


MBend Tutorials

Initially, it is recommended that you work through the exercises in the order in which they appear. However, to renew your acquaintance with a particular feature or procedure, you can jump directly to the specific exercise.

 **NOTE:** The measurements for these exercises all use metric units.

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1 Getting Started

The purpose of this exercise is to acquaint you with **MBend**. You will open **MBend**, select a machine and tools, open an existing part, and get to know the simulation mode at the heart of **MBend** and the layout of the screen.

1.1 Opening MBend

Let's get started.

Double click the **MBend** icon  on your desktop. The software opens to the **MBend** tab, allowing you access to all the basic functions of **MBend**:

- Open an existing part.
- Import a part from 3D CAD packages, importing industry standard exchange formats.
- Configure your machine, materials, tools, and other settings.
- Access the online help and tutorials via the Help tab.

You can also access these functions via the **Quick Access Toolbar**  at the top of the **MBend** screen.

1.2 Setting a Machine

In this step you select a machine:

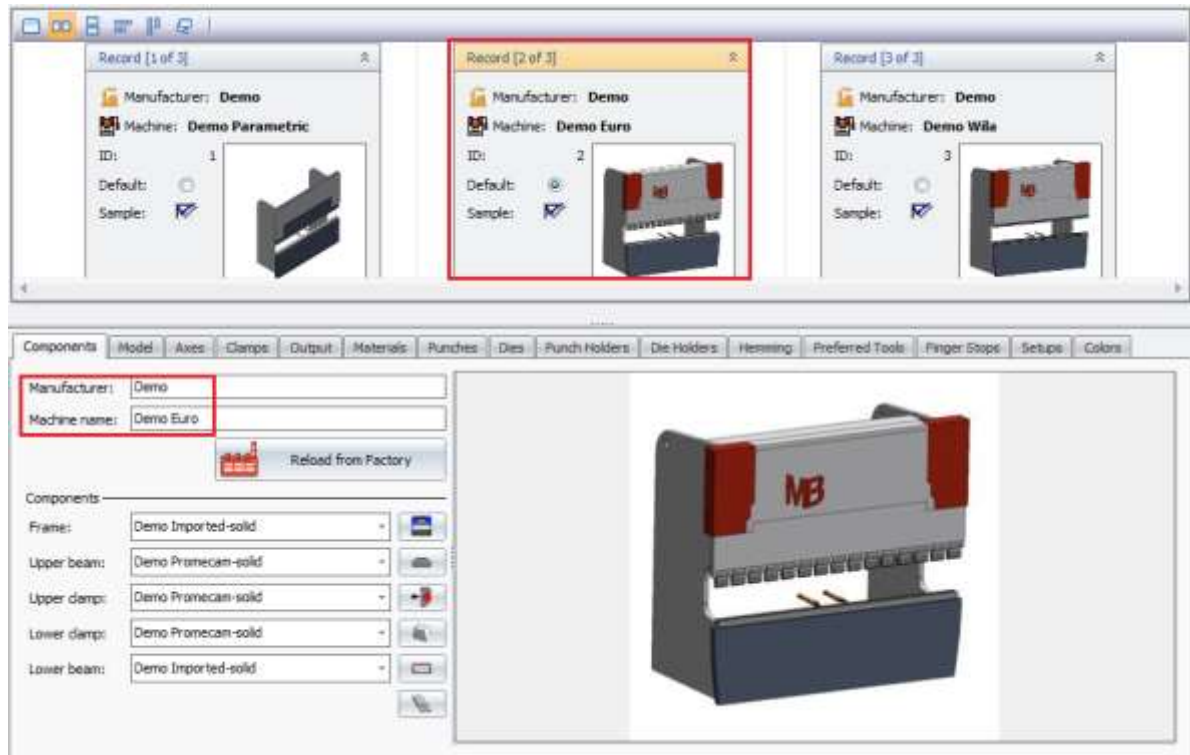
1. Click the **Home** tab:



2. Click the **Configuration** group => **Machines**:



3. The **Machines** dialog box opens. Select the **Demo: Demo Euro** machine:



4. Click **OK** (or **Close**).

1.3 Opening a Part

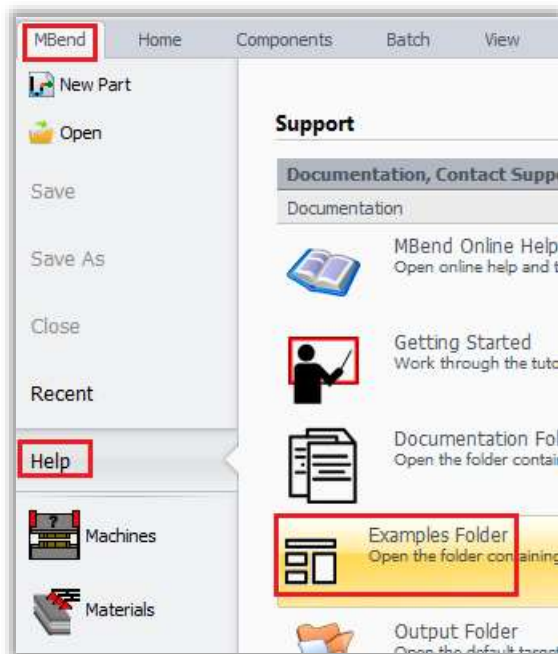
You can open two types of files in MBend:

- Files that were created in **MBend** with the **MBCAM** extension. These files contain the part geometry and may also include simulation information for tools, bend sequences, etc.
- Files that were created in a drafting program such as SolidWorks, Solid Edge, and Inventor. **MBend** supports IGES, STEP, and other file types.

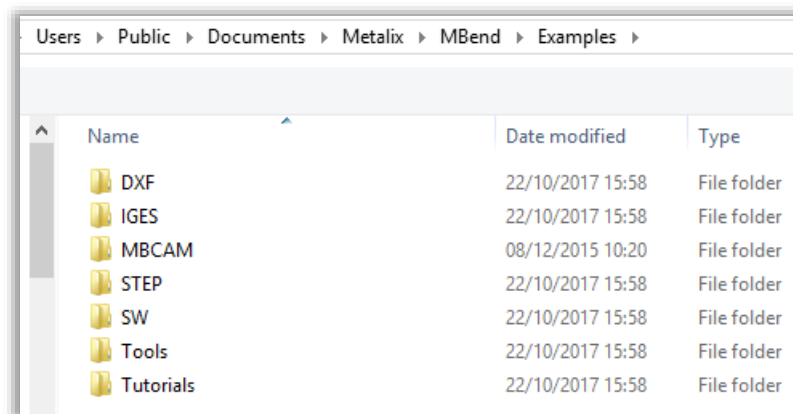
To become acquainted with the layout of **MBend**, you will open an **MBCAM** file.

To open it:

1. In the **MBend** tab, click **Help** (on the left) and click **Examples Folder**:



The browser opens to the **Metalix\MBend\Examples** folder:



2. Double click the **Tutorials** folder.

3. Drag the **GettingStarted.mbcam** file into **MBend**. After a few seconds, the **Open Part** dialog box opens:

Open Part

Part file name: GettingStarted.mbcam

Folder: C:\Users\Public\Documents\Metalix\MBend\Examples\Tutorials

General Application Information

Saved by user	METALIX\annel
Saved in application version	5.2.68
Origin	Unknown

Part Information

Material	0 Steel
Thickness	1.00

Simulation Information

Machine

Saved simulation machine missing	Simulation data reset
Saved simulation workflow step	Tooling
Includes flat model	<input checked="" type="checkbox"/>

Simulation Output Information

Customer	
Order	
Reference	
Batch	
NC Name	
Quantity	
Comments	

Open part file in selected operation mode:


Material: 0 Steel

Machine: Demo Demo Euro

Tool station setups: <None>

☐ Don't ask again in this session; Always open files in this operation mode.

Design Simulation Cancel

 **TIP:** Because this is an **MBCAM** file, you can see a preview of the part and information about the part and simulation.

1.4 Opening Simulation Mode

Open in **Simulation** mode by clicking the **Simulation** button on the bottom of the dialog box. After a few seconds, you will see the main simulation screen.

In the **Simulation** mode you can

- Choose tools automatically or manually
- Set the bending sequence automatically or manually
- Position the fingers
- Run a simulation
- Create output (reports or NC), depending on your machine

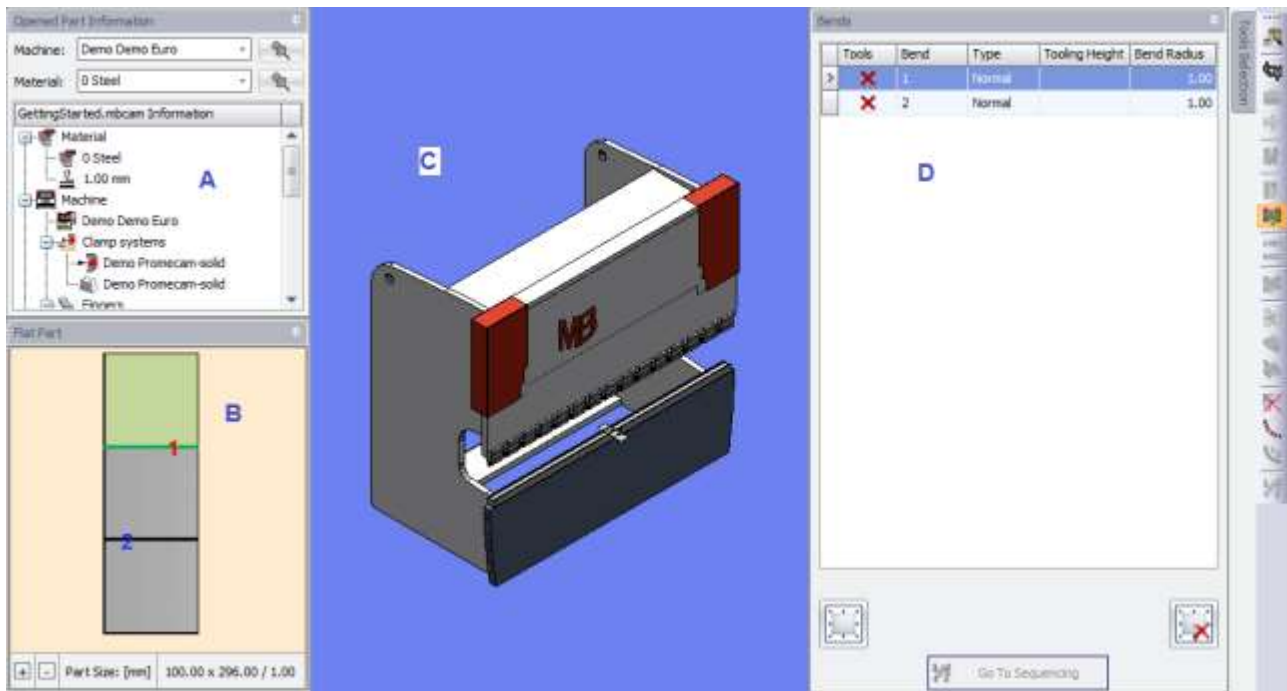
These actions are explained in the following exercises.

