

Homework Problem H34.A

Given: A circular cross-sectioned shaft is made up of components (1) and (2). Component (1) has a tubular cross section, with inner and outer diameters of d and $2d$, respectively. Component (2) has a solid cross section with a diameter of d . Components (1) and (2) are joined by a rigid connector at B with (1) being attached to a fixed wall at end A. Rigid connector C is attached to end C of component (2). Torques $3T$ and T act on connectors B and C, respectively, as shown.

Find: For this problem:

- Determine the torque load on each of the components as a result of the applied torques.
- What is the maximum shear stress in the shaft? At what location(s) does this maximum stress exist?

Leave your answers in terms of T and d .

