

Fig. P2.67

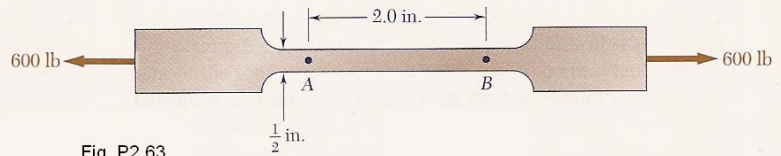
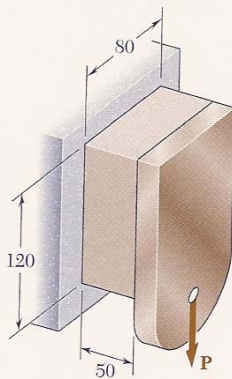


Fig. P2.63

2.63 A 600-lb tensile load is applied to a test coupon made from $\frac{1}{16}$ -in. flat steel plate ($E = 29 \times 10^6$ psi and $\nu = 0.30$). Determine the resulting change (a) in the 2-in. gage length, (b) in the width of portion AB of the test coupon, (c) in the thickness of portion AB, (d) in the cross-sectional area of portion AB.

2.67 The aluminum rod AD is fitted with a jacket that is used to apply a hydrostatic pressure of 6000 psi to the 12-in. portion BC of the rod. Knowing that $E = 10.1 \times 10^6$ psi and $\nu = 0.36$, determine (a) the change in the total length AD, (b) the change in diameter at the middle of the rod.

2.70 The block shown is made of a magnesium alloy for which $E = 45$ GPa and $\nu = 0.35$. Knowing that $\sigma_x = -180$ MPa, determine (a) the magnitude of σ_y for which the change in the height of the block will be zero, (b) the corresponding change in the area of the face ABCD, (c) the corresponding change in the volume of the block.



Dimensions in mm

Fig. P2.77

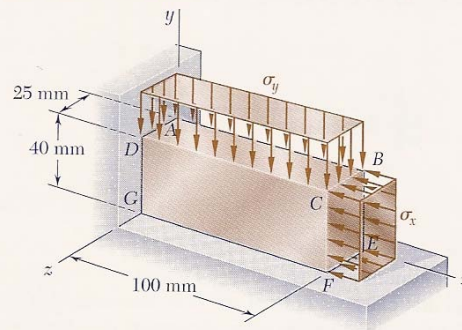


Fig. P2.70

2.77 The plastic block shown is bonded to a rigid support and to a vertical plate to which a 240-kN load P is applied. Knowing that for the plastic used $G = 1050$ MPa, determine the deflection of the plate.

2.93 Knowing that $P = 10$ kips, determine the maximum stress when (a) $r = 0.50$ in., (b) $r = 0.625$ in.

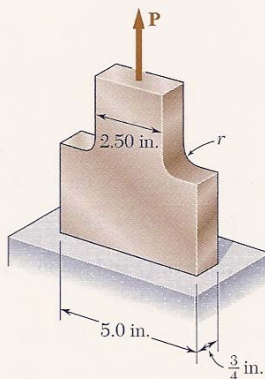


Fig. P2.93

2.96 Knowing that the hole has a diameter of $\frac{3}{8}$ in., determine (a) the radius r_f of the fillets for which the same maximum stress occurs at the hole A and at the fillets, (b) the corresponding maximum allowable load P if the allowable stress is 15 ksi.

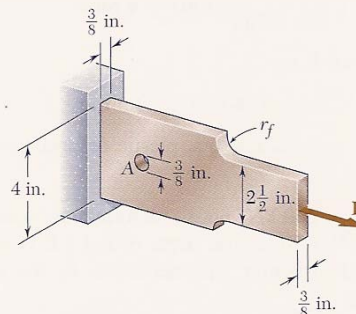


Fig. P2.96