** status bar:
    - b.  **Follow Properties:**  **Make group.**
    - c.
  6. Delete the superfluous conlines:
    - a. **Edit** toolbar: 
    - b. **Select By:** status bar: 
    - c. Draw a rectangle that includes each of the five conlines to select them:

## Notes

d.  **Delete**

 You have added an irregular outside bleed to your design using the **Follow** tool.

You started off by adding four conlines that you would need later on.

With the **Follow** tool, you have traced the outline of the bleed you wanted. You have set the offset value for the bleed to **5** and chosen a **Negative offset**. While indicating the path the bleed needed to follow, you had to switch regularly between the **Follow Left** and the **Direct path to point** options.

You ended by deleting the conlines you had drawn.

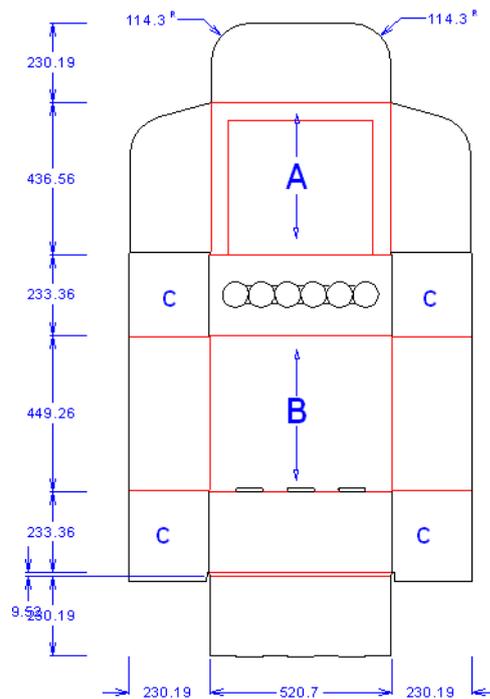
## Notes

## 2.8.7 Recap Exercise

For this exercise you need the 'Recap03.ARD' training file.

## Start situation

This is what your design looks like at the start of the exercise:



## Task

Extend panel A using the **Move** tool.

**Note:** You will need to close the resulting gaps.

Extend panel B using the **Stretch by Polygon** tool.

**Note:** In this case, the measurements should reflect the change.

Change the radius of each of the top corners of the top flap.

Add chamfers to the top C flaps:

- Top left corner for the left one
- Top right corner for the right one

**Note:** Each time, you need to remove the resulting superfluous line and fix the resulting gap.

Remove the inside lines of the window.

**Note:** For the first circle, you need to do this using the **Split Line** tool.

Add a bleed outline, in an **Outside Bleed** layer, that excludes the two top C flaps and the window.

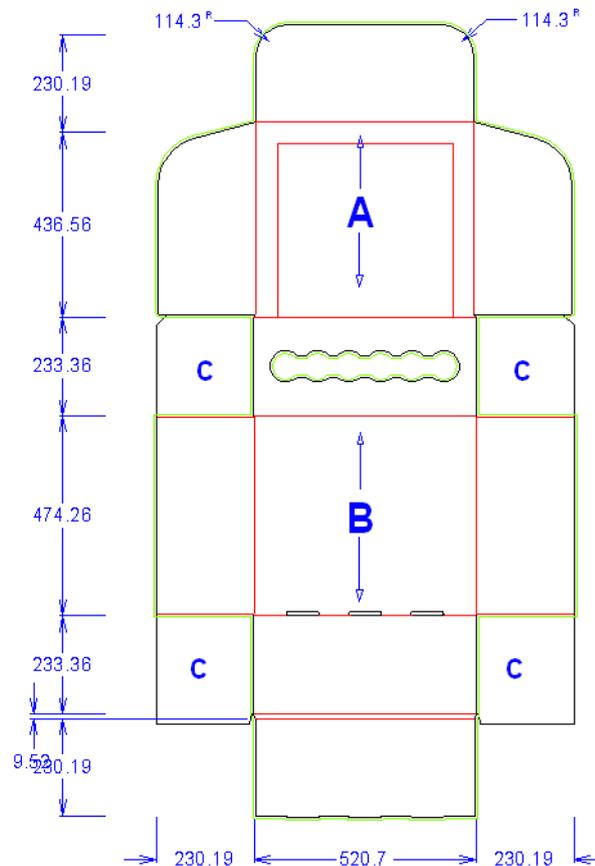
### Tools

You can use the following tools to complete this exercise:

- **Select**
- **Move**
- **Trim/Extend One Line**
- **Stretch by Polygon**
- **Blend**
- **Split Line**
- **Trim Interior**
- **Chamfer**
- **Bleed**

### End situation

This is what your design should look like at the end of the exercise:



## Notes

## Notes

### Values

Your design should have the following values:

Item	Parameter	Value
Panel A	Length	25
Panel B	Length	25
Top corners of the top flap	<b>Radius of blend</b>	75
Top C flaps	<b>Length along first line</b>	25
Bleed	<b>Offset</b>	6

## 2.9 Canvas

---

In this lesson you will learn to master the Canvas concept.

 See **Designer > Canvases**

### Purpose

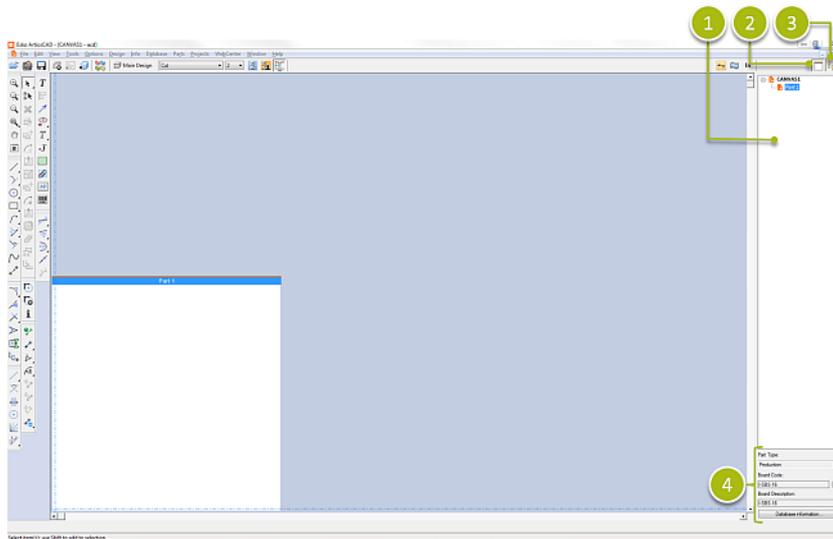
The Canvas concept in ArtiosCAD is designed to make creation of Point-Of-Purchase (POP) files easier. It allows the user to see all parts of a display in a single location, whether they are production parts or not. Canvas designs also allow the user to have different material types in use, logical names, and database information tied to each part.

### Creating a Canvas File

1. **File > New Canvas**
2. Select the appropriate **Parameter Set** and **Board** for the first part to be created.

**Note:** A Canvas file has its own extension, *.ACD*, which stands for ArtiosCAD Canvas Design Document.

## The Canvas Interface



Part	Description
1	<b>Parts List</b>
2	 <p><b>Show or Hide Parts Frames</b></p> <p><b>Note:</b> Each part in a canvas file has a frame around it. By default the area within the frame is white, and the area around the frame is light grey. Drafting takes place within the frame area, the frame will expand as needed to fit around drafting. The title bar of the frame can be hidden (using this button) or renamed.</p>
3	 <p><b>Show or Hide Parts List</b></p>
4	<p>In this part, you can:</p> <ul style="list-style-type: none"> <li>• Choose <b>Production</b> or <b>Non-production</b></li> <li>• Check and change the <b>Board Code</b> and the <b>Board Description</b></li> <li>• Click  to open the <b>Database Information</b> for the part of the canvas selected in the <b>Parts List</b></li> </ul>

## Notes

## Notes

## Actions in the Parts List



Right click the...	To...
Canvas name	<ul style="list-style-type: none"> <li>• <b>Create Part</b></li> <li>• <b>Import File As New Part</b></li> <li>• <b>Import Standard As New Part</b></li> </ul>
Part name	<ul style="list-style-type: none"> <li>• <b>Rename Part</b></li> <li>• <b>Delete Part</b></li> <li>• <b>Mark as Production</b> or <b>Mark as Non-production</b></li> </ul>

## Unavailable Actions in Canvasses and Parts

Always unavailable	Only available when a part is active (unavailable when the canvas is active)
<ul style="list-style-type: none"> <li>• <b>Tools &gt; Counter</b></li> <li>• <b>Tools &gt; Reports</b></li> <li>• <b>Help &gt; Diagnostics &gt; Import NC File</b></li> <li>• Palletization</li> <li>• Sequencing tool</li> <li>• <b>Group Sequence</b></li> <li>• <b>Design from Half/Quarter</b></li> </ul> <p><b>Note:</b> In ArtiosCAD Standard Edition, <b>Publish to WebCenter</b> is not available for canvases.</p>	<ul style="list-style-type: none"> <li>• <b>File &gt; Import File</b></li> <li>• <b>Edit &gt; Paste</b></li> <li>• <b>Edit &gt; More Select</b></li> <li>• <b>Edit &gt; Edit Tools</b></li> </ul>

**Note:** *If the current tool is not available when switching to a canvas, ArtiosCAD activates the **Select** tool.*

## Tutorials

You will follow three separate tutorials:

- [Tutorial: Converting an Existing File to a Canvas](#) on page 214
- [Tutorial: Importing to a Canvas and Working with Parts](#) on page 216
- [Tutorial: Saving Parts](#) on page 219

## Notes

### 2.9.1 Tutorial: Converting an Existing File to a Canvas



**For this tutorial you need the training file 'CONVERTING AND AUTOSPACE DESIGN.ARD'.**



See **Designer > Canvases > File operations > Converting an existing design to a canvas**



You will convert one of your ArtiosCAD design files (ARD file) into a Canvas file (ACD file).

①②③

1.  'CONVERTING AND AUTOSPACE DESIGN.ARD'
2. 

**Note:** You can also choose **File > Convert to Canvas**

⊖ ArtiosCAD creates separate parts for each geometry that touches or overlaps. ArtiosCAD numbers the parts by rows starting from the top left. Part 1 is the active part.

**Note:** In some cases, this will result in less parts than you anticipated, e.g. because a **Dimension** line has inadvertently joined two parts. If so, you can still separate them: select all the lines that belong to one part and right click to choose **Split Part** or choose **Parts > Split Part**.

