Erratum Stiffness in Torsion

In the article by Wagner and Nikolai in the January, 1985 issue, on page 46, lines 2-4, it was erroneously printed that "torsional stiffness is proportional to the fourth power of cross-sectional area." The correct statement is "torsional stiffness is approximately proportional to the fourth power (collectively) of the cross-sectional dimensions."

Torsional stiffness of a straight round wire is theoretically proportional to the fourth power of its diameter. The relationships between torsional stiffness and the dimensions of a rectangular wire are complicated by the absence of circular symmetry; the cross-sections are distorted when the wire is twisted, and two dimensions are required to describe its size. In the torsional-stiffness formula for rectangular wires, the smaller crossectional dimension is cubed, while the largest dimension is present only to the first power. For a square wire there is, in effect, only one cross-sectional dimension, which appears to the fourth power in both the elastic bending and torsional stiffness equations.

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