


FIGURE P12-8

Problems 12-18 and 12-19

- ^{*†}12-18 The 400-mm-dia steel roller in Figure P12-8 has been tested on a dynamic balancing machine at 100 rpm and shows an unbalanced force of $F_1 = 0.291 \text{ N}$ @ $\theta_1 = 45^\circ$ in the x - y plane at 1 and $F_4 = 0.514 \text{ N}$ @ $\theta_4 = 210^\circ$ in the x - y plane at 4. Determine the angular locations and required diameters of 25-mm-deep holes drilled radially inward from the surface in planes 2 and 3 to dynamically balance the system.

- [†]12-19 The 500-mm-dia steel roller in Figure P12-8 has been tested on a dynamic balancing machine at 100 rpm and shows an unbalanced force of $F_1 = 0.23 \text{ N}$ @ $\theta_1 = 30^\circ$ in the x - y plane at 1 and $F_4 = 0.62 \text{ N}$ @ $\theta_4 = 135^\circ$ in the x - y plane at 4. Determine the angular locations and required diameters of 25-mm-deep holes drilled radially inward from the surface in planes 2 and 3 to dynamically balance the system.

* Answers in Appendix F.

[†] These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs.