
PowerSHAPE 2016 R1

Tutorials Manual

Drafting



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Patent Information

Emboss functionality is subject to patent number GB 2389764 and patent applications US 10/174524 and GB 2410351.

Morphing functionality is subject to patent application GB 2401213.

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Drafting for PowerSHAPE

Creating and Editing a Drawing

1. Create a drawing



If you do not have the licence required for the commands in this tutorial*, go to the next step in the tutorial and click **Import Data (Drafting_PS.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)

The model will then be provided with the correct data and you will be able to complete the tutorial.

*In most cases selecting an icon will inform you that the necessary licence is missing. In some modules of PowerSHAPE the icon(s) may be missing entirely.

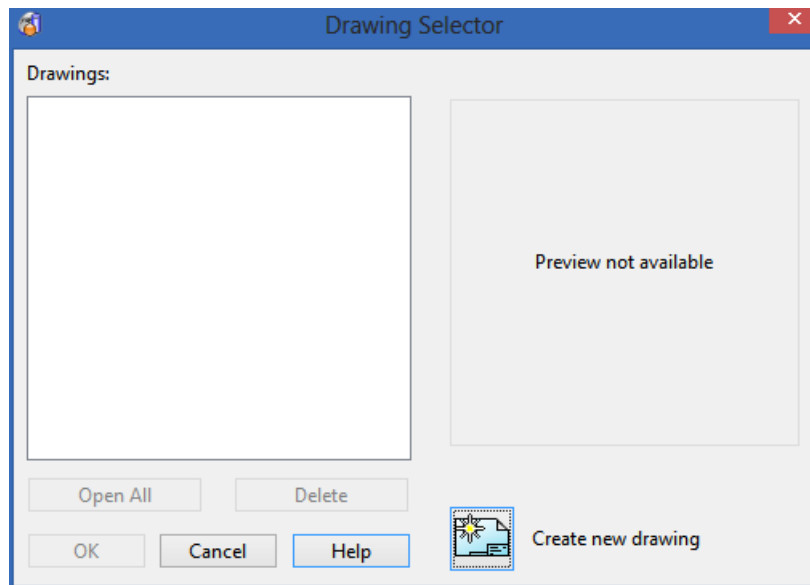
1 Click **Import Data**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)

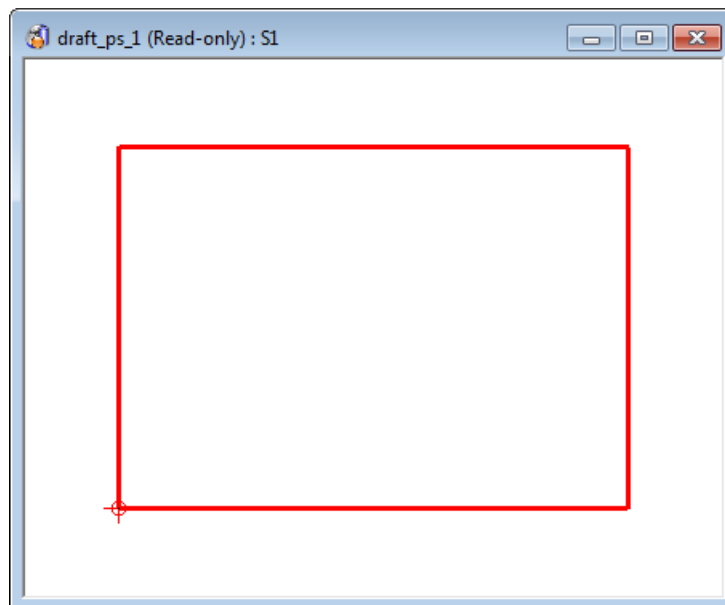
2 Click **Modelling Mode** using the right mouse button.

3 From the flyout, click **Drafting Mode** .

The Drawing Selector dialog is displayed.



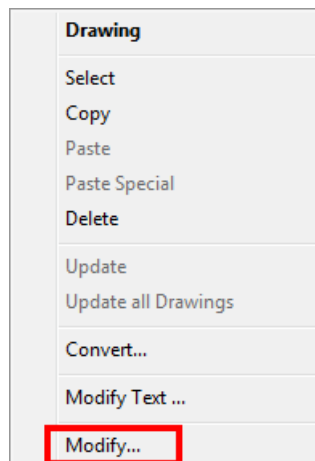
- 4 Click **Create new drawing**  on the dialog.
View creation mode is started automatically.



2. Edit the drawing

- 1 Click in the drawing with the right mouse button.

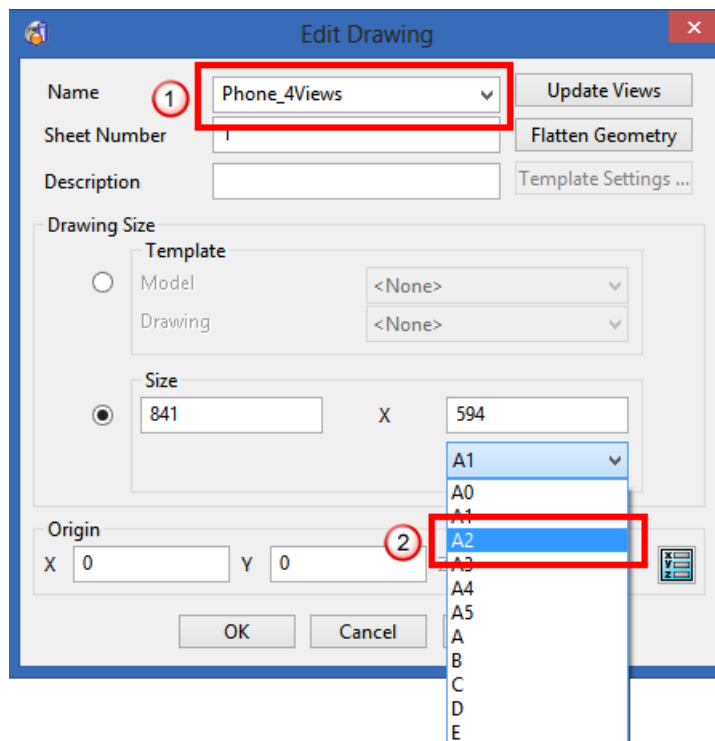
2 Click **Modify**.



The **Edit Drawing** dialog is displayed.

3 Do the following:

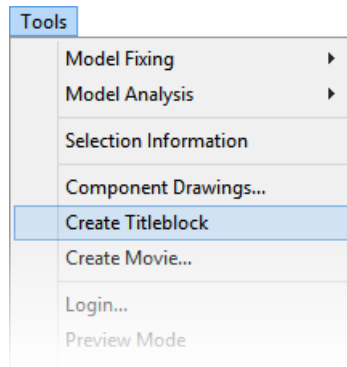
- ① Change the **Name** to **Phone_4Views**.
- ② Change the drawing size to **A2**.



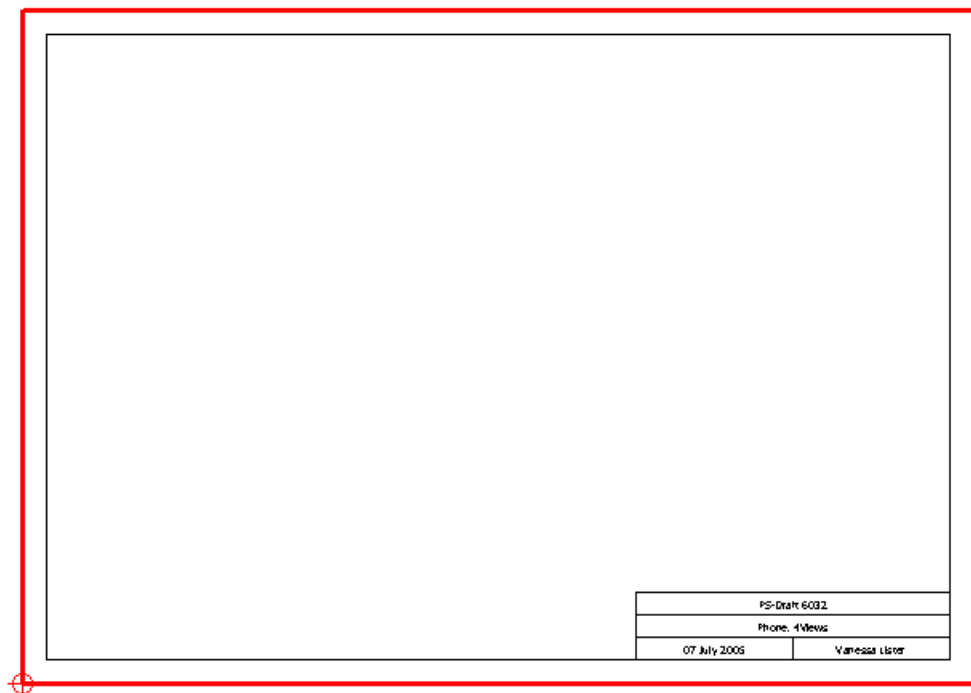
4 Click **OK**.

3. Add a title block

- 1 Click **Tools > Create Titleblock**.



The titleblock is added to the drawing.

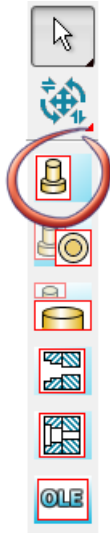


Creating and Editing Drawing Views

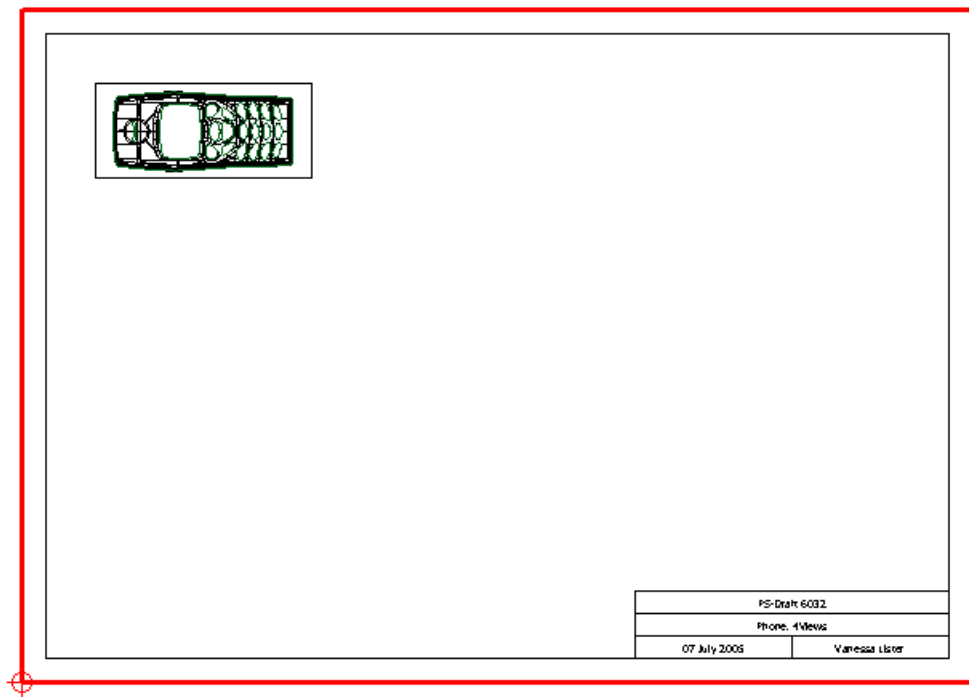
4. Create a view

- 1 Click **View** .

- 2 Click **Single View** .



