



How to Make a Simple Squeeze Bottle


Using Cobalt[™], Xenon[™], Argon[™]

How to Make a Simple Squeeze Bottle

1. Draw the profile of the bottle using the **Through-point B-spline** tool in the Front view.




2. Switch to a Trimetric view and

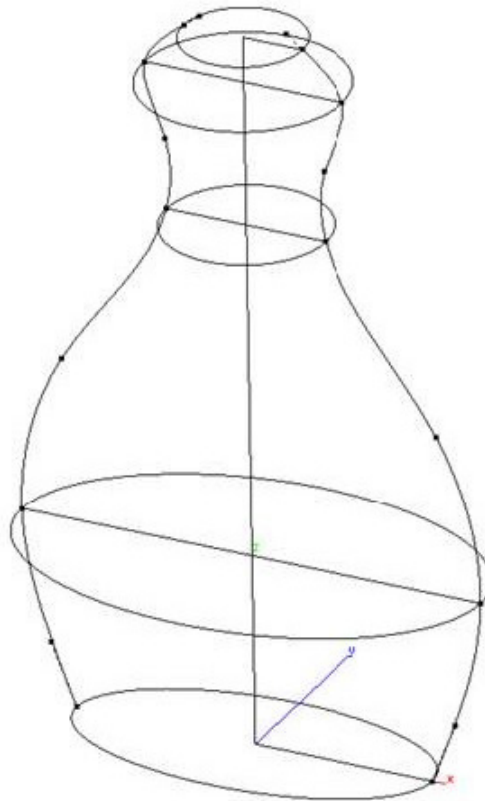
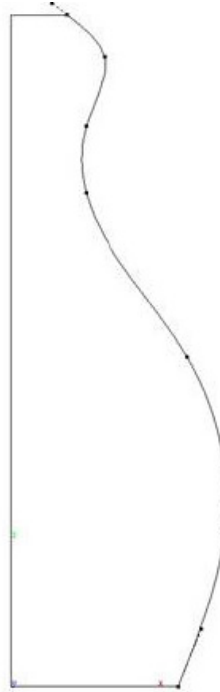
Mirror  the profile. Use the **2 Pts** or **ZY plane** option. Hold down the CTRL/OPTION key to make a copy.



3. Make sure to show the control points of the splines (**Edit>Show Points**).

4. Draw in cross-sections between spline points for defining the

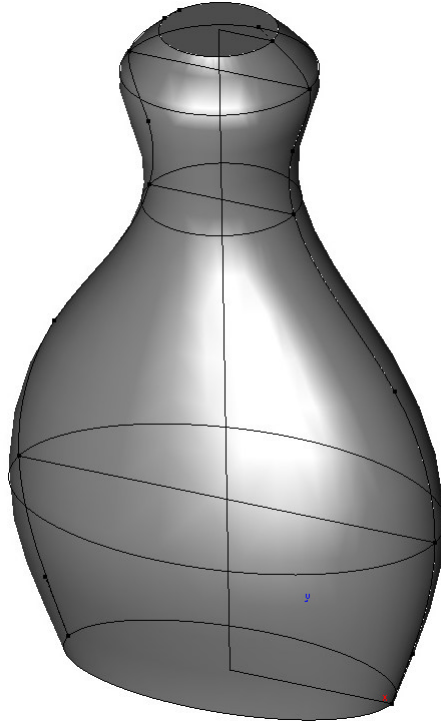
shape. Use **Ellipses**  and

Circles  to put in cross sections everywhere the shape changes.



