

Lesson 12

Adding Fillets and Chamfers

Learning Objectives

Upon completion of this lesson, the user will be familiar with the fillet and chamfer tools.

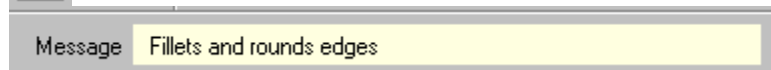
We can use the bracket created in the previous lesson to practice adding chamfers and fillets.



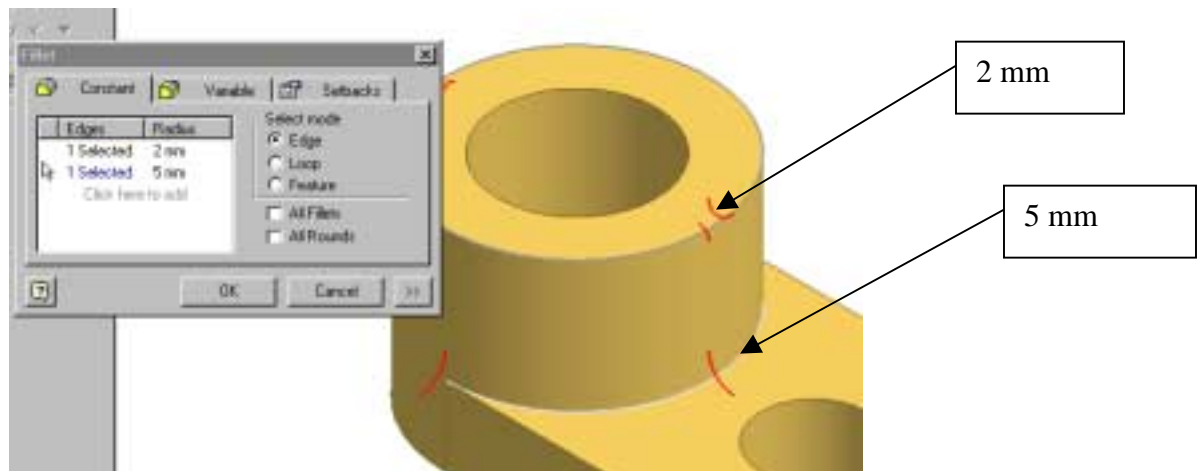
Select 'open' and locate the 'lesson11.ipt' file.

Constant Fillet

To add a constant fillet, select the Fillet tool from the Features toolbar.



Note that the Message box in the Command Bar displays that we have selected the Fillet tool.



The Fillet dialog box appears. Highlight inside the box where it lists edges and then select the top edge of the cylinder. We should see the edge of the cylinder highlight in green and the number of edges change from 0 to 1. Accept the value of 2. Pick the line below it to add another edge. Select the bottom edge of the cylinder as shown. Set that fillet to 5 mm. Verify that 'Edge mode' is enabled under 'Select Mode'.

Press 'OK'.

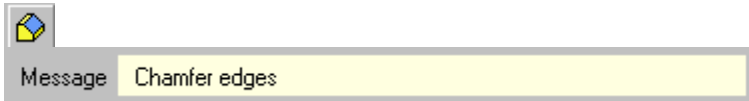


Our model with the fillets added.

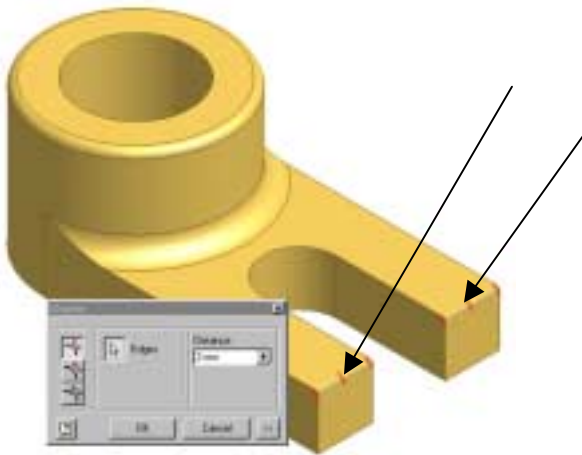
The chamfer tool acts similar to the fillet tool.

