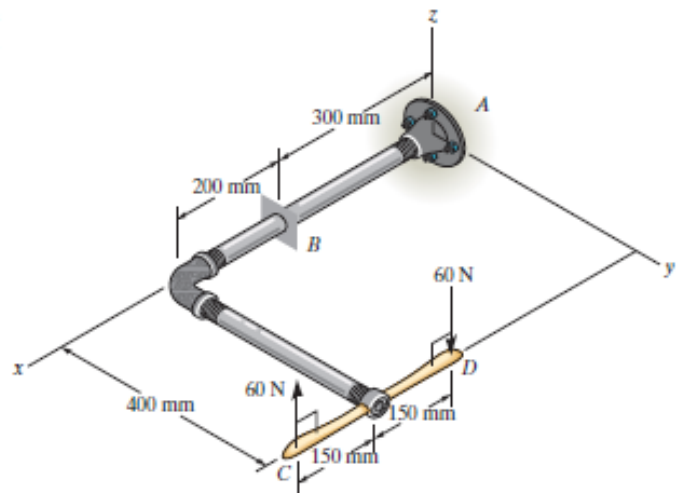


**1-27.** The pipe has a mass of 12 kg/m. If it is fixed to the wall at *A*, determine the resultant internal loadings acting on the cross section at *B*. Neglect the weight of the wrench *CD*.



$$\Sigma F_x = 0; \quad (N_B)_x = 0$$

Ans.

$$\Sigma F_y = 0; \quad (V_B)_y = 0$$

Ans.

$$\Sigma F_z = 0; \quad (V_B)_z - 60 + 60 - (0.2)(12)(9.81) - (0.4)(12)(9.81) = 0$$

$$(V_B)_z = 70.6 \text{ N}$$

Ans.

$$\Sigma M_x = 0; \quad (T_B)_x + 60(0.4) - 60(0.4) - (0.4)(12)(9.81)(0.2) = 0$$

$$(T_B)_x = 9.42 \text{ N} \cdot \text{m}$$

Ans.

$$\Sigma M_y = 0; \quad (M_B)_y + (0.2)(12)(9.81)(0.1) + (0.4)(12)(9.81)(0.2) - 60(0.3) = 0$$

$$(M_B)_y = 6.23 \text{ N} \cdot \text{m}$$

Ans.

$$\Sigma M_z = 0; \quad (M_B)_z = 0$$

Ans.

