

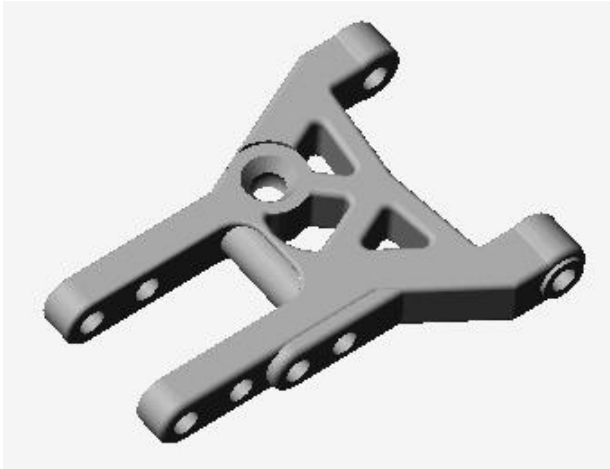
Alibre Design – Modeling Fundamentals

Introduction

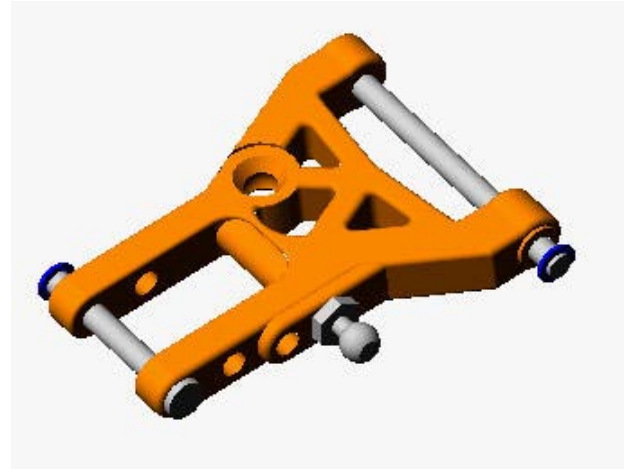
Alibre Design is a parametric solid modeling system. Parametric solid modeling involves the application of dimensions and other parameters to define a 2D profile, and ultimately the 3D shape, of a part. These dimensions and parameters can be changed at anytime to easily modify designs and alter the shape of a model.

Parts are comprised of one or more features. A feature represents an individual shape and can either add material or remove material in a part. Examples of features include holes, fillets, cuts, and revolutions.

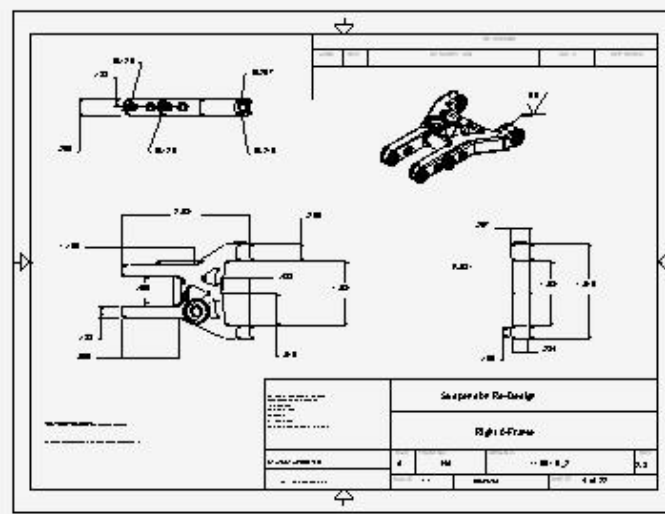
Alibre Design data consists of parts, assemblies, and drawings. Full associativity between parts, assemblies, and drawings automatically applies changes made in one document across the entire design.



Alibre Design Part



Alibre Design Assembly



Alibre Design Drawing

- You typically start a new part by first creating a sketch, which is a 2D profile of a 3D shape. The sketch will subsequently be used to create a base feature, always the first feature you create in a part. You can add as many additional features as necessary to fully define a part.
- You can easily change the shape of a model by adding, deleting, editing, or reordering features.
- You can generate 2D mechanical drawings at any time in the design process based on information in parts and assemblies.
- You can also import parts, assemblies, and drawings from other CAD systems into Alibre Design. You can modify imported parts and assemblies or you can add new features to them.

