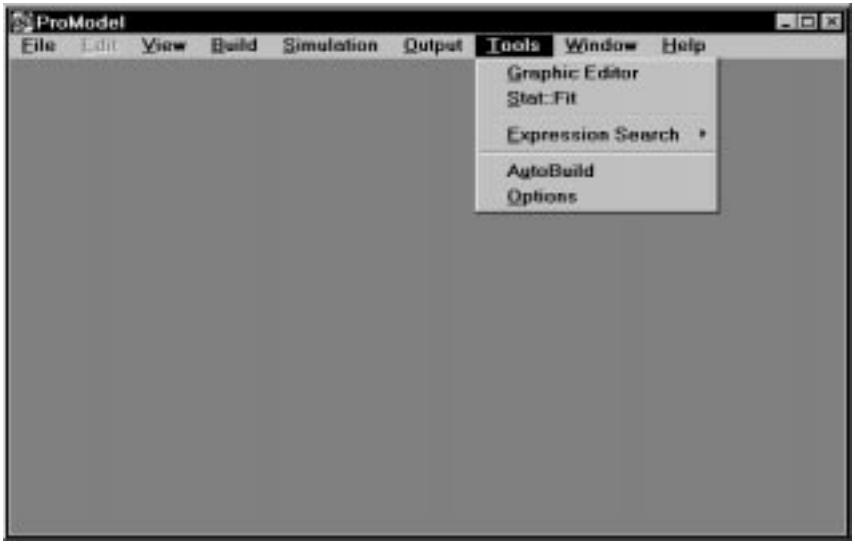
Chapter 10 Using Auxiliary Tools

CHAPTER CONTENTS

10.0.1 Tools Menu

The Tools Menu gives you access to two powerful tools to help you through the model building process.



Graphic Editor Allows you to create, edit, rearrange, or delete library graphics for use as entities, locations, resources and background graphics.

Stat::Fit Launches Stat::Fit and allows you to fit analytical distributions to user data.

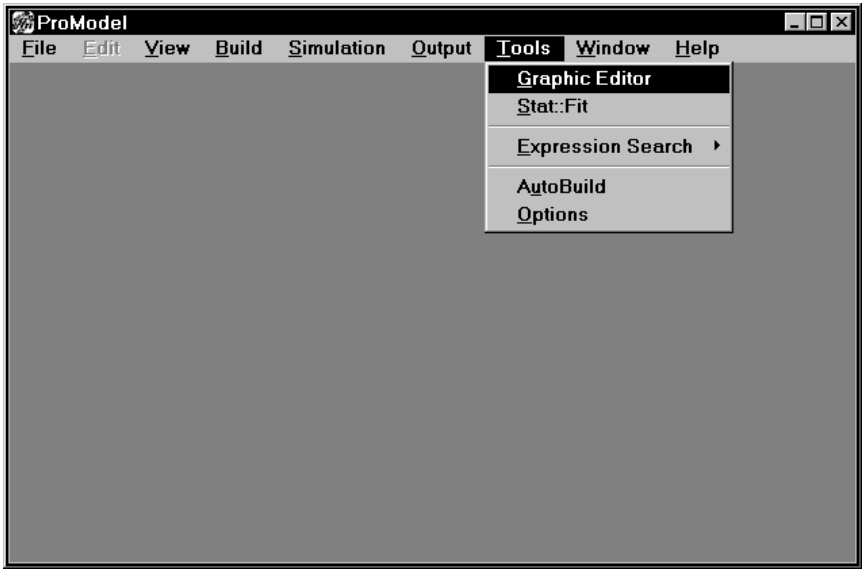
Expression Search Allows you to perform global search and replace functions on expressions throughout any part of the model.

AutoBuild This option will guide you through the model building process and simulation steps by prompting you to define the basic model elements.

Options Allows you to set various directory and display defaults.

10.1 Graphic Editor

The Graphic Editor allows you to create, edit, rearrange, or delete library graphics within a particular graphics library file. You can also copy graphics from one library to another. Graphics from several libraries can even be merged into a single graphic. Each graphics library is saved with the grid size and scaled used to create the graphics.



How To **Access the Graphic Editor from within ProModel:**

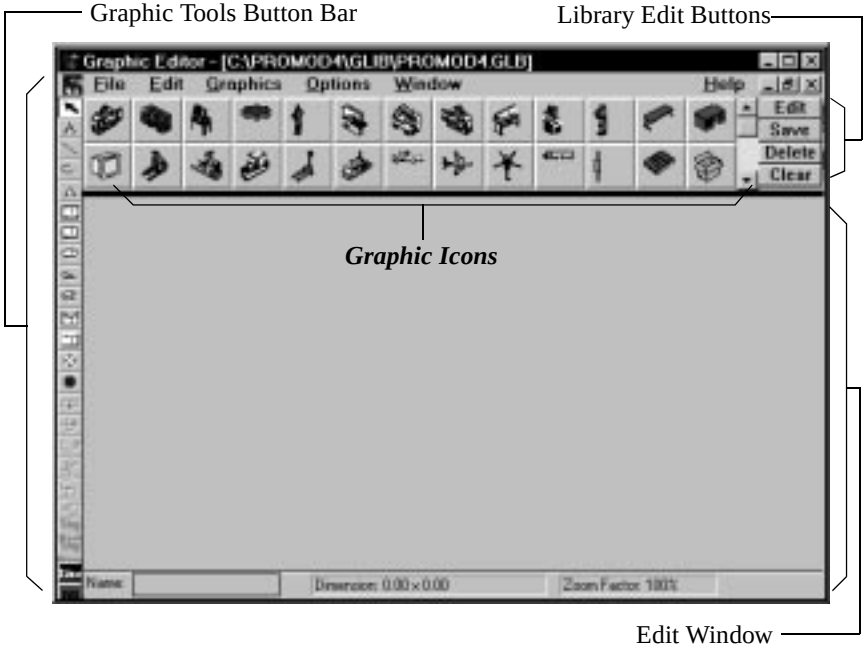
- Select **Graphic Editor** from the **Tools** menu.

How To **Access the Graphic Editor from the Program Manager:**

- Double click the Graphic Editor icon in the ProModel Group. This method allows you to use the Graphic Editor as a separate application from ProModel.

10.1.1 Overview

The Graphic Editor consists of a menu bar, a Graphic Tools button bar, a Graphic Library menu, Library Edit buttons, an Edit window, and a set of icons representing the graphics in the graphics library.



Each of the tools in the Graphic Tools button bar is discussed in this section, including the procedures for creating and editing a graphic's components (called "objects") using the drawing tools.

Graphic Editor Menus

The Graphic Editor menu bar includes the following menus:

File The File menu allows you to open a graphics library for editing and saving a current library. It also allows you to print a single graphic or an entire library.

Edit The Edit menu provides functions for selecting and duplicating one or more objects that comprise a library graphic. In addition, it provides functions to import and export graphics from other applications.

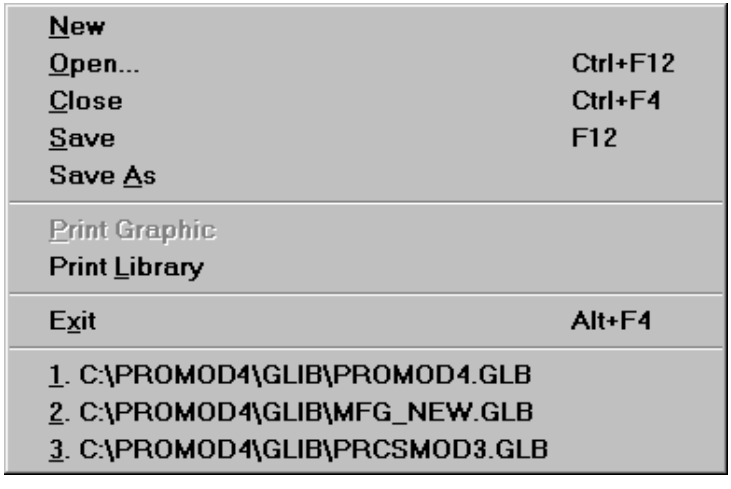
Graphics The Graphics menu is for manipulating one or more objects that comprise a library graphic. With this menu, you can group several objects together, flip

and rotate objects, and alter the color, fill pattern and line style of objects. You can also adjust the dimensions of the entire graphic.

