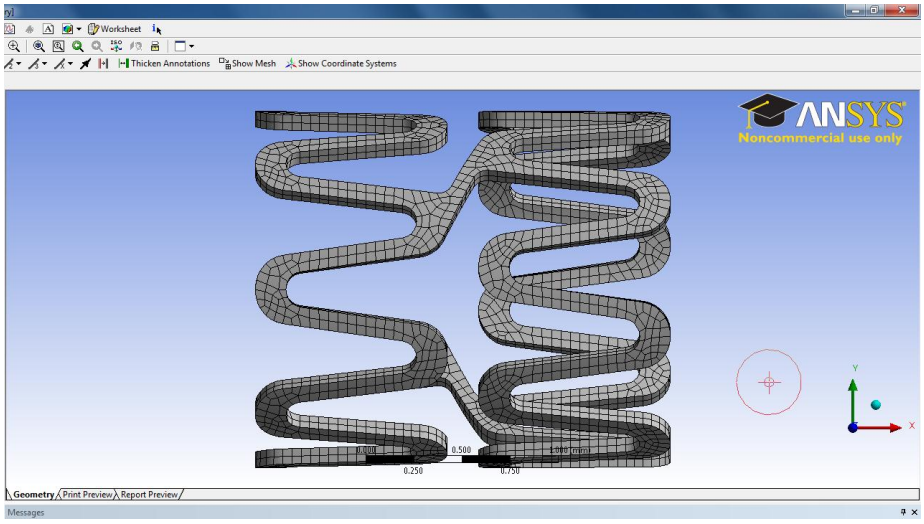

Figure 1

1) Figure 1 is the meshed 2-ring stent model that I am using. It has 8 struts (aka vertices, or crowns)

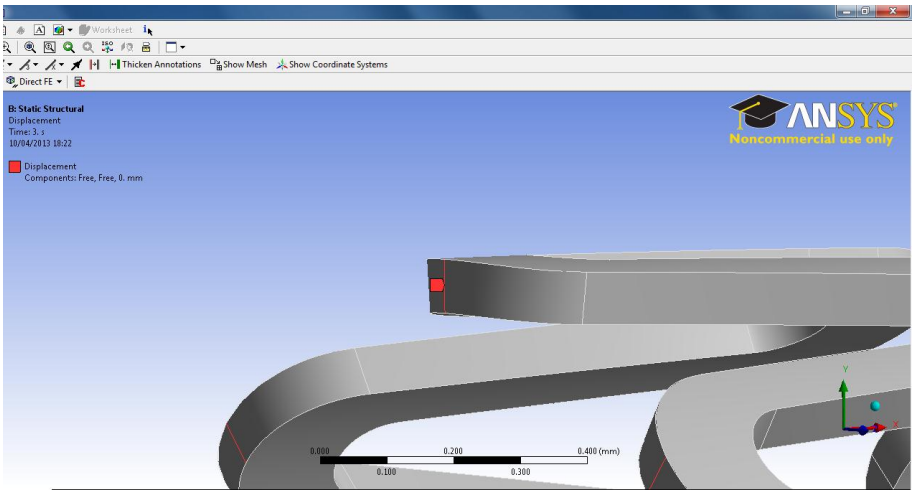

Figure 2

2) I've selected the vertex lines (shown in red), around all 8 vertices of <u>one end</u> of the stent and given them a displacement of zero in the axial directions (by defining a cylindrical coordinate system). This ensures that these vertices can move only in the Y-Z plane, and since I'm using a cylindrical coordinate system, I believe this ensures that the axis of the stent is now fixed (free to rotate, and to grow radially). See Figure 2. Figure 3 shows the cylindrical cood system.