Workspaces

All design work in Alibre Design is done in windows called workspaces. You can open a part, assembly, drawing, or bill of materials (BOM) workspace. Each workspace is displayed in a separate window; however, a drawing workspace can contain multiple drawing sheets. You can have as many workspaces open as needed.

Opening a New Workspace

To open a new part, drawing, assembly, or BOM workspace:

1 On the Home window, from the **File** menu, select **New**.

2 Select **Part**, **Assembly**, **Drawing**, or **Bill of Materials**.

Or

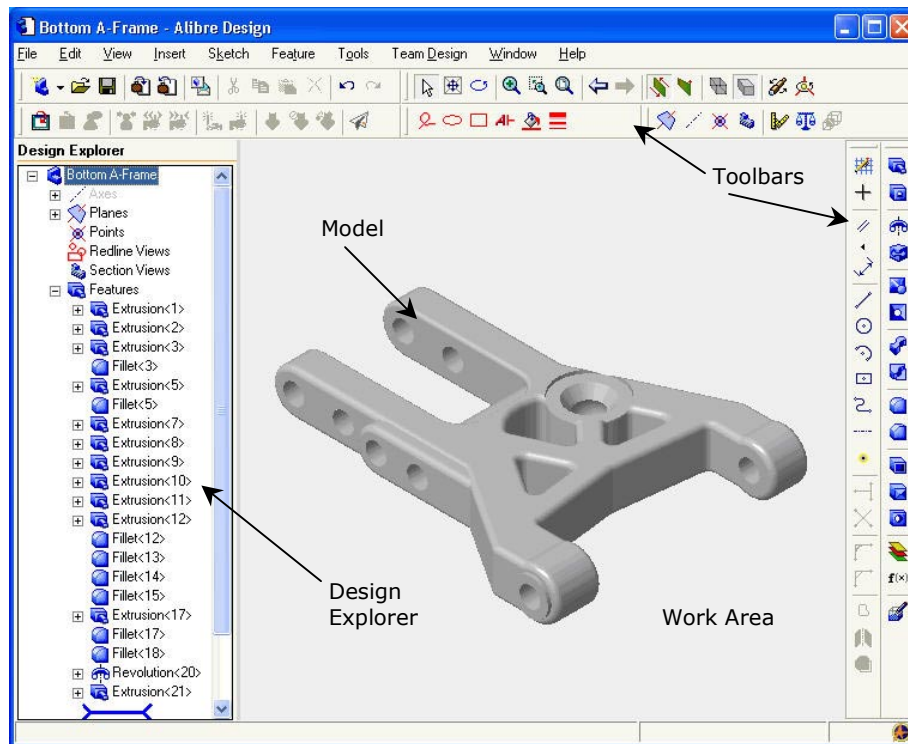
Click the new **Part**, **Assembly**, **Drawing**, or **Bill of Materials** workspace icon on the Home window main toolbar.



Workspace Terms

Alibre Design workspaces are divided into two distinct areas.

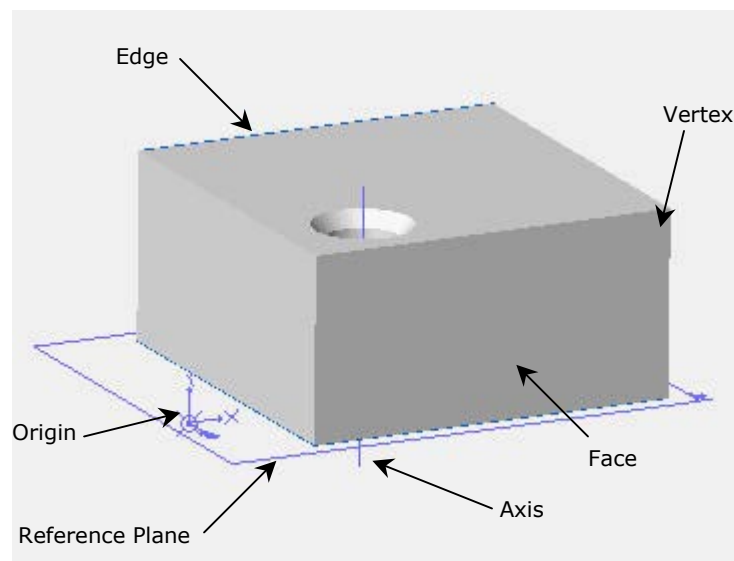
- The **Design Explorer** (in part and assembly workspaces) and the **Drawing Explorer** (in drawing workspaces) are located on the left side of the workspace and list all pertinent design information.
- The **work area** is the graphics canvas in which you create all parts, assemblies and drawings. Toolbars may be located above and to the right of the work area.