Options The Options menu controls the editing environment. With this menu you can use a grid to help you align component objects, edit that grid, and require objects to snap to it. Finally, the Options menu allows you to zoom in and out on the graphic so you can edit the graphic at different sizes.

Window The Window menu allows you to arrange the windows (or iconized windows) currently displayed on the screen such that all windows are visible at once. It also allows you to bring any individual window to the forefront of the display. This is particularly useful when you are opening multiple graphic libraries and want to view all libraries simultaneously.

10.1.2 File Menu



New Creates an empty graphics library.

Open Brings up the Open Library Graphics dialog box for specifying which graphics library file to retrieve. Graphics library files have the file extension GLB.

Close Closes the current graphic library. If the graphics library has been changed since the last save, you will have the option to save it.

Save Saves an open graphics library under the current file name or prompts you for a name if the graphics library has not been named.

Save As Brings up the Save As dialog box for saving the current Graphics library file under a new filename. Graphic Library files have the file extension GLB.

Print Graphic Prints the graphic in the Edit window only.

Print Library Prints the entire current graphic library.

Exit Quits the Graphic Editor with an option to save the current library if changes have been made since the last save.

Recently Opened Files Lists the five most recently retrieved graphics libraries. Selecting one of these options will retrieve the listed graphics library.

Opening a Graphics Library File

All individual library graphics are loaded from and saved to the current graphics library, which, by default, is the one specified for the current model. However, other graphic libraries may be opened for editing at any time. The name of the current library is displayed in the title bar of the window for each library. More than one library can be opened and viewed on the screen at a time. Opening more than one graphic library simultaneously facilitates copying graphics between libraries.

How To Open another graphics library file:

1. Choose **Open** from the **File** menu.
2. Enter or select the name of the desired graphics library.
3. To view all open graphic libraries, choose **Tile** or **Cascade** from the **Window** menu.

Note A history list is given at the bottom of the File menu so you are able to quickly retrieve the last five libraries opened.

Closing a Graphics Library File

When you are finished working with a graphics library, you can close it to save screen space and memory. This option will not affect the graphic library used with any model.

How To Close a graphics library file:

- Choose **Close** from the **File** menu.

Saving a Graphics Library File

Once a graphic has been created or edited and placed in the current library, the library file must be saved in order to make the changes permanent.

How To **Save a graphics library file:**

- Select **Save** from the **File** menu to save the library with the same name.

How To **Save a graphics library file with a new name:**

- Select **Save As** from the **File** menu to save the library with a new name.

Printing an Individual Graphic

How To **Print an individual graphic:**

1. Double click the mouse on the desired graphic's icon, or select the graphic's icon and click the **Edit** button.
2. Select Print Graphic from the **File** menu.
3. Choose the desired options from the resulting Print dialog box and click **OK**.

Printing an Entire Graphics Library

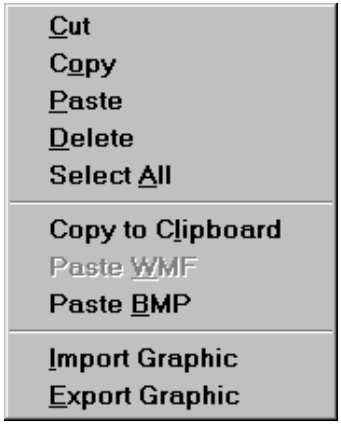
How To **Print an entire graphics library:**

1. Select **Print Library** from the **File** menu.
2. Choose the desired print options from the Library Print dialog box and select **OK**.

Note If more than one graphic library is open, ProModel will print the active graphic library only.

10.1.3 Edit Menu

Use the Edit menu for selecting and duplicating the individual objects comprising a library graphic. You may also use it to exchange graphics with other applications. To use the Edit menu functions, load the graphic you wish to edit by selecting its icon from the library and clicking the Edit button, or double click the icon.



Cut Removes the selected object(s) and makes a temporary copy that may be pasted back into the edit window later.

Copy Makes a temporary copy of the selected object(s) to be pasted later.

Paste Adds the most recently cut or copied object(s) to the current graphic.

Delete Deletes the selected objects from the current graphic.

Select All Selects all of the objects comprising the current graphic.

Copy to Clipboard Copies the entire graphic to the clipboard as a bitmap so it can be pasted into other applications including word processors.

Paste WMF Pastes a Windows metafile (WMF) from the Windows clipboard into the Edit window. You must have previously copied a Windows metafile to the Windows clipboard in another application.

Paste BMP Pastes a bitmap file (BMP) from the Windows clipboard into the Edit window. You must first copy a bitmap file to the Windows clipboard.

Import Graphic Imports a WMF, BMP, PCX, or GIF file into the Edit window.

Export Graphic Exports the graphic in the Edit window to a WMF or BMP file.

Importing a Graphic

How To Import a graphic into a graphic library:

1. Select the box to which you would like to add the graphic in the library. If you want to create a new graphic, choose the blank box at the end.
2. Select **Import Graphic** from the **Edit** menu.
3. Enter the name of the graphic you would like to import.
4. Select **OK** to close the import graphic dialog box.
5. Click on the **Save** button on the top right side of the library window.

Exporting a Graphic

How To Export a graphic:

1. Double click the mouse on the desired graphic's icon, or select the graphic's icon and click the **Edit** button.
2. Select **Export Graphic** from the **Edit** menu.
3. Enter a valid DOS name for the graphic in the resulting dialog box.
4. Click the **OK** button in the export graphic dialog box.

Copying a Graphic from One Library to Another

How To Copy an icon from one library to another library

1. Open both libraries.
2. Drag the graphic's icon from the first graphic library to the second graphic library (preferably left to right).
3. Save the destination library by choosing **Save** from the **File** menu.

10.1.4 Graphics Menu

The Graphics menu is for manipulating one or more objects that comprise a library graphic. With this menu, you can group several objects together, flip and rotate objects, and alter the color, fill pattern and line style of objects. You can also adjust the dimensions of the entire graphic.

Flip Horizontal Horizontally flips the entire graphic or any selected objects of the current graphic. This menu item works like the button of the same name described later in this chapter.

Flip Vertical Vertically flips the entire graphic or any selected objects of the current graphic. This menu item works like the button of the same name described later in this chapter.

Rotate Rotates the entire graphic or any selected objects of the current graphic 90 degrees clockwise. This menu item works like the button of the same name described later in this chapter.

Move to Front Moves the selected object in front of all other objects. Use this option to see an object obscured by other objects. This menu item works like the button of the same name described later in this chapter (to move an object one position forward at a time, use the Graphic Tools).

Move to Back Moves the selected object behind all other objects. Use this option to send an object obscuring other objects to the background. This menu item works like the button of the same name described later in this chapter.

Group Combines or groups several objects into a single object for sizing and editing.

Ungroup Ungroups several grouped objects so they may be edited individually.

Line Styles Allows the user to choose the line style including solid, dashed, line thickness, and optional arrowheads on either end of the line.

Fill Patterns Allows the user to choose the fill pattern for solid objects including transparent, slant, backward slant, grid, crosshatch, vertical, horizontal, solid, vertical gradient, and horizontal gradient.

Line Color Allows the user to choose the line color and create custom colors.

Fill Color Allows the user to choose the fill color and create custom colors for solid objects.

Dimension Brings up the Dimensions dialog box for defining the graphic dimension. The dimension can be height or width. The units can be feet or meters.

Note Line Styles, Fill Patterns, Line Color, and Fill Color set the feature and cause the setting to be applied to the currently selected elements.

Group

When using the graphic tools to create an icon, it is often helpful to group several graphics into a single graphic for editing purposes. For example, you may create an icon using the square, line, and circle tool and want to work with them as a single item.

How To

Group objects together:

1. Use selector to select all objects you desire to group. Hold the shift key down to select more than one object at a time.
2. Choose **Group** from the **Graphics** menu.
3. Manipulate the group as necessary.

Ungroup

The Ungroup options allows you to ungroup several objects that are grouped together.

