

Getting Acquainted with 3D Grips and Feature Generator

Quickly Insert and Edit Parametric Features on Any Part

Sometimes when you need to modify a part, just a small nudge of a line in a particular direction is all that's needed. The 3D Grips and Feature Generator tools in Autodesk Inventor® 10 provide a fast and flexible way to add and edit parametric features in your new and existing models. You can insert many types of pre-established features from the built-in Content Center and modify them using 3D Grips.

The addition of 3D Grips tools is handy for new and advanced users. For example, arrows indicate the drag direction while Inventor's preview feature shows the impact of a change before it's made.

Feature Edit with 3D Grips

Select a 3D Grip and drag a feature or a face, or snap to other geometry to resize a feature.

1. To access 3D Grips, right-click on the desired face or feature from either the part window or from the model browser.
2. Select 3D Grips from the context menu to activate the grip tools.
3. Notice the feature is now highlighted (red = cut, green = join, blue = intersect operation). Depending on its construction, arrows and circles appear on each face of the selected feature.
 - Green arrows indicate the face isn't tied to a sketched parametric dimension.
 - Yellow arrows indicate the feature has a parametric dimension you can modify if the face is edited by using 3D Grips tools (figure 1).

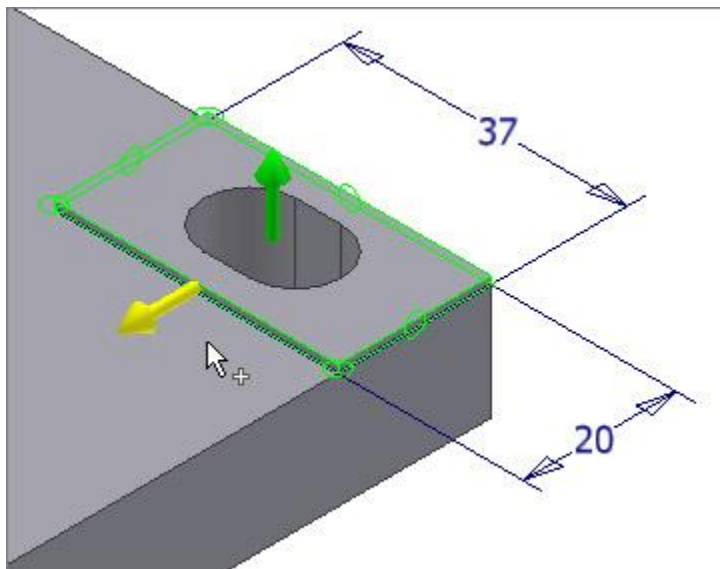


Figure 1. Green and yellow arrows indicate how a feature can be modified.

4. To edit the feature, either:
 - Select an arrow and drag it to the desired location
 - Right-click on a dimension and select Edit Dimension
 - Right-click on an arrow and select Edit Extent or Edit Offset (figure 2)

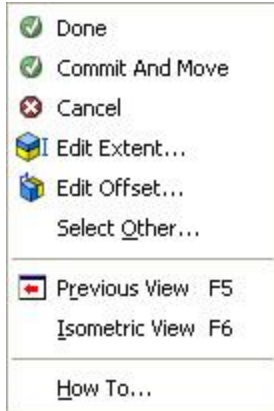


Figure 2. Menu selection lets you edit a feature.

Edit Snap Spacing

Edit the snap spacing to control the extent of change allowed by dragging a face using 3D Grips tools. In the Document Settings dialog box, the Modeling tab includes an option to specify 3D Snap Spacing setting (figure 3).