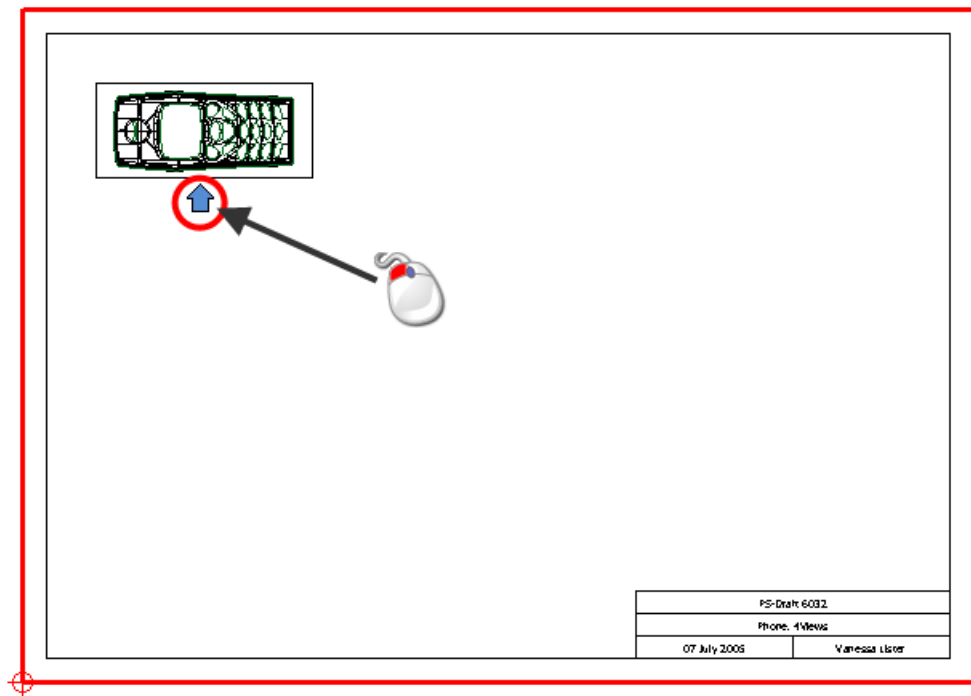
- 3 Move the cursor in the drawing.
4 Click to fix the view, as shown below.



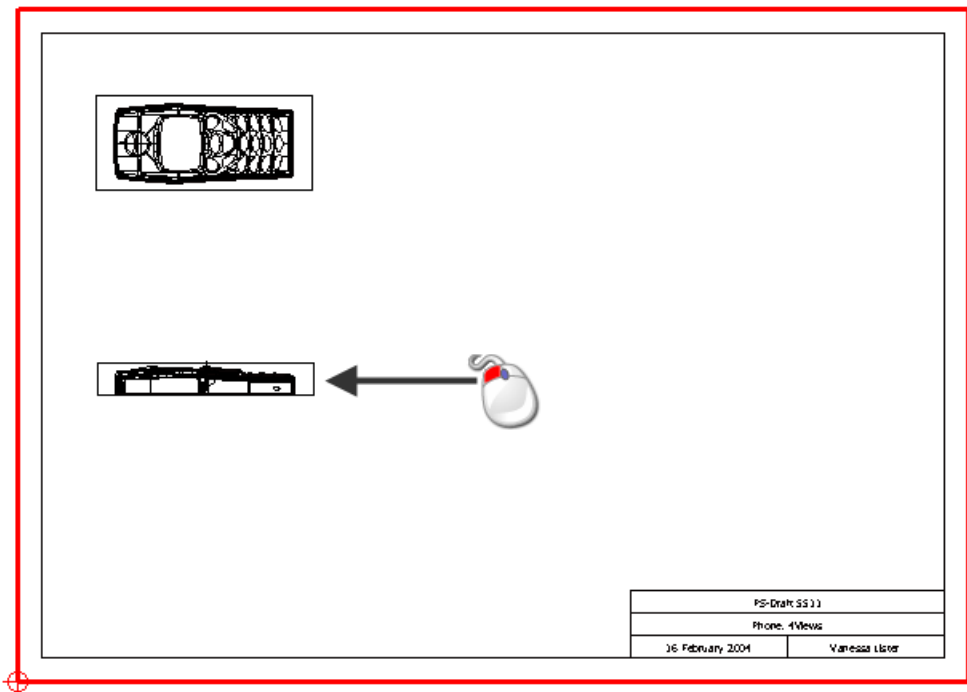
5. Create a relative view

- 1 Move the cursor to the bottom of the new view.

- 2 Click when the arrow points upwards, as shown below.



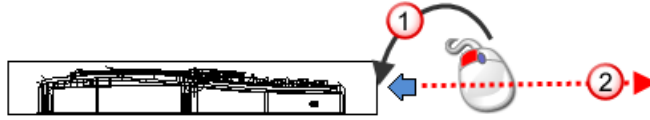
- 3 Move the cursor in the drawing.
4 Click to fix the view, as shown below.



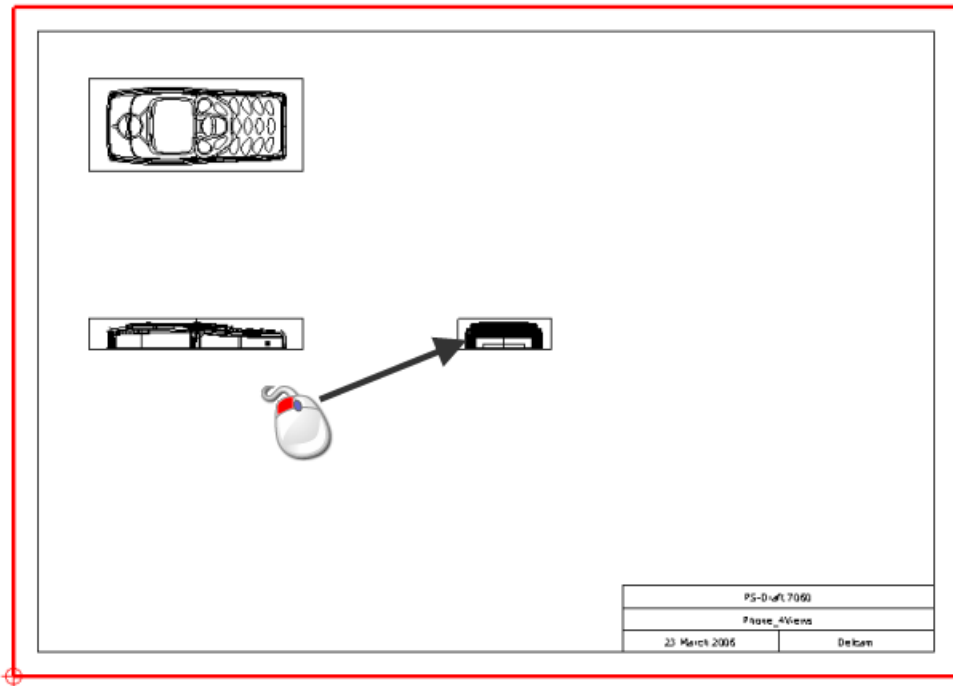
- 5 Create another relative view from the right end of the view.
6 Click when the arrow points left at the end of the view, shown in the image below:



Zoom in if necessary to activate the horizontal relative view arrow.



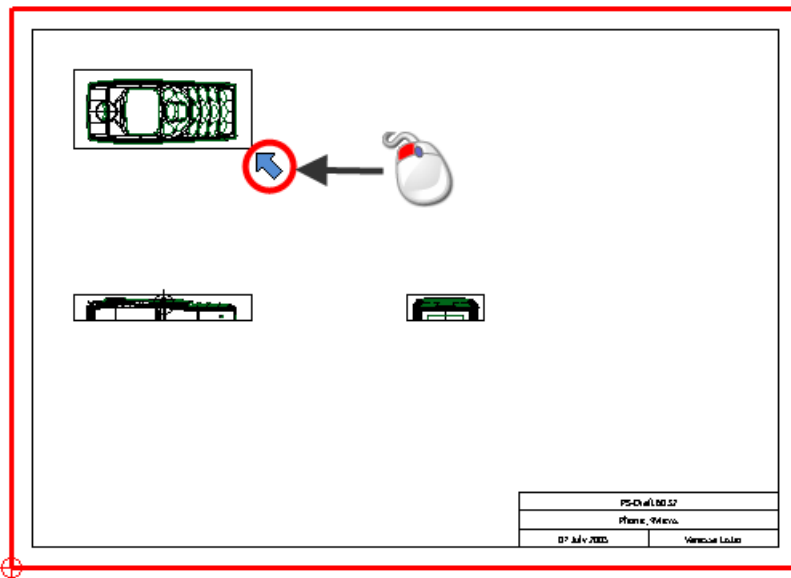
- 7 Move the cursor in the view and click to fix the new relative view, show in the image below:



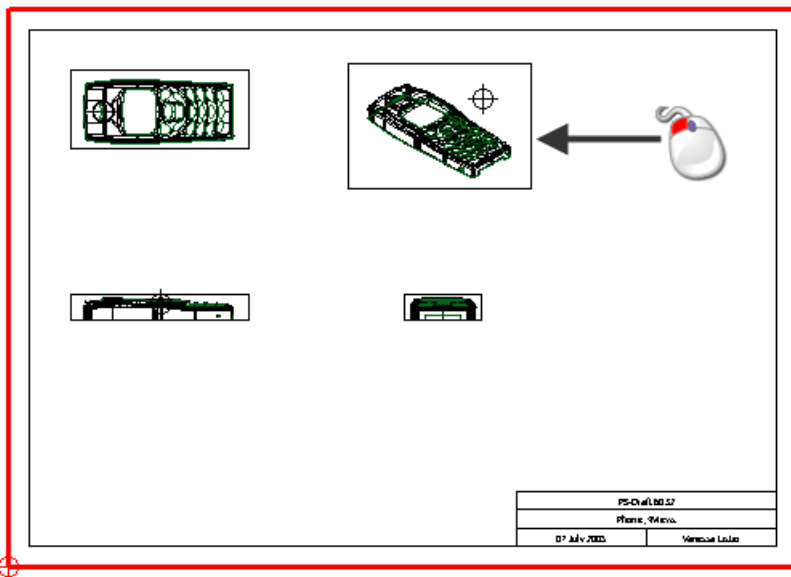
6. Create an isometric view

- 1 Move the cursor to the bottom right corner of the first view.

- 2 Click when the cursor changes to an arrow, as shown below.



- 3 Move the cursor in the drawing.
4 Click to fix the view, as shown below.



- 5 Click **Select**



7. Edit the background detail of the views

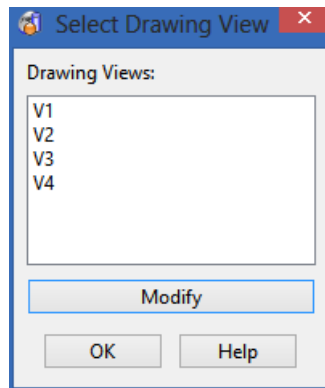
- 1 Click **Select** using the right mouse button.
The **Selection** flyout is displayed.



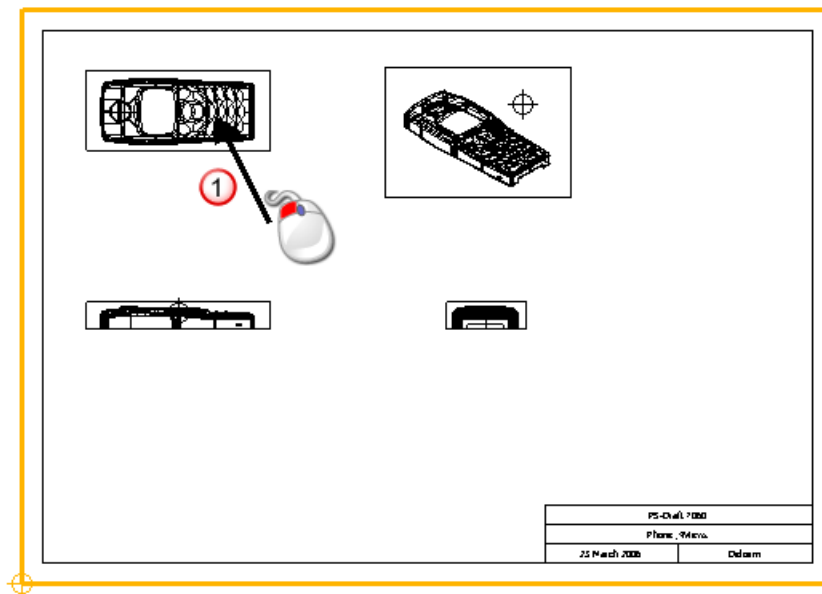
- 2 Click **Drawing view selection** .



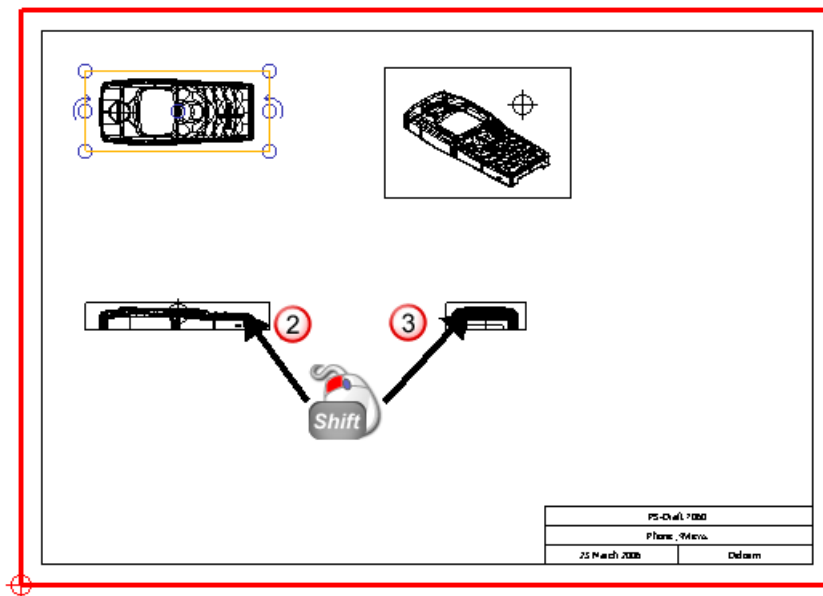
The **Select Drawing View** dialog is displayed.