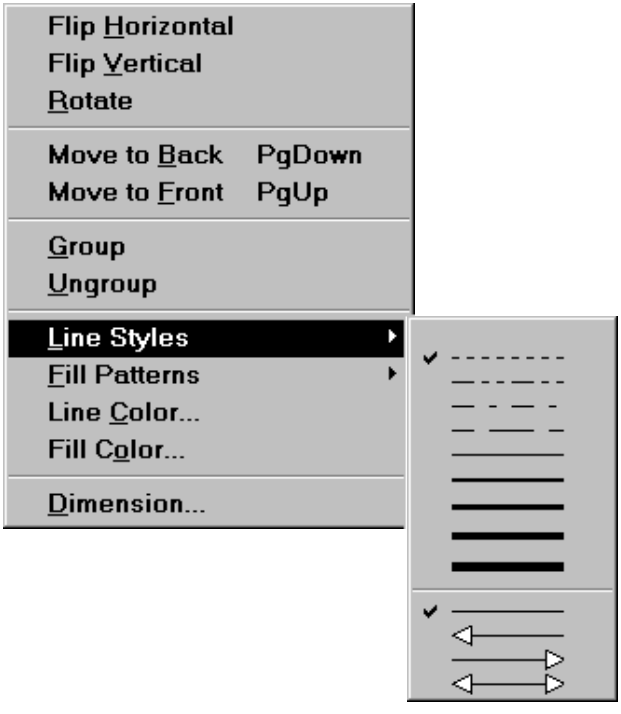
How To

Ungroup previously grouped objects:

1. Use the selector to select the object you desire to ungroup.
2. Choose **Ungroup** from the **Graphics** menu.

Line Styles

You may choose different styles for the lines and borders of objects by choosing Line Styles in the Graphic Editor Graphics menu.



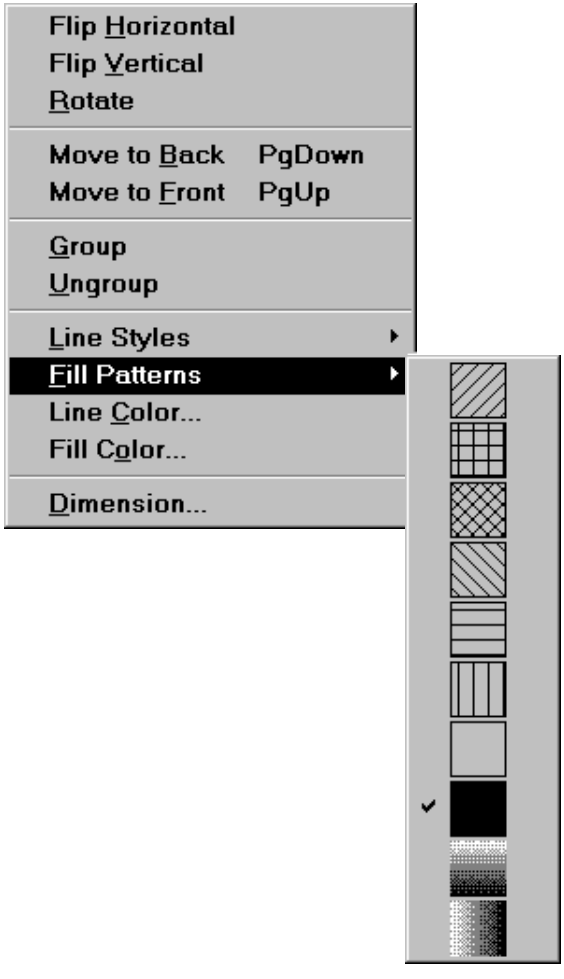
How To **Change the line style or border style of an object:**

1. Select the desired object(s) using the Selector.
2. Choose **Line Styles** from the Graphic Editor **Graphics** menu.
3. Click on the desired style.

Note The arrowhead color is the same as the line color and is defined through the Line Color in the Graphics menu.

Fill Patterns

Various patterns may be used to fill each object by choosing Fill Patterns from the Graphic Editor Graphics menu.



How To

Change the fill pattern of an object:

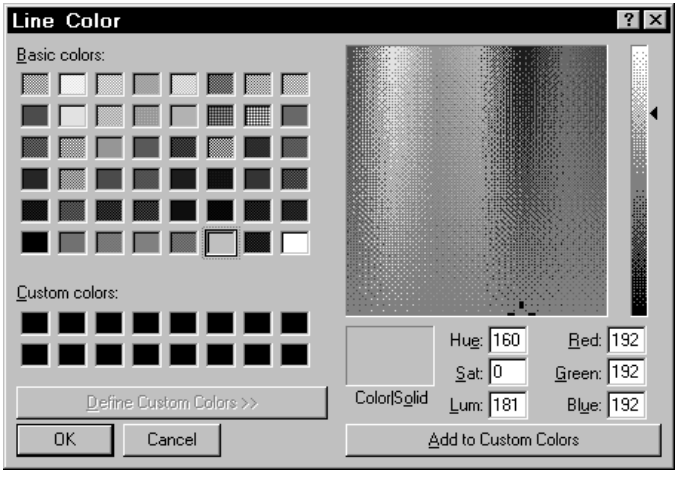
1. Select the desired object(s) using the Selector.
2. Choose **Fill Patterns** from the Graphic Editor **Graphics** menu.
3. Click on the desired fill pattern.

Line and Fill Color

You may also select a custom color for your lines and graphics.

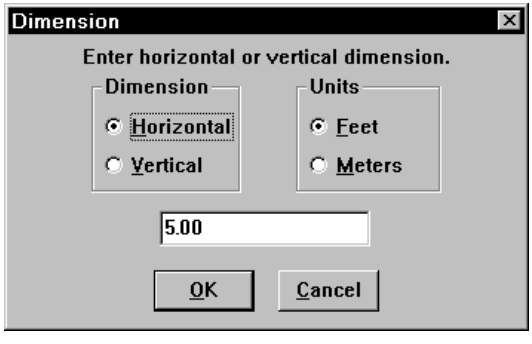
How To Change line or fill color

1. Select the line or graphic you want to change.
2. Choose **Line Color** or **Fill Color** from the **Graphics** menu.
3. From the dialog below, click on the color you wish to use.



Dimension

You can define the height or width of an object in feet or meters from the Dimensions Dialog box. This will determine how large the graphic appears when placed on a model layout. For example, to change the width of a graphic loaded in the Edit window to 5.00 feet, enter the following in the Dimensions dialog box:

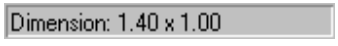


How To

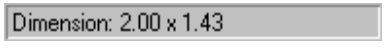
Change the graphic's dimensions:

1. Load a graphic into the Edit window.
2. Select **Dimension** from the **Graphics** menu.
3. Enter the new graphic dimension and click **OK**.

For example, a graphic of a monitor is displayed in the Graphic Edit window. The size of the graphic in the Graphic Edit window is 1.40 x 1.00 as shown below.



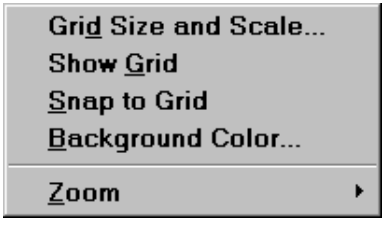
However, the monitor is really 2 feet wide. To change the graphic's dimensions, select Dimension from the Graphics menu. Type 2 for the horizontal dimension and click OK.



Notice the vertical dimension is automatically adjusted to 1.43. You can only define either the horizontal or vertical dimension of the graphic. If you define one dimension, the software will automatically calculate the other according to the proportions of the graphic in the Edit window. If you know the graphic is actually 2.00 x 1.50 feet, you will need to adjust the proportions of the graphic accordingly by using various tools from the Tools button bar.

10.1.5 Options Menu

The Options menu controls the editing environment. With this menu you can use a grid to help you align objects, edit that grid, and require objects to snap to it. Finally, the Options menu allows you to zoom in and out on the graphic so you can edit the graphic at different sizes.



Grid Size and Scale Brings up the Grid dialog box for choosing the size, color and visibility of the grid.

Show Grid Causes the grid to appear in the background for editing purposes. If the grid is on, choosing this option will turn it off. This is the same as choosing Grid On in the Grid dialog box.

Snap to Grid Positions any object subsequently drawn or moved on the layout on the nearest grid line. This option works whether the grid is visible or not.

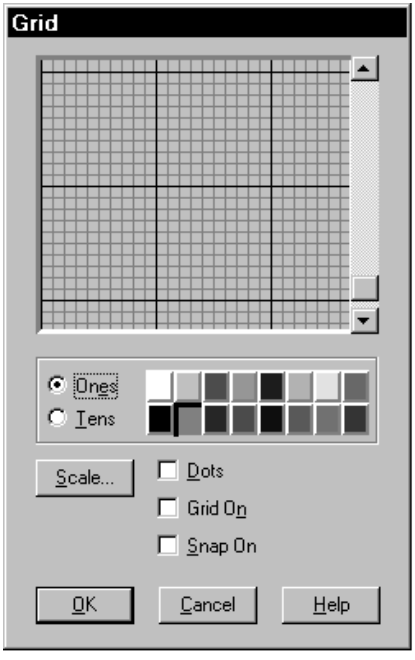
Background Color Brings up the color dialog box for choosing a background color for the layout window.