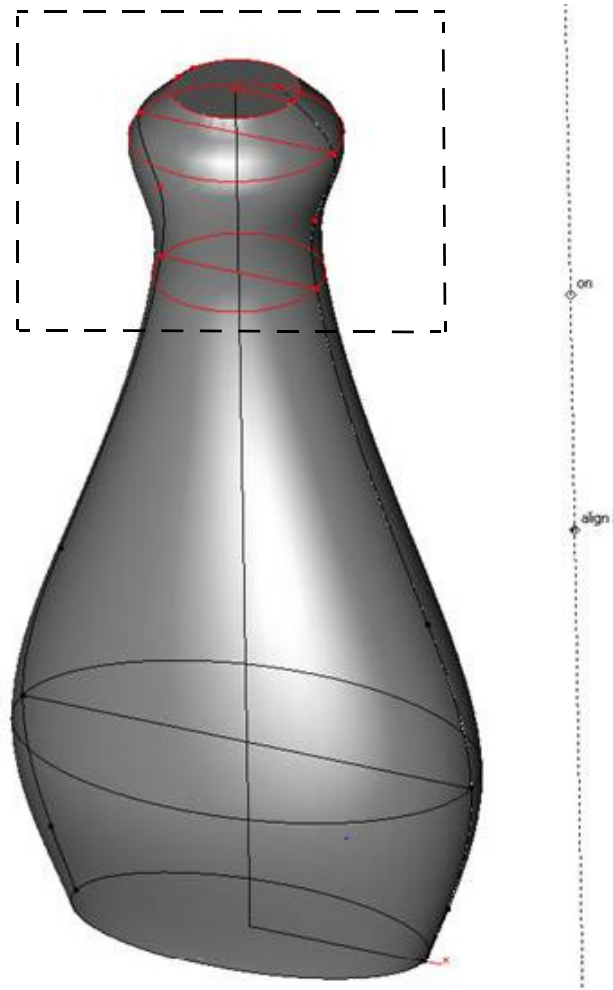
5. Select the **Solid From Profiles**  tool. Choose the **With Guide Paths** option from the Message Line. 

- Select all of the ellipses and circles as the profile curves, then select the two splines as the guide paths. You'll end up with something like the image below.






Basic Shape Editing

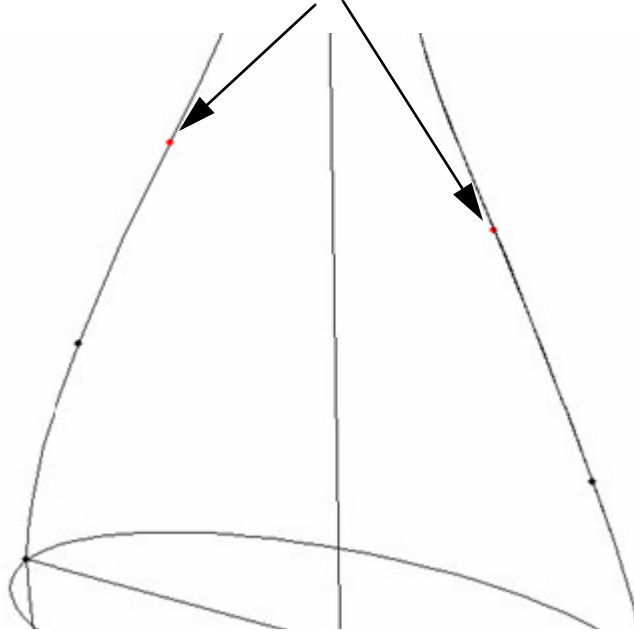
Making changes to the shape is a common and important task. Modify the shape of the bottle by selecting and moving the control points.




