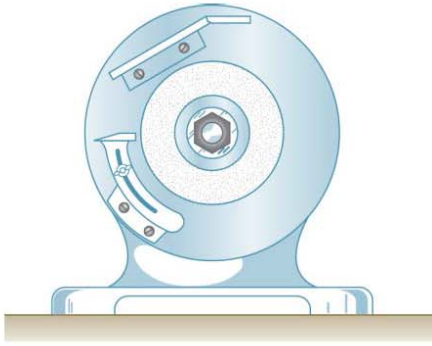


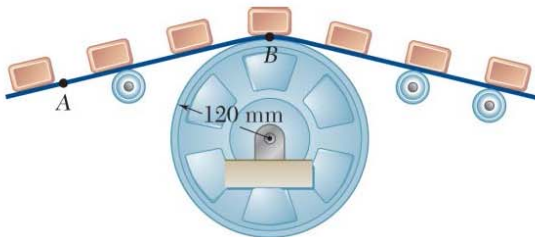
HW #8 – Chapter 15

PROBLEM 15.5



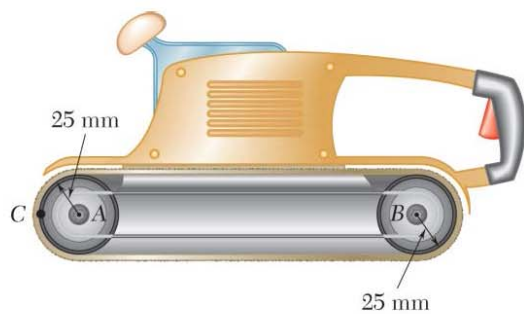
A small grinding wheel is attached to the shaft of an electric motor which has a rated speed of 3600 rpm. When the power is turned on, the unit reaches its rated speed in 5 s, and when the power is turned off, the unit coasts to rest in 70 s. Assuming uniformly accelerated motion, determine the number of revolutions that the motor executes (a) in reaching its rated speed, (b) in coasting to rest.

PROBLEM 15.18



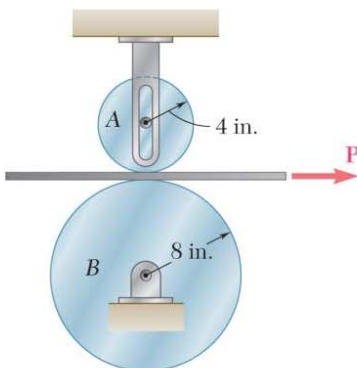
A series of small machine components being moved by a conveyor belt pass over a 120 mm radius idler pulley. At the instant shown, the velocity of Point *A* is 300 mm/s to the left and its acceleration is 180 mm/s^2 to the right. Determine (a) the angular velocity and angular acceleration of the idler pulley, (b) the total acceleration of the machine component at *B*.

PROBLEM 15.20



The belt sander shown is initially at rest. If the driving drum *B* has a constant angular acceleration of 120 rad/s^2 counter-clockwise, determine the magnitude of the acceleration of the belt at Point *C* when (a) $t = 0.5 \text{ s}$, (b) $t = 2 \text{ s}$.

PROBLEM 15.25



A belt is pulled to the right between cylinders *A* and *B*. Knowing that the speed of the belt is a constant 5 ft/s and no slippage occurs, determine (a) the angular velocities of *A* and *B*, (b) the accelerations of the points which are in contact with the belt.