Zoom Shrinks or enlarges your view of the graphic by the percentage selected.

Grid Size and Scale

The grid size is changed by using the scroll bar to the right of the grid dialog box. Move the scroll bar up to increase the grid size and move the scroll bar down to decrease the grid size. To change the color of the fine grid lines, select the Ones button and choose a color. To change the color of the coarse grid lines, select the Tens button and choose a color.

Instead of viewing boxes as the grid units, you may choose dots by selecting the dots box. You may also choose to switch the grid, as well as the grid snap, on in this same area.



How To **Change the distance per grid unit in the Graphic Editor:**

1. Select **Grid Size and Scale...** from the **Options** menu.
2. Click on the **Scale** button.
3. Define the distance per grid unit in either feet or meters and click **OK**.

Show Grid

How To **Show the Grid on the Layout window:**

- Choose **Show Grid** from the **Options** menu.

Snap to Grid

How To **Have all new and edited objects snap to the grid:**

- Choose **Snap to Grid** from the **Options** menu.

Background Color

How To **Change the Background Color of the Edit Window:**

- Choose **Background Color** from the **Options** menu.

Zoom

How To **Magnify a Graphic:**

1. Choose **Zoom** from the **Options** menu.
2. Choose the level of magnification from the submenu.

10.1.6 Window Menu

The Window menu is used to manipulate the various windows in the Graphic Editor and follows the Microsoft Windows standard for Window menus.

Tile Causes all open windows to fit in the available screen space. Windows that may be hidden behind other windows will become visible. This is useful when desiring to view more than one graphic library on the screen at a time.

Cascade Causes all open windows to overlap such that the title bar of each window is visible.

Arrange Icons Takes all active iconized windows and arranges them neatly along the bottom of the screen.

Open Libraries Displays all graphic libraries currently open in the Graphic Editor. To switch to another open library, click on the desired name.

10.1.7 Library Edit Buttons

The Graphic Editor contains four library edit buttons: Edit, Save, Delete, and Clear.

Edit Retrieves a selected graphic from the library to the edit window.

Save Saves a graphic from the Edit window to the library. For a new graphic to be added to the library, the blank box at the end of the library must be selected. Otherwise, the graphic in the Edit window will replace whichever graphic's icon is selected.

Delete Deletes the selected graphic from the library.

Clear Clears the contents of the edit window.

How To **Edit a graphic:**

- Double click on the graphic in the library. This method clears the contents of the Edit window before loading the new graphic.

or...

- Select the graphic by clicking once on the graphic and then click the Edit button. This method clears the contents of the Edit window before loading the new graphic.

10.1.8 Manipulating Graphics

Among other things, a graphic can be reduced, enlarged, combined, and reordered.

How To **Change a graphic's size:**

1. Select the graphic in the Edit window using the selector.
2. Choose **Group** from the **Graphics** menu.
3. Select one of the small gray boxes at the graphic edge to reduce or enlarge the graphic size. The selector will change to a cross-hair when you are near a gray box.
4. Drag the box to the desired size.

Several graphics can be combined together to create a single graphic. For example, a desk and a chair are separate graphics but would be easier to use if they were combined to form a single graphic.

How To **Combine two graphics:**

1. Load the first graphic into the edit window.
2. Drag the second graphic into the edit window.
3. Position and size the two graphics as desired.
4. Click the blank box in the Graphic Library.
5. Click the **Save** button.

How To **Change the order of graphics in a graphic library:**

- Drag a graphic to the desired location in the library.

10.1.9 Create New Graphics and Libraries

How To Create a new graphic

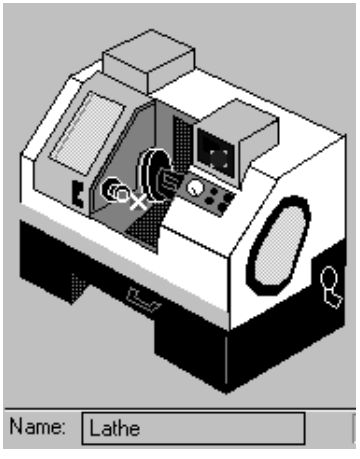
1. Select **Graphic Editor** from the **Tools** menu.
2. Use the drawing tools to create the new graphic.
3. Click the **Save** button on the graphic editor.
4. The image appears at the end of the existing icons.

How To Create a new graphics library

1. Select **Graphic Editor** from the **Tools** menu.
2. Select **New** from the **File** menu.
3. Use the drawing tools to create any graphics you wish to use in your library. You may also copy and paste graphics from existing libraries.
4. After you finish preparing each new image, click the **Save** button on the graphic editor.

10.1.10 Naming a Graphic

Graphics can be named for resources, locations, and entities, or merely for easier identification. When a named graphic is chosen while building a model, instead of entering a default name, such as Loc1, ProModel will enter the graphic's name, such as Lathe. If the name already exists for a location or resource graphic, a number will be appended (e.g., Lathe1, Lathe2, etc.) If the name already exists for an entity graphic, a letter will be appended (e.g., PartA, PartB, etc.). This will make the model easier to understand and use.



How To **Name a graphic:**

1. Enter the desired name at the bottom left of the screen, where it says "Name."
2. Click the **Save** button to save the named graphic.

Note Correct syntax for location, resource, and entity names should be used when entering a name in the Name field if the graphic is intended to represent locations, resources, or entities. Graphic names are allowed to have spaces which automatically convert to underscores "_" when used for locations, resources, or entities.

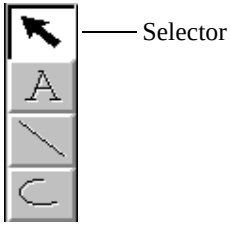
10.1.11 Graphic Tools Button Bar

The Graphic Tools Button Bar contains the tools necessary to create and edit a graphic's component objects. The drawing tools are the main tools through which graphics are created and edited in the Editing window. The drawing tools include the following:

- Selector
- Entity Spots
- Text
- Status Lights
- Lines
- Flip Horizontal
- Arcs
- Flip Vertical
- Triangles
- Rotate
- Regular Squares and Rectangles
- Cut
- Rounded Squares and Rectangles
- Copy
- Circles and Ellipses
- Paste
- Chords
- Step Back
- Pies
- Step Front
- Polygons
- Line Color
- Raised Squares and Rectangles
- Fill Color

Selector

The Selector is a pointing device that allows you to select one or more objects of a graphic. It also allows you to move, size, and shape all graphic objects.



How To Move an object:

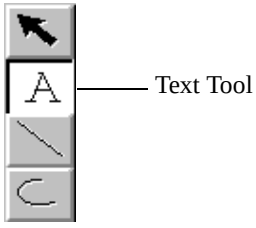
1. Click on the Selector button.
2. Drag the object to the desired location.

How To Size or shape an object:

1. Click on the Selector button from the button bar.
2. Select the desired object.
3. Drag the sizing points. The arrow will turn into a cross-hair when it approaches the sizing points.

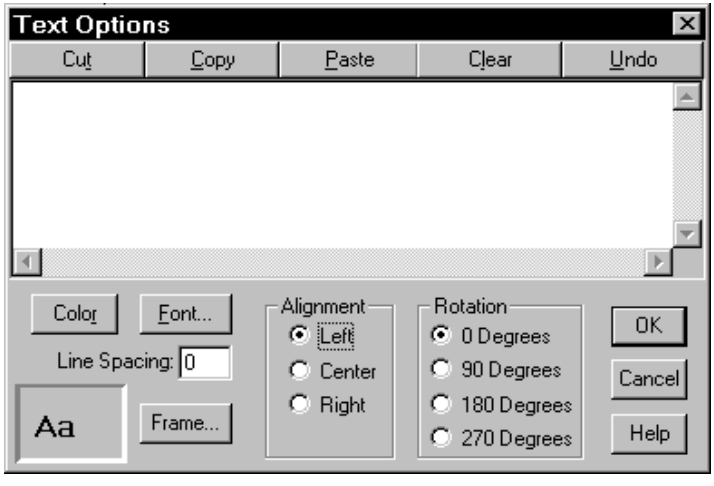
Text Tool

Text may be placed anywhere in the graphic by using the Text tool.