**Note:** Except for **Doc Plot** and **Output** layers, all the layers are automatically turned on.

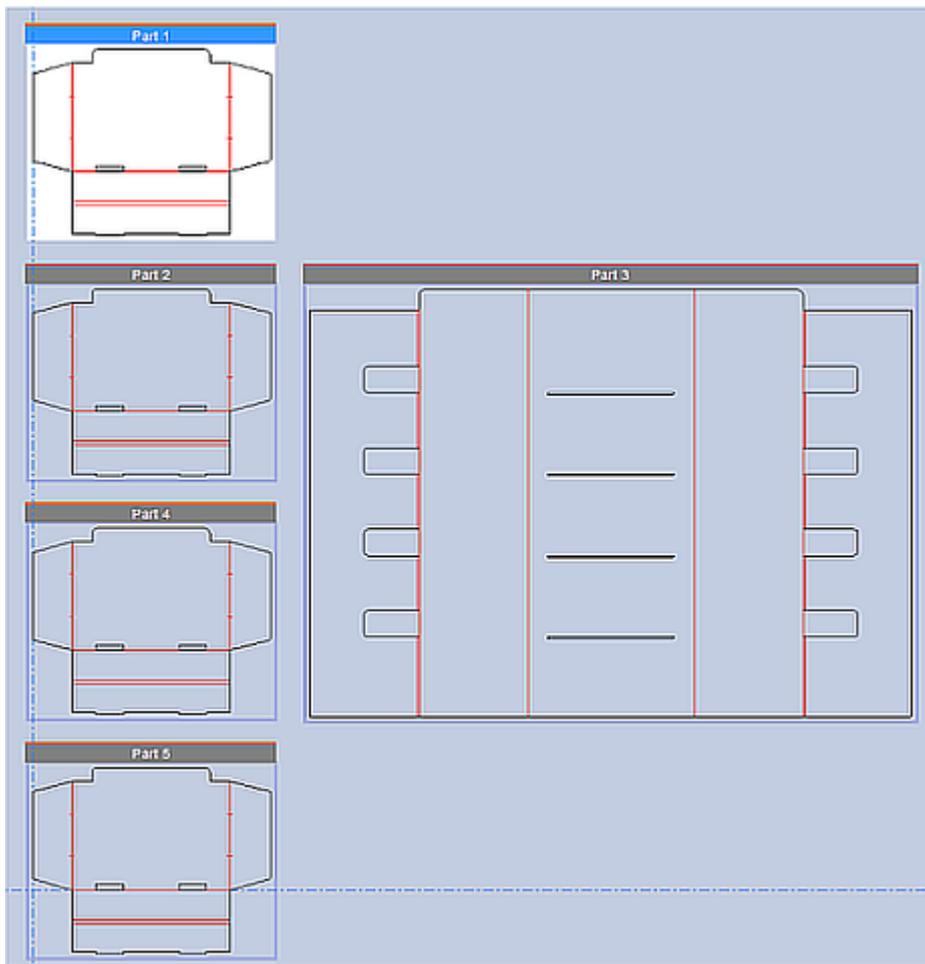
#### 3. Parts > Auto Space Parts

⊖ You have pushed parts 1, 2, 4, and 5 apart.



You have converted a design file that contained different components into a Canvas file consisting of different Parts. To make the canvas less cluttered, you have added some blank space between the parts:

## Notes



## 2.9.2 Tutorial: Importing to a Canvas and Working with Parts

-  See **Designer > Canvases > File operations > Importing a file as a new part / Importing a standard as a new part**
-  You will create a new Canvas and add a new part to it based on a Standard.

1|2|3

1. Create a new Canvas:
  - a. **File > New Canvas**
  - b.  **Single Design Settings**: in the left column, expand **Corrugated**.
  - c.  **Corrugated - Metric - Single Design parameters**
  - d. In the right column, expand **Artios > Corrugated Boards > C**
  - e.  **I-125C (I-125 C Kraft)**
  - f. 

 *You have created a new Canvas and a first, empty Part has been added.*
2. Import a Standard to **Part 1**:

**Note:** You can also import an existing file. In that case, you have to choose **File > Import File As New Part** (or right click the Canvas name in the **Parts List** and choose **Import File As New Part**). If the active part is empty, the imported file will be placed into the part. If there is no unused active part, ArtiosCAD will create a new part in the bottom right.

- a. **File > Import Standard As New Part**
- b.  **Standards Catalog**: in the left column, expand **Corrugated > FEFCO > 200 Series**
- c.  **F0201**
- d. 
- e.  **Board Information:** 

## Notes

**Note:** This way, the board matches the board selected for the Canvas file.

f.  **F0102W:**  1500 for **L**

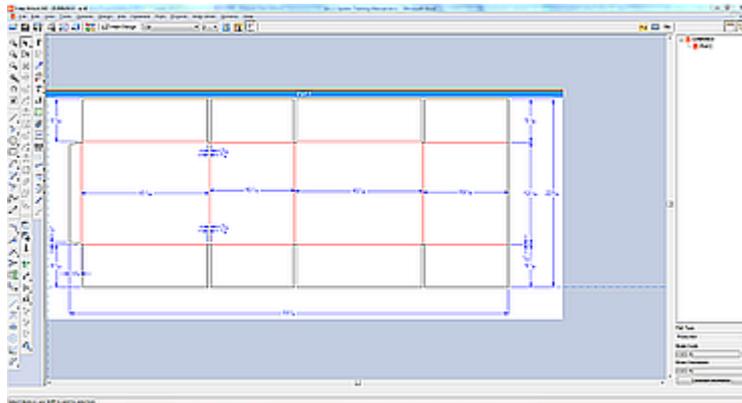
g.  1000 for **W**

h.  1200 for **D**

i. 

 You have created the Standard in Part 1. The board codes match the original part in the Canvas. The Standard also inherits the grain direction, units, and side of the Canvas.

**Note:** A Part made from a Standard cannot be rebuilt.



3. Explore some of the possibilities of working with Parts;

a. Click and hold the title bar of Part 1 and drag the Part.

 You can move the Part manually to another location on the Canvas.

b.  the title bar or a blank space inside the Part.

 The Part turns magenta and the context menu appears. You can see that **Delete Part** is not active since you cannot delete the only Part of the Canvas.

**Note:** To delete a Part, you can also choose **Parts > Delete Active Part**

c.  in the gray space and  **Create Part** from the context menu.

 You have added a Part 2 to the Canvas.

**Note:** Now that you have more than one Part, you could delete either one.

 You have created a new Canvas and added a design based on a Standard to its initial Part. Next, you have moved Part 1, discovered that you cannot delete it as long as it is the only Part, and added a second Part.

## Notes

## Notes

## 2.9.3 Tutorial: Saving Parts



**For this tutorial you need the training file 'Example Saving File.ACD'.**



See **Designer > Canvases > File operations > Saving parts**



You will save the Parts of your Canvas file to individual ArtiosCAD workspaces. You will then be able to work with these Parts individually.

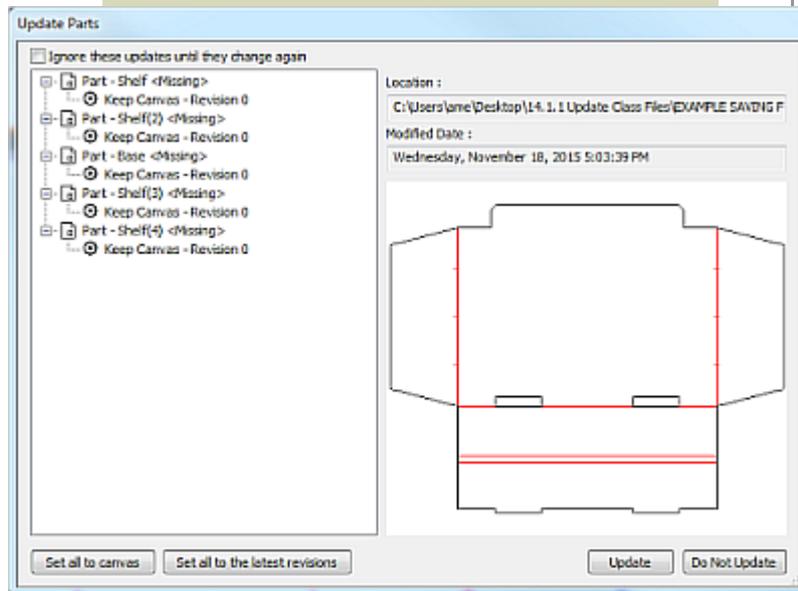
**Note:** *If you do, ArtiosCAD will prompt you to synchronize the Canvas versions with the individual versions the next time you open the Canvas.*



1. Open 'Example Saving File.ACD':
  - a.  'Example Saving File.ACD'
  - b.  **Add Database Entities:**
  - c.  **Esko ArtiosCAD Warning:** 
    - ⊖  **Update Parts:** *you can now choose to update the different Parts of the Canvas with the versions you have selected in the left hand side of the dialog.*

## Notes

**Note:** In this case, there are as yet no revisions. You can check this by expanding the Parts:



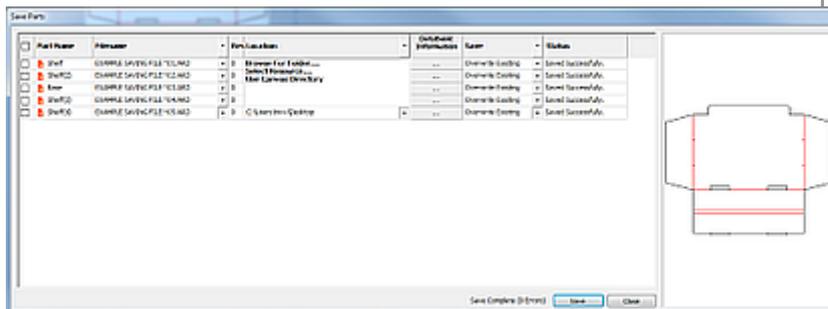
d.

⊖ The Canvas, containing five Parts, is opened. **Shelf** is the active Part.

2. Save the Parts in your Canvas file:

a. **File > Save Parts...**

b.  **Save Parts:** if necessary, change the location by opening the drop-down list next to **Location:**



**Note:** If you click  , your Canvas file will be saved, but not the separate ARD files of the Parts. You can change this option by choosing **Options > Defaults... > Startup defaults > Canvas/Parts Options**

## Notes

**Note:** You can set the location for each Part individually, or for all the Parts by clicking the drop-down list in the column header.

☰ Those Parts that have changed since the last save, if any, are automatically selected.

- c. Check in the **Save** column that **Create New Document** is set for each of the Parts.

**Note:** If the Parts had already been saved previously, you can also choose to **Save** (overwrite the existing document) or **Save as New Revision** (add a revision to the document, in which case you will have to add a comment).



To learn more about Revisions, see **Designer > Canvases > File operations > Saving revisions**

- d.

☰ You can check the **Status** column: in this case you will see **Saved successfully**.

- e.

☰ The Parts are saved as separate ARD files in the location of your choice.

**Note:** The file names for the Parts are based on the Canvas name.

☰ You have opened an ACD file, explored how you can work with the version history of the different Parts, and seen how you can save these Parts as ARD files.

### 2.9.4 Recap Exercise: Basic Canvas Actions

For this exercise you need no particular training file.

#### Tasks

- Create a New Canvas Workspace
- Draw a shape in Part 1
- Create a second Part
  -  in the Open Space (grey area) and choose **Create Part** or
  -  **Parts > Create Part**
- Switch to the second part by clicking on the title bar of Part 2
-  **Tools > Current Point > Move by** to move into Part 2.
- Draw a shape in Part 2.
- Draw from Part 1 and connect to Part 2.