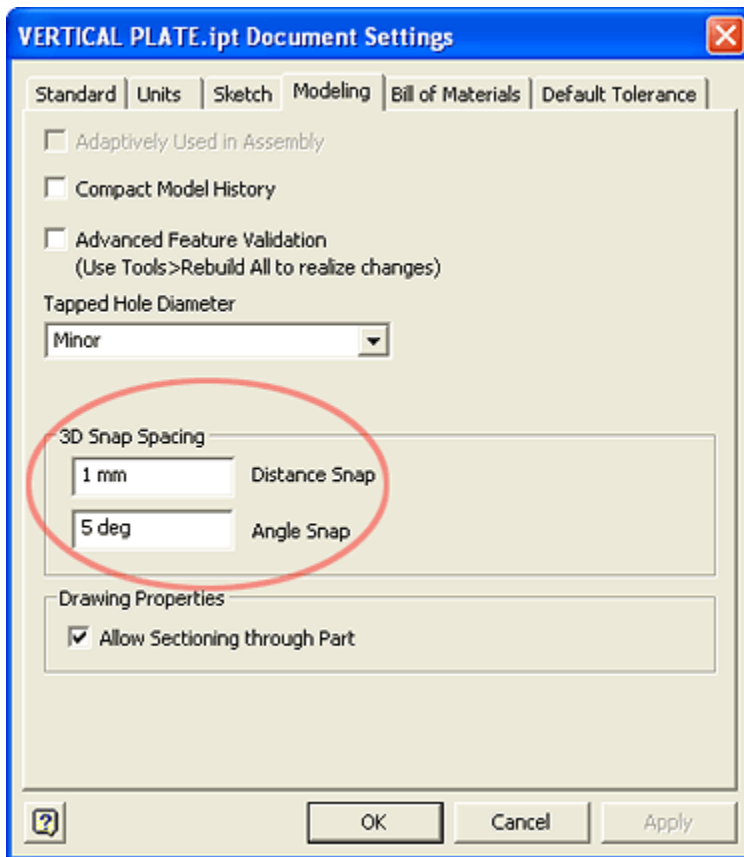


Figure 3. Edit the 3D Snap Spacing for a 3D Grip edit.

Make Faces Flush

Make two faces coplanar while editing a face or feature with 3D Grips tools.

1. Select the face or feature, and activate 3D Grips.
2. Once the arrows are available, select the arrow from the face or feature you would like to edit.
3. Select a face/plane to which you want the chosen plane to be flush. The software creates a preview of the results before you commit to the change (figure 4).
4. When you are satisfied with the result, right-click and select Done to make the change.

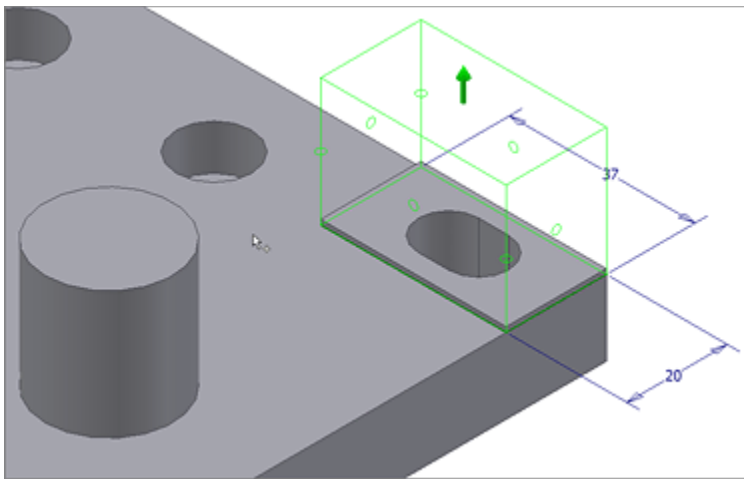


Figure 4. Preview results from 3D Grip edit.

Moving Features with 3D Grips

Edit the shape and size of a feature through 3D Grip editing, move a feature along its original face/plane, or move it to a new face/plane.

1. To move a feature, choose one of these options:
 - a. Right-click on a feature in the model browser, and select Move Feature from the context menu.
 - b. Change selection priority to Feature Priority on the Inventor Standard toolbar, right-click on the feature you would like to move, and select Move Feature. Right-click on the feature in the part window, and select Move Feature from the context menu.
 - c. Right-click on a face in the part window, and select 3D Grips from the context menu. Then right-click and select Commit and Move.
2. Now you can select and drag the feature to a new location. As you drag the feature, it will highlight and snap to existing edges to aid in proper placement (figure 5).