How To Place text in a graphic:

1. Select the Text tool from the button bar.
2. Click where the text is to appear. The Text dialog box will open.



3. Enter the desired text in the Text dialog box below. Set the desired options for the text. When finished, click the **OK** button.

How To Edit text already in the graphic:

- Double click on the text.

Lines

Lines may consist of several segments and are drawn using the line tool.

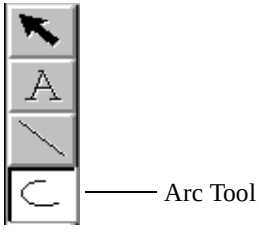
How To **Draw lines in the Graphic Editor:**

1. Select the Line tool.
2. Click the left mouse button where the line is to begin.
3. Move the mouse to the end of the line segment.
4. Click the left mouse button to create a joint and begin the next segment.
5. Double click the left mouse button or click the right mouse button to end the line.

Note Lines can be drawn at 15 degree increments by holding the shift key while moving the end of a line segment.

Arcs

Arcs are drawn using the Arc tool.



How To

Draw an arc in the Graphic Editor:

1. Select the Arc tool from the Tools window.
2. Press the left mouse button at one end of the desired arc.
3. Drag the mouse to the other end of the arc and release the left mouse button.

Note

To have the arc bow left, start the arc from the top and drag down. To have the arc bow right, start the arc from the bottom and drag up.

Triangles

Triangles are drawn using the Triangle tool.

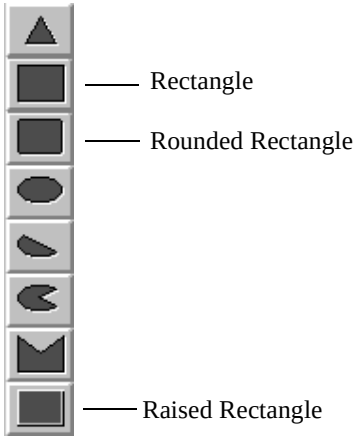
How To

Draw a triangle in the Graphic Editor:

1. Select the Triangle tool from the Tools button bar.
2. Press the left mouse button where the center of the base of the triangle is to be located.
3. Drag the mouse until the triangle's base is the desired size, but do not release the mouse button.
4. Press the shift key and move the mouse to adjust the size of the other two sides. Release the mouse button when done.

Squares and Rectangles

Squares and rectangles may be drawn using the regular rectangle tool, the rounded rectangle tool, or the raised rectangle tool.



How To Draw a rectangle in the Graphic Editor:

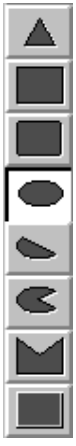
1. Select either the regular, rounded, or raised rectangle tool from the Tools window.
2. Press the left mouse button at the top left corner of the desired rectangle.
3. Drag the mouse to the lower right corner of the rectangle and release the mouse button.

How To Draw a square in the Graphic Editor:

- Hold the shift key while drawing or editing a rectangle.

Circles and Ellipses

Circles and ellipses may be drawn using the ellipse tool.



How To Draw an ellipse in the Graphic Editor:

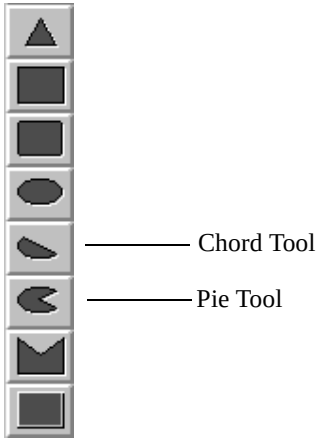
1. Select the ellipse tool from the Tools window.
2. Press the left mouse button at one end of the desired ellipse.
3. Drag the mouse to the other end of the ellipse and release.

How To Draw a circle in the Graphic Editor:

- Hold the shift key while drawing or editing an ellipse.

Chords and Pies

Chords and pies are drawn using the Chord tool and Pie tool.



How To Draw a chord or pie in the Graphic Editor:

1. Select the chord tool or pie tool from the tools menu.
2. Press the left mouse button at one end of the desired chord or pie.
3. Drag the mouse to the other end of the chord or pie and release the left mouse button.

How To Draw a circular chord or pie in the Graphic Editor:

- Hold the shift key while drawing a chord or pie.

How To Adjust the size of the “slice” in the chord or pie after the graphic has been drawn:

1. Select a corner of the “slice” on the graphic.
2. Press the left mouse button at the corner of the “slice.”
3. Drag the mouse to the desired position of the “slice” and release the left mouse button.

Polygons

Polygons are drawn using the Polygon tool.

How To **Draw a polygon in the Graphic Editor:**

1. Select the Polygon tool from the Tools window.
2. Click the left mouse button to begin the first point of the polygon.
3. Click the left mouse button at each successive point of the polygon.
4. Click the right mouse button or double click the left mouse button to end the polygon.

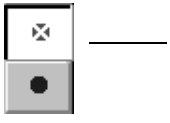
Note The sides of a polygon may be drawn at 15 degree increments by holding down the shift key while moving the mouse to the next vertex.

Positioning Spot

A positioning spot controls the positioning of an entity on a location, resource, or path. It also controls the positioning of an entity or resource on a path. There are two types of positioning spots: entity spots and alignment spots.

Entity spots can be defined for a graphic in either the Graphic Editor or in the Locations module. Alignment spots can only be defined for a graphic in the Graphic Editor. In the Graphic Editor, the button showing the red circle with the white X represents the positioning spot. The default type is entity spot. To change the type, the user may double-click on the spot to display the Spot Type dialog. This allows the user to define the type of positioning spot.

A graphic may have any number of entity spots. A graphic may also have any number of alignment spots. However, only the first alignment spot defined will be used. An entity or alignment spot is ignored if it is inapplicable for the model element it is used to represent. The following definitions explain uses of the entity and alignment spots for locations, entities, and resources.



How To

Place a Positioning Spot on an icon:

1. Select the positioning spot tool from the button bar.
2. Click on the icon where the entity is to appear.

Location Graphics May only use entity spots. Whenever an entity arrives at the location, the entity graphic will be placed on the first entity spot defined for the location. The next arriving entity will use the entity spot defined second, and so forth. If entity spots are defined for a location graphic in the Locations module, they are used ahead of any entity spots defined in the Graphic Editor. If no entity spot is defined for the location graphic, no entity is shown on the location.

Entity Graphics Use only alignment spots. When an alignment spot is defined for an entity graphic, the entity graphic will be positioned so the alignment spot of the entity graphic and the entity spot for the location or resource graphic are aligned. If the entity is traveling along a path, the entity graphic will move along the path with the alignment spot and the path segment or node aligned. If no alignment spot is placed on an entity graphic, the center of the entity graphic is used for alignment.

Resource Graphics May use both entity spots and alignment spots. An entity spot on a resource graphic may be used to locate an entity a resource is carrying. An alignment spot can be placed on a resource graphic so that when the resource travels along a path, the resource graphic will move along the path with the alignment spot and the path segment or node aligned. If no alignment spot is placed on a resource graphic, the center of the graphic is used for alignment.

Status Lights

A status light is a circle that changes color depending on the status of a location. A status light can be placed anywhere relative to a location to show the status or current state of the location. At run-time a window can be displayed showing what status each color represents.

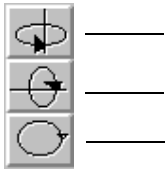
How To **Place a status light on an icon:**

1. Select the Status Light tool from the button bar.
2. Click on the icon where the status light is to appear.

Note Status lights for location graphics may also be defined in the Locations Editor.

Flip and Rotate

Objects may be flipped about the horizontal axis and vertical axis or rotated by 90 degrees using the flip and rotation tools from the Tools button bar.