**Note:** *The part expands as you draw and does not add to Part 1, but expands over Part 1.*

## 3. Outputs

---

## Notes

In this lesson you will learn how to generate different types of outputs based on your design.

### Purpose

 See **Outputs > Introduction to Outputs**

Outputs are processes that transform your electronic drawing data into something tangible that you can share with the rest of the world. You can make an output using a report, a simple printout, a sample, or an electronic file. Outputs are configured in the Defaults section of ArtiosCAD. You can customize your own output methods in addition to using those on the server.

### Types

 See **Outputs > Concepts and Ideas in Outputs**

There are two conceptual types of outputs – those that are printed on a printer or plotter, and those created on a machine that is not a printer or plotter. Windows printer drivers are used for most printer outputs. ArtiosCAD CAM (Computer Aided Manufacturing) drivers are used for most plotter and machine output.

### Generating

Generating an output is a straightforward process that is independent of a toolbar and uses menu commands instead.

You always start with **File > Outputs**. At this point you choose a specific output format.

### Tutorials

Based on a design contained in a single training file, you will follow ten separate tutorials:

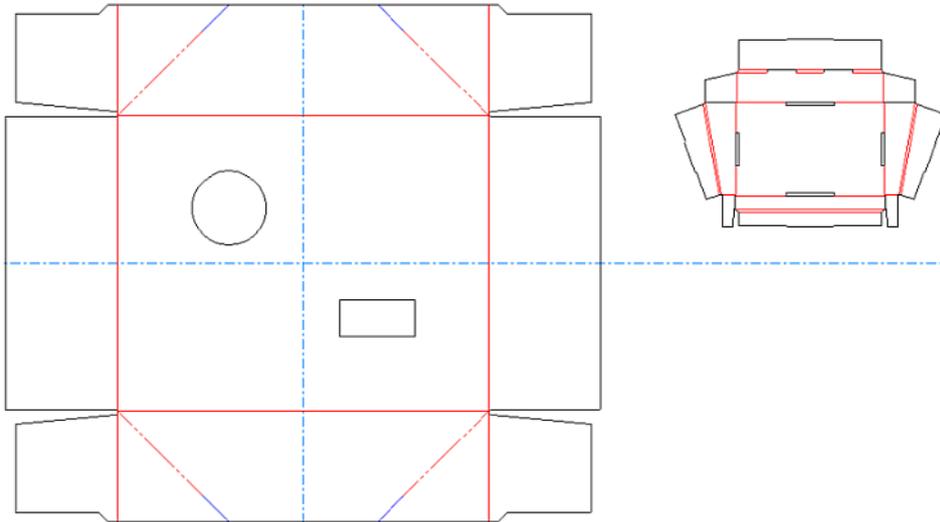
- [Tutorial: Printing](#) on page 225
- [Tutorial: Printing a Spec Sheet Report](#) on page 227
- [Tutorial: Plotting a Spec Sheet to PDF](#) on page 228
- [Tutorial: Plotting a Spec Sheet to PDF/U3D](#) on page 230
- [Tutorial: Placing a Spec Sheet in a Separate Layer](#) on page 232
- [Tutorial: Overruling the Dimension Format in the Printout](#) on page 234
- [Tutorial: Making a Sample](#) on page 236

## Notes

- [Tutorial: Generating Multiple Outputs in a Group](#) on page 238
- [Tutorial: Printing a Selection](#) on page 239
- [Tutorial: Outputting a Part of a Canvas](#) on page 242

For the first nine tutorials, you only need the training file with the initial situation (OUT\_00.ARD). Save your tutorial results with self-chosen file names. Use a backup of an intermediate file if necessary: which particular one is mentioned at the beginning of the tutorial.

Though outputs have no immediate impact on a design, you will make some minor adjustments to the design in order to explore some of the possibilities of outputs. At the end of the lesson, your design will have the following aspect:



For the tenth tutorial, you will use a Canvas file: 'Example Saving File.ACD'.

Apart from these tutorials, the following will also be covered during the training: '[Bill of Materials Reports](#) on page 244'.

## Notes

## 3.1 Tutorial: Printing



**For this tutorial you need the training file 'OUT\_00.ARD'.**

- ① You want to make a printout of your design that includes its overall dimensions. Previously, you had already added those dimensions to your design.

①②③

1. 'OUT\_00.ARD'
2. Display the **Overall dimensions** layer:
  - a. **View** bar:
  - b. **Layers:** the left column next to the **Overall dimensions** layer.
  - c.
3. Print the design, including its overall dimensions:
  - a. **File > Outputs > Printer output > Plot to Printer**
  - b. **Plot to Printer:** .

**Note:** If you decide to print without checking the preview first, you can immediately click instead.

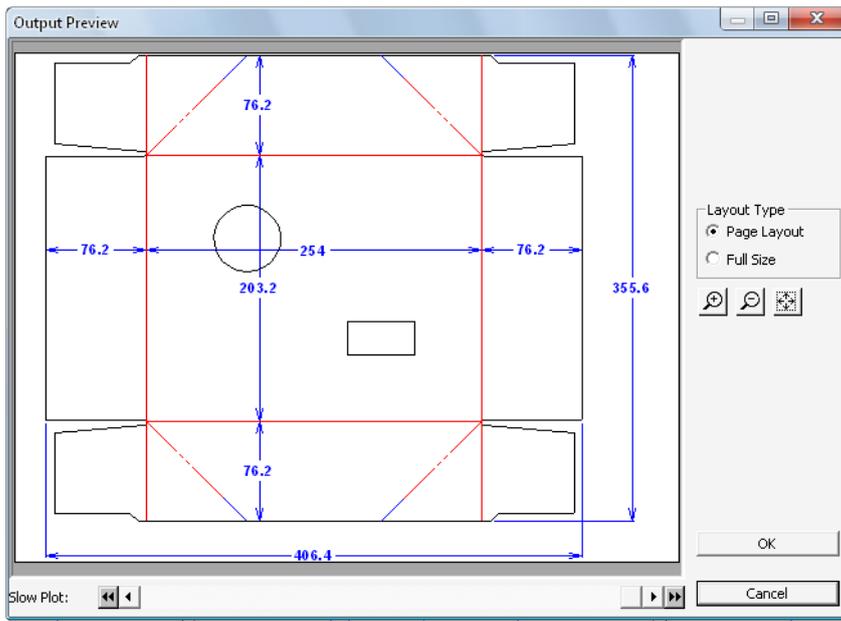
  - c. **Output Preview:**



You have activated the **Overall dimensions** layer of the design in order to include it in a printout. To print your design you have generated a **Printer output** of the **Plot to Printer** type.

Before sending the result to the printer, you have verified it in a preview:

# Notes



## Notes

## 3.2 ☰ Tutorial: Printing a Spec Sheet Report



If necessary, you can open the file 'OUT\_01.ARD'.

- ☉ You want to generate a report about your design in the form of a spec sheet.

1|2|3

1. **File > Outputs > Printer output > Spec. Sheet #2**

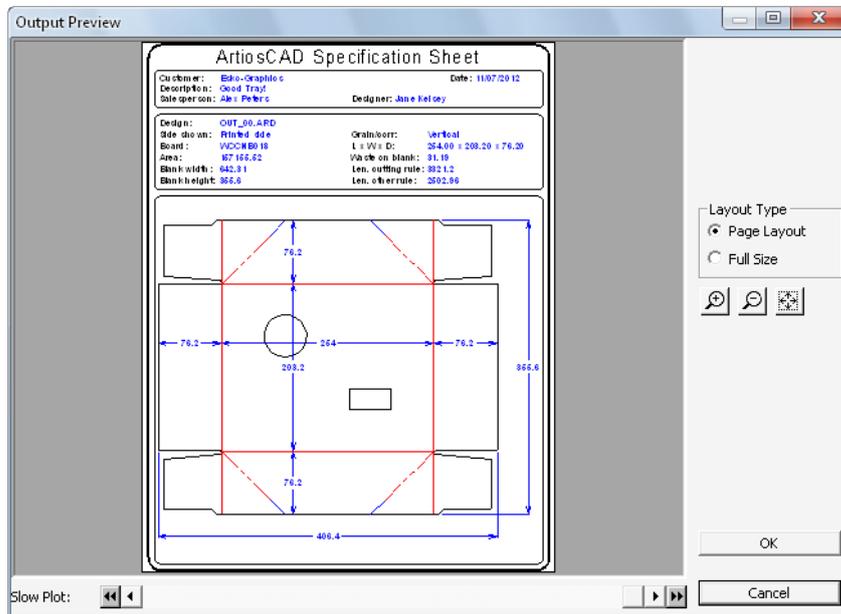
2. **Spec. Sheet #2:**

3. **Output Preview:**



To print the spec sheet of your design, you have generated a **Printer output** of the **Spec. Sheet #2** type.

Before sending the result to the printer, you have verified it in a preview:



### 3.3 ☹ Tutorial: Plotting a Spec Sheet to PDF



If necessary, you can open the file 'OUT\_01.ARD'.

- ☉ You want to generate a PDF output of your design based on an available report of the spec sheet type. Before creating the file you decide to check the preview.

1|2|3

1. **File > Outputs > Printer output > Plot to PDF**
2. Attach a report of the spec sheet type to your output:
  - a. **Plot to PDF: Properties...**
  - b. **Properties:** **Reports**
  - c.  **Use Report.**
  - d. **Spec. Sheet #2**
  - e.
3. Check the preview and generate the PDF:
  - a. **Plot to PDF:**
  - b. **Output Preview:**
  - c. **Save As:**

**Note:** You can change the name of the PDF and its location.

☹ The PDF will automatically be opened.

☹ To generate a PDF of the spec sheet of your design, you have generated a **Printer output** of the **Plot to PDF** type. Next you have attached a **Spec. Sheet #2** report to your PDF.

Before saving the resulting PDF, you have verified it in a preview.



## 3.4 ☹ Tutorial: Plotting a Spec Sheet to PDF/U3D



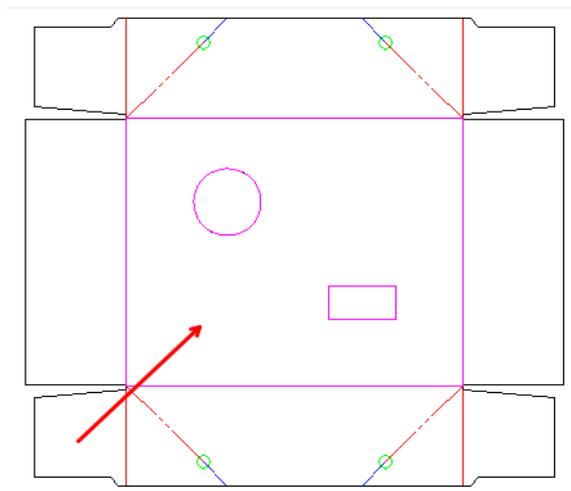
If necessary, you can open the file 'OUT\_01.ARD'.

