

Q: How to model a variable diameter push spring in SolidWorks?

A: Most important part of variable diameter push spring is variable diameter helix - Fig. 1. Variable diameter helix is defined as intersection of helix surface and revolved surface. Helix surface determines pitch of push spring and revolved surface determines diameter of push spring. Fig.2 show an example of using variable diameter push springs at bicycle saddle.

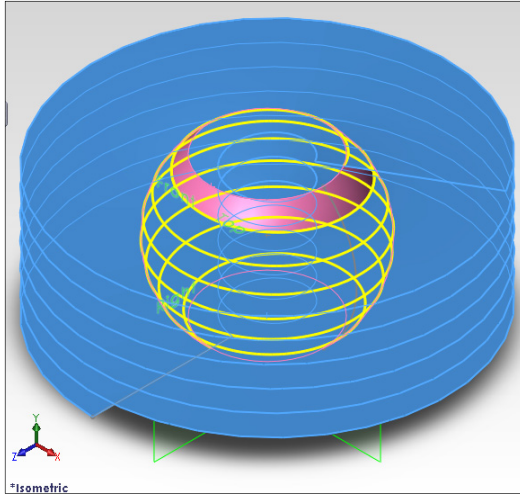


Fig.1



Fig.2

1. In Front plane **Sketch**  profile for **Revolved Surface** : Fig.3

2. Create **Axis**  using two planes: **Front** and **Right**

3. Create **Revolved Surface**  : Fig.4

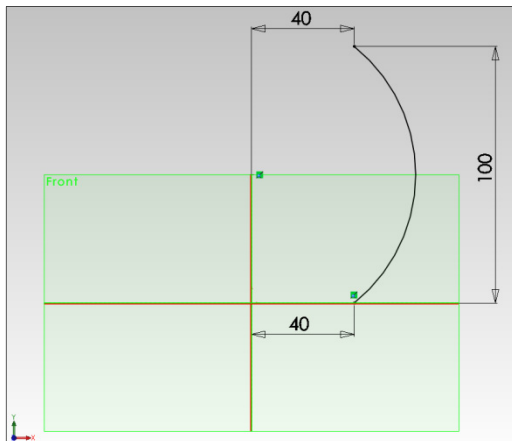


Fig.3

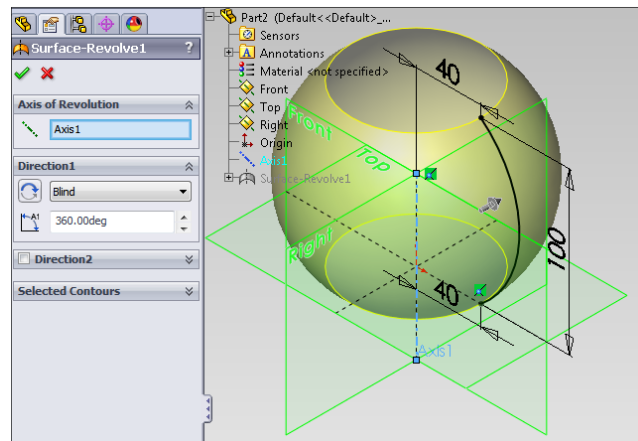