If you need help from **MBend** technical support, you may need to create a problem report that encapsulates your current work environment.

1.5 Examining the Screen Layout

The simulation view centralizes the main function of **MBend**. It allows you to choose the tools and the order of the bends, and check for collisions.

This is the simulation window:




A Part Information panel – All the information about the part and the machine.

B Flat Part panel – A view of the flattened part and the bend numbers. The active bend is colored green.

C Part Display area – Visualization of the machine tools and the bending simulation.

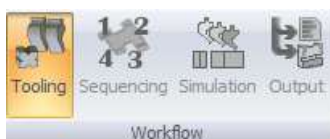
D Tooling/Hits Sequencing/Simulation/Report and NC Generation button – Changes according to the workflow stage that is currently active (in this case, the Tooling stage).

 **TIP:** At the bottom of the screen is the path to the place on the computer where the current file is located. To open Windows Explorer at this folder, double click this path.

The simulation mode has these stages:

1. **Tooling** – choose the tools for bending the part.
2. **Sequencing** – set the order of the bends and set the machine fingers' location for each bend.
3. **Simulation** – view the bending process and detect collisions.
4. **Output** – generate reports and (optionally) NC code.

Note the stages in the ribbon (the **Workflow** group) at the top of the screen:



You can now close the file. Click the **MBend** tab => **Close**.

2 Adding a Machine


This exercise shows how to add a machine to the list of machines available for simulation. You will add one of the standard **MBend Demo** machines that are used for the other **MBend** exercises, and assign tools to it from the general tool library.

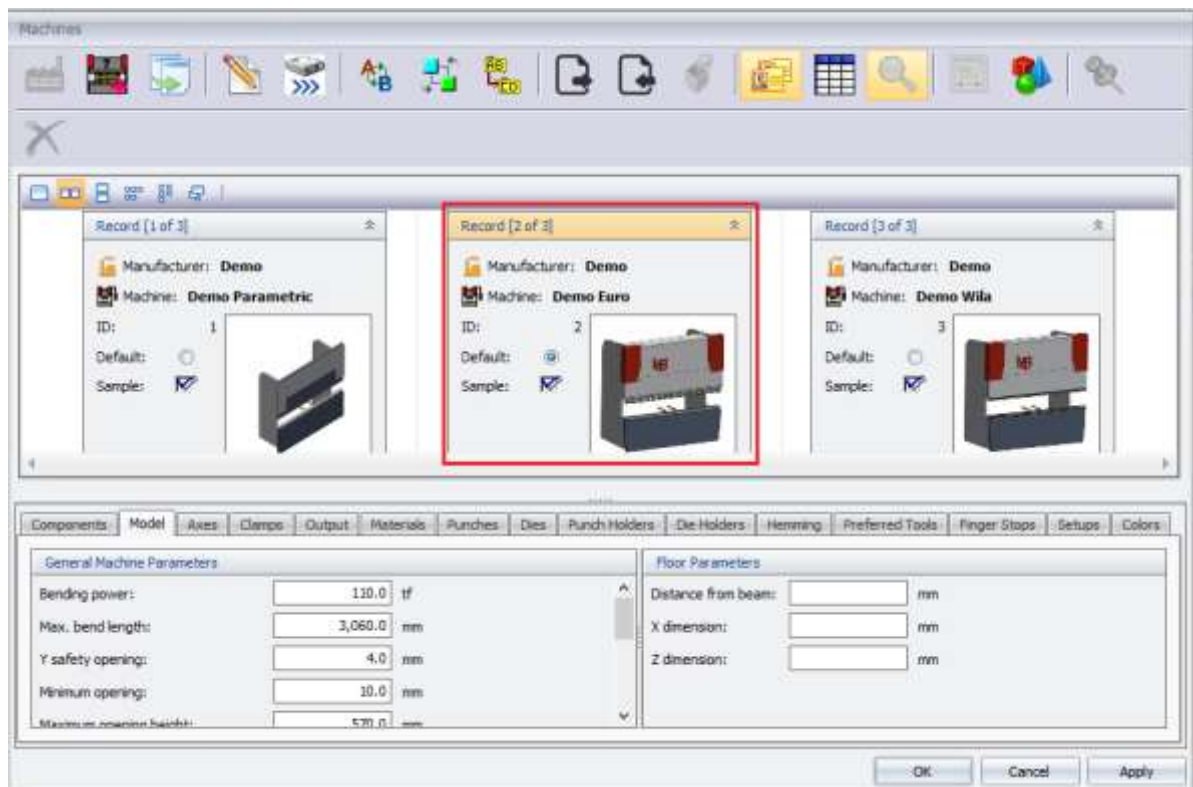
2.1 Installing a Machine

To add a machine:

1. Click the **Home** tab => **Configuration** group => **Machines** (or click the **Machines** icon in the Quick Access toolbar):



2. The **Machines** dialog box opens. If the machine you want is not listed, click **Add New Machine**  and follow the [wizard](#).
3. If the machine is listed, select it:





You now have the machine in your machine list and can choose it when opening a part.

Do not close the **Machines** dialog box.

2.2 Setting the Default Machine

The default machine is the one you will be offered when opening a part or creating a new one.

 **TIP:** You can always switch machines after the part is open.)

To change the default, click the pin icon . (The pin icon is grayed out when you select the default machine.)

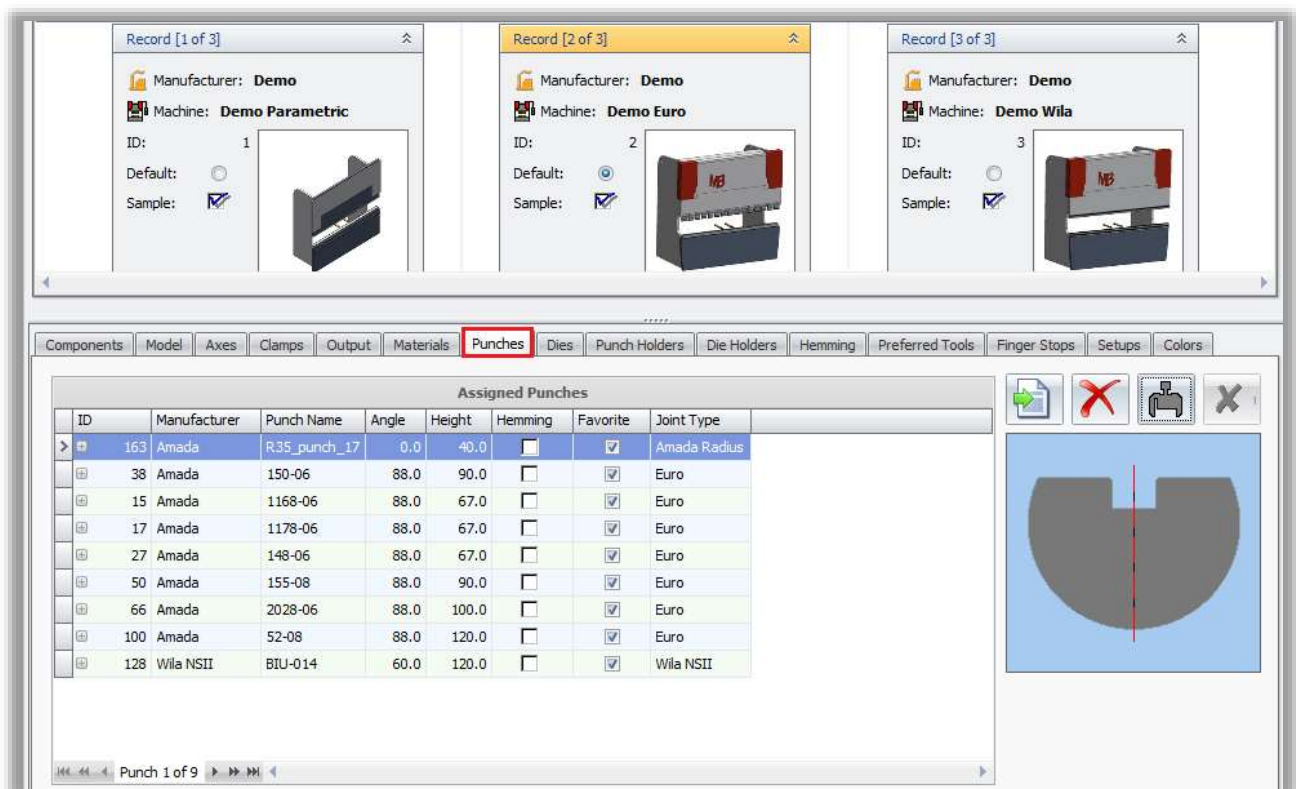
2.3 Assigning Tools

The tools library contains many tools. For each machine you should assign the actual tools that are available in the factory for this machine.

MBend standard machines come with pre-assigned tools, but you can change them as needed. When you configure a new machine, you have to assign all its tools.

2.3.1 Viewing Assigned Tools

To view the assigned tools, click the **Punches** tab:



The screenshot shows the MBend software interface. At the top, there are three record panels for different machines: 'Record [1 of 3]' for 'Demo Parametric', 'Record [2 of 3]' for 'Demo Euro', and 'Record [3 of 3]' for 'Demo Wila'. Each panel shows the machine name, ID, and a 3D model of the machine. Below these panels is a navigation bar with tabs: Components, Model, Axes, Clamps, Output, Materials, **Punches** (highlighted), Dies, Punch Holders, Die Holders, Hemming, Preferred Tools, Finger Stops, Setups, and Colors. The 'Punches' tab is active, displaying a table of assigned punches. The table has columns: ID, Manufacturer, Punch Name, Angle, Height, Hemming, Favorite, and Joint Type. The data is as follows:

ID	Manufacturer	Punch Name	Angle	Height	Hemming	Favorite	Joint Type
163	Amada	R35_punch_17	0.0	40.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Amada Radius
38	Amada	150-06	88.0	90.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
15	Amada	1168-06	88.0	67.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
17	Amada	1178-06	88.0	67.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
27	Amada	148-06	88.0	67.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
50	Amada	155-08	88.0	90.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
66	Amada	2028-06	88.0	100.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
100	Amada	52-08	88.0	120.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euro
128	Wila NSII	BIU-014	60.0	120.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wila NSII

At the bottom of the table, there is a pagination bar showing 'Punch 1 of 9'. To the right of the table, there are icons for adding, deleting, and saving punches, and a 3D model of a punch.


