

1- A 2-tooth case hardened worm of forged steel is to drive a 40-tooth sand cast bronze gear. The worm is running at 1720 rpm, has an axial pitch of 7.85 mm, a normal pressure angle of 14.5° , a pitch diameter of 30 mm and its right hand helix teeth are ground and polished. If the gear has 15 mm face width and the coefficient of friction between the worm and the worm wheel is 0.03, **determine:**

- The directions of forces acting on the worm
- The maximum power that could be transmitted through this gear set
- The efficiency of the system

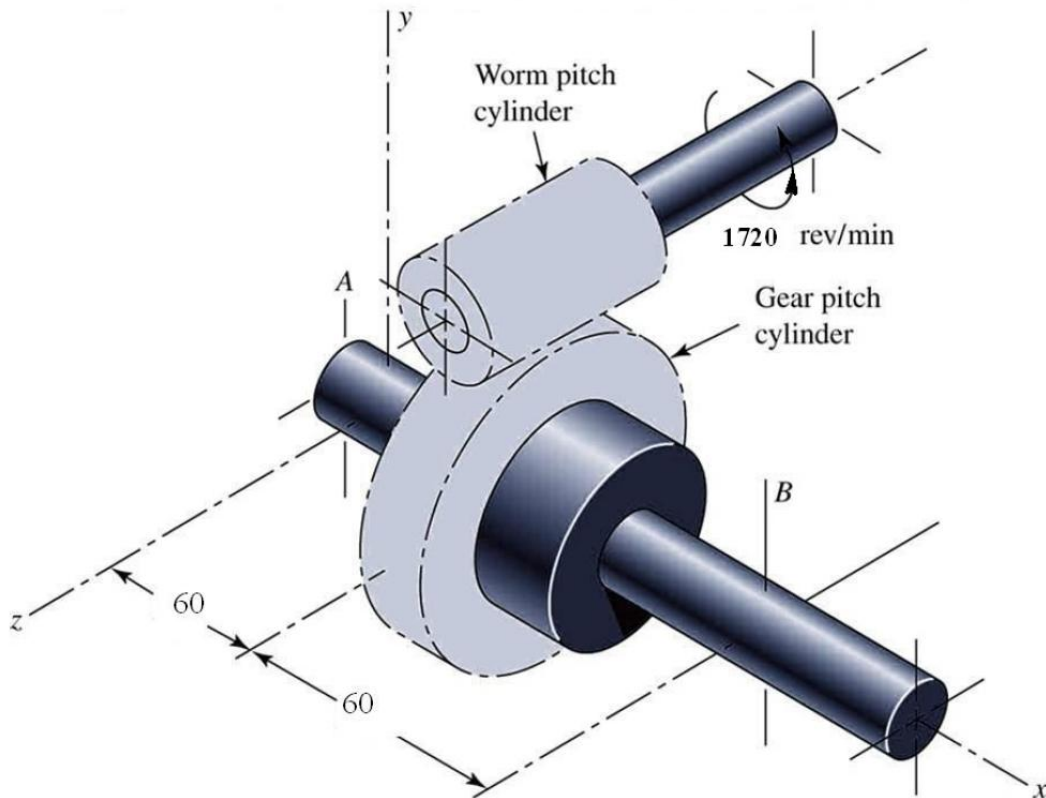


Figure 8-1

2- For the gear train shown in the figure 8-2, find the required input power and speed of the 18-tooth spur pinion (magnitude and direction of rotation) knowing that the required output torque is 3 kN.m. at 1.5 rad/s CW on worm wheel 9.. All gears have a normal pressure angle of 20° and the coefficient of friction between the worm and the worm wheel is 0.03. (All gears data are shown in figure 8-2)

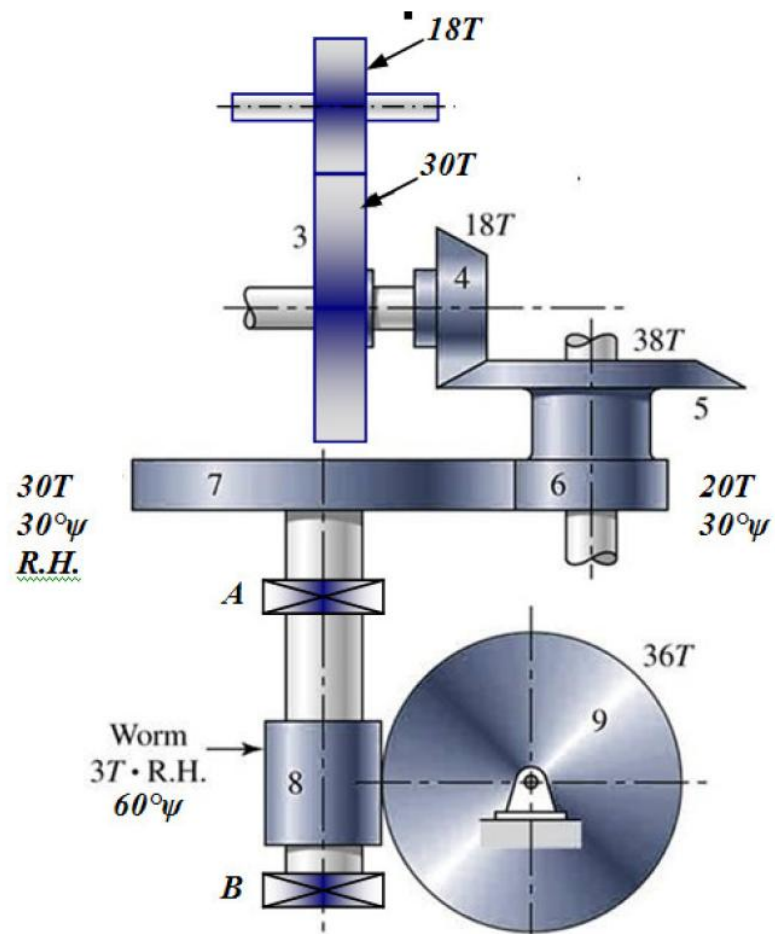


Figure 8-2