

Inventor 11 TUTORIAL 11

Cylindrical Cam?

Learning Objectives

After completing this tutorial, you will be able to:

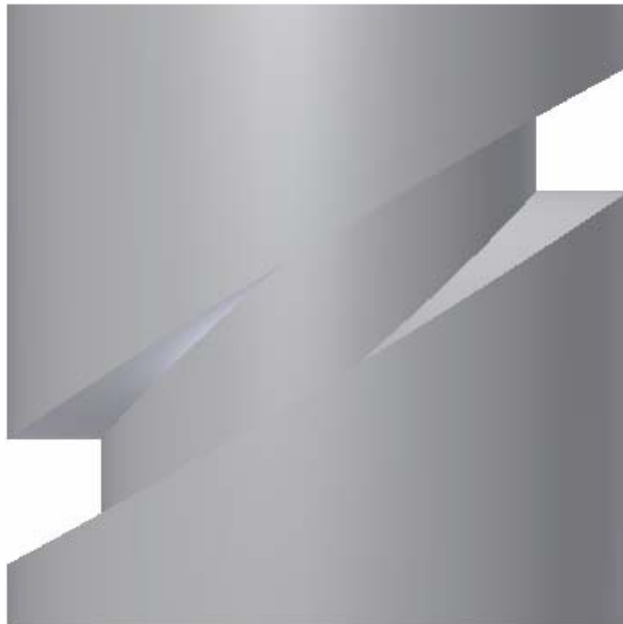
- Demonstrate advantages of 3D design for even “simple” parts.
- Use the Emboss command to create “sacrificial” geometry

Required Competencies

Before starting this tutorial, you should have been able to:

- Create Inventor sketches
- Use the Loft command
- Use the Split command

Some parts that are trivial to draw with traditional 2D orthographic projection methods can turn out to be quite difficult to manufacture as designed. The process of creating a virtual 3D model can reveal some of the problems that might be encountered in manufacturing. This tutorial assumes that the user is completely familiar with creating precise 2D sketches of arcs, lines, polylines, and splines in any location as well as the 3D tools from previous releases.



