
PowerSHAPE 2016 R1

Tutorials Manual

Direct modelling of a solid



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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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Direct modelling of a solid

Moving regions

1. Move a face to extend a plate




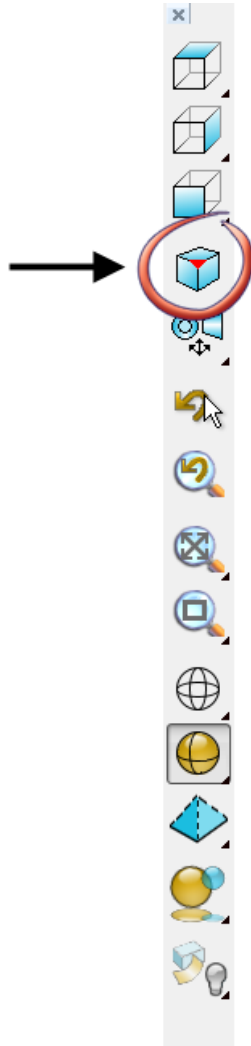
If you do not have the licence required for the commands in this tutorial*, go to the next step in the tutorial and click **Import Data (solid_dm.psmodel)**.


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

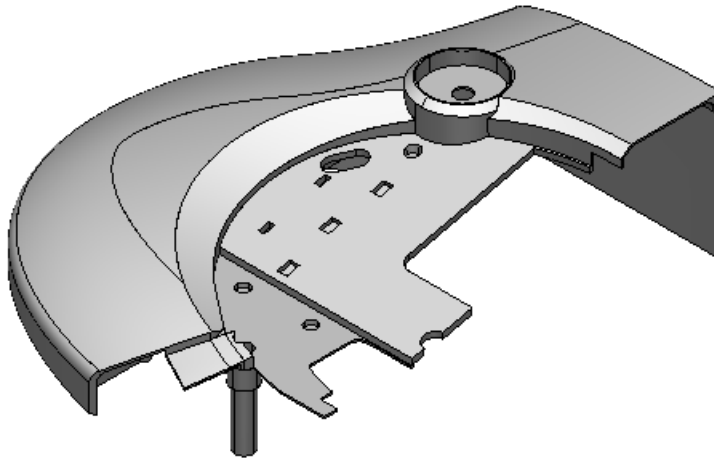
The model will then be provided with the correct data and you will be able to complete the tutorial.

*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 **View ISO1** using the right mouse button .

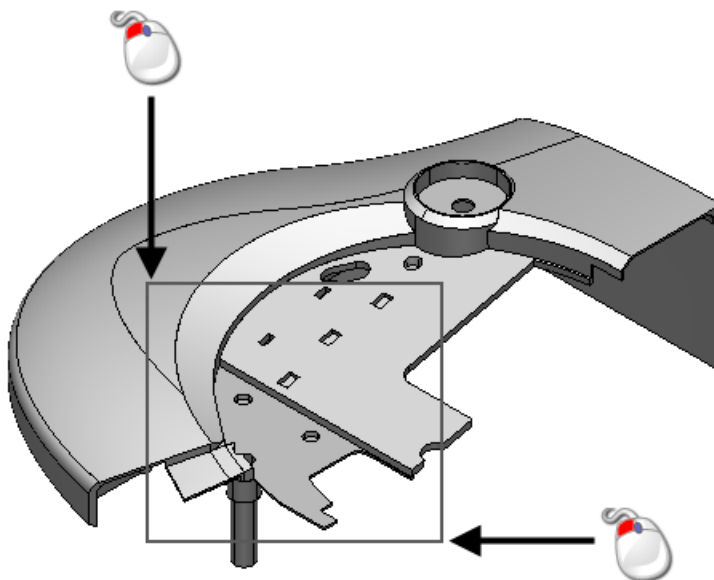


- 2 From the flyout, click **View ISO2** .



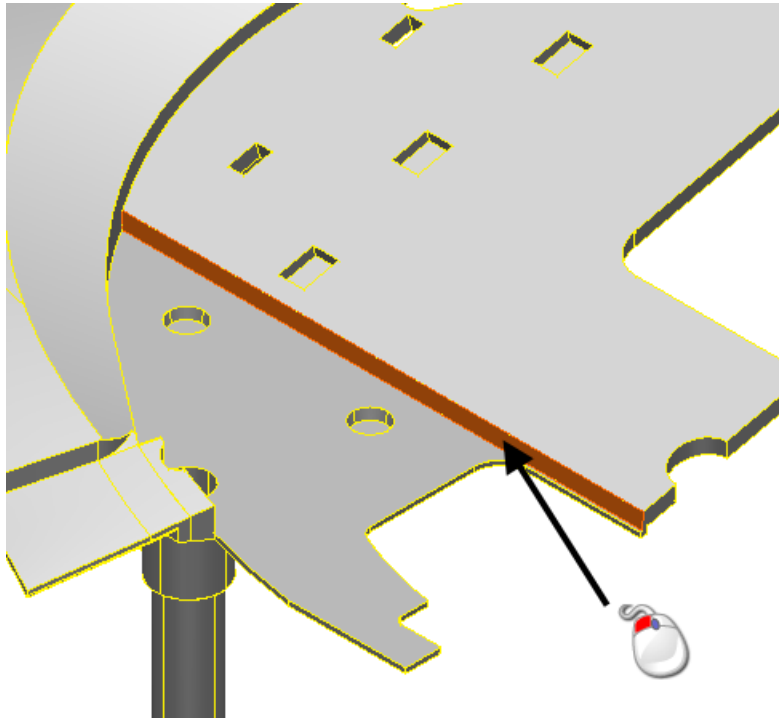
- 3 Click **Zoom to box Mode** .

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



- 4 Click the solid.

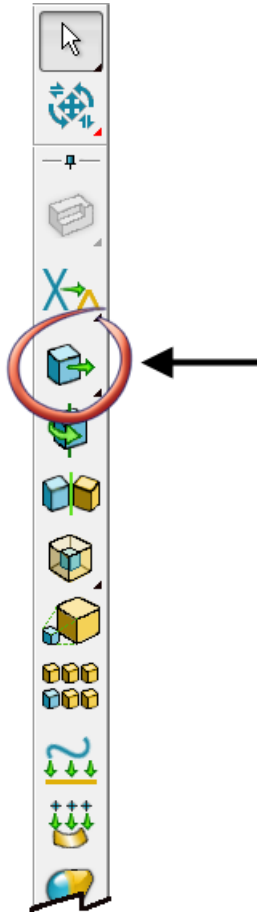
5 Click the face shown below:



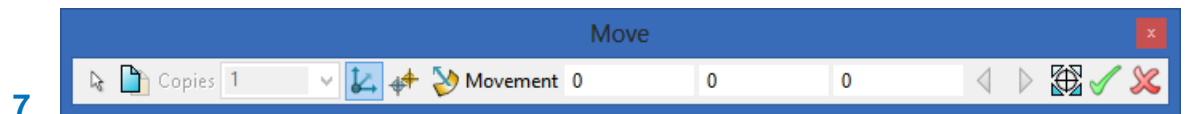
The Solid edit toolbar is displayed.



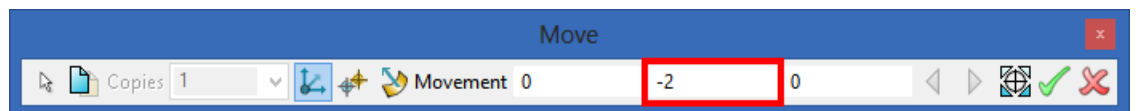
- 6 Click **Move/copy items** .



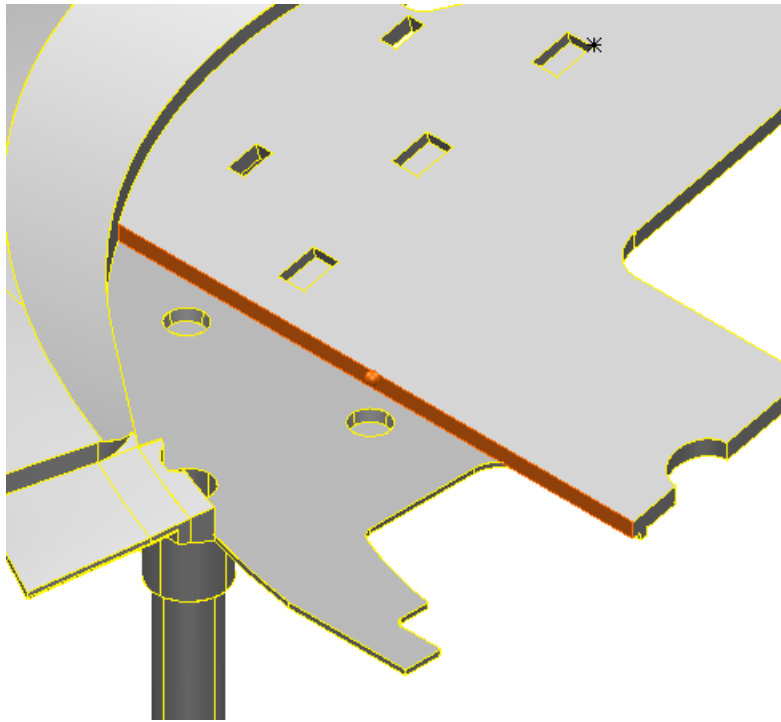
The **Move** toolbar is displayed.



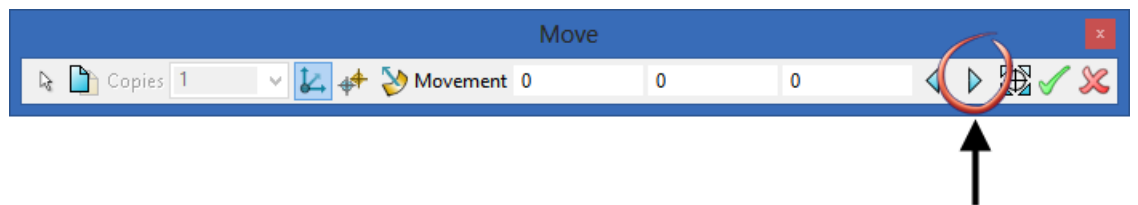
Enter **-2** in the **Y axis**.



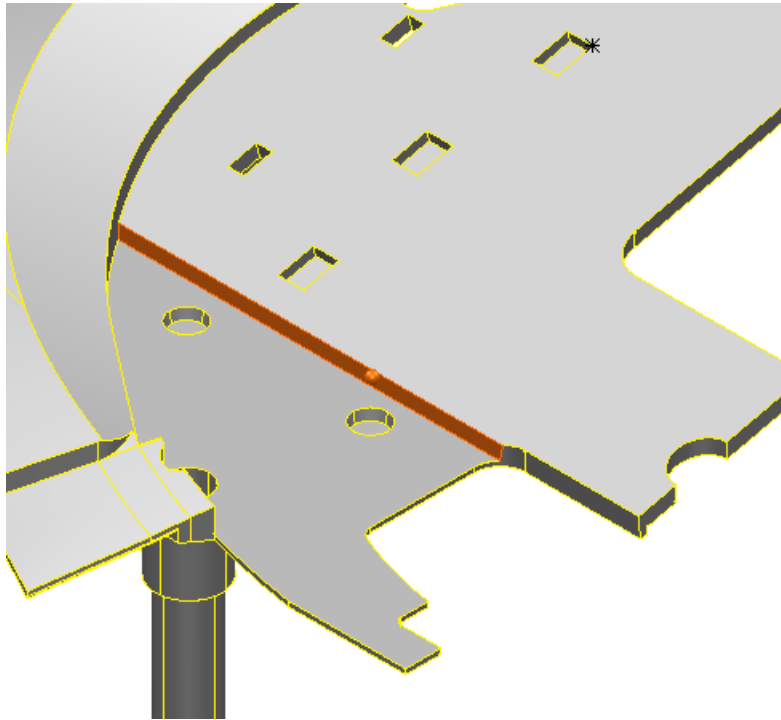
8 Click **Apply** .



9 Click **Next solution** three times.



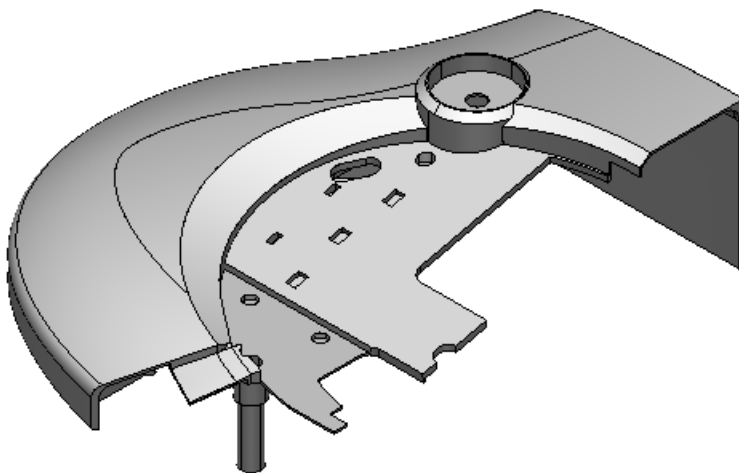
This cycles through the different solutions of the move command.



10 Click **Dismiss** .

11 Click anywhere in the graphics window to deselect the model.

12 Click **Resize to Fit** .

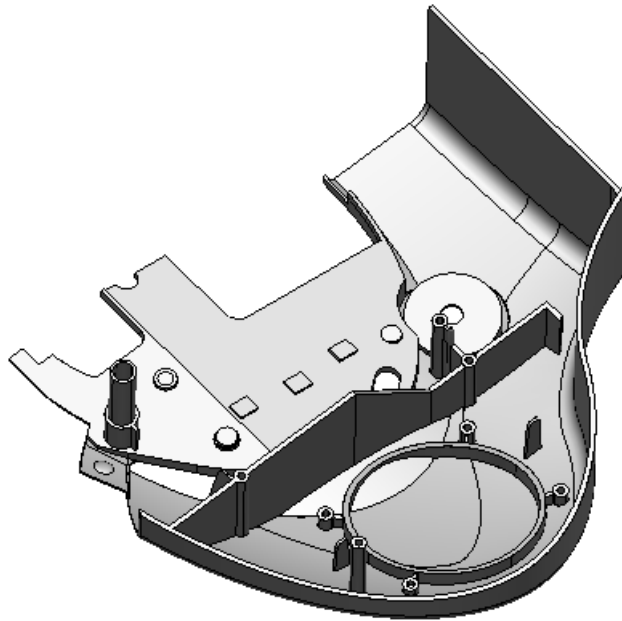


2. Move faces to lower a hole

- 1 Click **Zoom to Box Mode**  using the right mouse button.
- 2 From the flyout, click **Rotate** .

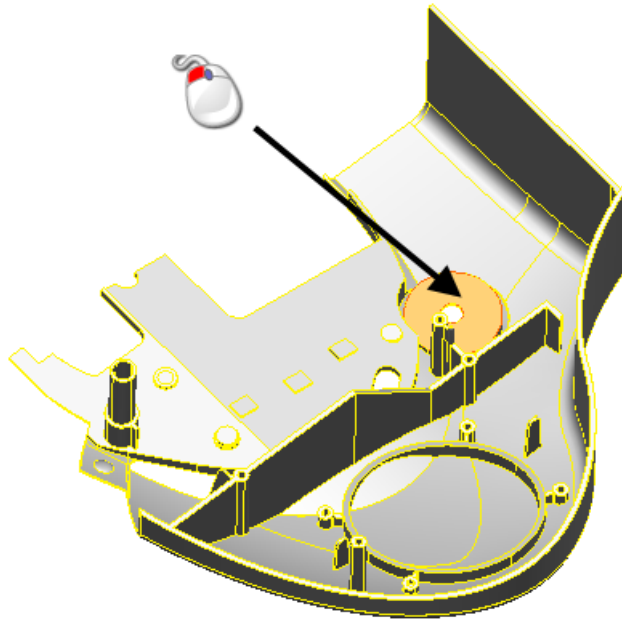



- 3 Click the left mouse button and drag, to rotate the model to display the view shown below:



- 4 Click the solid.

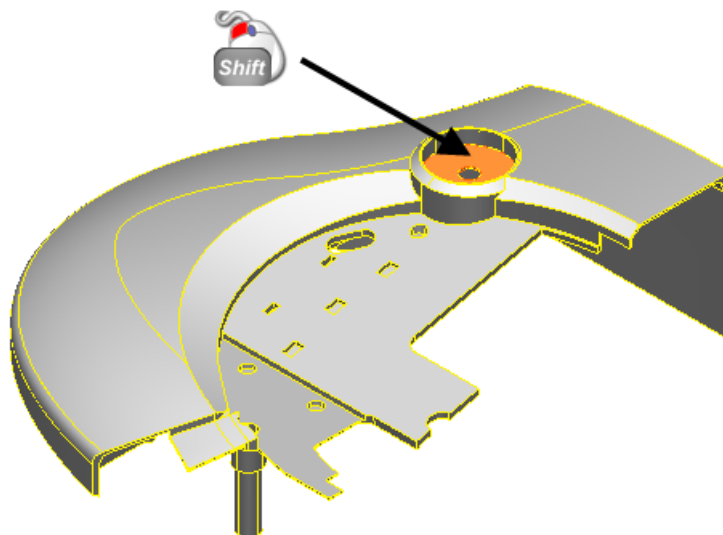
5 Click the face shown below:



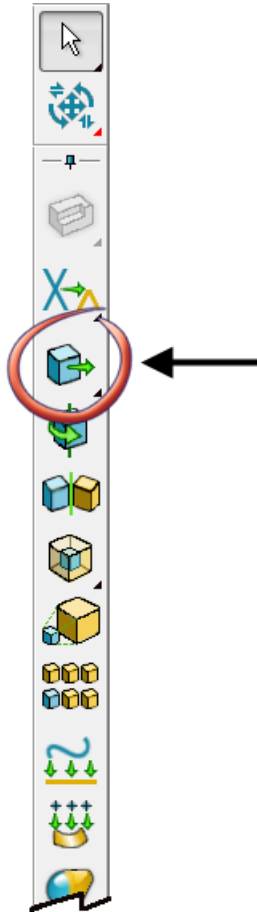
6 From the flyout, click **View ISO2** .



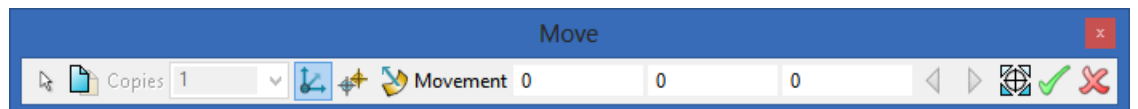
7 Hold down the **Shift** key and click the face.



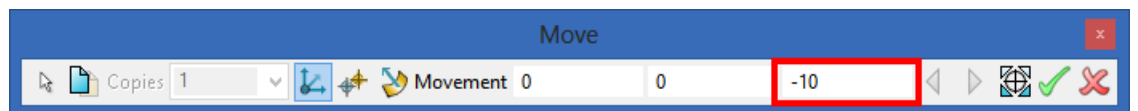
- 8 Click **Move/copy items** .



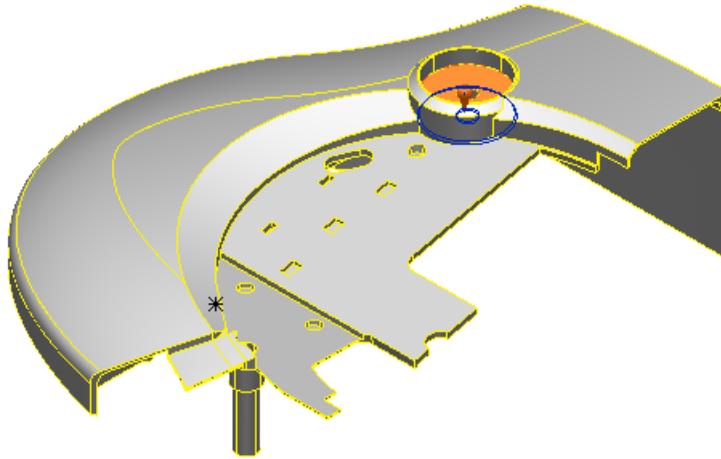
The **Move** toolbar is displayed.



- 9 Enter **-10** in the **Z axis**.



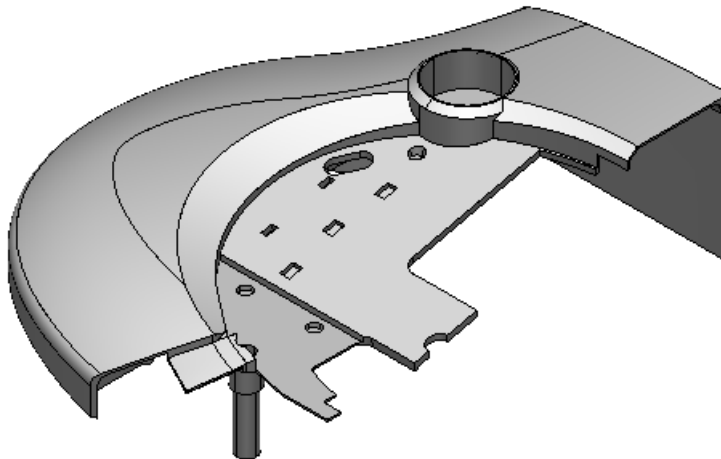
The preview of the move transform is drawn on the model.



10 Click **Apply** .

11 Click **Dismiss** .

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

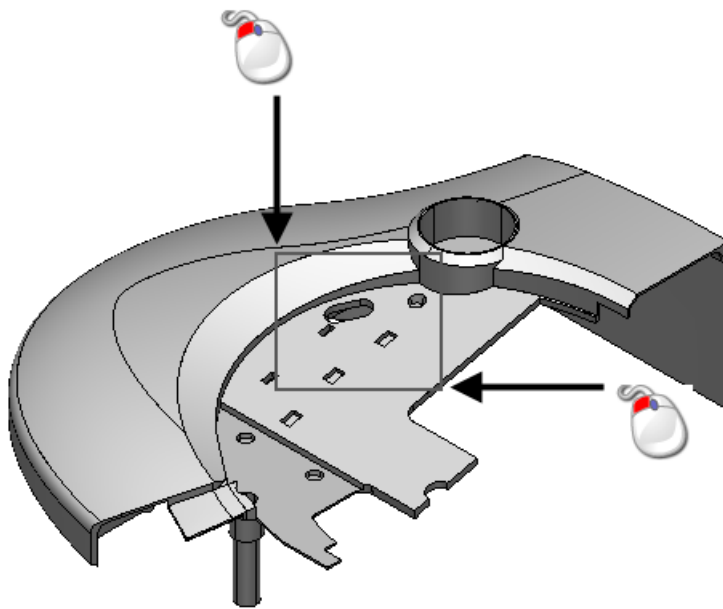


Changing the shape and position of a region

3. Create a positional workplane

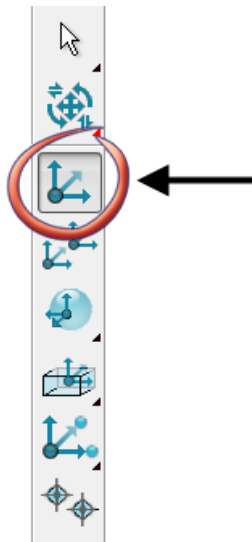
1 Click **Zoom to box Mode** .

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

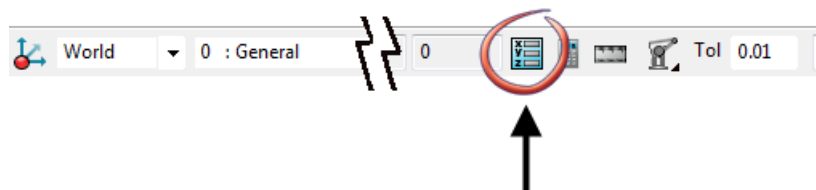


- 3 Click **Workplane** .

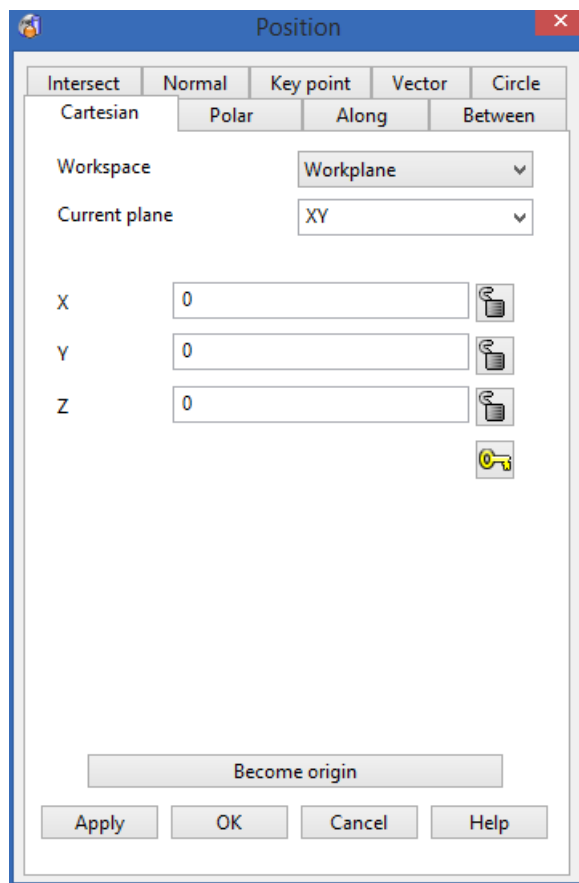
- 4 Click **Single workplane** .



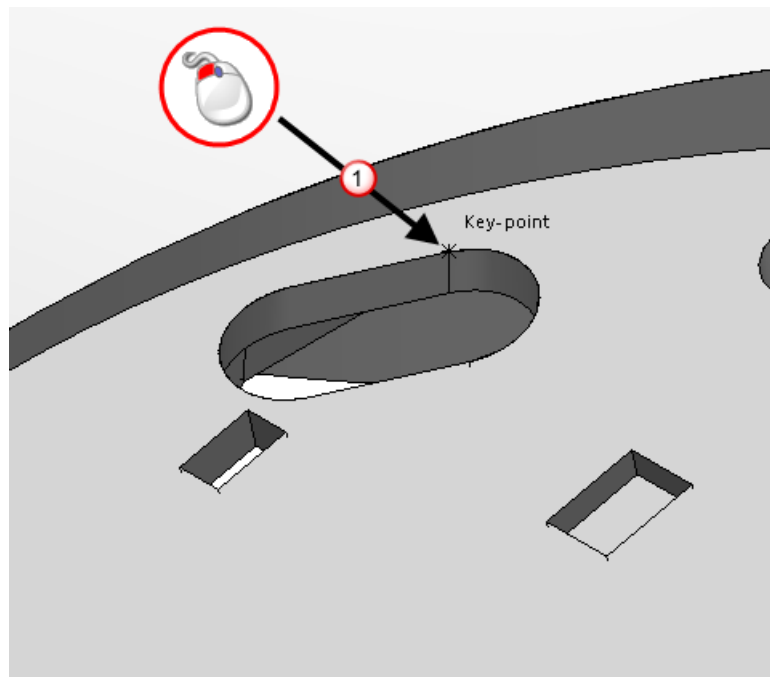
- 5 From the status bar, click **Open the Position dialog** .



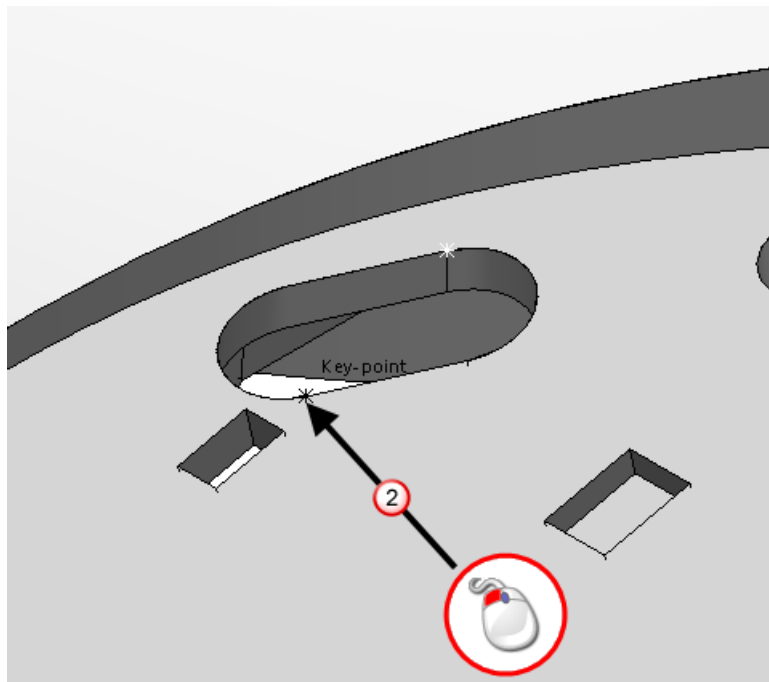
The **Position** dialog is displayed.