- 3 Click on the top left view in the drawing, as shown below:

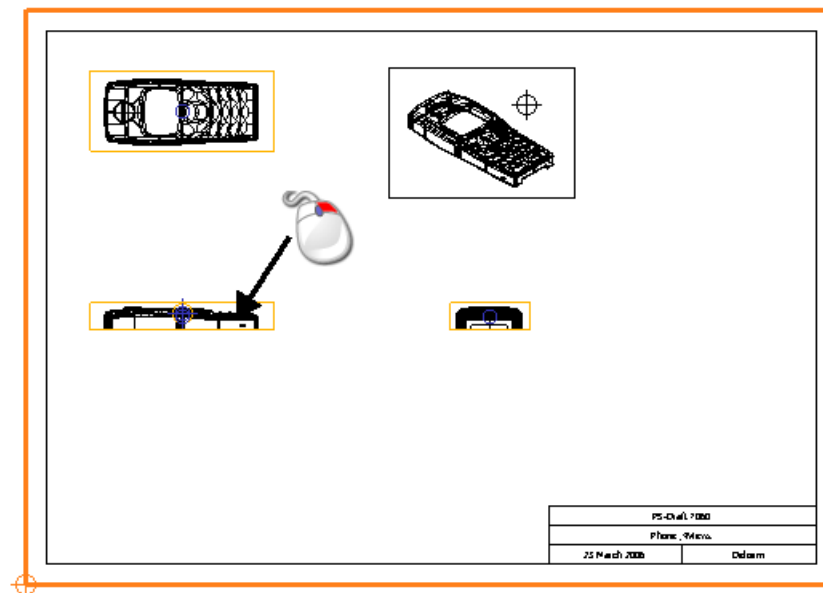


- 4 Hold down the **Shift** key and click on the bottom two views.



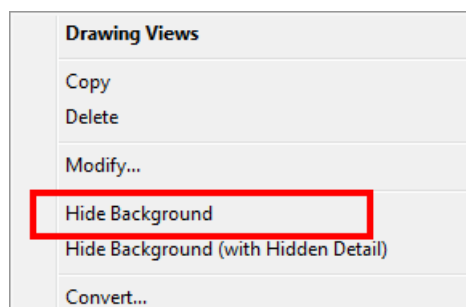
- 5 Click **OK** on the **Select Drawing View** dialog.

- 6 Click with right mouse button on one of the views.



The **Drawing View** popup menu is displayed.

- 7 Click **Hide background**.

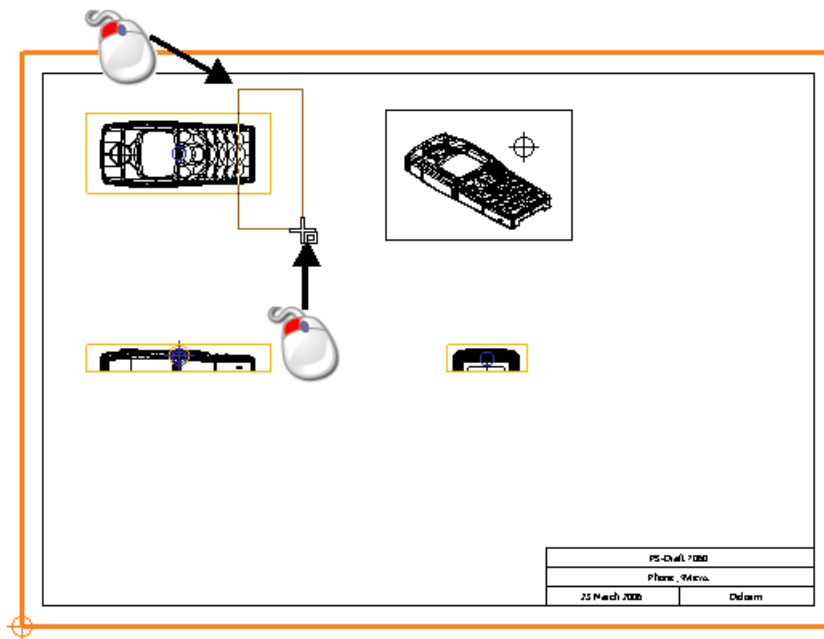


- 8 Click **Select** .

Adding Dimensions to the Drawing

8. Create a radius dimension

- 1 Click **Zoom to box Mode** .
- 2 Click the left mouse button and drag a box, as shown:



- 3 Click **Annotation** .

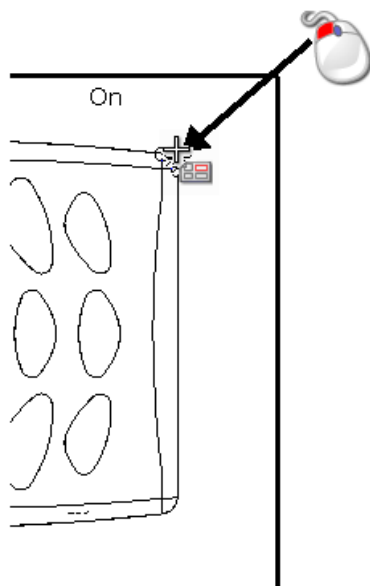


- 4 Click **Radius** .

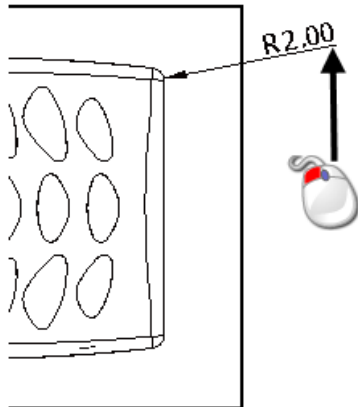


- 5 Move the cursor over the top corner of the model.
- 6 Click when the cursor changes and **On** is displayed, as shown below.

 *Zoom in further to the corner to make selection easier. Zoom out again to the wider view to fix the dimension.*



- 7 Click away from the model to add the dimension to the drawing, as shown below.



- 8 Click **Resize to Fit**

- 9 Add three more radius dimensions to the top left view.

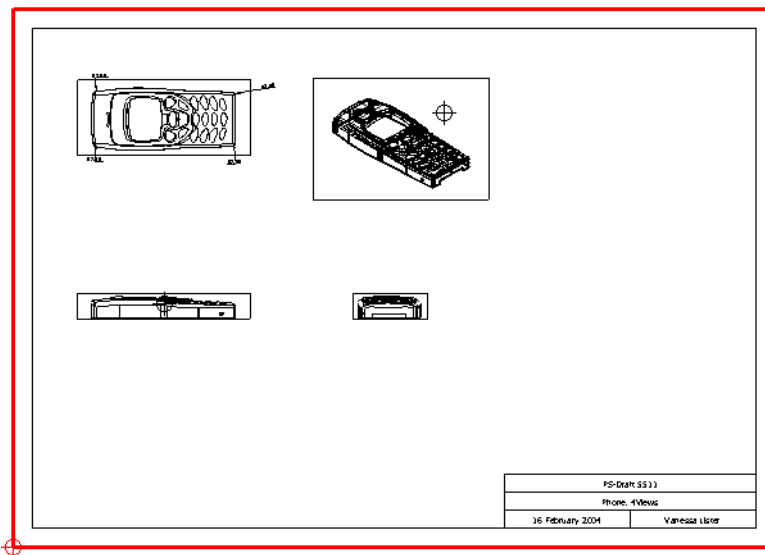


Zoom in and out as necessary.

- 10 Click **Select**

- 11 Click **Resize to Fit**

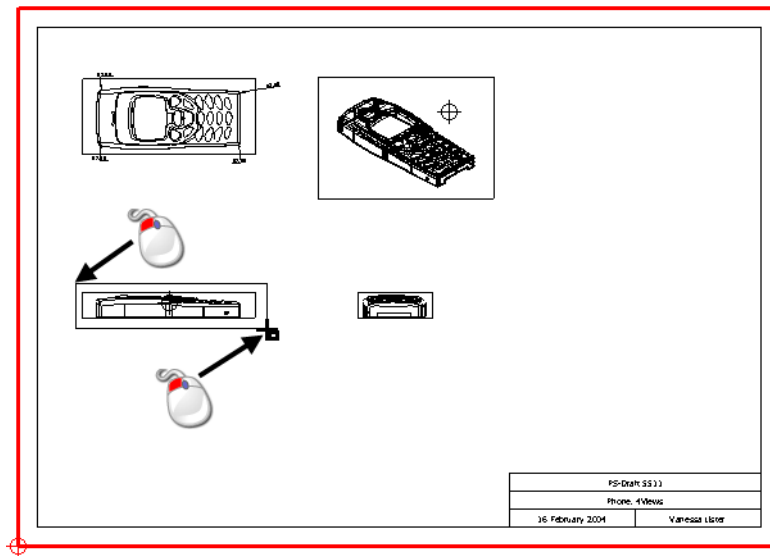
- 12 Click anywhere in the graphics window to deselect the model.



9. Create base point dimensions

- 1 Click **Zoom to box Mode**

- 2 Click the left mouse button and drag a box, as shown:



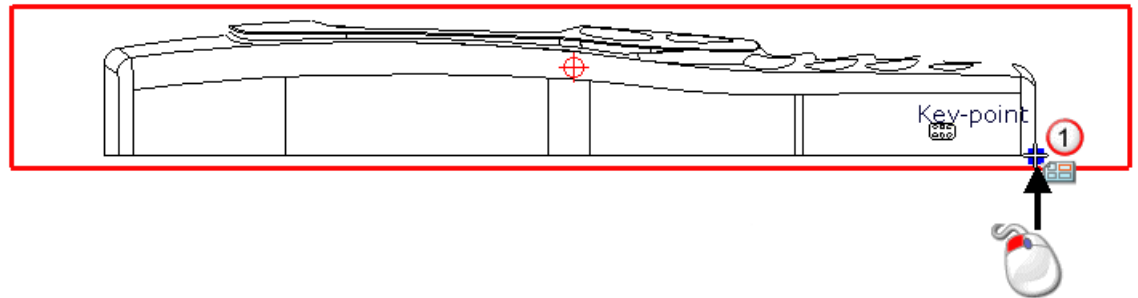
- 3 Click **Annotation** .



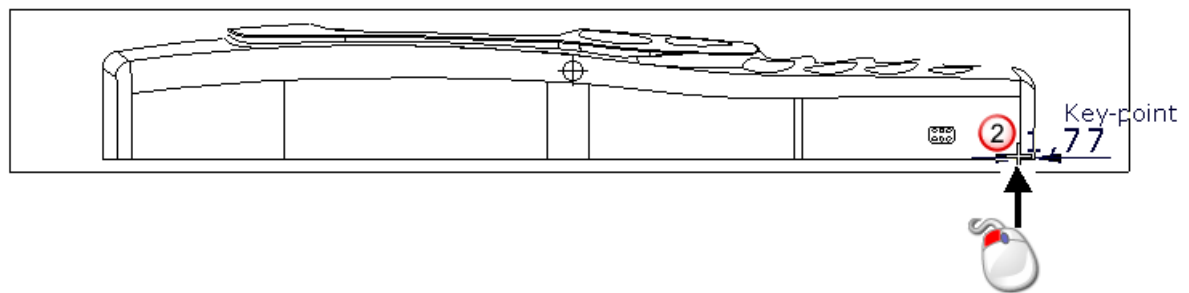
- 4 Click **Basepoint** .