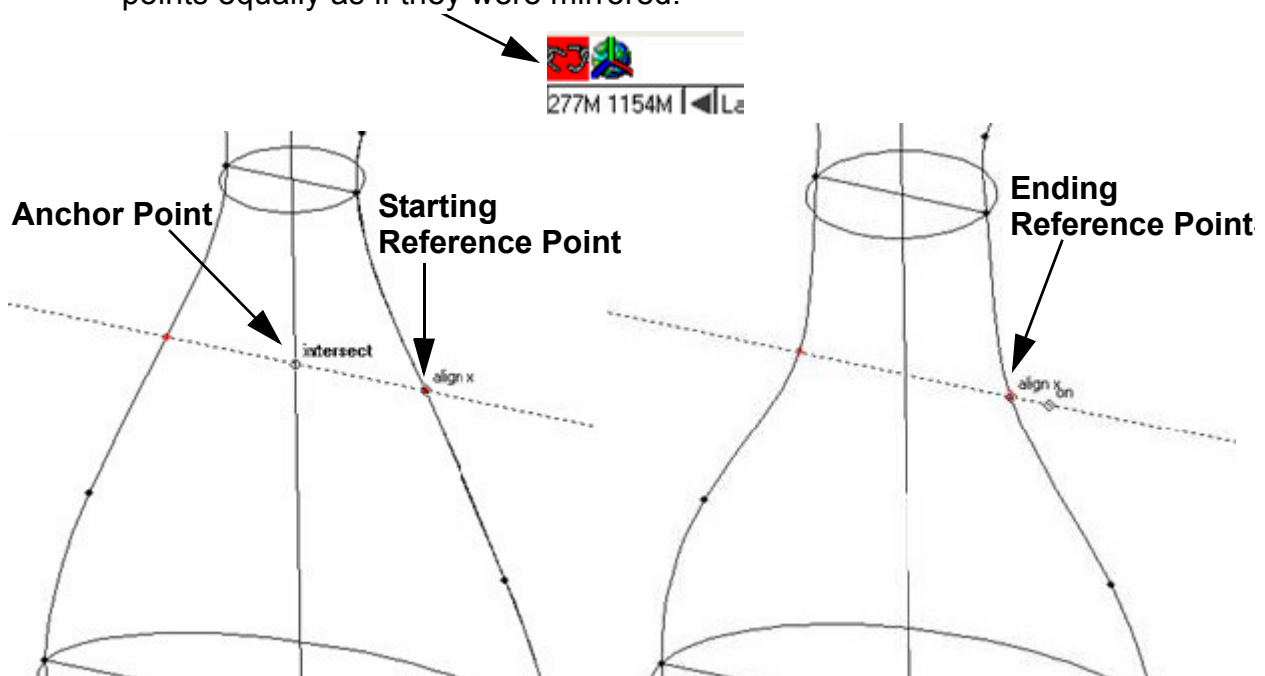
6. Drag a Selection box around all of the objects at the top portion of the bottle.

Use the **Move**  tool and Item option  to move everything up the *z axis*. By using the **Move** tool, enter a specific numeric value for the move distance.

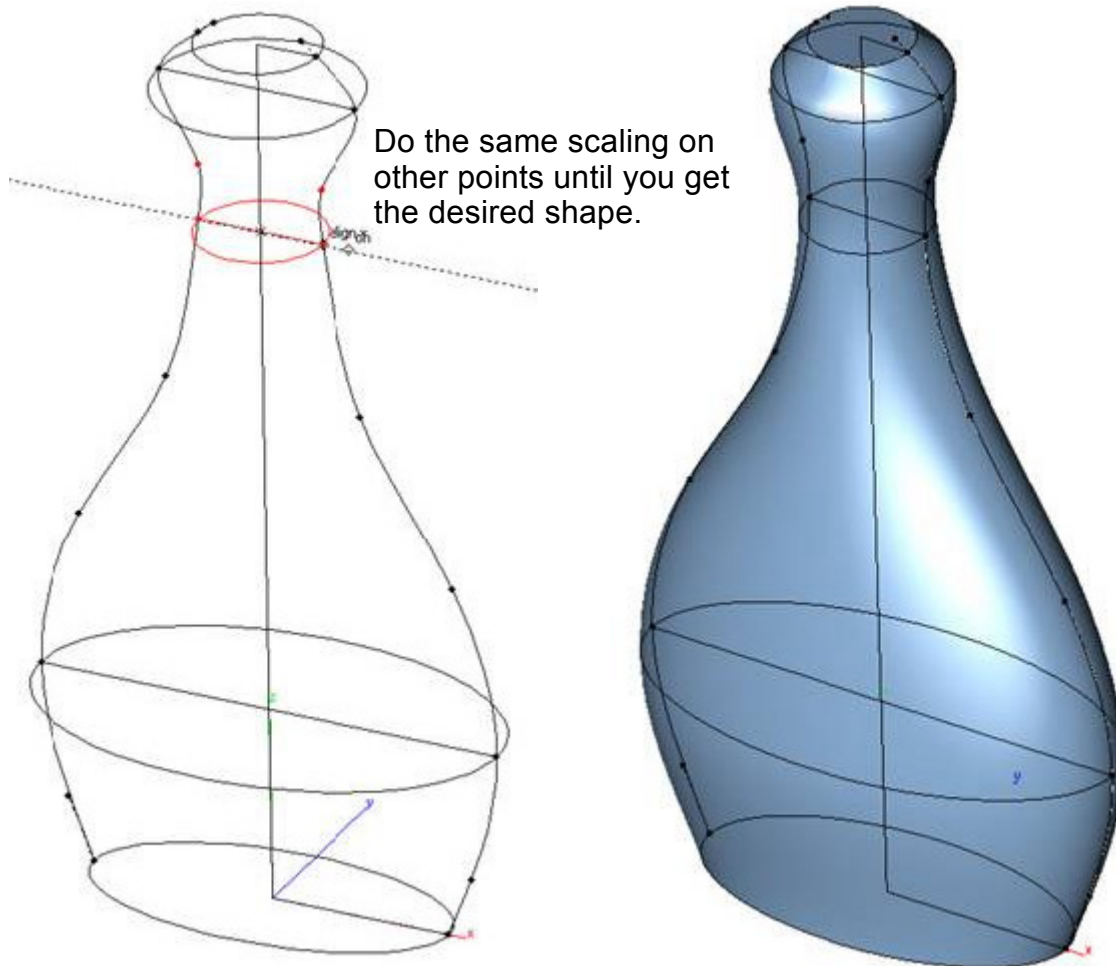
7. Use the **Add Control Point**  tool to add a control point on each spline to gain more control over the shape at the neck region.




