# MBend V9 Highlights

This document describes the new features included in version 9 of MBend from Metalix.

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1 New Flattening Options

MBend includes an option to flatten the part according to user-defined default tools, per material and thickness. (This is in addition to the older option for flattening the part by design radius.)

There is now a RiR column showing the resulting inner radius (replacing the Radii table).

Click the Home tab => Configuration group => Compensation Factor. The Bend Compensation Factor Setup dialog box opens. For example:

For more details, see the MBend Bend Compensation section in the online help.

2 Try Auto-Process

MBend can now process new parts automatically when it opens a part for processing (from 3D, flat, or the New Part Wizard):

1. MBend looks for Preferred Tools for the part (by machine + material + thickness).
2. If there are Preferred Tools, MBend applies them and searches for bend sequences.
3. If there is a valid bend sequence, MBend calculates a tool setup.
4. If there is a valid tool setup, **MBend** opens the part in the Simulation stage. You can set this option when opening a 3D part by selecting **Try auto process**:
You can also set this option when you finish designing a part in the **New Part Wizard**:

![New Part Wizard](image)

### 3 Profile Editing Even After Processing

You can now edit a part's profile after the tooling stage (for parts created in the Profile Editor). You can do this when you are processing the part, or after you open an existing part you processed previously.

To make changes in your profile, bend length, flange heights, etc., click the **Simulation** tab => **Switch To** group => **Design**:

![Simulation TAB](image)
4 Intuitive Profile Designer

The profile designer has a new look and feel, and is easier to use. You can change the profile values by typing them directly in the table:

1. Click the Home tab => File group => New Part, select New profile, and click Next.
2. In the Edit Profile screen, design the part.
   The editable values appear in a table on the right:

5 Full Support for Multi-V Dies

MBend automatically simulates the correct multi-V die opening, rotating the die as needed.

5.1 Types of Multi-V Dies

MBend supports multi-V die tool import and simulation. These dies include:

- "X" and multiple-V:
• Two-V (quick-change, etc.):

By requiring only one DXF drawing per die, it is now easier to import the multi-V dies. In addition, since there is only one die, there is only one set of segments for this die (whereas in the past there was a segment set for each V).

The one multi-V die can be used for both parts of a hemming bend. For example, prebend (1) and flatten (2):

Once a die is imported, MBend recognizes all the V openings.
In the Multi-V tab you can examine and modify the parameters for each V opening:

![Multi-V tab screenshot]

### 5.2 Select by Die Rotation or by I Axis Movement

When you use an X die, changing Vs is done by rotating the die in place. But for two-stage hemming dies this is done by moving the lower clamp in the I axis. For this, MBend offers the V switch mode setting:

- **By Die Rotation** – for X dies, etc.
- **By I Axis Movement** – for two-stage hemming dies, etc.

In addition, for the I axis movement, MBend calculates the precise offset required:

![I axis movement screenshot]

### 5.3 Auto Tooling Support Per V

When you run auto-tooling MBend tries to find a valid solution for each V die opening.

![Auto tooling support screenshot]
In this example, **MBend** finds two good solutions and two failures:

![Image of MBend software interface showing setup results]

### 6 Multiple Setup Support

A part may require a setup that is not valid for the machine. For example, too many stations may overhang the machine, or there may not enough segments to create the setup. **MBend** can split the setup into valid sub-setups, and then generate individual NC and setup report files for each sub-setup.

To activate this option, go to Options => General tab => Various Settings section, select **Show Setup Management**.

The following example shows how to split a setup.
This part has bends with two different radii (1mm and 4mm):

To use two different dies is not possible because there is not enough room on the machine to accommodate the two stations required:
The solution is to use the **Multiple Setup** feature to split the setup in two:

1. Click the multiple setup icon (at the bottom of the Simulation panel).
2. **MBend** analyzes the setup and checks if it can be split. In this case, **MBend** finds two sub-setups: one for the **Station 2** hits, and the other for **Station 1** hits:

   ![Multiple Setup Feature](image1)

   ![Manage Setups](image2)

3. Click **Generate Setups**. **MBend** creates two sub-setups. Setup1 looks like this:

   ![Setup1 Simulation](image3)
Setup2 looks like this:

4. In the Output stage, select **All setups. MBend** generates two individual NC files:
7 Drag Fingers in All Axes

You can drag the fingers in any direction, not just the Z axis. Select one of the fingers, then select Drag by Z/X/R:

As you drag the finger it is highlighted in yellow:

When you drag so far that it "bites" into the part, MBend highlights it in a reddish color:
When you release the finger, it snaps to the part's edge:

8 Import Additional CAD Formats

MBend can now import additional CAD formats:

- 2D SCPX files from Muratec
- 3D Parasolid (x_t)
- 3D SAT

9 Auto-Sequencing Enhancements

Auto-sequencing includes these changes.

