Lesson 7
The Solids Toolbar

Base solids are models created in other CAD systems and saved in SAT or STEP file format. You open a base solid in Autodesk Inventor as a fixed size base feature (the first one in a file). Unlike Autodesk Inventor models, you cannot access sketches or features used to create a base solid.

In the Solids environment, you use tools to modify an imported base solid. Modifications do not add features to the solid, except for work features used as construction geometry.

TIP: If you are using solids created in MDT4, you need to have Service Pack 3 or greater installed before you can use Inventor's Solid tools to modify the file. These are downloadable for free from Autodesk's website at www.autodesk.com.

Users who have created 3D models in AutoCAD can use Inventor's Solids Modeling ability to modify their solids and even build them into parametric models.

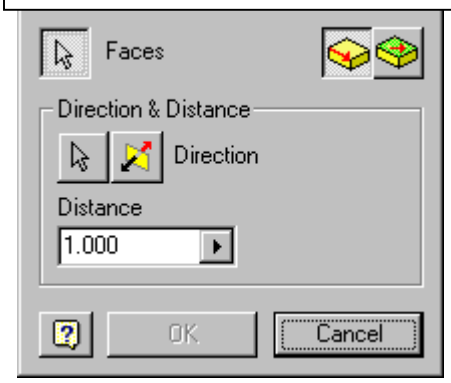
The Solids toolbar is activated by selecting the Base Solid from the browser and double-clicking it. You can also right click on the Base feature, right click and select 'Edit Solid'.

TIP: You will not be able to access any of the tools on the Solids Toolbar unless you have a Base Solid present in your drawing. The tools will be greyed out until the base is activated by a double-click.

Move Face

Use the Move Faces tool on the Solids toolbar to move one or more faces on a base solid. Moved faces are not parametrically located.

TIP: Usually, you select all faces that need to move. Because faces are not parametrically associated, moving them as a group is the easiest way to retain their positions relative to one another.



To move faces by direction and distance

1. Click the Move Faces tool.
2. Click the Distance and Direction button.
3. In the graphics window, click an edge or work axis to define the direction. If desired, click Flip to reverse direction.
4. Enter the distance one of these ways:
    - Enter a number or an equation. The equation cannot include a parameter name.
    - Click the arrow to list recent values, then click to select one.
    - Click the arrow to access the Measure tool. The measured value is automatically entered in the distance field.

Click Update to exit the solids environment.

To move a face by a distance in a plane:

1. Click the Move Faces tool.
2. Click one or more faces to move.
3. Click the Planar Move button.
4. In the graphics window, click a plane.
5. Click the Points button, then click two points to define the start and end points.

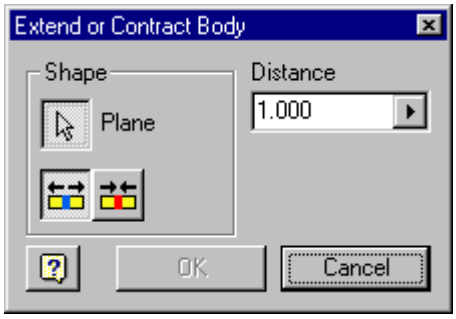
   The points are projected onto the plane, if necessary, and one or more faces are moved relative to the projected points.

6. Click Update to exit the solids environment.

TIP: Only work points, the end or midpoint of an edge, or the center of a circular edge may be selected. Instead of clicking two points, you can use the Precise Input tool to enter coordinates. For example, click the Relative Coordinates button to relocate the coordinate origin, then enter coordinates relative to the new origin.

Extend or Contract Body

In the Solids environment, extends or contracts a base solid along an axis. The base solid is resized perpendicular to a selected plane. Extending or contracting a base solid does not add a new feature.



The Plane tool selects a work plane or planar face to identify the section about which the base solid will extend or contract.

The two buttons on the left specify if the base solid extends or contracts equally on both sides of the selected plane by a specified distance. The button on the left extends the solid. The button on the right contracts the solid.

The Distance edit box specifies distance the base solid extends or contracts. May be specified as a number or an equation. You must enter in a value – using the mouse is not an option.

The remaining tools on the Solid toolbar (Work Plane, Work Axis and Work Point) allow the user to add work features for the purposes of adding Inventor features to the model.

Toggle Precise UI

This brings up the Precise Input Toolbar.

Solids Editing Tools

Button	Tool	Function
	Move Face	Moves one or more faces on a solid
	Extend or Contract	Extend or contract a base solid symmetrically about a planar face or work plane
	Work Plane	Create a work plane
	Work Axis	Create a work axis
	Work Point	Create a work point
	Toggle Precise UI	Brings up the Precise Input Toolbar

Review Questions

1. The Solids tools are used to:

    A. Edit solid models created in AutoCAD and inserted into an Inventor file
    B. Create solid models
    C. Transform solid models into parametric models
    D. All of the above

2. True or False:

You will not be able to access any of the tools on the Solids Toolbar unless you have a Base Solid present in your drawing file.

3. True or False

You can add work features, such as work planes and work points, to a base solid.

4. True or False

You can add a hole feature to your base solid.

5. True or False

You can extend or shorten your base model using Solids tools.

6. To activate the Solids Toolbar:

    A. Go to View->Toolbars->Solids
    B. Highlight the Base solid in the browser, right click and select 'Solids'
    C. Double click on the Base Solid in the browser
    D. Right click in the drawing window and select 'Solids'

ANSWERS: 1) A; 2) T; 3) T; 4) T; 5) T; 6) C