8. After adding the points, the Link icon in the lower left corner of the screen will turn red to show that links are broken in the file. Click on the icon and the links will be updated and the solid will regenerate based on the new splines. It's a good idea to keep an eye on this icon and make sure the links are always up to date.
9. Select the two new points and then select the **Expand/Shrink**  tool. Scale the points down to make a tighter neck area. This has the effect of moving the points equally as if they were mirrored.

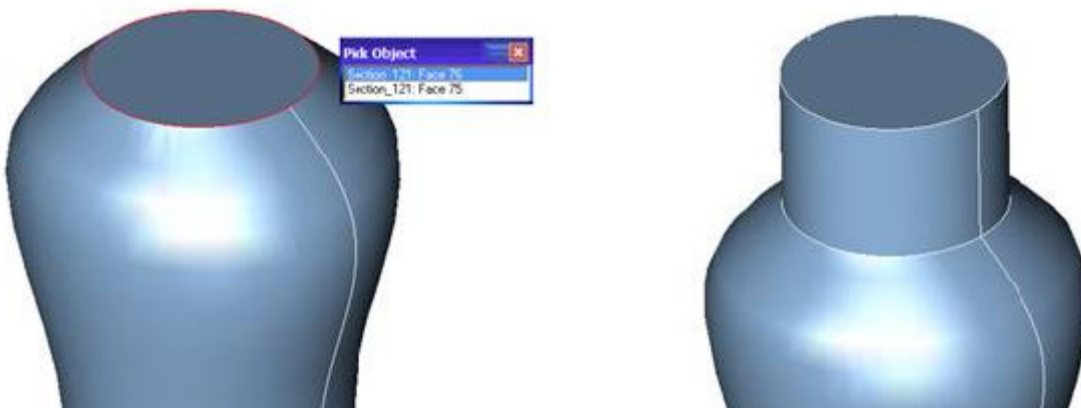



- The key is to select an anchor point exactly halfway between the two points. That way the points will move equally about that centered point. The image above shows the anchor point as a point selected on the centerline.

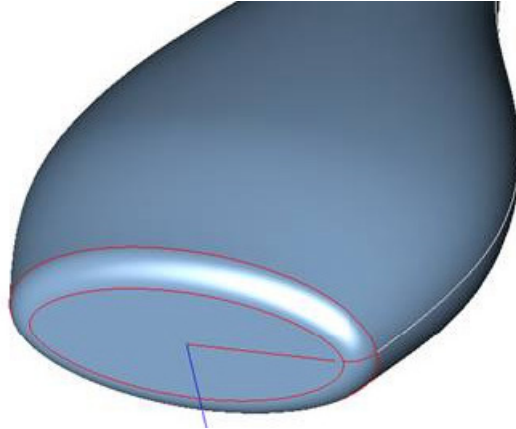



10. Now add a piece to the top of the bottle that will be the bottle mouth. Use the

Protrusion tool for this. Select the **Protrusion**  tool and **Vector** option, then select the top face of the bottle. Next select two points along the *z* axis that will define the distance and direction of the protrusion. In the Message Line, type in a specific value, .5" for instance.