2.3.2 Sorting Data

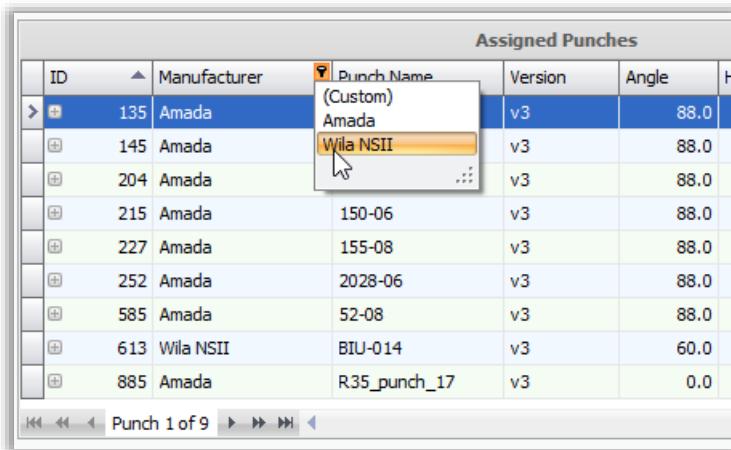
In **MBend**, you can sort the data such as lists of tools, by any column.

Click the **Punch Name** column header and **MBend** sorts the data in ascending order. Click it again and the order changes to descending.

2.3.3 Filtering Data


In **MBend**, you can use filters to reduce the number of displayed items.

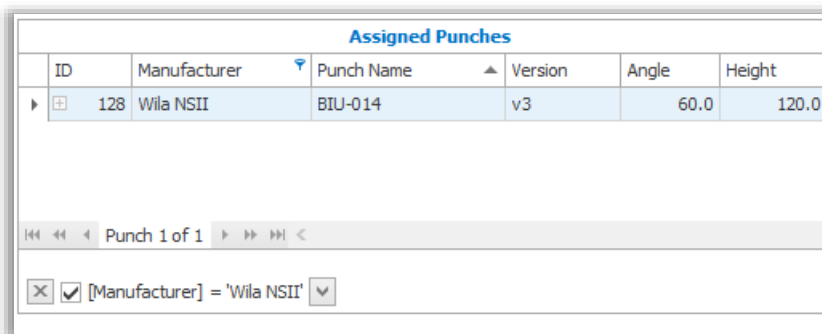
To show tools made only by a specific manufacturer, hover over the **Manufacturer** column header, click the filter icon , and select **Wila NSII**:



ID	Manufacturer	Punch Name	Version	Angle	Height
135	Amada	(Custom)	v3	88.0	
145	Amada	Amada	v3	88.0	
204	Amada	...	v3	88.0	
215	Amada	150-06	v3	88.0	
227	Amada	155-08	v3	88.0	
252	Amada	2028-06	v3	88.0	
585	Amada	52-08	v3	88.0	
613	Wila NSII	BIU-014	v3	60.0	
885	Amada	R35_punch_17	v3	0.0	

Punch 1 of 9

Now that you have applied a filter, you can see a filter icon  in the column header and details at the bottom of the panel:



ID	Manufacturer	Punch Name	Version	Angle	Height
128	Wila NSII	BIU-014	v3	60.0	120.0


Punch 1 of 1

☒ [Manufacturer] = 'Wila NSII'

To restore the full list of assigned punches, click the remove filter icon .

2.3.4 Adding Punches

You can assign more punch tools to a machine in the **Punches** tab:

1. Still in the **Punches** tab, click **Assign Punches**  (on the right).
2. The **Select Punch** dialog box opens and you can select punches to assign:



Punch	Manufacturer	Punch name	Up Joint	Height	Working height	Radius	Angle	Max Power	Hammering
123	Wila NSII	BIU-003	Wila NSII	98.0	98.0	1.0	86.0	65.0	<input type="checkbox"/>
124	Wila NSII	BIU-004	Wila NSII	98.0	98.0	1.0	80.0	160.0	<input type="checkbox"/>
125	Wila NSII	BIU-011	Wila NSII	120.0	120.0	1.0	28.0	100.0	<input type="checkbox"/>
126	Wila NSII	BIU-012	Wila NSII	120.0	120.0	1.0	90.0	100.0	<input checked="" type="checkbox"/>
127	Wila NSII	BIU-013	Wila NSII	120.0	120.0	1.0	86.0	65.0	<input type="checkbox"/>
129	Wila NSII	BIU-015	Wila NSII	120.0	120.0	0.8	90.0	40.0	<input type="checkbox"/>

Punch 6 of 25

[Manufacturer] = 'Wila NSII'

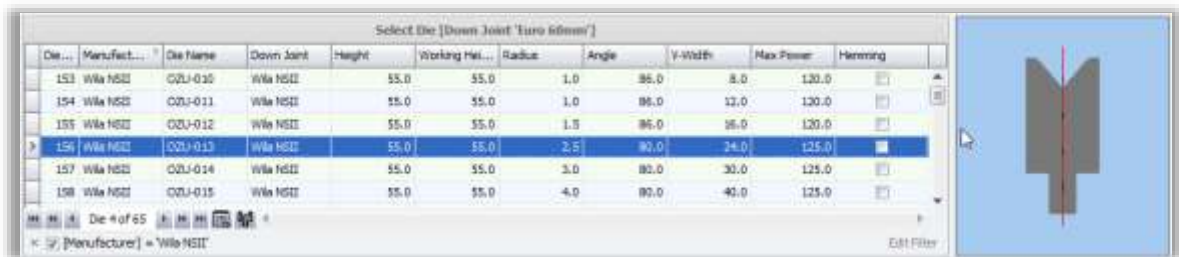
3. Filter the **Manufacturer** column so you only see **Wila NSII**. Select **Punch Name BIU-012** and click **OK**.

MBend adds this punch to the list of **Assigned Punches**.

2.3.5 Adding Dies

You can assign more die tools to a machine in the **Dies** tab:

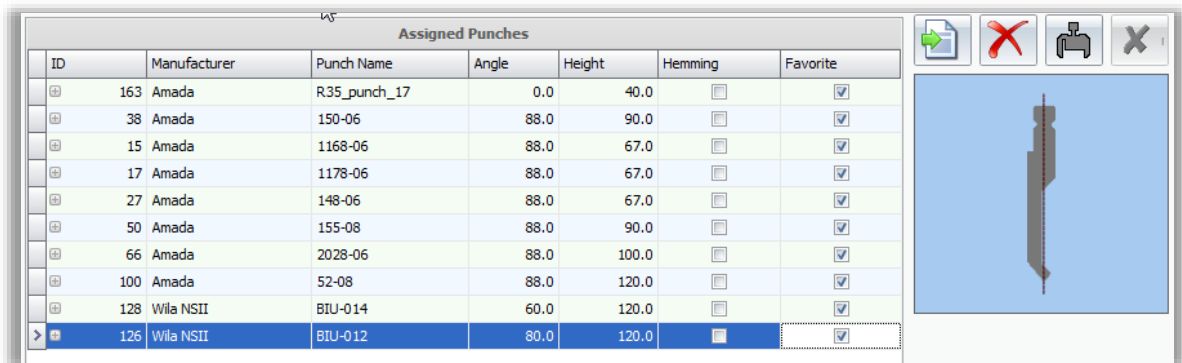
1. In the **Dies** tab, click **Assign Dies** .
The **Select Die** dialog box opens and you can select dies to assign.
2. Add a die by filtering for **Wila NSII** as before, and adding **OZU-013**:





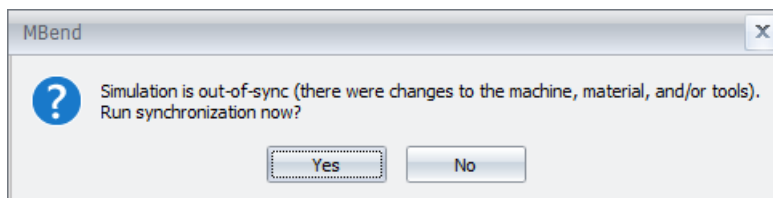
2.3.6 Removing Assigned Tools

Remove the newly assigned tools:

1. Start with the punch tool by clicking the **Punches** tab.
2. Select the punch:



3. Click **Remove Punch Assignment**  and confirm the deletion.
4. Repeat for the newly assigned die tool (using **Remove Die Assignment** ).
5. To close the **Machines** dialog box, click **OK**.
6. If you are prompted to run synchronization, click **Yes**:



3 Discovering Automatic Simulation

This exercise teaches the basic steps of developing a bend simulation from an STP file for the eventual purpose of creating NC or reports.

The machine used in the exercise is the **Demo: Demo Euro**, which is already installed.

- 🌿 **TIP:** To add a machine that is not installed in your computer and assign the appropriate tools, read the [MBend Add Machine Exercise](#).

What you will learn in this exercise:

- Opening an STP file
- Selecting tools
- Sequencing the bends automatically
- Splitting and merging tools
- Setting finger positions
- Generating a report

3.1 Opening an STP Part

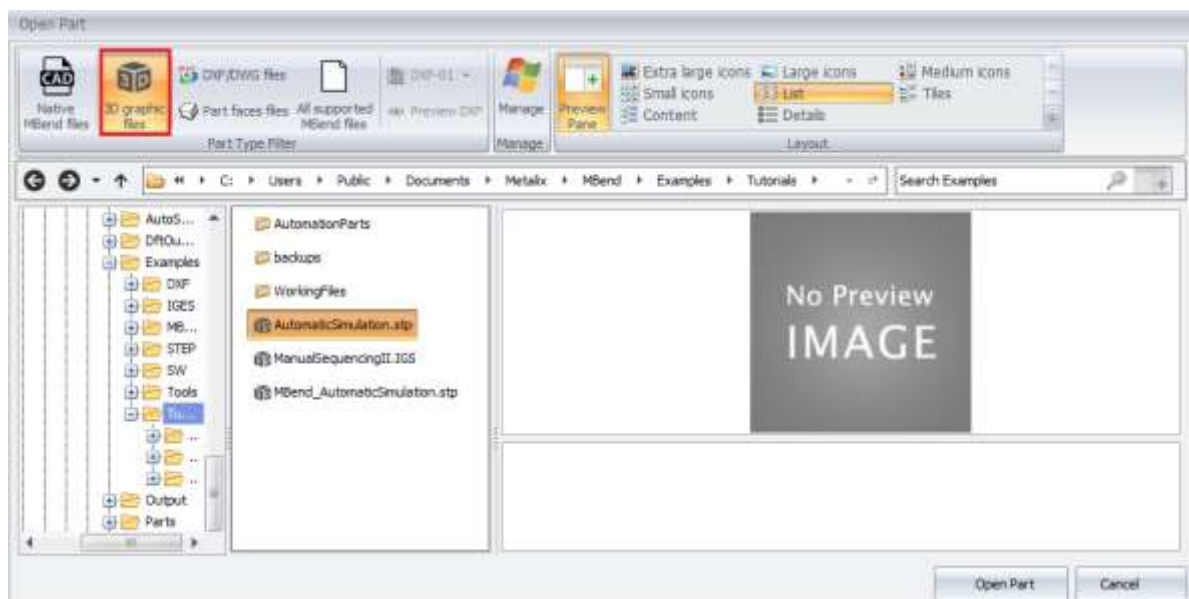
MBend creates files with the **MBCAM** extension. They include the part geometry and all the bending and simulation information.