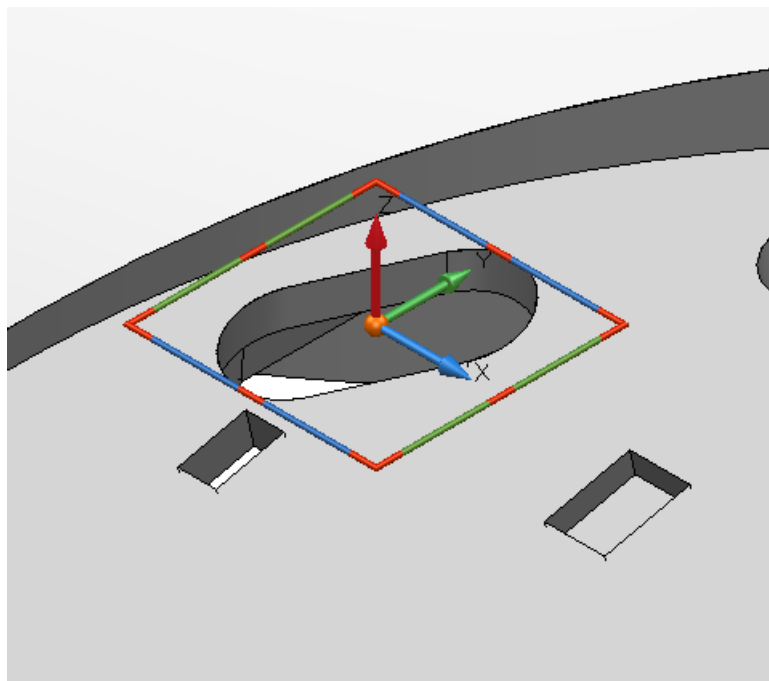
- 6 Click the **Between** tab.
- 7 When *Key-point* displays, click the left mouse button. ①



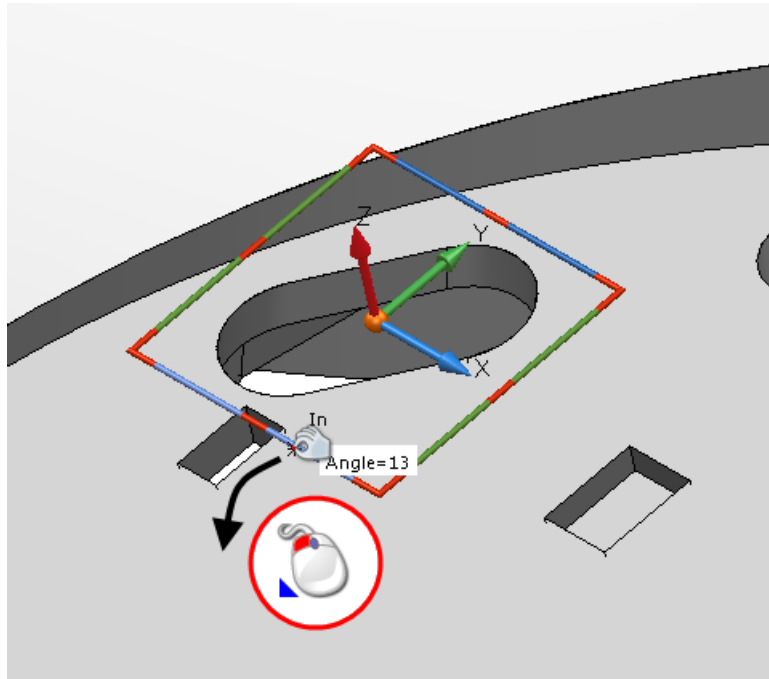
- 8 When *Key-point* displays, click the left mouse button. ②



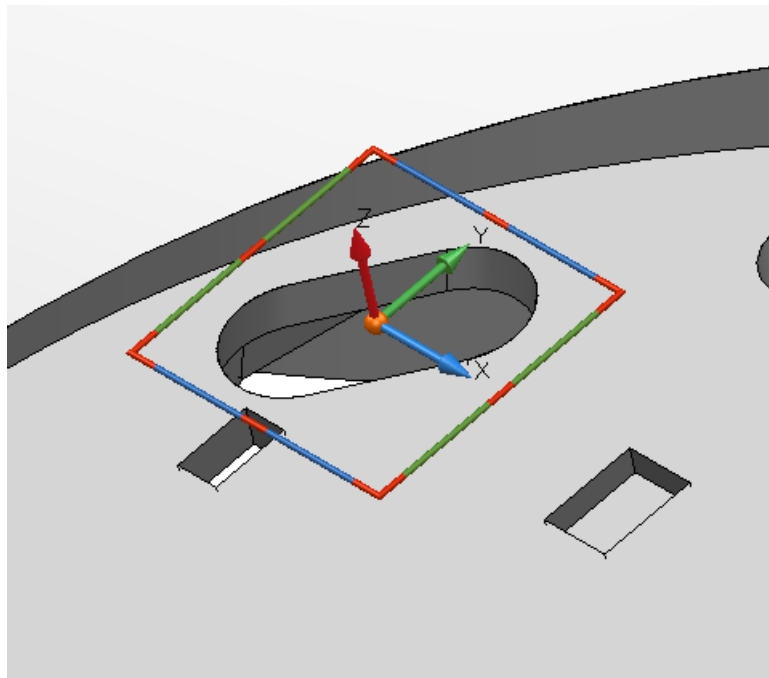
- 9 Click **OK**.



- 10 Click and drag the blue X axis rotation handle until an angle of 13 is displayed.




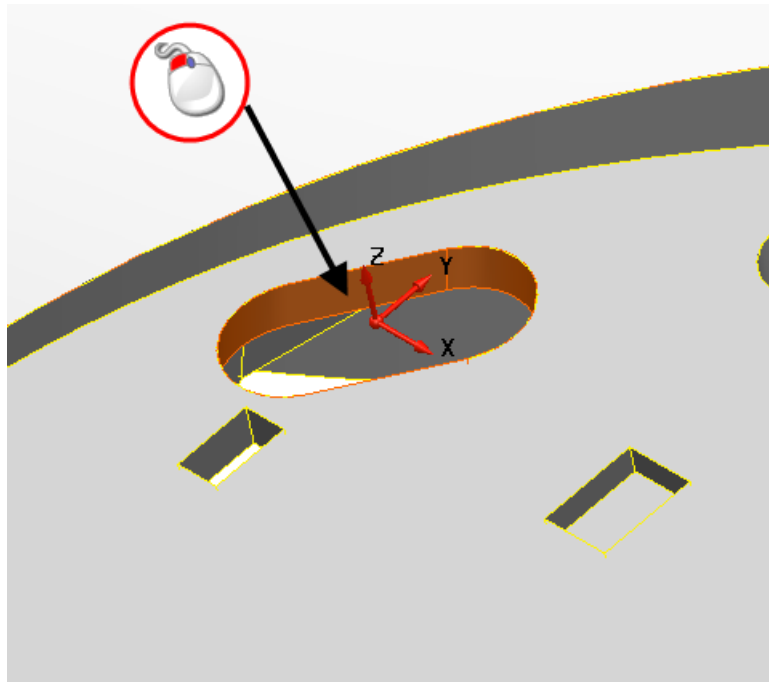
The workplane is positioned on the model and can be used to aid the editing of the faces of the solid.



4. Scale faces to reduce the region

- 1 Click the solid.

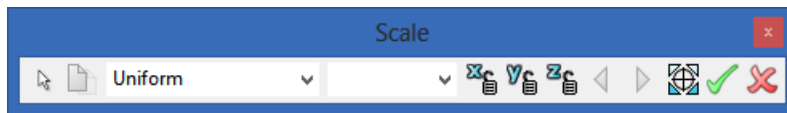
- 2 Click **Select faces of continuous regions** .
- 3 Click the face shown below:



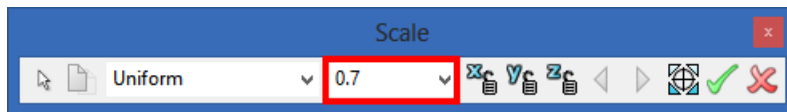
- 4 Click **Scale items** .



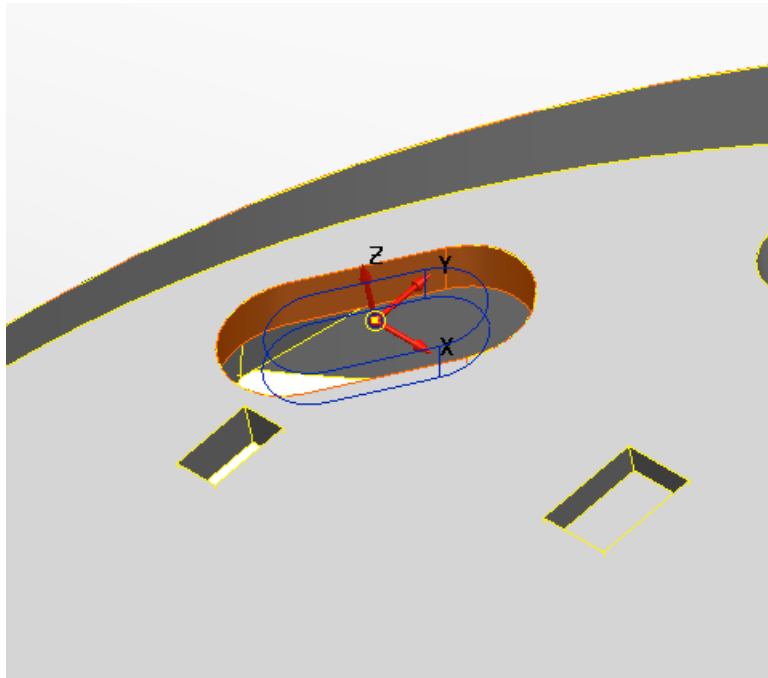
The **Scale** toolbar is displayed.



- 5 Enter a **Uniform scale factor** of **0.7**.

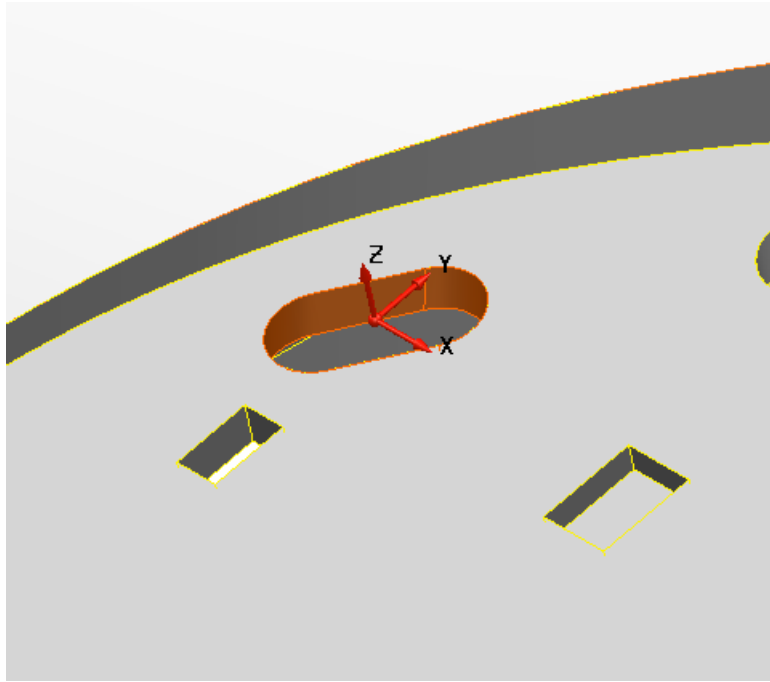


A preview of the scale is drawn on the model.



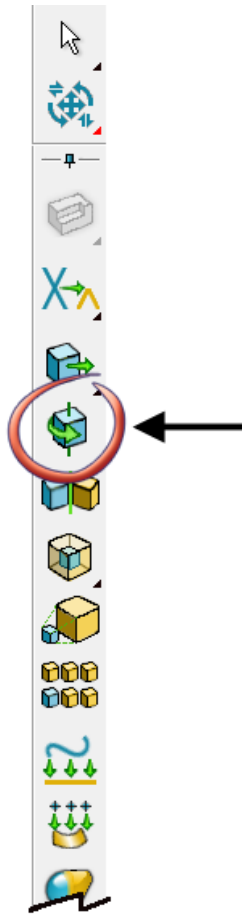
- 6 Click **Apply** .

7 Click **Dismiss** .

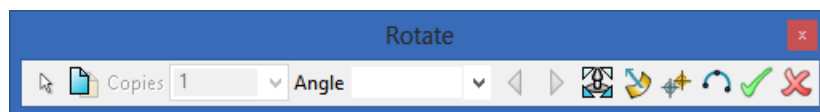


5. Rotate faces

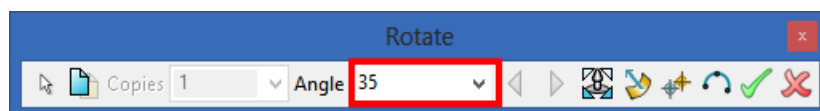
- 1 Click **Rotate items** .



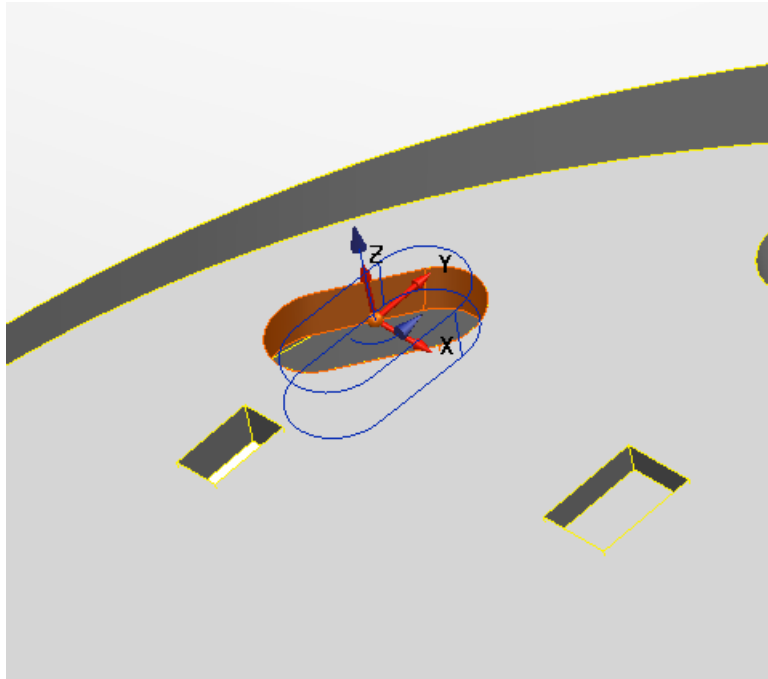
The **Rotate** toolbar is displayed.






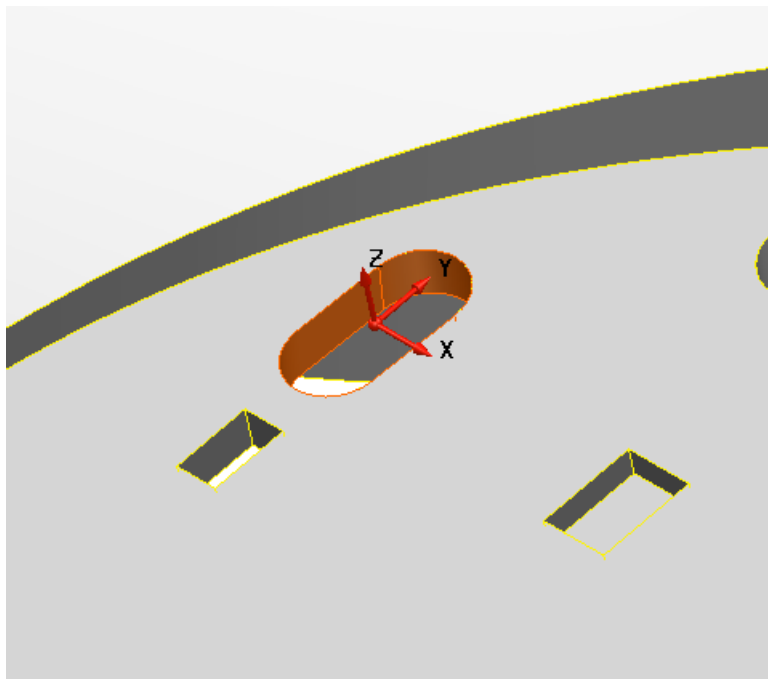
- 2 Enter an **Angle** of **35**.



A preview of the rotation is drawn on the model.



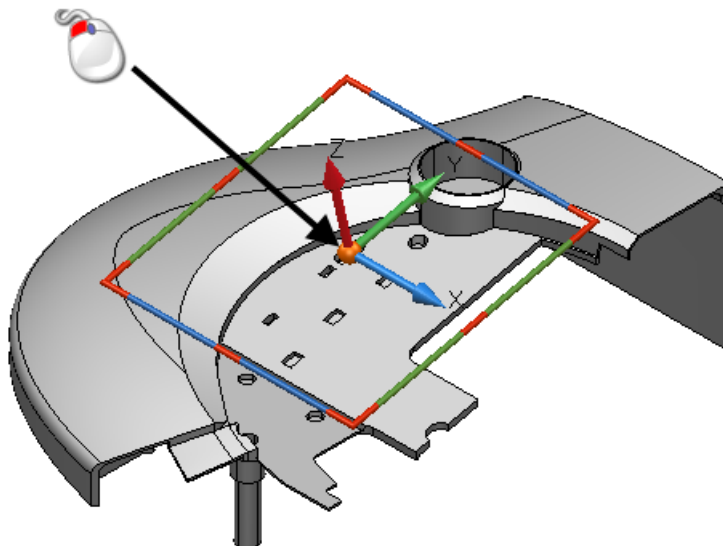
- 3 Click **Apply** .
- 4 Click **Dismiss** .
- 5 Click **Select** .



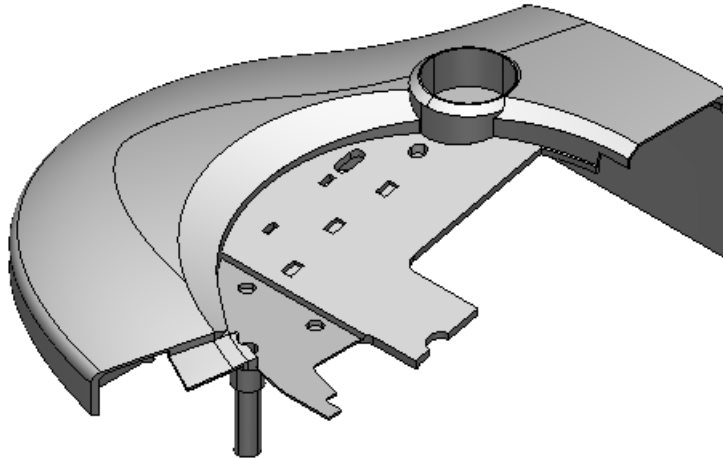
- 6 Click **Resize to Fit** .



- 7 Click anywhere in the graphics window to deselect the model.
- 8 Click the workplane.



- 9 Click **Delete** .



Removing faces from the solid

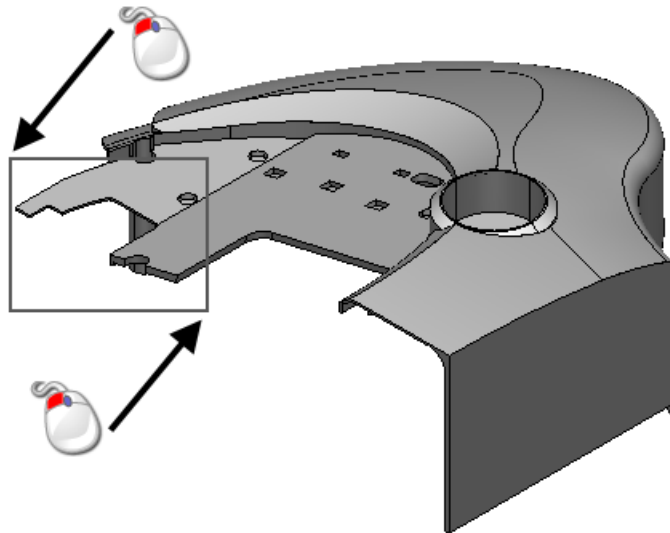
6. Remove and heal some faces

- 1 Click **View ISO3** .



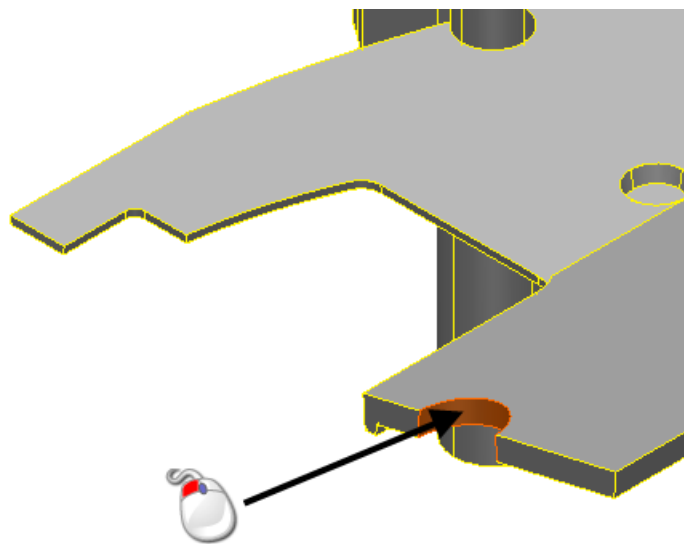
- 2 Click **Zoom to box Mode** .

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



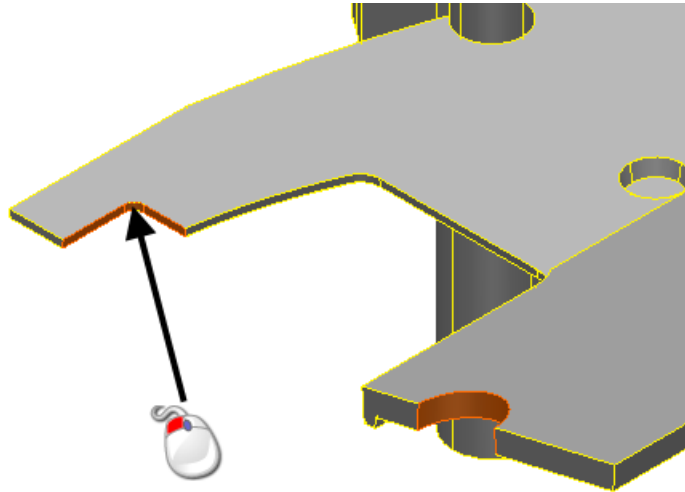
- 4 Click the solid.


- 5 Click the face shown below:

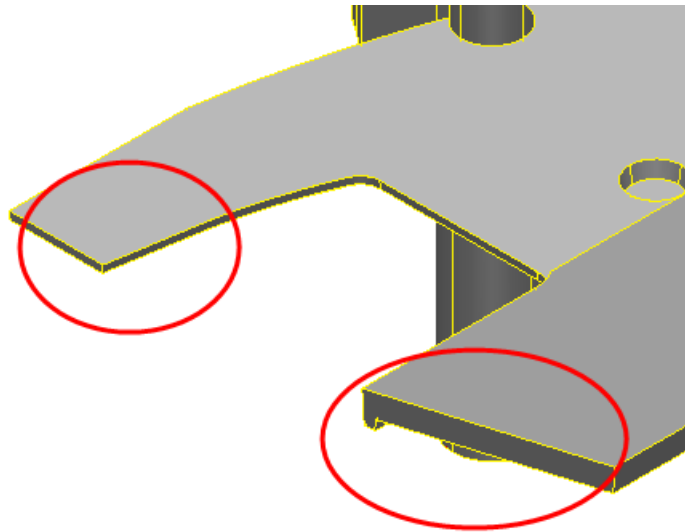


- 6 Click **Select faces of continuous regions** .


- 7 Hold down the **Shift** key and click the face.

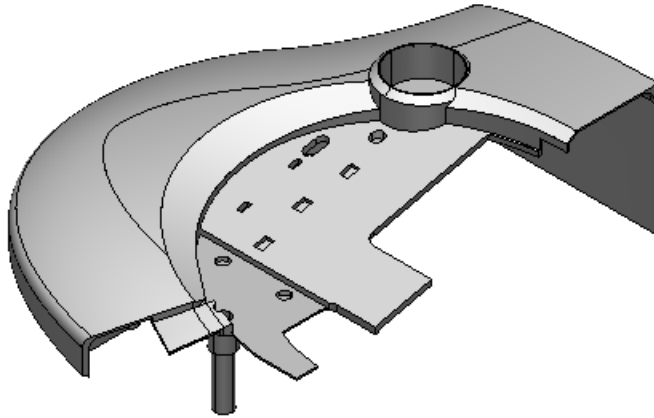


- 8 Click **Remove** and heal the selected faces .



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

10 From the flyout, click **View ISO2** .



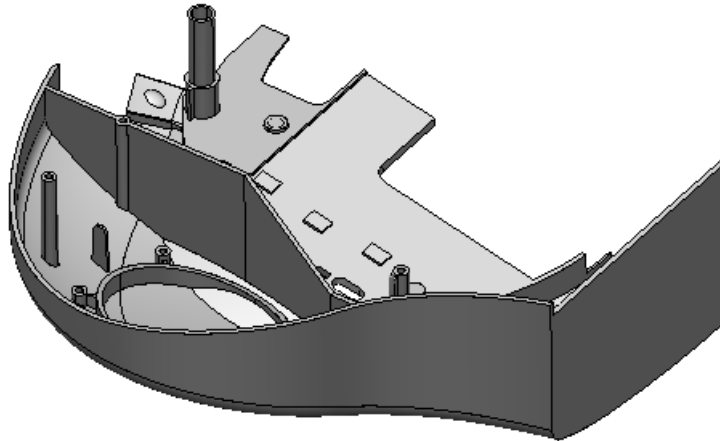
Changing the position of a locating rib

7. Divide a face

- 1 Click **Zoom to Box Mode**  using the right mouse button.
- 2 From the flyout, click **Rotate** .

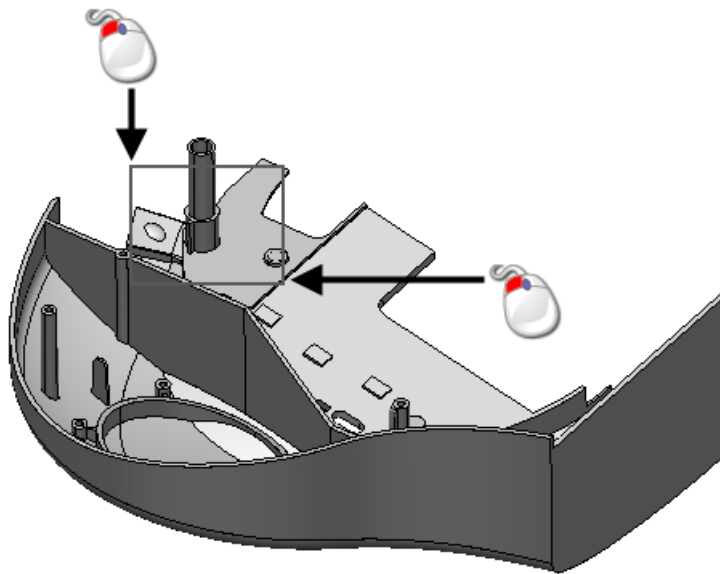


- 3 Click the left mouse button and drag, to rotate the model to display the view shown below:



- 4 Click **Zoom to box Mode** .

