Motor and Gear Charts: **Design I**

![Image](image_url)

- Motor/Gear Box
- Coupling
- Bushing w ball bearings
- Load
Motor and Gear Ratio: Design II
MATLAB® Script: Simulation

- MATLAB® program and Torque-speed files on 2.007 website software/tools

- Interface: Inputs and Outputs
  - Car parameters
  - Distance
  - Choose Gear Ratio to minimize your time
  - Output time you needed

- Drive chain efficiency determined by experiments

- Choose different parameters to optimize the performance of your car
Output Plots

- Acceleration limited by torque-speed and friction
- Maximum speed from acceleration and time
- Deceleration limited by friction and torque
- Two plots
  - Speed vs. Time
  - Distance vs. Time
Compare Simulation & Experiment

- Using the simple car
- 1:100 Gear Ratio
- Two wheel drive
- Efficiency about 50%