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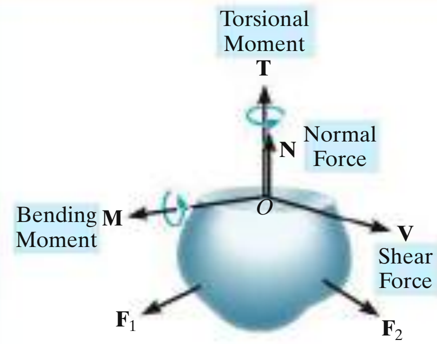
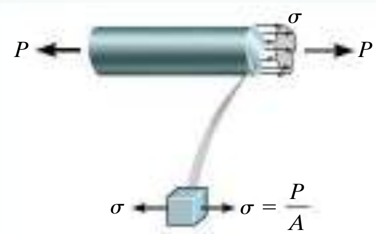
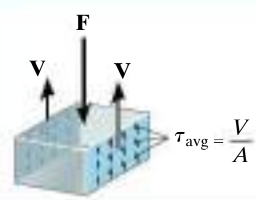
CHAPTER REVIEW

The internal loadings in a body consist of a normal force, shear force, bending moment, and torsional moment. They represent the resultants of both a normal and shear stress distribution that acts over the cross section. To obtain these resultants, use the method of sections and the equations of equilibrium.	$\Sigma F_x = 0$ $\Sigma F_y = 0$ $\Sigma F_z = 0$ $\Sigma M_x = 0$ $\Sigma M_y = 0$ $\Sigma M_z = 0$	
If a bar is made from homogeneous isotropic material and it is subjected to a series of external axial loads that pass through the centroid of the cross section, then a uniform normal stress distribution will act over the cross section. This average normal stress can be determined from $\sigma = P/A$, where P is the internal axial load at the section.	$\sigma = \dfrac{P}{A}$	
The average shear stress can be determined using $\tau_{avg} = V/A$, where V is the shear force acting on the cross-sectional area A. This formula is often used to find the average shear stress in fasteners or in parts used for connections.	$\tau_{avg} = \dfrac{V}{A}$	
The ASD method of design of any simple connection requires that the average stress along any cross section not exceed an allowable stress of σ_{allow} or τ_{allow}. These values are reported in codes and are considered safe on the basis of experiments or through experience. Sometimes a factor of safety is reported provided the ultimate stress is known.	$\text{F.S.} = \dfrac{\sigma_{fail}}{\sigma_{allow}} = \dfrac{\tau_{fail}}{\tau_{allow}}$	
The LRFD method of design is used for the design of structural members. It modifies the load and the strength of the material separately, using load and resistance factors.	$\phi P_n \geq \Sigma \gamma_i R_i$	