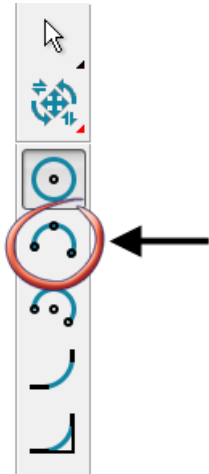
- 5 Click the left mouse button and drag a box, as shown:



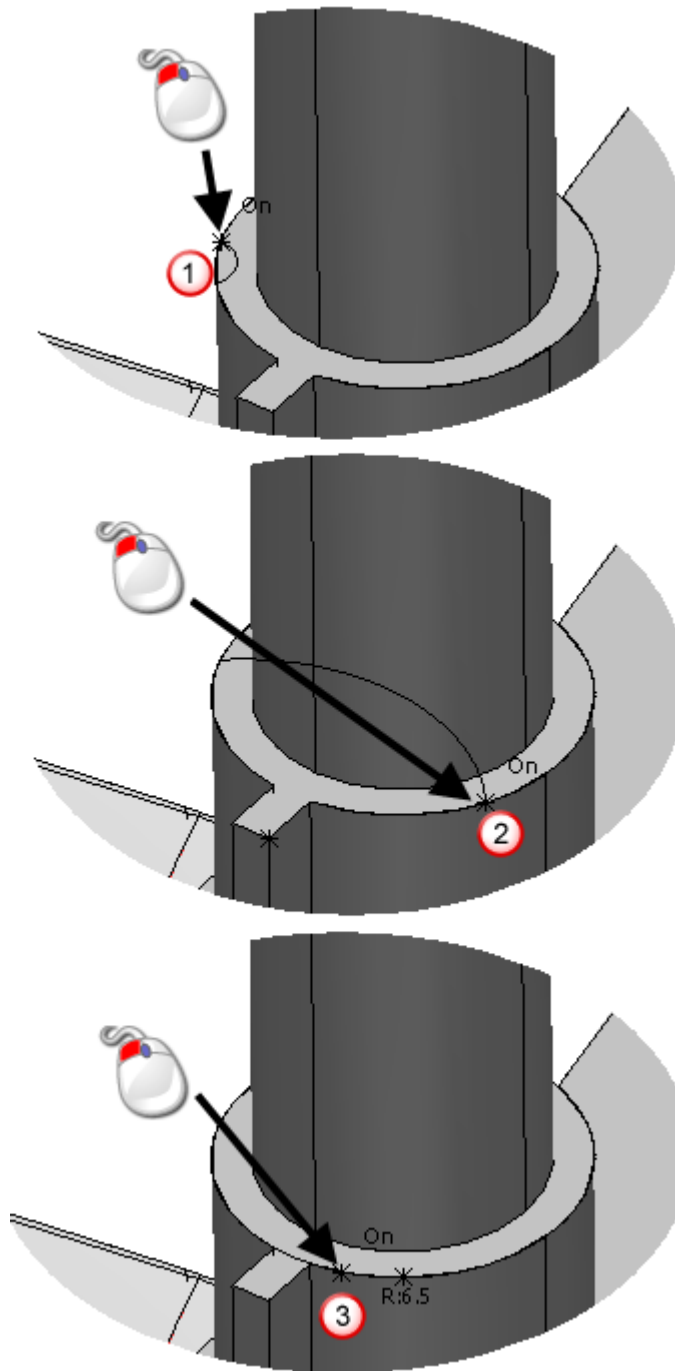
- 6 Click **Arc** .



- 7 Click **Create an arc through three points/items** .

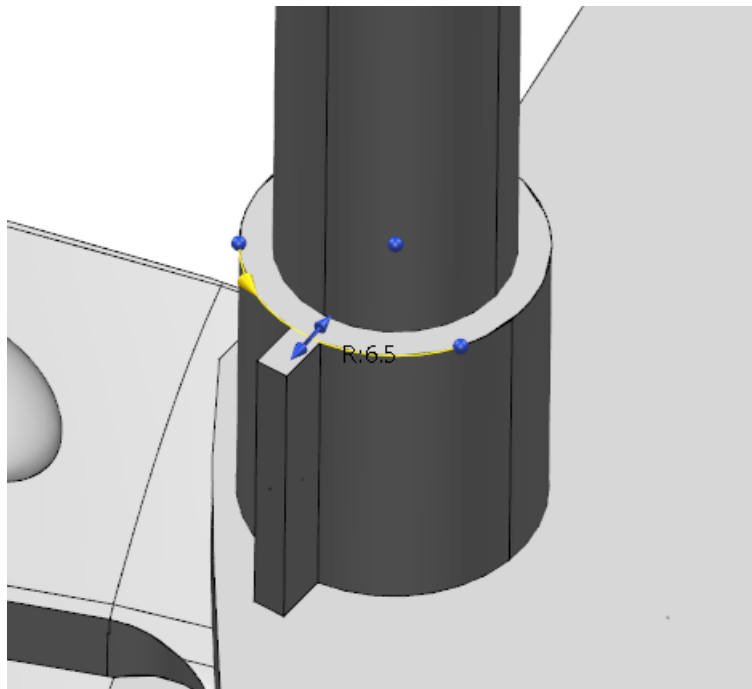


- 8 Click 3 points on the edge of the face shown below:



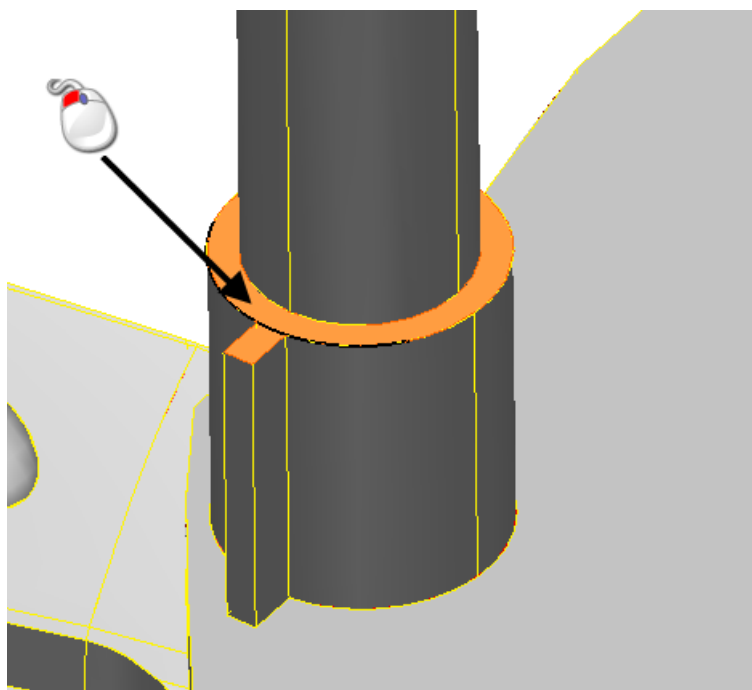
- 9 Click **OK**.

10 Click **Select** .



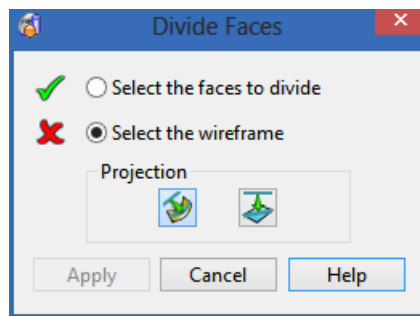
11 Click the solid.

12 Click the face shown below:



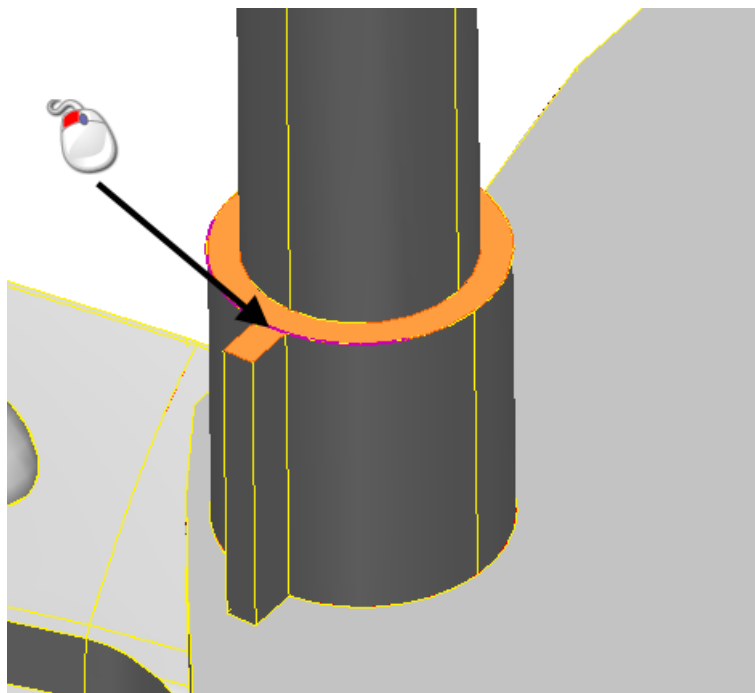
13 Click **Divide faces of a solid using wireframe** .

The Divide faces dialog is displayed.



Select the wireframe is active ready for the wireframe used to divide the face to be selected.

14 Click the arc.



15 Click **Project wireframe along principal axis of active workplane** .

16 Click **Apply**.

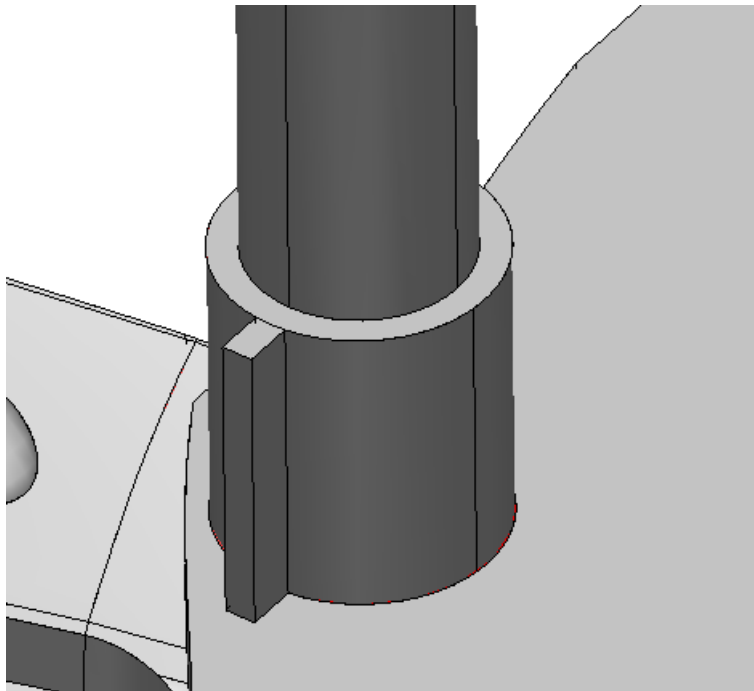
17 Click **Cancel**.

18 Click **Quick select all wireframes** .



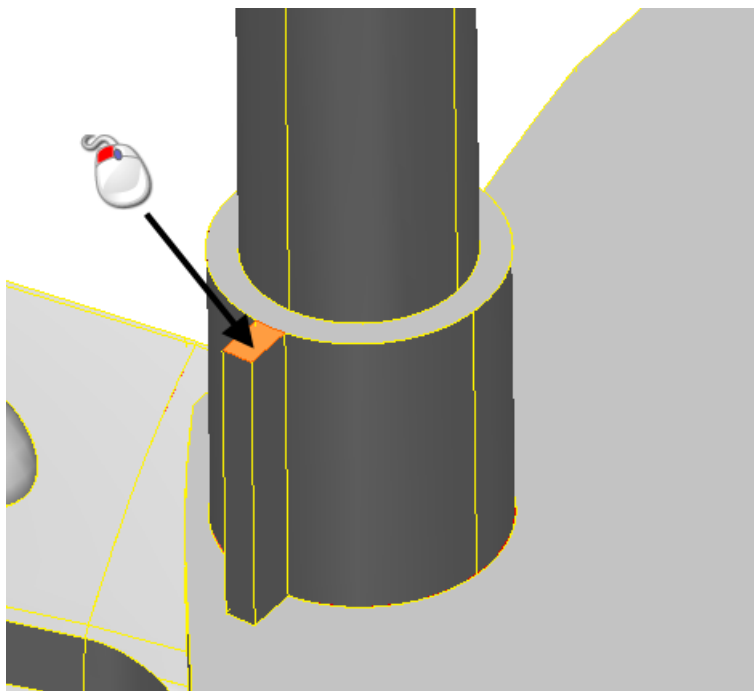
19 Click **Delete** .

The single face has been divided into two faces.

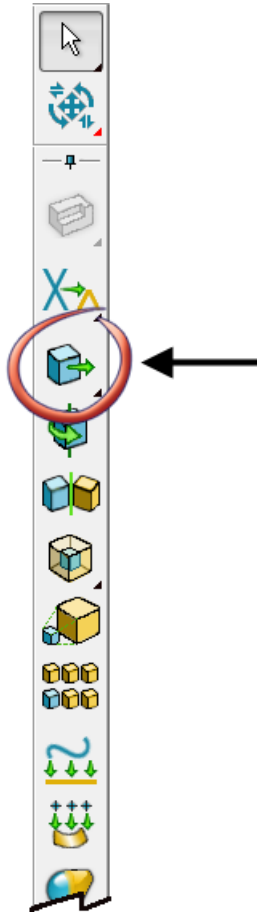


8. Move a face

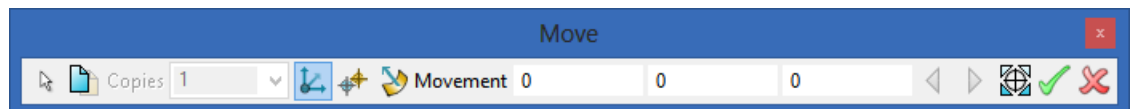
- 1 Click the solid.
- 2 Click the face shown below:



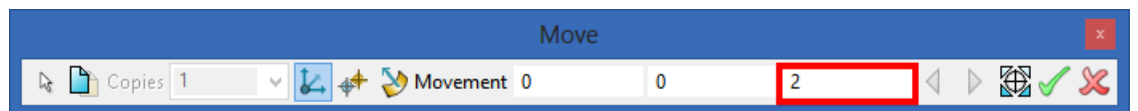
- 3 Click **Move/copy items** .



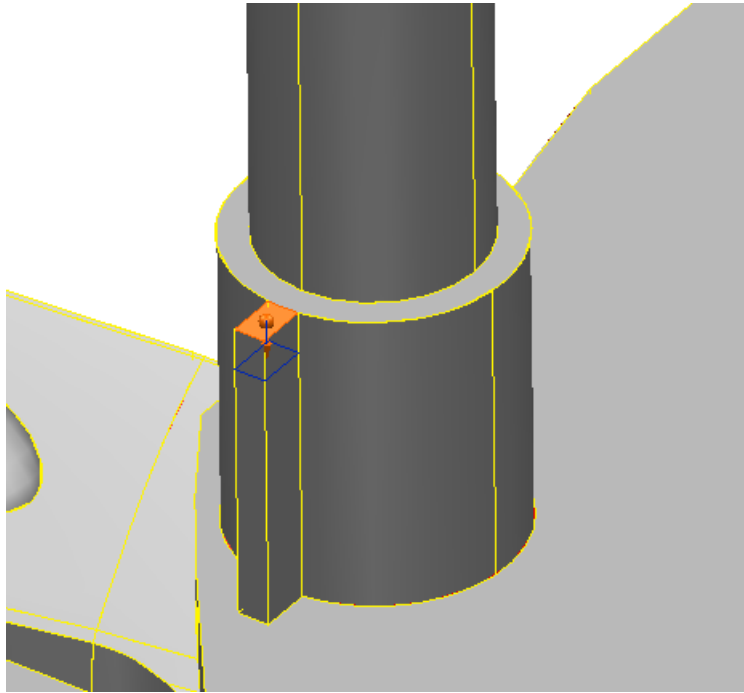
The **Move** toolbar is displayed.



- 4 Enter **2** in the **Z axis**.

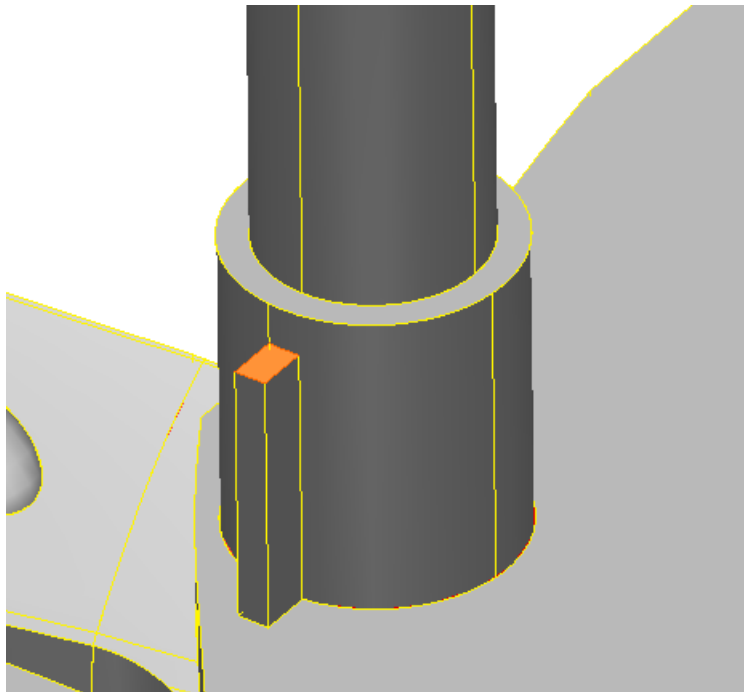


The preview move graphics are drawn on the model.



5 Click **Apply** .

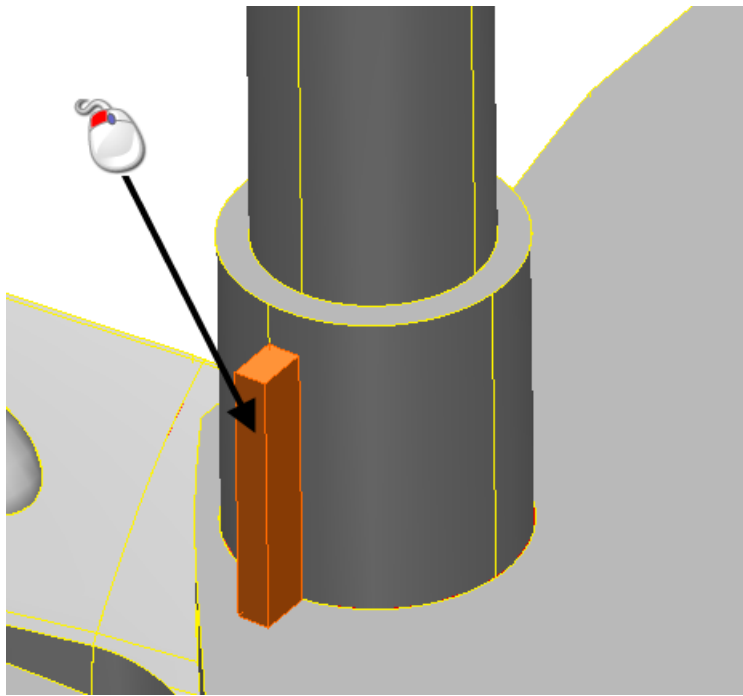
6 Click **Dismiss** .



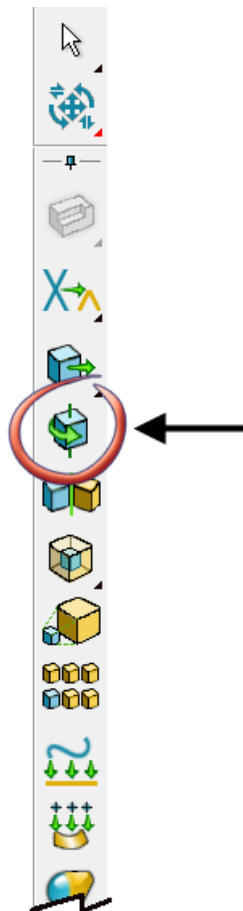
9. Rotate the rib faces

1 Click **Select faces of convex regions** .

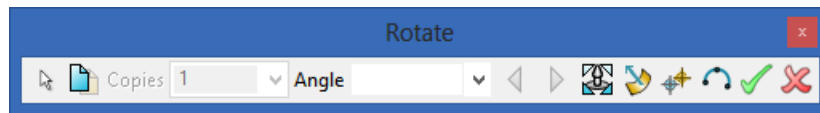
2 Click the face shown below:




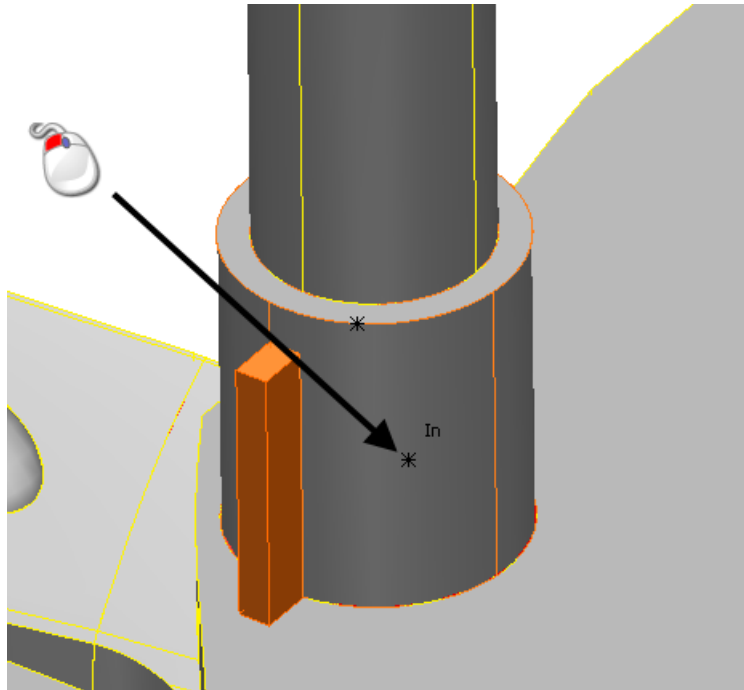
3 Click **Rotate items** .



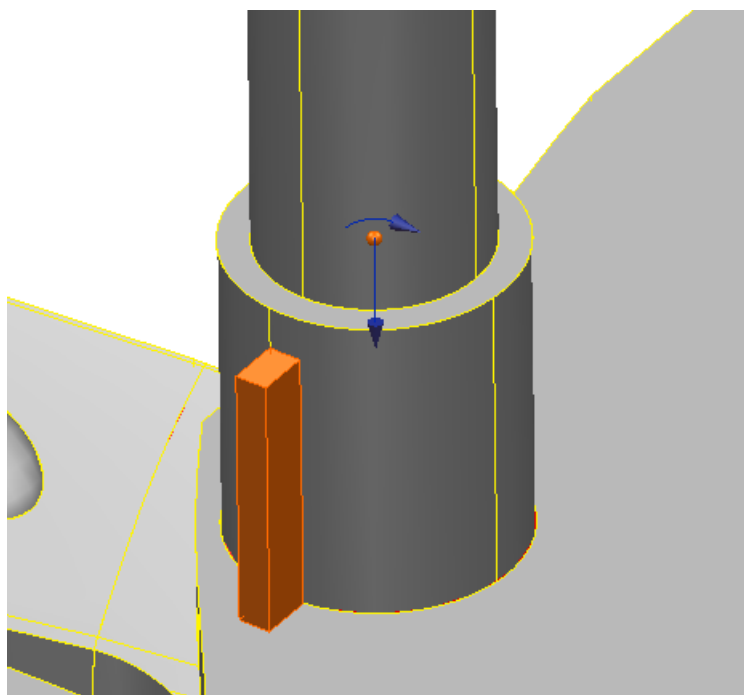
The **Rotate** toolbar is displayed.



- 4 Click **Align rotation axis with geometry** .
- 5 Click the face shown below:

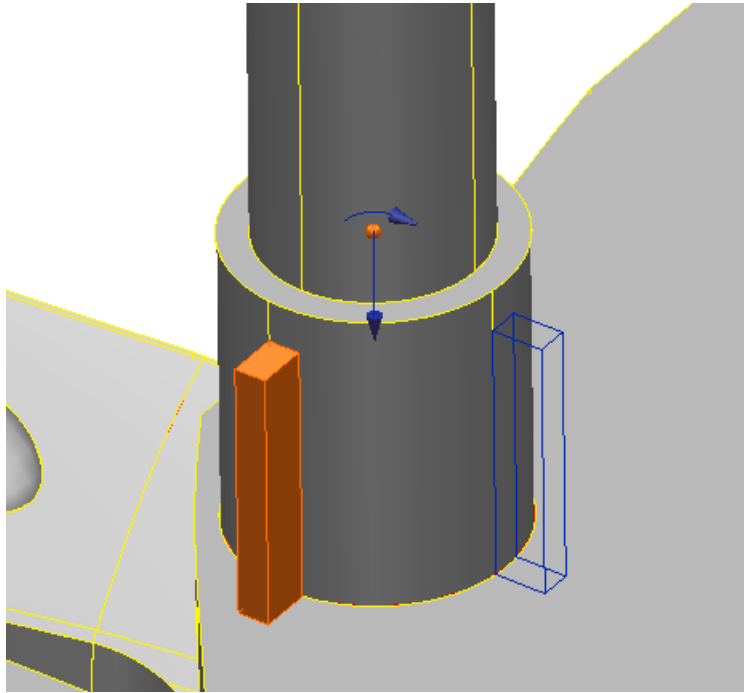


The rotation axis is positioned at the centre of the cylindrical face.



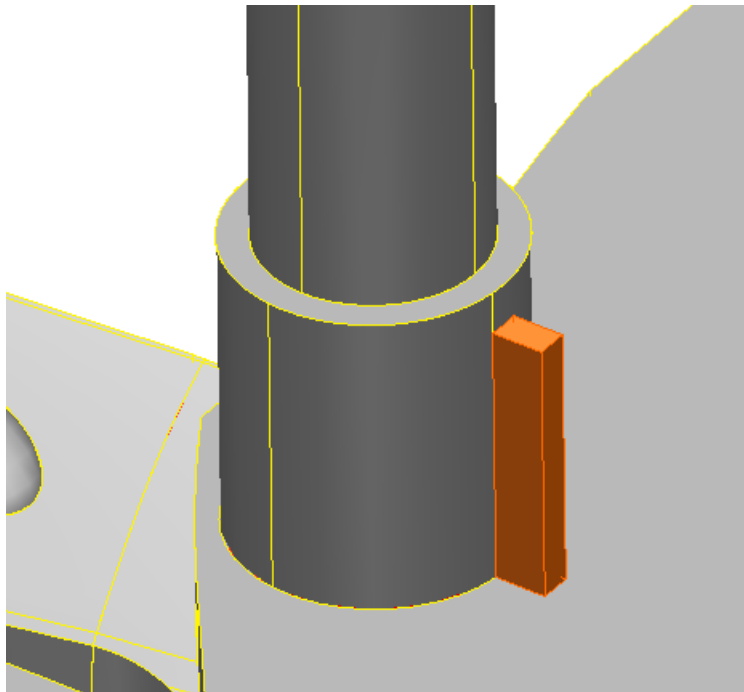
- 6 Click an **Angle** of **270** from the drop-down list.

The preview rotation graphics are drawn on the model.



7 Click **Apply** .

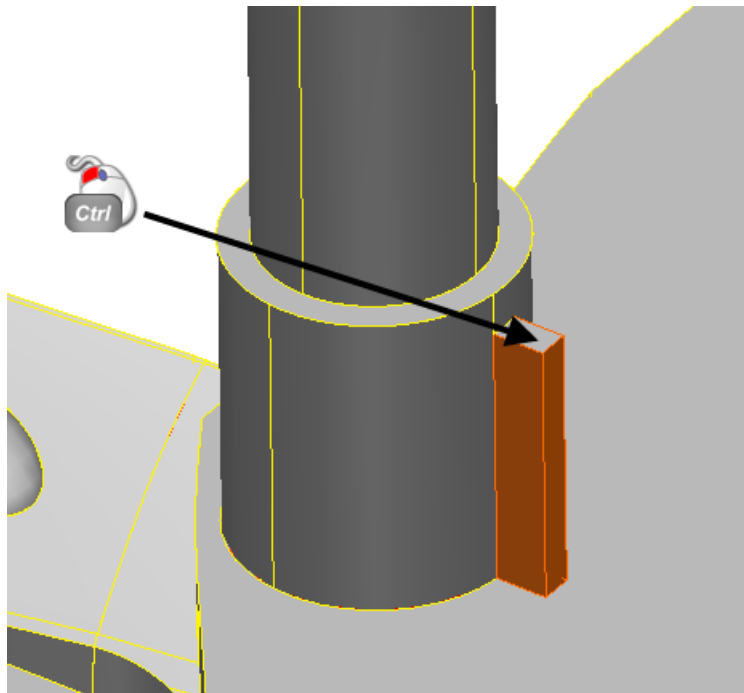
8 Click **Dismiss** .




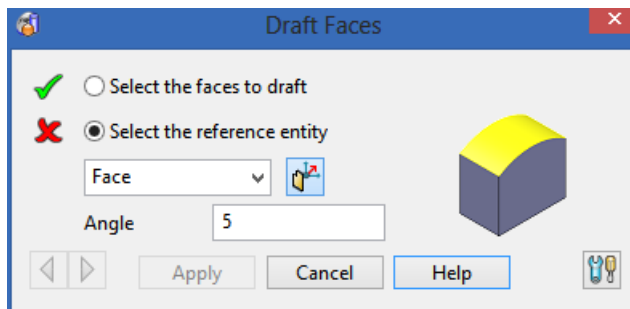
10. Draft the rib faces

1 Click **Select individual faces** .

- 2 Hold down the **Control** key and click the face.
This removes the top face from the selection.