MBend can also open files created in 3D CAD software. These files contain only geometry data. In this exercise you will import an **STP** (3D geometry) file.

1. In **MBend**, click the **Home** tab => **File** group => **Open** 📁.
2. In the **Open Part** dialog box, browse to the **Metalix\MBend\Examples\Tutorials** folder.

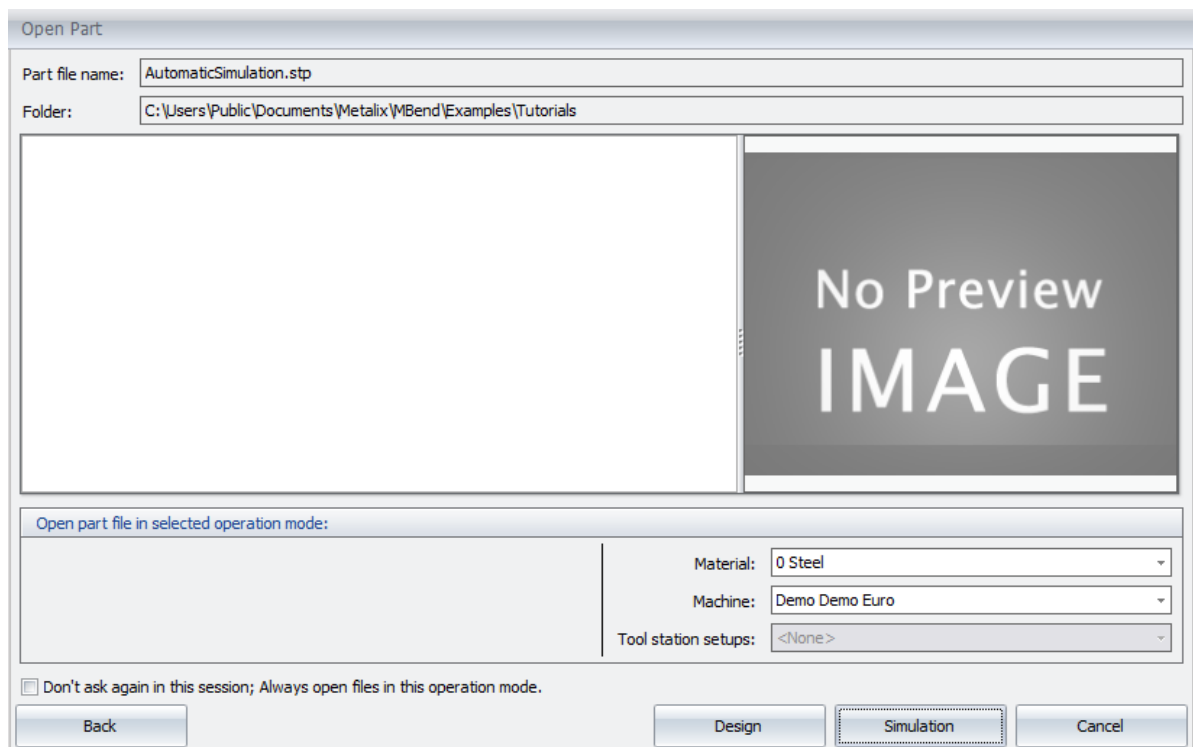
- 🌿 **TIP:** To find the exact location of this folder, click **MBend** => **Help** => **Examples Folder** => **Tutorials**.

3. Select **3D graphic files**  on the ribbon:

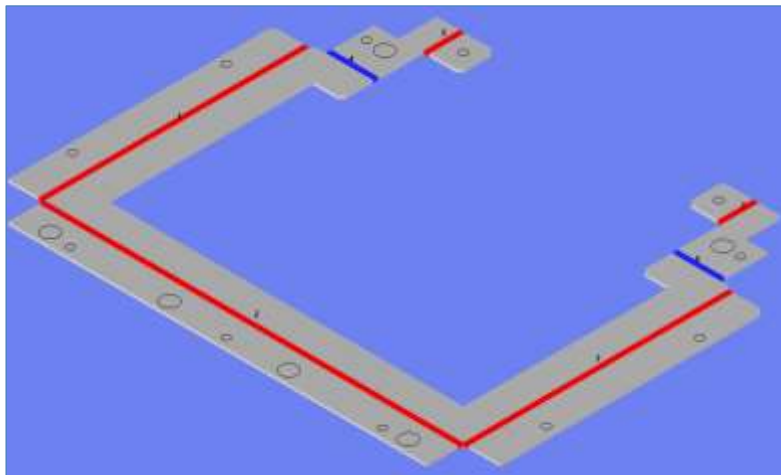



4. Select the **AutomaticSimulation.stp** file and click the **Open Part** button.
No preview is visible because this is not yet an **MBend** file.

5. For **Material** choose **Steel**. The **Machine** should be **Demo Demo Euro**.
6. Click the **Simulation** button:



The part opens in **Simulation** mode:



 **TIP:** To view the part from different angles, try out the icons:

- In the [Orientation toolbar](#)



- In the [Zoom toolbar](#)





You can also try rolling and clicking the mouse scroll wheel.

3.2 Saving the Part

You should save your work periodically. Click the **Home** tab => **File** group => **Save** .

This creates an MBCAM file with the same name as the source STP file.



 **TIP:** To change the default file locations in **MBend**, click **Options**  in the **Quick Access Toolbar**, make your changes in the **Folders** tab, and click **OK**.

3.3 Starting the Simulation Steps

The simulation is the main function of **MBend**. It allows you to choose the tools and the order of the bending, and check for collisions.

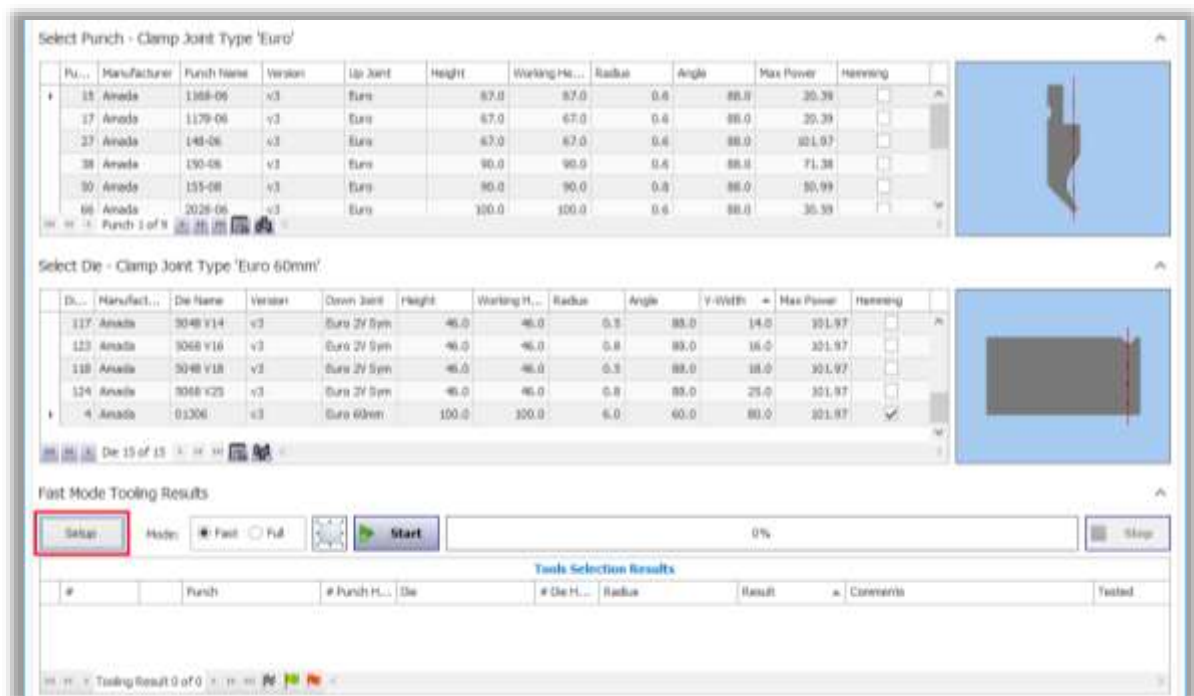
3.3.1 Selecting Tools Automatically

To choose the tools for bending the part:

1. Click the **Simulation** tab => **Tools Selection** group => **Auto Tooling** . The **Automatic Tools Selection** dialog box opens.
2. To ensure that you select tools from those assigned to this machine, on the ribbon, click **Assigned Tools** .

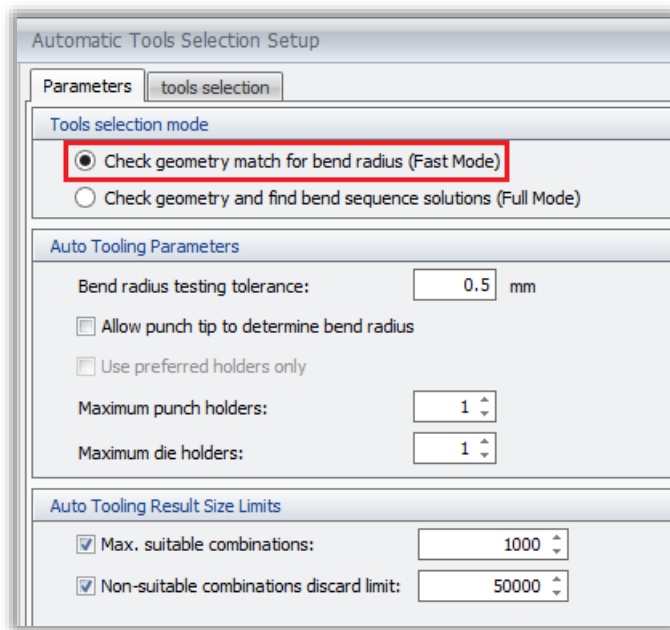
 **TIP:** You can set **Assigned Tools** as the [tool group to use by default](#).

