



## Module 1

1. Introduction and Overview
2. Create a Shape
3. Develop a Pattern
4. Use the Viewing Controls
5. Getting Help



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## **Overview**

**Plate 'n' Sheet Professional** is designed to make it easy to unfold shapes commonly encountered by fabricators and sheet metal workers. The shape is defined by entering dimensions and the unfolded pattern produced instantly by pressing the 'Enter' key.

'Ease of use' is our guiding principle. In Version 4 we believe we have been able to provide many additional features while maintaining the program's original simplicity for basic users.

The shape may be viewed as either a 3D model or as a flat pattern at any stage of the process. Sizes may be altered at any time and the shape will change dynamically. Tools are supplied to zoom in or out and to view the shape from different angles.

Orthographic viewing angles (top, front, side, end and four isometric angles) are available at the click of a button to allow true length measurements to be taken directly from the model.

Wherever possible, error messages will let you know if a size is not valid or conflicts with another size.

Several dimensioning modes are available and the resultant pattern may be printed or exported as a DXF for use in other software.

## **Printing the Pattern**

**Plate 'n' Sheet Professional** can be used with most printers, from wide format CAD plotters to small A4 inkjet or laser printers. Large full size patterns can be produced on small printers by printing across multiple sheets of paper and joining them up while maintaining accuracy.

## **Exporting the Pattern**

**Plate 'n' Sheet Professional** may be used with a CAD program or an NC profile cutters. It is able to export both the pattern or 3D model as a DXF file readable by most CAD and related programs.

The program is fully "Stand-Alone" and a CAD program or an understanding of CAD is not essential to using the program.

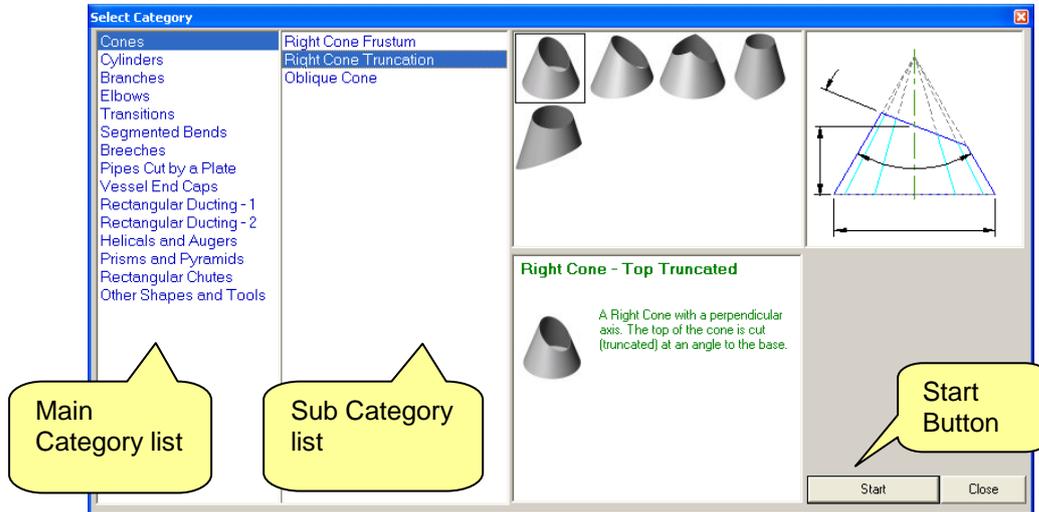
## **Ongoing Development**

**R & L CAD Services Pty Ltd** is dedicated to product improvement. Please let us know if you encounter difficulties in using the program or manual or have suggestions for improvements and additions.