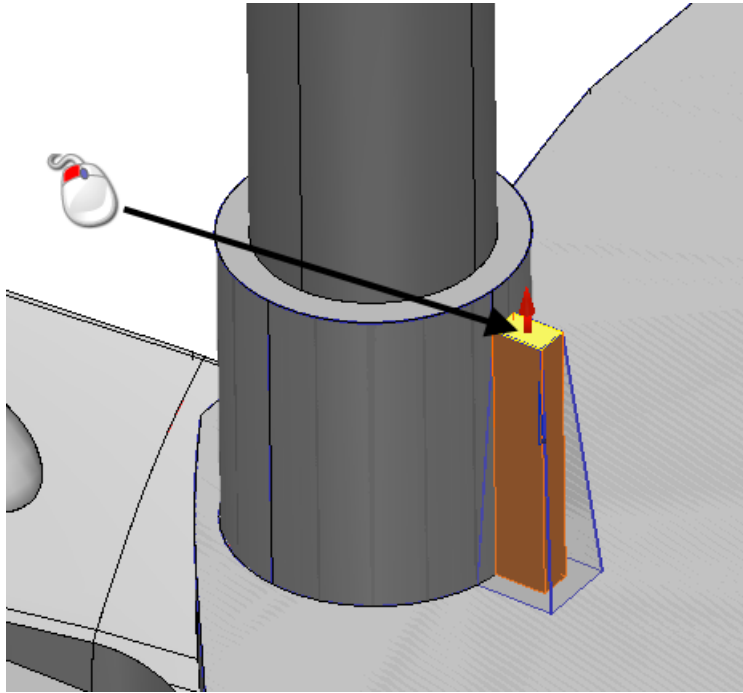


- 3 Click **Draft faces of the selected solid** 
The Draft faces dialog is displayed.

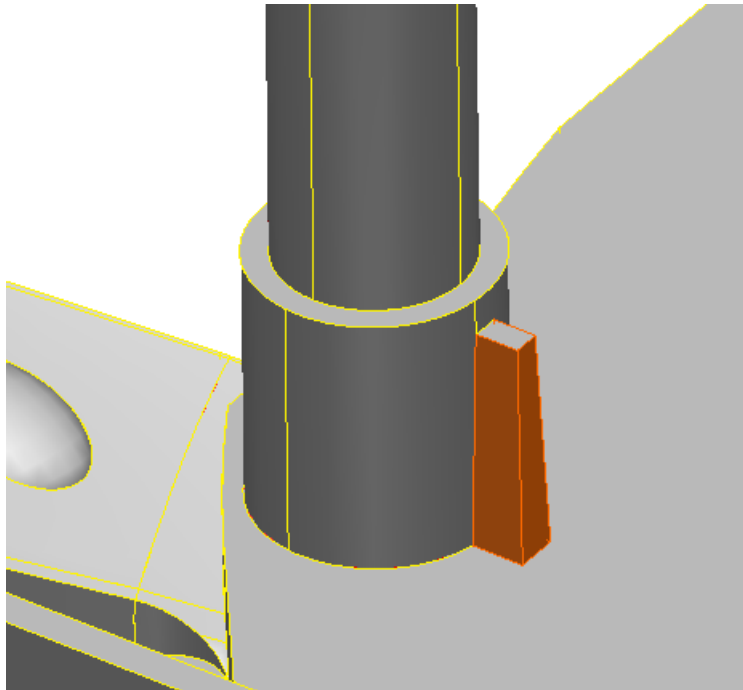


- 4 Click the top face of the rib as the reference entity.

The preview draft graphics are drawn on the model.

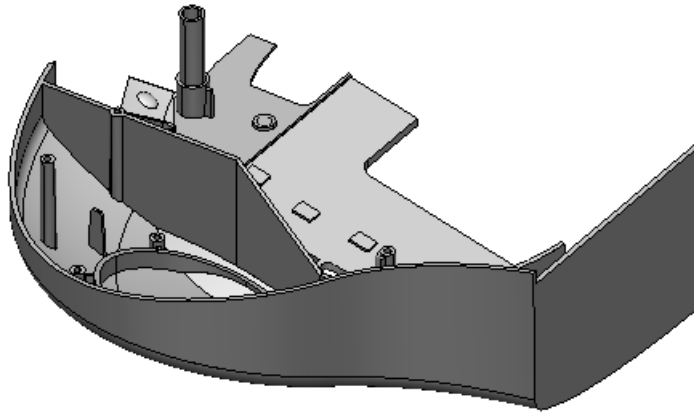


- 5 Enter an **Angle** of **2**.
- 6 Click **Apply**.
- 7 Click **Cancel**.



- 8 Click **Resize to Fit** .

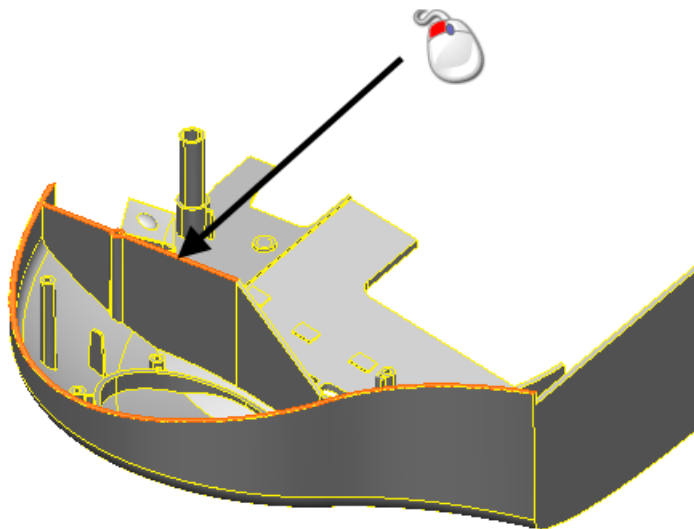
- 9 Click anywhere in the graphics window to deselect the model.



Lower regions using split solid

11. Split the solid with a face

- 1 Click the solid.
- 2 Click the face shown below:

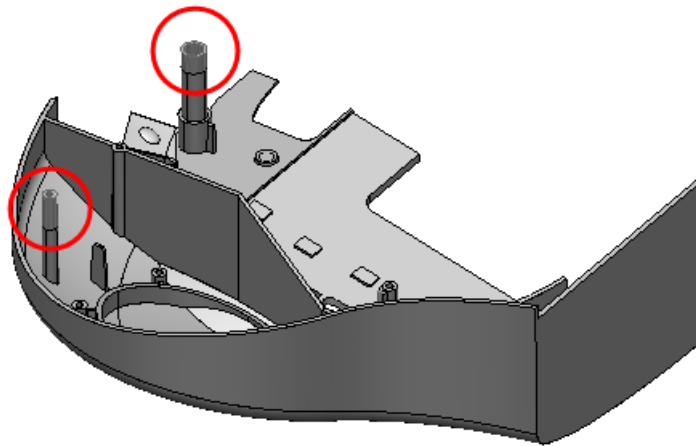


- 3 Click **Feature** .

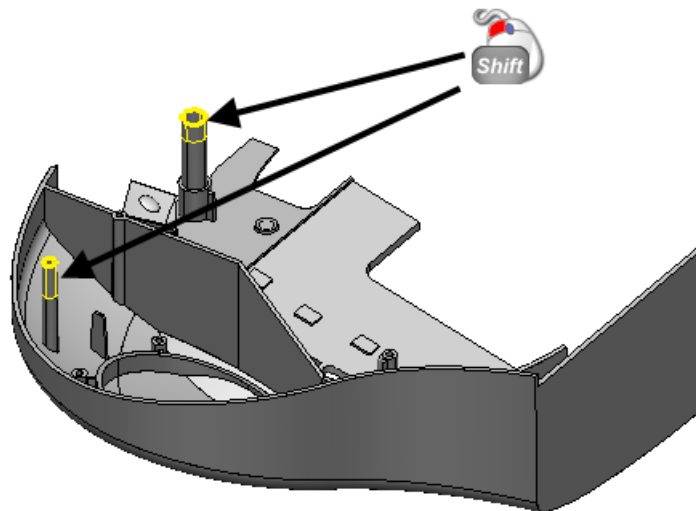


- 4 Click **Split the active solid with the selected solid** .

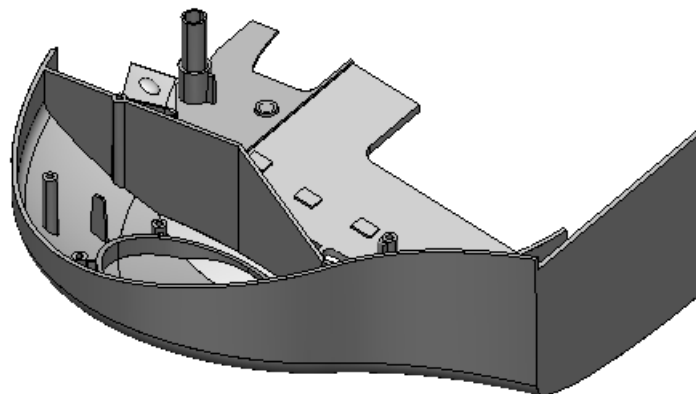
5 Click **OK**.



6 Hold down the **Shift** key and click the two solids.



7 Click **Delete** .



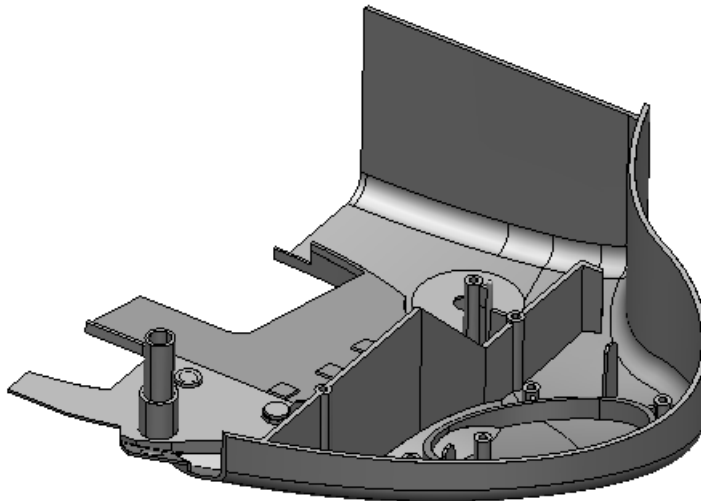
Blending faces into the thickness of the solid

12. Move and blend faces

- 1 Click **Zoom to Box Mode**  using the right mouse button.
- 2 From the flyout, click **Rotate** .

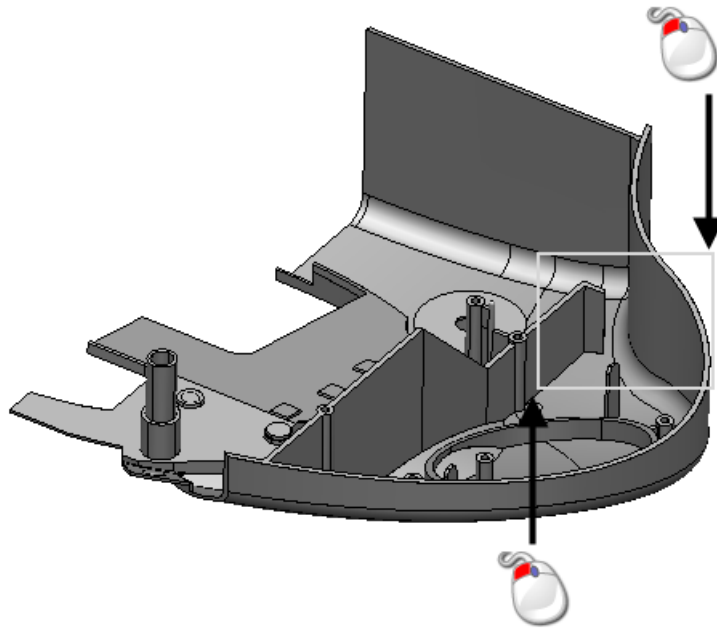


- 3 Click the left mouse button and drag, to rotate the model to display the view shown below:



- 4 Click **Zoom to box Mode** .


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

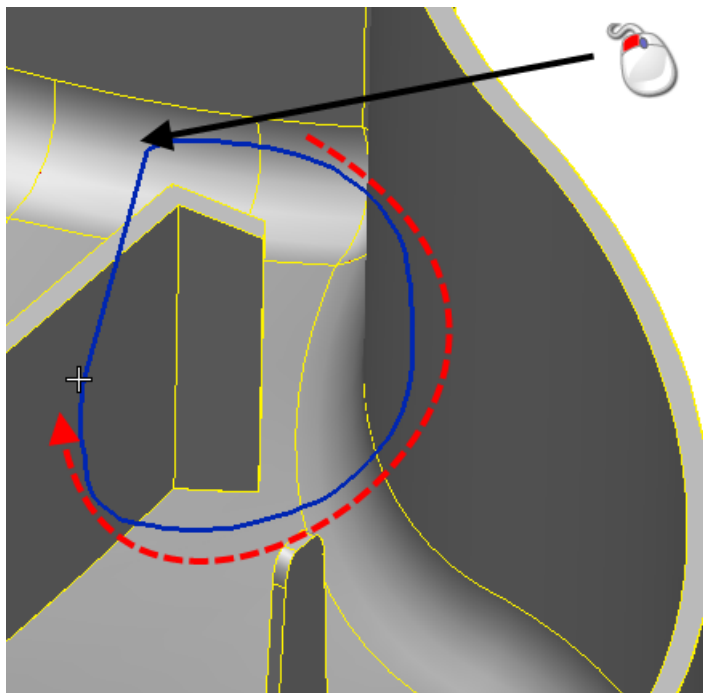


- 6 Click the solid.

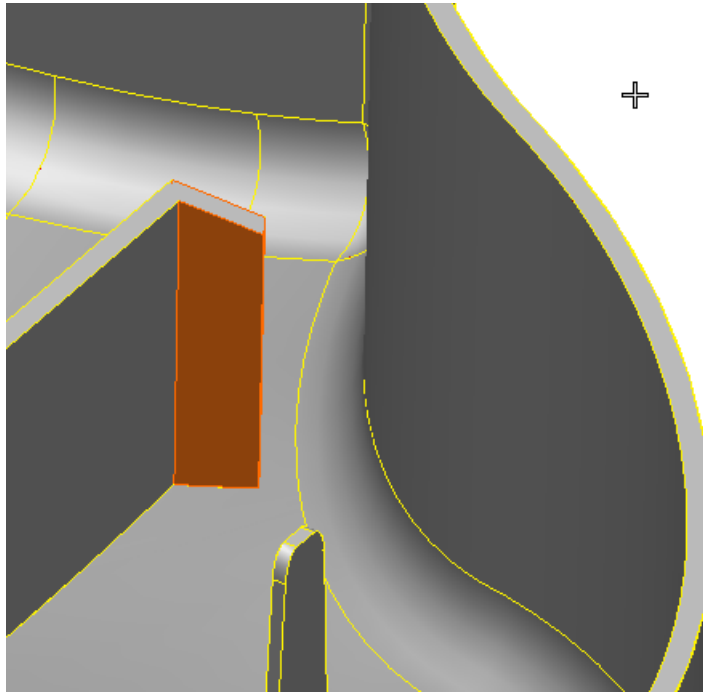
- 7 Click **Select faces using a continuous lasso** .

- 8 Click the left mouse button and drag the lasso around the faces, as shown below:

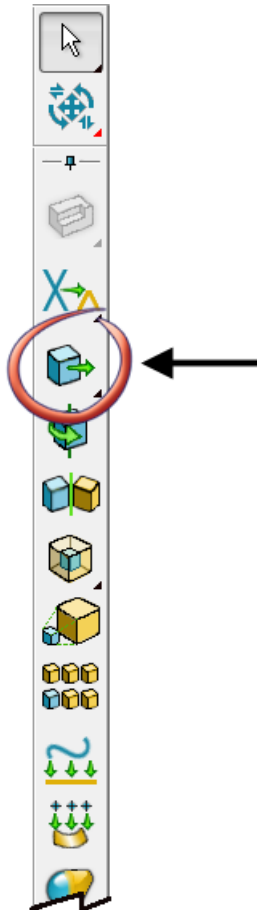
Selection automatically changes to **Whole box** , the faces completely enclosed by the lasso will be selected.



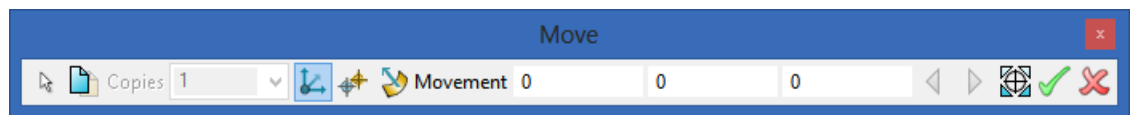
When the mouse button is released the faces are selected.



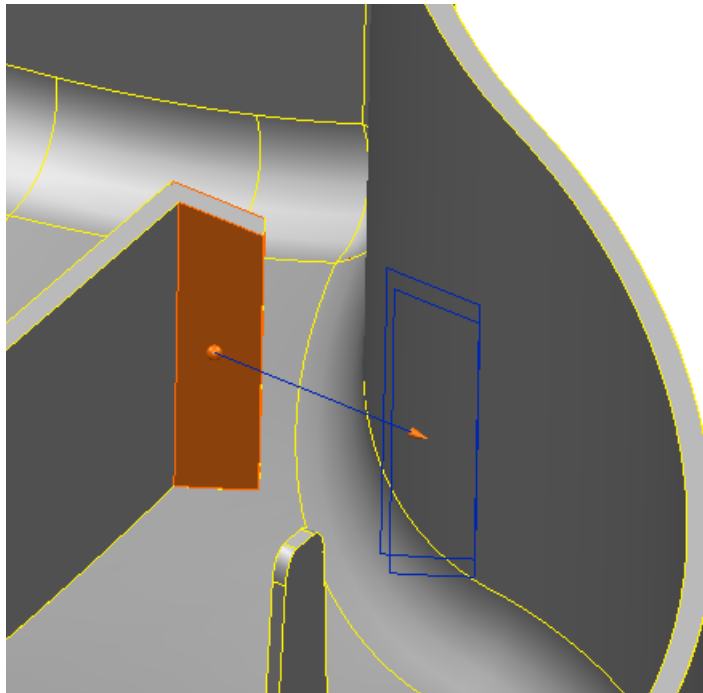
9 Click **Move/copy items** .



The **Move** toolbar is displayed.



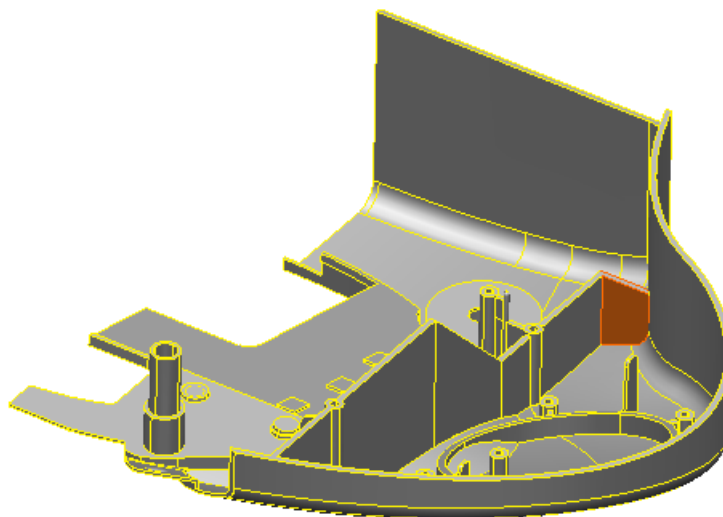
10 Enter **-20** in the **X** axis.



11 Click **Apply** .

12 Click **Dismiss** .

13 Click **Resize to Fit** .



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

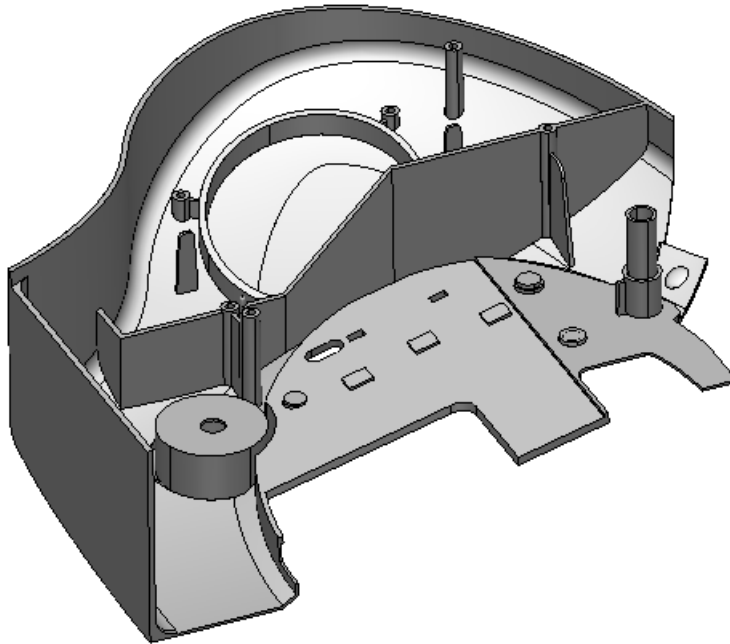
Adding draft to rib faces of varying height

13. Create lines along the rib

- 1 Click **Zoom to Box Mode**  using the right mouse button.
- 2 From the flyout, click **Rotate** .



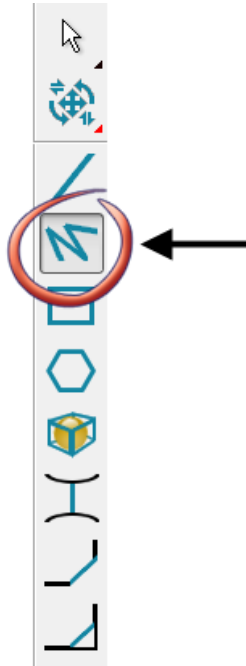
- 3 Click the left mouse button and drag, to rotate the model to display the view shown below:



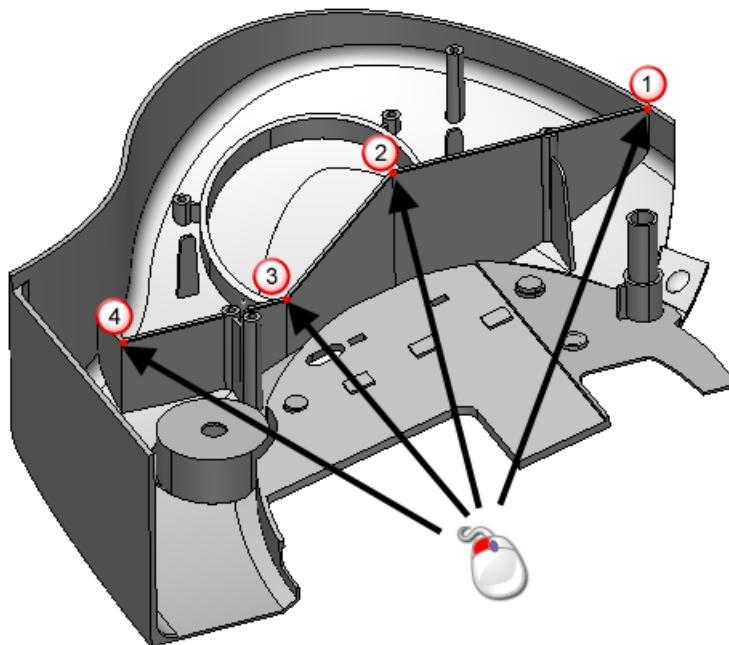
- 4 Click **Line** .



5 Click **Continuous Lines** .

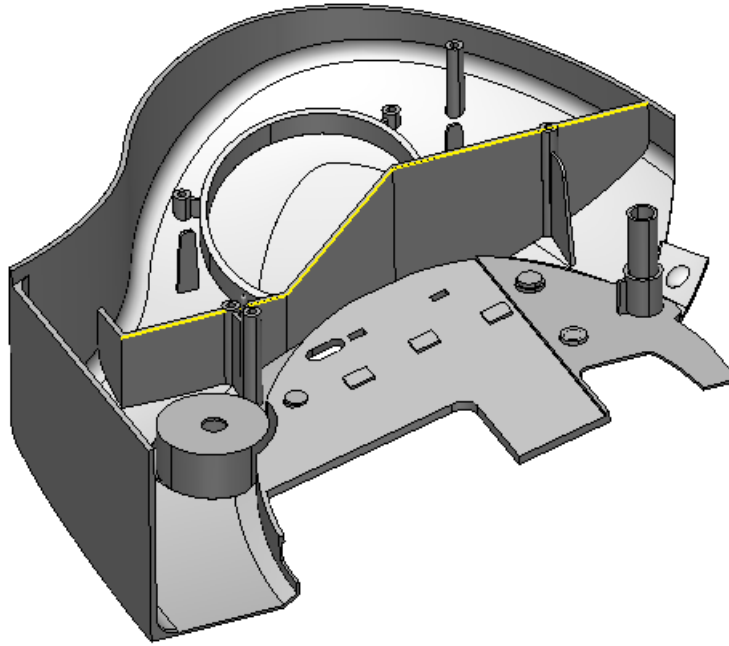


6 Click the 4 positions shown below:



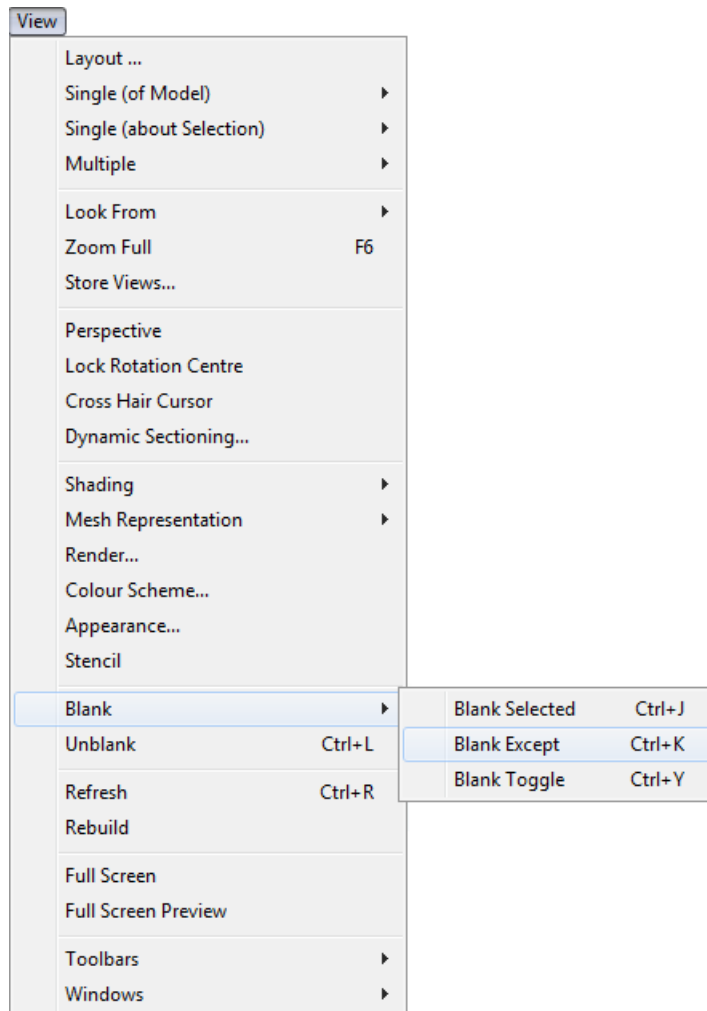
7 Click **Select** .

- 8 Click **Quick select all wireframes** .



- 9 Click **View**.
10 Click **Blank**.

11 Click **Blank Except**.

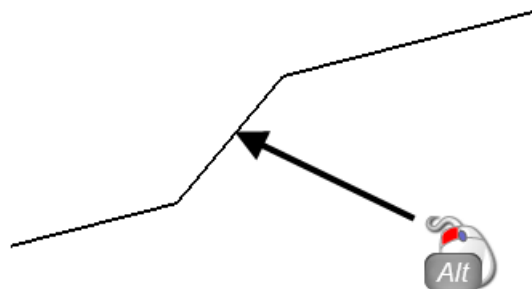


12 Click anywhere in the graphics window to deselect the model.

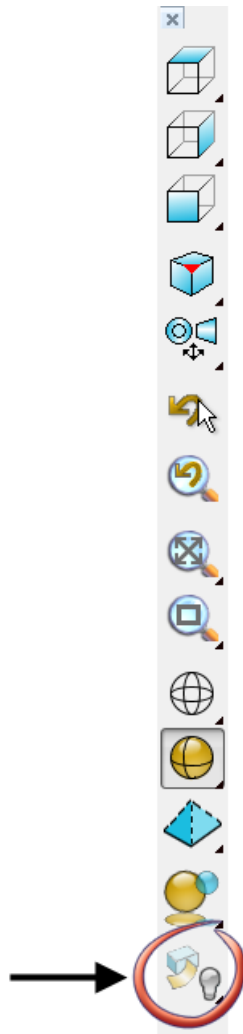
13 Press and hold the **ALT** key and click the left mouse button, as shown below.