- ☉ You want to save a spec sheet report of your design as a PDF file that includes an embedded 3D model of the result.

U3D (Universal 3D) models can be generated and included in a PDF file. These models are interactive: for instance, you can zoom and rotate the 3D object.

1|2|3

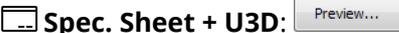
1. Create a 3D model of your design:
  - a. **View** bar:
  - b. **Add Unfolded Design(s)**: if necessary, the central panel to select it as the **base face**:



- c.
  - ⊖ A 3D model with the extension A3D has been generated.
- d. Choose **Window**.
- e. Switch back to the **Designer** workspace by selecting the name of your design file.

**Note:** This is the file with the ARD extension.

## Notes

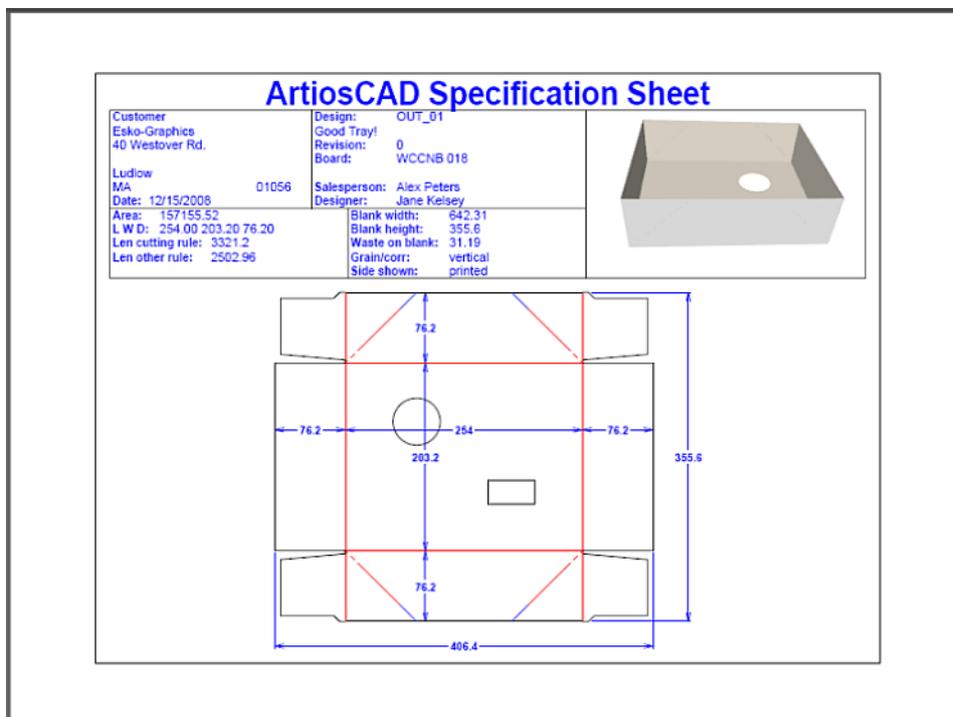
2. Check the preview and generate the PDF/U3D:
  - a. **File > Outputs > Printer output > Spec. Sheet + U3D**
  - b.  **Select report files:**
  - c.  **Spec. Sheet + U3D:**
  - d.  **Output Preview:**
  - e.  **Save As:**  for **File name.**
  - f.

 *The PDF will automatically be opened. You can manipulate the 3D model included.*

 You have created a 3D model of your design.

With this model still open in the **3D** workspace, you have returned to the **Designer** workspace in order to generate the PDF/U3D report.

You have generated a **Printer output** of the **Spec. Sheet + U3D** type. You have saved the resulting PDF and the file was automatically opened with the interactive 3D model included.



## 3.5 ☹ Tutorial: Placing a Spec Sheet in a Separate Layer



If necessary, you can open the file 'OUT\_01.ARD'.

- ☉ You want to generate a spec sheet report of your design. Instead of immediately printing the report, you want to place it in a separate layer. In a layer, you will be able to use the familiar design tools to change the report.



1. Generate the spec sheet report and place it in a separate layer:
  - a. **File > Outputs > Printer output > Spec. Sheet #2**
  - b. **Spec. Sheet #2: Properties...**
  - c. **Properties**, **Device:**  **Workspace Layer**
  - d. Spec for **Layer name**.
  - e.
  - f. **Spec. Sheet #2:**

☹ *The **Spec** layer has been added to the design and is the active layer. You can now edit the spec sheet report it contains.*
2. Hide all layers except the **Spec** layer:
  - a. **View** bar: Spec
  - b. **Layers:** the eye next to the **Overall dimensions** layer to hide it.
  - c. the eye next to the **Main Design** layer to hide it.
  - d.
3. **View** toolbar:

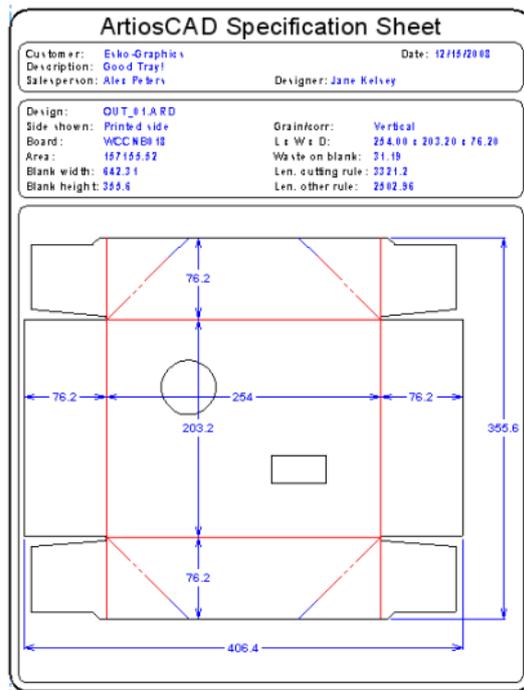


You have generated an output of the **Spec. Sheet #2** type. Instead of printing this report, you have placed it in a separate **Spec** layer.

**Note:** When changing the design information (such as customer, board, L x W x D, ...) AFTER placing the Spec Sheet in a layer, the content of the created Spec Sheet will NOT be updated. In that case you need to generate the output again and replace the Spec layer.

To prepare your workspace for editing the report, you have hidden all layers except the **Spec** layer.

## Notes



## 3.6 ☰ Tutorial: Overruling the Dimension Format in the Printout



If necessary, you can open the file 'OUT\_02.ARD'.

- ☉ Since screen and printout formatting do not necessarily match, you sometimes want to overrule the design formatting.

In this tutorial you have been working in a design with dimensions in **Millimeters**. For your printout however, you require **Inches**. You decide to overrule your design formatting for the printout.

1|2|3

1. Prepare the layers:
  - a. **View** bar: Spec
  - b. **Layers:** ☰ **Main Design** layer.
    - ⊖ *The **Spec** layer is at once de-activated and hidden.*
  - c. the left column next to the **Dimensions** layer.
  - d.
2. **File > Outputs > Printer output > Plot to Printer**
3. Overrule the dimension format in the print output:
  - a. **Plot to Printer: Properties...**
  - b. **Properties:** **View**
  - c.  **Override Dimension Format**
  - d. ☰ **inches** for **Units**
  - e.  **Small Fractions** for **Inches Format**
  - f.
4. Check the preview and print:
  - a. **Plot to Printer:**
  - b. **Output Preview:**

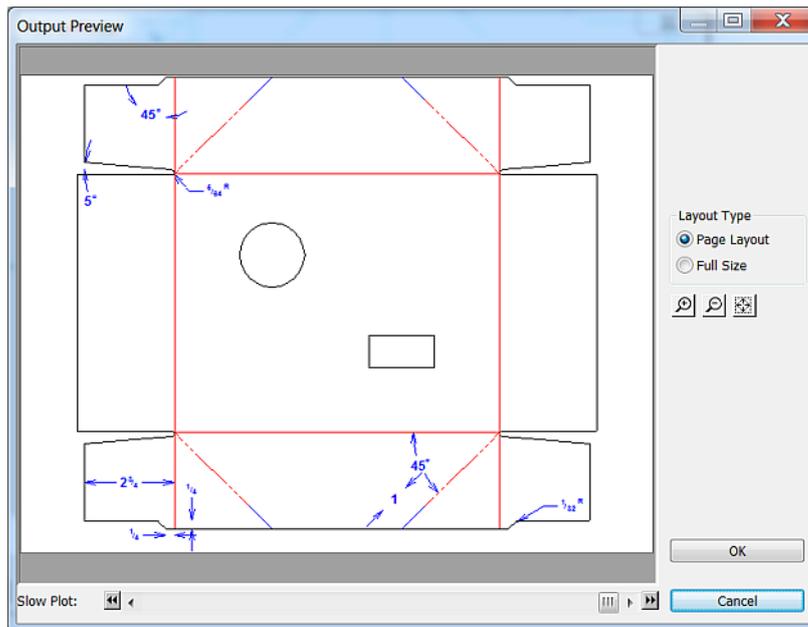
**Note:** *The formatting of the dimensions in the design has not changed.*

## Notes

 You have prepared your printout by making the **Main Design** and **Dimensions** layers visible while hiding the **Spec** layer.

For the printout, you have overruled the formatting of the dimensions: you have chosen to display **inches** instead of **mm**.

Before sending the result to the printer, you have verified it in a preview:



## 3.7 ☹ Tutorial: Making a Sample



If necessary, you can open the file 'OUT\_03.ARD'.

- ☉ The electronic file formats of the outputs include those of a large range of samplemakers. This allows you to quickly obtain a tangible result of your design. An automatic optimization of the design according to the samplemaker chosen takes place.

**Note:** In certain cases you may need to overrule this optimization.

In this case, you want to make a sample of your design on a **Kongsberg XE10 - FC** cutting table.

For this, you need an ACM file that can be read by the cutting table. In this tutorial, you will generate this file. You also want to verify the plotting optimization that is automatically performed when generating this type of output.