11. Blend  the bottom edge with a nice, large radius.





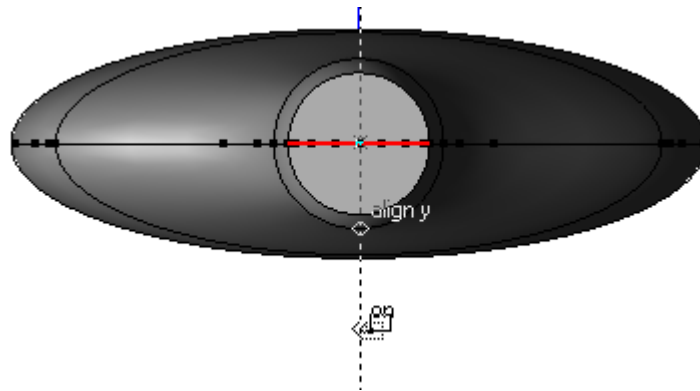
12. Now use the Shell  tool to hollow out the bottle. Set the wall thickness to .0625" and choose the top face for the open face.



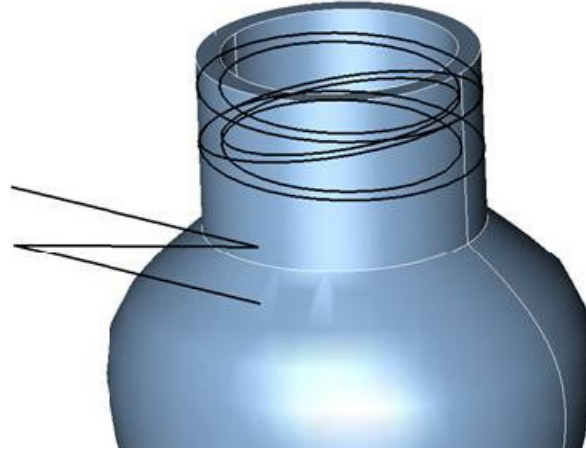
13. Add some threads to the bottle. From the Front view, draw some lines that will define the threads. Draw a Z shape for the threads.



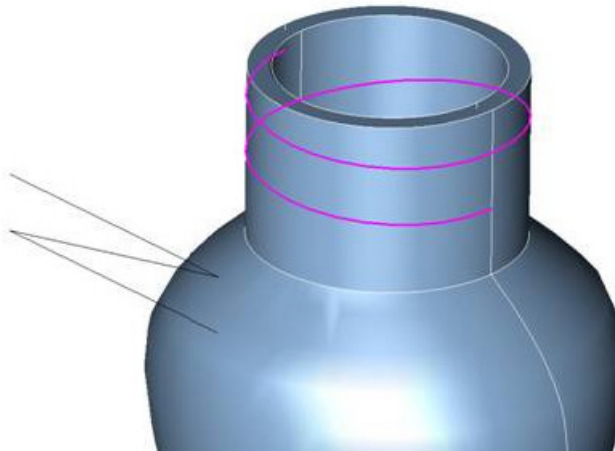
14. Check the Work Plane option in the Snaps window.
15. While drawing the threads, use the **Connected Lines**  tool and make sure to use the snap points so that the lines are exactly the width of the bottle top.
16. Switch to the top view and use the **Move**  tool to move these three lines to a place some distance outside the bottle and along the *y* axis.



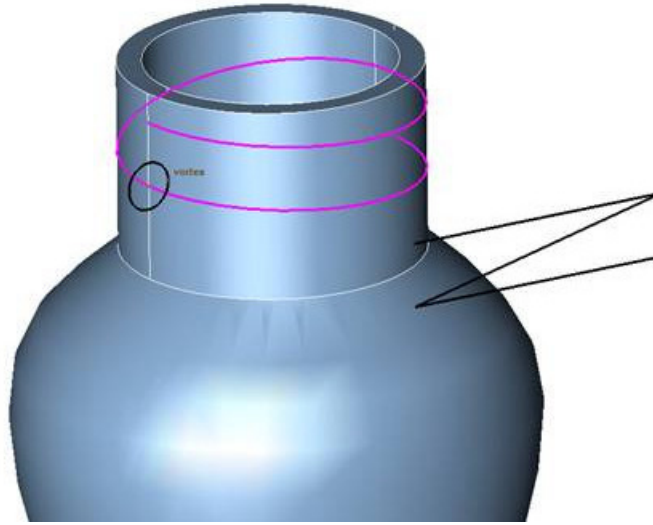
17. Now use the **Project Curves**  tool with the **Through** option and project the lines onto the bottle top.