Fig.4

4. Create **Helix curve**  with base in **Top** plane: Fig.5

5. In **Right** plane **Sketch**  profile for helix surface : Fig.6

SolidWorks Tutorial for GRABCAD Challenge: Variable diameter push spring

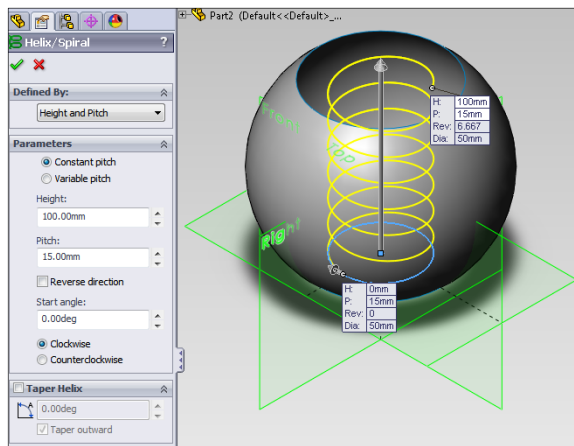


Fig.5

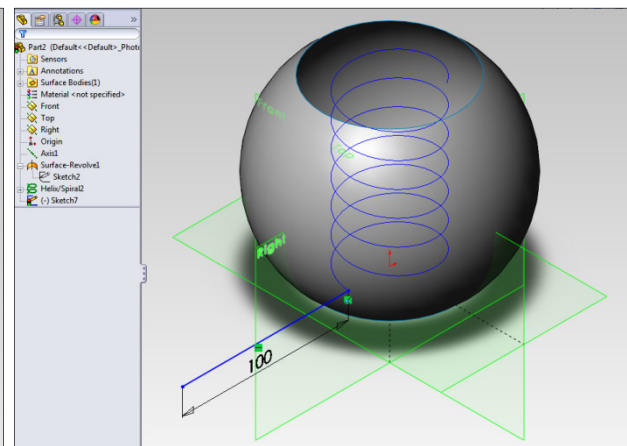


Fig.6

6. Create helix surface using **Swept Surface** : Fig.7

7. Using **Split Line**  create intersection between revolved surface and helix surface: Fig.8

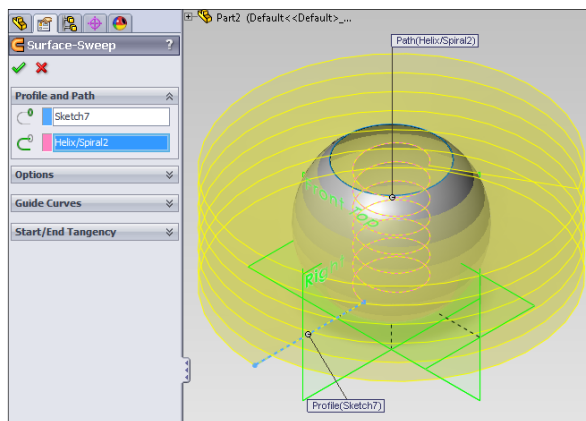


Fig.7

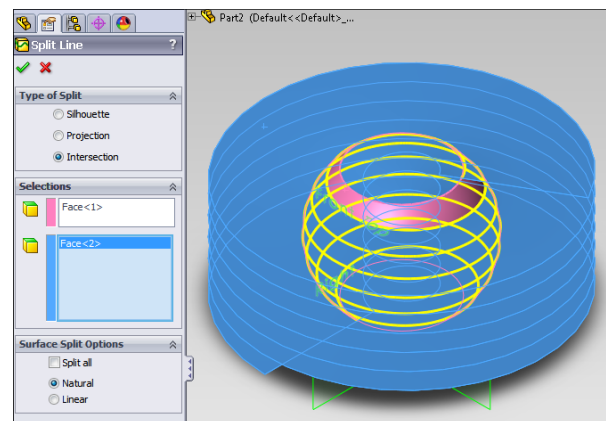


Fig.8

8. In **Right** plane **Sketch**  profile for push spring and define profile diameter: Fig.9. You can **Hide**  revolved surface for better visibility at intersection curve.