①②③

1. **File > Outputs > Kongsberg XE10 - FC > Kongsberg XE10 - FC sample cutting and matrix**
2. Verify the plotting optimization:
  - a.  **Kongsberg XE10 - FC sample cutting and matrix:**  

  - b.  **Output Preview, Slow Plot** toolbar: 
  - c. Drag the slider to the right to verify the plotting of the crease and the cut lines.
  - d.  **Page Layout** for **Layout Type**.  
 *You can now verify the positioning on the table.*
  - e.  **Output Preview**
3. Generate the ACM file:
  - a.  **Kongsberg XE10 - FC sample cutting and matrix: Make Sample**
  - b. (Optional): If you have not previously created a CAM folder on the C: drive, you will receive an error notification. In that case, click 

## Notes



- ⊖ The ACM file will be saved in the current working directory.

c. **Save As:**

**Note:** You can change the name of the ACM file and its location.

d. **Specify a Kongsberg Job Setup File:**

- ⊖ The ACM file has been generated.

e. **Kongsberg XE10 - FC sample cutting and matrix.**

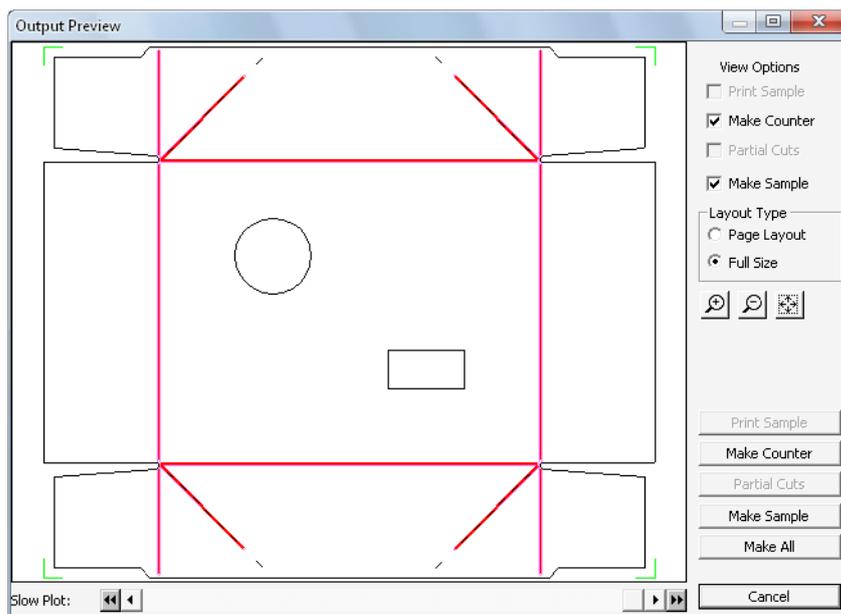
ⓘ You have generated an ACM file of your design for use on a **Kongsberg XE10 - FC** sample table.

For this, you have generated a **Kongsberg XE10 - FC** output of the **sample cutting and matrix** type.

Before accepting the optimized output, you have verified:

- The plotting sequence of the crease and cut lines
- The page layout

You have used the following preview for your verification:



## 3.8 ☹ Tutorial: Generating Multiple Outputs in a Group



If necessary, you can open the file 'OUT\_03.ARD'.



See **Outputs > Concepts and Ideas in Outputs**

You can also create **Grouped outputs**, which as the name implies is a group of outputs. This way you can (for example) output to a printer, send a design via e-mail, and cut the sample all with a few clicks of the mouse. For more information on configuring Grouped outputs, see the *Defaults* chapter of the *ArtiosCAD Installation and Configuration Guide*.



In this case, you repeatedly need three outputs for making the die for your design:

- A die board
- A billing record sent to the accounts
- A spec sheet for the die room

Instead of having to generate each of these outputs separately each time, you have previously grouped them.

①②③

1. **File > Outputs > Grouped Output Example > A group of all 3 outputs for making the die**

2. **Confirmation:**

☹ *The outputs are generated. The **BILLING\_RECORD** file is automatically opened.*



Using a simple menu command, you have created the following grouped output containing three different output formats:

- A TXT file for the **Die Board** output
- A TXT file for the **Send billing record to Accounts** output
- A printout for the **Spec. for Die Room** output

## Notes

### 3.9 ☹ Tutorial: Printing a Selection

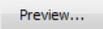


If necessary, you can open the file 'OUT\_03.ARD'.

- ☉ In a separate layer of the design, you have previously added a drawing of a tray. You will activate this layer and thus see two objects on the workspace.

Even with the two objects present on your workspace, you decide to make a printout of a spec sheet report for the tray only. You want this report to give the technical details for the tray only. To achieve this, you will have to print a selection of the workspace.

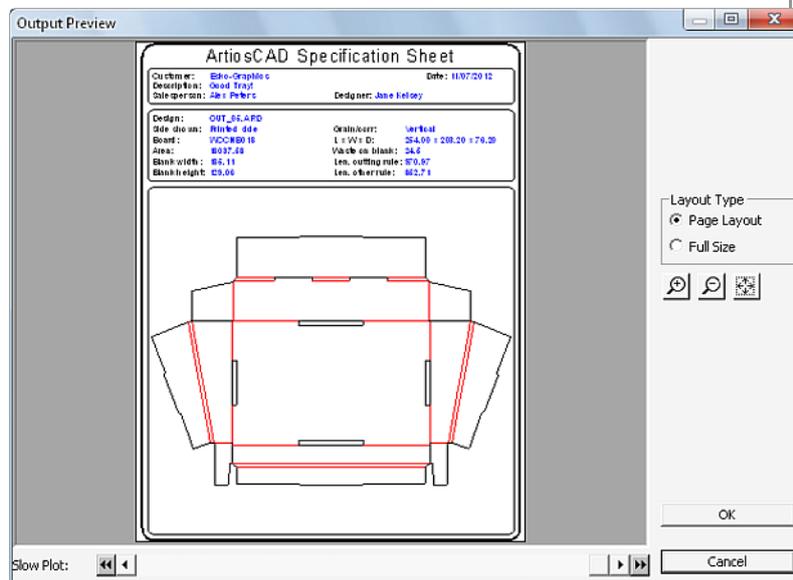
1 2 3

1. Make the **Tray Design** layer visible:
  - a. **View** bar: 
  - b.  **Layers:**  the left column next to the **Tray Design** layer.
  - c. 
2. Select the tray:
  - a. **Edit** toolbar: 
  - b. Draw a rectangle around the tray to select it.
3. Preview the print output:
  - a. **File > Outputs > Printer output > Plot to Printer**
  - b.  **Plot to Printer:** 
  - c.  *The two drawings of your design are included in the printer output.*
  - c.  **Output Preview**
4. Change the print output to include only the selection:
  - a.  **Plot to Printer: Properties...**
  - b.  **Properties:**  **View**
  - c.  **Current selection** for **View Selection**.
  - d.  **Use selection for report calculations**.

## Notes

**Note:** Otherwise the spec sheet report would include technical details for the whole design and not just the tray.

5. Attach a report of the spec sheet type to your output:
  - a.  **Reports**
  - b.  **Use Report**
  - c.  **Spec. Sheet #2**
  - d.
6. Check the preview and generate the print output:
  - a.  **Plot to Printer:** 
    -  Only the tray is included in the printer output:



- b.

 To print a spec sheet report about a selection of your design containing only the tray, you have:

- Selected the tray
- Generated a **Printer output** of the **Plot to Printer** type
- Changed the properties in order to:
  - Include only the selection
  - Use only the selection for report calculations
- Attached a **Spec. Sheet #2** report to your output

- Checked the preview

## Notes

## 3.10 Tutorial: Outputting a Part of a Canvas



**For this tutorial you need the training file 'Example Saving File.ACD'.**



See **Outputs > Canvas Outputs**



You are working with a Canvas file that contains five Parts: a base and five identical shelves.

You decide to make a printout of a spec sheet report with the technical details for the shelf only. To achieve this, you will have to print a Part of the Canvas.

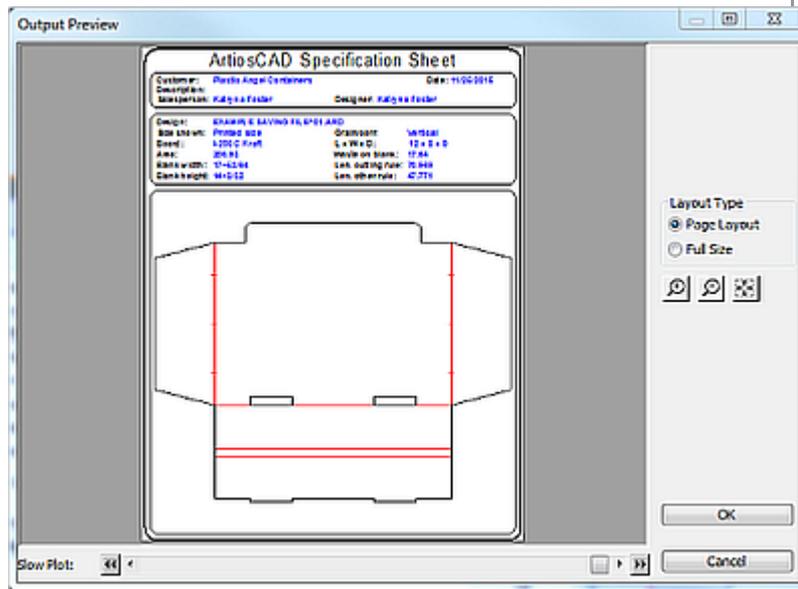
1|2|3

1.  'Example Saving File.ACD'
  -  **Shelf**, as the first Part of the Canvas, is the active Part.
2. Preview the print output:
  - a. **File > Outputs > Printer output > Plot to Printer**
  - b.  **Plot to Printer:**
  -  Only the active Part is included in the printer output.
  - c.  **Output Preview**

**Note:** If you want to print your entire Canvas, including all its Parts, you need to make the Canvas active in the **Parts List** before starting up the output.

3. Attach a report of the spec sheet type to your output:
  - a.  **Plot to Printer: Properties...**
  - b.  **Reports**
  - c.  **Use Report**
  - d.  **Spec. Sheet #2**
  - e.
4. Check the preview and generate the print output:
  - a.  **Plot to Printer:**
  -  Only the tray is included in the printer output:

## Notes



b.

 To print a Part of your Canvas containing only the shelf, you have:

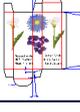
- Made sure the Part was active
- Generated a **Printer output** of the **Plot to Printer** type
- Attached a **Spec. Sheet #2** report to your output
- Checked the preview

**Note:** If you would like to generate a PDF containing all the Parts of your Canvas, you need to choose **Parts > Parts Outputs > Multipage PDF**.

 For more information, see **Outputs > Canvas Outputs > Running a part-by-part Output for a canvas**

## 3.11 Bill of Materials Reports

ArtiosCAD can create Bill of Materials Reports, or BOM Reports. BOM Reports list different designs that make up a Project. Shown below are the first pages of two example BOM Reports run against the same Project.