Cylindrical Cam

1. Open the Cylindrical Cam.ipt file. Make Sketch1 visible. Revolve the sketch.

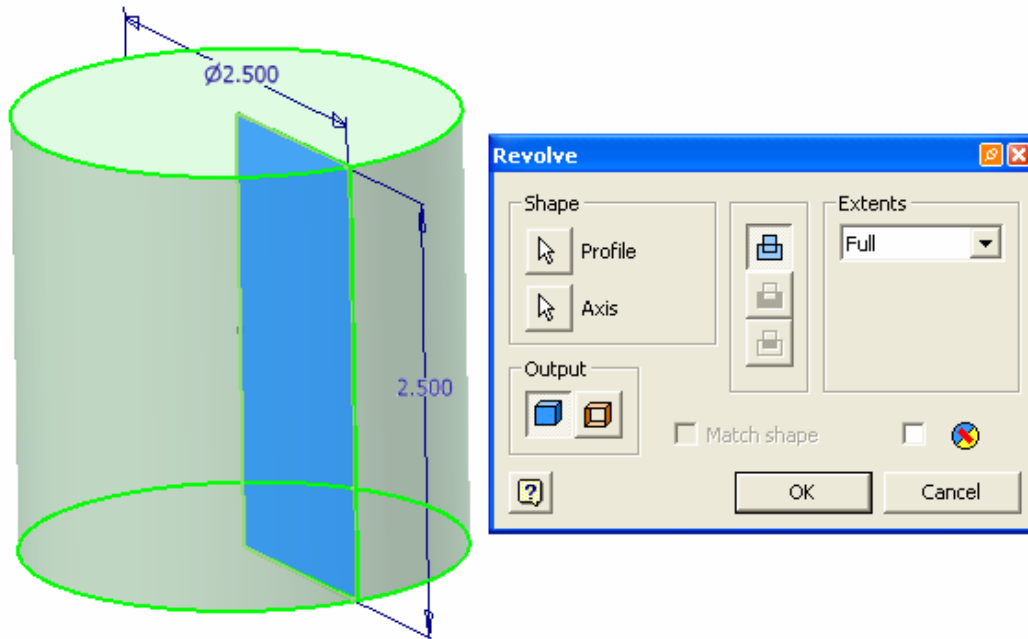


Figure 1

2. Make Sketch2 visible and attempt to Emboss-cut the sketch onto the cylinder with Wrap to Face.

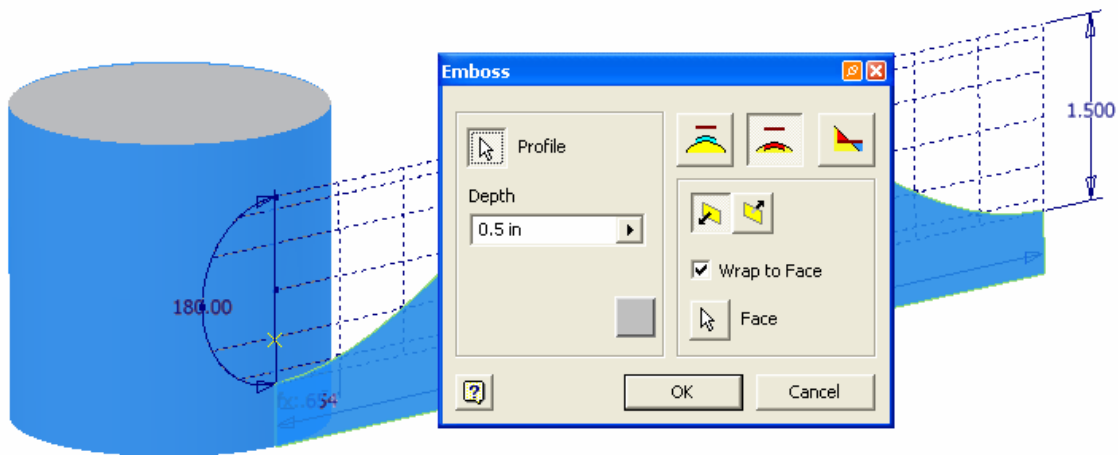


Figure 2

3. Edit Sketch2 and add a line bisecting the sketch.

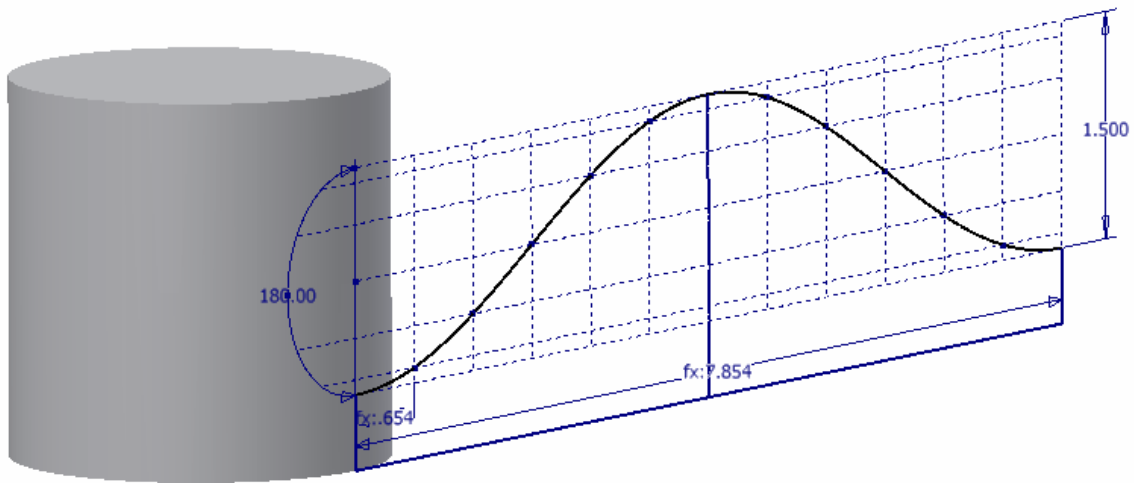


Figure 3