Chamfer – Equal Distances

We will chamfer the two ends of the bracket.



Again, we notice that the Message text changes when our mouse rolls over the Chamfer tool. We select the chamfer tool using a left-pick.



The Chamfer dialog box appears.

Select the two edges shown.

We will use the top Chamfer option, which is Equal Distance.

We will accept the default distance of 2mm.

Press 'OK'.

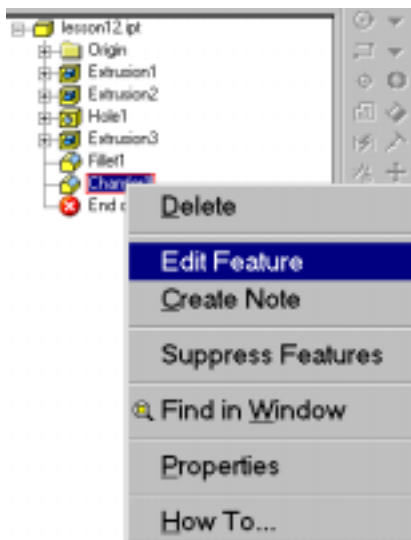


Our model with the chamfers added.

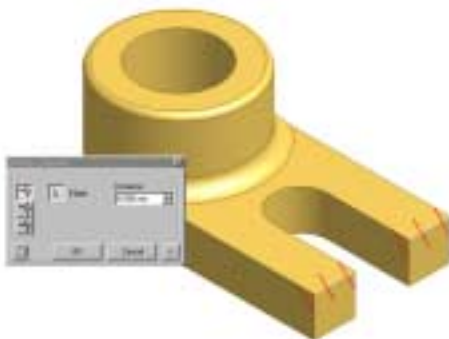
Modify Chamfer

We note that the chamfer appears too small, so we would like to edit the value. This is relatively easy.

In the Browser, select the chamfer, right-click and select 'Edit Feature'.



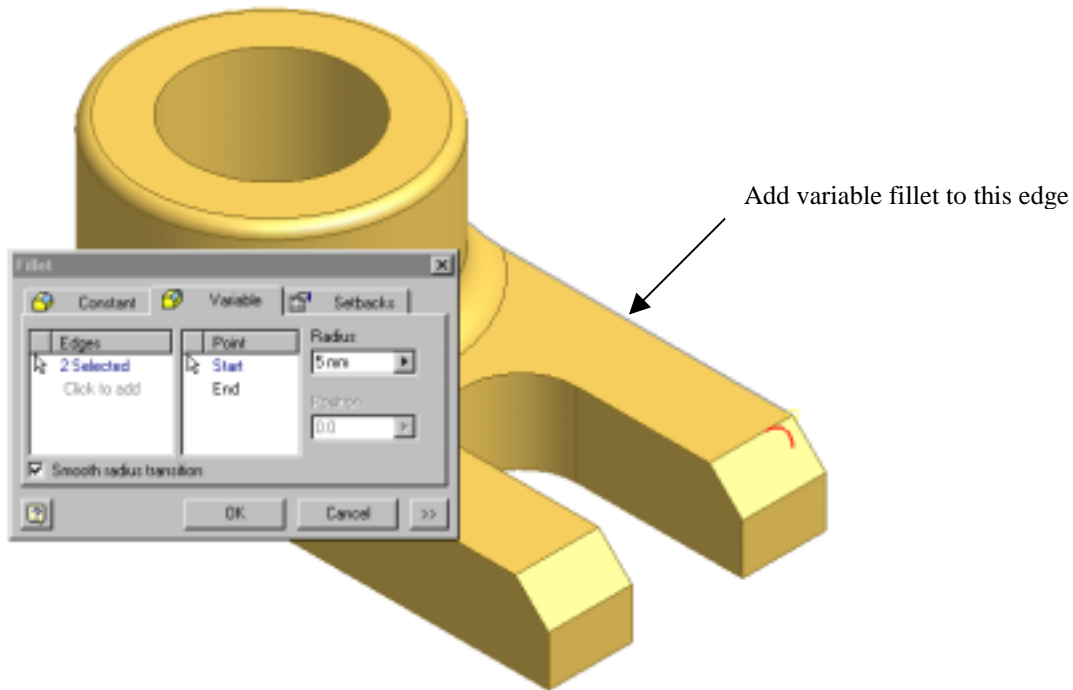
In the Chamfer Dialog box, edit the 2mm dimension and change it to 6 mm. Press 'OK'.