ArtiosCAD BOM		11/08/2008 14:01:16	
Project: <b>2008-11-08001</b>		Manager: <b>Katryna Foster</b>	
Customer: <b>Plastic Angel*</b>		Sales: <b>Nerissa Ghomeshi</b>	
Notes: Cumulative project for November's work			
	Name: <b>05_2496.ARD</b> # Req'd: <b>3</b>	Description: <b>Database configuration testing</b>	
	Material: <b>200 # C Kraft</b> # Colors: _____	Notes1: _____	
	Notes2: _____	Size: <b>26*5/8x35*7/8</b> Wght: <b>0</b> Rule: <b>337.40*</b> Cost(\$): _____	
	Name: <b>2496 CREAM TUBE*</b> # Req'd: <b>5</b>	Description: <b>Cream tube holder</b>	
	Material: <b>1-SBS-16</b> # Colors: _____	Notes1: _____	
	Notes2: _____	Size: <b>6*15/32x9*1/2</b> Wght: <b>64</b> Rule: <b>70.539</b> Cost(\$): _____	
	Name: <b>3X05_2496.ARD</b> # Req'd: <b>1</b>	Description: <b>Database configuration testing</b>	
	Material: <b>200 # C Kraft</b> # Colors: _____	Notes1: _____	
	Notes2: _____	Size: <b>8*4*3/4x35*7/8</b> Wght: <b>0</b> Rule: <b>1012.2*</b> Cost(\$): _____	
	Name: <b>ANGEL1 WITH INSIDE AND*</b> # Req'd: <b>0</b>	Description: _____	
	Material: <b>200 # C Kraft, US</b> # Colors: _____	Notes1: _____	
	Notes2: _____	Size: <b>22*11*11/16x18*</b> Wght: <b>0</b> Rule: <b>218.43*</b> Cost(\$): _____	

ArtiosCAD BOM		11/08/2008 14:03:27				
Project: <b>2008-11-08001</b>		Manager: <b>Katryna Foster</b>				
Customer: <b>Plastic Angel*</b>		Salesperson: <b>Nerissa Ghomeshi</b>				
Name	Print Item	Cnt	Weight	Area	Rule	Comments
1. 05_2496	Green	3	0	955.17	337.41	
2. 2496 CREAM TUBE*	2496 CREAM TUBE HOLDER.ARD	5	0.02	61.45	70.54	
3. 3X05_2496	3X05_2496.ARD	1	0	3040.41	1012.23	
4. ANGEL1 WITH INSIDE AND*	ANGEL1 WITH INSIDE AND*	0	0	426.81	218.43	
5. ANGEL1	ANGEL1.ARD	1	0	426.81	218.43	
6. ANGEL2	ANGEL2 SMALL WRAPAROUND.ARD*	1	0.16	196.08	112.52	
7. ANGEL3 LARGE*	ANGEL3 LARGE WRAPAROUND.ARD*	1	0.85	1374.57	355.00	
8. ANGEL5 CENTER*	ANGEL5 CENTER WRAPAROUND*	1	0.89	1103.48	322.71	
<b>Total Count:</b>		<b>13</b>	<b>2.00</b>	<b>9314.1*</b>	<b>3385.8*</b>	

The basic idea behind using BOM Reports is that you design a Report that repeats information down the page for each individual document in the Project. You can show as much or as little information as you like about the designs. To help show you what is possible, a few example BOM Reports are included in Shared defaults in **Options > Shared defaults > Outputs > Artios > Project Bill of Materials**.

### Note:

*BOM Reports do not need to be added to the Report Catalog in Defaults.*

The **Project Documents** dialog box and the **Documents** pane of the **Project Browser** are where you configure the order and quantity in which the designs will appear on BOM Reports.

To run an existing Output against every document in a Project, simply check **Project-Bill of Materials** in the **Show in** group on its Properties dialog box in Defaults. When it is time to run that Output, select it from the **Projects > Bill of Materials** menu instead of the **Outputs** menu.

## 4. Exports

---

## Notes

In this lesson you will learn how to generate different types of exports based on your design.

### Purpose



See **Getting started with Esko ArtiosCAD > Working with design files > Saving and exporting designs**

*Exporting a design* means that you are essentially taking a snapshot of the design and converting it to a different format for use by someone who does not have ArtiosCAD. Most common export formats are text formats.

### Export formats

ArtiosCAD offers the possibility of creating the following export formats amongst others:

**Note:** *The following formats do not support multi-page export for a Canvas. See [Tutorial: Outputting a Part of a Canvas](#) on page 242*

- DXF
- EPS
- CFF2
- DWG
- IGES
- ACIS
- STEP
- XCGM

**Note:** *ASCII (text-based) formats, such as DXF, are the most common export formats.*

### Example

A native ArtiosCAD design cannot be read by AutoCAD. If you want to generate a file that AutoCAD can use, you need to export your design to the DXF format.

### Generating

Generating an export is a straightforward process that is independent of a toolbar and uses menu commands instead.

You always start with **File > Export**. At this point you choose a specific export format.

### Tutorials

Based on a design contained in a single training file, you will follow five separate tutorials:

- [Tutorial: Generating a DXF File](#) on page 247
- [Tutorial: Generating a DDES File](#) on page 249
- [Tutorial: Generating an EPS File](#) on page 251
- [Tutorial: Exporting with an Information Filter](#) on page 253
- [Tutorial: Generating a PNG File](#) on page 255

At the end of the lesson, your design will not have changed.

## Notes

## Notes

## 4.1 Tutorial: Generating a DXF File



**For this tutorial you need the training file 'EXP\_00.ARD'.**

- ☉ You want to share your design with someone who can open AutoCAD DXF files. You will therefore generate this format and save the exported file.

1 2 3

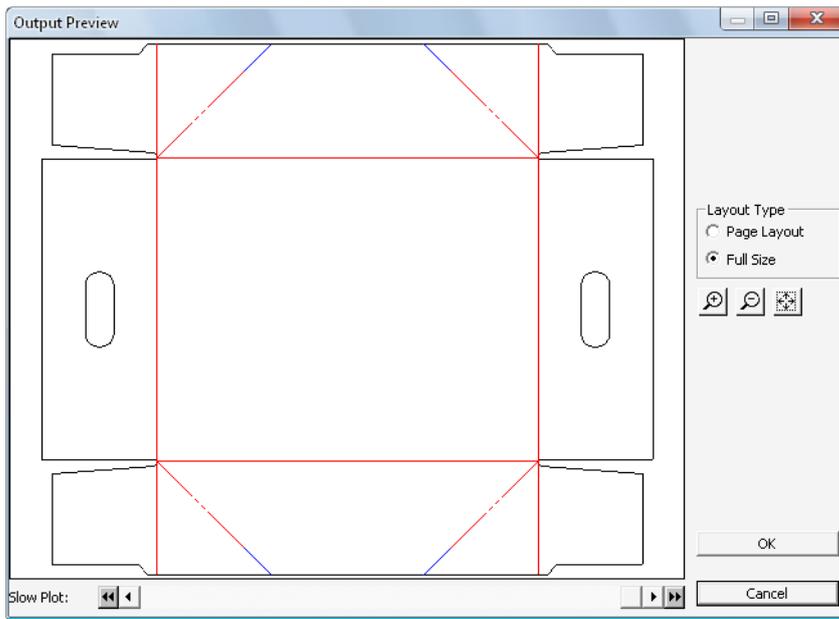
1.  'EXP\_00.ARD'
2. **File > Export > DXF > DXF - Metric**
3. Preview the DXF file:
  - a.  **DXF - Metric:**
  - b.  **Output Preview:**  **Full Size**
4. Save the DXF file:
  - a.
  - b.  **Save As:**

**Note:** You can change the name of the DXF file and its location.



To make your design available in the DXF format, you have generated a **DXF** export of the **DXF - Metric** type. Before saving the result, you have verified it in a preview:

## Notes



## 4.2 ☰ Tutorial: Generating a DDES File



If necessary, you can open the file 'EXP\_00.ARD'.

- ☉ You want to share your design with someone who can open DDES files. You will therefore generate this format and save the exported file.



1. **File > Export > DDES > DDES - Save**

2. Preview the DDES file:

a. **DDES - Save:**

b. **Output Preview:**  **Full Size**

3. Save the DDES file:

a.

b. **Save As:**

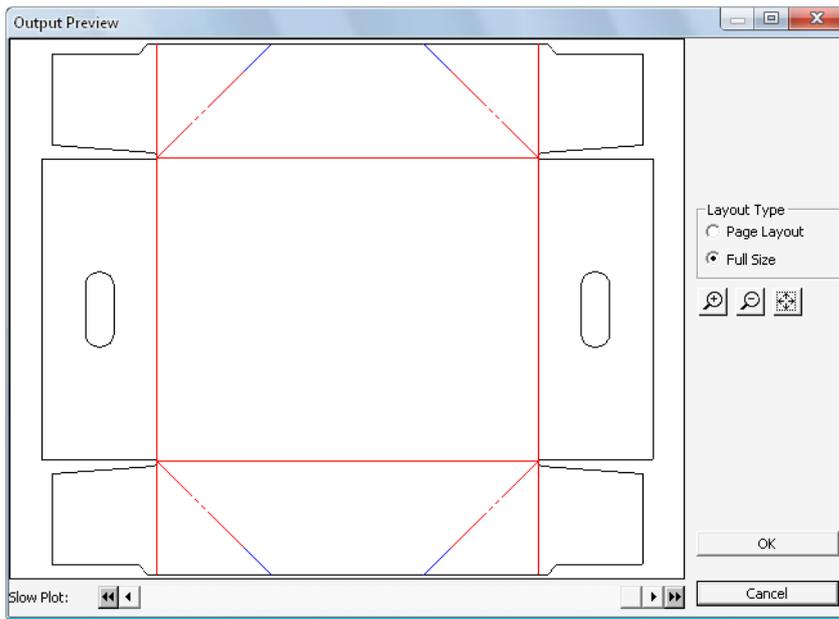
**Note:** You can change the name of the DS2 file and its location.



To make your design available in a DDES format, you have generated a **DDES** export of the **DDES - Save** type.

Before saving the result, you have verified it in a preview:

## Notes



## Notes

## 4.3 ☰ Tutorial: Generating an EPS File



If necessary, you can open the file 'EXP\_00.ARD'.

- ☉ You want to share your design with someone who can open graphic files. You will therefore generate and save an EPS file.

①②③

1. **File > Export > EPS File > EPSF (Illustrator® 8.0 compatible)**

2. Preview the EPS file:

a. **EPSF (Illustrator® 8.0 compatible):**

b. **Output Preview:**  Full Size

3. Save the EPS file:

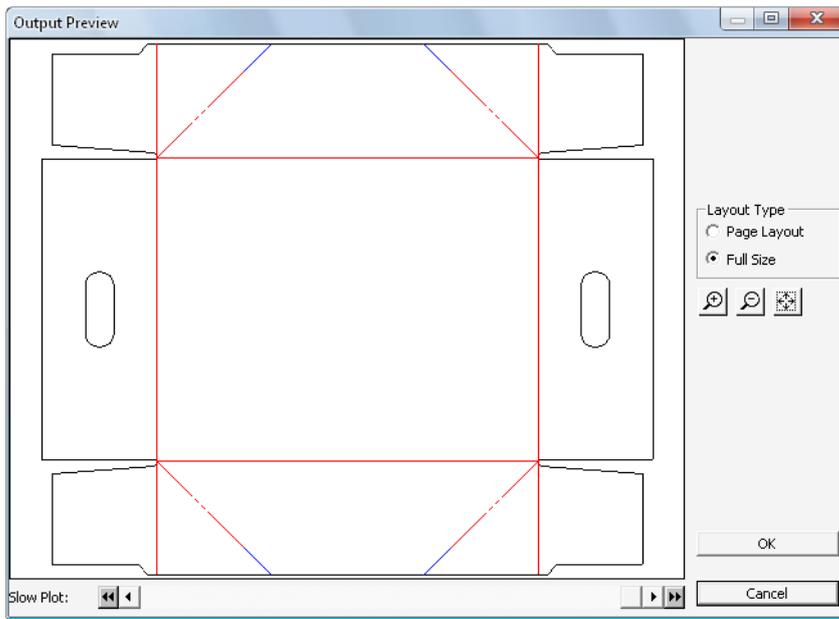
a.

b. **Save As:**

**Note:** You can change the name of the EPS file and its location.

☰ To make your design available in the EPS format, you have generated an **EPS File** export of the **EPSF (Illustrator® 8.0 compatible)** type. Before saving the result, you have verified it in a preview:

## Notes



## Notes

## 4.4 ☹ Tutorial: Exporting with an Information Filter



If necessary, you can open the file 'EXP\_00.ARD'.