9.1 Report No Solution

When MBend cannot automatically find a solution, it now reports the reason for failure, telling you which tools or components caused collisions. This information should help you find a better solution.
This example indicates problems with the upper tooling, so a different punch (higher, gooseneck, etc.) may provide a valid solution:
9.2 Part in Machine Rule

A new auto-sequencing rule allows you to minimize the unwanted situation where a part is positioned inside the machine. For example:
What’s New V9

NOTE: You must select **Use rule set** in auto-sequencing:

![Auto Hits Sequence Setup](image)

9.3 Report All Sequences

The **Report all sequences** option in the auto-sequencing setup tells **MBend** to show the results of all sequences; not just the best ones. For example, the second line would not normally show up as it requires diagonal gauging:

![Auto Sequence Selection](image)

10 Part Alignment to Tools

Align the part to the die or punch using the **Alignment Management** tools in the **Simulation** tab:

![Alignment Management](image)
Options:

- **Align Hit Left** and **Align Hit Right** move the part to the nearest die or punch endpoints on the left or right.
  
  From this position:

![Diagram showing part alignment]

Clicking **Align Right** moves the part to the right of the punch (as it is nearer):

![Diagram showing part alignment]

Another click moves it to the right of the die:

![Diagram showing part alignment]

- **Align Hit Center** moves the part to the middle of the die or punch (whichever is closer).

- **Align Station to Machine Center** moves the station to the middle of the machine.

These functions are also all available in the **Station Setup** (in a slightly different format).
GUIDE: To align all hits simultaneously, hold down the Ctrl key and click.

## 11 Crowning Support for Cybelec

For Cybelec-controlled machines.

The machine configuration can include tonnage percentages for crowning, and Y1 and Y2 values. There is no need to calculate the data manually.

To include this data, in the Machines dialog box, click Output tab => Crowning tab, and select Generate Y1, Y2, Tonnage and Crowning output.

The values in this table are editable. For example:

![Crowning Values Table](image)

This is the crowning range from the Cybelec control:

![Crowning Range](image)
These are the values that MBend calculates and outputs to the Cybelec control:

<table>
<thead>
<tr>
<th>Crown Parameters</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowning</td>
<td>8.83</td>
</tr>
<tr>
<td>Y1</td>
<td>139.60</td>
</tr>
<tr>
<td>Y2</td>
<td>139.60</td>
</tr>
</tbody>
</table>

View these values by clicking the Simulation tab => Simulation Configuration group => Hit Parameters.

12 Import External Bend Compensation Table

To help you integrate your existing bend compensation data, MBend provides a simple interface for managing and importing the values from a CSV file.

Following is an example of a CSV file (from Solid Edge), open in Excel. Note the column headers (MAT, T, V, R, etc.):

1. (Optional) Before importing, map the fields of the CSV file to the relevant fields in the bend compensation table. In the Options => Mapping Management tab,
   - click the Import Generic Maps tab => Define new CSV map file manually and type the Map Property corresponding to each CSV Column. Add columns and delete columns as required.

2. To import table headers, click Define new CSV map file from sample file. Navigate to the CSV file, then select the Map Property corresponding to each CSV Column. Some properties (Material, Thickness, V-Opening, and Radius) are mandatory.
3. To map the materials, in the Material Synonyms tab, click Define New Material Synonym A-Z, replace NewSynonym with the name of a material from your CSV, and in the Material column, select the corresponding material for use in MBend:

At the top of the dialog box:
- CSV map name is the file you selected.
- Map Type can only be BendTable.
- First Data Row indicates where the data begins in the CSV file.
- Unit can be metric or imperial.
The next action overwrites all the existing values in the table.

It might be a good idea to make a backup of your environment first. See instructions on how to switch the environment (in the Home tab => Configuration group).

4. To import the values, click the Home tab => Configuration group => Compensation Factor and click Import New Bend Table. Select the CSV file.

5. To see the values per material and thickness, in the Bend Compensation Factor Setup dialog box, in the Bend Compensation Factor section, select a material and thickness from the dropdown lists. The values you imported are displayed in the table:

(RiR = resulting inner radius, SB = springback)
13 **K Display Mode**

The bend compensation table has a new display and edit mode for K factor. Select K in the **Bend Compensation Factor Setup** dialog box, under **Display Mode**:

![Image showing the display mode of the bend compensation table]

The values in the table change, depending on the display mode.

14 **Faster Part Opening**

The speed for opening MBCAM parts in **MBend** is greatly improved.

15 **Graphical Finger Stop Definitions**

You can define the individual finger stops using an interactive graphic interface.

1. After importing a finger (or opening it for editing), create a stop by clicking the 3D representation of the finger.

2. For a new cylindrical stop, click the arc of the stop:
3. Then click its side:

MBend analyzes the geometry and extracts the stop’s position and attributes (height, radius, etc.):

It is possible to edit all the values manually; for example, if there is no side edge to click when defining the stop height.

For more details, see the video: https://www.youtube.com/watch?v=dDI455d7voQ.

16 Import\Export Machine Components

Import and export individual components such as fingers, punches, etc. This feature makes it easy to transfer component definitions from one MBend installation to another:

1. Click the Components tab => the component:
2. In the dialog box that opens, click Import or Export and follow the prompts. The file name extension depends on the type of component (mbmLB for lower beams, mbmFR for frames, etc.).

17 New Post-Processors

MBend works with additional post-processors:

- Safan SMK (for older machines)
- Safan E-Control
- Euromac
- CoastOne – TC15
- Accurpress
- Cybelec VisiTouch