



3D Model Component Creation Process

A common mistake that users make when creating families is to begin modeling 3D geometry before the “Up front” work is done. In the case of a parametric family especially, the actual modeling of extrusions, revolves, blends and sweeps is a small part of the overall process. First, take care to plan, define and test the parameters that you are going to use to control the geometry. Only after you have confirmed that all of the underlying rules and constraints are working and properly configured should you actually create the model geometry. Combining the modeling tools provided by Revit and the parametric tools and constraints, a typical process for modeling a 3D family object will include the following steps:

1. Define all Reference Planes needed to define the geometry in three dimensions. Provide names for any that may need to be used as Work Planes in the future.
2. Constrain the Reference Planes with dimensions and parameters.
3. Flex the Family to test the behavior of the Reference Planes against the parameters and constraints.
4. Begin the creation of the Solid or Void geometry using either an extrusion, revolve, blend, sweep or swept blend.
5. Check and set the Work Plane for the sketch geometry. It is important to do this first, if for no other reason than to ensure that you’re drawing the sketch where you think you are.

Note: that you can also set the current Work Plane at any time by selecting the Work Plane Creating Parametric Components in Autodesk Revit Architecture tool on the “Create” ribbon, and you can display the current Work Plane using the Work Plane Display toggle on the ribbon as well.

6. Create the sketch geometry. Lock the geometry to your reference planes.



7. Set the object’s properties. To do this, do not select the method Properties tool on the ribbon. Technically the object doesn’t exist yet, so selecting the Element Properties tool while in sketch mode will take you to the properties of whatever sketch line work you have selected. Instead, select the method-specific Properties button on the ribbon. Specific properties that you are interested in include the depth (in the case of an extrusion or blend), the material of the object, visibility and sub-category (if necessary). You can also set the properties after the object has been created and you have exited sketch mode. It is also important to note that you can link properties to parameters. For example, if you have created a Yes/No parameter, that parameter can be used to control the Visibility property of the object.
8. Finish the Sketch, which will complete the object and apply the 3D properties to the 2D Sketch geometry.
9. Flex the Family, testing both the dimensional constraints and parameters again as well as any parameters that you linked to object properties. If there are any errors, you can either edit the sketch or modify any parameter-based properties to resolve the issue before going on to the next geometric component.