Autodesk Inventor Tutorials

by Sean Dotson
www.sdotson.com
sean@sdotson.com

Derived Parts
Part Three –
Mold & Die Creation
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In this part of the tutorial on derived parts we will deal with Inventor's ability to create molds and dies.

A major advantage of a solid modeling program is its ability to accurately and easily produce negative molds or dies of a positive part.

The example begins in an assembly drawing with three parts. A top and bottom half of the mold and the positive of the molded part. For the sake of this example the top and bottom halves of the mold are simply blocks. In a real mold injection ports, runners, dowel pins, dowel pin holes and other features would likely be required. (see Figure 1)
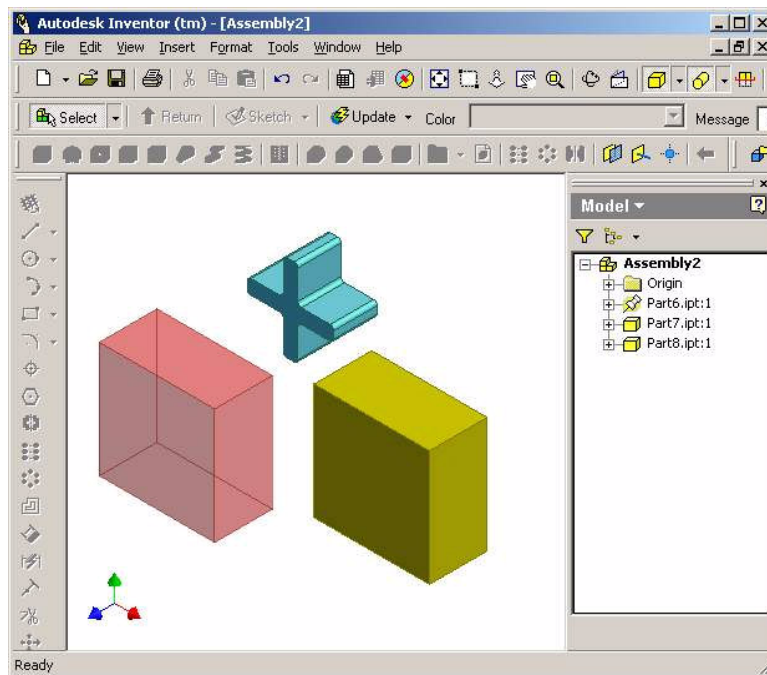

Figure 1 – Unconstrained Base Assembly

Constrain the parts in the assembly into the configuration that the mold requires. In this example we "bury" the cross shaped part into each of the top and bottom mold halves. The top half has been made transparent for clarity. After constraining the model the derived part is ready to be created. (see Figure 2)

Start a new part and exit sketch mode. Click on **Derived Component** and select the assembly file. Just as in the first lesson, the user may now choose which parts to join, cut or ignore. For the purposes of making a mold, select the icon associated with the cross-shaped part and change it's icon to subtract (blue minus sign). (see Figure 3)
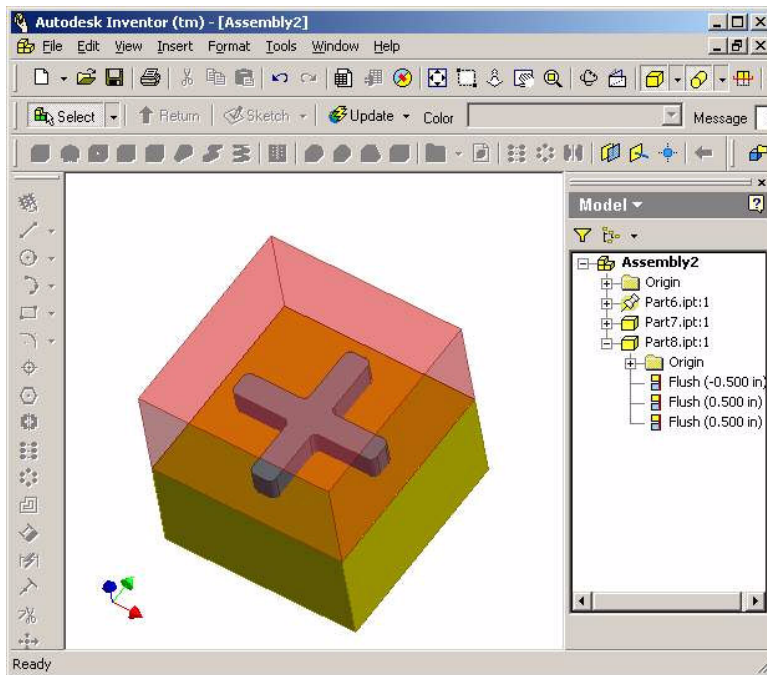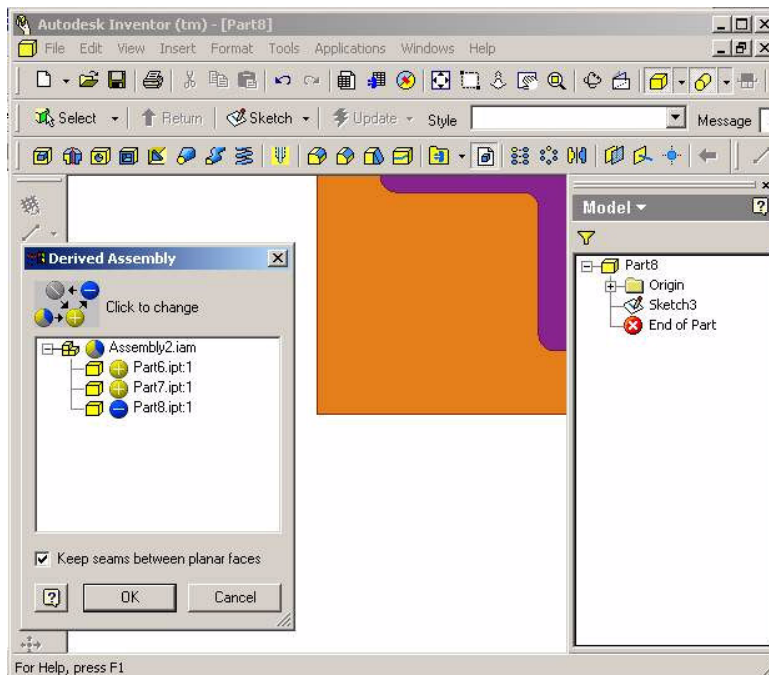
Figure 2 – Constrained Base Assembly