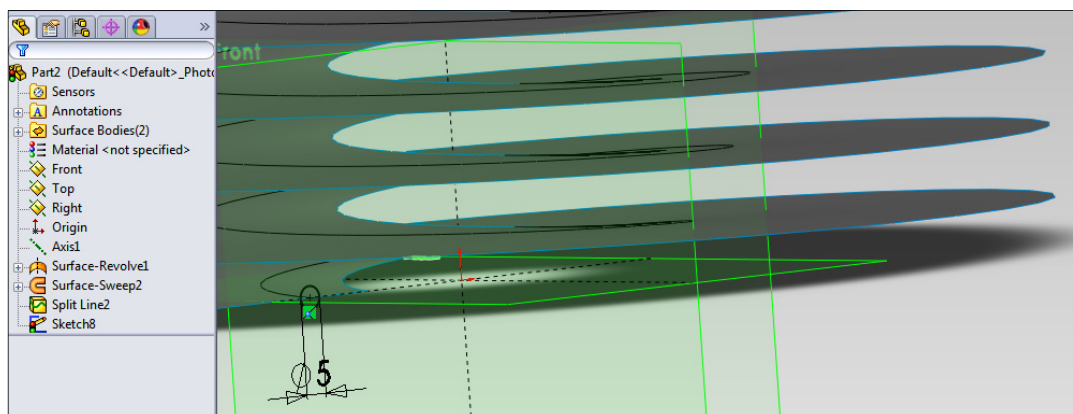


Fig.9

9. Create variable diameter push spring using Swept Boss/Base : Fig.10

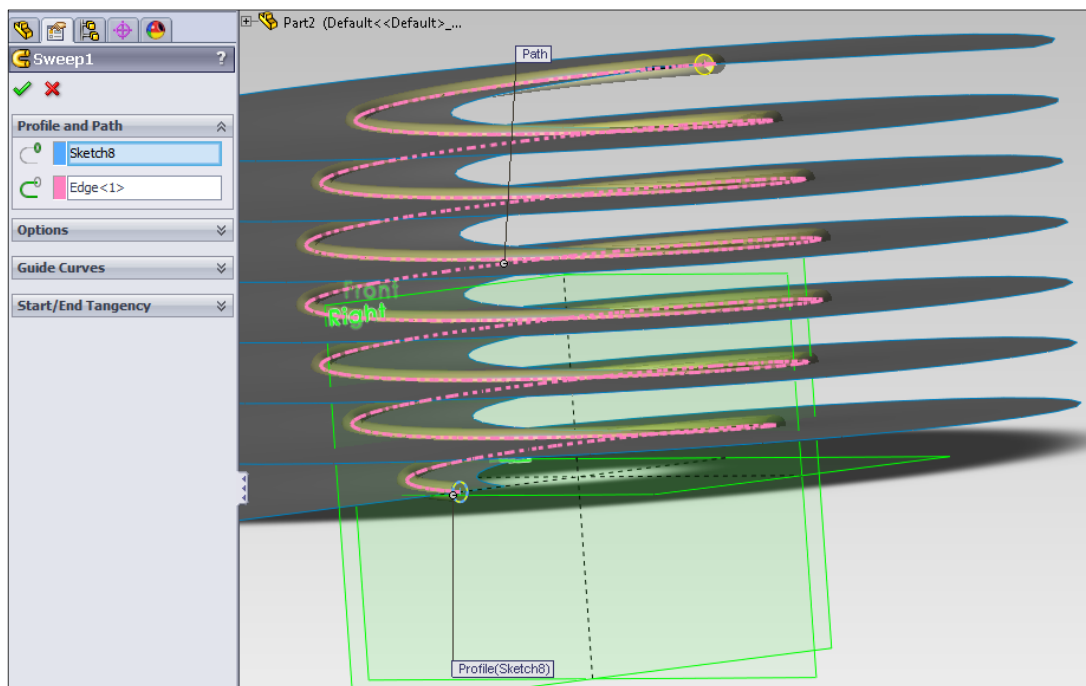


Fig.10

You can create different shapes of push springs using extruded or loft surface in this method instead of revolute surface: Fig.11

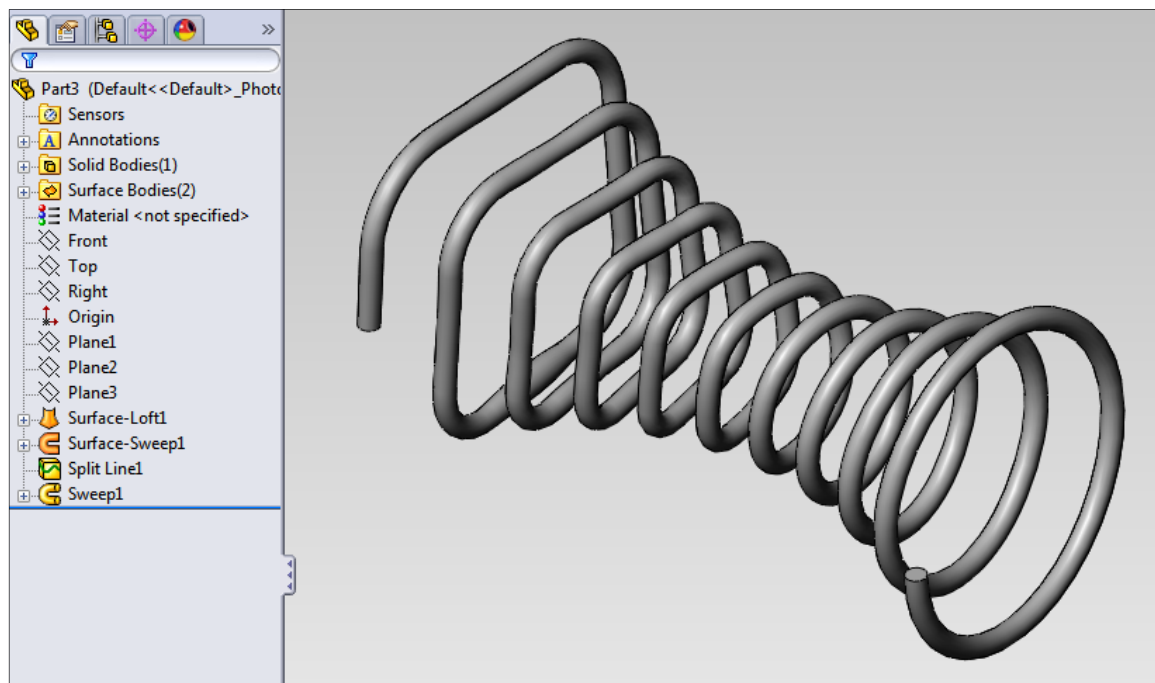


Fig.11