Part Workspace with default toolbars

Model Terms

The following terms are consistently used throughout the documentation and refer to geometric elements in a model (faces, edges, and vertices) as well as construction geometry (reference planes, axes, and the origin).



Work Area Background Color

You can change the work area background color in a part or assembly workspace. To change the background color:

- 1 In a part or assembly workspace, from the **Tools** menu, select **Options**.
- 2 Select the **Color Scheme** tab in the Options dialog box.
- 3 Choose one of the four predetermined color schemes, e.g. **Dark Background Scheme**, from the dropdown list.

Or

Select a custom background color.

- 4 Click **OK** to apply the setting.

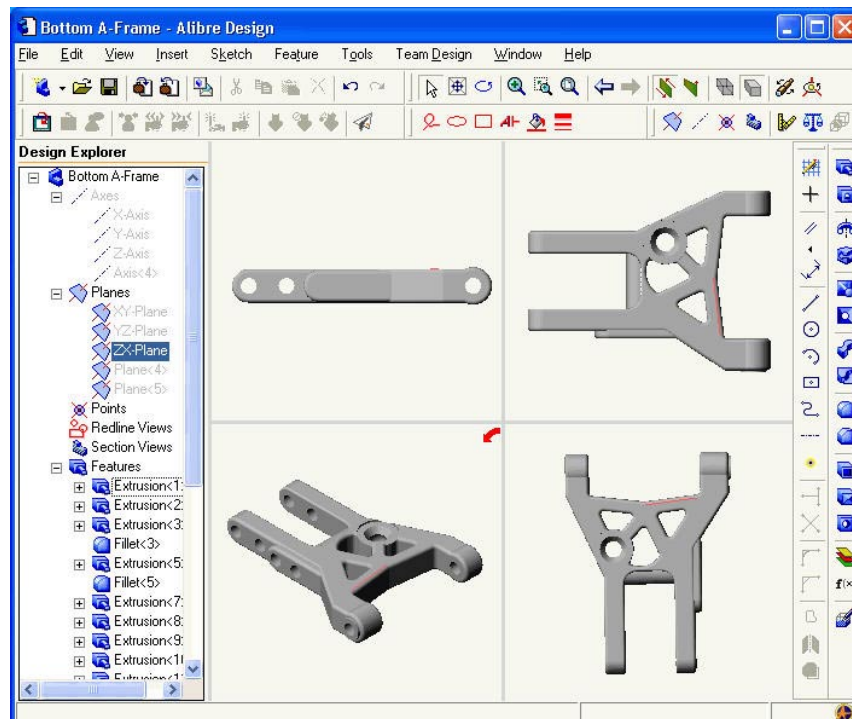
Multiple Views

You can split the work area into as many as four different views. You can zoom, rotate, and set the view mode in each view independently.


To split the work area into multiple views:

- 1 In a workspace, from the **Window** menu, select **Split View**.
- 2 Select **Horizontal**, **Vertical**, or **Both**. The Horizontal and Vertical options split the work area into two views. The Both option splits the work area into four views.

To select a view and make it active, click anywhere in the view border. A red arrow appears in the upper right corner of the active view.



Named Views

In part and assembly workspaces, you can use named views to control view display and manipulation. You can quickly change the display to a default view and add custom views using the **Orientations** command under the **View** menu or by selecting the **View Orientations**  tool on the View toolbar.



To apply a named view to the work area, double-click a named view, or select a named view and then click **Set**.

You can also add a custom view orientation by clicking **Add** and subsequently entering a view name.