3. Click the **Setup** button:



The **Automatic Tools Selection Setup** dialog box opens.

- Choose **Fast Mode** as shown in the picture below. This means that during the tooling stage, **MBend** does not check for valid bend sequences. Click **OK**:



Automatic Tools Selection Setup

Parameters tools selection

Tools selection mode

☒ Check geometry match for bend radius (Fast Mode)

☐ Check geometry and find bend sequence solutions (Full Mode)

Auto Tooling Parameters

Bend radius testing tolerance: 0.5 mm

☐ Allow punch tip to determine bend radius

☐ Use preferred holders only

Maximum punch holders: 1

Maximum die holders: 1


Auto Tooling Result Size Limits

☒ Max. suitable combinations: 1000

☒ Non-suitable combinations discard limit: 50000

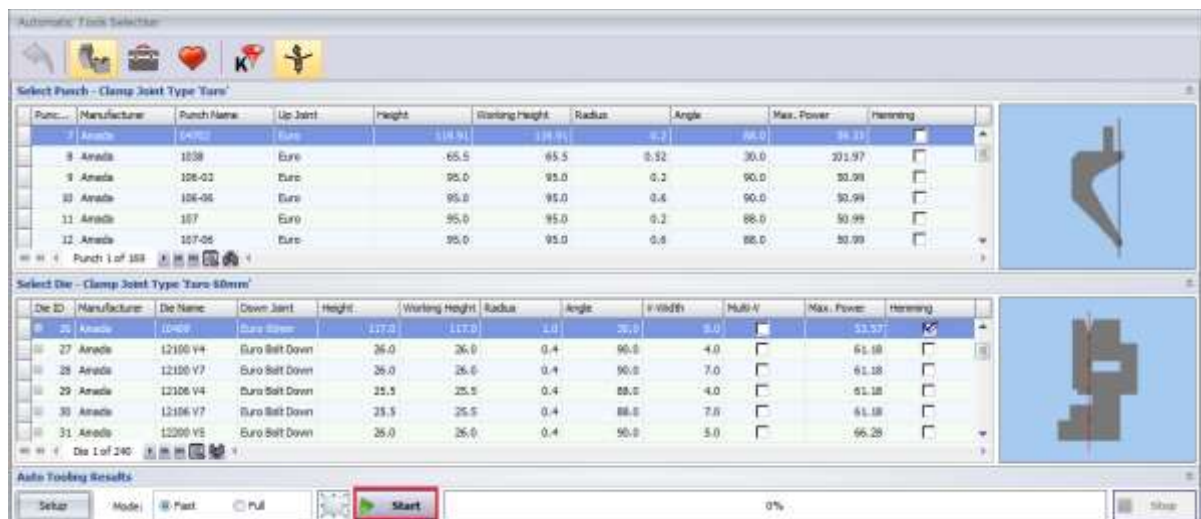
TIP: There are two main options to choose between:

- Fast Mode** – **MBend** checks only the bend radii.
- Full Mode** – **MBend** checks the sequences, checks for collisions according to your definitions, and builds the tool stations. This option takes longer.

- To make sure the search looks for all possibilities, clear any prior searches by clicking **Select All** .

TIP: It is a good idea to click **Select All** before all new searches.

- Click the **Start** button:



Automatic Tool Selection

Select Punch - Clamp Joint Type Euro

Punch ID	Manufacturer	Punch Name	Up Joint	Height	Working Height	Radius	Angle	Max. Power	Hammering
7	Anade	1040	Euro	117.0	117.0	1.0	25.0	95.0	15.11
8	Anade	1038	Euro	65.5	65.5	0.52	30.0	201.97	
9	Anade	106-02	Euro	95.0	95.0	0.2	90.0	50.99	
10	Anade	106-06	Euro	95.0	95.0	0.4	90.0	50.99	
11	Anade	107	Euro	95.0	95.0	0.2	88.0	50.99	
12	Anade	107-06	Euro	95.0	95.0	0.4	88.0	50.99	

Select Die - Clamp Joint Type Euro 60mm

Die ID	Manufacturer	Die Name	Down Joint	Height	Working Height	Radius	Angle	Width	Multi-V	Max. Power	Hammering
26	Anade	12100	Euro Split	117.0	117.0	1.0	25.0	9.0		53.37	
27	Anade	12100 V4	Euro Split Down	26.0	26.0	0.4	90.0	4.0		61.18	
28	Anade	12100 V7	Euro Split Down	26.0	26.0	0.4	90.0	7.0		61.18	
29	Anade	12106 V4	Euro Split Down	25.5	25.5	0.4	88.0	4.0		61.18	
30	Anade	12106 V7	Euro Split Down	25.5	25.5	0.4	88.0	7.0		61.18	
31	Anade	12200 V5	Euro Split Down	26.0	26.0	0.4	90.0	5.0		66.28	

Auto Tooling Results:

Setup Mode Fast Pull

Start

0%

Stop

The automatic tool selection starts. **MBend** tests punch-die combinations for the part's bends, and displays them in the bottom section of the screen.

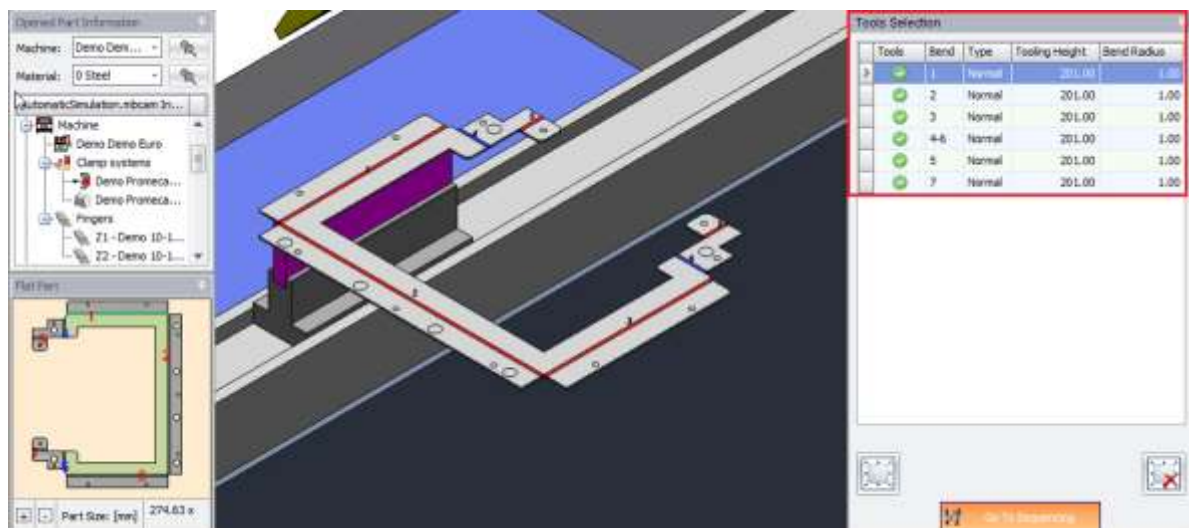
- Show only suitable tool combinations by clicking the green flag at the bottom of the window.

8. In the **Tool Selection Results** panel, select the solution using **Amada 148-06 (27)** and **Amada 07186 (12)**:



9. Click the **Accept** button at the bottom of the screen.

In the **Tool Selection** panel (on the right of the screen) you can see that **MBend** has successfully assigned tools to all the bends in the part:




10. To see the tools for the bends, click each bend in the **Bends** list. Zoom in to the display.

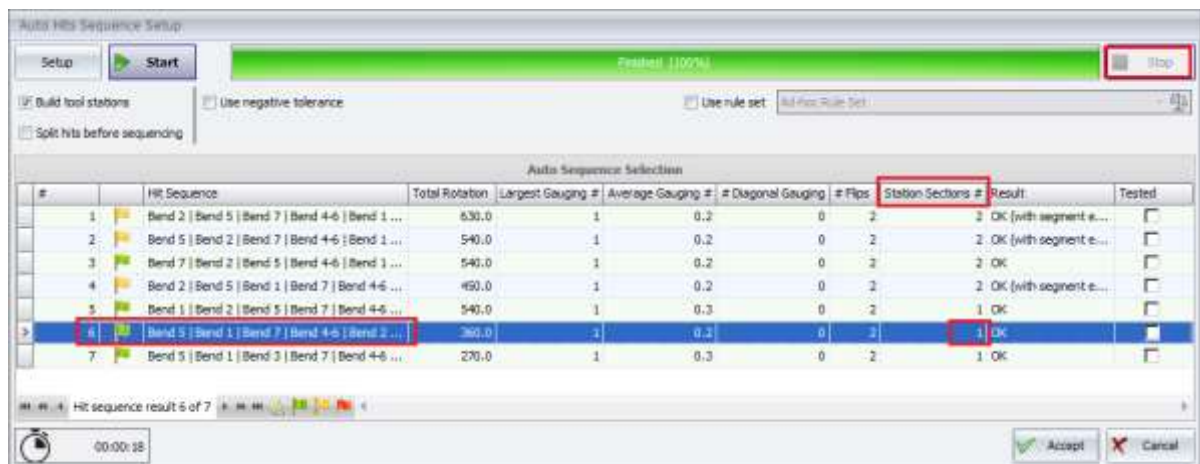
NOTE: At this stage the tools are theoretically divided into segments. **MBend** only shows the precise segment calculations at the simulation stage.

3.3.2 Determining the Bend Sequence Automatically

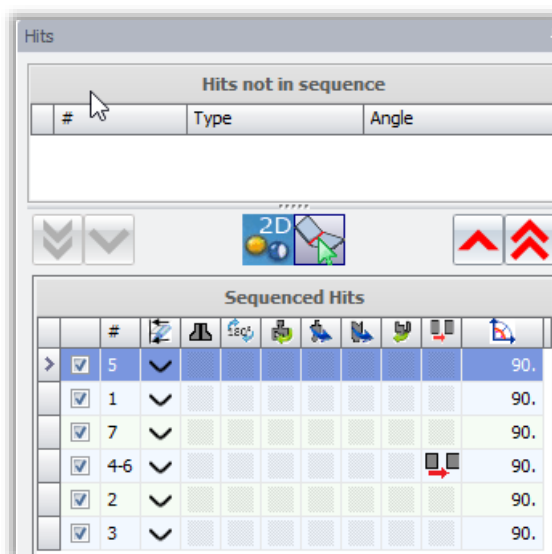
The next stage is to determine the bend order:

1. Click the **Go To Sequencing** button at the bottom of the **Tool Selection** panel.
MBend replaces the **Tool Selection** panel with the **Hit Sequencing** panel.
2. Because you used the **Auto Tooling Fast Mode**, **MBend** has not yet determined the sequence. Click the **Simulation** tab => **Hit Sequencing** group => **Auto Sequencing** .
3. The **Auto Hits Sequence Setup** dialog box opens. Make sure **Use rule set** is not selected.
4. Click **Start**. **MBend** searches for suitable sequences of hits.

