

Fig. P1.3 and P1.4

1.4 Two solid cylindrical rods AB and BC are welded together at B and loaded as shown. Knowing that $d_1 = 50$ mm and $d_2 = 30$ mm, find the average normal stress at the midsection of (a) rod AB , (b) rod BC .

1.16 When the force P reached 1600 lb, the wooden specimen shown failed in shear along the surface indicated by the dashed line. Determine the average shearing stress along that surface at the time of failure.

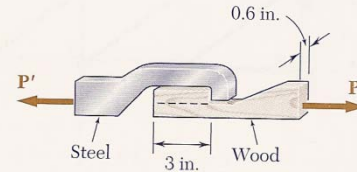


Fig. P1.16

1.27 For the assembly and loading of Prob. 1.7, determine (a) the average shearing stress in the pin at B , (b) the average bearing stress at B in member BD , (c) the average bearing stress at B in member ABC , knowing that this member has a 10×50 -mm uniform rectangular cross section.

1.7 Each of the four vertical links has an 8×36 -mm uniform rectangular cross section and each of the four pins has a 16-mm diameter. Determine the maximum value of the average normal stress in the links connecting (a) points B and D , (b) points C and E .

Note: The blurry vertical load is 20kN.

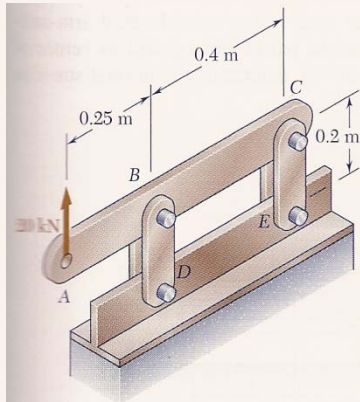


Fig. P1.7

1.29 The 1.4-kip load P is supported by two wooden members of uniform cross section that are joined by the simple glued scarf splice shown. Determine the normal and shearing stresses in the glued splice.

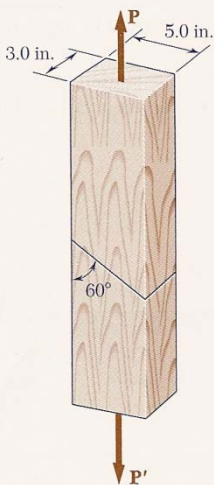


Fig. P1.29 and P1.30

1.39 Knowing that the ultimate load for cable BD is 100 kN and that a factor of safety of 3.2 with respect to cable failure is required, determine the magnitude of the largest force P that can be safely applied as shown to member ABC .

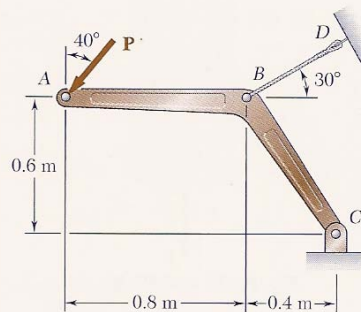


Fig. P1.38 and P1.39

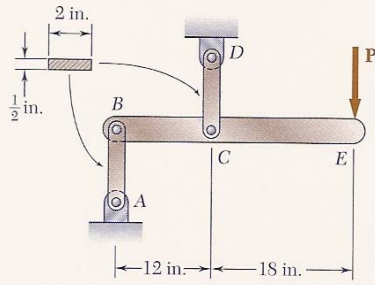


Fig. P1.51

1.51 Each of the steel links AB and CD is connected to a support and to member BCE by 1-in.-diameter steel pins acting in single shear. Knowing that the ultimate shearing stress is 30 ksi for the steel used in the pins and that the ultimate normal stress is 70 ksi for the steel used in the links, determine the allowable load P if an overall factor of safety of 3.0 is desired. (Note that the links are not reinforced around the pin holes.)