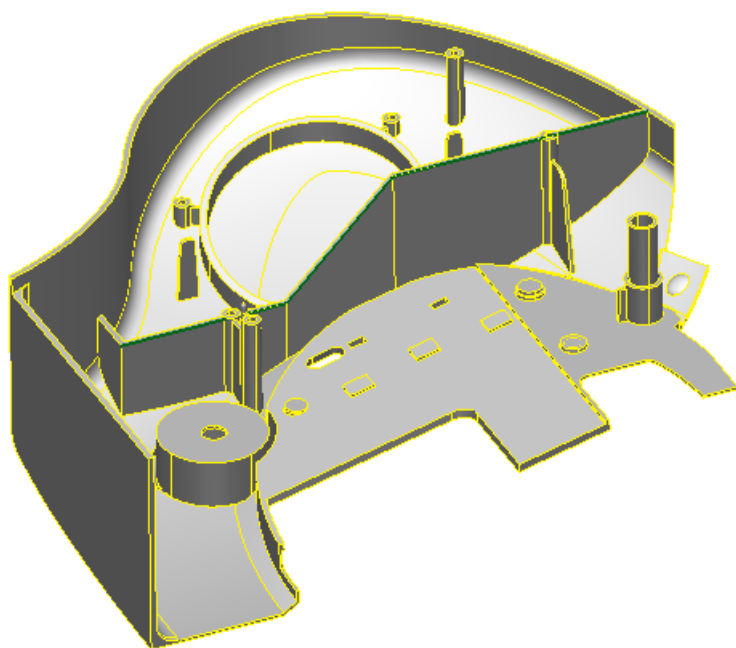
This is the shortcut for creating a composite curve.



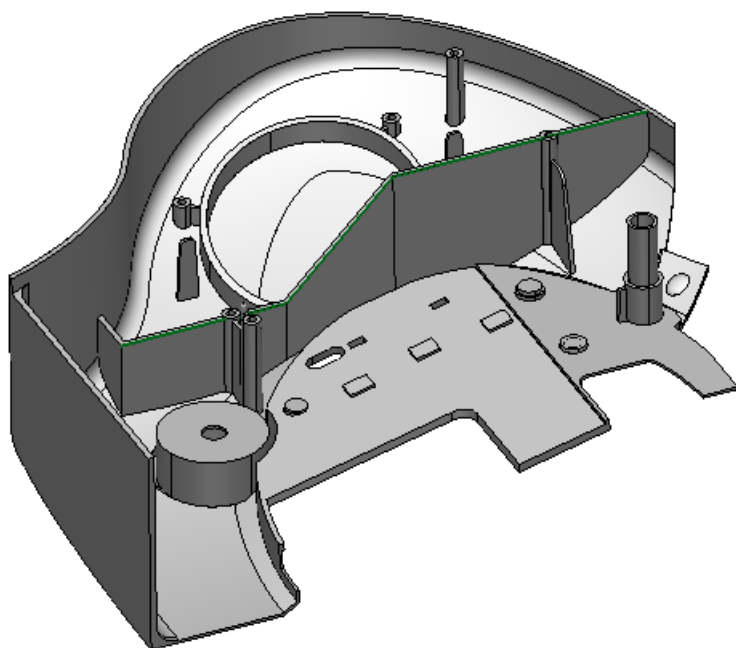
14 Click **Blank Selected**  using the right mouse button.



15 From the flyout, click **Unblank**.

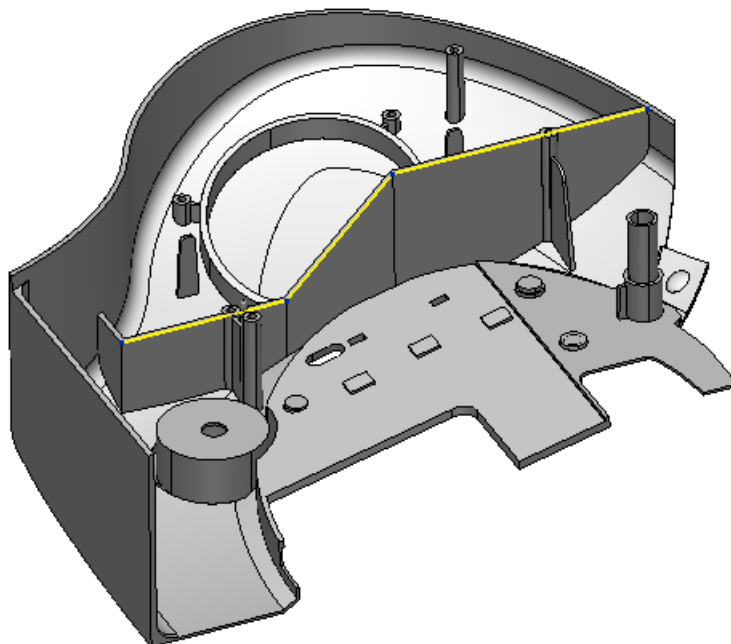


16 Click anywhere in the graphics window to deselect the model.

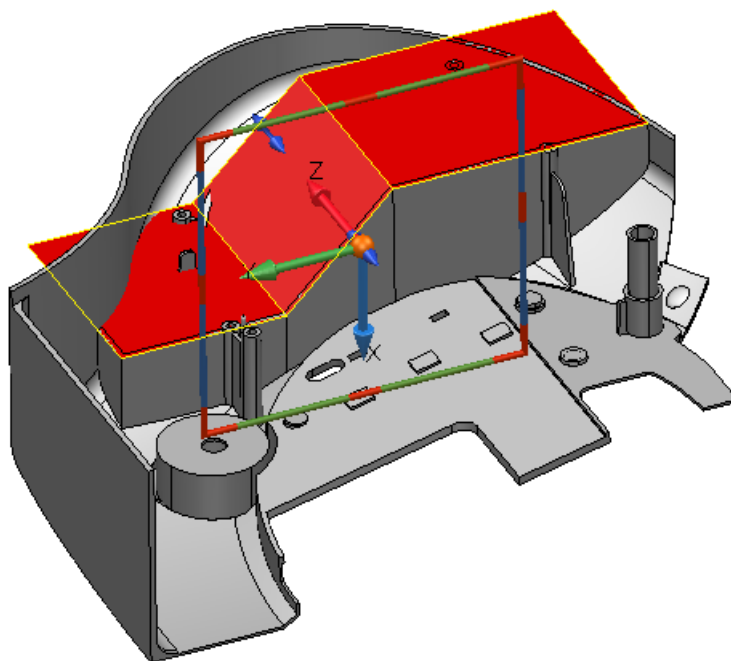
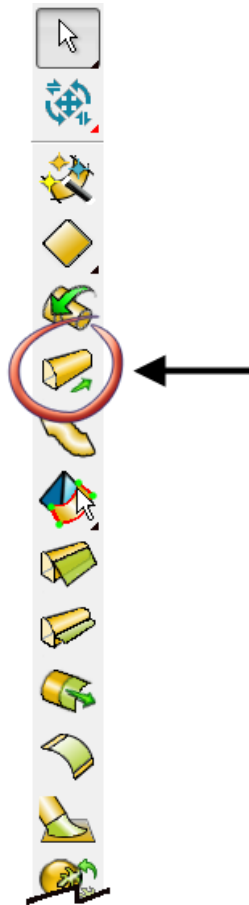


14. Create an extrusion for the reference surface

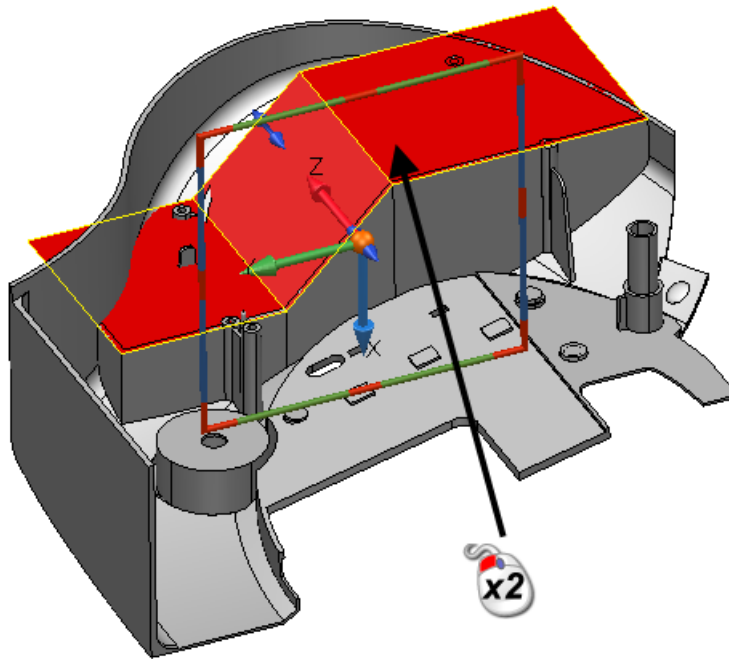
- 1 Click **Quick select all wireframes** .



2 Click **Extrusion** .

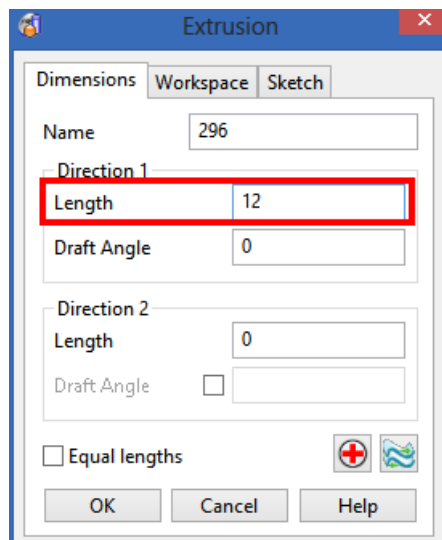


- 3 Double click the extruded surface.



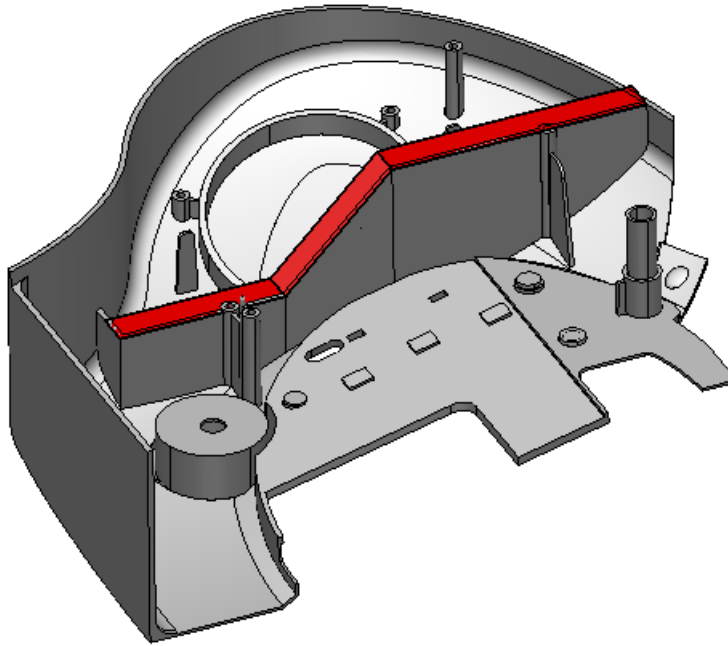
The Extrusion dialog is displayed.

- 4 Enter 12 in **Length** of Direction 1.



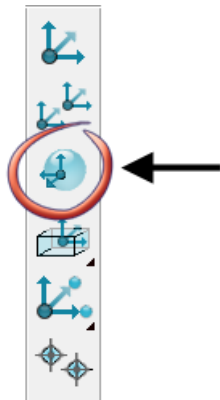
- 5 Click **OK**.

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

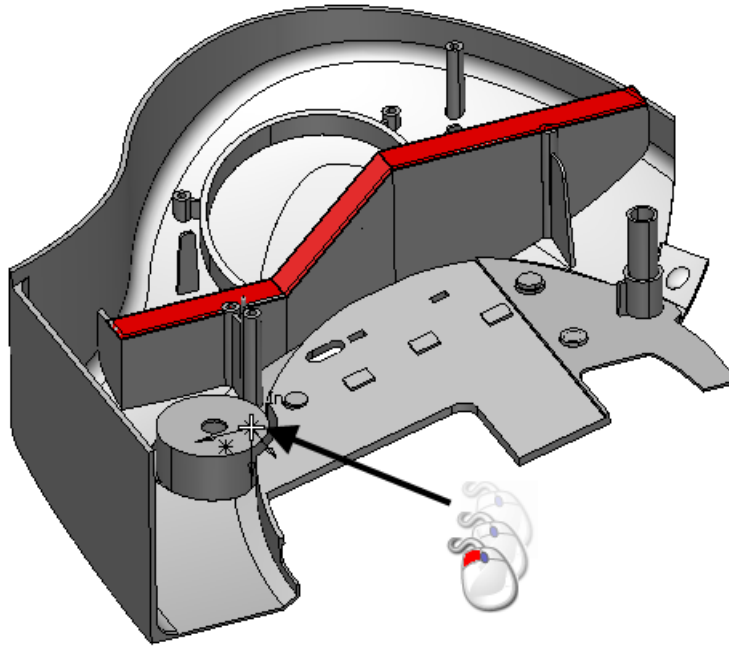


15. Create a workplane aligned to geometry

- 1 Click **Workplane** .
- 2 Click **Single workplane aligned to geometry** .

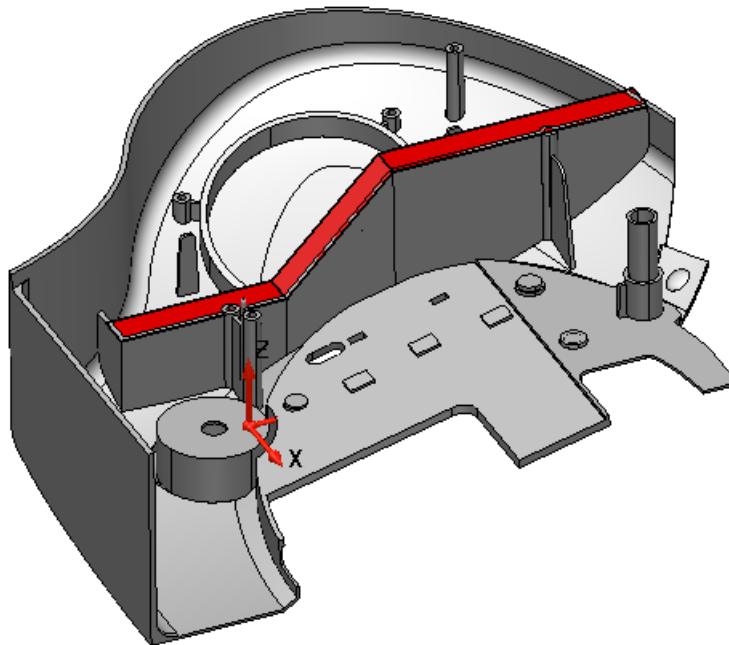


- 3 Move the cursor over the solid. When *In* displays, click the left mouse button.



- 4 Click **Select** .

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

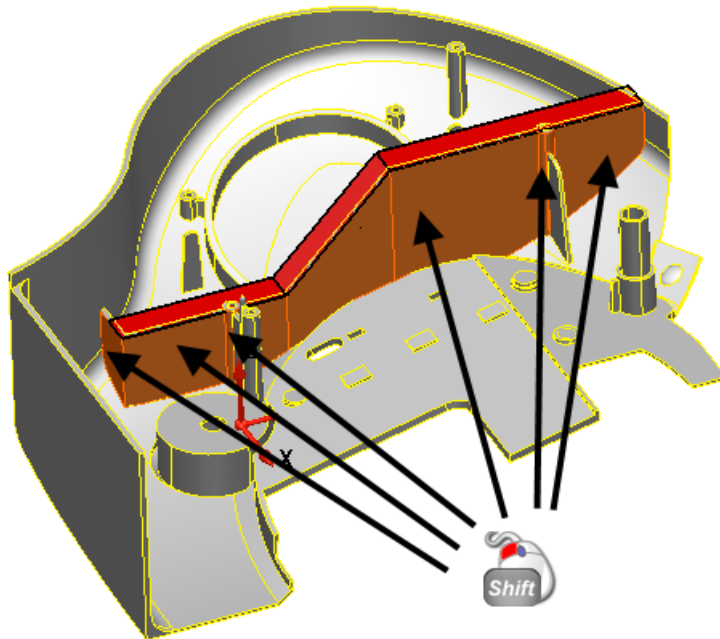


16. Draft the middle rib faces referenced to a surface

- 1 Click the solid.

2 Click **Select faces of continuous regions** .

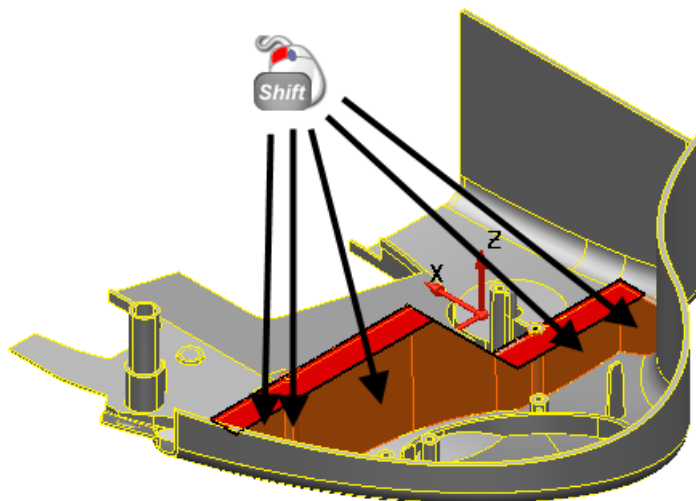
3 Hold down the **Shift** key and click all the faces of the rib.



Zooming the view in and out will make the selections easier.

4 Click **View ISO4** .

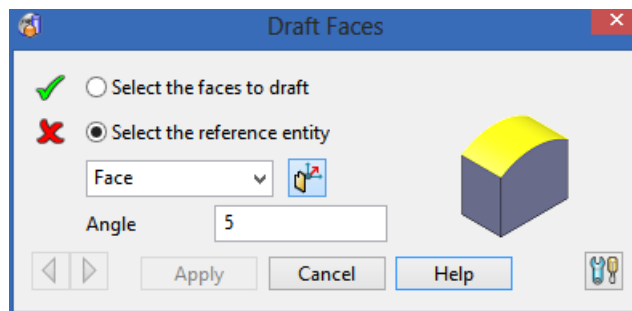
5 Hold down the **Shift** key and click all the faces of the rib.



Zooming the view in and out will make the selections easier.

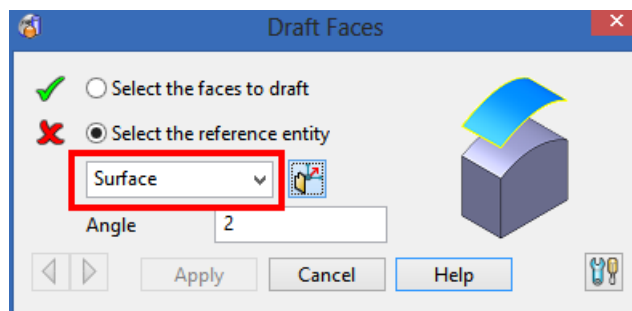
6 Click **Draft faces of the selected solid** .

The Draft faces dialog is displayed.

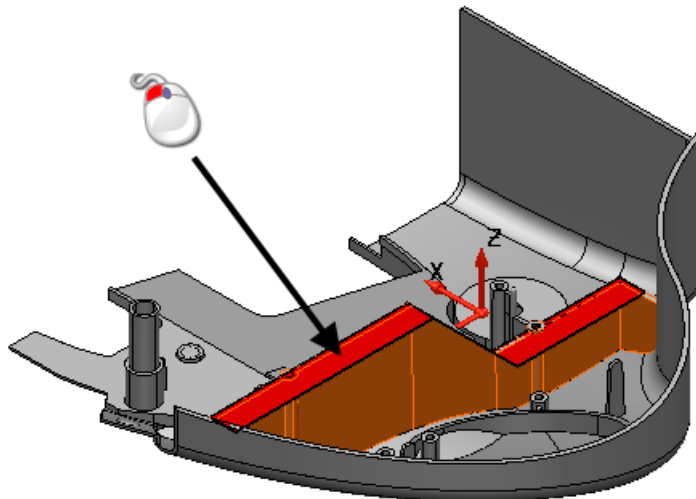


7 Enter an **Angle** of 2.

8 Click **Surface** from the **Reference entity** drop-down list.



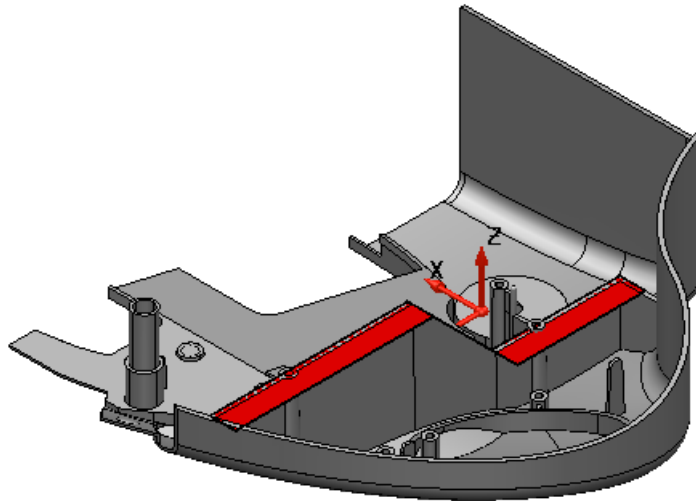
9 Click the surface.



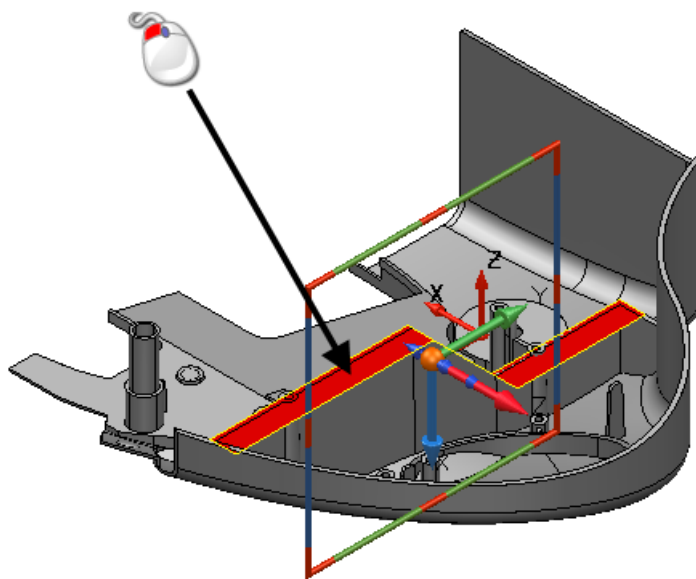
10 Click **Apply**.

11 Click **Cancel**.

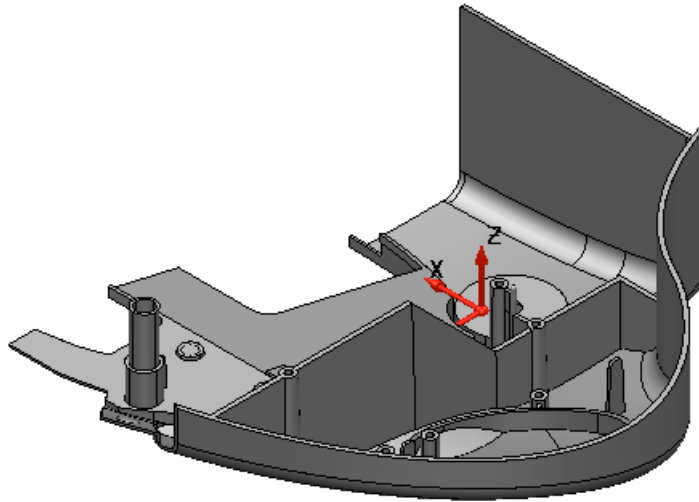
12 Click anywhere in the graphics window to deselect the model.



13 Click the extrusion.



14 Click **Delete** .



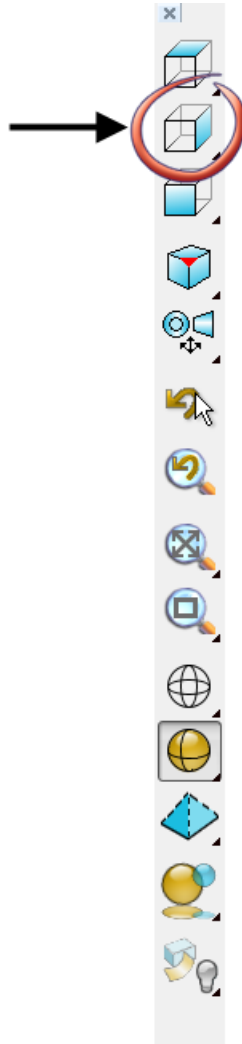
Trim the uneven edges of a solid

17. Create a wireframe shape

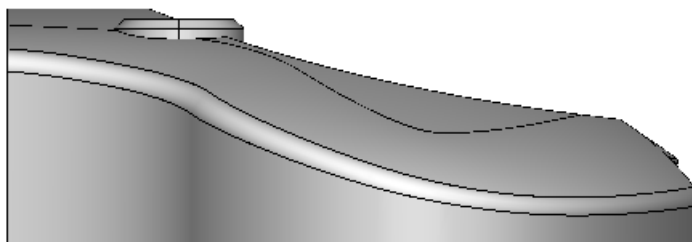
- 1 From the **Status Bar** at the bottom of the screen, click *World* workplane from the drop-down list.



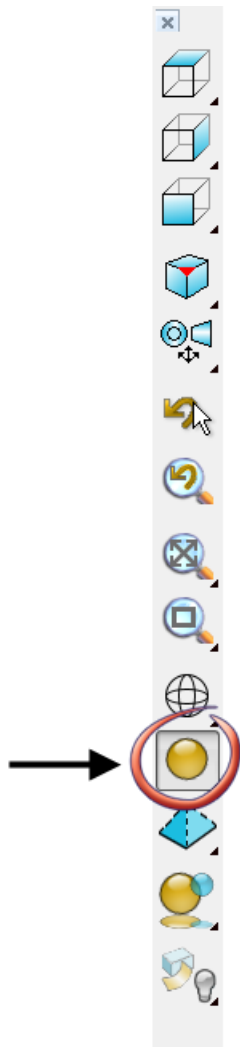
- 2 Click **View from right**  using the right mouse button.



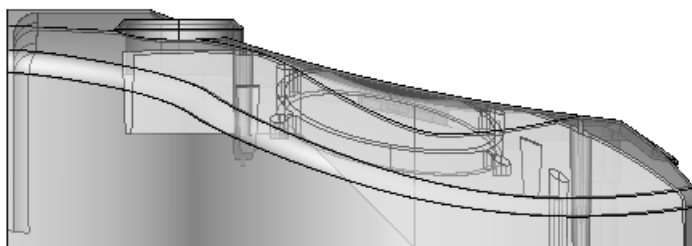
- 3 From the flyout, select **View from Left** .



- 4 Click **Shaded View**  using the right mouse button.



- 5 From the flyout, click **Toggle Transparent Views** .

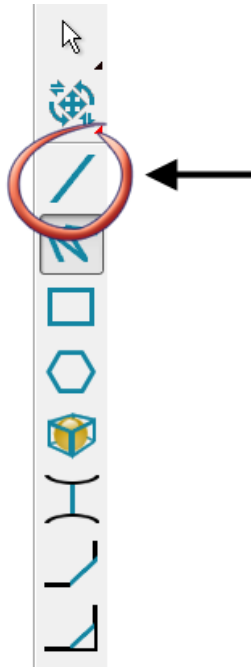


- 6 Form the **Status bar**, click **Plane lock** , to lock creation to the Principal plane.