Figure 3 – Derived Part Dialogue

Check the option to keep seams between planar faces and then click OK. The derived part will be created. Please note that the colors of the derived parts have been change for illustrative purposes. When creating a derived part, the color used is the default color for that specific template. (see Figure 4)
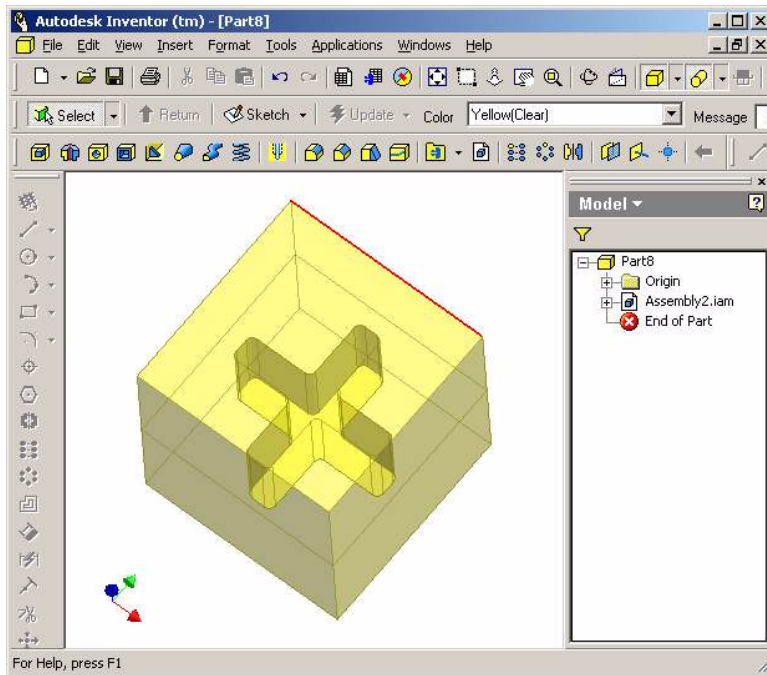
Figure 4 - Derived Part

The derived part is now a cube with an internal cross-shaped void. There are several ways to now separate the two halves of the mold. One of the most simple is to first save a copy of the derived part. We now have two copies of the same part that are both linked to the original base assembly. Next create a new sketch on one of the side faces of the mold. Produce a "cut" extrusion to remove the top half of the mold. (see Figure 5)
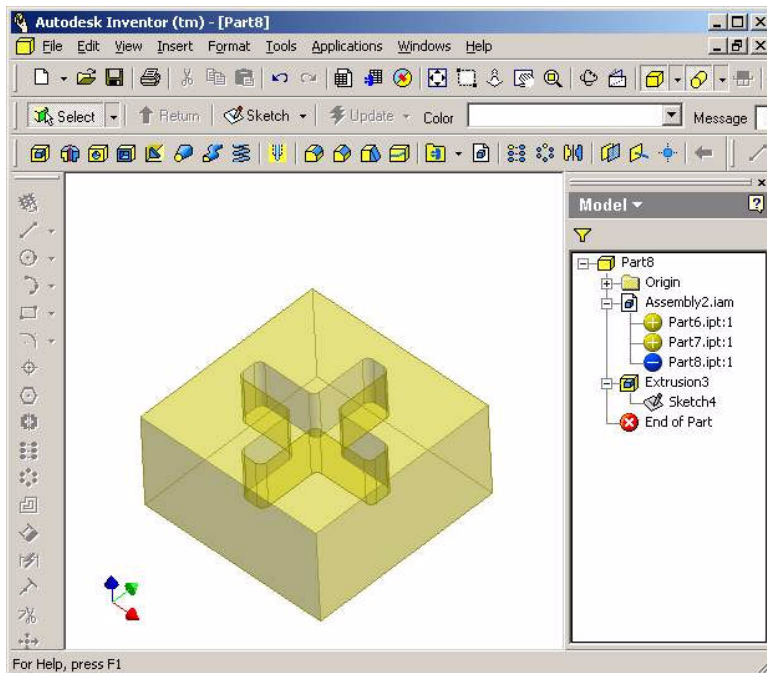

Figure 5 - Top Half of Derived Mold

Doing the same operation (but on the bottom half of the mold) on the other derived part will produce two parts that make up the two halves of the mold. Any changes to the original base assembly will be reflected in both of these derived parts.

It is hoped that these tutorials have been helpful in helping you to understand the uses and limitation of derived parts. I encourage you to play around with different techniques. While the basics of mold and weldment design have been explained in this document there are many additional techniques that can be added to the design procedure.