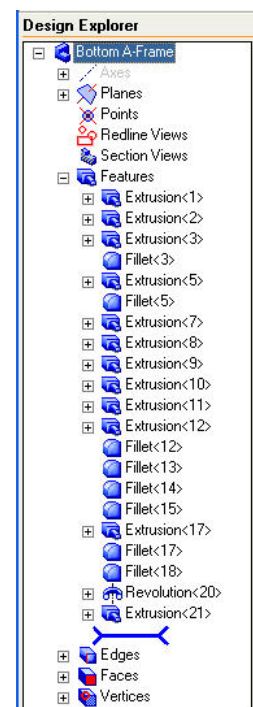
Default views are listed in blue, and custom views are listed in black.

Design Explorer

As previously described, each part and assembly workspace consists of the work area and the Design Explorer. The Design Explorer's primary purpose is to track and list the structure of a part or assembly. However, the Design Explorer can be used to accomplish numerous tasks.

Use the Design Explorer to:


- Select items in the design by name.
- Suppress or hide selected features and parts.
- Hide planes and axes.
- Temporarily roll the model or assembly back to an earlier state: double-click a feature or part or use the rollback bar.
- Identify and change the order in which features are regenerated.
- Rename features: right-click a feature and select **Rename**.
- Delete features and parts.
- Toggle the display of section views on and off.
- Edit a sketch: double-click the sketch name.



- Track and control the display of redline markups.
- Check the status of a feature or part to resolve errors.

Selection Methods

The majority of design tasks require that an item is selected. For example, a reference plane or planar face must be selected before you can begin sketching.

- **Normal selecting** – To select faces, edges, vertices, etc., first click the Selection tool  or choose **Select** from the **View** menu. Move the cursor over an item, then click once to select the item. An item will change to red as you move the cursor over it and will change to yellow after you select it

Note: Selection highlight colors will vary depending on the work area color scheme used. This documentation describes properties associated with the **Dark Background Scheme**.

- **Selecting Multiple Items** – To select multiple items, hold the **Shift** key while you select the items.
- **Selecting by Dragging** – In a sketch or drawing, select multiple items by dragging a selection rectangle around a group of items.
- **Using a Selection Filter** – Apply a filter to make selecting a specific item type easier. Filter on **Features**, **Faces**, **Edges**, and/or **Vertices**. To apply selection filter, from the **Tools** menu, expand **Selection Filters** and choose the appropriate filter. You can also activate the **Selection Filters** toolbar and control filters easily with icons.
- **Face, Edge, and Vertex Cursors** – As you move the cursor over faces, edges, and vertices, the cursor will change to provide a visual indication of the item type.



Vertex Selection

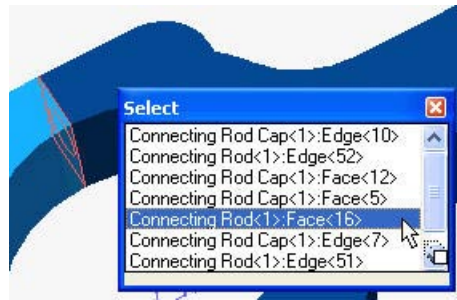


Edge Selection



Face Selection

- **Modifying a Selection** – Many dialog boxes require a selection or multiple selections in order to complete the command. The selected item name will often populate an area in a dialog box. To change the selection, either make another selection, which will override the previous selection, or right-click the item name in the dialog box, and choose **Clear Selections** or **Remove Selected Item(s)**.
- **Advanced Selector** – On occasion, other items may obscure the item you want to select. Use the **Advanced Selector** to accurately select an item. To use the Advanced Selector, move the cursor over the item and click the right-click. The **Select** dialog box appears containing all the items in the vicinity. Select the item you want from the list.



Note: If available, you can also click the middle mouse button to access the Advanced Selector.

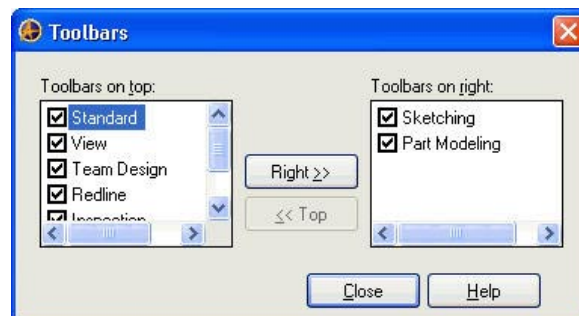
- **Selecting from the Design Explorer** – Select any item in the **Design Explorer** by clicking the item name. The associated item will change color in the work area. Select non-consecutive items in the Design Explorer by holding down the **Ctrl** key as you click. Select consecutive items in the Design Explorer by holding down the **Shift** key as you click.