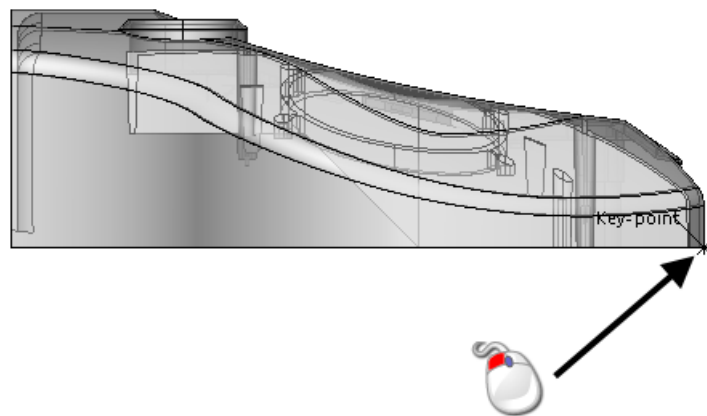
- 7 Click **Line** .



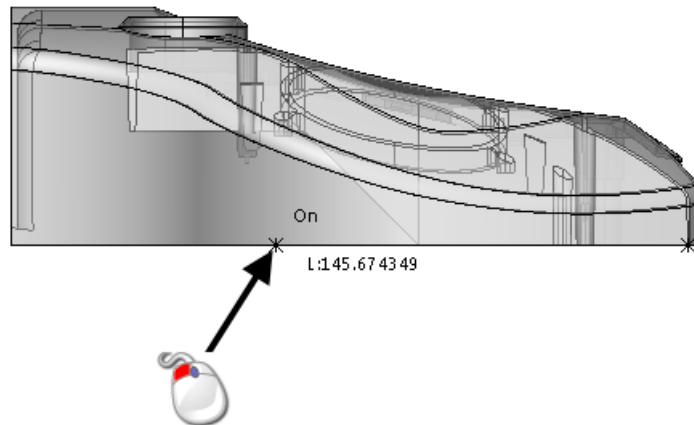
- 8 Click **Create a single line** .



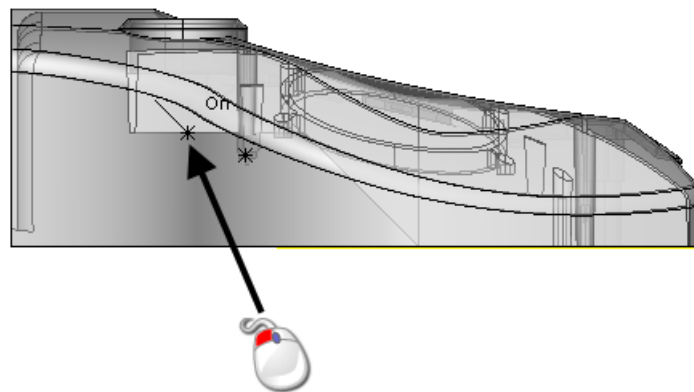
- 9 When *Key-point* displays, click the left mouse button.



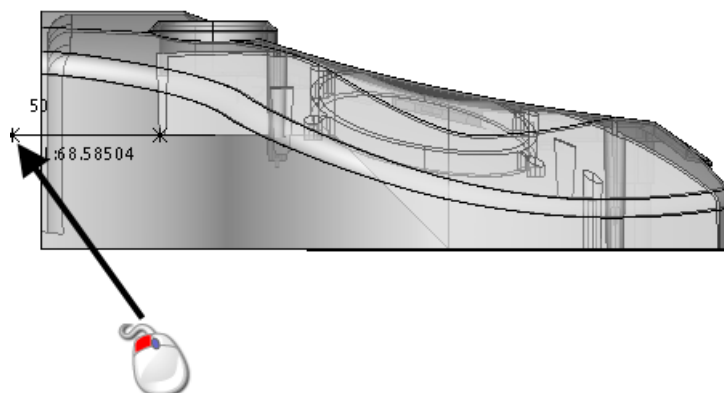
- 10 When an approximate length of 145 displays, click the left mouse button.



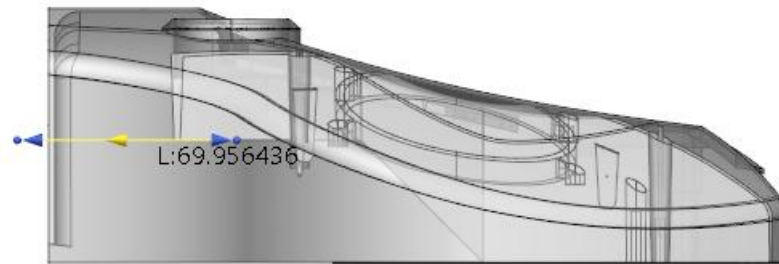
- 11 When *On* displays, click the left mouse button.



- 12 Move the cursor to the left, away from the solid and click the left mouse button.



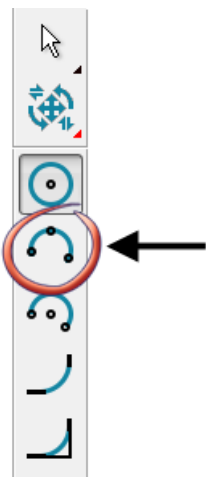
13 Click **Select** .



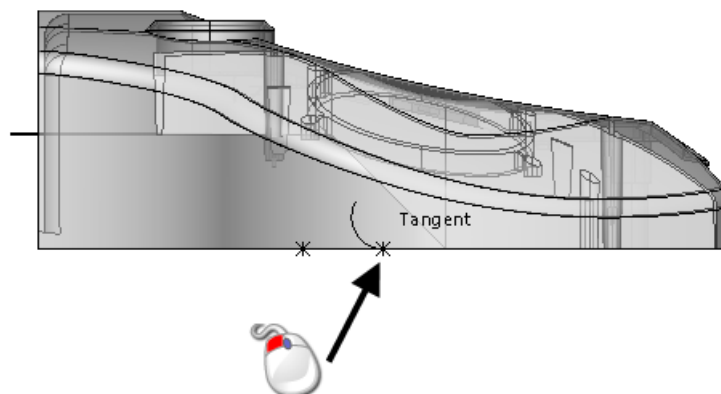
14 Click **Arc** .



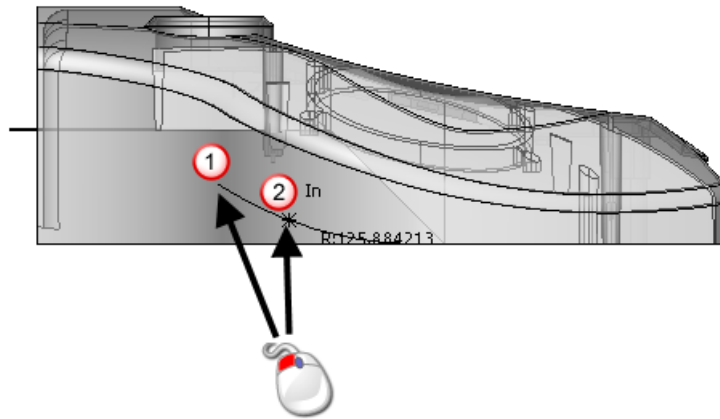
15 Click **Create an arc through three points/items** .



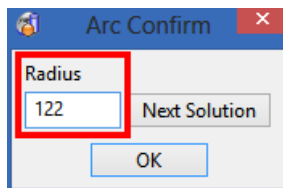
16 When *Tangent* displays, click the left mouse button, shown in the image below:



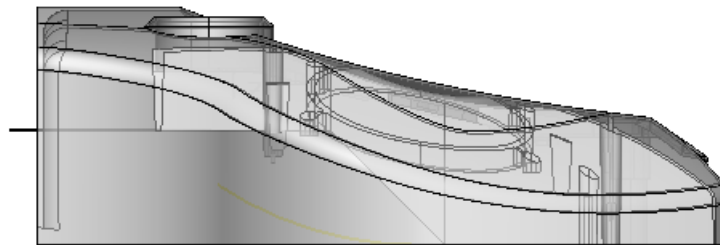
17 Click the 2 positions shown below:



18 Enter a Radius of 122.



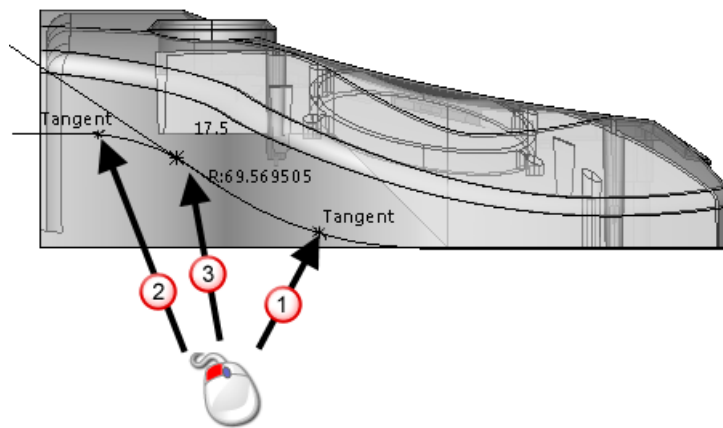
19 Click OK.



20 When *Tangent* is displayed on the arc, click the left mouse button ①.

21 When *Tangent* is displayed on the right side of the line, click the left mouse button ②.

22 Click the third position shown below ③.

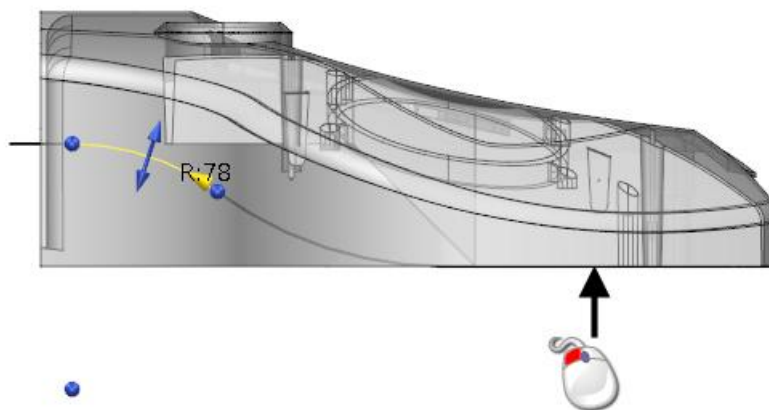


23 Enter a **Radius** of 78.

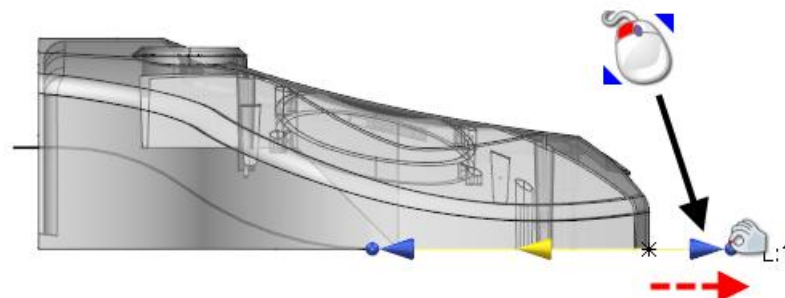
24 Click **OK**.


25 Click **Select** .

26 Click the first line.

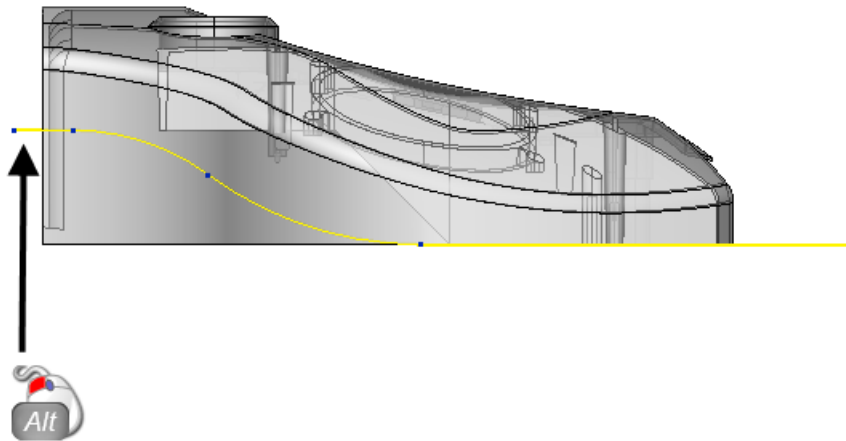


27 Click and drag the right arrow marker of the line so that it goes past the end of the solid.



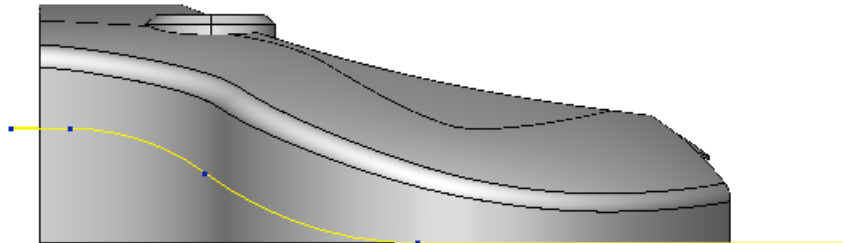
 *Dragging the arrow marker will only change the length of the line.*

28 Press and hold the **ALT** key and click the line.




29 From the **Status bar**, click **Plane lock** , to unlock creation from the Principal plane.

30 From the flyout, click **Shaded and Wireframe view** .

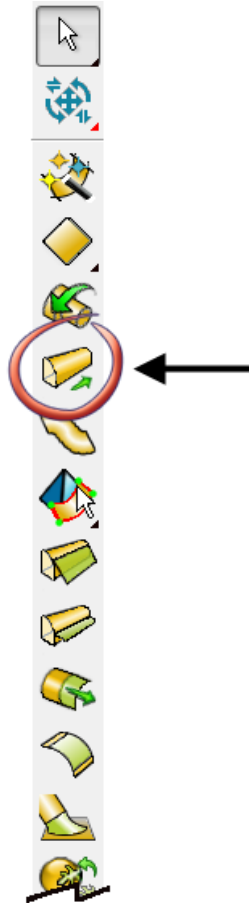


18. Boolean the solid

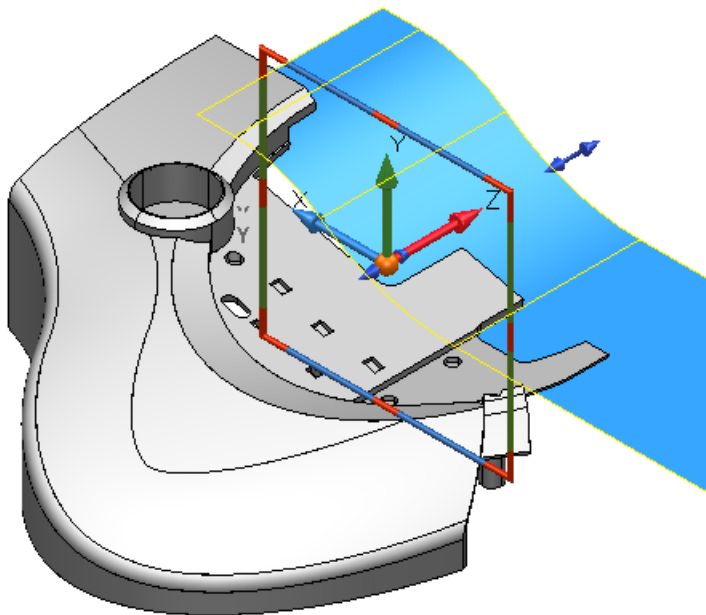
1 From the flyout, click **View ISO1** .



- 2 Click **Extrusion** .



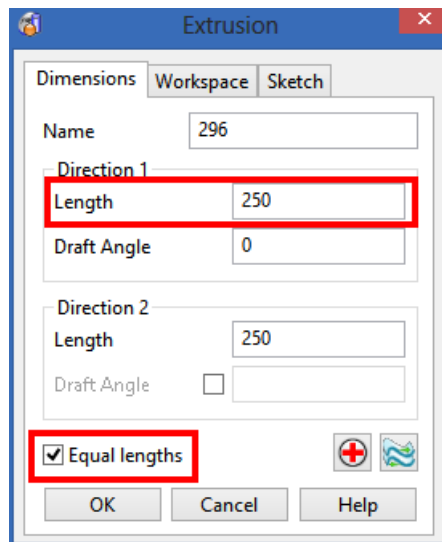
- 3 Double click the extruded surface.



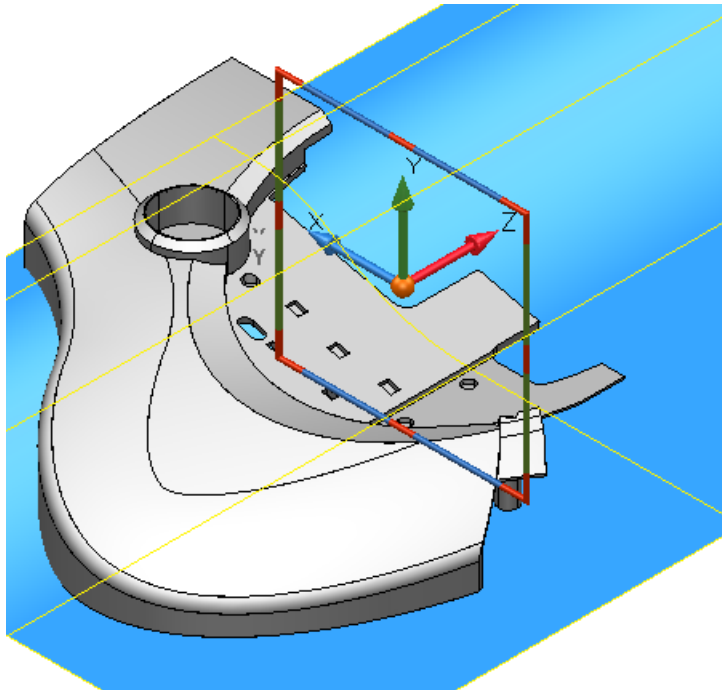
The Extrusion dialog is displayed.

- 4 Enter **250** in **Length** of Direction 1.

- 5 Click **Equal lengths**.



- 6 Click **OK**.



- 7 From the flyout, select **View from Left** .



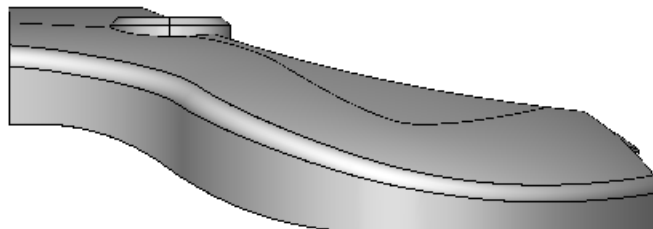
- 8 Click **Feature** .



- 9 Click **Remove the selected solid** .





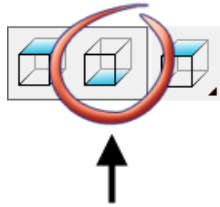
- 10 Click anywhere in the graphics window to deselect the model.




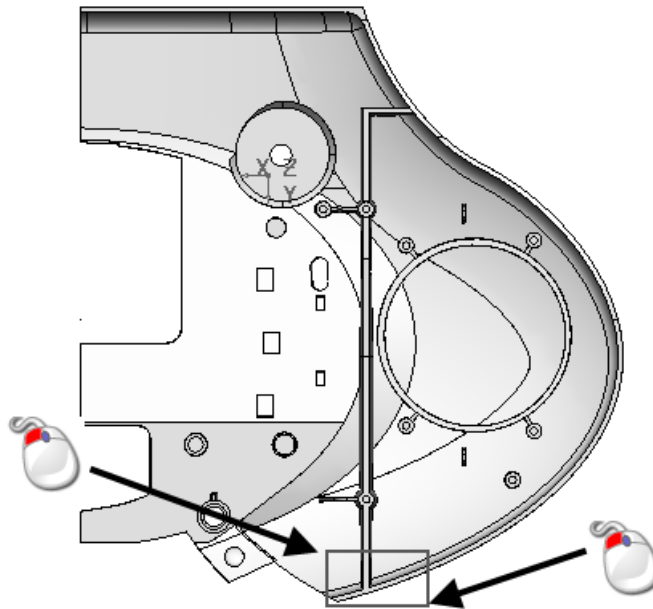
Creating a stepped lip

19. Create and offset a composite curve

- 1 Click **View from top**  using the right mouse button.
- 2 Click **View from bottom** .

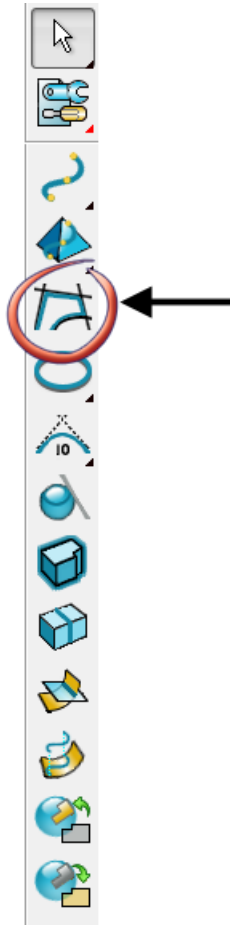


- 3 Click **Zoom to box Mode** .
- 4 Click the left mouse button and drag a box, as shown:

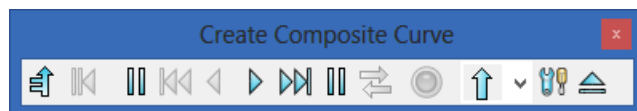


- 5 Click **Curve** .

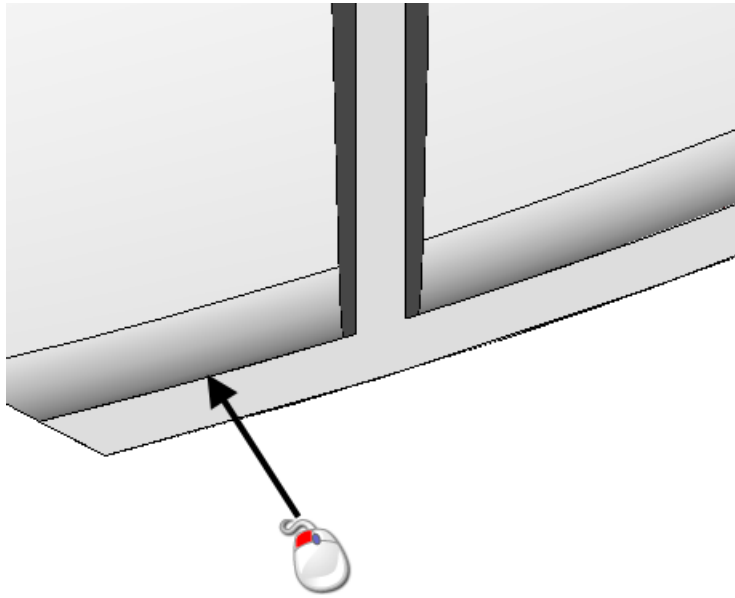
6 Click **Create a Composite Curve** by tracing .



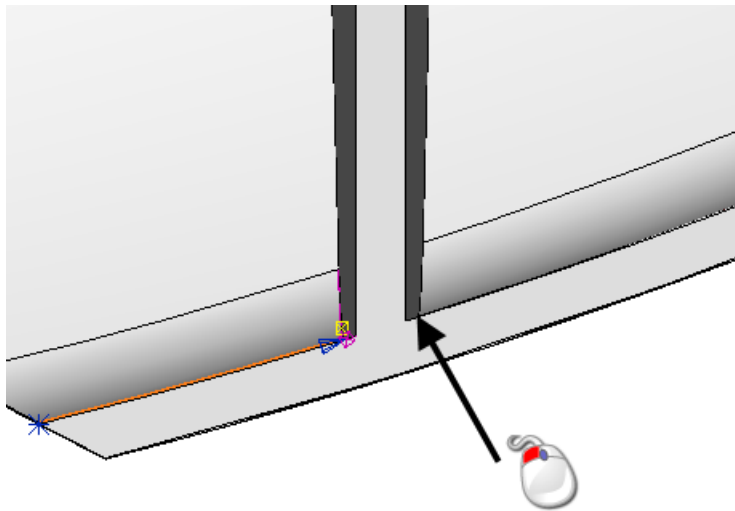
The **Create Composite Curve** toolbar is displayed.



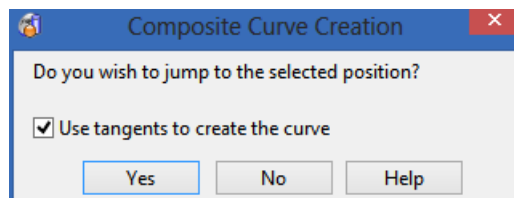
- 7 Click the edge of the face, shown below:



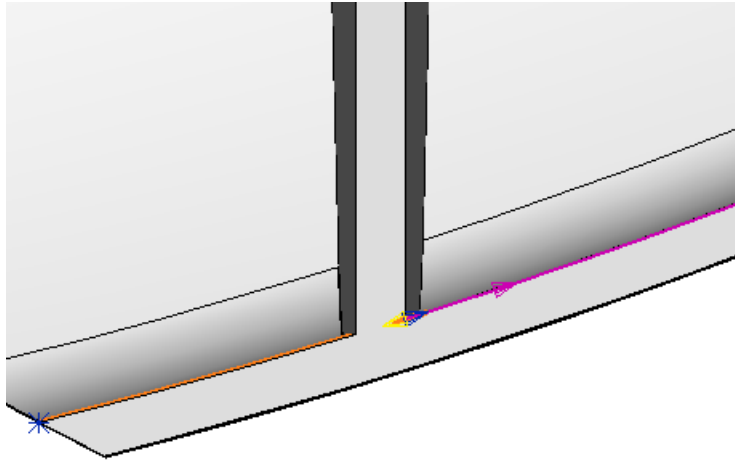
- 8 Click the edge of the face, shown below:



The Composite curve creation jump dialog is displayed.

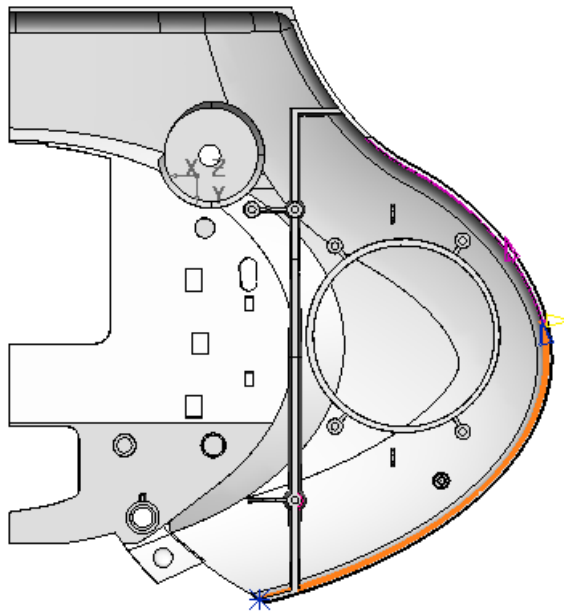


9 Click **Yes**.



10 Click **Forwards** .

11 Click **Resize to Fit** .



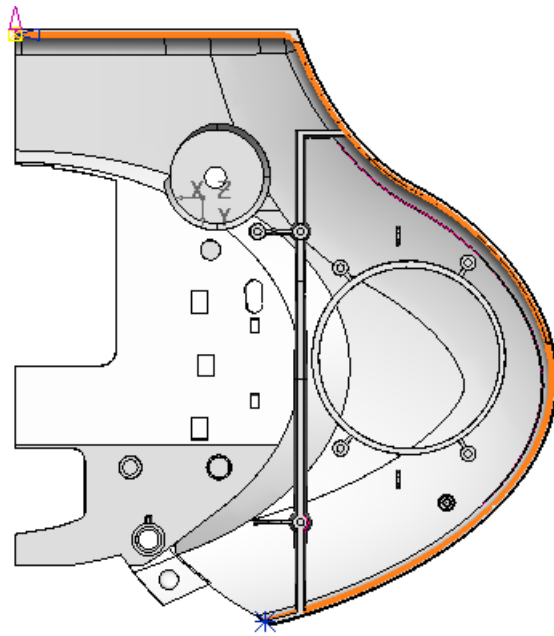
12 Click **Forwards** .

13 Click **Forwards** .

14 Click **Forwards** .

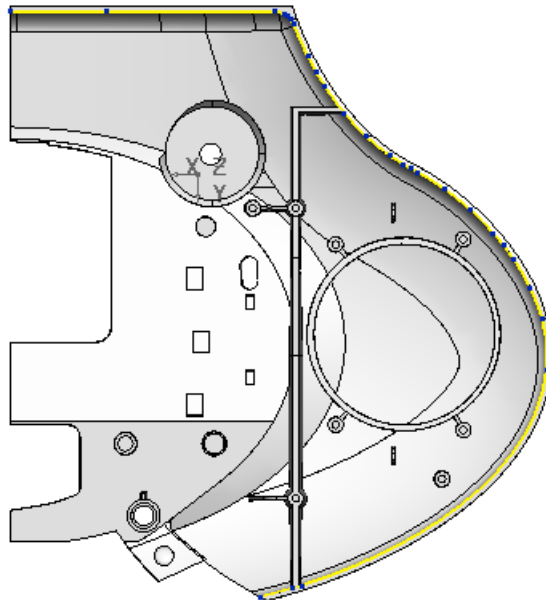
15 Click **Forwards** .