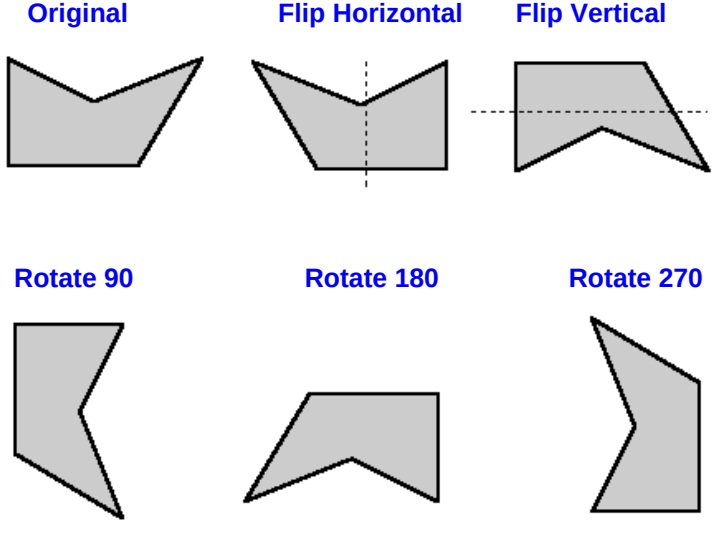
How To

Flip or rotate an object:

1. Select the desired object(s).
2. Click on the Flip Horizontal, Flip Vertical, or Rotate buttons.

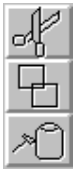
Using the flip and rotate buttons is the same as choosing flip and rotate options under the Graphics menu.

The figure below shows an object that has been flipped horizontally, vertically, and rotated through all phases.



Cut, Copy, and Paste

To speed the development of complex graphics, you may cut, copy, and paste objects from one area of the workspace to another. Each of these buttons works exactly the same as the corresponding item from the Edit menu.



How To Cut an object:

1. Select the desired object(s) using the Selector.
2. Click the Cut button. The object is removed from the Edit window but remains in the Graphic Editor's internal clipboard.

How To Copy an object:

1. Select the desired object(s) using the Selector.
2. Click the Copy button. The original object remains on the screen and a copy is placed on the Graphic Editor's internal clipboard.

How To Paste an object:

1. Click on the Paste button. The contents of the internal clipboard are pasted next to the last object cut or copied.
2. Move the new object to the desired location using the Selector.

Step Back and Step Front

You can move an object behind or in front of another object. The Step Back option allows you to move a selected object behind another object. The Step Front option allows you to move a selected object in front of another object.

For example, suppose you have five graphic objects displayed and you want to move the top object to the third object. You can use the Step Back or Step Front option.

How To **Move an object behind or in front of another object:**

1. Select the object to move using the Selector.
2. Click on the Step Back or Step Front tool from the button bar.
3. Continue to press the Step Back or Step Front button until the selected object is behind the desired object.

Note If you would like to move an object behind or in front of all objects, use the Move to Back or Move to Front option in the Graphics Menu. Alternatively, use the Page Up or Page Down keys.

Line and Fill Color

An object's line and fill colors can be chosen using the Line tool and the Fill tool. You may use one of the predefined colors or create your own custom color. Each tool's color changes according to the color chosen.

How To **Define the line color or fill color:**

1. Select the object(s) to change using the Selector.
2. Click on the Line or Fill tool from the button bar.
3. Choose the desired color. The tool will change to the color specified.

Note The line color and fill color can also be defined in the Graphic Editor Options menu.

10.1.12 Editing a Library Graphic

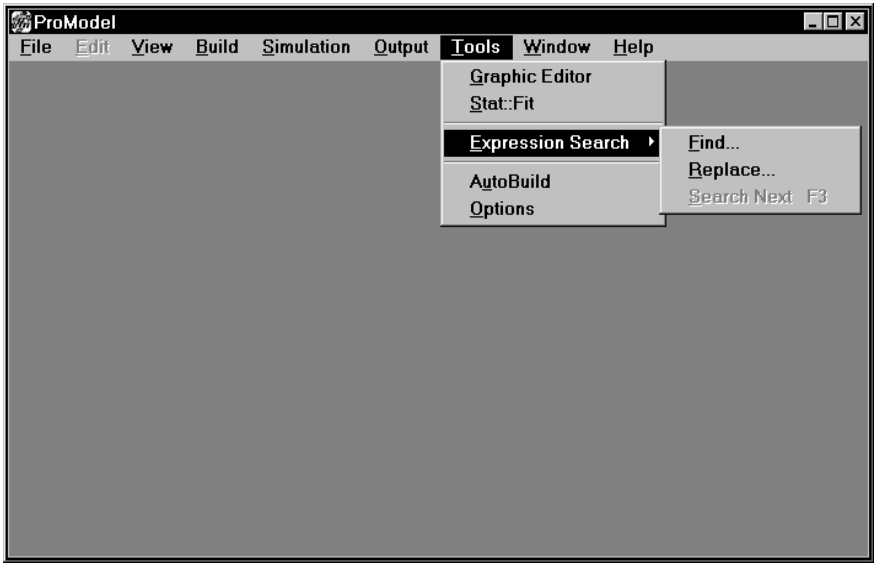
Various editing functions allow you to alter the objects that comprise a library graphic. These functions may be applied to the entire graphic or to one of the objects from which the graphic is constructed. The following is a description of how to edit a graphic (All mouse actions are performed using the left button unless stated otherwise).

TO...	DO THIS
Select an object.	Choose the Selector tool and click on the object.
Select multiple objects.	Drag in an empty region until a bounding rectangle encompasses the objects. or Shift+Click on each of the objects you want selected (Shift+Click again on a selected object deselects it).
Move one or more selected objects.	Drag the selected object(s).
Delete selected objects.	Press the Delete key. or Select Cut from the Edit menu (This method puts the object on the clipboard for subsequent pasting).
Copy selected objects.	Press the Copy button to copy the selected objects to the clipboard. Then press the Paste button to place a copy of the selected objects into the Edit window. or Choose Copy from the Edit menu. Then choose Paste from the Edit menu.
Edit text.	Double click on the text to bring up the text editor dialog box.
Change the shape of a selected object.	Drag one of the sizing points of the selected object.
Add a vertex to a selected line or polygon.	Right click on the line or polygon where the vertex is to be added.
Delete a vertex of a selected line or polygon.	Right click on the vertex.

TO...	DO THIS
Change the fill pattern for a selected object.	Choose Fill Patterns from the Graphics menu and select the desired pattern.
Change the color of a selected object.	Click on the Line or Fill Color button with one or more objects selected.
Change the line style for a selected object.	Choose Line Styles from the Graphics menu. Then choose the desired line style.
Flip or rotate a selected object.	Click on the flip or rotate button with one or more objects selected.
Move a selected object in front of another object.	Click on the Step Front button until the selected object is in front of the other objects.
Move the selected object in front of all other objects.	Choose Move To Front from the Graphic menu. or Press the Page Up key.
Move a selected object behind another object.	Click on the Step Back button until the selected object is behind the other objects.
Move a selected object behind all other objects.	Choose Move To Back from the Graphic menu. or Press the Page Down key.
Nudge a selected object one pixel left.	Press the Left arrow key.
Nudge a selected object one pixel right.	Press the Right arrow key.
Nudge a selected object one pixel up.	Press the Up arrow key.
Nudge a selected object one pixel down.	Press the Down arrow key.
Size a background graphic proportionately.	Select the graphic, group it, then size using the handles.
Create a perfect circle or square.	Select a graphic and, while holding down the shift key, size the graphic.
Size a background graphic proportionally.	Select the Graphic, group it, then size using the handles.
Create a perfect circle or square.	Select a graphic and, while holding down the shift key, size the graphic.

10.2 Expression Search

The Expression Search feature is used to find or replace text entered into logic windows and expression fields, such as location downtime logic or location capacity. Name fields can be found, but not replaced. Reference fields can be found and replaced. However, when the name of a location, resource, entity, etc. is changed, the user will be prompted to automatically change all references to the new name. There are three types of searches: Find expression, Replace expression, and Search Next expression.



How To

Perform an expression search:

- Select **Expression Search** from the **Tools** menu.

10.2.1 Expression Search Sub-Menu Choices

Find

A dialog box gives you the following options after choosing Find from the Expression Search submenu:

Modules to Search Check the modules you want to search. “Other” includes all other edit tables and some dialog boxes where text is entered for defining the model, such as attributes or arrays.

Search Notes Check this box to include Notes fields in the text search.

Whole Words Only Check this box to search for only whole words or groups of whole words that match the text to find. For example, searching for “Attr” without the Whole Words Only box checked will find “Attr1” and “Attr2” whereas a search with the box checked would find neither.

Text to Find Enter the text expression you want to find.