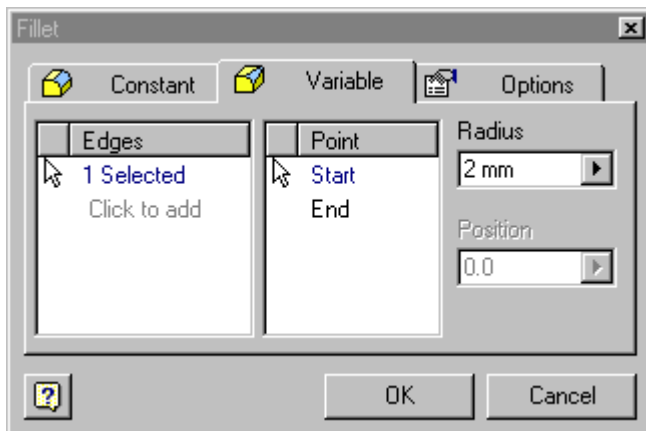
Note that the part automatically updates.

Variable fillet

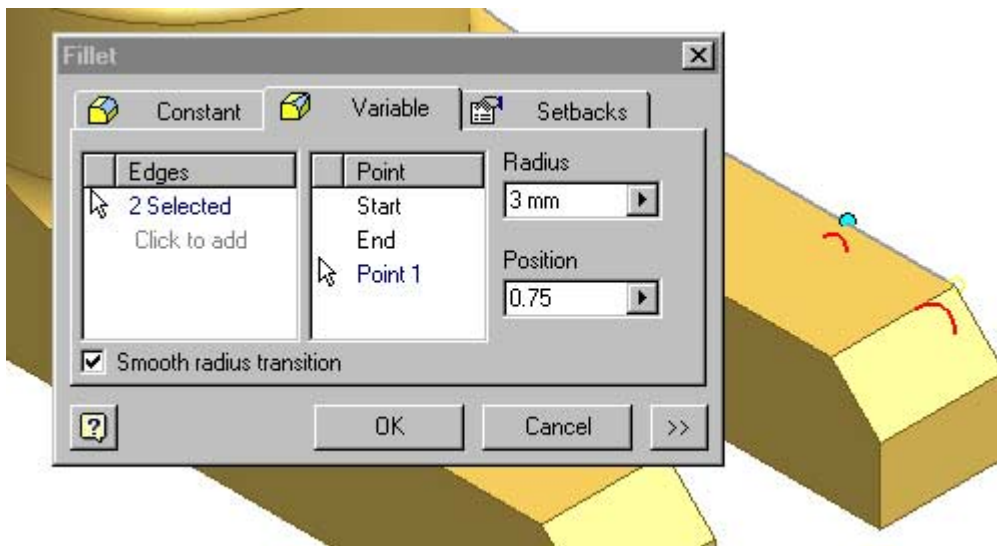
Initiate the fillet tool again.