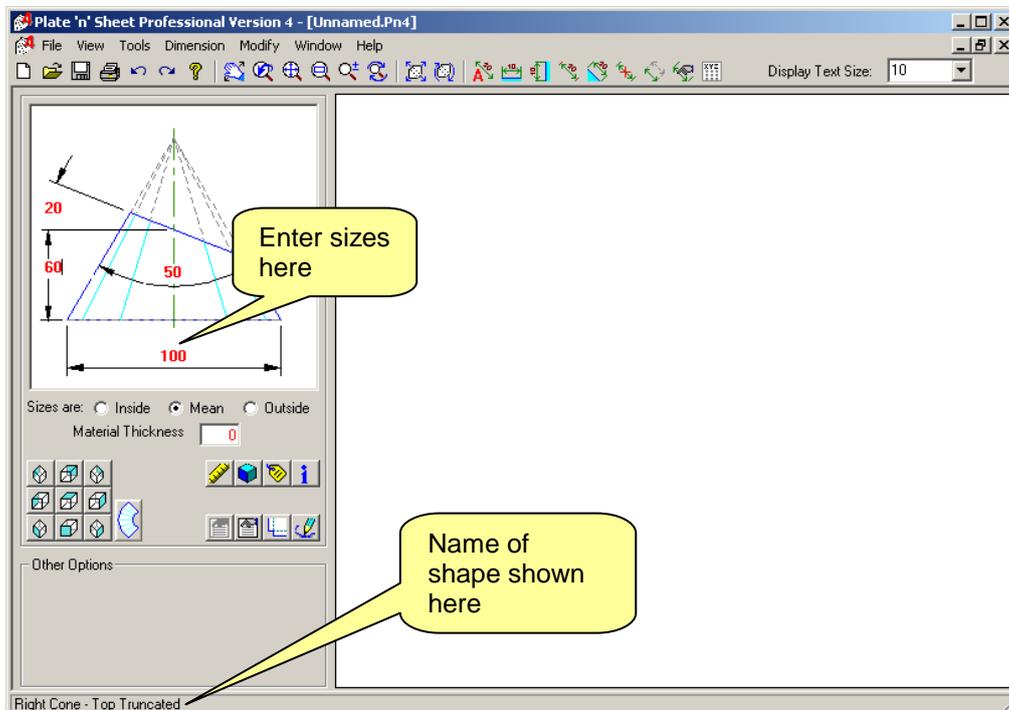
If you have a special shape not included in the standard package, we are happy to discuss a customized version for a negotiated fee. If the proposed customization happens to be in line with our plans for developing and improving the product, this cost may be minimal.

## Getting Started – Make a Pattern for a Cone

Start the program and click the “New” button and select a “**Cones**” from the Main Category List and “**Right Cone Truncation**” from the Sub Category List. Select the cone as shown below by double-clicking on the shape image or clicking on the **Start** button.