Toolbars

You can control toolbar visibility as well as toolbar position in a workspace.

To turn toolbars on and off:

- 1 In any open workspace, from the **View** menu, select **Toolbars**. The Toolbars dialog box appears.
- 2 To hide a toolbar that is currently displayed, click the checked box next to the toolbar name.
- 3 To display a toolbar, click the empty check box next to the toolbar name.
- 4 Click **OK** to apply changes.



To move a toolbar between the top and right of the workspace:

- 1 In any open workspace, from the **View** menu, select **Toolbars**. The Toolbars dialog box appears.
- 2 To move a toolbar from the top of the workspace to the right of the workspace, select the toolbar name and then click **Right**.

- 3 To move a toolbar from the right of the workspace to the top of the workspace, click the toolbar name and then click **Top**.
- 4 Click **OK** to apply changes.


To drag a toolbar to a different position in an area:

- 1 Move the cursor near the vertical bar on the left side of the toolbar.
- 2 Click and hold the mouse button and drag the toolbar to a new position within its respective area.


View Manipulation

You can change the perspective and orientation of the work area view by using the rotate, zoom, and pan tools. These tools are available from the View toolbar and the View menu.




- The **Pan** tool  dynamically moves the current view around the work area. Click the icon and then click and drag the cursor around the work area.


Note: You can also pan by holding the **Shift** key and the left and right mouse buttons down simultaneously while moving the cursor around the work area.


- The **Rotate** tool  dynamically rotates a part or assembly around a given point. Click the icon and then click and drag the cursor around the work area.



Note: You can also rotate by holding the left and right mouse buttons down simultaneously while moving the cursor around the work area.


- The **Zoom Mode** tool  dynamically changes the scale of the work area view. Click the icon, hold the left mouse button down, and move the cursor up to zoom in, or down to zoom out.






Note: If available, you can use the mouse wheel to dynamically zoom in and out.

- The **Zoom to Window** tool  changes the scale of the view so that a specified region fills the work area. Click the icon, click and drag a rectangle around an area with the cursor. Release the mouse button when the rectangle borders the correct area.

- The **Zoom to Fit** tool  restores the view so that the entire design is displayed in the work area.

- The **Previous View**  tool reorients the work area to views that preceded the current view. The **Next View**  tool becomes available after the Previous View tool has been used.

- The **Orthographic**  tool changes the display of the work area so that parallel edges, faces, etc. appear as infinitely parallel.

- The **Perspective**  tool changes the display so that all parallel edges, faces, etc. appear to converge into one point.
- The **Wireframe** tool  changes the display so that only the edges of the model are shown.
- The **Shaded** tool  changes the display so that the faces of the model are shaded.
- The **View Orientations** tool  stores default views (e.g. front, back, left, etc.) as well as custom views.
- The **Rotation Points** tool  stores default rotation points (the origin, model's center of mass and center of volume) as well as custom rotation points.

Getting Help

Help can be accessed numerous ways while you are using Alibre Design.

- While online, you can access the Help system from any window with the **Help** menu or the **F1** key.
- You can also install the Help system locally off so that Help is available when you are working offline. You may install Help from the CD or the Alibre support web site, www.alibre.com/support.
- Seven help modules related to basic functionality are accessible on the Home window in the Welcome tab. Click one of the seven links in the **How Do I** section to access these help modules.
- To access help related to a specific dialog box, click the **Help** button in the dialog box.
- When you mouse over an icon on a toolbar, a **Tooltip** will popup that identifies the function of the tool.
- The status bar in the lower left corner of a workspace displays hints related to completing a command and provides a brief description of a tool or function.
- While online, you can contact the **Alibre Assistant** from the **Contacts** list in the Home window. You can send messages, emails, start a chat conversation, and work in a Team Design session in real-time to ask technical questions and resolve issues. The Alibre Assistant is available from 8:00 am to 5:00 pm Central Time.
- New documentation materials including tutorials will be available periodically on the Alibre website, www.alibre.com, in the **Support** section. In order to access the materials, you must first sign into the web site. Check frequently for updates.