- Look for a result where the first bend is **Bend 5** and the second is **Bend 1**, and there is only one station section (examine the **Station Sections #** column). When you see a result like this, click **Stop**:



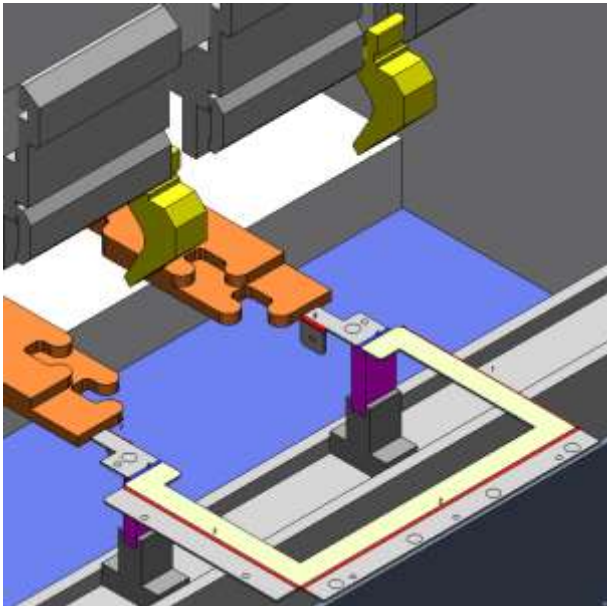
- Click **Accept**. The **Hit Sequencing** panel may look like this:




- Click the first bend (in the **Sequenced Hits** list) and then the **Play current hit forward** button (at the bottom of the panel). In the simulation window you can view the bending process. To see clearly, zoom in.
- Check all the bends in the same way.

3.3.3 Merging Tools

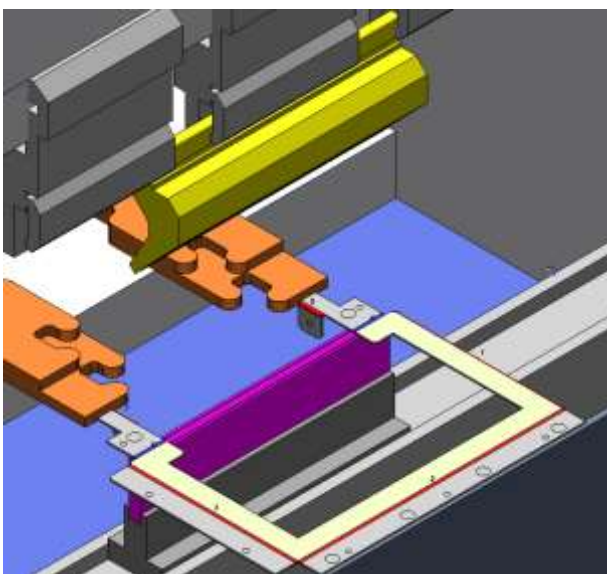
1. In the **Sequenced Hits** list, click **Bend 4-6**. You can see in the simulation window that by default this is a divided bend:





2. You can change the default and bend them with a unified station. For this bend, click the **Divide/Unify Tools** column under **Sequenced Hits**:


Sequenced Hits									
	#								
<input checked="" type="checkbox"/>	5	▼							90.
<input checked="" type="checkbox"/>	1	▼							90.
<input checked="" type="checkbox"/>	7	▼							90.
<input checked="" type="checkbox"/>	4-6	▼							90.
<input checked="" type="checkbox"/>	2	▼							90.
<input checked="" type="checkbox"/>	3	▼							90.

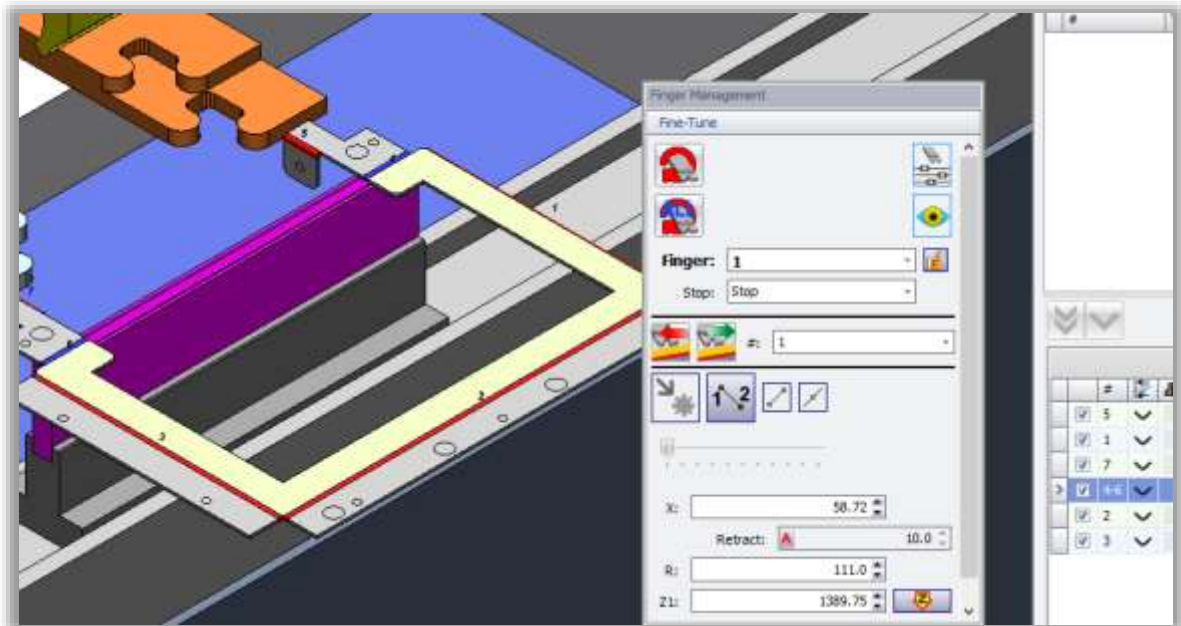
This is how it might look after uniting the divided tools:




 **TIP:** You can change the setting for dividing collinear bends by clicking **Tools**  on the Quick Access Toolbar. In the **Tools Configuration** dialog box => **General** tab, deselect **Automatically divide collinear bend tool** and click **OK**.

3.3.4 Setting Finger Positions

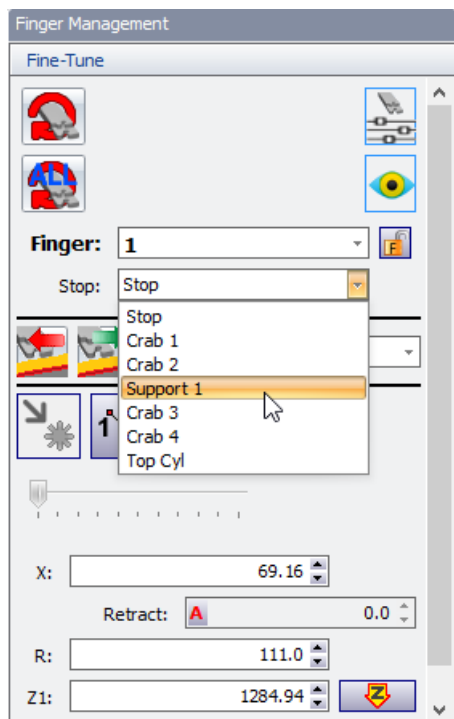
1. Click the **Simulation** tab => **Finger Management** group => **Fine-Tune** .
2. Select a finger. **MBend** shows you the finger stop in use for the current bend. For example:



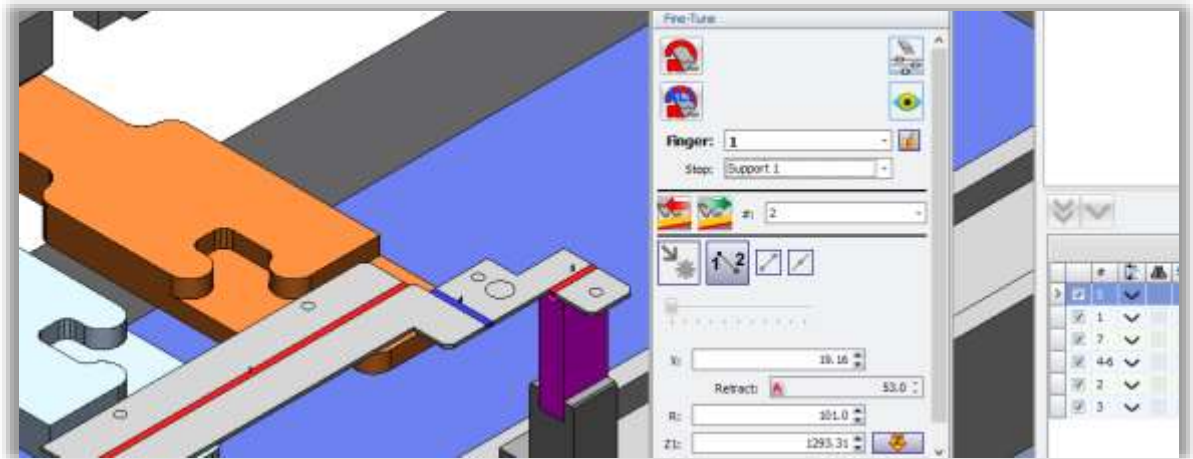
 **NOTE:** You might see different values.

You can go through the bends, correcting the location of the machine fingers as required.

3. For example, **Bend 5** is more stable when holding the part against the **Support 1** finger stop. To change it, in the **Sequenced Hits** list, select **Bend 5**.
4. In the **Finger** field, select **1**. In the **Stop** field, click the down arrow:



5. Choose **Support 1**. **MBend** places the fingers as shown:




3.3.5 Running the Simulation

Simulate the bending sequence:

1. Click the **Go To Simulation** button.
2. Using the **Play Bends Simulation** panel you can view the bending process and detect collisions:

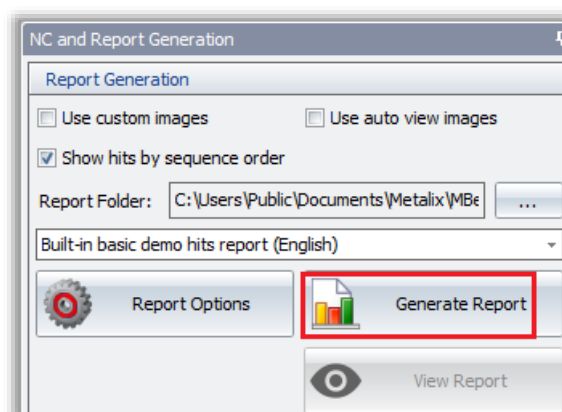


To see all the bends played from the current position through to the end, deselect the **Single Play** option (it should have a gray background) and then click the **Play current hit forward** button .

