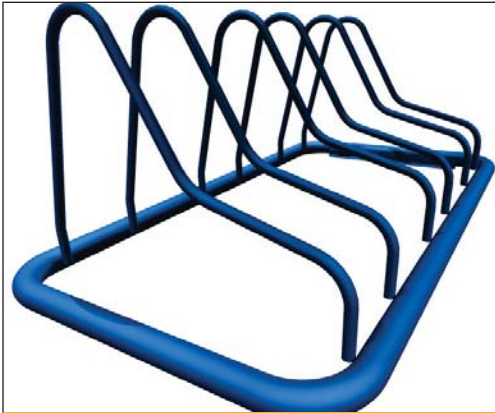# Autodesk Inventor Tips & Tricks



Autodesk® Inventor™ software has a tool set geared towards frame design. It is called the Frame Generator. The Frame Generator in Inventor 2008 has been enhanced with the addition of bent member creation tools.

The bent member creation tools are easy to use tools that fit the frame design workflow. The User Interface has been implemented as part of the existing frame member generation interface.

# Creating Bent Frame Members in Autodesk Inventor 2008

When it comes to designing anything with a steel frame, the time will come when it is necessary to make use of bent frame members. Bent members may be used for ease of manufacture, aesthetics, or for structural reasons.

**The Setup**

Imagine that you are designing a simple bike rack. The bike rack needs to hold three bikes. As part of the design criteria, you would like to minimize the number of pieces, and make the rack as simple to assemble as possible.

Using the new Bent Member functionality in the Inventor 2008 Frame Generator, this is a very simple undertaking. Follow these simple steps:

**1.** Begin by creating a master sketch file containing some simple sketches and a few parameters. Two sketches drive the entire design. The three User Parameters drive the location of all the uprights.
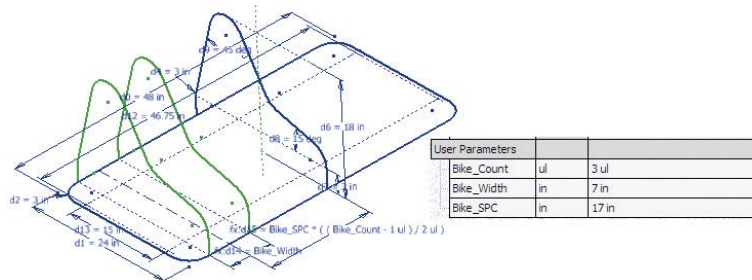


Figure 1, Master Sketch File

**2.** In a new assembly, insert the Master Sketch file. Ensure it is grounded at the origin of the assembly.
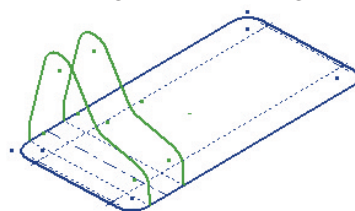


Figure 2, The Master Sketch file inserted in the assembly file.

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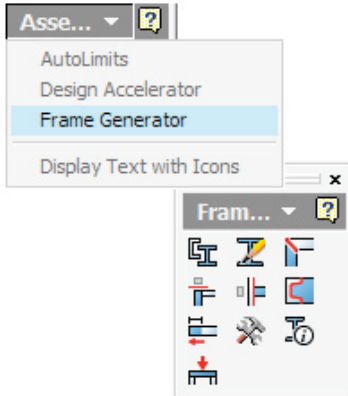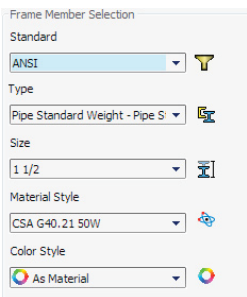**3.** Change the Browser view to the Frame Generator view to begin using the Frame Generator.

Figure 3, Starting the Frame Generator.

**4.** Start the Insert Frame Members tool and set it up as shown in Figure 4.

**Tip:**
*The assembly file must be saved in order to begin creating frame members.*

*The Frame Generator creates its own assembly file and skeleton file in the background.*

Figure 4, Setup for member selection.

**5.** Select the four segments and the four arcs that form the sketch for the base frame. As items are selected for member placement, geometry is created within the skeleton file. The orientation of the frame members will be displayed in a preview in the graphics area. Before selecting Apply, ensure that **Merge** is unchecked.
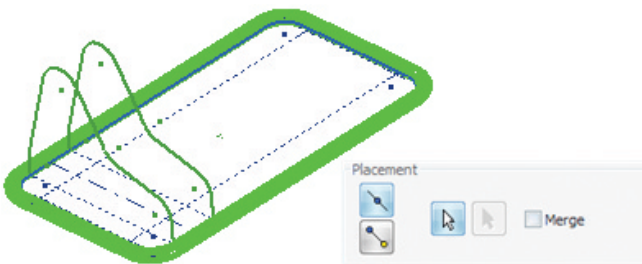
Figure 5, The lower frame is selected and displays a preview.