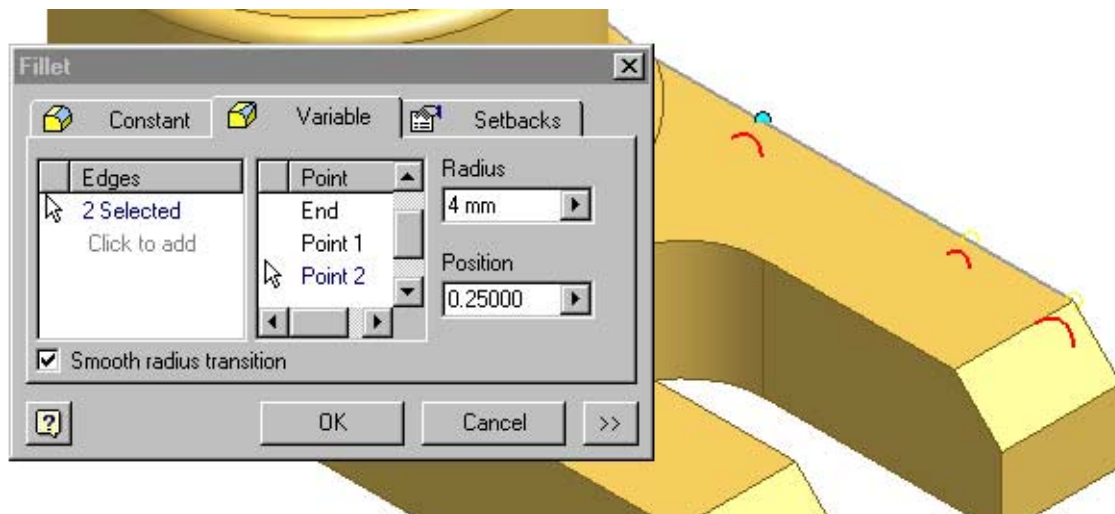
Select the Variable tab. Then pick the indicated edge.



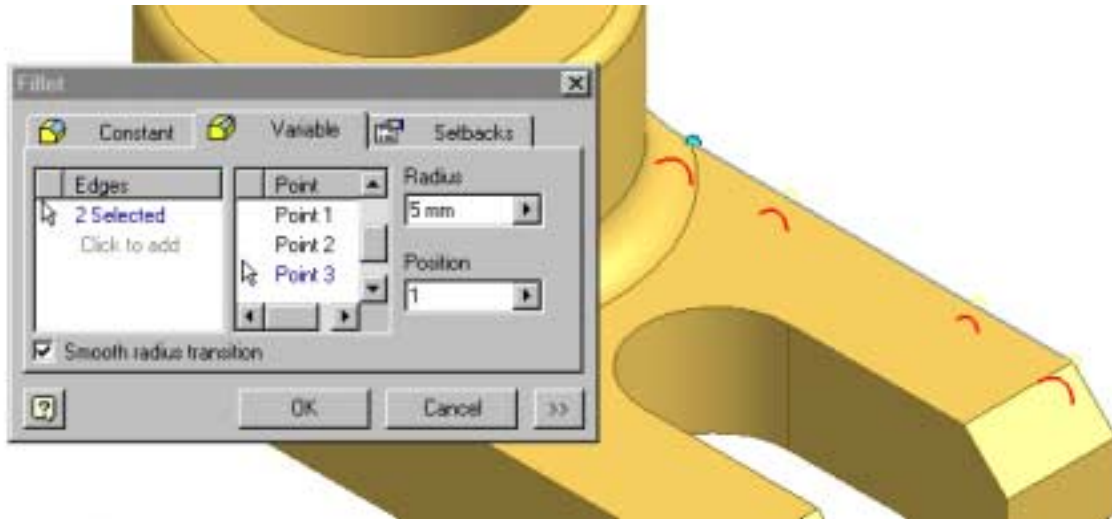
Notice that one edge is shown selected. The start point is highlighted in the graphics window and the radius is set at 2 mm.



Pick a point on the edge. Set the position to 0.75. Notice the point will shift to the correct location. Set the radius to 3 mm.



Pick a point on the edge. Set the position to 0.25. Notice the point will shift to the correct location. Set the radius to 4 mm.



Pick a point on the edge. Set the position to 1. Notice the point will shift to the correct location. Set the radius to 5 mm.