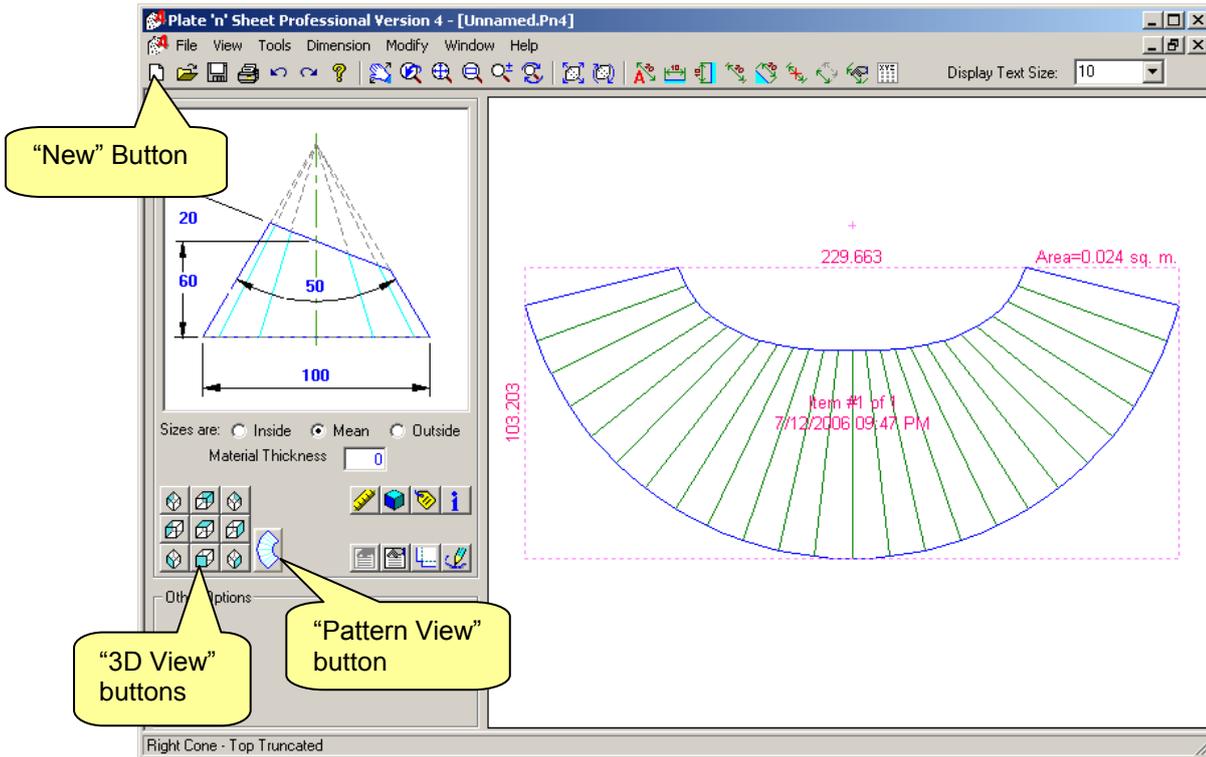
This will display the **Model Window** and a diagram of the shape with spaces for entering the values that define the shape (“**Parameters**”).



Enter the shape “**parameters**”. Note that the parameters are shown in red until they have been entered.

Now view the unfolded shape by simply pressing the “Enter” key or clicking the “Pattern View” button!

© Plate 'n' Sheet Development Version 4  
Professional Edition



Note that once the parameters have been successfully processed they change color to blue.

You may change the parameters at any time. Press the enter key to apply the new values. A message will be displayed if an invalid value is entered. **If the values are red they have not yet been applied.**

You may alternate between model view and pattern view as you wish. Click on the view buttons to view the shape as a 3D “wire-frame” model. The colored face shows the direction of the view. (Tip! Pause the mouse over a button to find the name of the view.)

