

Motor Calculations

Motor selected for driving the wheels (total number 2, one for each wheel):
#164786, MOTOR, GEAR, 300RPM, 12VDC @ 25MA

Preliminary test:

No load speed at 6 V: 142.1 rpm;
at 9 V: 218.0 rpm.

Assume that when driving the wheel, the motor would spin at 60-70% of the maximum efficiency speed, and that we would use a pair of wheels with the diameter = 3.75 in. Then the estimated full speed of our robot is approx. equal to:

$$142.1 \text{ rpm} / 6V * 12V * 60\% * (\pi * 3.75 \text{ in} * 25.4/1000 \text{ m/in}) / (60 \text{ s/min}) = 0.85 \text{ m/s}$$