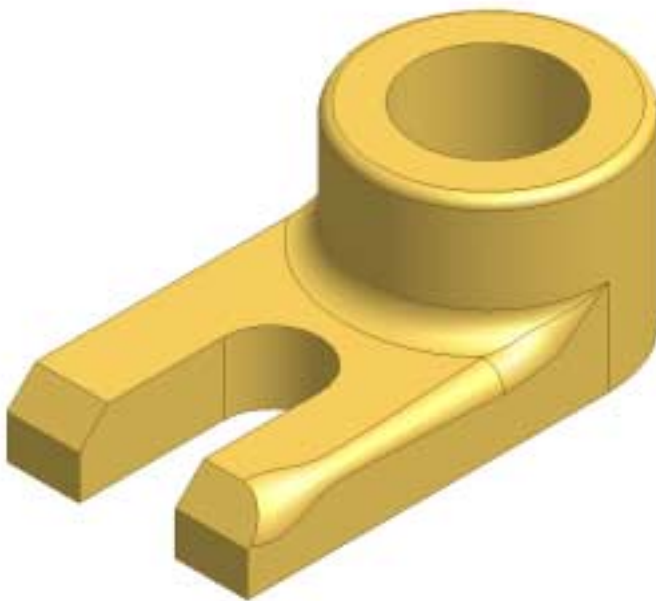
TIP: Do NOT press 'OK' until you are done placing points. If you accidentally press 'OK', highlight the fillet in the browser or graphics window, right click and select 'Edit Feature' to add additional points. To delete a point, select it and press the 'Delete' key on the keyboard.



TIP: To modify or check any of the point values, highlight the point in the point dialog box and the radius and position for that point will be displayed. The values can be edited easily. Note: Once a point is added, it **CANNOT** be deleted. The user would have to delete the fillet and redefine.



Highlight the End point in the point list and modify the radius to 7 mm. Press 'OK'.



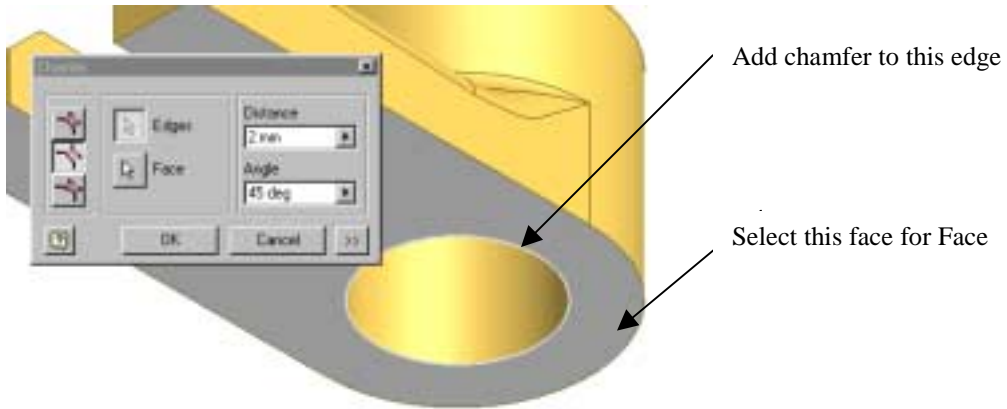
The variable fillet.

Experiment with different point positions and values to see how the fillet changes.

Chamfer Distance- Angle

Let's add a chamfer using Distance-Angle to the bottom hole.

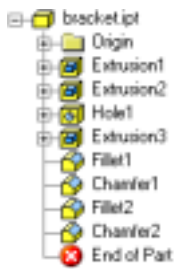
Select the Chamfer tool.



Set the distance to 2 mm and angle to 45 deg.



TIP: If you create a chamfer using one method, i.e. Equal Distance, you CAN use 'Edit Feature' to change it to a different method, i.e. Distance-Angle without having to delete the chamfer.

