SolidWorks 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 Wrap command

Required Competencies

Before starting this tutorial, you should have been able to:
• Create SolidWorks sketches
• Use the Offset Surface 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.
1. Open the Cylindrical Cam.SLDPRRT file. Edit Graph Sketch. On a plane tangent to the cylinder I created a displacement diagram for harmonic motion and 1.5 in displacement. The baseline length of the graph is PI*cylinder diameter.

2. Notice that I mirrored this point to control spline tangency at the bottom of the curve.
3. Start a new sketch on the tangent plane and create the sketch shown.

![Figure 3](image1)

4. Hide the Graph Sketch and edit the new sketch as shown.

![Figure 4](image2)
5. Insert>Features>Wrap...

Figure 5

6. Set to Deboss with a depth of 0.5in.

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

8. Offset Surface the spline curve face 0.0in. Hide the spline curve face.
9. Mirror the Offset Surface with the Option to Knit the surfaces.

![Figure 7](image1)

10. Offset Surface the Knitted (mirrored) surface 0.25in to each side. Hide the Mirrored Surface.

![Figure 8](image2)
11. Start a new sketch on the Top plane and create the sketch shown.

Figure 7

12. Extrude the sketch mid-plane a distance of 2.5in.

Figure 8
13. Start a new sketch on the top of the cylinder and create the sketch shown. *(Be sure to project the cylinder edge.)*

![Figure 7](image1)

14. Extrude Up to Surface and then hide the offset surface.

![Figure 8](image2)
15. Repeat on the other side.

![Figure 7](image)

16. Cut a mounting hole.

![Figure 8](image)
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.