MAK 206 HW #2

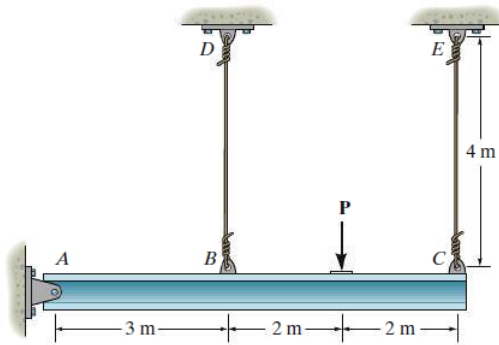**2–3.** The rigid beam is supported by a pin at A and wires BD and CE. If the load P on the beam causes the end C to be displaced 10 mm downward, determine the normal strain developed in wires CE and BD.

*2–4. The force applied at the handle of the rigid lever causes the lever to rotate clockwise about the pin B through an angle of $2°$. Determine the average normal strain developed in each wire. The wires are unstretched when the lever is in the horizontal position.
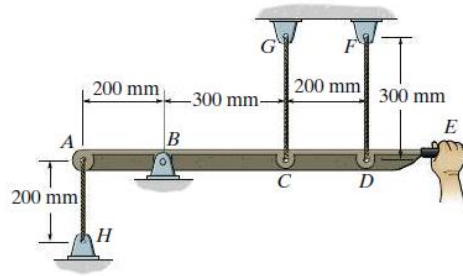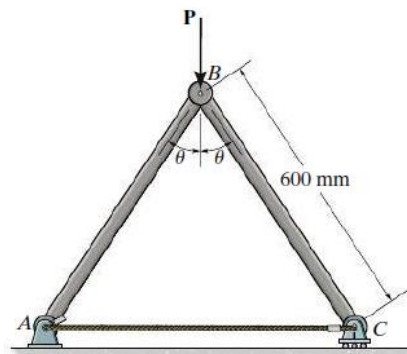

Prob. 2–3

Prob. 2–4

2–5. The two wires are connected together at A. If the force P causes point A to be displaced horizontally 2 mm, determine the normal strain developed in each wire.
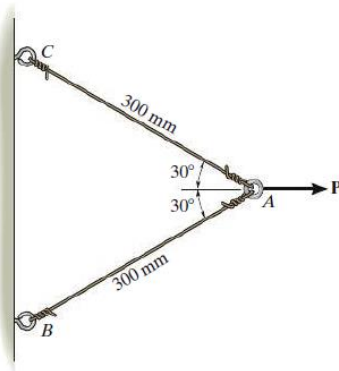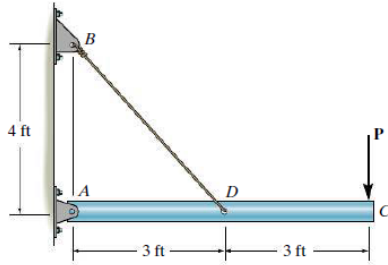
2–7. The pin-connected rigid rods AB and BC are inclined at $\theta = 30°$ when they are unloaded. When the force P is applied θ becomes $30.2°$. Determine the average normal strain developed in wire AC.
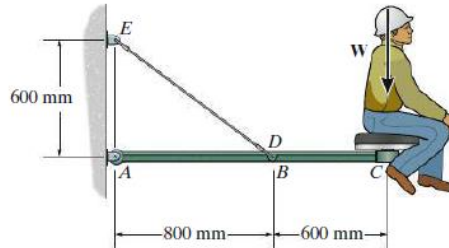

Prob. 2–5

Prob. 2–7

3–15. The rigid pipe is supported by a pin at *A* and an A-36 guy wire *BD*. If the wire has a diameter of 0.25 in., determine the load *P* if the end *C* is displaced 0.15 in. downward.
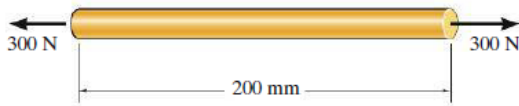
*3–16. The wire has a diameter of 5 mm and is made from A-36 steel. If a 80-kg man is sitting on seat *C*, determine the elongation of wire *DE*.
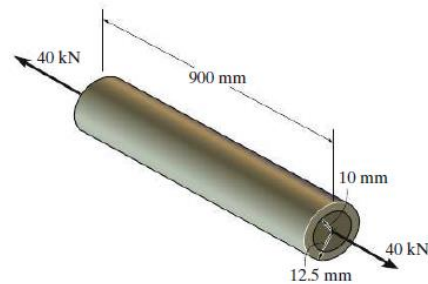

Probs. 3–14/15

Prob. 3–16

3–26. The thin-walled tube is subjected to an axial force of 40 kN. If the tube elongates 3 mm and its circumference decreases 0.09 mm, determine the modulus of elasticity, Poisson's ratio, and the shear modulus of the tube's material. The material behaves elastically.

3–25. The acrylic plastic rod is 200 mm long and 15 mm in diameter. If an axial load of 300 N is applied to it, determine the change in its length and the change in its diameter. $E_p = 2.70$ GPa, $\nu_p = 0.4$.

Prob. 3–25

Prob. 3–26