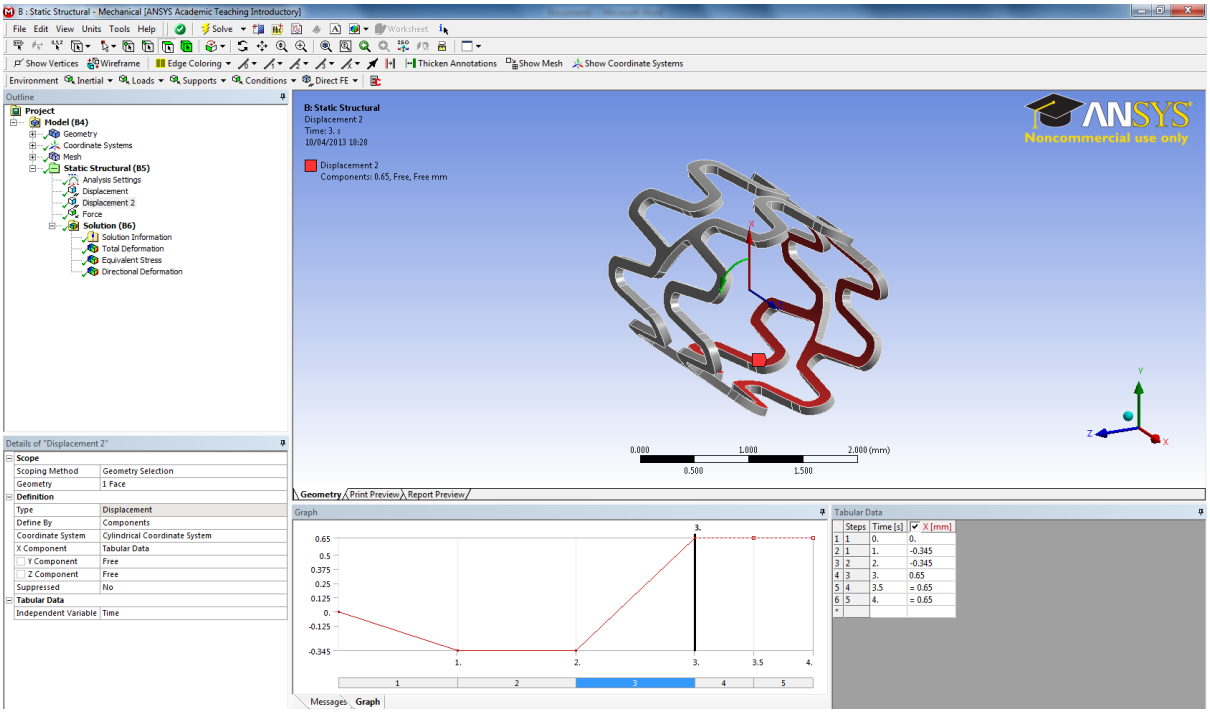

Figure 3

3) The diameter (inner) of the original stent is 1.69mm. By defining a multi-step analysis, and using displacements (with the cylindrical cood system), I first crimp the stent to 1mm (Inner Dia; by -0.345mm displacement radially, in step 1), then rest the stent in step 2, and expand to 3mm in step 3. All shown in Figure 3.

4) Since I'm currently looking at a static analysis, the solver neglects rotations (yes, it is free to rotate as earlier described) but does give me a warning. However, I get pretty results for the crimping and expansion (good news!). The stress values are good, and I am able to get plasticity (max stress between yield and ultimate tensile).Figure 4 and Figure 5 show these results.

5) However, if I try refraining the original boundary conditions to rotate (by further defining the displacement earlier mentioned, including a y=0 for no rotations, y being the azimuthal component of the cylindrical cood sys), I get very bad results!

6) If I set up this entire thing in a Transient Analysis, I can clearly see the rotations of the stent (not good!) while crimping and expanding. Any suggestions to redefine my current boundary condition (of the displacement) so that it stops rotating in the Transient Analysis would help a lot, for the next steps too!

7) If not, is there a way of importing the static results of crimping and expansion into another analysis (this time a transient one) since I have to eventually apply an axial force to the stent, which I don't think a static analysis would give good results to. ANY SUGGESTIONS!?! THANKS!