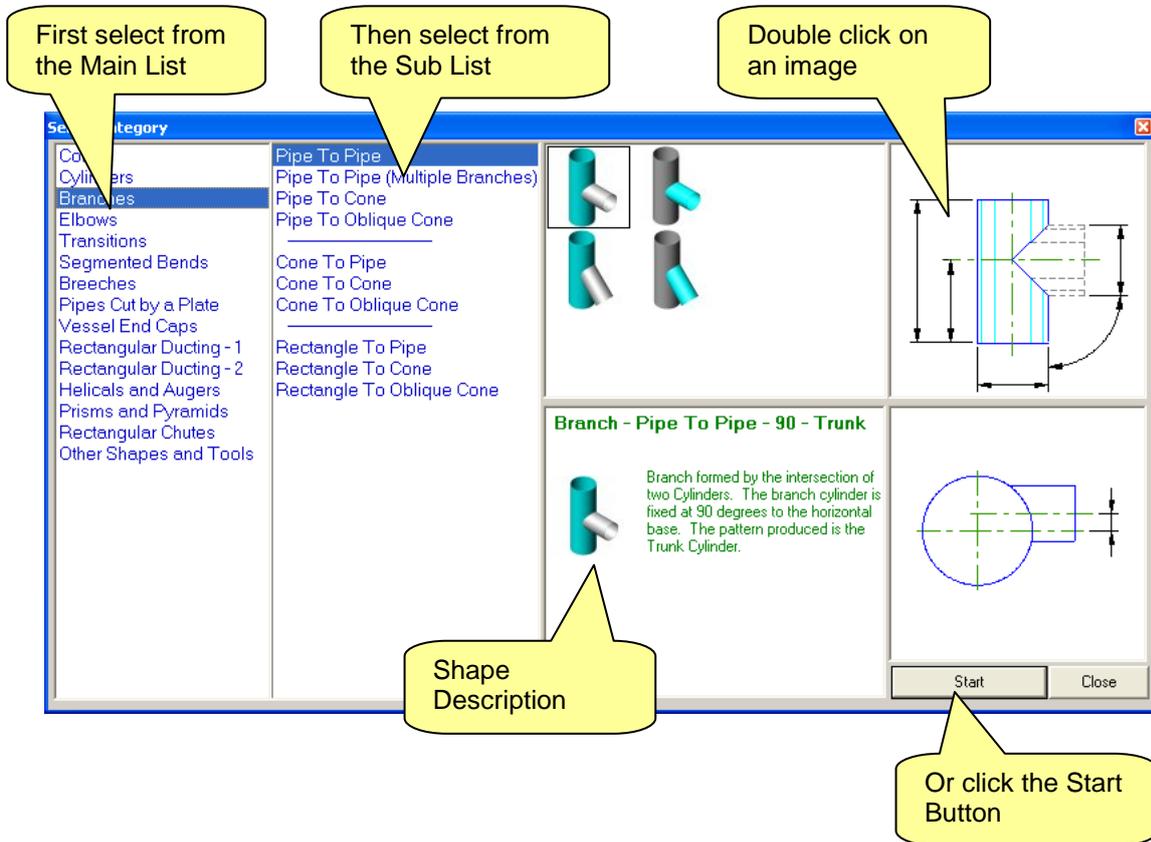


Return to Pattern View by clicking the “Pattern View” button.

Congratulations! You have successfully created the flat pattern development of a cone. The basic process is the same for all shapes. Now for some more details...

## The Category Menu

The menu consists of a main list of shape categories on the left side and a sub list. The sub list changes as selections are made from the main list.



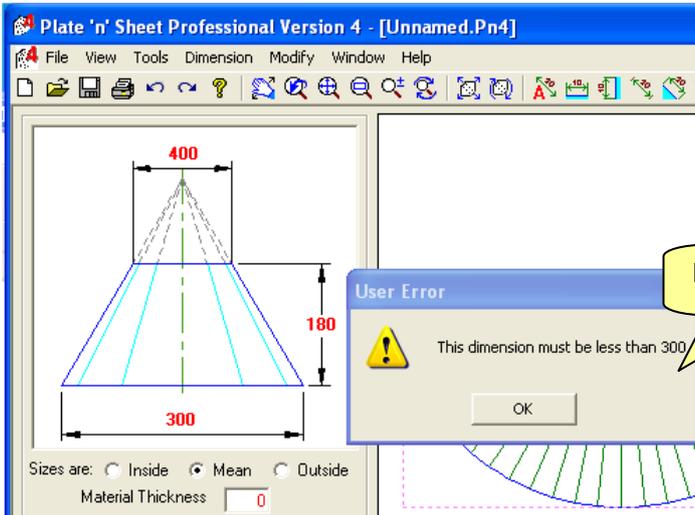
Selecting from the sub list reveals further choices shown as images. You may begin a shape by either clicking the "Start" button with the left mouse button or by double clicking on an image.

Each shape has a brief description. If the shape consists of more than one part, as with the branches shown above, **the part highlighted in blue is the part for which the pattern will be created.**

Select "New" from the "File" pull down menu (or click the "New" button) to return to the Category Menu after completing a pattern.