16 Click **Forwards** .

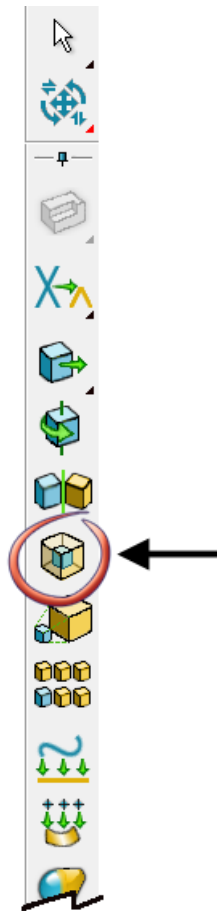


17 Click **Save** .

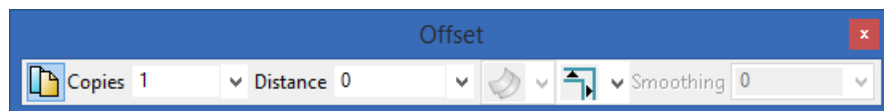
18 Click **Eject** .



19 Click **Offset** items .



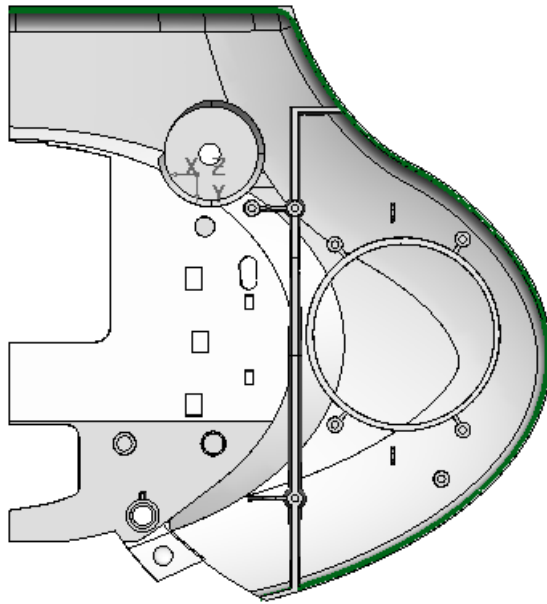
The **Offset** toolbar is displayed.



20 Enter a **Distance** of **-1**.

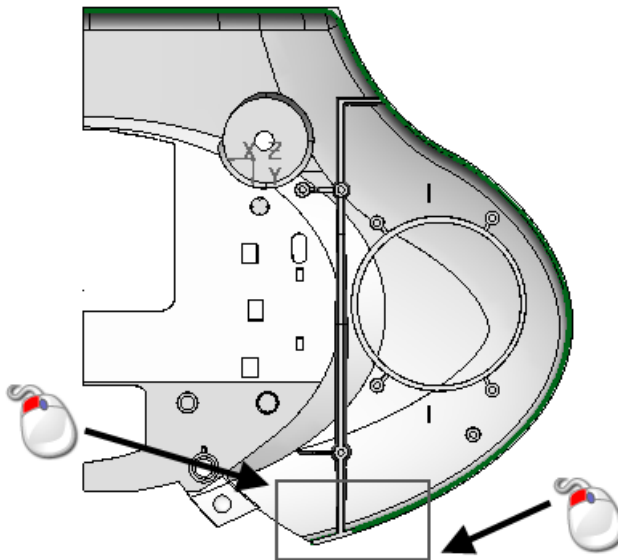
21 Click **Select** .


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



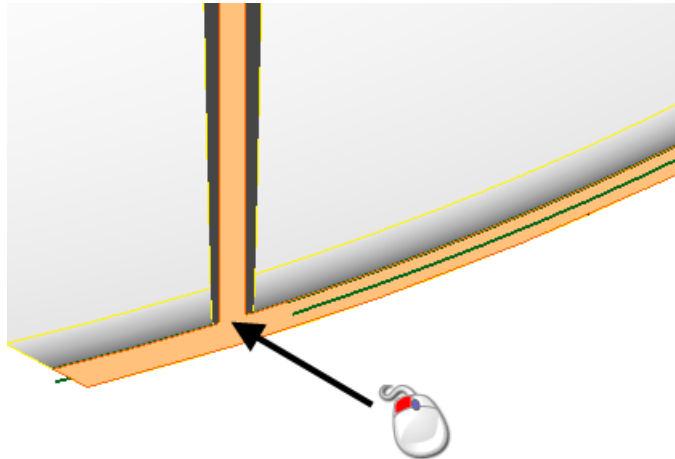
20. Divide the lip faces


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

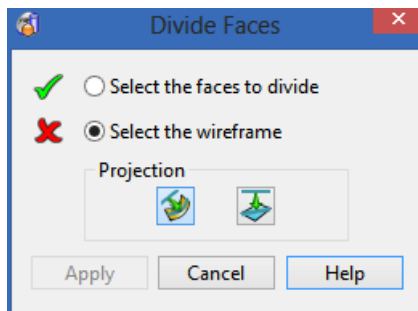


- 3 Click the solid.
- 4 Click **Select faces of continuous regions** .

- 5 Click the face.

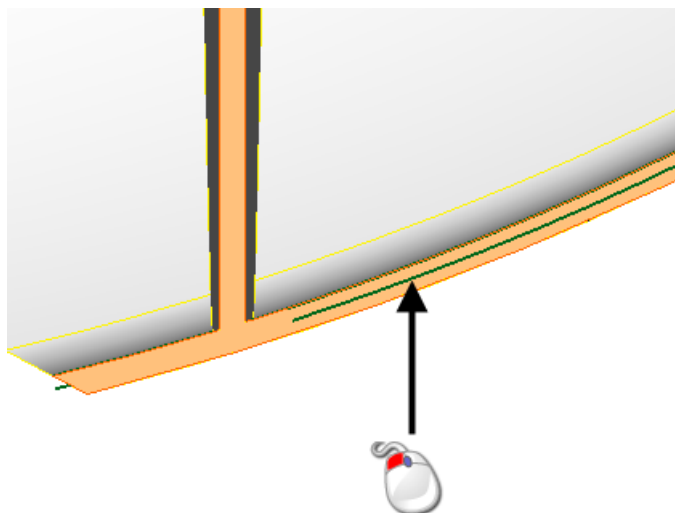


- 6 Click **Divide faces of a solid using wireframe** .
The Divide faces dialog is displayed.



Select the wireframe is active ready for the wireframe used to divide the face to be selected.

- 7 Click **Project wireframe along principal axis of active workplane** .
- 8 Click the composite curve.

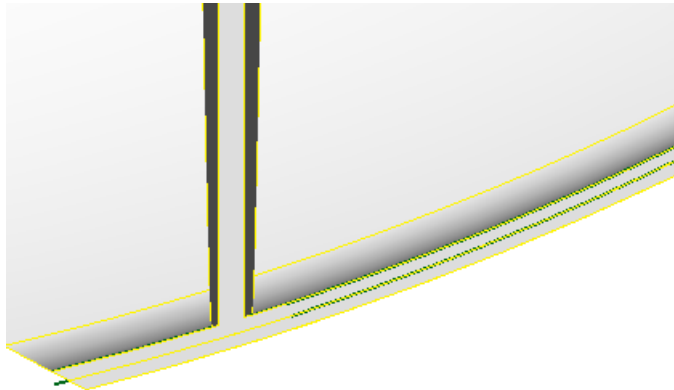


- 9 Click **Apply**.

10 Click **OK**.

11 Click **Cancel**.

The face is divided into two.

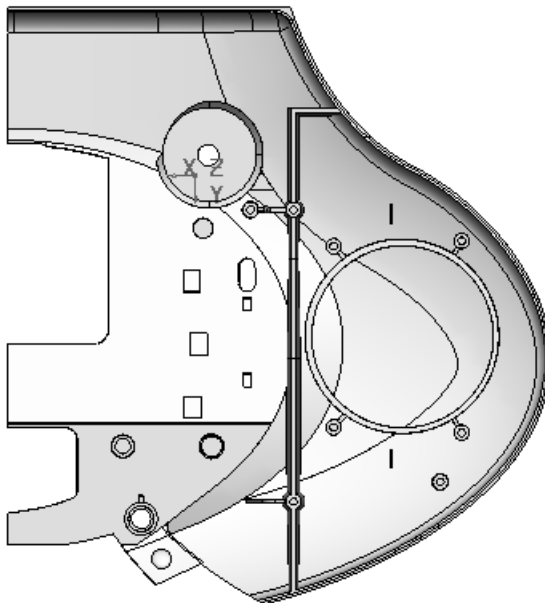


12 Click **Quick select all wireframes** .



13 Click **Delete** .

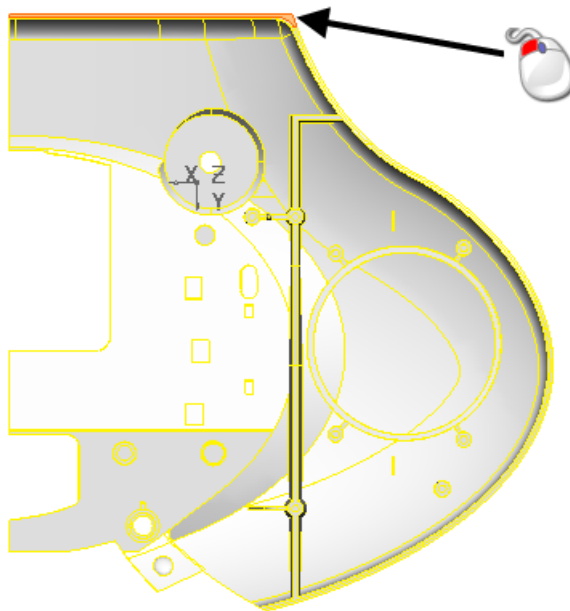
14 Click **Resize to Fit** .



21. Move faces to create a lip

1 Click the solid.

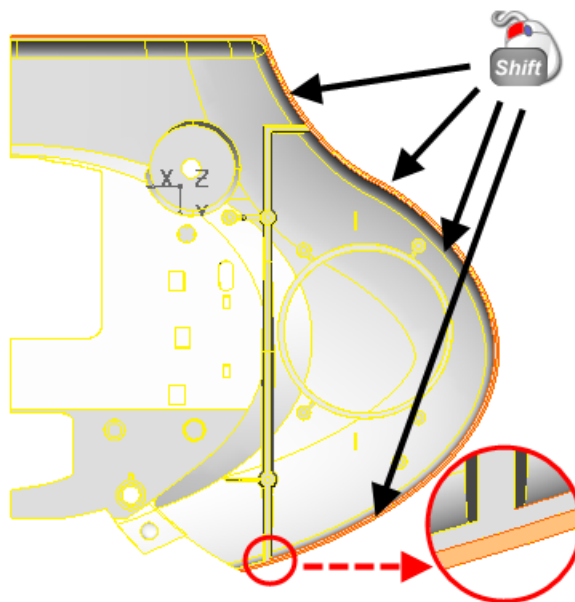
- 2 Click the face shown below:



- 3 Hold down the **Shift** key and click the other faces that make up the outer lip.



Zooming the view in and out will make the selections easier.



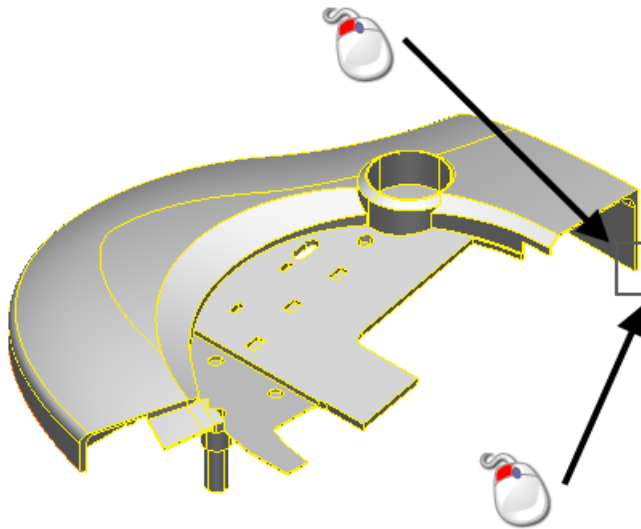
- 4 From the flyout, click **View ISO2**



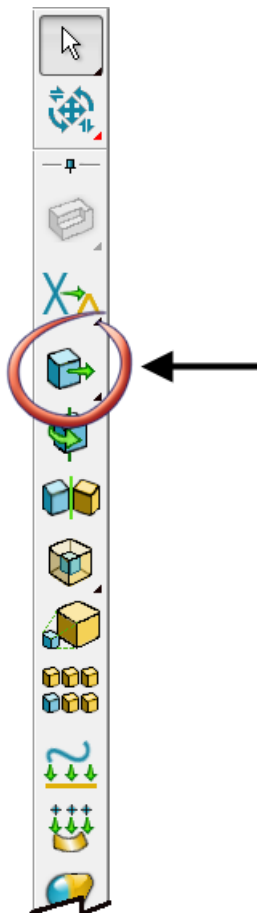
- 5 Click **Zoom to box Mode**



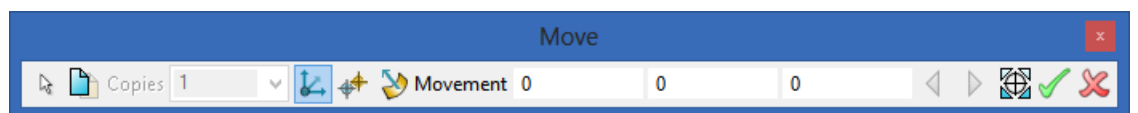
- 6 Click the left mouse button and drag a box, as shown:



- 7 Click **Move/copy items** .

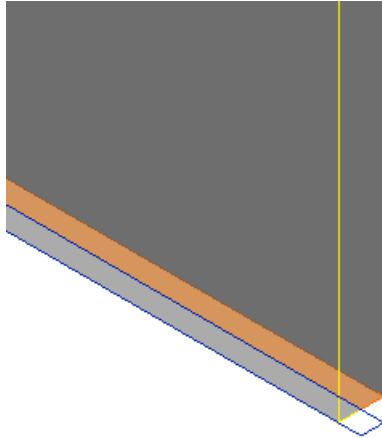





The **Move** toolbar is displayed.

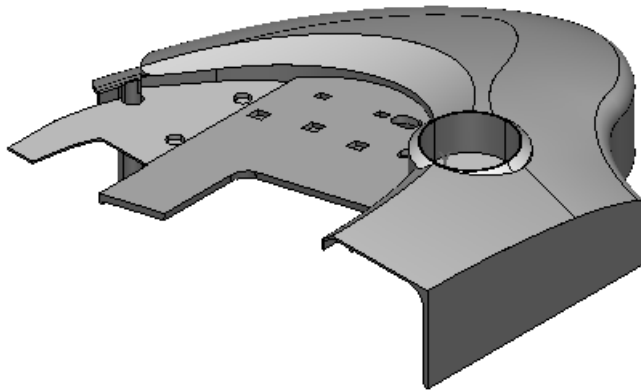
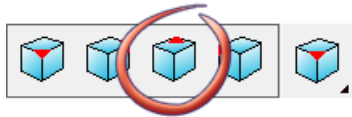


- 8 Enter -1 in the **Z axis**.

The preview move graphics are drawn on the model.
(Image is shown in transparent shaded mode)



- 9 Click **Apply** .
- 10 Click **Dismiss** .
- 11 Click anywhere in the graphics window to deselect the model.
- 12 Click **View ISO3** .



Recognising features in the solid

22. Recognise a hole

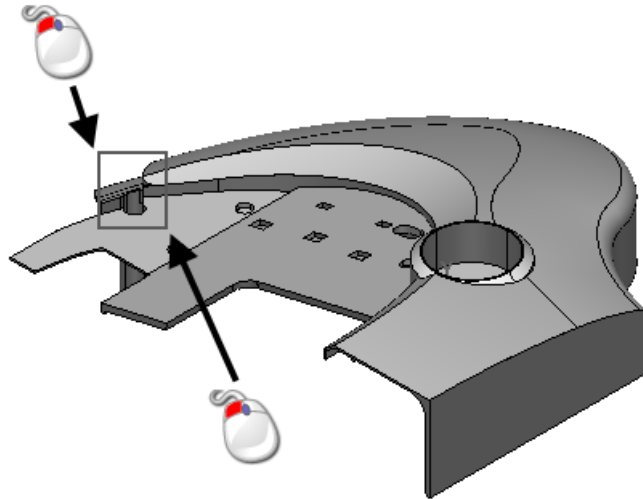
- 1 Click **Show the tree window** .

A single solid is displayed in the solid history tree, there aren't any features.



2 Click **Zoom to box Mode** .

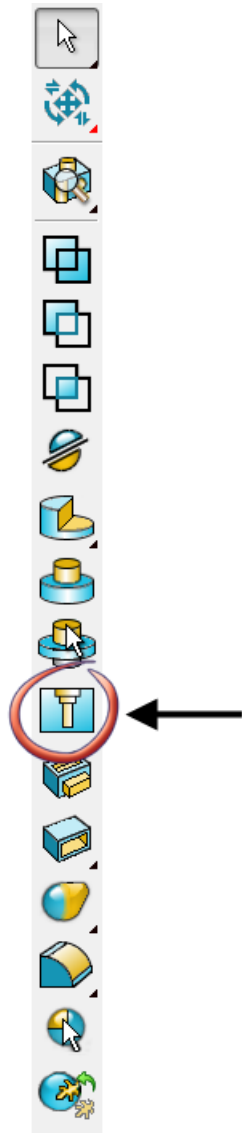
3 Click the left mouse button and drag a box, as shown:



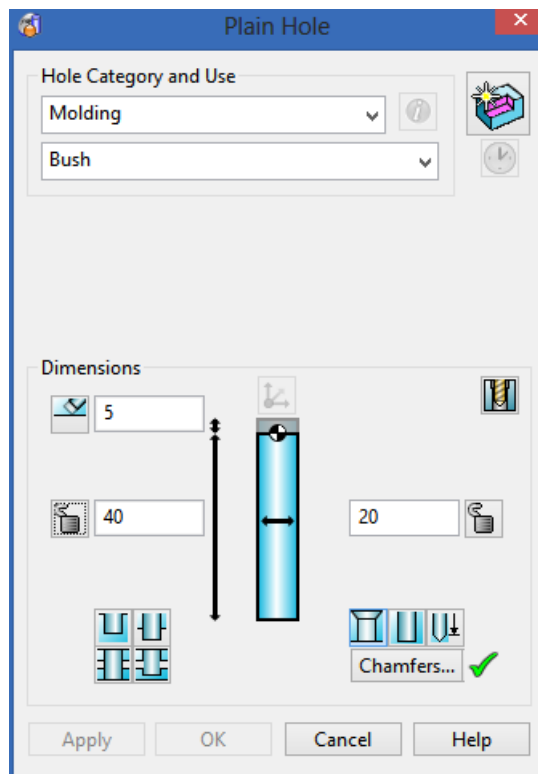
4 Click **Feature** .



5 Click **Create a Hole** .

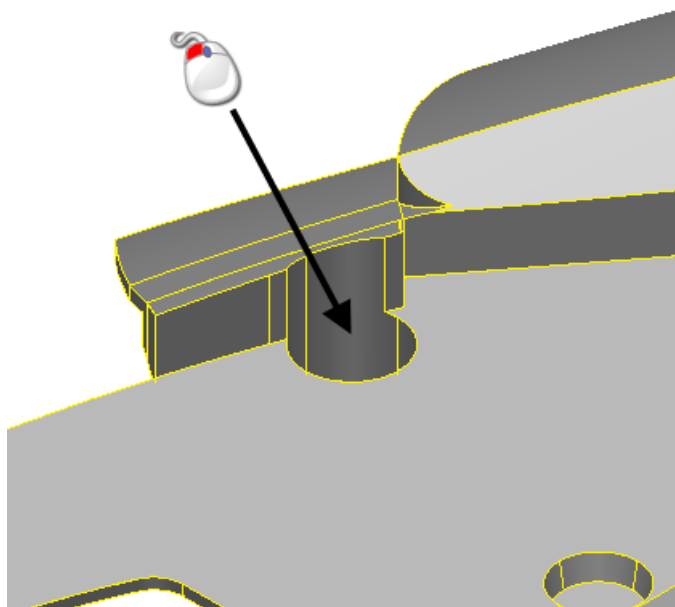


The Hole dialog is displayed.

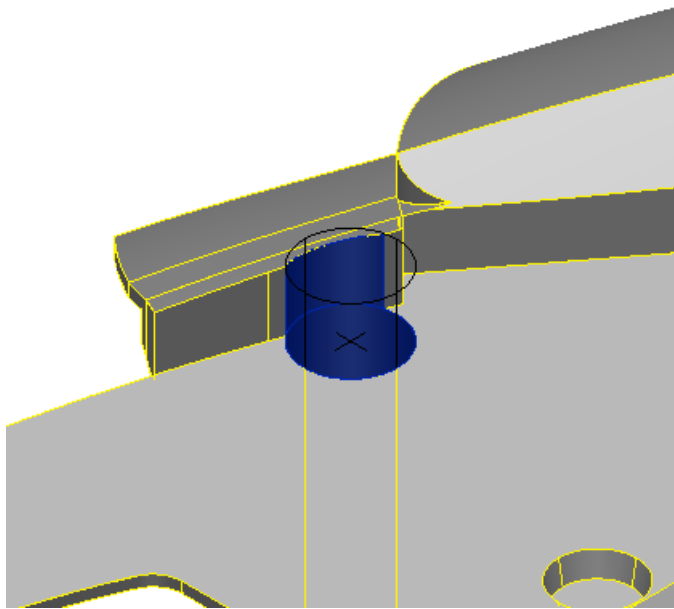


6 Click **Turn feature editing mode on** .


7 Click the hole shaped geometry.



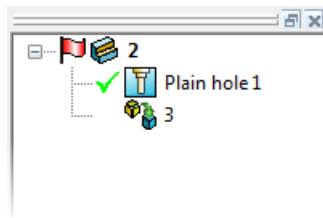
A hole feature is recognised and instrumented.



8 Click **OK**.

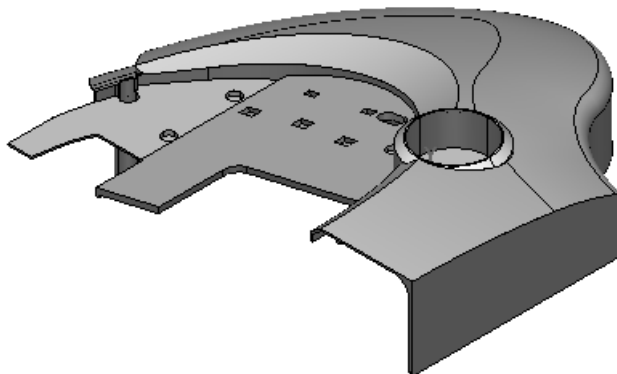
9 Click  to expand the solid history tree.

A hole feature is now displayed in the tree.



10 Click **Resize to Fit** .

11 Click anywhere in the graphics window to deselect the model.

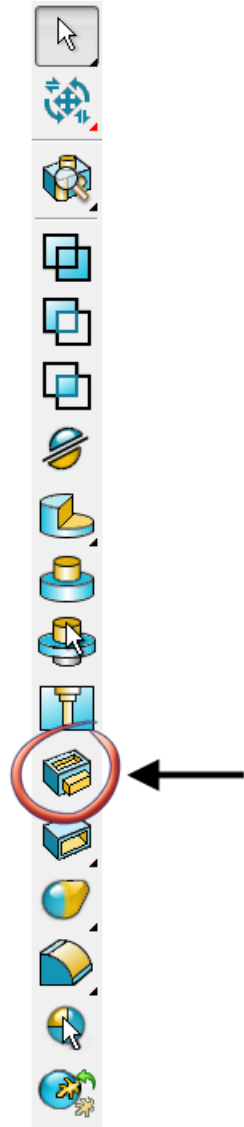


23. Recognise a pocket

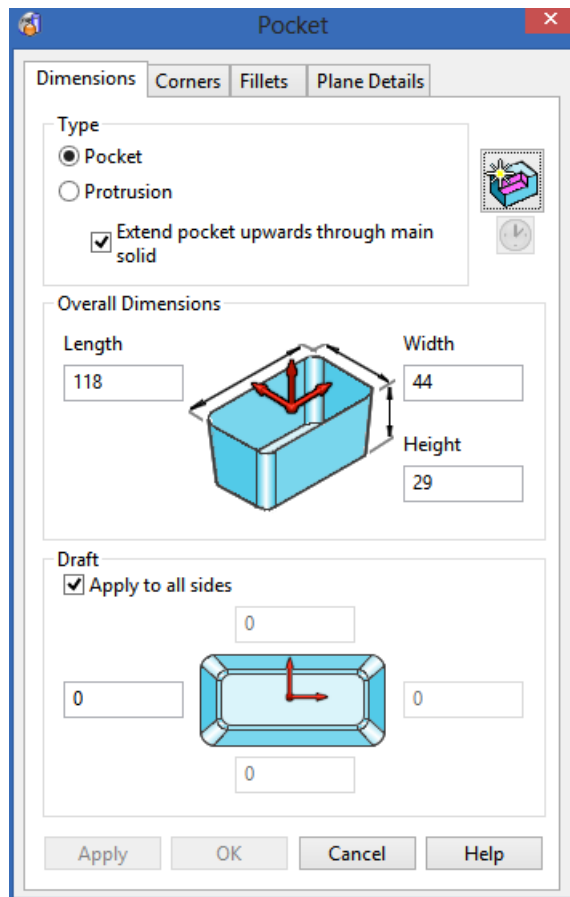
- 1 Click **Feature** .




- 2 Click **Create a solid pocket or protrusion feature** .



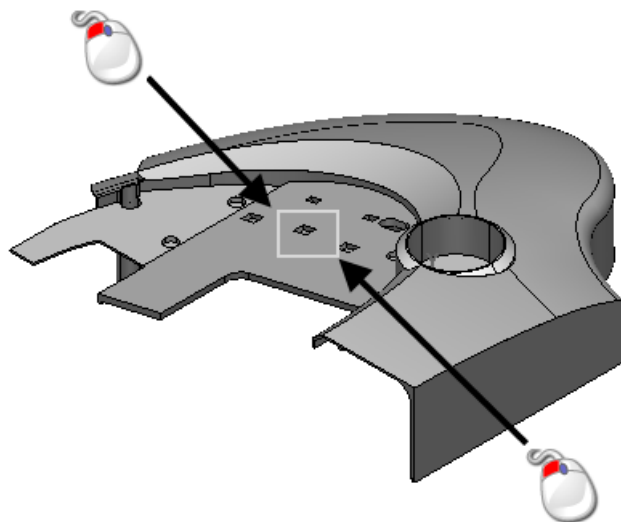
The Pocket dialog is displayed.



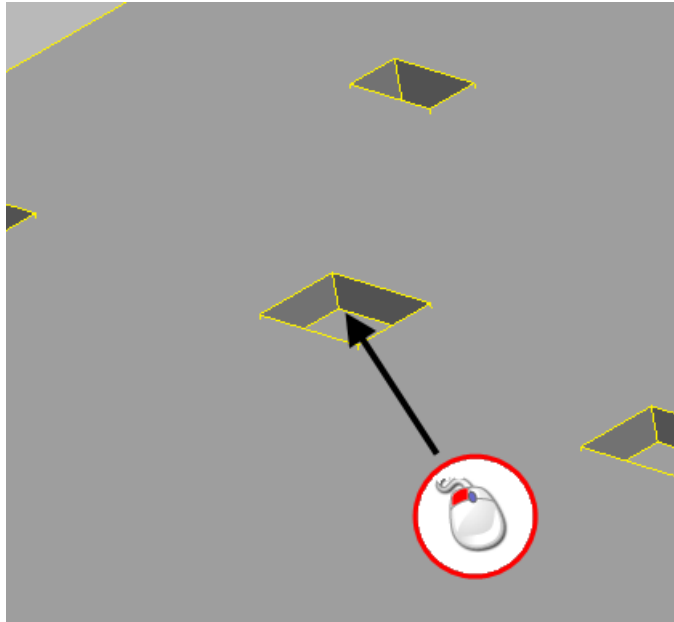
3 Click **Turn feature editing mode on** .