4. Emboss-cut the half of the sketch onto the cylinder with Wrap to Face.

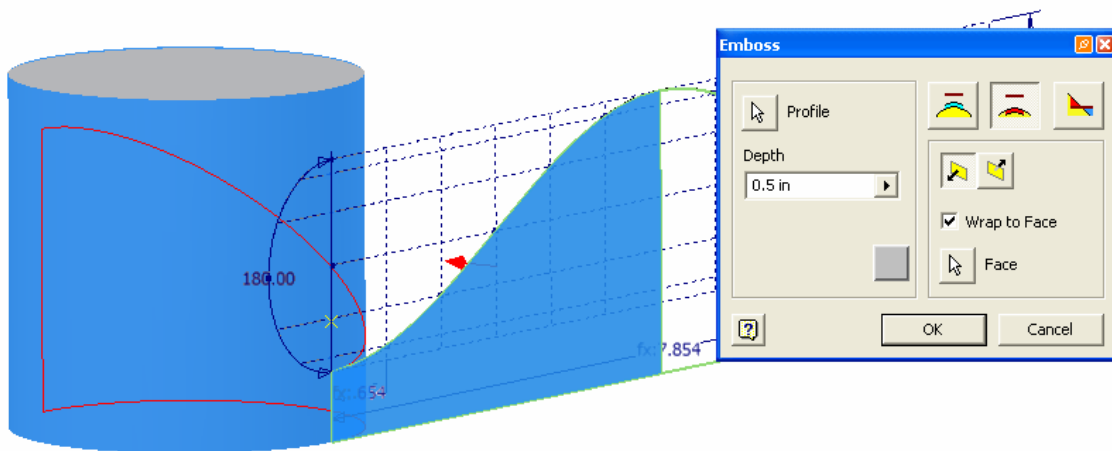


Figure 4

5. Share Sketch2. Emboss-cut the other half of the sketch onto the cylinder with Wrap to Face.

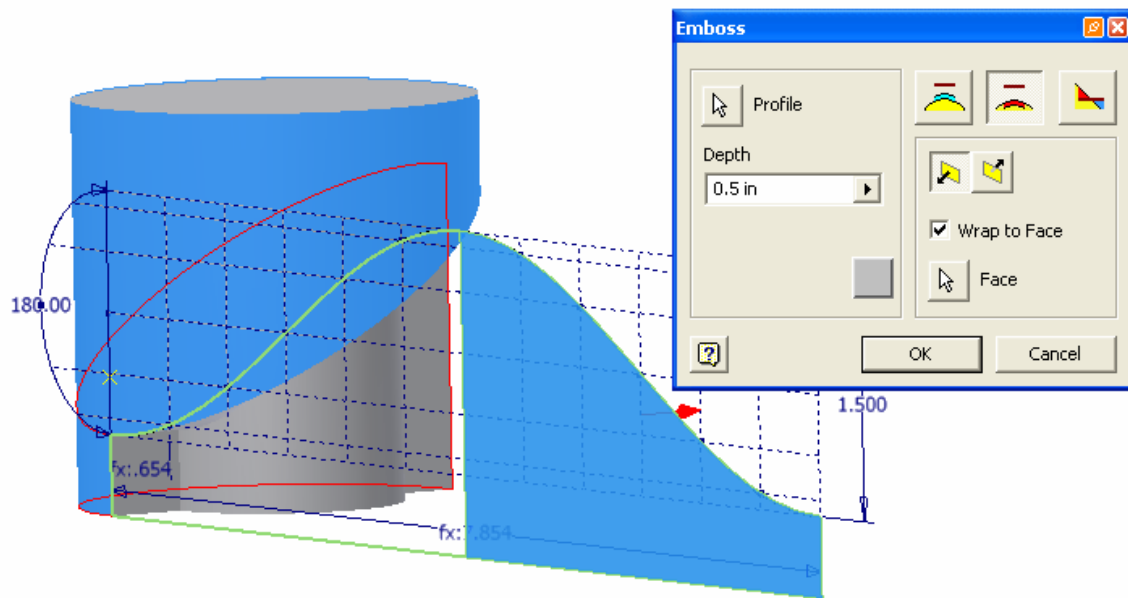


Figure 5

6. Delete Face all of the faces except the spline face.



Figure 6

7. Offset the surface .25in.



Figure 7

8. Offset the surface to the other side .25in. Then Delete Face the original center surface.