## Entering Values

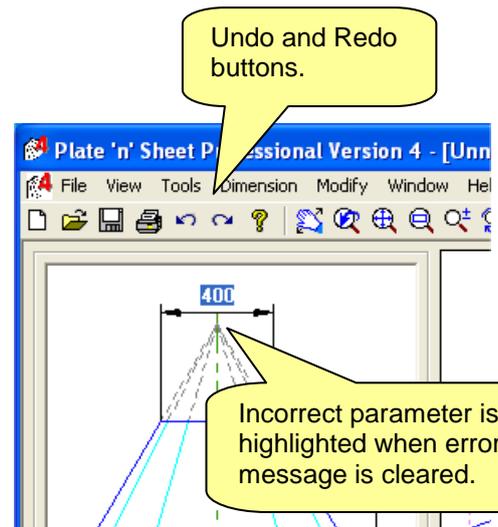
Enter sizes by clicking on the number and begin typing. Use the delete or backspace keys if you make a mistake. The numbers will be red until they have been processed. Only numbers, the decimal point ".", and the negative symbol "-" may be entered. Do not enter units such as "mm" or "Inches"



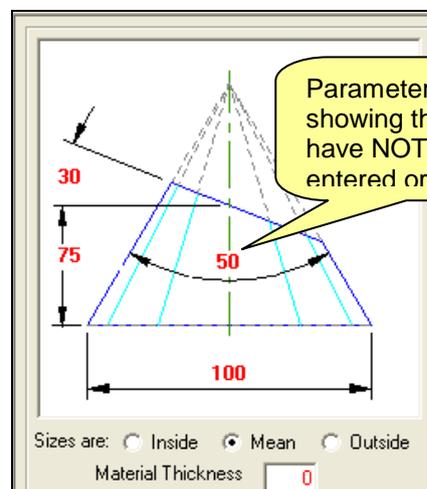
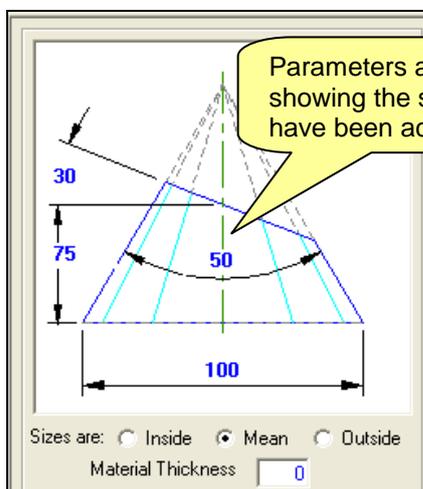
An error message will occur if you forget a size or enter an invalid size. When you close the message box the invalid or missing parameter will be highlighted.

The **parameters will change to blue** when they have been successfully processed and the shape has updated. Remember, if they are still red they have not been processed and the shape has not updated.

Note: If you make a mistake or change your mind, use the **'Undo'** button to step back through recent changes.

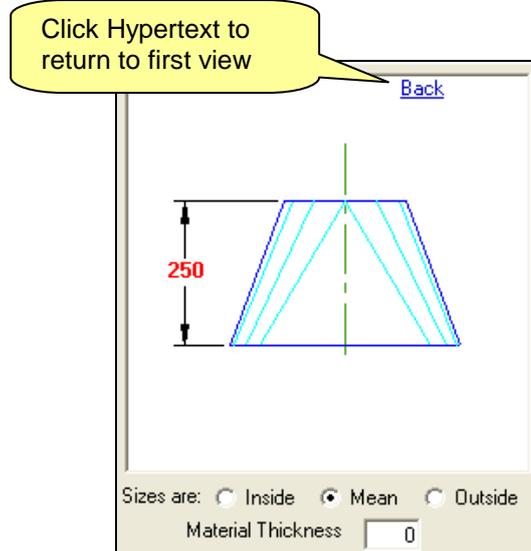
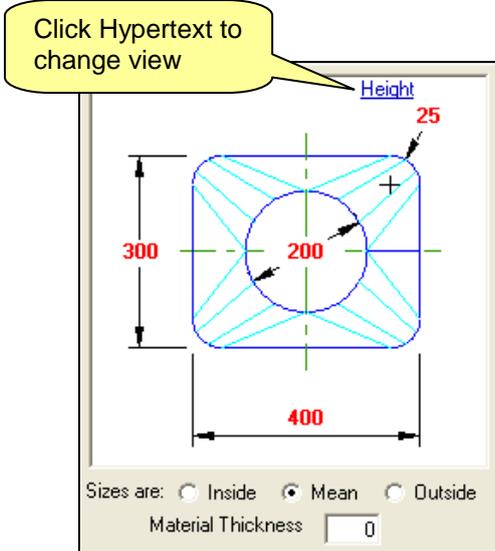


Click the **'Redo'** button to cancel the last 'undo' operation.



