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6.2 TORSION OF SOLID CIRCULAR SHAFT

6.2.1 Assumptions

In the development of a torsion formula for a circular shaft, the following assumptions are made:

1. Material of the shaft is homogeneous throughout the length of the shaft.
2. Shaft is straight and of uniform circular cross section over its length.
3. Torsion is constant along the length of the shaft.
4. Cross section of the shaft which are plane before torsion remain plane after torsion.
5. Radial lines remain radial during torsion.
6. Stresses induced during torsion are within the elastic limit.

The above assumptions are reasonably justified as long as the torque applied and the angle of twist are small.

The stresses induced at any point in the cross section of the shaft is one of pure shear.

6.2.2 Derivation ...

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