Electric Vehicle Performance – Design Data

version: 1.1

Vehicle: Honda Civic 1500S, 1984

Electric Motor: Err:508

Weights:

Original vehicle	1907	lbs
- Components removed	450	lbs
+ Motor	###	lbs
+ Batteries	###	lbs
+ Other components	50	lbs
Net Vehicle Weight	###	lbs

Drag:

Drive train efficiency	0.91
Rolling Resistance	0.012
Steering and Brake, Csb	0.003

Aerodynamic Drag:

Average wind velocity	9	mph
Frontal area	16	square feet
Coefficient of drag, Cd	0.3	
Relative wind coefficient, Crw	1.2	

Gear Ratios:

1st gear ratio	2.916
2nd gear ratio	1.764
3rd gear ratio	1.181
4th gear ratio	0.846
5th gear ratio	0.714
Differential ratio	4.066

Tires: 175/70R1

Overall diameter	24
Revolutions per mile	**Err:508**

Batteries:

Battery voltage	12
Number	10
Weight per battery	86
Battery pack voltage	**Err:508**

Design speed	65	mph	Motor RPM at design HP	**Err:508**
Design Wheel Torque	###	ft-lbs		
Motor horsepower	###	hp	Optimum gear ratio	**Err:508**

Cd for different vehicles:

cars	0.30 - 0.35
vans	0.33 - 0.35
pickups	0.42 - 0.46

Crw for different vehicles:

streamlined	1.2
average sedan	1.4
pickup or van	1.6

Cr for different surfaces:

hard surface	0.015
medium-hard	0.08
soft	0.3

Trojan Battery Specs:

	Minutes	Energy Density	20 AH

Model	Volts	@ 75 amps	lbs	watt-hours/lb	Cap.
T-105	6	107	61	15.5	217
T-125	6	125	66	15.6	235
T-145	6	145	71	15.0	244
27TMH	12	50	60	15.2	117
5SHP	12	78	86	14.2	165

based on equations and data in "Build Your Own Electric Vehicle" by Bob Brant, Tab Books, 1994
courtesy of Doug Wilson (send comments, corrections and improvements to wilson@bwco.com)

Overall
11.856
7.172
4.802
3.440
2.903

3
inches

volts

lbs

wtt-hrs

per bat.
1302
1410
1464
1404
1980