### When there are two views for entering parameters

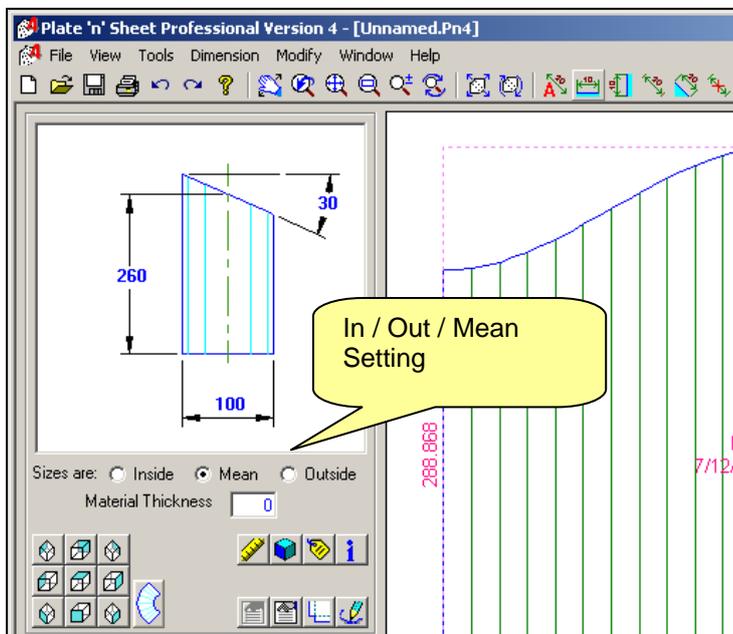
Some shapes require two views to fully define the shape. Rectangle-to-round transitions need a top view to dimension the rectangle and a front view to show the height



In these cases, there will be a blue “Hyperlink” to switch from one view to another.

### Apply Material Thickness

**Plate 'n' Sheet Professional** will allow for the thickness of the material being used when creating the model and the unfolded pattern.

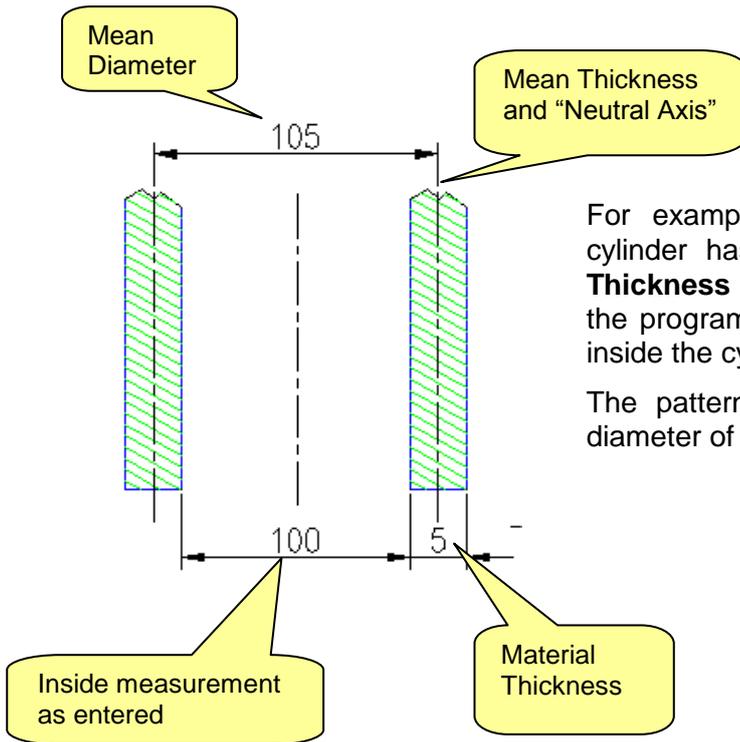


Enter the thickness of the material to be used. All sizes must be in the same units. For example, if you were to use meters to enter diameters, the thickness must also be in meters.