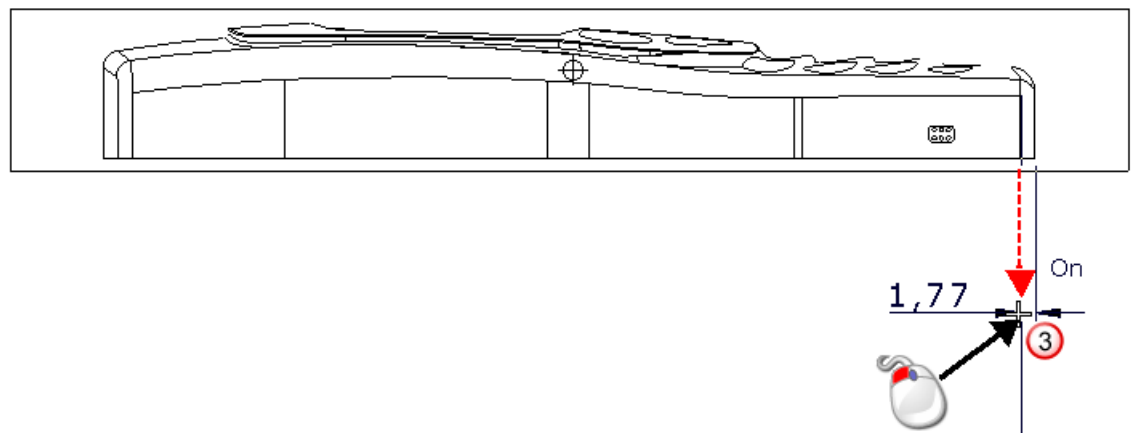
- 5 Click basepoint ①, to specify the base measuring point for all the basepoint dimensions.



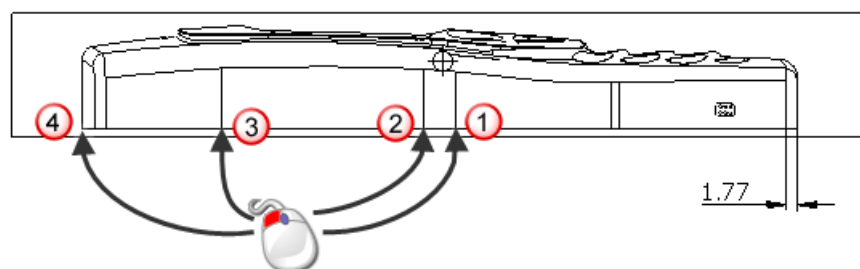
- 6 Click basepoint ②, to specify the end of the first dimension, as shown below.



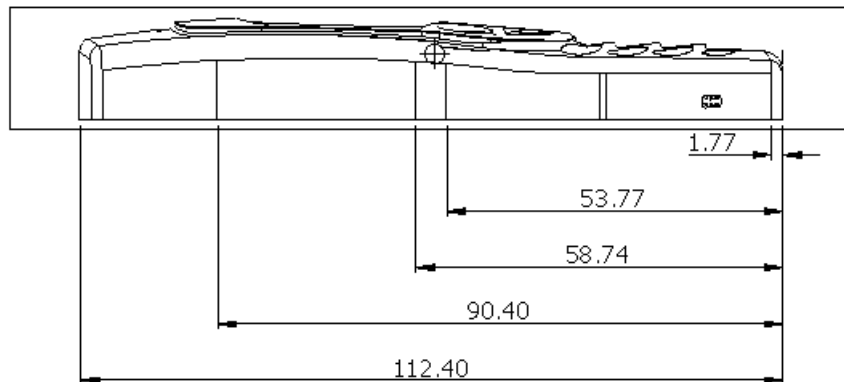
- 7 Click ③ to fix the dimension to the drawing.



- 8 Click 4 more positions as shown below.



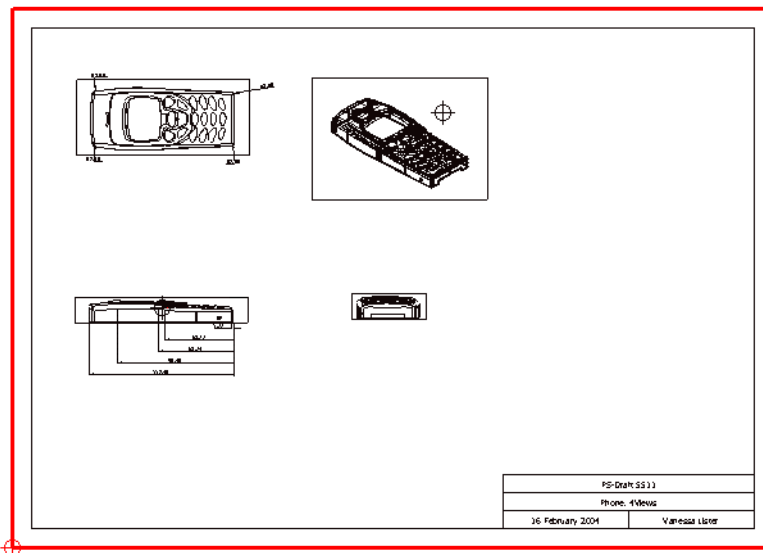
Each new position creates a dimension from the basepoint. Its text position is placed automatically below the text of the other dimensions.



9 Click **Select**



10 Click **Resize to Fit**

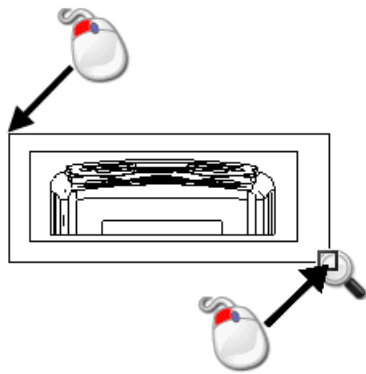


10. Create automatic dimensions

1 Click **Zoom to box Mode**



- 2 Click the left mouse button and drag a box, as shown:



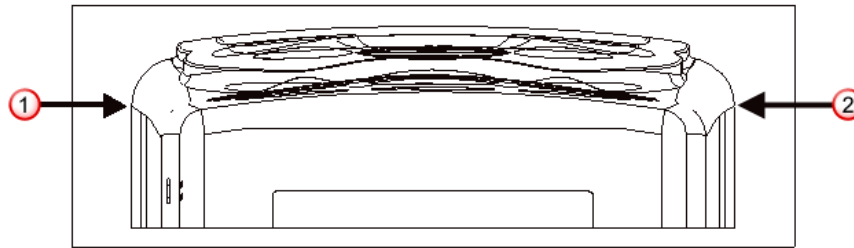
- 3 Click **Annotation** .



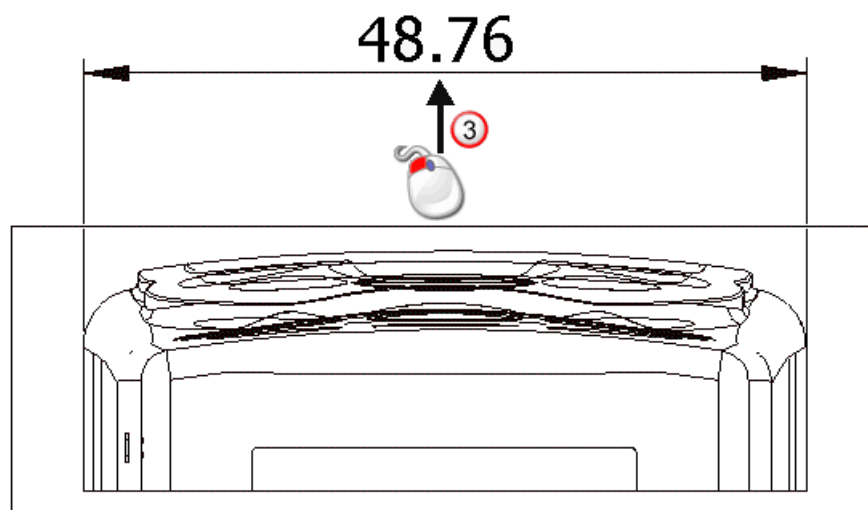
- 4 Click **Automatic dimension** .



- 5 Click positions ① and ② to specify the start and end points of the dimension.



- 6 Move the cursor above the view.
- 7 Click ③ to fix the dimension, when the radius snaps to the halfway position.



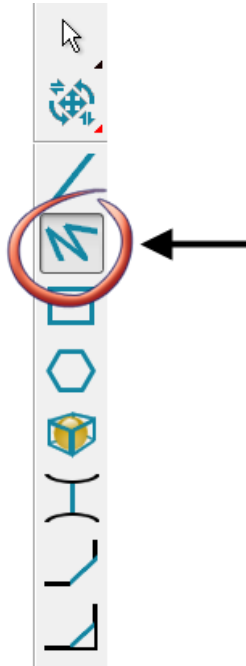
- 8 Click **Select** .

11. Create a centreline

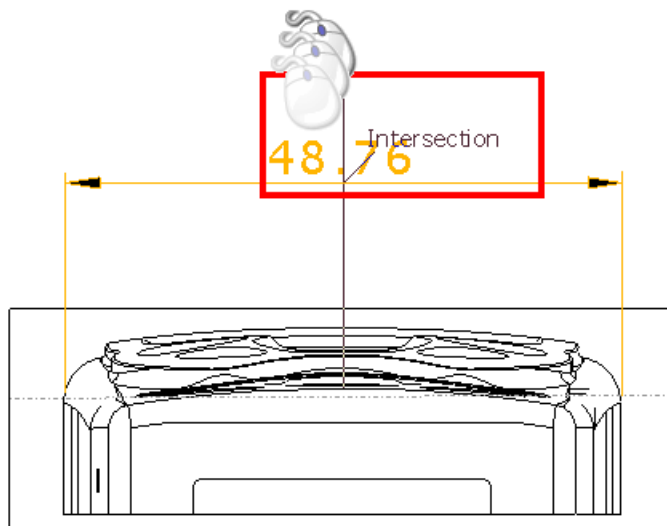
- 1 Click **Line** .



- 2 Click **Continuous Lines** .

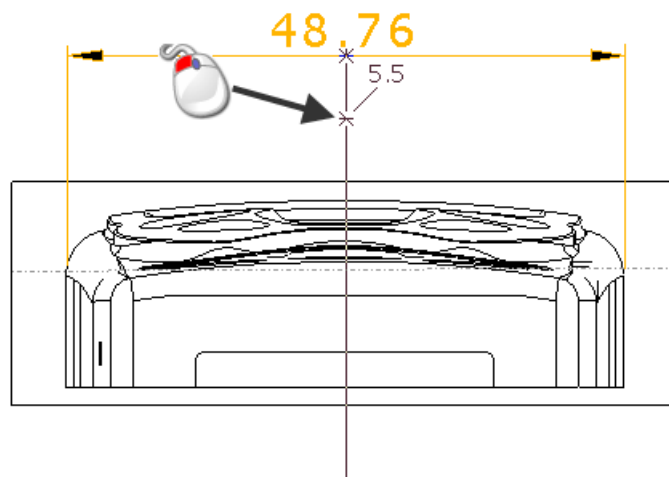


- 3 Move the cursor around the model.
- 4 Construction lines and dimensions activate and display.
- 5 Move the cursor over the centre of the dimension until the construction line and *Intersection* shown below displays:



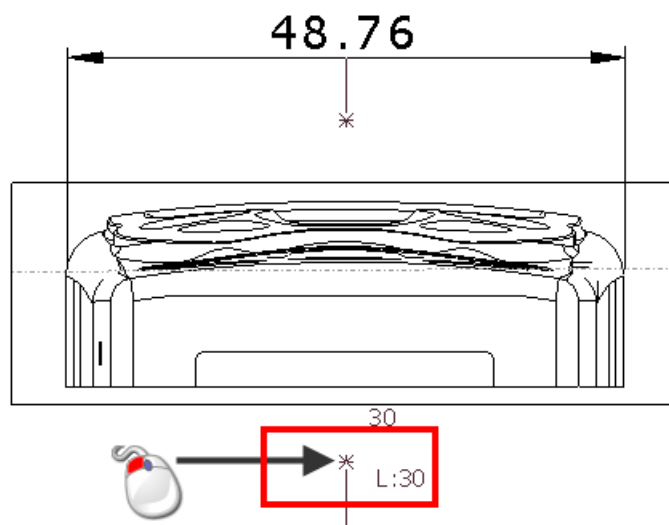
- 6 Move the cursor down the vertical construction line, between the dimension and the view.

- 7 Click to fix the start point of the line.

