

Hybrid Synergy Drive System Operation

2004→ Toyota Prius

Operational status	
<p>At acceleration from start and at low to mid-range speeds</p> <p>The engine is stopped when it encounters a poor-efficiency range under a wider range of operational conditions such as acceleration from standing start and up to mid-range speed. The vehicle runs entirely on power generated by the motor.</p>	
<p>During driving under normal conditions</p> <p>Power generated by the engine is distributed two ways by the power split device. One power stream is used to drive the generator, which in turn drives the motor. The other power stream is used to directly drive the wheels. The distribution of these power streams is controlled to provide maximum efficiency.</p>	
<p>During sudden acceleration</p> <p>During sudden acceleration, extra power is supplied from the battery while the engine adds drive to the high-output motor, providing good response and a smooth drive, as well as improved acceleration performance.</p>	
<p>During braking and other forms of deceleration</p> <p>During deceleration through braking and other methods, the high-output motor functions as a large capacity generator, controlling power distribution to the wheels. The system functions as an efficient regenerative braking system recovering the vehicle's kinetic energy as electrical energy. The recovered energy is then stored in the high-performance battery.</p>	
<p>While the battery is recharging</p> <p>The battery is controlled to maintain a certain level of charge. When the charge level becomes low the generator kicks in to recharge it.</p>	
<p>When the vehicle is stopped, the engine automatically stops.</p>	

— Mechanical transmission

== Electrical transmission