- ☉ You want to generate a filtered export of your design. You require a new ARD file of your design with one of the layers, the **Annotation** layer, left out.

1|2|3

1. Verify that your design includes an **Annotation** layer:
  - a. **View** bar:
    - ⊖ **Layers**: you can see the **Annotation** layer in the list.
  - b. **Layers**
2. **File > Export > ArtiosCAD Workspace (Using Information Filter)**
3. Filter the **Annotation** layer:
  - a. **ArtiosCAD Workspace (Using Information Filter): Properties...**
  - b. **Properties**, **Information Filter**: in the **Design Layers** section, disable **Annotation**.
  - c.
4. Save the ARD file:
  - a. **ArtiosCAD Workspace (Using Information Filter)**:
  - b. **Save As**: EXP\_00\_FILTERED for **File name**.
  - c.
5. Verify that the **EXP\_00\_FILTERED** design does not include an **Annotation** layer:
  - a. 'EXP\_00\_FILTERED.ARD'
    - ⊖ *All the layers are displayed.*
  - b. **View** bar:
    - ⊖ **Layers**: you can see that the **Annotation** layer is missing.
  - c. **Layers**

d. Close the **EXP\_00\_FILTERED** design.



You have verified the layers in your design and decided that you needed a version without the **Annotation** layer.

For this, you have generated an **ArtiosCAD Workspace (Using Information Filter)** export of your design. You have excluded the **Annotation** layer. You have saved the resulting ARD file with a fitting name: 'EXP\_00\_FILTERED.ARD'.

You have verified that the **Annotation** layer is indeed missing from the new design.

## Notes

## Notes

## 4.5 ☹ Tutorial: Generating a PNG File



If necessary, you can open the file 'EXP\_00.ARD'.

- ☉ You want to generate a Bitmap export of your design. More specifically, you need a PNG file.

1|2|3

### 1. File > Outputs > Printer output > Plot to Printer

**Note:** For this type of export you need the output command.

2. Specify the PNG file:
  - a. **Plot to Printer: Properties...**
  - b. **Device:**  **Bitmap**
  - c. In the **Bitmap Format** section,  **PNG**
  - d. **Position:** in the **Device Size** section,  for both **Width** and **Height**.
  - e. **Directories:**  for **Extension**
  - f.
3. Save the PNG file:
  - a. **Plot to Printer:**
  - b. **Save As:**

**Note:** You can change the name of the PNG file and its location.



To make your design available as a Bitmap, you have generated a **Printer output** of the **Plot to Printer** type.

You have chosen Bitmap as the device type and specified this as a PNG file. Next you have changed the dimensions of the Bitmap and defined its extension.

Finally, you have saved the result.

## 5. Basic Customization

---

## Notes

In this lesson you will learn how you can customize ArtiosCAD to suit your requirements. The standard customization is to be found in the **Defaults**.

### Shared defaults

Shared defaults are shared by all the users of the same ArtiosCAD server. They are stored in the **Serverlib** folder on the system defaults server.

### User defaults

User defaults are owned by a single user. They are stored in the **Clientlib** folder on the local system.

### Categorization

To simplify the customization process, the **Defaults** are grouped in a number of categories and subcategories:

- Design defaults
  - Database
  - Default board
  - Rebuild options
  - Default View Mode
  - ...
- Plotting Style Catalog
- Property defaults
- Startup defaults
- Customized toolbars
- Shortcuts
- Outputs
- Geometry Macro Catalog
- ...

### Restarting

Changing defaults is a straightforward process. Some of the changes however require you to restart ArtiosCAD.

### Topic

You will learn about [Startup Defaults and Single Design Parameter Sets](#) on page 258.

## Tutorials

You will also follow two separate tutorials:

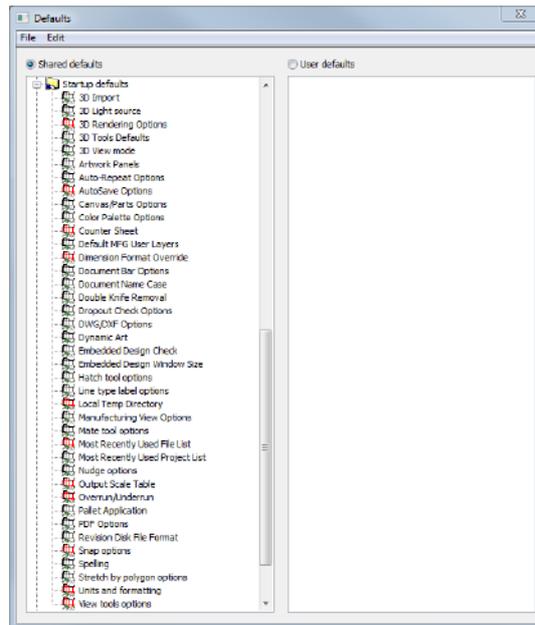
- [Tutorial: Customizing Preferences](#) on page 259
- [Tutorial: Assigning a Shortcut](#) on page 263

You only need a training file (CUS\_00.ARD) for the first of these tutorials.

## Notes

## 5.1 Startup Defaults and Single Design Parameter Sets

### Startup defaults



### Single design parameter sets



## 5.2 Tutorial: Customizing Preferences



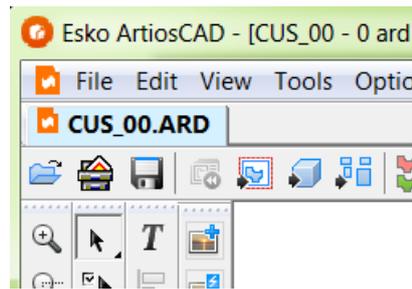
For this tutorial you need the training file 'CUS\_00.ARD'.

- ① You want to customize the shared defaults preferences so that ArtiosCAD will:
  - Always show the **Document Bar**
  - Display 3D thumbnails in the **Design Browser**
  - Assign a default owner to new designs

①②③

1. 'CUS\_00.ARD'
2. Open the **Document Bar Options** preferences:
  - a. **Options > Defaults...**
  - b. **Defaults**: expand **Startup defaults**
  - c. **Document Bar Options**
3. Choose always to show the **Document Bar**:
  - a. **Document Bar Options**:  **Always show Document Bar**.
  - b.
  - c.
  - d. **Defaults**
    - ⊖ *You will be asked to save the changes to the **Shared defaults**.*
    - e.
    - ⊖ *You will be warned that the **Shared defaults** will be overwritten.*
    - f.
    - ⊖ *The **Document Bar** is displayed at the top of the design area:*

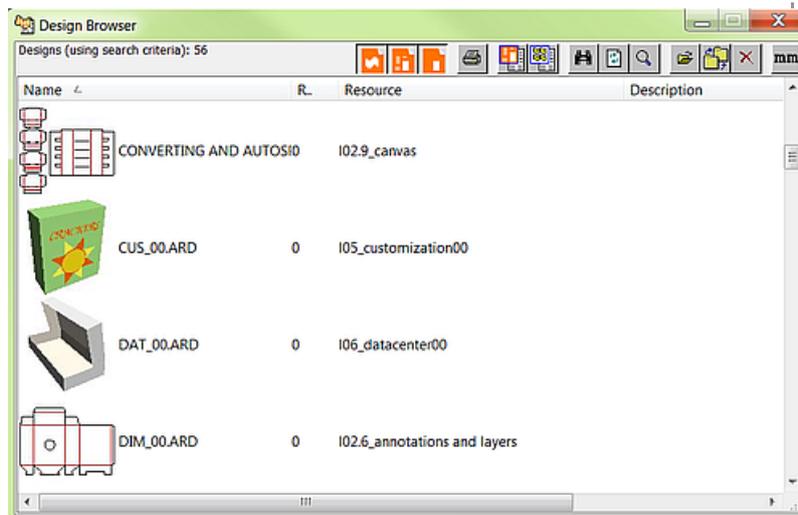
## Notes



**Note:** A tab will be added for each document you open.

4. Open the **Database** preferences:
  - a. **Options > Defaults...**
  - b. **Defaults:** expand **Design defaults**
  - c. **Database**
5. Choose the thumbnail format for the **Design Browser:**
  - a. **Database:** **ArtiosCAD 3D** for **Create thumbnails in format.**
  - b.
  - c.
  - d. **Defaults**
    - You will be asked to save the changes to the **Shared defaults.**
  - e.
  - You will be warned that the **Shared defaults** will be overwritten.
  - f.
6. Save the file to a **Database** resource:
  - a. **File > Save As...**
  - b. **Save As:** **Resource View**
  - c.
  - d. **Oneup Database Information:**
7. Verify the chosen thumbnail format:
  - a. **Database > Browsers > Design**
    - In the **Design Browser**, a 3D image is used as a thumbnail for your design.

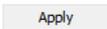
## Notes

b.  **Design Browser**

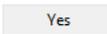
8. Assign a default owner to new designs:
- Repeat step 4 to open the **Database** preferences.

b.  **Database:**  **Esko** for **Default owner**

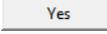
**Note:** Owners and other information about designs are contained within the **DataCenter Admin** program in the **Esko > ArtiosCAD** program group.

c. d. e.  **Defaults**

 You will be asked to save the changes to the **Shared defaults**.

f. 

 You will be warned that the **Shared defaults** will be overwritten.

g. 

 The default owner of every **new** design you create will be **Esko**.

9. Verify the chosen default owner of a new design:

a. **File > New Design**b.  **Single Design Settings:** c. **Database > Information...**

 In the **Oneup Database Information** dialog, **Esko** is set as the **Owner**.

d.  **Oneup Database Information**

## Notes

 By customizing the **Document Bar Options** in the **Startup defaults**, you have made the **Document Bar** always visible, enabling tabs for switching between opened files.

You have also customized some of the **Database Design defaults**.

You have:

- Chosen the **ArtiosCAD 3D** format for the thumbnails displayed in the **Design Browser**
- Set the default **Owner** for every design you create to **Esko**

## Notes

### 5.3 Tutorial: Assigning a Shortcut

---

See the Appendix in this Training Guide for a list of regularly used shortcuts. You can change Shortcuts in **Defaults**.

## 6. DataCenter

---

## Notes

### Purpose



See **DataCenter > Introduction to DataCenter**

DataCenter is a program which makes finding specific information about ArtiosCAD designs quick and easy. As you work, DataCenter automatically records facts about every single design and every manufacturing file you create or modify.