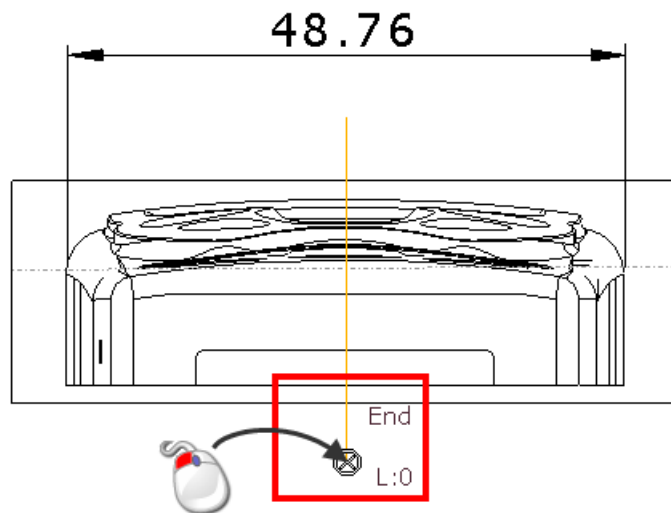


- 8 Move the cursor vertically down the construction line below the view.

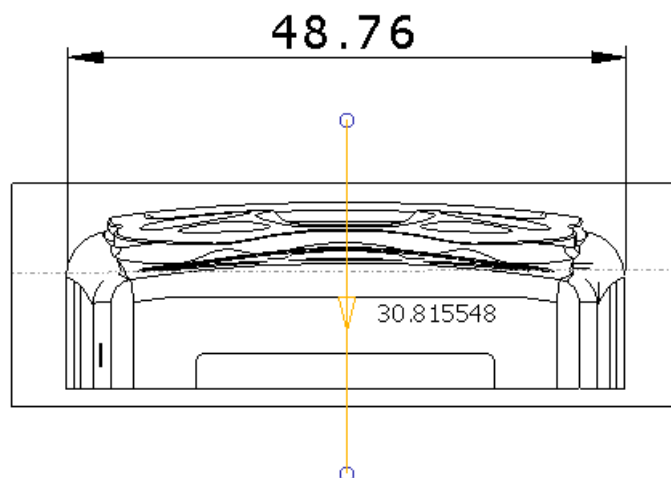
- 9 Click to fix the end point of the line.



- 10 Move the cursor over the end point of the line until **End** displays, shown below:



- 11 Click to complete the line.



- 12 Click **Select** .

- 13 Click **Resize to Fit** .

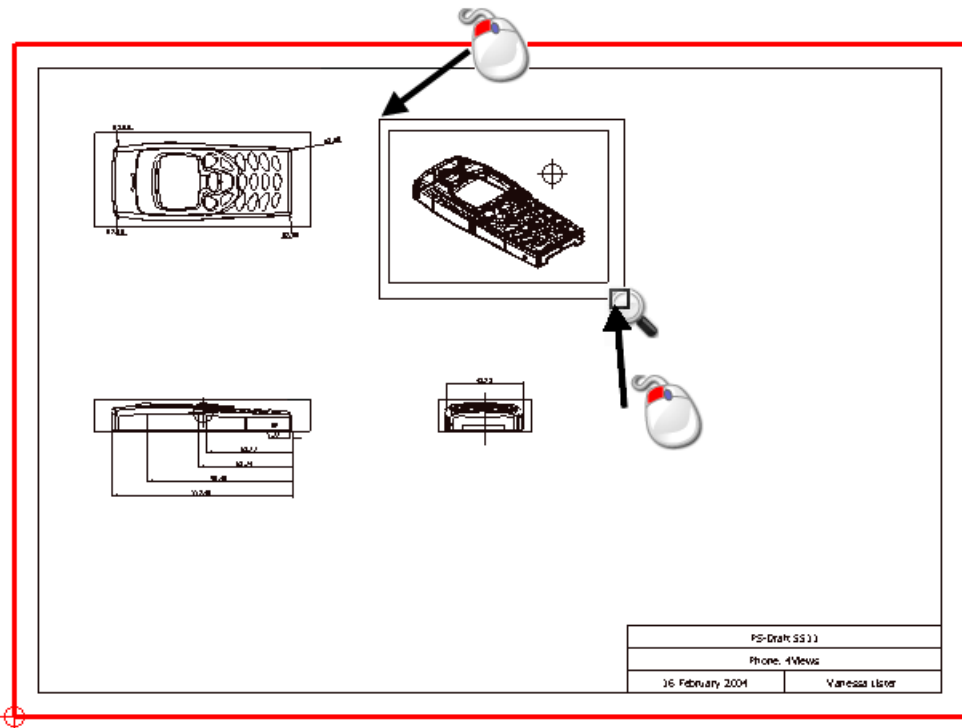
- 14 Click anywhere in the graphics window to deselect the model.

 **Important:** Make sure you click **Select**  to exit creation mode.

Creating and Editing text on a Drawing

12. Add a title

- 1 Click **Zoom to box Mode** .
- 2 Click the left mouse button and drag a box, as shown:



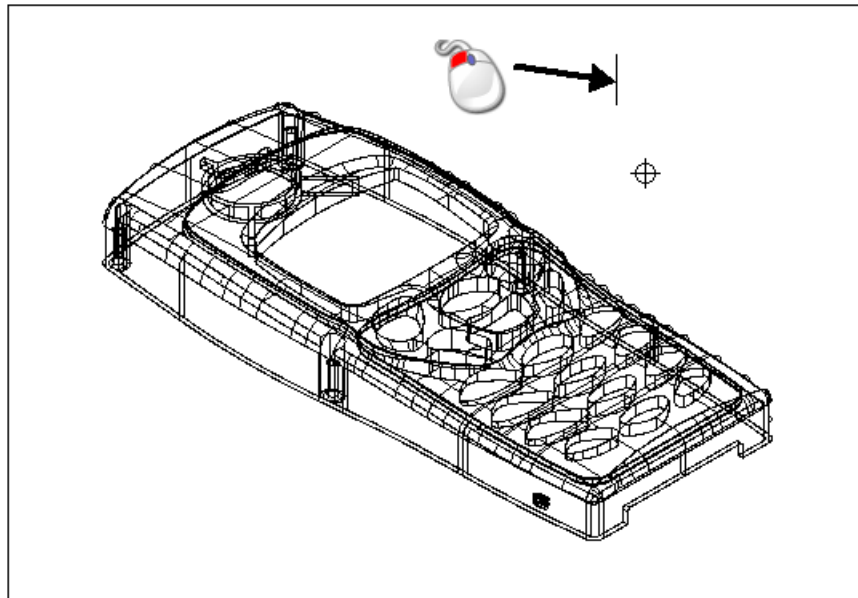
- 3 Click **Annotation** .



- 4 Click **Horizontal Text** .

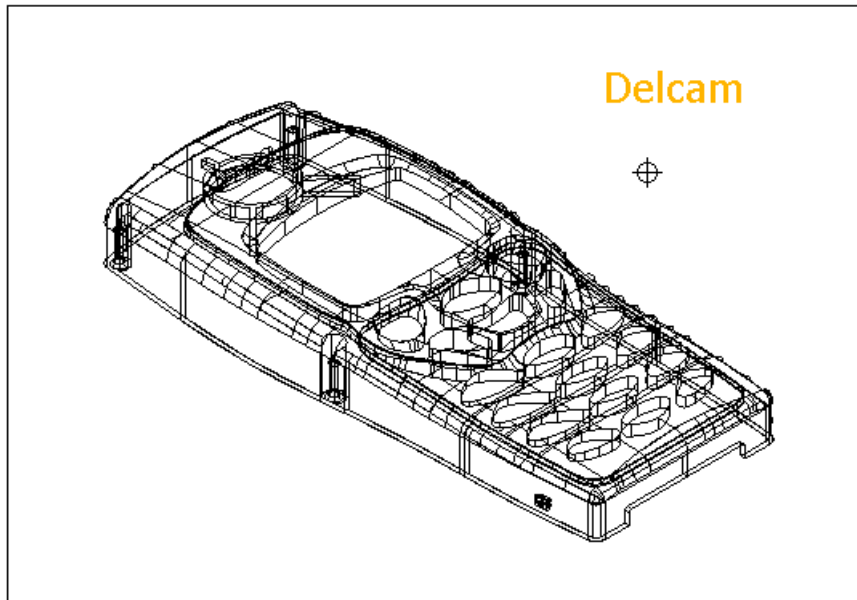


- 5 Click in the view, as shown below.



- 6 Type:
Delcam

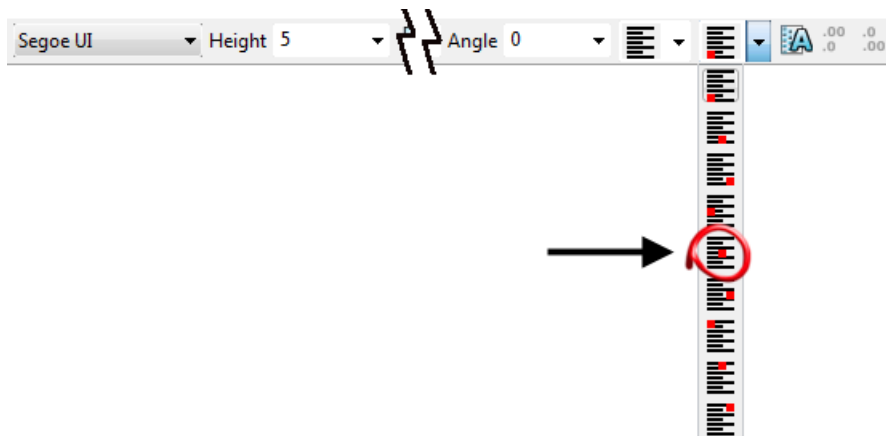
- 7 Click **Select** .



13. Edit the title

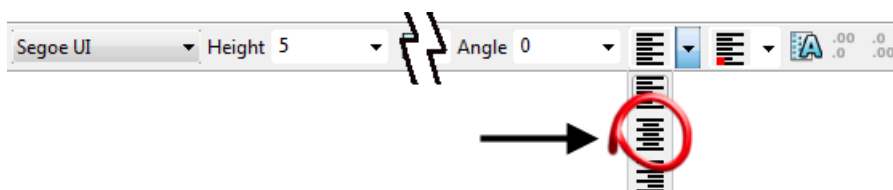
- 1 Click **Text origin** .

- 2 Click **Centre** .



- 3 Click **Text justification** .

- 4 Click **Centre justify** .

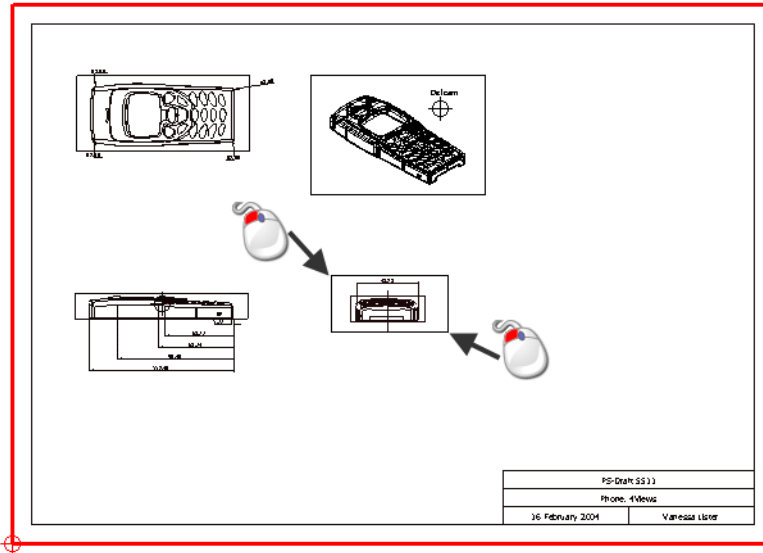


- 5 Click **Resize to Fit** .

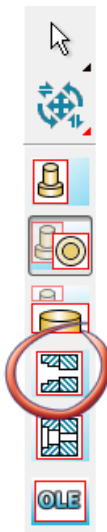
Creating and Editing a Section View

14. Create a section view

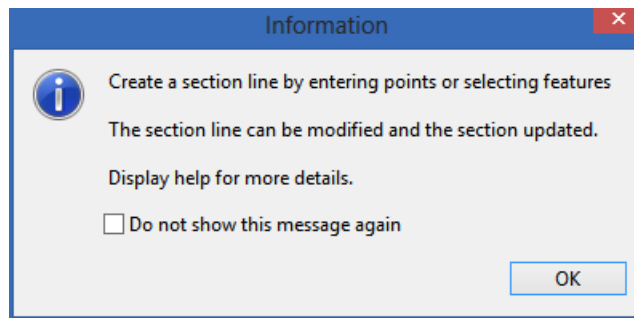
- 1 Click anywhere in the graphics window to deselect the model.
- 2 Click **Zoom to box Mode** .
- 3 Click the left mouse button and drag a box, as shown:



- 4 Click **View** .
- 5 Click **Section View** .