4 Click **Zoom to box Mode** .

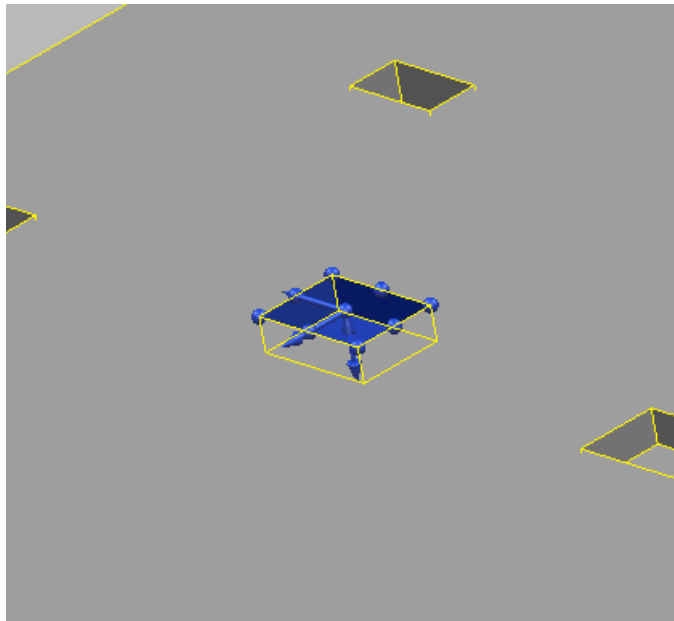
5 Click the left mouse button and drag a box, as shown:



- 6 Click the pocket shaped geometry.

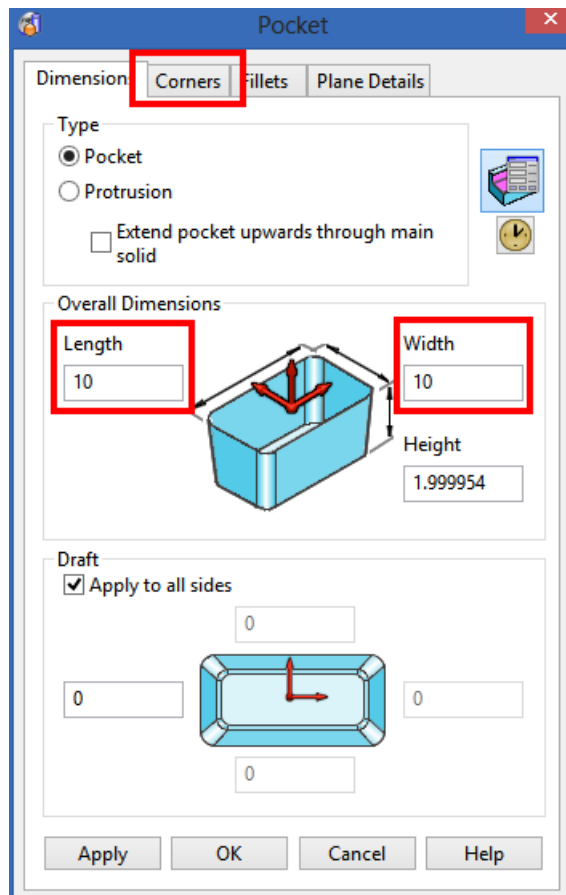


A pocket feature is recognised and instrumented.

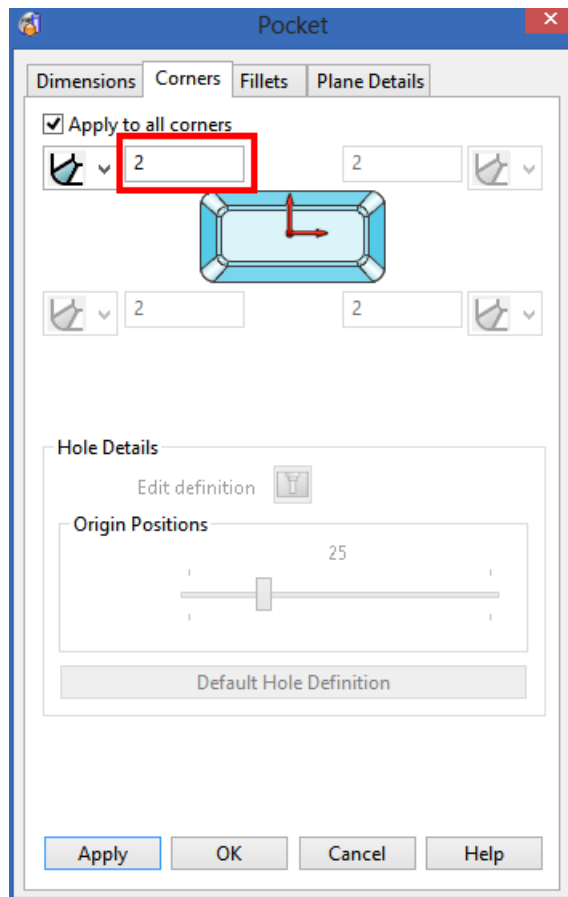


- 7 Enter **10** in **Length**.
8 Enter **10** in **Width**.

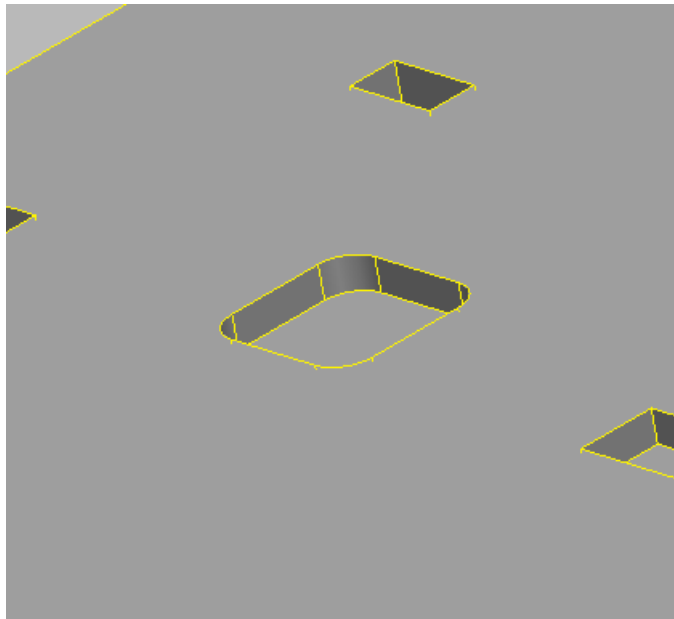
9 Click **Corners** tab.



10 Enter 2 for the **Radius**.



11 Click **OK**.

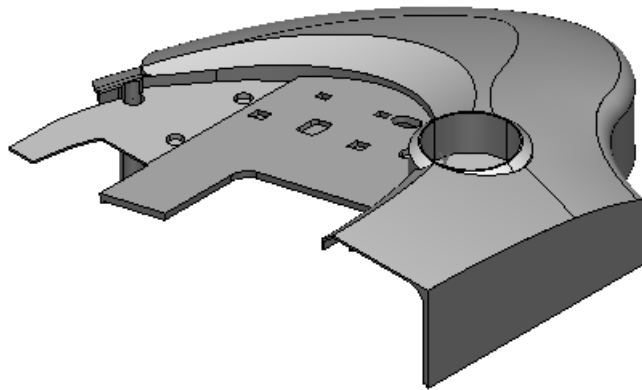


A pocket feature is added to the solid history tree.



12 Click **Resize to Fit** .

13 Click anywhere in the graphics window to deselect the model.



24. Recognise a Fillet

1 Click **View ISO4** .

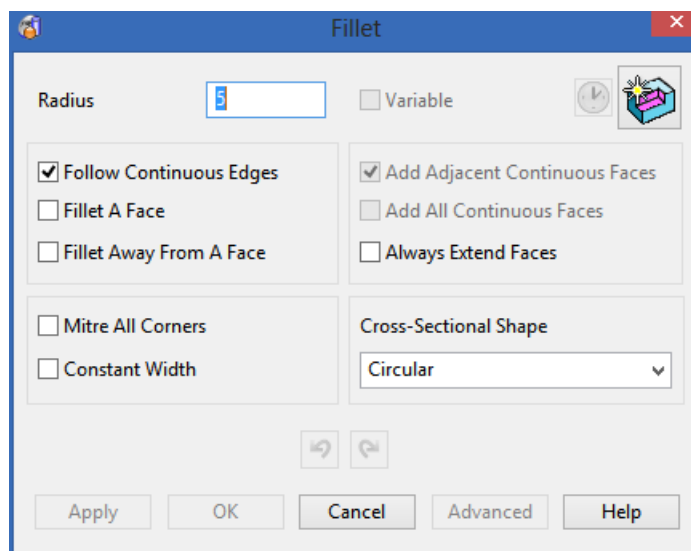
2 Click **Feature** .




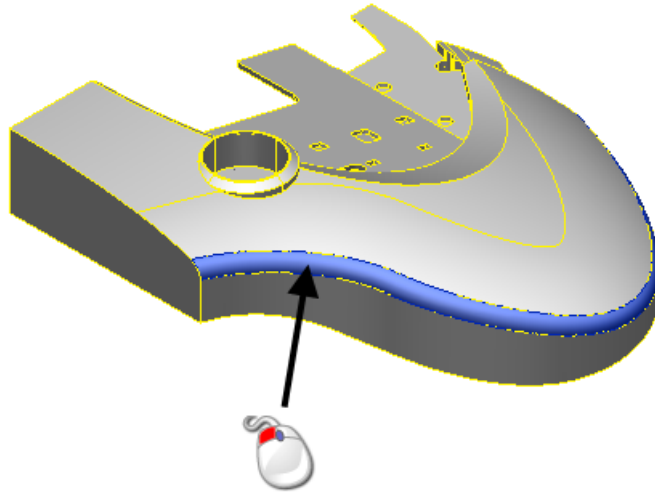
- 3 Click **Create solid fillet** .



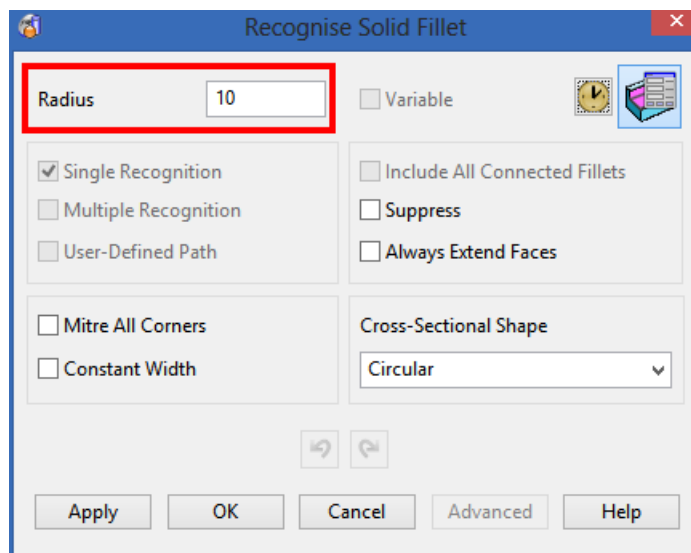
The Fillet dialog is displayed.



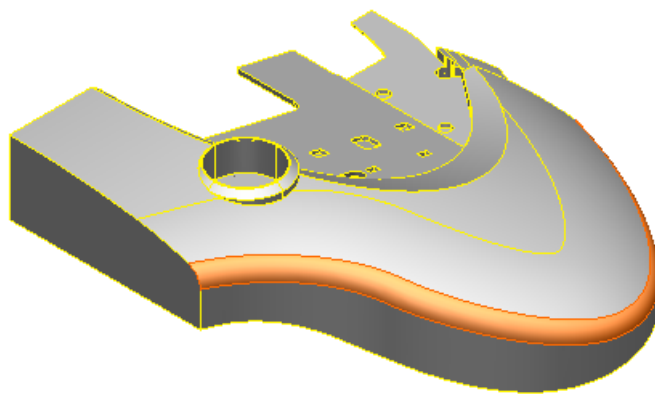
- 4 Click **Turn feature editing mode on** .
- 5 Click the fillet shaped geometry.




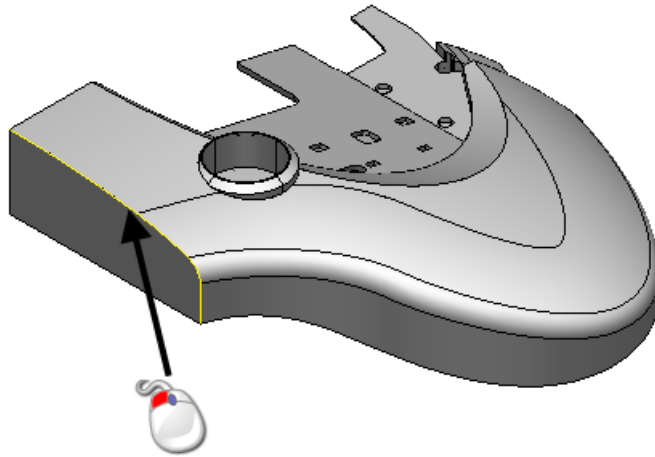
- 6 Enter a **Radius** of 10.



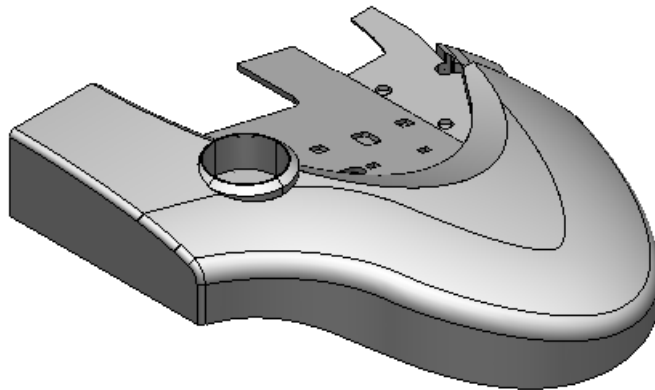
- 7 Click **Apply**.



- 8 Click **Turn feature editing mode off** .
- 9 Click the fillet track.




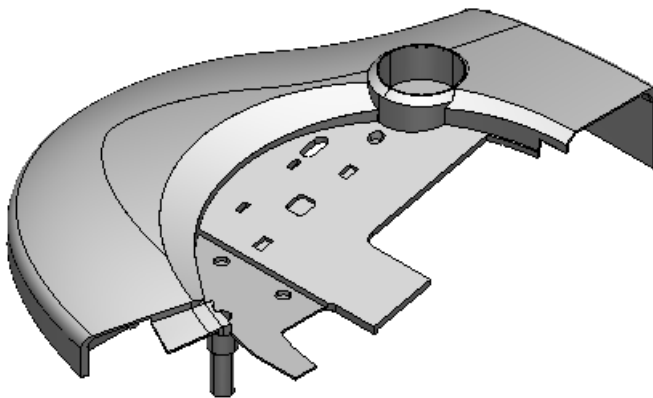
- 10 Enter a **Radius of 3**.
- 11 Click **OK**.
- 12 Click anywhere in the graphics window to deselect the model.




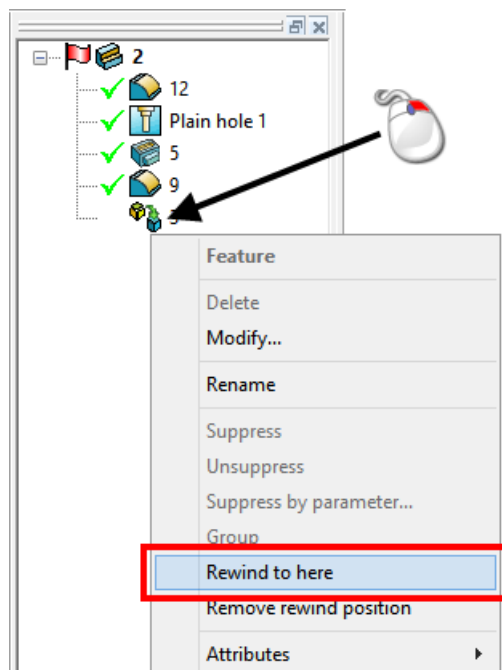
Check the solid without losing the history tree

25. Rewind the tree to the base solid

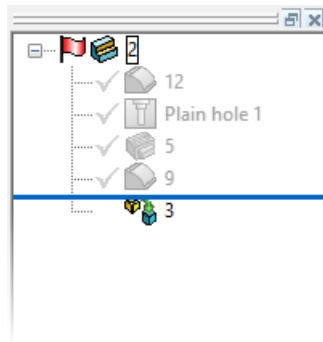
- 1 From the flyout, click **View ISO2** .



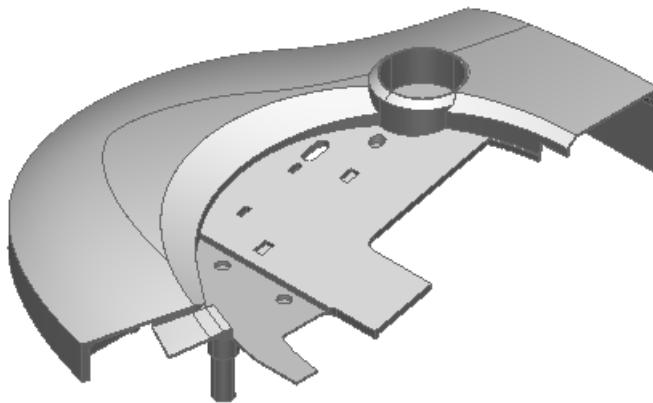
- 2 Click  to expand the solid history tree.
- 3 Click the right mouse button on the base solid and click **Rewind to here**.



All the feature above the base solid are rewound and now become unavailable to edit.



Operations can now be performed on the base solid without removing the solid history tree.



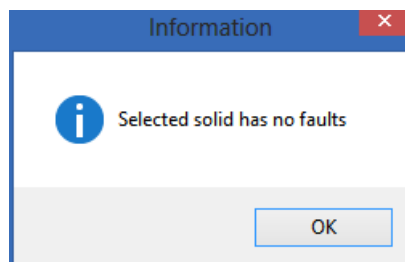
26. Check the base solid with the Solid Doctor

- 1 Click the solid.

- 2 Click **Solid doctor** .

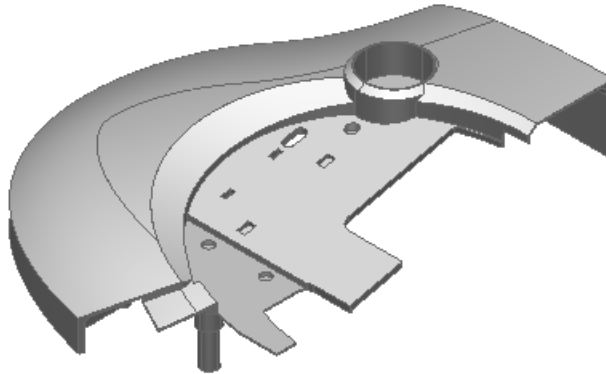
The solid is checked for faults.

The solid has no faults.




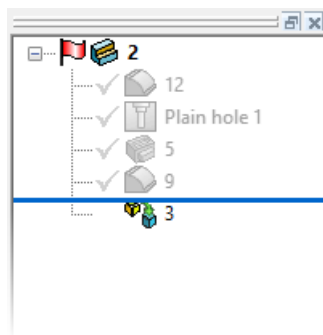
- 3 Click **OK**.

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

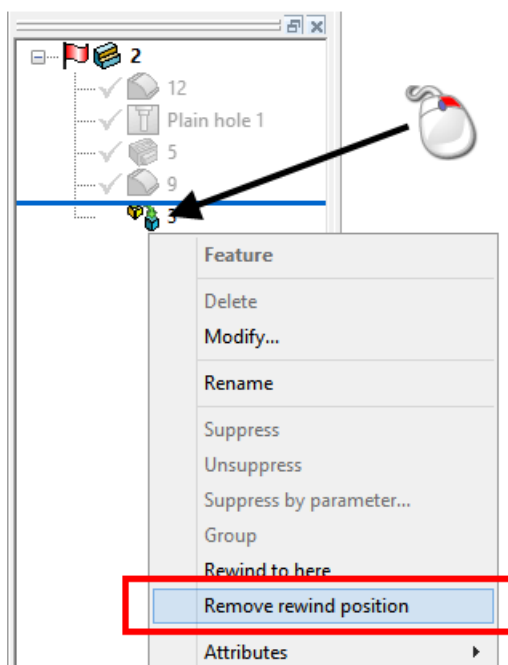


27. Remove the rewind position

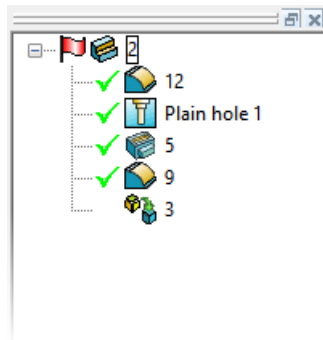
- 1 Click  to expand the solid history tree.



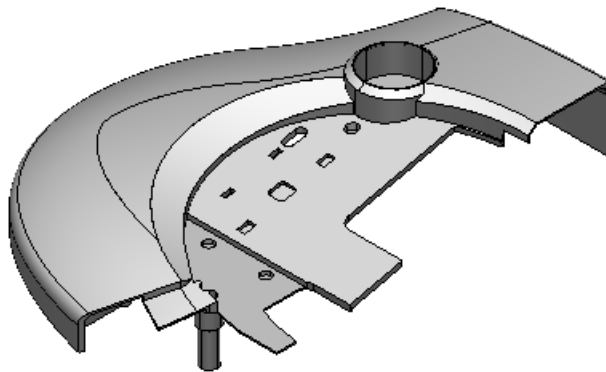
- 2 Click the right mouse button on the base solid and click **Remove rewind position**.



The rewind position is removed and the features are available to edits again.



The tree is still present and the solid is faultless.



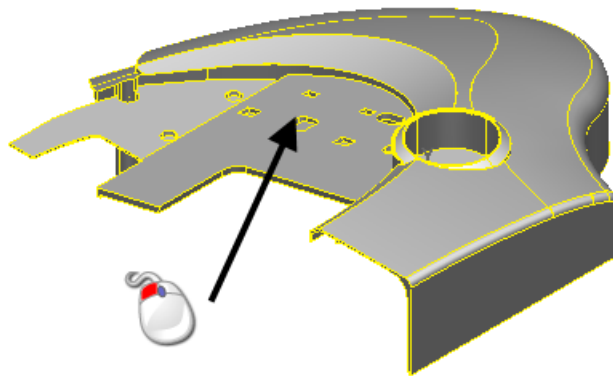
Creating the final model

28. Mirror the solid

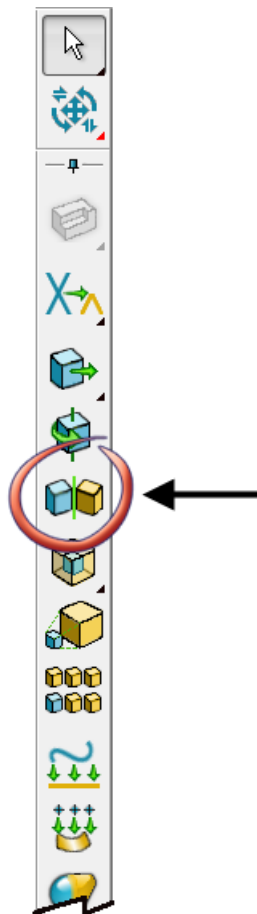
- 1 Click **View ISO3** .



- 2 Click the solid.



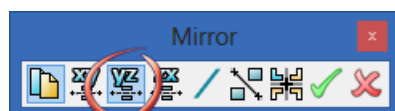
- 3 Click **Mirror/symmetrise object** .



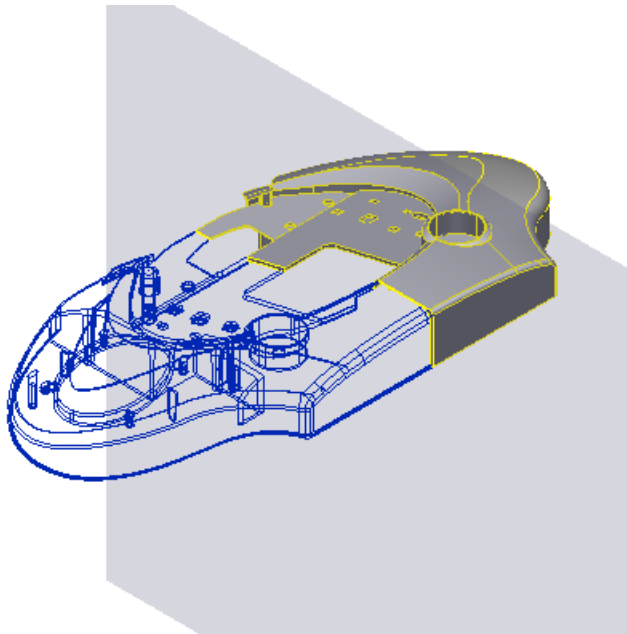
The **Mirror** toolbar is displayed.






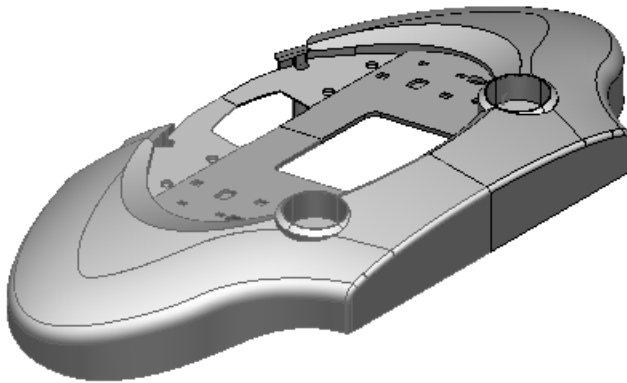
- 4 Click **Mirror in YZ** .



The mirror preview graphics are drawn.

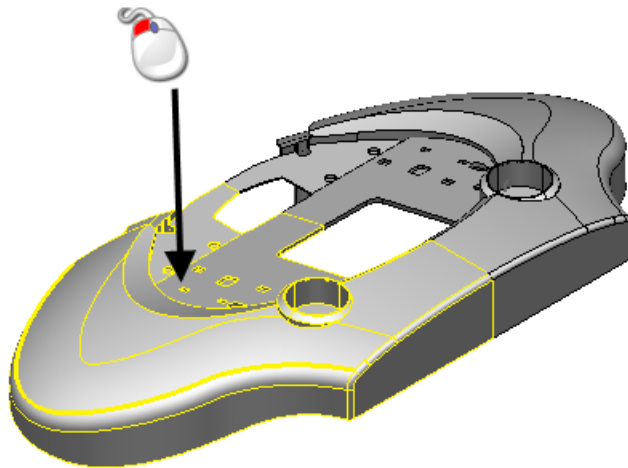


- 5 Click **Apply** .
- 6 Click **Dismiss** .
- 7 Click **Resize to Fit** .



29. Add the two solids together

- 1 Click the solid.




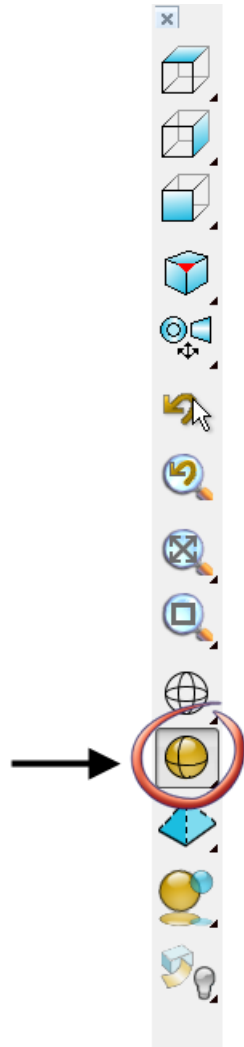
- 2 Click **Feature** .




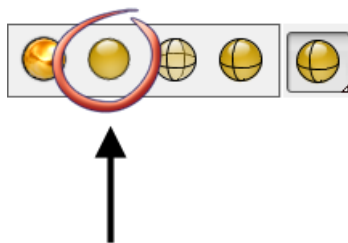
3 Click **Add the selected solid** .



- 4 Click **Shaded and Wireframe view**  using the right mouse button.



- 5 From the flyout, click **Shaded View** .



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



Summary

You have edited and recognised features of a solid.

You have done the following:

- Moved faces of a general solid
- Created and edited a workplane
- Scaled faces of a general solid
- Rotated faces of a general solid
- Removed and healed faces of a general solid
- Divided faces of a general solid
- Added draft to a faces of a general solid
- Split the solid using one of the faces of the general solid
- Recognised features of a solid to create a history tree
- Rewound the solid history tree
- Checked the solid with the solid doctor without losing the history tree
- Mirrored the solid
- Applied boolean operations to the solid