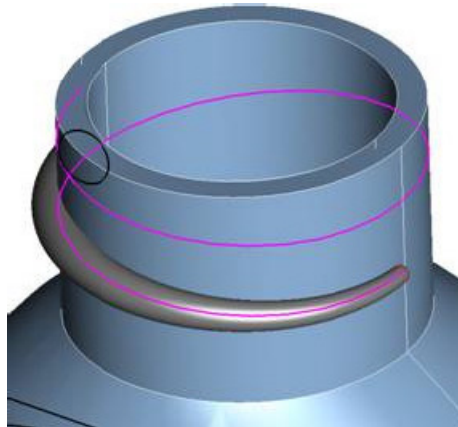
18. Delete all of the extra curves the projection creates until you are left with the ones shown in magenta.



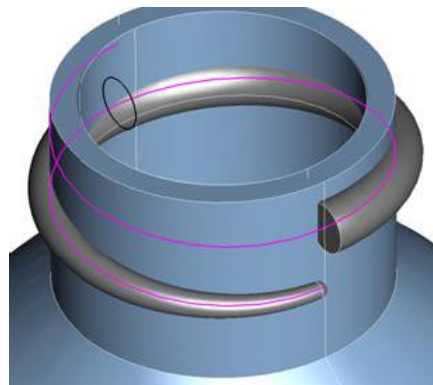
19. Now switch the work plane to Front and draw a circle at the start of one of the curves. Make the circle diameter small, .05". This will be the profile for a swept solid. This can be any closed shape desired. A circle is used here.



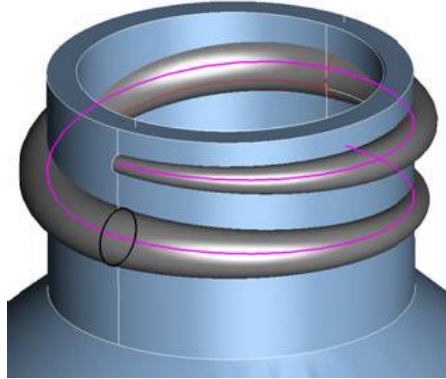
20. Select the **Solid Sweep Along Path**  tool and sweep the circle along the first curve. Add a -2 -degree value in the Draft Angle Status Line box.




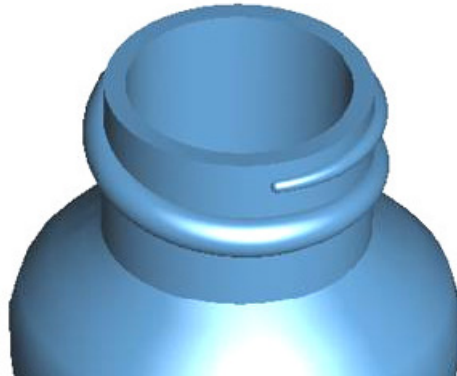
21. Sweep the next section with no draft.




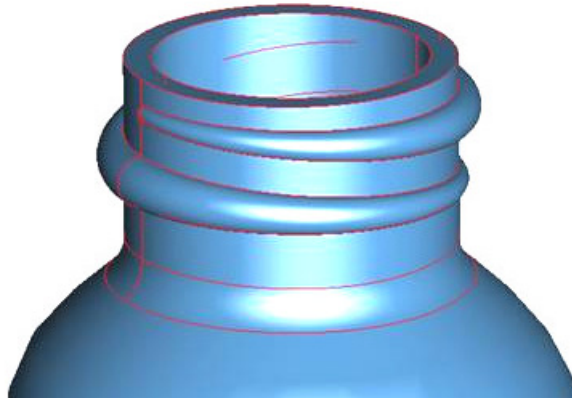
22. Sweep the last section with +2 degrees of draft.



23. Use the **Union Solid**  tool to add all of the pieces together.



24. Use the **Blend**  tool and begin rounding the edges of the top.



25. Add tiny blends around all of the edges.



26. Congratulations, your squeeze bottle is complete!