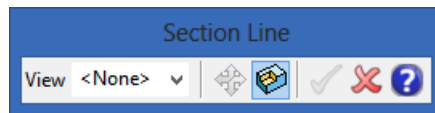


The section view Information dialog is displayed.

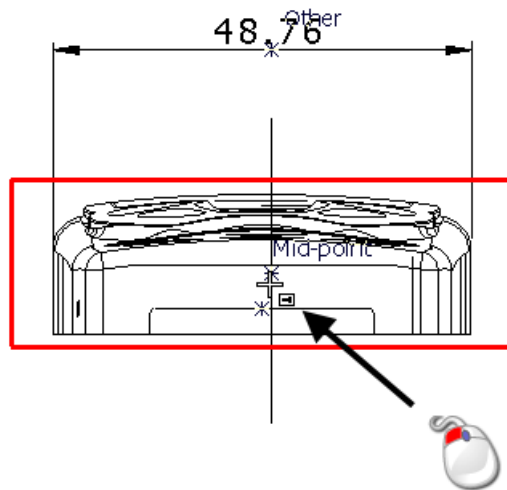


- 6 Click **OK**.

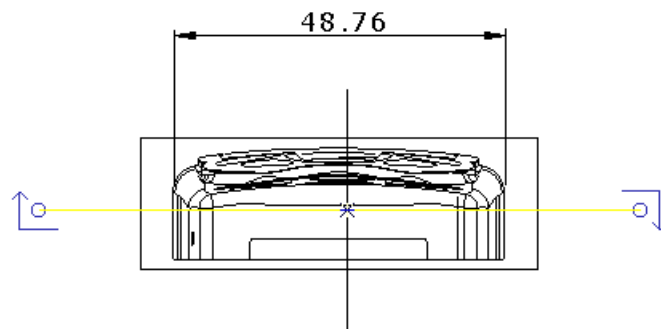
The **Section Line** toolbar is displayed.



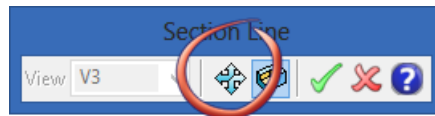
Click in the drawing view when *Mid-point* is displayed, shown in the image below.



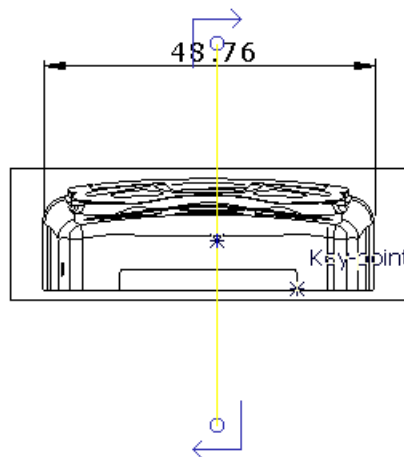
The section line is created and is ready to be edited.



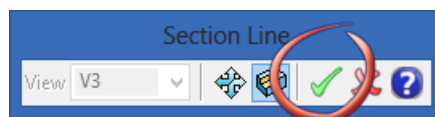
- 7 Click **Toggle Direction**.



The section line changes from a horizontal section line to a vertical section line.



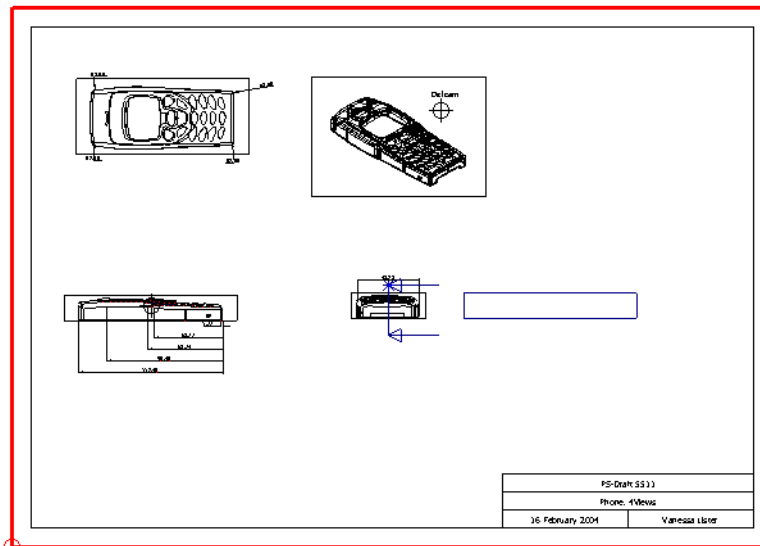
- 8 Click **Accept changes and finish**.



- 9 Click **Resize to Fit** .

- 10 Look for arrows which are now displayed at the top and bottom of the centre line.

- 11 Click the arrows to make them point left, as shown below.
- 12 Move the cursor in the drawing to place the view attached to the cursor, as shown below.

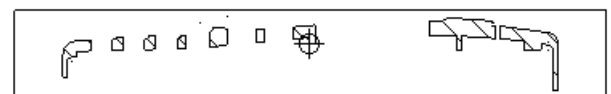
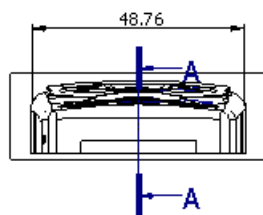


- 13 Click on the drawing to position the view.

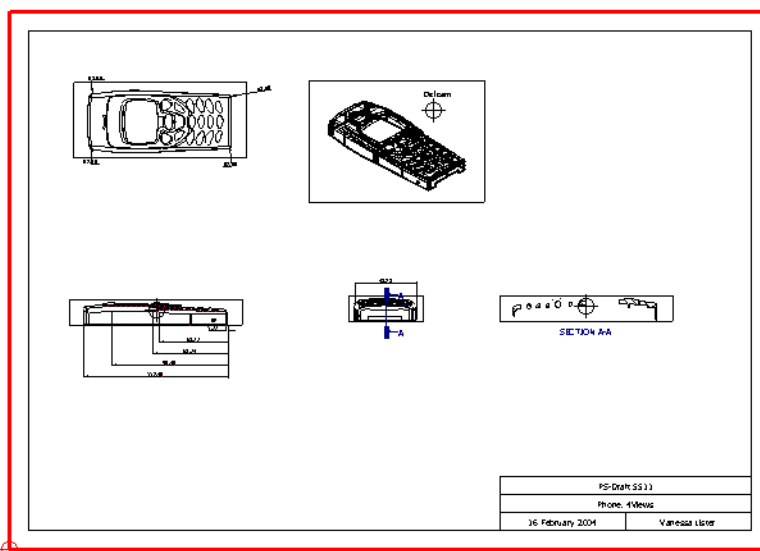
- 14 Click **Select**



The new section view has a label under it to match the labels on the centre line. This is to show where the section view was created.

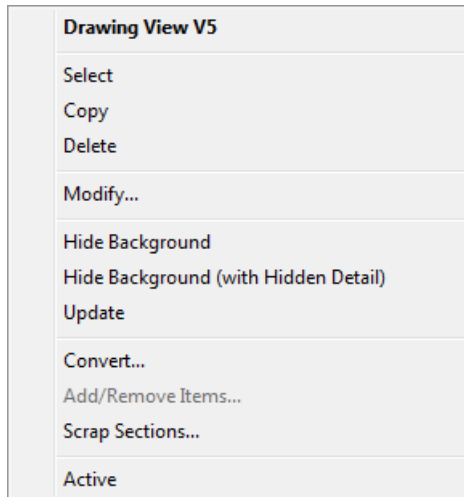


SECTION A-A

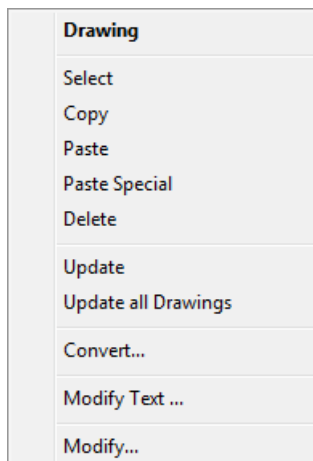


15. Copy and paste the section view

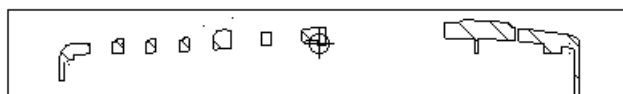
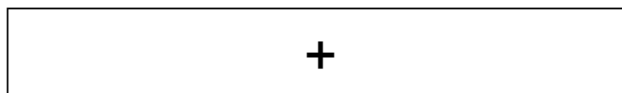
- 1 Right click in the section view created in step 14.



- 2 Click **Copy**.
- 3 Click in the drawing using the right mouse button.
- 4 Click **Paste Special**.

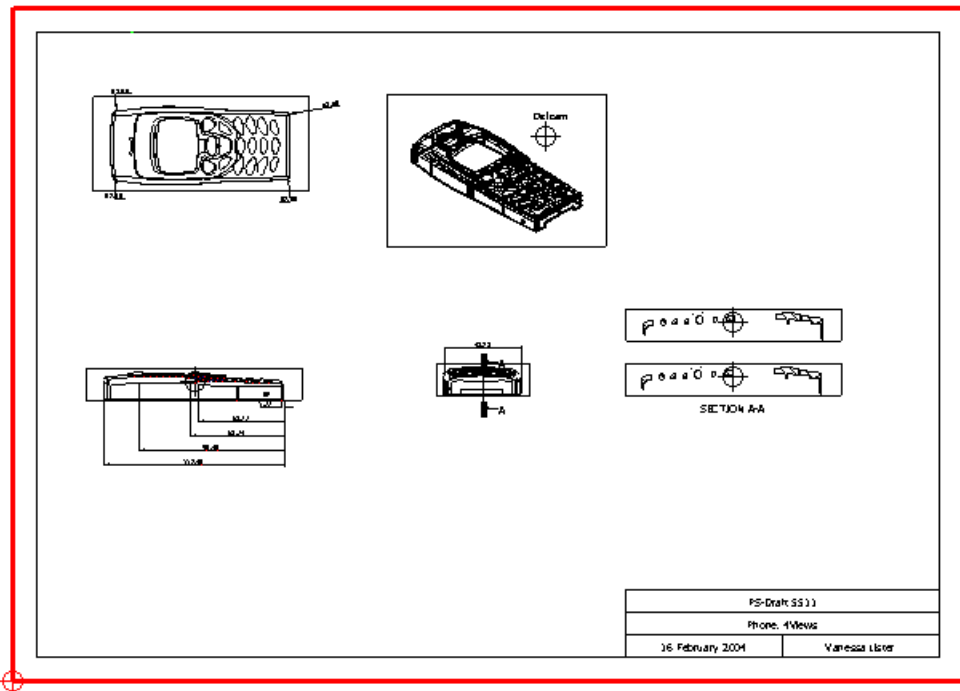


- 5 Click **Yes** in the **Query** pop-up window.
- 6 Move the cursor to place the view, as shown below.



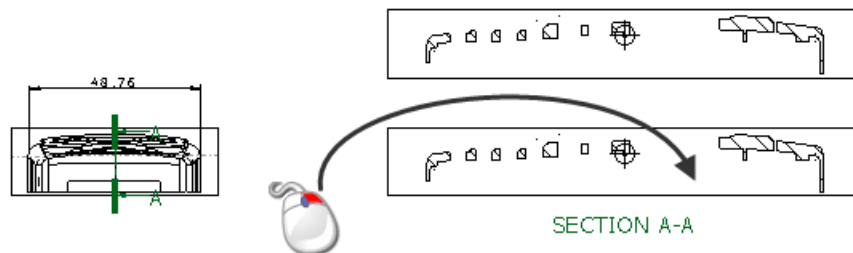
SECTION A-A

- 7 Click to fix the copied section view.