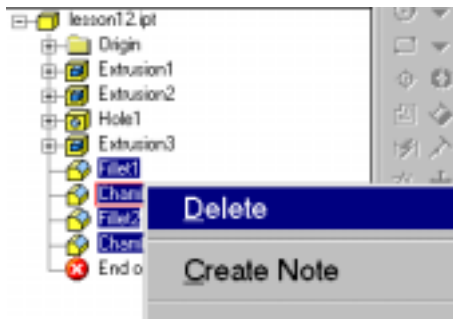


Notice that in the browser there is no distinction between a chamfer created using Equal Distance and a chamfer using Distance- Angle. A chamfer is a chamfer.



To delete fillets and chamfers

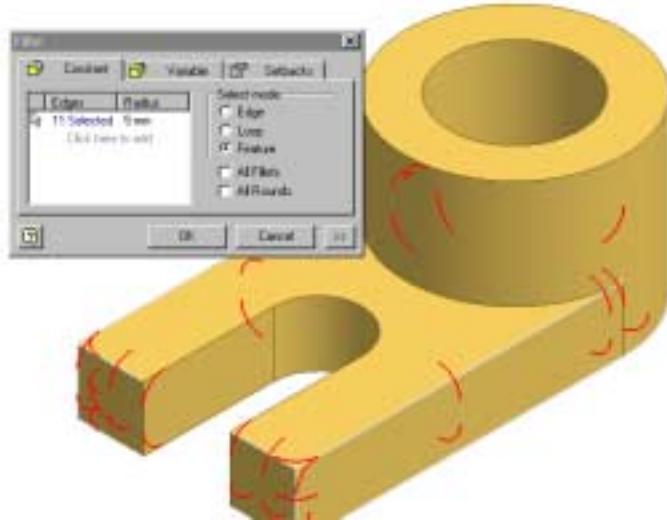
Highlight the fillet in the browser, right click and select 'Delete'. Notice that the corresponding feature also highlights in the graphics window.



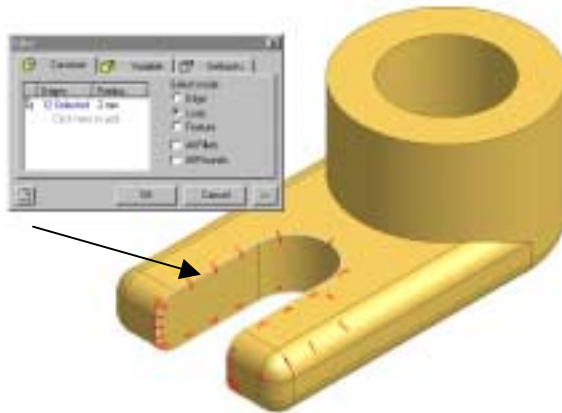
Delete all the fillets and chamfers. You can select and delete them all at one time by holding down the Control key to perform a multi-select.

To quickly add fillets

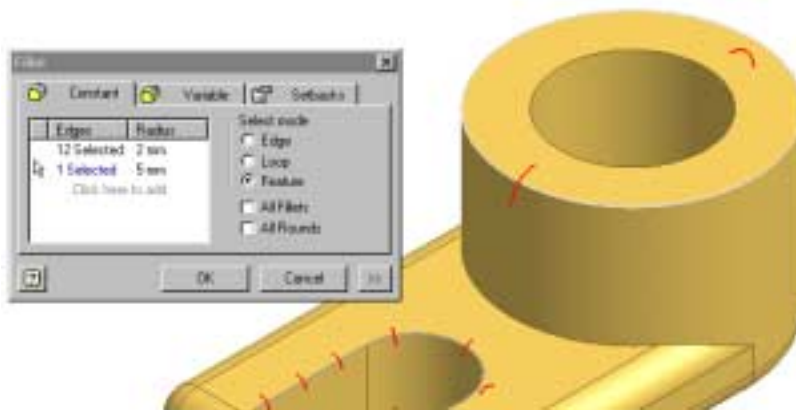
Select the fillet tool.