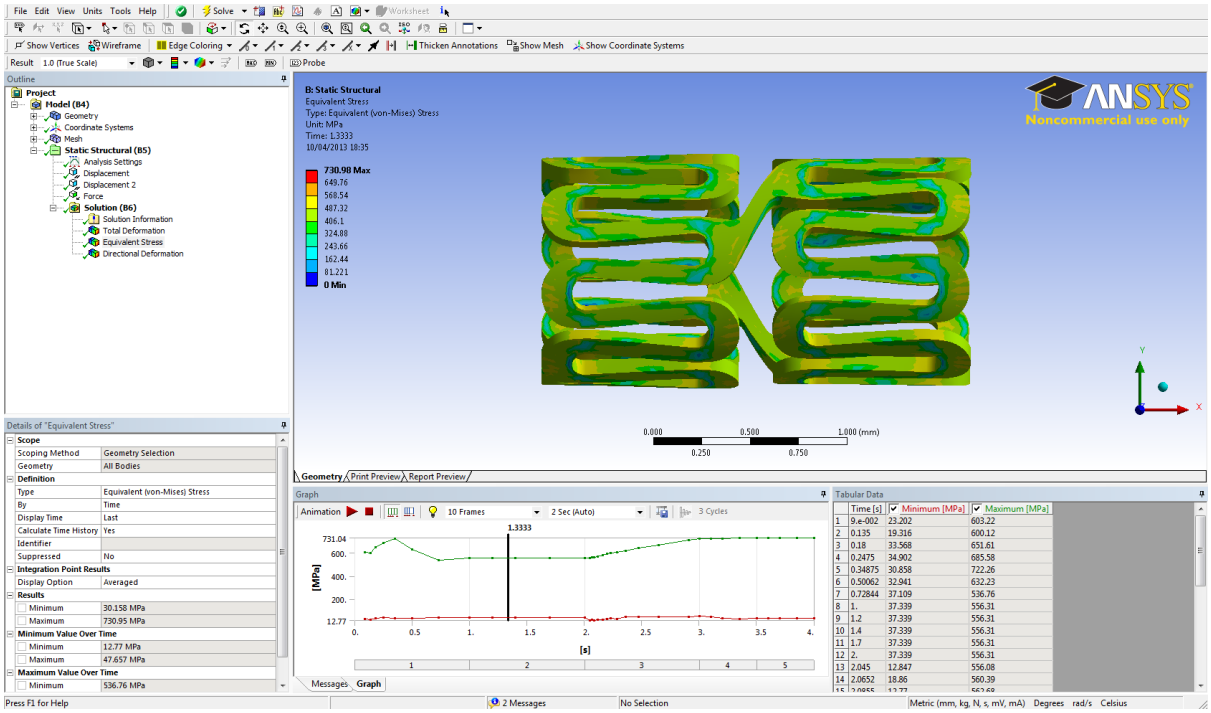

Figure 4: Crimping; stresses are between yeild stress and ultimate stress; good stuff!

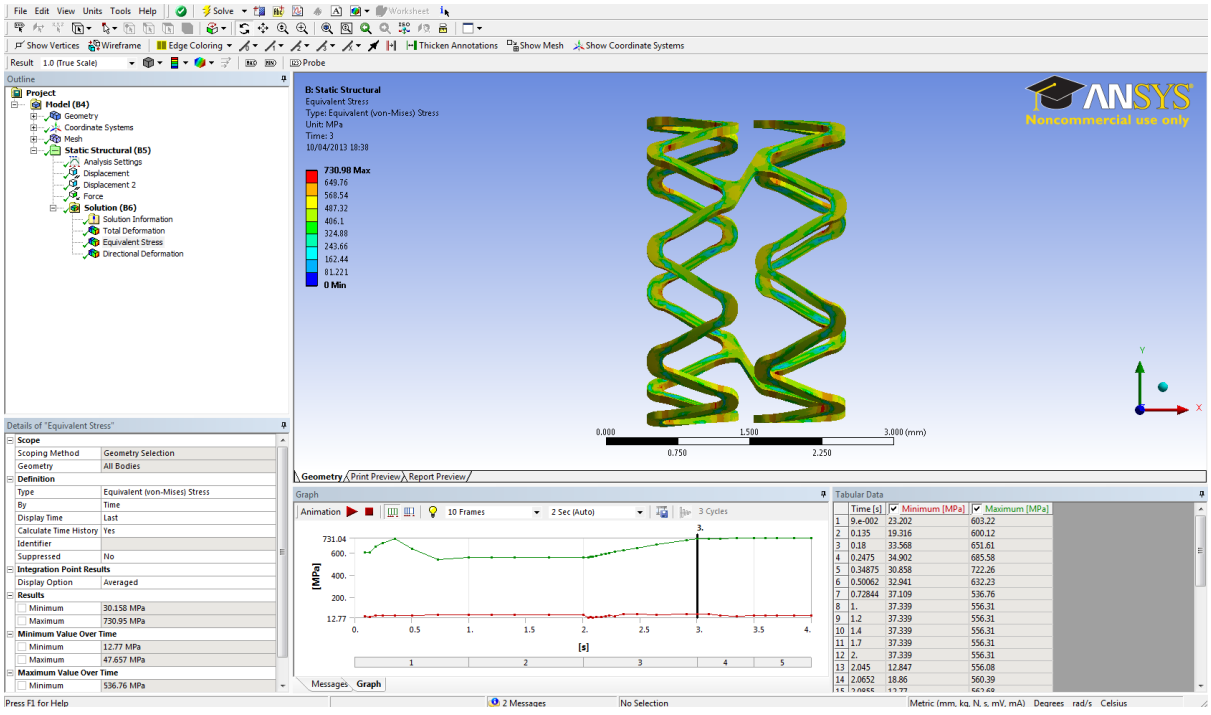

Figure 5: Expansion; good stuff too!