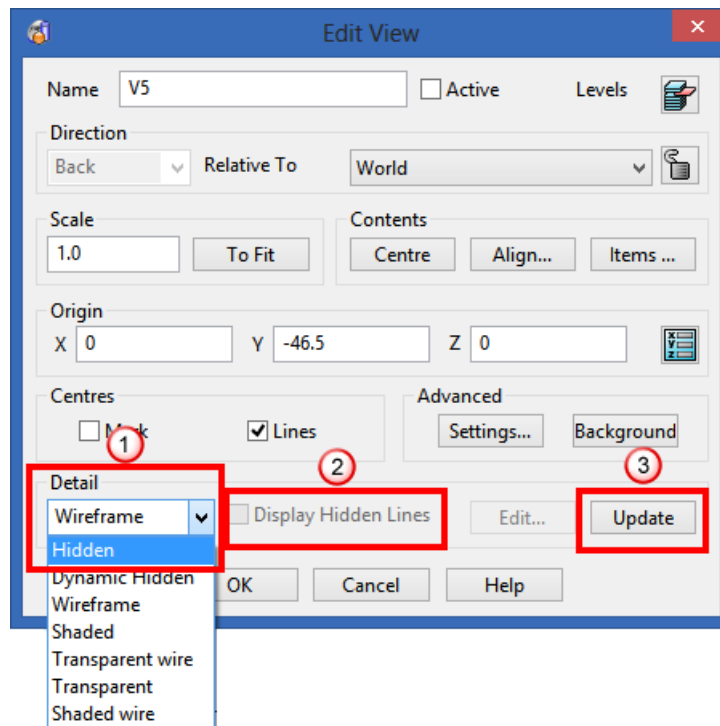
16. Edit the section view

- 1 Right click in the original section view.

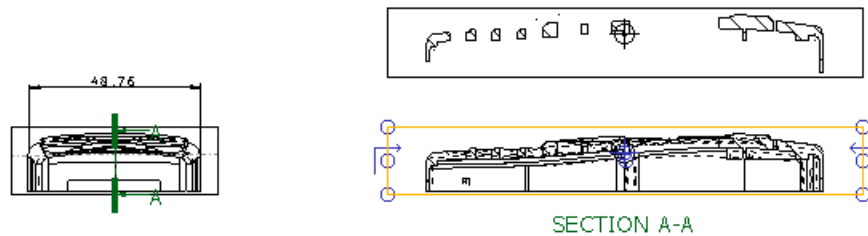


- 2 Click **Modify** from the pop-up menu.
The **Edit View** dialog is displayed.
- 3 Make the following changes:
 - ① Select **Hidden** from the **Detail** drop down list.
 - ② Select the **Display Hidden lines** option.

- 3 Click **Update**.



- 4 The section view is updated in the drawing.



- 5 Click **OK**.

- 6 Click **Select**



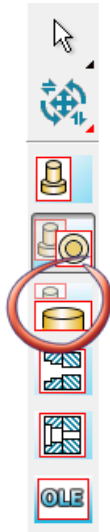
Creating and Editing a Limited View

17. Define the limited view

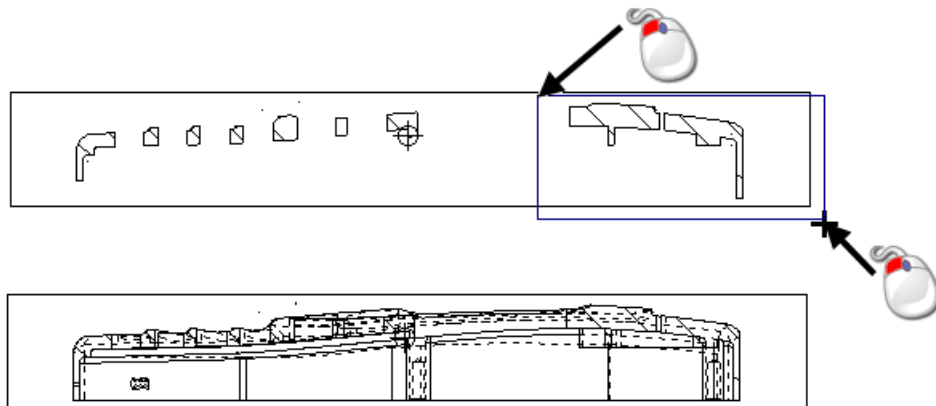
- 1 Click **View**



- 2 Click **Limited View** .



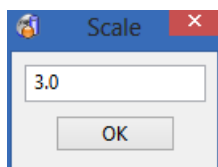
- 3 Click the left mouse button and drag a box, as shown below:
You must click inside the view boundary. Zoom in if necessary.



SECTION A-A

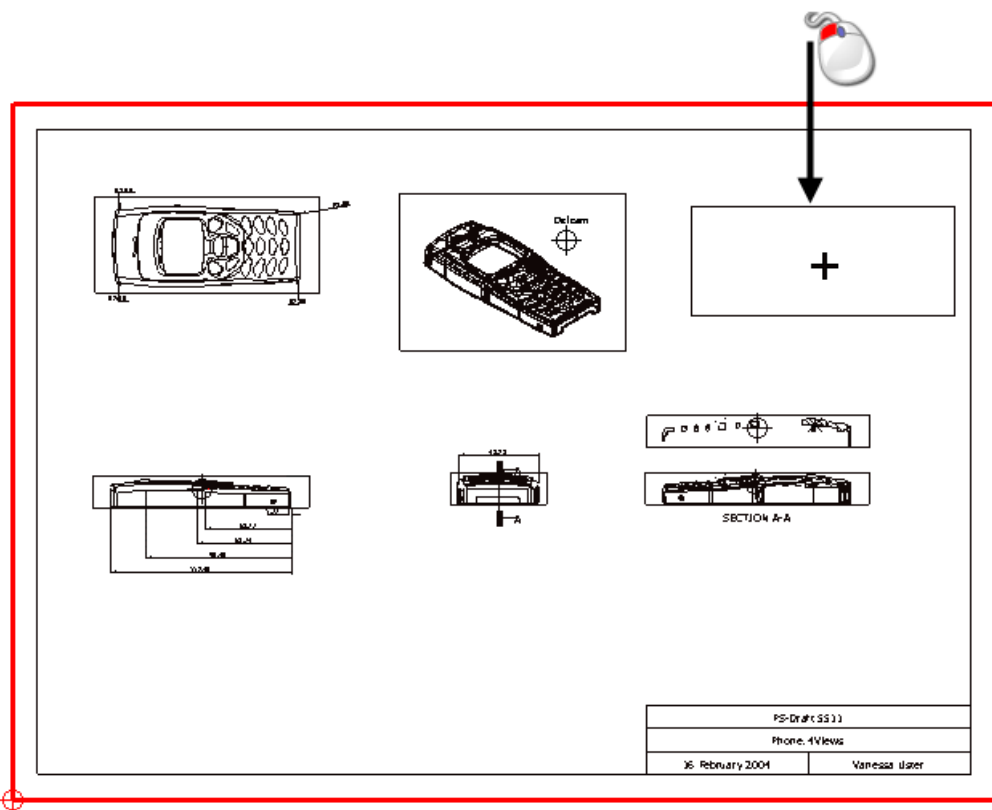
The **Scale** dialog is displayed.

- 4 Change the scale to **3**, as shown below:

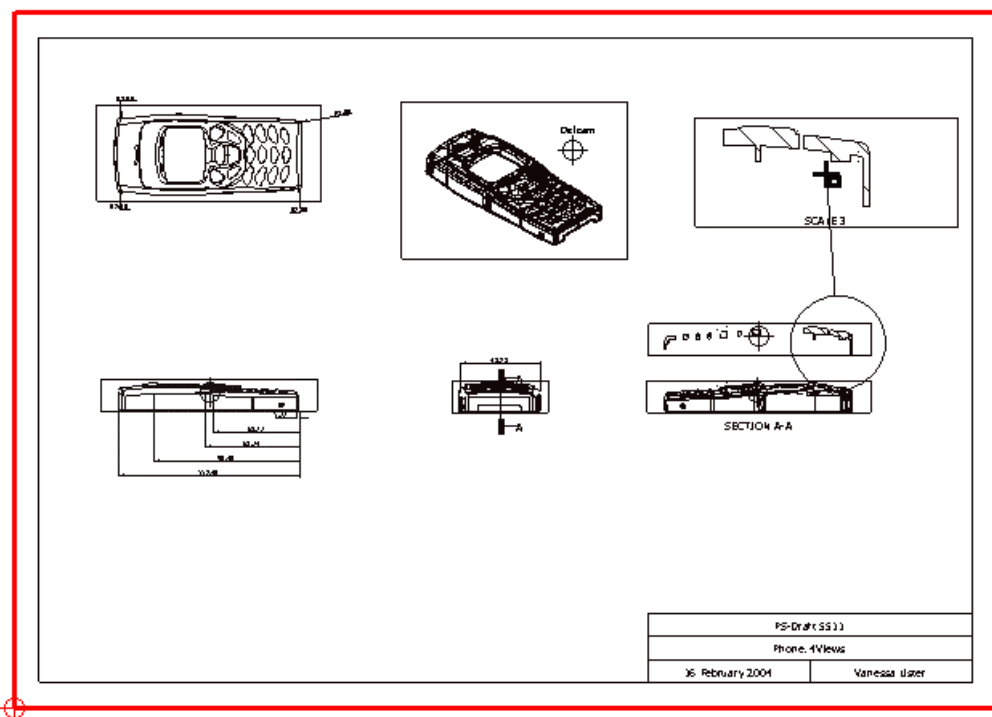


- 5 Click **OK**.

- 6 Move the cursor in the drawing as shown below.



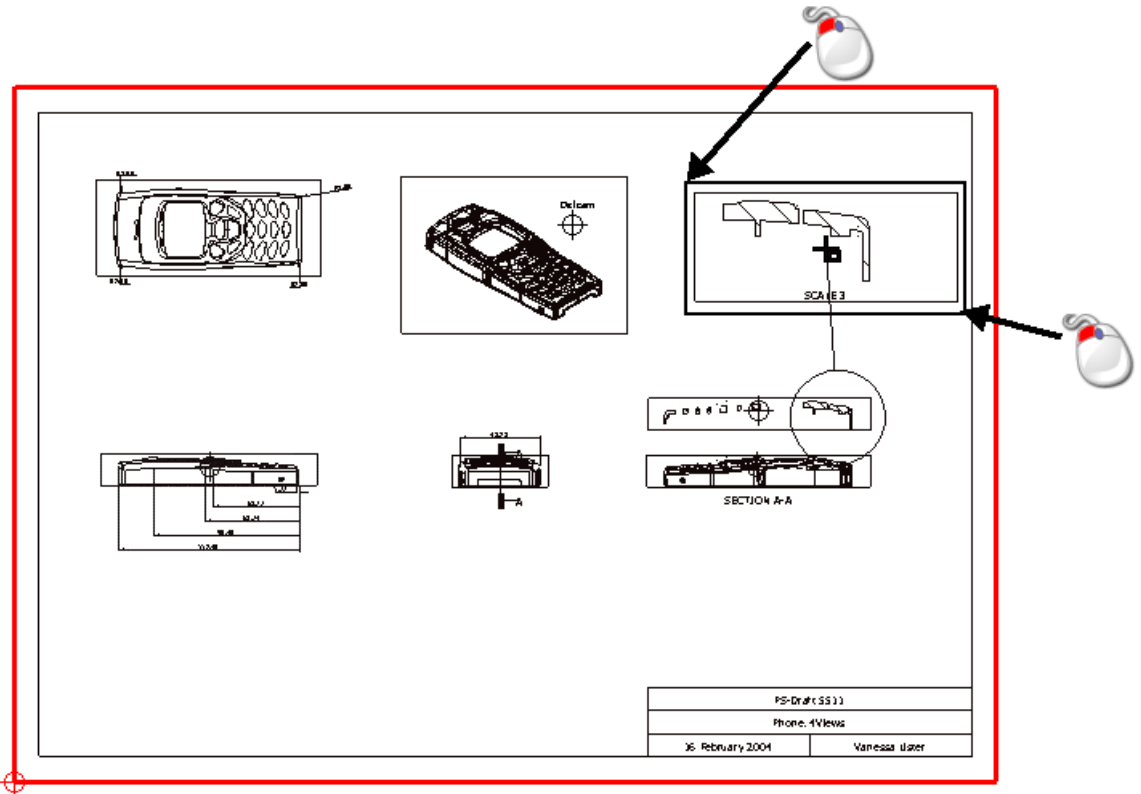
- 7 Click to fix the view.