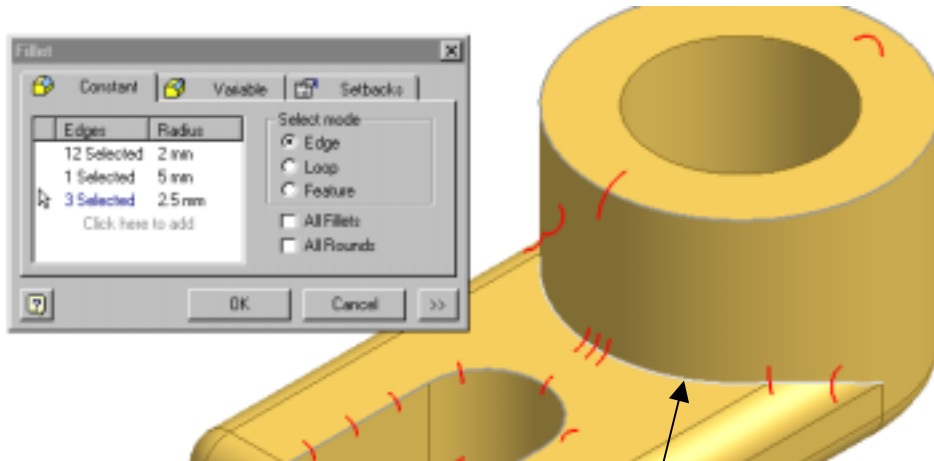
Enable the Feature select mode. Select the Extrusion1 in the browser.
Set the Radius to 5.
Press 'OK'.



Select the fillet tool. Enable loop mode. Select the edge indicated. Set radius to 2 mm.
Select the next line in the Fillet dialog box.

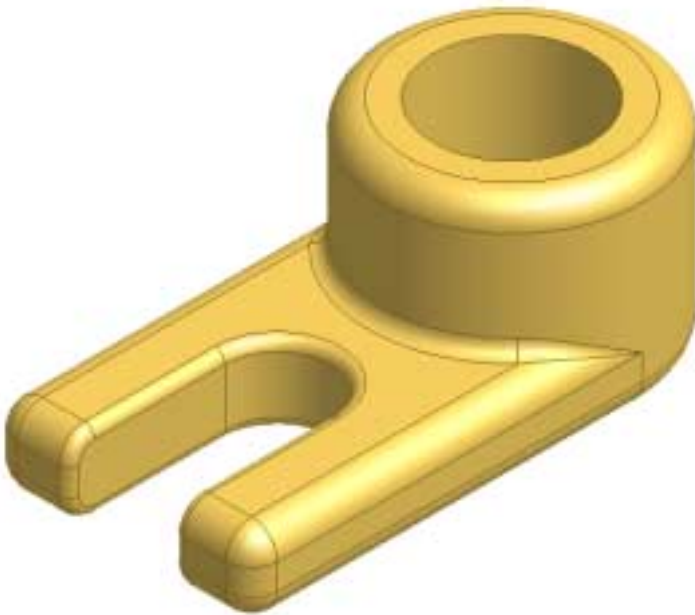


Enable the Feature select mode.
Select Extrusion2 in the browser.
Set the Radius to 5 mm.



Select the next line in the Fillet dialog box.
Set the Select mode to Edge.
Select the bottom of the cylinder.
Set the radius to 2.5 mm.