3.3.6 Generating Output

You are using a demo machine, so the only output you can generate is a report (and not the NC):

1. Click the **Go To Output** button. The **NC and Report Generation** panel opens.
2. Click **Generate Report**:



MBend generates the default report. It might look like this:

MBend Setup Report Example

Demo only, not for production

Part: AutomaticSimulation

Customer: Order:
Reference: Batch:

Product information		Created:	25/10/2017	
Machine:	Demo Demo Euro			
Material:	Steel	Thickness	2	mm
Cutting size	274.63 x 345.38 mm	Weight:	1.48	kg
Bends:	6			
Comment				
Part location	C:\Users\Public\Documents\Metalix\MBend\Parts\AutomaticSimulation.mbcam			

The diagram shows a green L-shaped metal part with six numbered bend locations. Red numbers 1, 2, 3, 5, and 6 are placed at the corners and ends of the part. Blue number 4 is placed at the intersection of the two main arms. The part is shown with grey tabs and holes at the ends of its arms.


 **TIP:** You can export your report to Adobe PDF, Microsoft Word, or Excel.

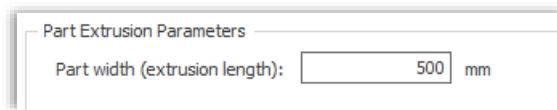
3. Close the report screen, save your work, and close the part file.

4 Creating Part Profiles

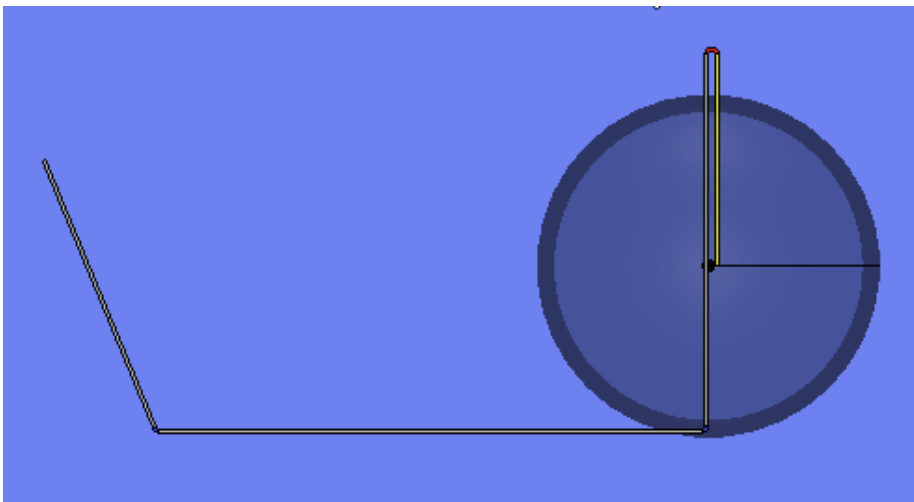
In this exercise you will sketch a part profile, refine its dimensions and angles, and save it in the profile library.


4.1 Sketching the Initial Design

1. Click the **Home** tab => **File** group => **New Part** . The **New Part Wizard** opens.
2. In the **Start From** section, select **New profile**.
3. In the **General Part Definition Parameters** section, select **Material Steel**, **Thickness 1**, and **Bend radius 1**.
4. In the **Part Extrusion Parameters** section, set the **Part width** to **500**:



5. Click **Next**. In the blue area, sketch a design (consisting of four lines) similar to the picture below, starting from the left, by clicking with the mouse. Do not pay much attention to angles and lengths, as you can refine them later:



6. When you have a rough draft, click **Edit** .

4.2 Refining the Design



Make minor changes to the design:

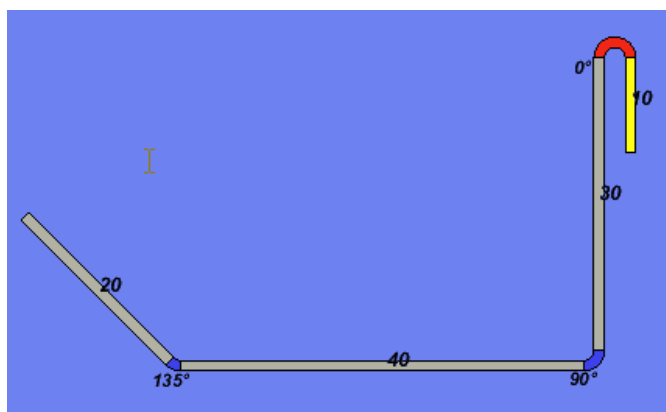
1. Click the first flange. Modify the bend information as shown:


Selected Bend Info	
Flange #:	1
Dimensions:	Internal
Height:	20.0
Radius:	1.0
Angle:	-45.0
Hemming:	Down
Angle to X:	-45

2. Click the second flange and modify its details:

Selected Bend Info	
Flange #:	2
Dimensions:	Internal
Height:	40.0
Radius:	1.0
Angle:	135.0
Hemming:	Down
Angle to X:	0

3. Modify the third flange details to height **30.0** and angle **90**.
4. Modify the fourth flange details to height **10.0** and angle **0**. (This is a hemming bend.)
5. To display the measurements on the screen, click **Show Height**  and **Show Angle** . You can zoom in and out of the picture. Your profile should now look like this:

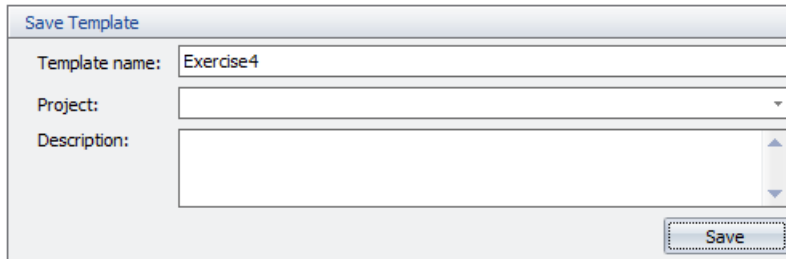


 **TIP:** You can read full details on the use of the [New Part Wizard](#).

4.3 Saving the Profile

Your design is complete. Now save it for future use:

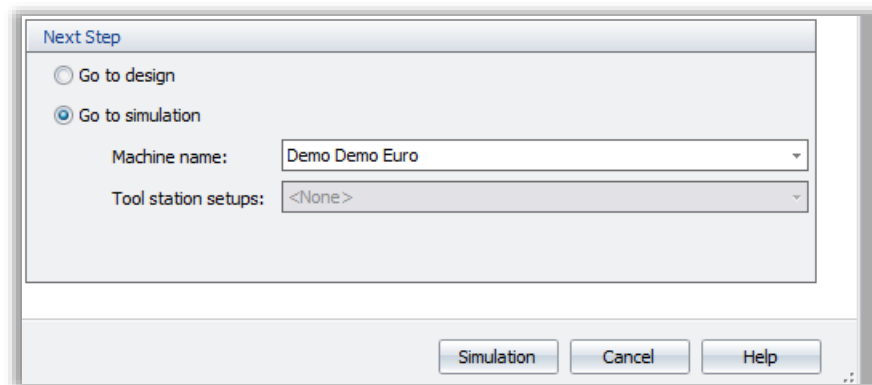
1. Click **Next**. In the **Save Template** section, in **Template name**, type **Exercise4**:



The 'Save Template' dialog box contains the following fields:

- Template name: Exercise4
- Project: (empty dropdown)
- Description: (empty text area)
- Save button

2. Click **Save**. In the **Next Step** section, make sure **Go to Simulation** is checked, and click **Simulation**:

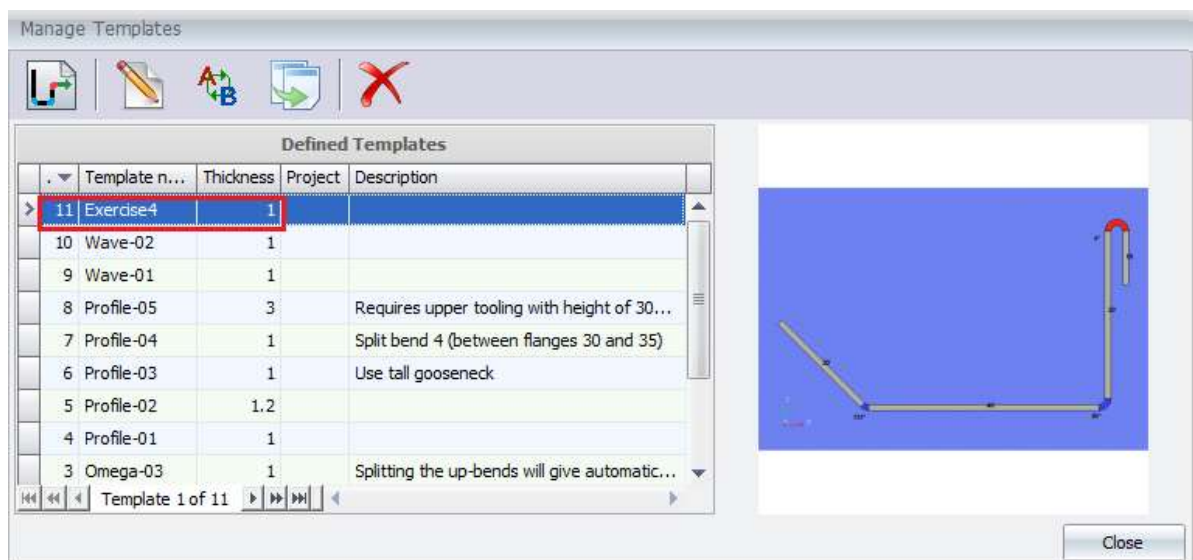


The 'Next Step' dialog box contains the following options and fields:

- Go to design (radio button, unchecked)
- Go to simulation (radio button, checked)
- Machine name: Demo Demo Euro (dropdown)
- Tool station setups: <None> (dropdown)
- Simulation button
- Cancel button
- Help button

MBend saves the **Exercise4** profile in the profile library and creates a part based on the profile.

3. Click the **Home** tab => **Configuration** group => **Templates**.
4. The **Manage Templates** dialog box opens. Click the **ID** column once or twice to sort the profiles in descending order. Highlight **Exercise4**. You can see a preview of the design on the right:



The 'Manage Templates' dialog box shows a list of defined templates. The 'Exercise4' template is highlighted. A preview of the design is shown on the right.

