weight

30

mass

weight · .434 = 22.7

---

top speed (mph)

2

speed/ft/s

mph · 1.46667

2.93334

in/s

mph · 17.6

35.2

m/s

mph · .44704

.89408

---

acceleration time

3

acceleration ft/s^2

$$\frac{\text{speed ft/s}}{\text{acceleration time}}$$

.97778

m/s^2

$$\frac{\text{speed m/s}}{\text{acceleration time}}$$

.2980

---

moving force required lV

& mass · acceleration

22.7kg · .2980 m/s^2

6.763 N

Force required

weight · ft/s^2

50 · .97778

48.889

~~wheel~~ diameter in

6

m

in · .0254

.1524

ft

in/12

.5

Rev/s

$$\frac{\text{speed in/s}}{\text{wheel dia in} \cdot \pi}$$

3.0667

Rev/min

$$\frac{\text{speed} \cdot \text{in/s} \cdot 60}{\text{Wheel Dia in in}}$$

352

Radians / s

$$\frac{\text{Rev/min} \cdot 2 \cdot \pi}{60}$$

.9337

Torque required Fxr Nm

moving force required · $\frac{\text{wheel dia}}{2}$

13.35

Force required lbf · ft · $\frac{\text{ft}}{2}$

12.22

Torque Radians / s

Horse power needed

$Hp = T \cdot \frac{RPM}{5252}$ " RPM = 2000

Hp = 1196

motor speed	Rpm
500	52,35
1000	104.72
1500	157.08
2000	209.44
2500	261.799
3000	314.159
3300	366.5108