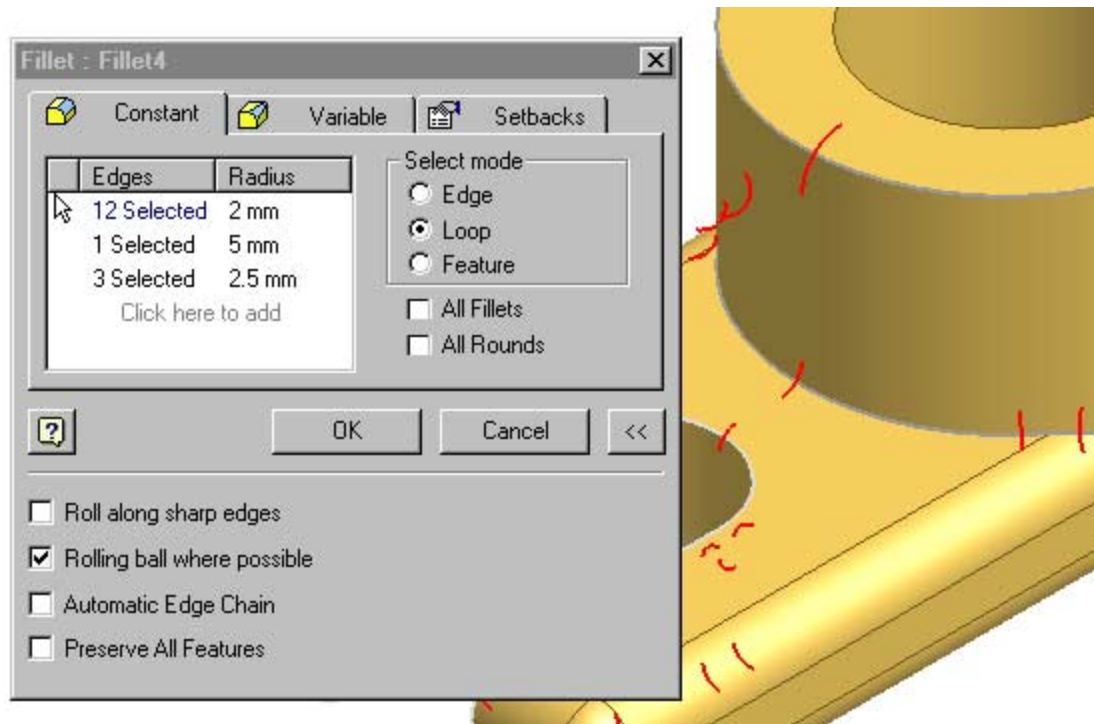
Press 'OK'.



Zoom in to the corner where the fillets meet.



The method in which corners are created is set in the More area of the fillet dialog box.



Select the fillet just created in the browser. Right click and select 'Edit Feature'. Click the More button. Disable Automatic Edge Chain. Press 'OK'.



Blend Option



Rolling Ball option

Compare the difference on corner preferences.

Review Questions

1. True- False

You cannot add a chamfer to a hole feature.

2. True- False

You cannot add a fillet to a hole feature.

3. When creating a variable fillet to add a point:

- A. Press the add button in the dialog box
- B. Pick a point on the selected edge
- C. Use the point tool on the sketch toolbar
- D. Enter in the coordinates for the point

4. The option mode for chamfer that is NOT available in Inventor is:

- A. Two Distances
- B. Equal Distances
- C. Distance-Angle
- D. Two Angles

5. The option mode for a constant fillet that is NOT available in Inventor is:

- A. Edge
- B. Loop
- C. Feature
- D. Plane

6. The tab on the fillet dialog box that is NOT available is:

- A. Settings
- B. Constant
- C. Variable
- D. Options

7. To delete a chamfer:

- A. Highlight the chamfer in the browser, right click and select 'Modify'.
- B. Highlight the chamfer in the browser, right click and select 'Delete'.
- C. Highlight the chamfer in the browser, right click and select 'Edit Feature'.
- D. Select the Erase tool and then select the chamfer.

ANSWERS: 1) F; 2) F; 3) B; 4) D; 5) D; 6) A; 7) B

8. True-False

Once you create a variable fillet, you cannot add points.

9. True-False

Once you create a variable fillet, you cannot delete points.

10. True-False

Once you create a chamfer using a method, you cannot modify the chamfer to use a different method.

ANSWER: 1) F; 2) F; 3) B; 4) D; 5) D; 6) A; 7) B; 8) F; 9) T; 10) F