Replace

Choosing replace gives you these options in addition to the find options:

Prompt on Replace Check this box if each time ProModel finds a match, you want ProModel to ask if you want that particular match changed to the replacement text. The prompt will give you the option to replace that particular match, skip that particular match, or to cancel the search altogether.

New Text Enter the text you want to replace the search text.

Search Next

Choosing Search Next in the Expression Search submenu will resume the most recently canceled search. For example, suppose you begin a search and then break out of the search to adjust something in the model. If you want to continue the original search, you can select Search Next and ProModel will start the search again at the place you stopped searching.

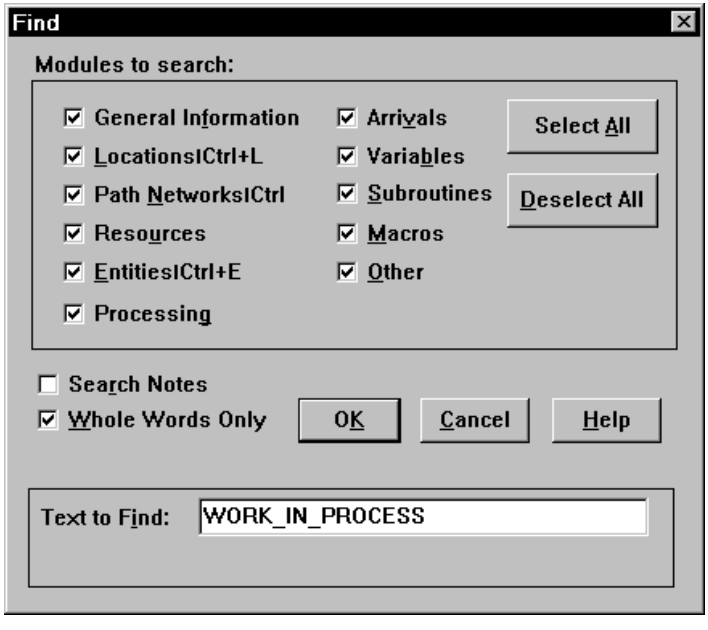
10.2.2 Find Expression

The Find Expression option allows you to find each occurrence of an expression in a model.

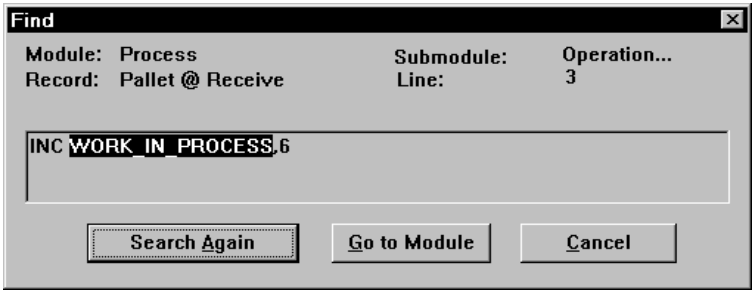
How To

Find an expression:

1. From the **Tools** menu, select **Expression Search**.
2. Select **Find...** from the submenu.
3. Supply the necessary details in the Find dialog box shown below. Clicking Select All or Deselect All button will check or uncheck every module.
4. Click **OK**.



Once the Expression Search has found the first occurrence of an expression, a dialog box will appear giving information on exactly where the text was found. ProModel will then display the following dialog, including a box displaying the entire line on which the text was found, with the search expression highlighted.



How To **Find the next match of a text expression:**

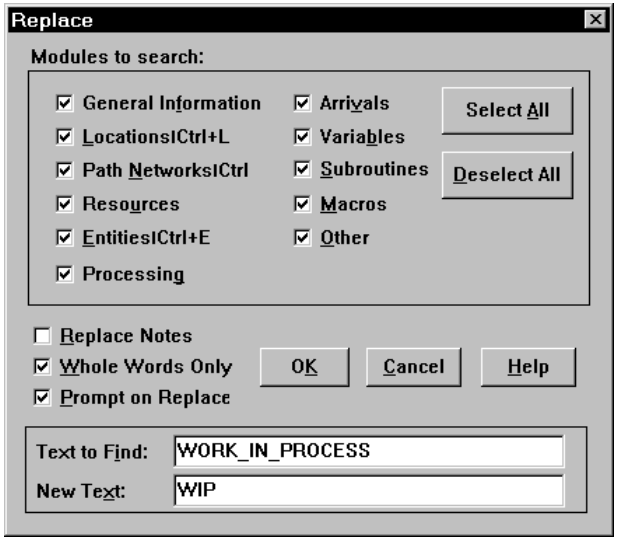
- Click on **Search Again**

10.2.3 Replace Expression

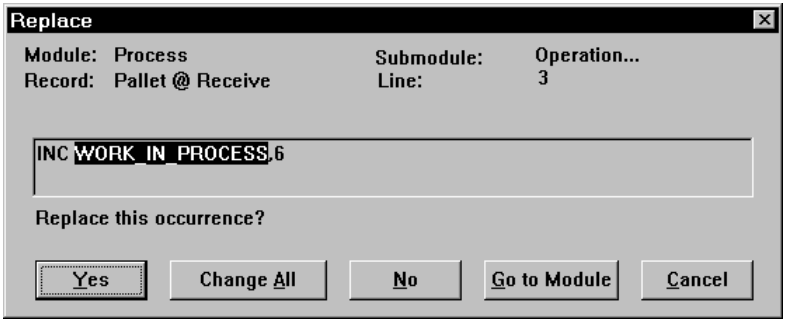
The Replace Expression option allows you to find each occurrence of an expression in a model and replace that expression with a new expression.

How To **Replace an expression with another expression:**

1. Select **Replace...** from the Expression Search submenu.
2. Supply the necessary details in the Replace dialog box shown below. Clicking **Select All** or **Deselect All** button will check or uncheck every module.



3. Click on **OK**. If you have chosen “Prompt on Replace,” ProModel will then display the following dialog box if it finds the text you specified.



4. Choose: **Yes** to change the text and search for the next match.
Change All to change every match.
No to skip this match and search for the next match.
Go to Module to edit the text directly.
Cancel to leave the match intact and stop searching.

10.2.4 Important Notes Regarding Expression Searches

1. Not every field of every module is included. Fields such as statistics, text in graphics, or yes/no fields which may not be edited cannot be searched for or replaced. To replace record identifiers, see number six.
2. Under “Modules to Search,” the Other option refers to information entered in places not listed in the dialog box, including the Simulation Options dialog box.
3. Notes fields are not part of the actual model data, therefore they are not automatically included in the search. Notes also include comments in the model. If you want to search or replace Notes fields, then check the Search Notes option in the Find or Replace dialog boxes.
4. The Whole Words Only option interprets words loosely enough to distinguish words not separated by spaces. For example, searching for “Attr1” in the expression Attr1=Attr1+Attr2, would find both occurrences. You can search for expressions longer than a whole word, such as “Attr1=Attr1+Attr2,” as whole word expressions. To find a portion of a name, like “Attr” in “Attr1,” deselect the Whole Words Only option.
5. Once the Expression Search has found the first occurrence of an expression, a dialog box will appear giving information on exactly where the text was found. This includes a box displaying the entire line on which the text was found, with the search expression highlighted. In some cases the box may be too small to display the entire line. To see the hidden portion of the text, left-click on the text, and use the left and right arrow keys to scroll the text horizontally.
6. The Replace feature cannot be used to change an element identifier. To change all occurrences of a model element name (such as a location name), change the name of the element where it is defined and all other expressions containing the name, as well as any references to this record, will be changed automatically.

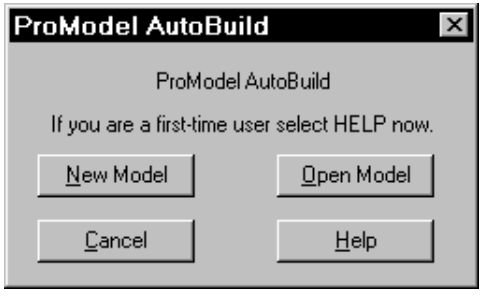
10.3 AutoBuild

Select the AutoBuild switch to have ProModel guide you through the model building and simulation steps by prompting you to define the basic model elements.

The art of simulation modeling is mastered only through the process of building several types of models. ProModel makes it easy for new modelers to learn the basic approach to modeling through the AutoBuild feature. This feature takes the fear out of modeling by providing a structured model building environment.