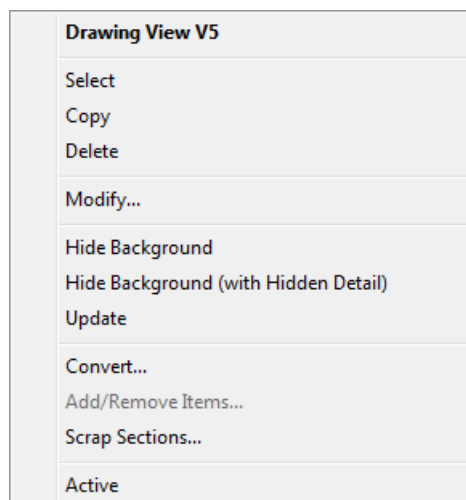
- 8 Click **Select** 

18. Edit the hatching

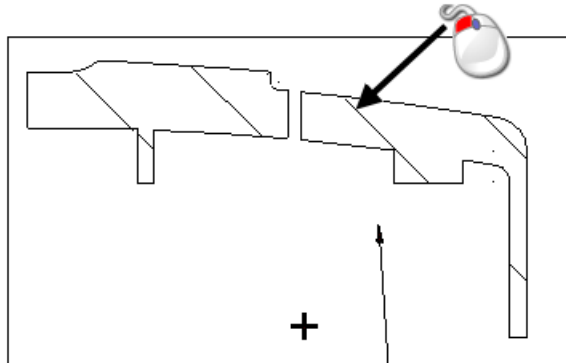
- 1 Click **Zoom to box Mode** .
- 2 Click the left mouse button and drag a box, as shown:



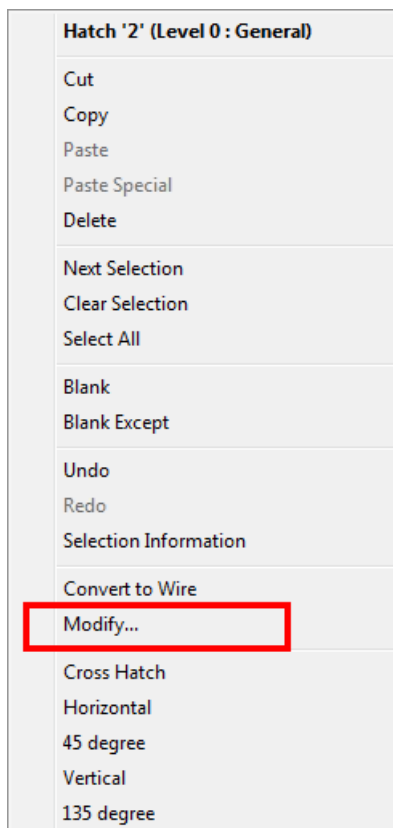
- 3 Right click in the limited view.
- 4 Click **Active**.



- 5 Select the original hatching, as shown below. Zoom in if necessary.

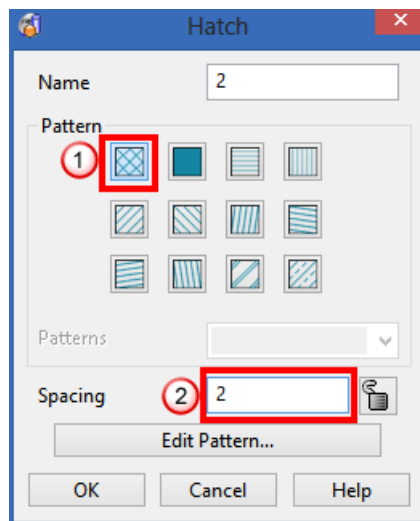


- 6 Right click on the hatched area.
- 7 Click **Modify**.

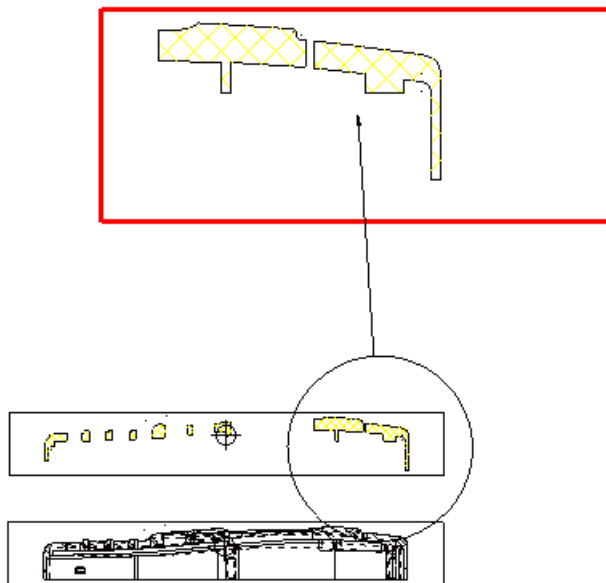


- 8 The **Hatch** dialog is displayed.
- 9 Make the following changes:
- ① Click **Cross Hatch** pattern.

② Change **Spacing** to 2.

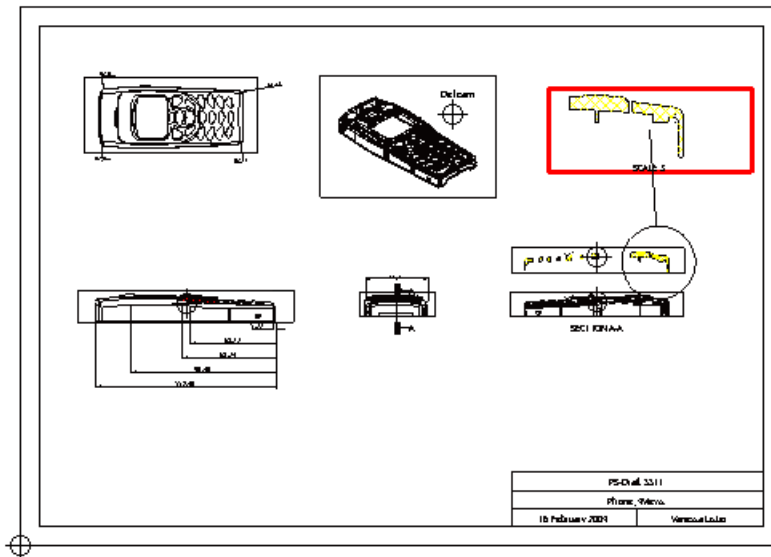


10 Click **OK**.



The modified hatching is displayed.

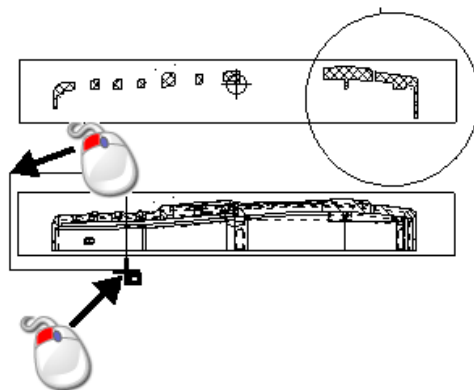
- 11 Click **Resize to Fit** .



Labelling an Object on the Drawing

19. Create a label balloon

- 1 Click **Zoom to box Mode** .
- 2 Click the left mouse button and drag a box, as shown:



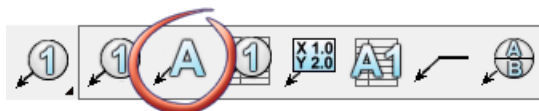
- 3 Click **Annotation** .



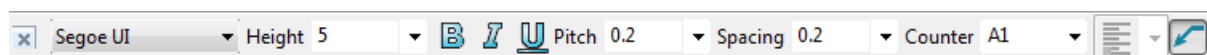
- 4 Click **Counter Balloon** using the right mouse button .



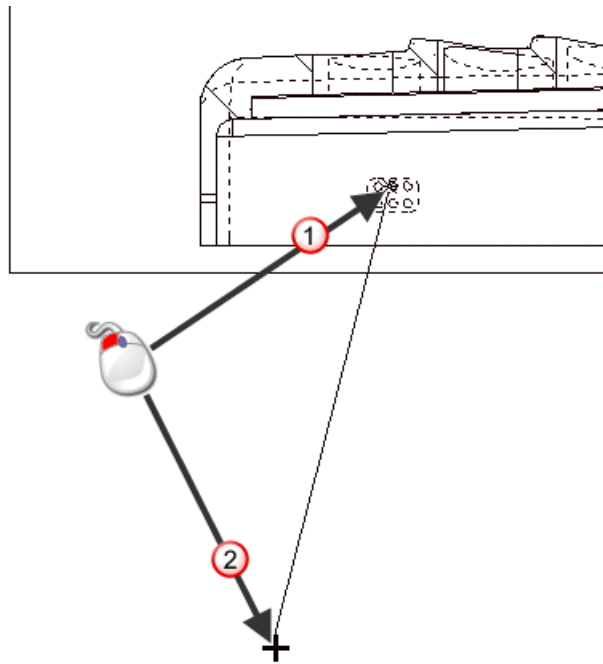
- 5 From the flyout, click **Label Balloon** .



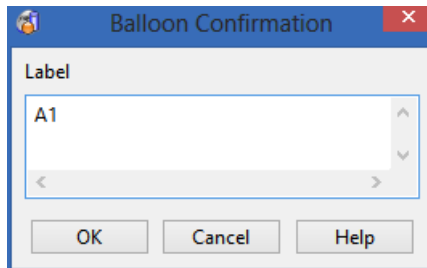
The **Text Editor** toolbar is displayed.



- 6 Click the two positions shown below.

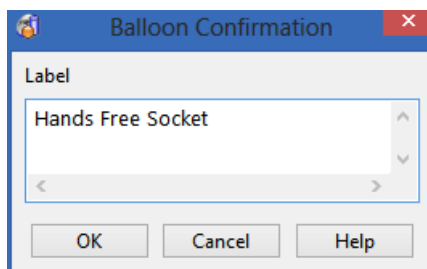


The **Balloon Confirmation** dialog is displayed.

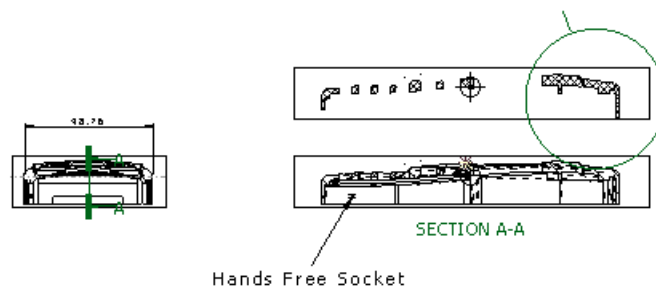


- 7 Change the label **A1** to the label below:

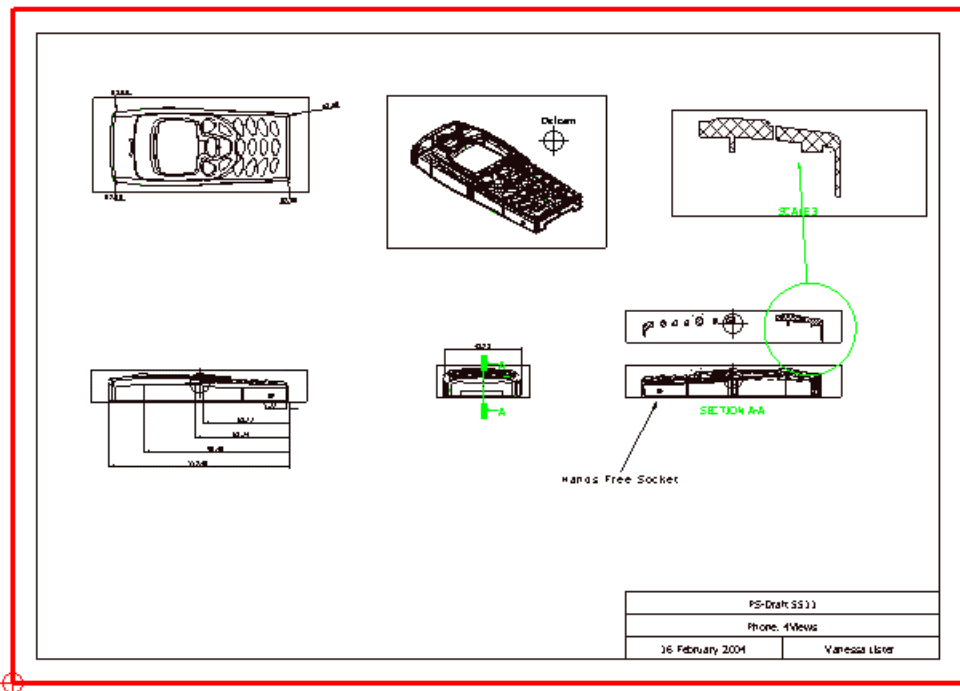
Hands Free Socket



8 Click **OK**.



9 Click **Resize to Fit** .



Summary

You have created an engineering drawing from a 3D model.

You have done the following:

- Entered the drafting module
- Created a drawing sheet
- Edited a drawing sheet
- Added a title block to the drawing
- Created different drawing views of the model
- Added different dimensions to the views
- Added a title to a view

- Edited text
- Copied and Pasted views
- Changed the scale of a view
- Edited hatching
- Created a label balloon
- Created a symbol definition
- Created a symbol