10 A satellite of initial mass 400 kg is in geostationary orbit at a speed of 3000 $m\,s^{-1}$. It fires a jet of gas opposite to the direction in which it is moving, for 5.0 s. The gas is ejected at a rate of 0.20 $kg\,s^{-1}$ and travels at 2000 $m\,s^{-1}$ relative to the satellite.

What is the final speed of the satellite?

A 2990 $m\,s^{-1}$ **B** 3010 $m\,s^{-1}$ **C** 3030 $m\,s^{-1}$ **D** 4000 $m\,s^{-1}$