

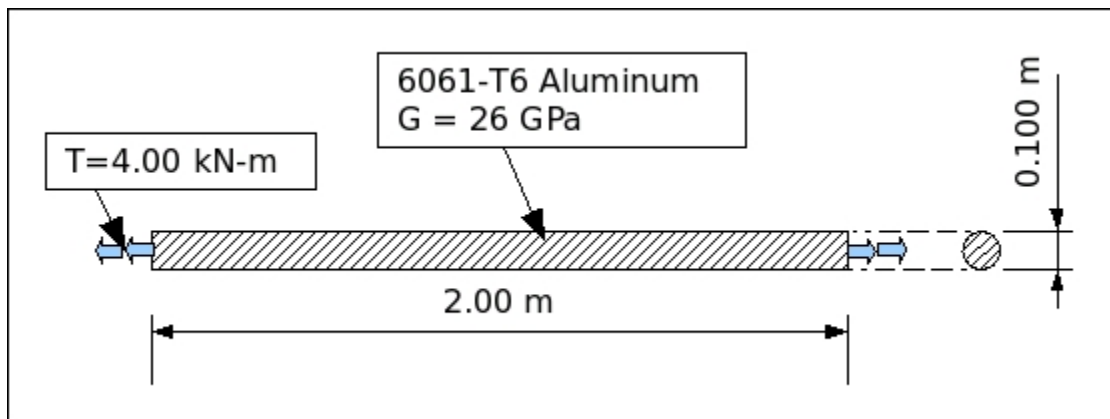
Strength of Materials Project Spring 2006 (Updated on 03/22/06)

Your goals in this project are to:

1. Learn SolidWorks enough to produce a 3-dimensional prismatic shaft with a non-circular cross-section.
2. Use Cosmos within Solidworks to place your shaft in pure shear by applying torques at the beams ends.
3. Determine the angle of twist for your shaft.
4. Determine the shear stresses over the cross-sectional area of your shaft.

Project Constraints

1. A formal engineering report will be written and submitted to the instructor by Wednesday April 26, 2006 concerning your investigation into torsion in non-circular shafts. If you are unsure about format check out the following:
http://engrphys.lemley.org/courses/engr_report_format_spring_2005.pdf.
2. You will need to reference your findings to a circular shaft of the same volume (or cross-sectional area). So that everyone is on the same page – let's all reference the following beam



At a minimum you should have plots of shear stress vs. radial position for the non-

circular and the volume equivalent circular shafts.

3. You may work together to figure things out (particularly in Solidworks), but you should have distinctly different cross-section shapes.
4. On the last day of class (April 28) we will have 3-minute reports from each student with a graphics of your cross-section shape compared to an equivalent circular cross-section.

Note I will help you as much as time permits. When you have problems accessing Solidworks or cannot figure things out ask me or ask other students. Successful completion of this project will depend on asking questions and consistently working on the project.