

2010 Toyota Prius

Gear Tooth Counts

For those who love to calculate gear ratios, here's some teeth counts for you.

Power Split Sun Gear: 30
Power Split Pinion Gear: 23
Power Split Ring Gear: 78

Motor Speed Reduction Sun Gear: 22
Motor Speed Reduction Pinion Gear: 18
Motor Speed Reduction Ring Gear: 58

MG2 speed reduction ratio (Sun to Ring Gear) = $58/22 = 2.636$

MG2 speed reduction ratio: 2.636:1

Counter Gear (replaces chain) Drive Gear Teeth: 54
Counter Gear Driven Gear Teeth: 55

Final Gear Drive Gear: 24
Final Gear Driven Gear: 77

Final Drive Ratio = Final Gear ratio (77/24) X Counter Gear ratio (55/54) = 3.267

Total Final Drive Ratio: 3.267:1

MG2 to wheel speed = $MG2 \text{ RPM} / (3.267 \times 2.636) = MG2 \text{ RPM} / 8.612 \times \text{tire mile/revs} \times 60 \text{ min/hr}$

Example : 58 mph (SGII) (60 displayed) = MG2 speed of 7000 RPM

$\frac{7000 \text{ rev}}{\text{min}} \times \frac{1}{8.612} \times \frac{\text{mile}}{832 \text{ rev}} \times \frac{60 \text{ min}}{\text{hour}} = 58.6 \text{ mph}$

MG2 RPM X **0.00837** = MPH

MPH = 13500 RPM (MG2 Max) X 0.00837 = 112.995 MPH (electronic speed limit)