DataCenter has two intertwined parts – the information-gathering engine in ArtiosCAD and the browsers in which the information is viewed. The engine sends information to a database using MSDE, Microsoft SQL Server, SQL Server Express Edition, or Oracle.

As a result, DataCenter offers an efficient way of finding information about your ArtiosCAD designs:

- It automatically gathers and stores information during the design process.
- When you save your design as a database resource, you can add the following types of information about your design:
  - Customer
  - Owner
  - Short description
  - ...

### DataCenter Admin

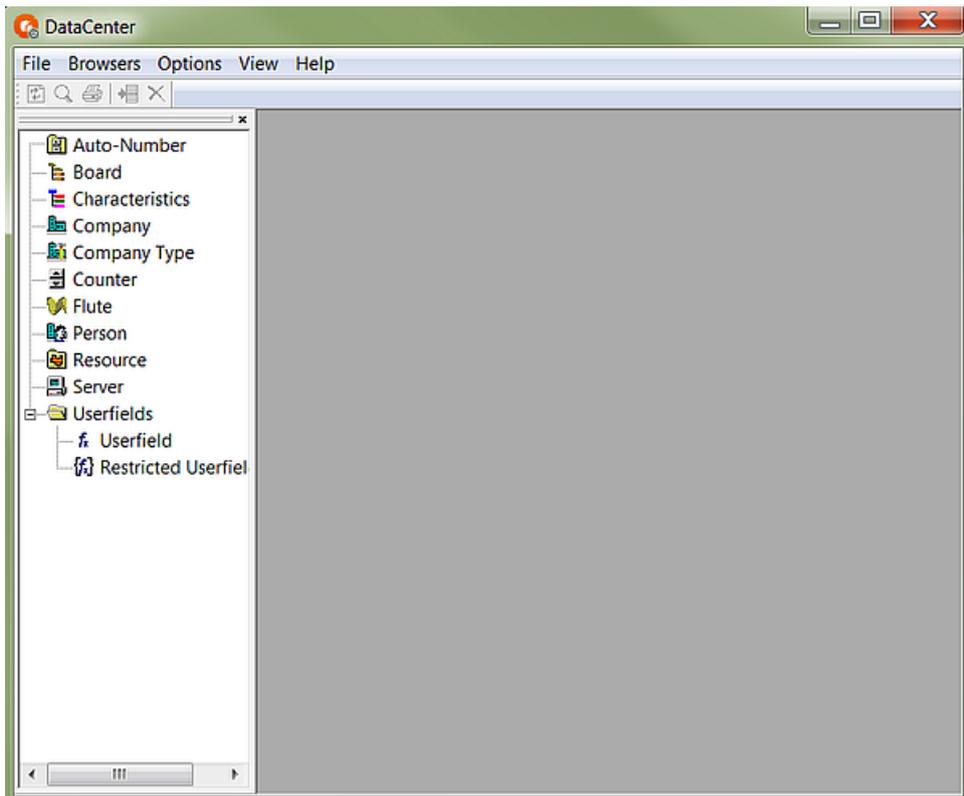
You can directly access and manage the information stored in the DataCenter through the **DataCenter Admin** program.

**Note:** To access this program choose **Start > All Programs > Esko > ArtiosCAD > DataCenter Admin**.



The following screenshot shows you the list of categories within the **DataCenter Admin** program. These can be used for browsing the information contained in the DataCenter.

## Notes



### Topics

You will learn about:

- [Board Information](#) on page 266
- [The Design Browser](#) on page 269

### Tutorial

Based on a design contained in a single training file (DAT\_00.ARD), you will follow this tutorial:

[Tutorial: Adding Information to the DataCenter While Designing](#) on page 267

## 6.1 Board Information

---

 See **DataCenter > Configuring DataCenter > Configuring board information**

### Purpose

ArtiosCAD gets all information about boards from DataCenter, so it is important that the Flute and Board browsers contain accurate information. Papers and flutes must be defined prior to trying to use them to define corrugated boards.

### Hierarchy

Boards are **hierarchical**; that is, they may be organized in a hierarchy of folders for more effective organization and easier access.

## Notes

## 6.2 Tutorial: Adding Information to the DataCenter While Designing



**For this tutorial you need the training file 'DAT\_00.ARD'.**

- ☉ You want to add information about your design to the DataCenter.

More specifically, you want to add:

- The customer
- A description
- A characteristic

①②③

1. 'DAT\_00.ARD'
2. Open the **Oneup Database Information** dialog:
  - a. **File > Save As...**
  - b. **Save As**, **Resource View:**
3. Add customer information to the DataCenter:
  - a. **Oneup Database Information:** button next to the **Customer** field.
  - b. **Customer: New**
  - c. **Details** section: Candle Company for **Name**.
  - d.
4. Add a description and a characteristic of your design:
  - a. **Oneup Database Information:** 6 Corner Beers for **Description**.
  - b.
  - c. **Set Characteristics:**  **Trays**
  - d.

☉ *You have added the information you needed to your design.*

## Notes

5.

☹ You have closed the **Oneup Database Information dialog**.

☹ By saving your design as a **Resource** you have opened the **Oneup Database Information dialog**.

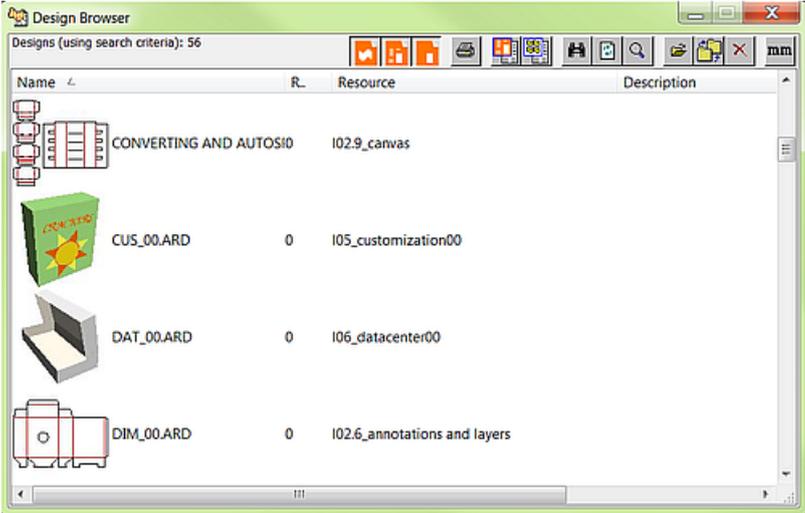
You have added the company name of your customer in the **Customer** dialog.

You have added a **Description** to your design and characterized it as a design of **Trays**.

Notes

### 6.3 The Design Browser

To open the **Design Browser**, click **Database > Browsers > Design** .



## 7. Advanced Features at a Glance

---

In this lesson you will see demos of some advanced features of ArtiosCAD.

### Topics

The following topics are covered in this lesson:

- [Demo of 3D](#) on page 271
- [Demo of Layout](#) on page 272
- [Demo of Manufacturing](#) on page 273

## Notes

## Notes

### 7.1 Demo of 3D

---

#### Purpose

 See **3D > Introduction to 3D**

**3D** has three modules that provide different abilities for viewing how the design will look in the real world. **3D** allows you to fold flat single designs in three dimensions. With the **3D Animation** module, you can create a movie of how the design folds. With **3D Designer**, you can import a model of the object being packaged, make intersecting pieces of board through any cross section, and then run a standard style of box to contain the assembly. The examples and procedures in this chapter may reference options and features that are not part of your system.

#### Topics

The following topics are covered in this demo:

- Convert and fold
  - **Flap priority**
  - 3D Parts positions / folding angles from Canvas are remembered
- Mate
- Intersection with a solid
- Solid creation and import
  - Spatial Library
- Animation
  - **Make tear-away animation**
- Export animation to Word / Excel / PowerPoint

## 7.2 Demo of Layout

---

### Purpose



See **Manufacturing > How to use manual layout tools to design a layout**

This section describes how to create a new set of manufacturing tools completely from scratch. A set of manufacturing tools includes a die wood, into which the cutting rule is inserted; a female stripping board, through which waste material is pushed; and a male stripping board, which pushes the waste through the female board.

ArtiosCAD can create many of these elements automatically, but you have the flexibility to design your own tools as well.

You must create and save the designs to be used in the manufacturing tools before creating a new layout.

### Topics

The following topics are covered in this demo:

- Nesting
- Gutters
- Intelligent Layout
- Coating blankets
- Dies

## 7.3 Demo of Manufacturing

---

### Purpose

 See **Manufacturing > Introduction to Manufacturing**

**Manufacturing** is the module of ArtiosCAD that makes production tools from single designs. These tools are mounted in presses. As the sheets of board move through the press, the tools cut the design out of the sheet and remove interior and exterior waste.

### Topics

The following topics are covered in this demo:

- Stripping
- Rubber layout
- Counter creation
- Blanking

## 8. Appendix: Keyboard Shortcuts

An overview of some of the most frequently used keyboard shortcuts.

### General

Function	Button	Shortcut
Convert to 3D		<b>Ctrl + 3</b>
Copy	-	<b>Ctrl + C</b>
Cut	-	<b>Ctrl + X</b>
Dynamic Drafting		<b>Shift + D</b>
Keypad dialog	-	<b>Ctrl + 4</b>
New Design	-	<b>Ctrl + N</b>
Open...		<b>Ctrl + O</b>
Paste	-	<b>Ctrl + V</b>
Print...	-	<b>Ctrl + P</b>
Properties...	-	<b>Alt + Enter</b>
Redo		<b>Alt + Z</b>
Run a Standard	-	<b>Ctrl + 2</b>
Save		<b>Ctrl + S</b>
Undo		<b>Ctrl + Z</b>

### Geometry Macros and rebuild

Function	Button	Shortcut
Rebuild		<b>F5</b>

### Views and selections

Function	Button	Shortcut
CloseUp dialog	-	<b>Ctrl + Space</b>

## Notes

Function	Button	Shortcut
Refresh	-	<u>F2</u>
Scale to Fit		<u>Ctrl + D</u>
Select		<u>Ctrl + E</u>
Zoom Rectangle		<u>Ctrl + R</u>
Zoom Out		<u>Ctrl + A</u>

## Extend/Measure

Function	Button	Shortcut
Clear Extend		<u>Ctrl + Alt + X</u>
Extend		<u>Alt + X</u>
Measure		<u>Ctrl + G</u>

## Geometry

Function	Button	Shortcut
Line Angle/ Offset		<u>Ctrl + 1</u>
Move to point		<u>Ctrl + W</u>
Move by		<u>Ctrl + Q</u>

## Construction lines

Function	Button	Shortcut
Conline Offset/Angle		<u>Ctrl + F</u>

## Edit tools

Function	Button	Shortcut
Copy		<u>Ctrl + Insert</u>
Move		<u>Ctrl + M</u>

## Adjust tools

Function	Button	Shortcut
Split Line		<b>Ctrl + L</b>

## Notes