Template n...	Thickness	Project	Description
11 Exercise4	1		
10 Wave-02	1		
9 Wave-01	1		
8 Profile-05	3		Requires upper tooling with height of 30...
7 Profile-04	1		Split bend 4 (between flanges 30 and 35)
6 Profile-03	1		Use tall gooseneck
5 Profile-02	1.2		
4 Profile-01	1		
3 Omega-03	1		Splitting the up-bends will give automatic...

5. Click **Close**.


TIP: You can edit the saved design if necessary. Refer to the [Profiles Library](#) section for more details.

5 Tooling Automatically

In the [previous exercise](#) you manually assigned tools for the bends. In this exercise, **MBend** suggests appropriate tools. You will then check that the tools do not cause collisions due to sequencing.

5.1 Using a Profile



If you are continuing from the previous exercise, you can reuse the profile as follows:

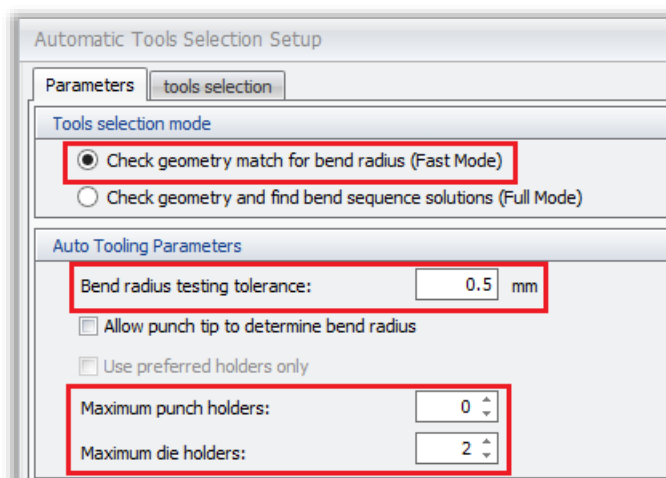
- If the exercise is open, in **MBend** reset the tooling by clicking the **Simulation** tab => **Actions** group => **Reset** and confirming your choice.
- If the exercise is not open:
 - a. Click the **Home** tab => **File** group => **New Part**  and select **Template**.
 - b. In the **Part Extrusion Parameters** section, type **400** as the **Part width** and click **Next**.
 - c. Select **Exercise5**, click **Next** twice, and click **Simulation**.


Alternatively, set up a profile as explained in [the previous exercise](#).

5.2 Finding Appropriate Tools

To find tools:

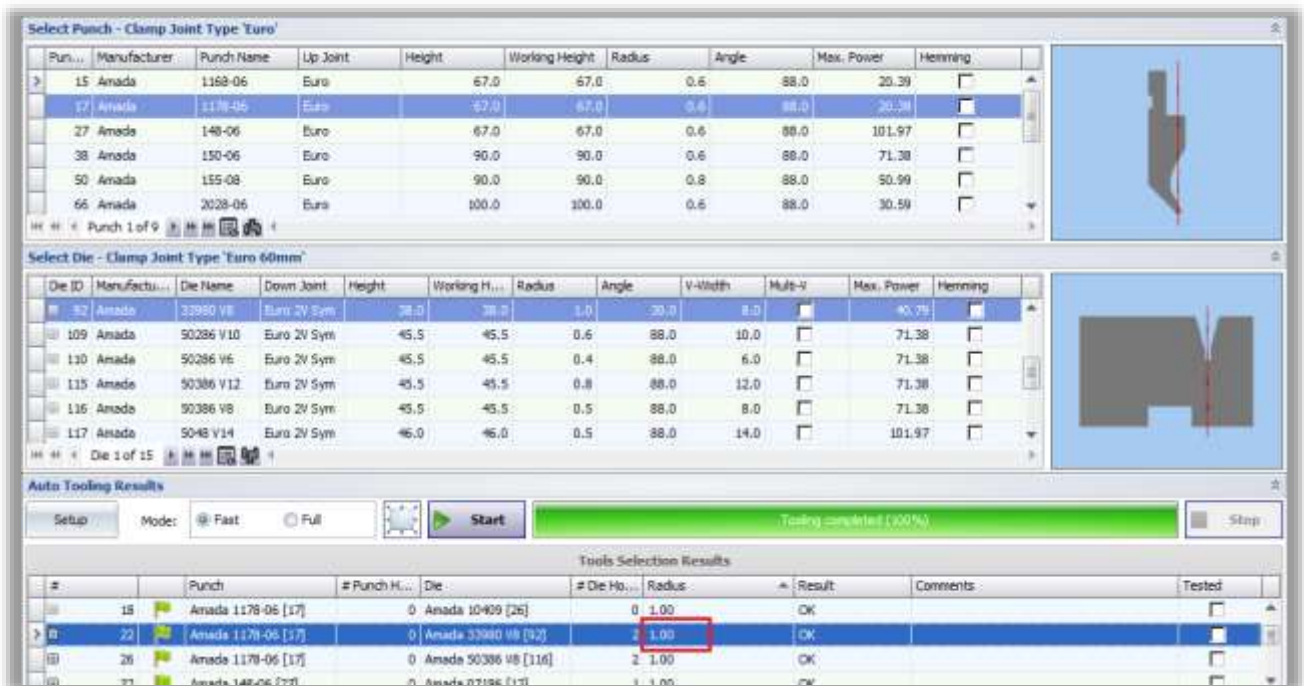
1. In the **Tools Selection** panel, select **Bend 1**.
2. Click the **Simulation** tab => **Tools Selection** group => **Auto Tooling** . The **Automatic Tools Selection** dialog box opens.
3. If not already selected, click **Assigned Tools**  on the ribbon.
4. Click the **Setup** button (halfway down on the left):
 - a. Select the first option for **Fast Mode**.
 - b. Set **Bend radius testing tolerance** to **0.5**.
 - c. Set **Maximum punch holders** to **0** and **Maximum die holders** to **2**.



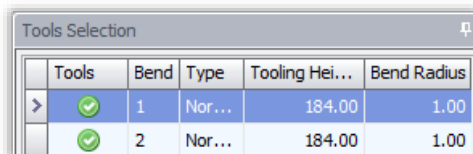
- d. Click **OK**.
5. Allow **MBend** to search all the joint types by clicking **Select All** .

NOTE: When you first enter the **Automatic Tools Selection** dialog box, you do not need to click **Start All**. It is usually only necessary if you are repeating the search without exiting the dialog box.

- Click the **Start** button.
- You want tools with a close or exact radius to the radius (**1.00**) you defined for the profile. In the **Auto Tooling Results** panel, select a tool with a green flag and a radius **1.00**:



- Click **Accept**.
- Check the radius is appropriate: The **Bend Radius** column of the **Tools Selection** panel should show **1.00** for the first bend:



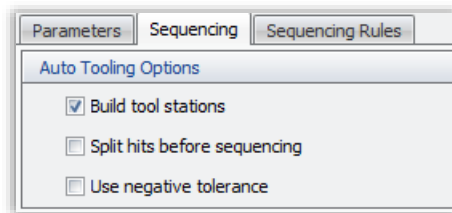
- Save the file with the name **BendSeq**.




5.3 Using Full Mode to Find a Sequence

Verify that the tool selection has at least one valid sequence:

- Click **Auto Tooling** (in the **Simulation** tab => **Tools Selection** group).
- Click **Setup**.
- In the **Automatic Tools Selection Setup** dialog box, in the **Tools selection mode** section, select **Full Mode** (the second option).

- In the Sequencing tab, check **Build tool stations**. The other options should not be selected:

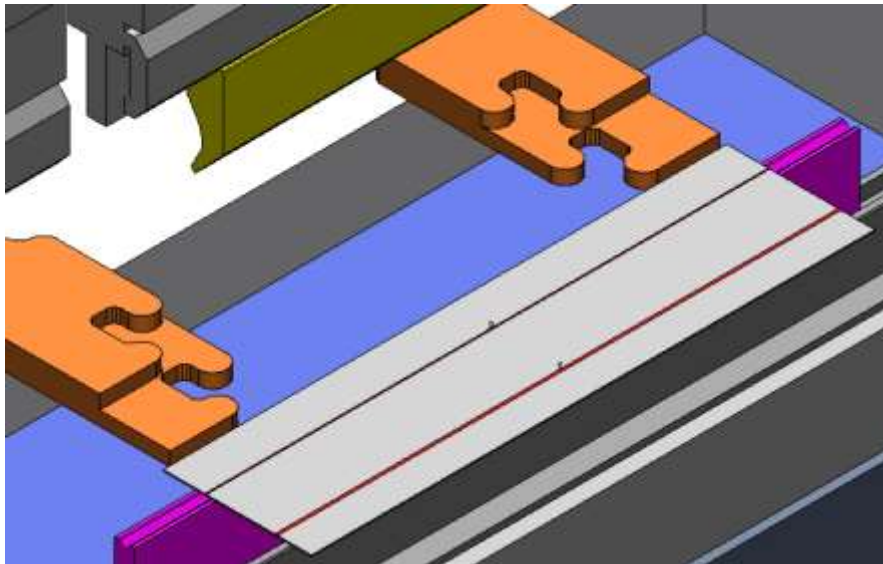


- Click **OK** (or **Close**).
- Click **Select All**  and click **Start**.
- Click the non-suitable combinations flag . You do not need to wait for **MBend** to calculate all the alternatives. When you see that there are a few unsuccessful combinations in the **Tool Selection Results** panel, click **Stop**.
- Examine the error messages to understand why some of the combinations failed.
- Click the successful flag . Note the sequence of the bends in the **Comments** column. For example:



#	Punch	# Punch Hol...	Die	# Die Hol...	Radius	Result	Comments	Tested
31	Amade 148-06 [27]	0	Amade 12204 V9 [34]	1	1.15	OK	Bend 2 Bend 1	<input type="checkbox"/>
32	Amade 148-06 [27]	0	Amade 23980 V12 [91]	2	1.50	OK	Bend 2 Bend 1	<input type="checkbox"/>
33	Amade 148-06 [27]	0	Amade 23980 V8 [92]	2	1.00	OK	Bend 2 Bend 1	<input type="checkbox"/>
34	Amade 148-06 [27]	0	Amade 50286 V10 [106]	2	1.30	OK	Bend 2 Bend 1	<input type="checkbox"/>
35	Amade 148-06 [27]	0	Amade 50286 V6 [110]	2	0.80	OK	Bend 2 Bend 1	<input type="checkbox"/>
36	Amade 148-06 [27]	0	Amade 50286 V12 [115]	2	1.50	OK	Bend 2 Bend 1	<input type="checkbox"/>

- Select a row displaying a sequence of **Bend 2 | Bend 1**.
- Check **Go directly to simulation** (down the bottom) and click **Accept**. This is how the part may look:



- Save the file.