**Tip:**
*When selecting continuous segments, leave the **Merge** option **unchecked**, so that the selected geometry will create **individual** frame members.*

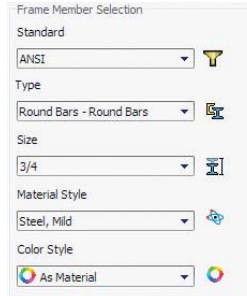**6.** Next, specify the frame type for the uprights. Select the member options as shown in Figure 6.

Figure 6, Setup for member selection.

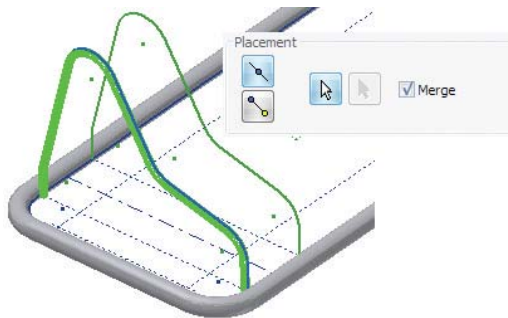**7.** Select the sketch objects that form the first upright. Ensure that the **Merge** option is **checked**.

Figure , Geometry is selected to create first bent upright.

**Tip:**
*When selecting continuous segments, leave the **Merge** option **checked**, so that the selected geometry will create **continuous**, bent frame members.*

**8.** Repeat for the second upright, again with the **Merge** option **checked**.
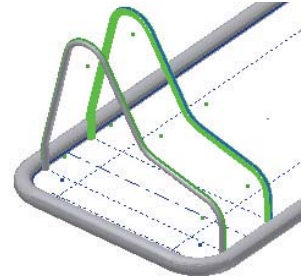
Figure 8, The second upright is previewed.

**Tip:**
*Both uprights will be identical parts. If required, the original can be copied and constrained to the sketch geometry. This replaces the need to create the second upright member.*

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**9.** Set up the Frame Member selection dialog, select the segment as shown in Figure 9 below, and click apply to create the first mount. Repeat at the other end for the second mount.
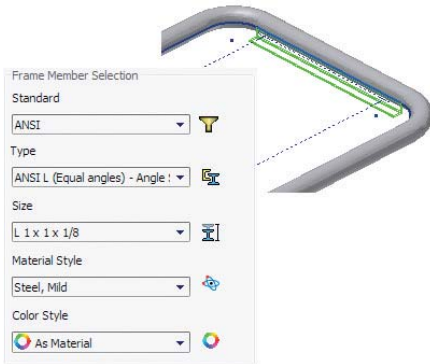


Figure 9, The first mount member is previewed.

**10.** A quick pattern for the remaining uprights and an assembly feature to create the mount holes wraps up the assembly.
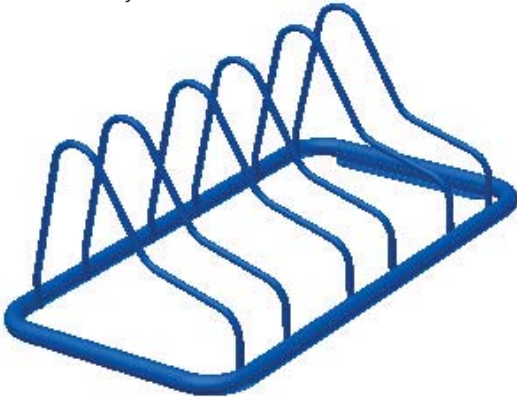


Figure 10, The completed Rack.

> **Tip:**
> *The values for the pattern are obtained by linking the parameters from the Master Sketch file to the assembly parameters via the parameters dialog.*
>
> **Tip:**
> *The sketch for the assembly feature contains Hole Centers projected from the Master Sketch file in the assembly.*

**The Result**

This new workflow allows you to very easily create Frame Members as continuous bent members or as segments that are assembled.

**Conclusion**

Using the Frame Generator tools in Inventor 2008, you will be able to develop frame assemblies that include bent members. These assemblies will be robust, and update as the underlying geometry changes.

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