The first question asked by new modelers is typically, “Where do I begin?” After the goals and objectives of the model have been determined, it is time to start actually entering data, but how? What should be entered first? Locations, Entities, Arrivals? The AutoBuild feature takes away the guess work by guiding you through the build modules in the most logical sequence: locations, entities, processing, and arrivals.

The AutoBuild feature is accessed by selecting AutoBuild from the Tools menu. This action brings up the following dialog which signals the start of the procedure.



If this is your first time using AutoBuild, select Help for an on-line overview of this feature. Otherwise select one of the other buttons defined below.

New Model Opens a new model and prompts for any optional model elements to be included in the model.

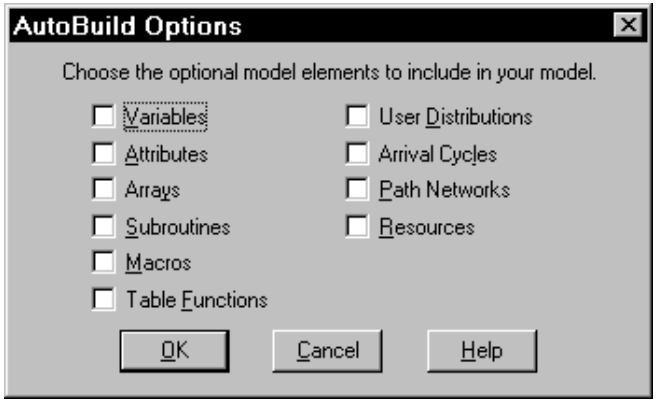
Open Model Opens an existing model for editing.

Cancel Exits the AutoBuild feature.

Using the AutoBuild Feature

When starting AutoBuild, an AutoBuild Options dialog appears, prompting you to check optional modules to be invoked by AutoBuild. If no options are checked, AutoBuild takes you only through the basic modules required to define a model (i.e., locations, entities, processing, and arrivals). Once you are in AutoBuild mode, ProModel will prompt you to go through each of the standard modules plus any optional modules selected.

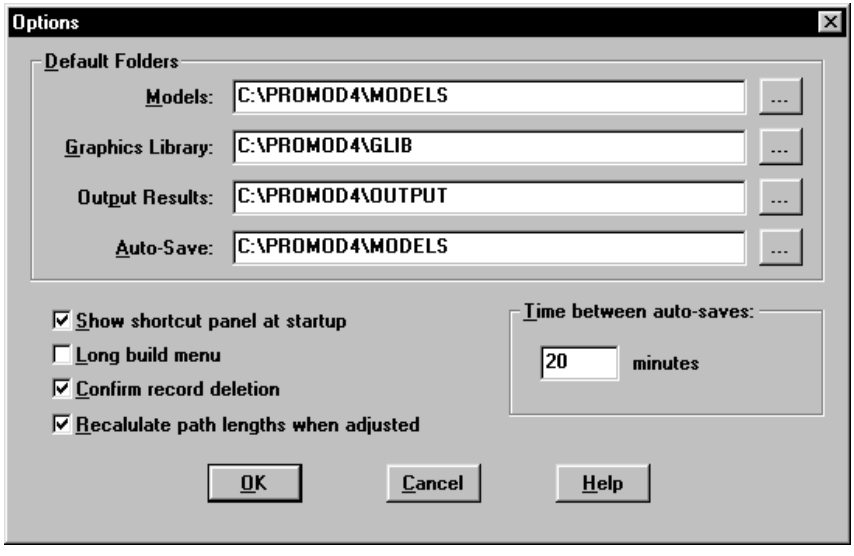
Note When you finish defining the information in a module, close the module. AutoBuild will then display a prompt and allow you to go to the next standard module.



AutoBuild is flexible enough to allow you to jump back and forth between build modules. Once the AutoBuild session has begun, you may enter any other module to make additions or changes and return to AutoBuild where you left off. To do this, simply select another module and make the desired change or addition. When completed, exit the module by closing the module window. The AutoBuild feature will take over and return you to the next uncompleted module. For example, if the Entities module was not complete, AutoBuild would return you to that module. Otherwise, AutoBuild would take you to the next uncompleted module.

10.4 Options

The Options dialog contains default folders, selections for displaying the long build menu, defaults for record deletion, and the time between auto-saves.



Default Folders These fields contain the default folders for your model.

Show shortcut panel at start-up Check this option to display the shortcut panel at start-up.

Long build menu Allows the user to view the long build menu.

Confirm record deletion Use this option to have ProModel display a dialog box confirming that the user wants to delete a record from an edit table.

Recalculate path lengths when adjusted Recalculates the time or distance of a path network or conveyor as it is graphically lengthened or shortened.

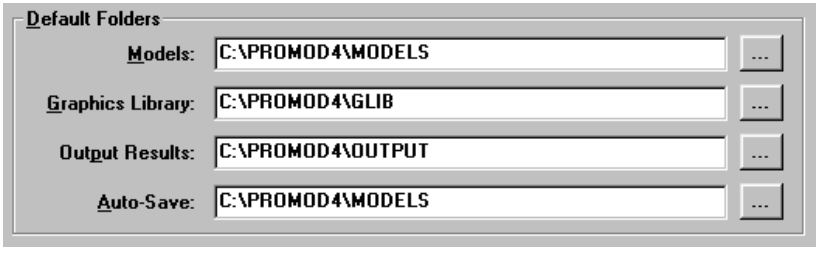
Time between AutoSaves Allows you to select how often ProModel will automatically save your model.

Directories

The Directories section of the Settings dialog allows you to specify which drives and folders to use for storing models, graphic libraries, and output results.

How To Change the default folders:

1. Select **Options** from the **Tools** menu.
2. Specify the desired folders for models, graphics libraries, output results, and auto-save.
3. Click **OK**.



Long Build Menu

The Long Build Menu option reorganizes the Build menu. The long build menu takes the first section of the More Elements submenu and places it in the Build menu. This includes attributes, variables, arrays, macros, and subroutines. Using the long build menu is especially helpful when using these elements frequently.

How To Display the long menu:

1. Choose **Options** from the **Tools** menu.
2. Check the **Long build menu** option.

Note To display the short menu, follow the same procedure above and *uncheck* the Long build menu option.

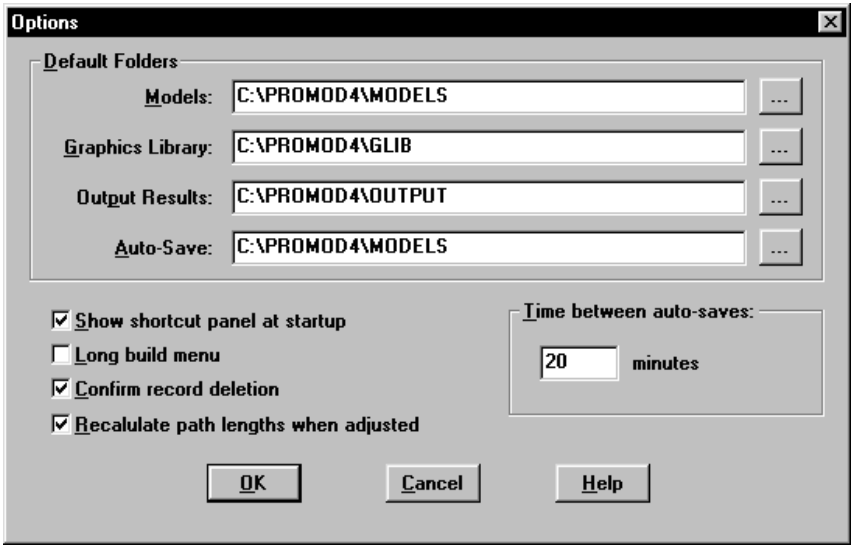
AutoSaving Files

ProModel automatically saves the open model every few minutes, which is useful in the event of unforeseen crashes and power outages. ProModel uses a model file called "AUTOSAVE.MOD" for all autosaves and only modifies the original file when Save is chosen from the File menu.

How To

Specify the amount of time between AutoSaves:

1. From the **Tools** menu, select **Options**.
2. In the **Time between autosaves** field, enter the time.



3. Click **OK**.

Note Models are always autosaved at the start of a simulation run. To deactivate the auto-save feature, set the time between auto-saves to 0.

How To

Specify the autosave directory:

1. From the **Tools** menu, select **Options**.
2. In the **Auto-save** field, enter the directory path you wish to use.
3. Click **OK**.