Figure 8

9. Make Sketch3 and Workplane3 visible and Extrude the inner circle to Workplane3.

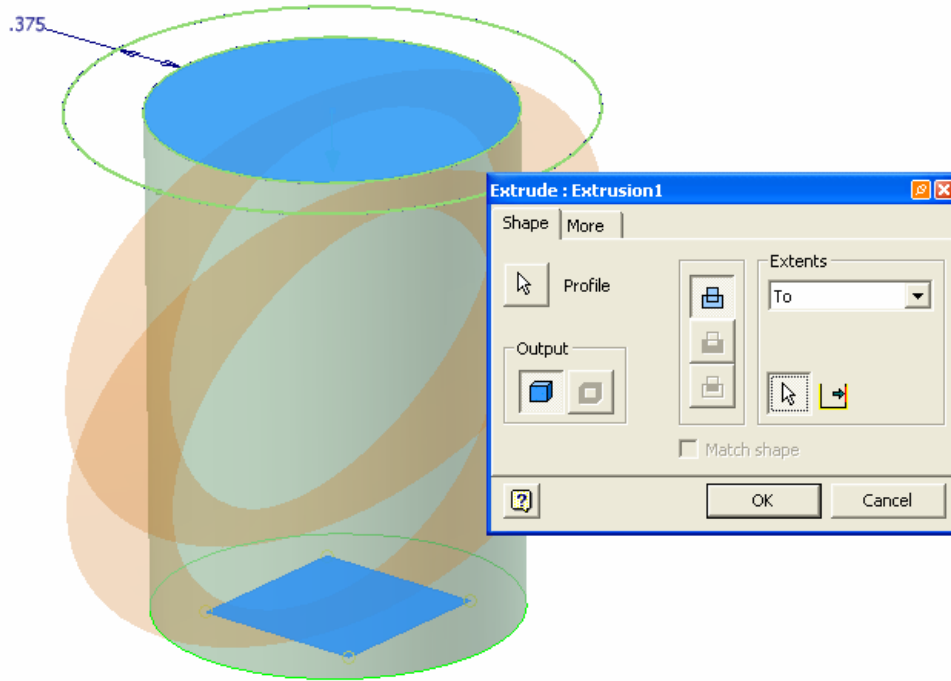


Figure 9

10. Extrude the outer ring of Sketch3 To the spline surface.

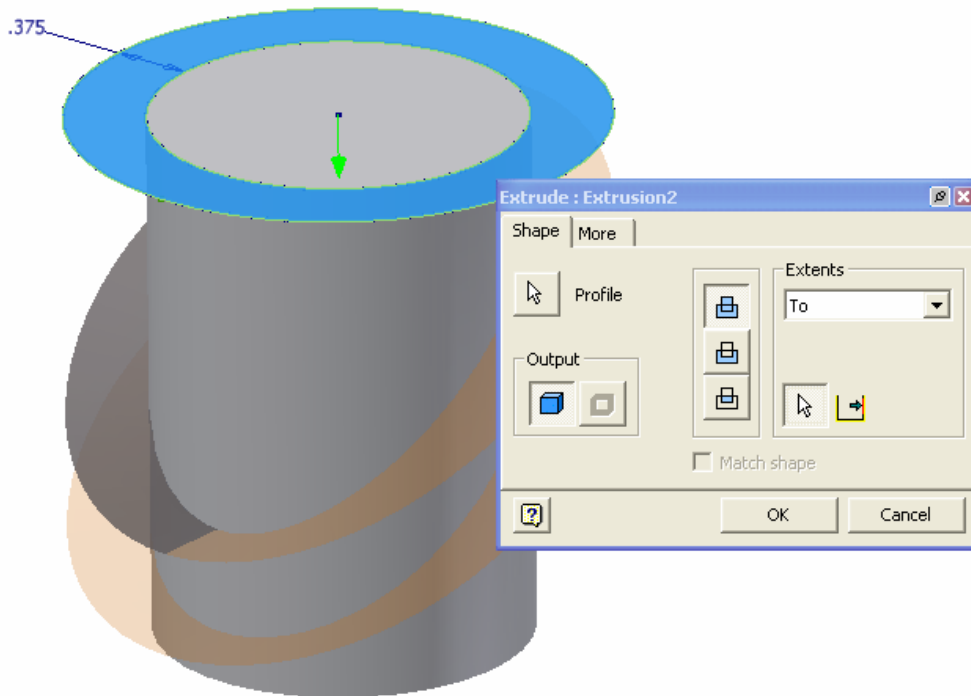


Figure 10

11. Turn the Extrude the part over and extrude the outer ring of Sketch3 From-To the second spline surface.

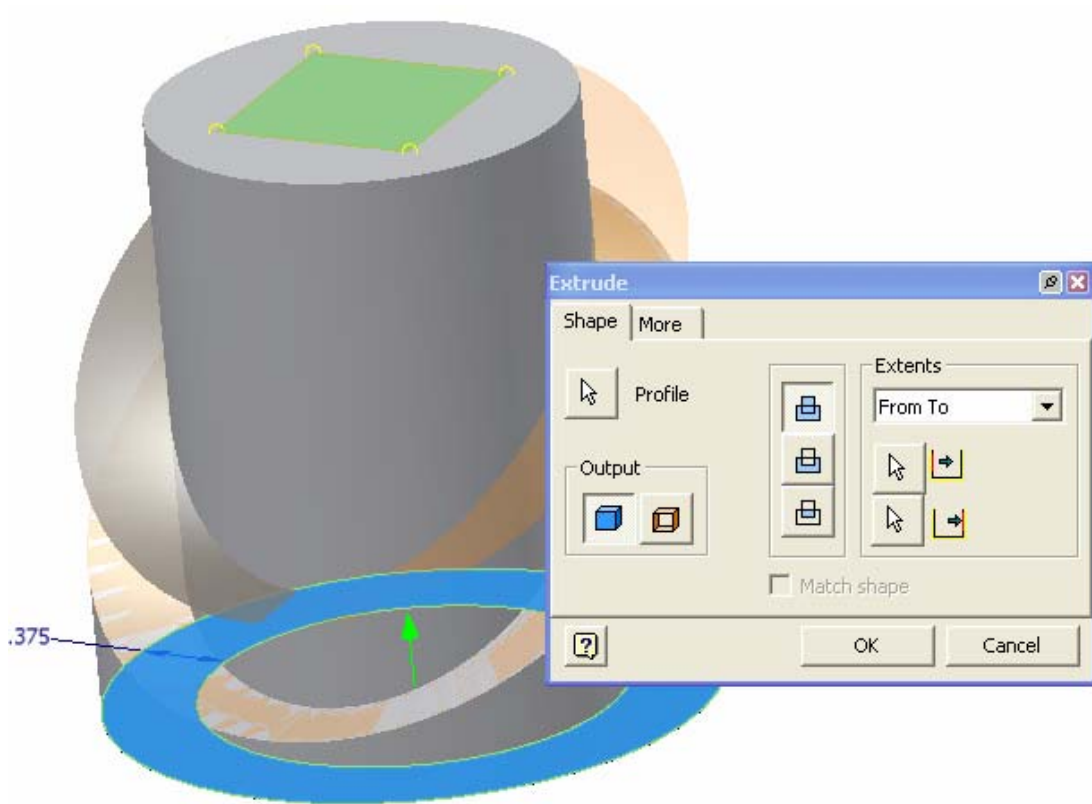


Figure 11

12. Add a mounting hole.



Figure 12

In the previous tutorials we saw examples of complex freeform parts that would be nearly impossible to document with traditional 2D orthographic views alone. Turns out that this part based on a trivial 2D drawing might be expensive to manufacture, thus 3D has significant value in correctly documenting (or uncovering expensive design considerations) of even “simple” parts.