You must tell the program whether the parameters being used are the **INSIDE** dimensions, **OUTSIDE** dimensions or the **MEAN** dimensions.

The program will then calculate the shape of the pattern based on the mean thickness of the shape.

Note: A “**Wrap-Around**” template may also be produced for use with stock pipe. In this case the true lengths, as measured at the mean, are transferred to the outside diameter. See the “**Shape Properties**” section for more details.



For example, in the diagram shown above, the cylinder has a diameter of 100 and the **Material Thickness** is 5. The **INSIDE** option is selected so the program knows that this parameter is measured inside the cylinder bore.

The pattern will be created for a cylinder with a diameter of 105.

For mild steel and most common materials, the material will compress a little on inside of the bend and stretch a little on the outside of the bend. The "**Neutral Axis**" of the material (the line that neither stretches or compresses) is very close to the middle of the material when the material bent around a gentle curve as found in most cones and cylinders.

There are exceptions to this. See the tutorial about **Creating Patterns for Fabricating from Plastic**. See also "Help for this Shape" Chutes.

An option is available making "wrap-around" templates when cutting cylindrical items from pre-formed pipe. This will be explained in Module 2.

## Viewing and Zooming



Click the **Pan View** button on the main tool bar to move the pattern within the current view port. In fact, you are not really moving the object. You are moving your view of the object in the same way you might pan across a scene with a movie camera. The coordinates of the point remain unchanged. This is the case with all of the viewing tools.



Click the **Zoom Extents** button on the tool bar to zoom in or out until the entire shape is visible on the screen.



Click the **Zoom Previous** on the main tool bar to return to the previous view.



Use the **Zoom Window** button to zoom by drawing a rectangle across the screen. Nominate the first corner of the rectangle by clicking and holding the left mouse button down. Stretch out the rectangle. When you release the mouse button the pattern will zoom to the area of the rectangle.



Click the **Dynamic Zoom** button to zoom in and out in “real time”. Pick a point close to the bottom of the screen, hold down the left mouse button, move the cursor toward the top of the screen to make the image appear larger. Release the left mouse button. This can be carried out multiple times. To zoom out dynamically, pick a point near the top of the screen, holding down the left mouse button, the cursor toward the bottom of the screen.



Clicking on a View button will show a view of the 3D “wire-frame” model. The view will be of the shape as seen from the colored side of the cube symbol. For example, the center button, with the colored side of the cube at the top displays a Top View of the model. The lower right button displays an Isometric view from the right-front angle.

As mentioned in the dimensioning instructions, dimensions may be applied on orthographic views only of the 3D model. The orthographic views are Top View, Front View, Rear View, Right- End View And Left-End View.