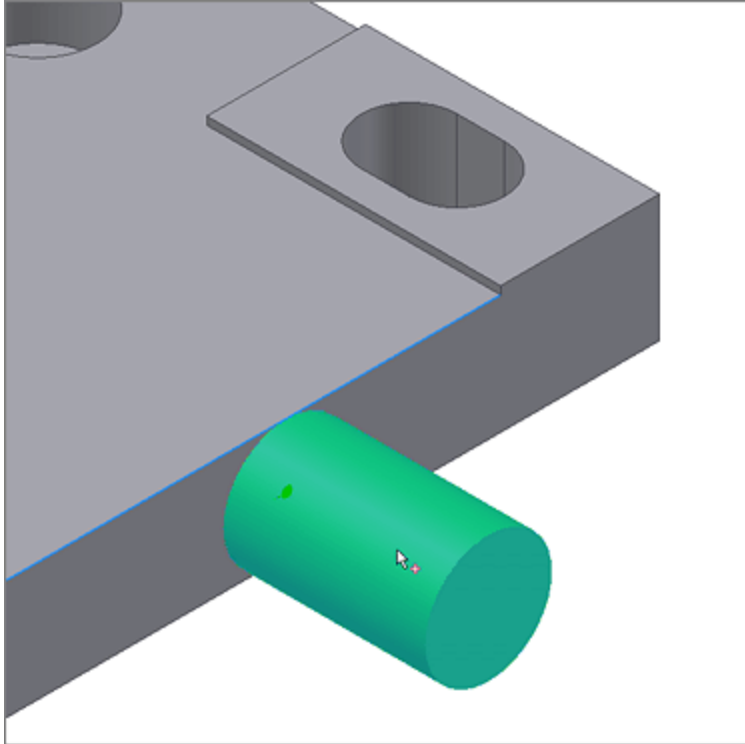


Figure 5. Features automatically snap to existing edges as you move them about.

3. Right-click to launch Move Feature, and choose a method for moving a feature (figure 6).
 - a. Select Triad Move if you would like to move the feature to a specific location. This brings up the 3D Move/Rotate dialog box.
 - Select any given axis or plane on the 3D indicator to specify the direction you want to move the feature.
 - Drag along that axis or key in a numerical value in the 3D Move/Rotate dialog box.
 - Select OK to commit to the changes and move the feature (figure 6).
 - b. Select Cruise Move to dynamically drag the feature around the original face/plane or to a different face/plane. Once you are satisfied with the results, right-click and select Done to accept the changes.

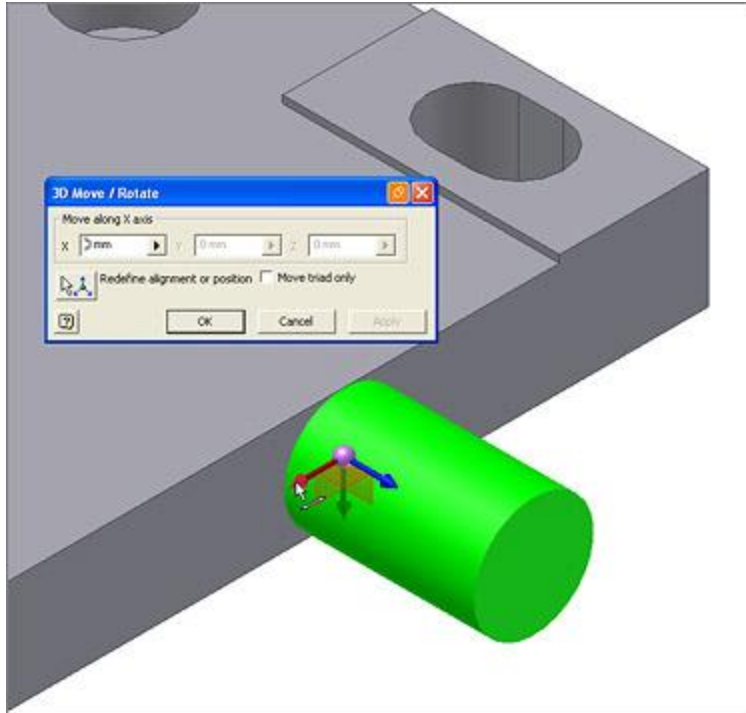


Figure 6. Use Triad Move mode to use specific inputs to relocate a feature.

Adding Features with Feature Generator

Standard shapes such as blocks, cylinders, spheres, and slots are fundamental to creating parts in Autodesk Inventor. Drag-and-drop shape libraries accelerate the transition to 3D modeling by making it easy and fast to create and edit parts. Use the Feature Generator to create fully editable Autodesk Inventor parts by simply dragging shapes from a library of standard geometry (figure 7).