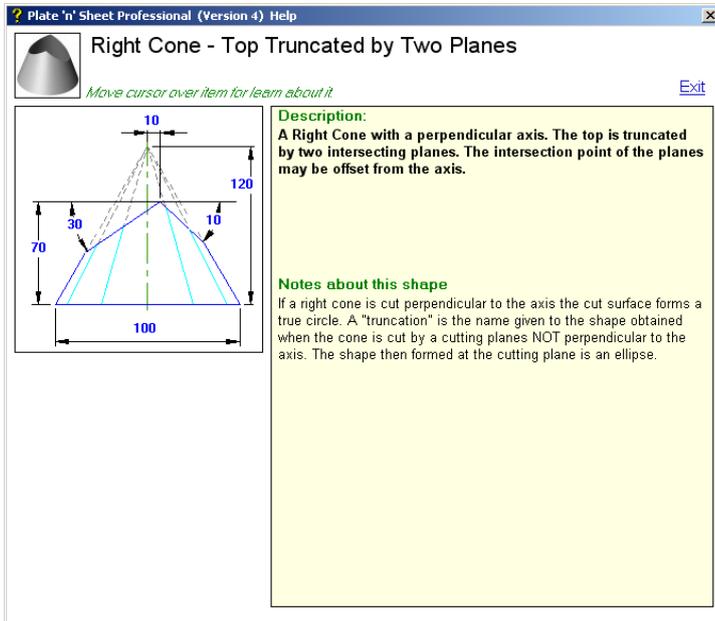


**Rotate View** is only available in 3D Model View and is used to rotate the view of the model dynamically. The center of rotation around which the view pivots is the center of the base of the model.

Rotating the view dynamically allows the user to freely rotate the shape so that a better understanding of the shape can be obtained. It also allows the user to rotate the shape so that points that are superimposed can be selected for measurement. To use it, click the **Rotate View** button and bring the mouse cursor over the screen. Press down with the left button and move the mouse holding the left button down. As the mouse is moved horizontally, the model rotates around the vertical axis. As the mouse is moved up and down the screen the model rotates around a horizontal axis. Release the mouse button when the view is in the required orientation.

## Getting Help

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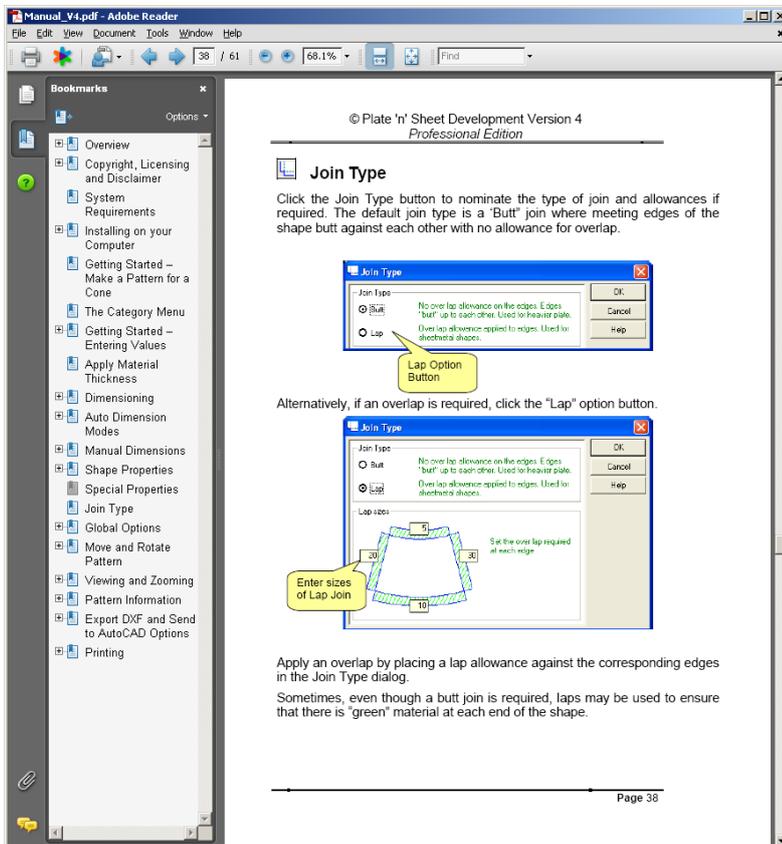
### Help for this item

Help about an individual shape is obtained by clicking the button shown on the top toolbar or pressing the F1 function key

'Help for this Shape' provides a brief description and, if appropriate, any special notes about the shape.

Passing the cursor over some features on the parameter diagram will reveal additional help. For example, passing the cursor over a dimension parameter reveal special notes on entering parameters.

## General Help



General help is available from the 'Help' pull down menu or by clicking the help button on any dialog box. This will open a copy of the manual as a PDF at the page in question.

In this example the help button was clicked on the Join Type dialog.

Selecting Help from the Help Menu opens the Help file at the table of contents.