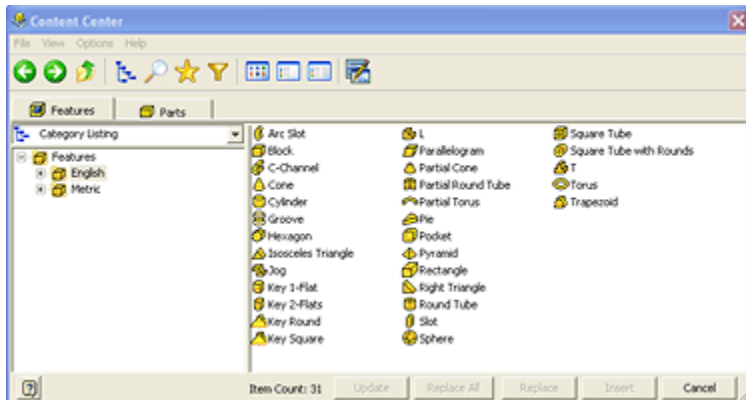


Figure 7. Choose standard shapes from the Content Center's Feature Generator library.

To add features from the Content Center to an existing part:

1. Click on the Content Center icon from the Part Feature panel bar to open the Content Center library.
2. Locate the appropriate feature from Content Center library.
3. Specify the necessary inputs, such as diameter and height.
4. To insert the feature, select the Insert button or drag the feature from the feature preview window to the Inventor part (figure 8).

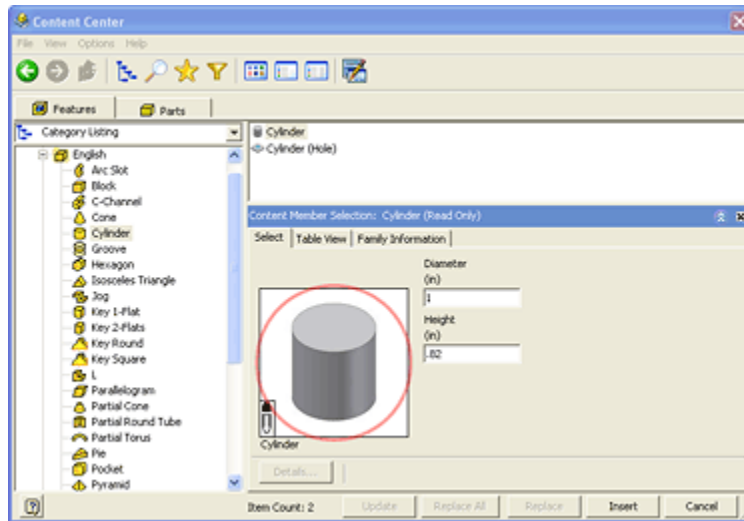


Figure 8. Drag the feature from the preview window into the part model.

5. Select either a face or work plane as the location to insert the newly created feature.
6. Once the feature is in the part environment, use 3D Grips to change its location and size to suit your needs (figure 9).

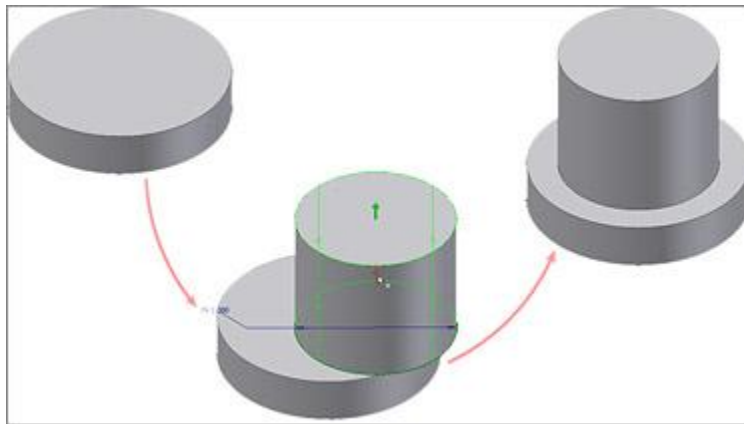


Figure 9. Use 3D Grip editing commands to modify the inserted feature.

Final Thoughts

Together, Content Center's Feature Library and 3D Grips tools make sketching and model editing faster and more intuitive. These tools also let engineers discover the benefits of 3D design and introduce it in stages at a pace that's right for each individual.