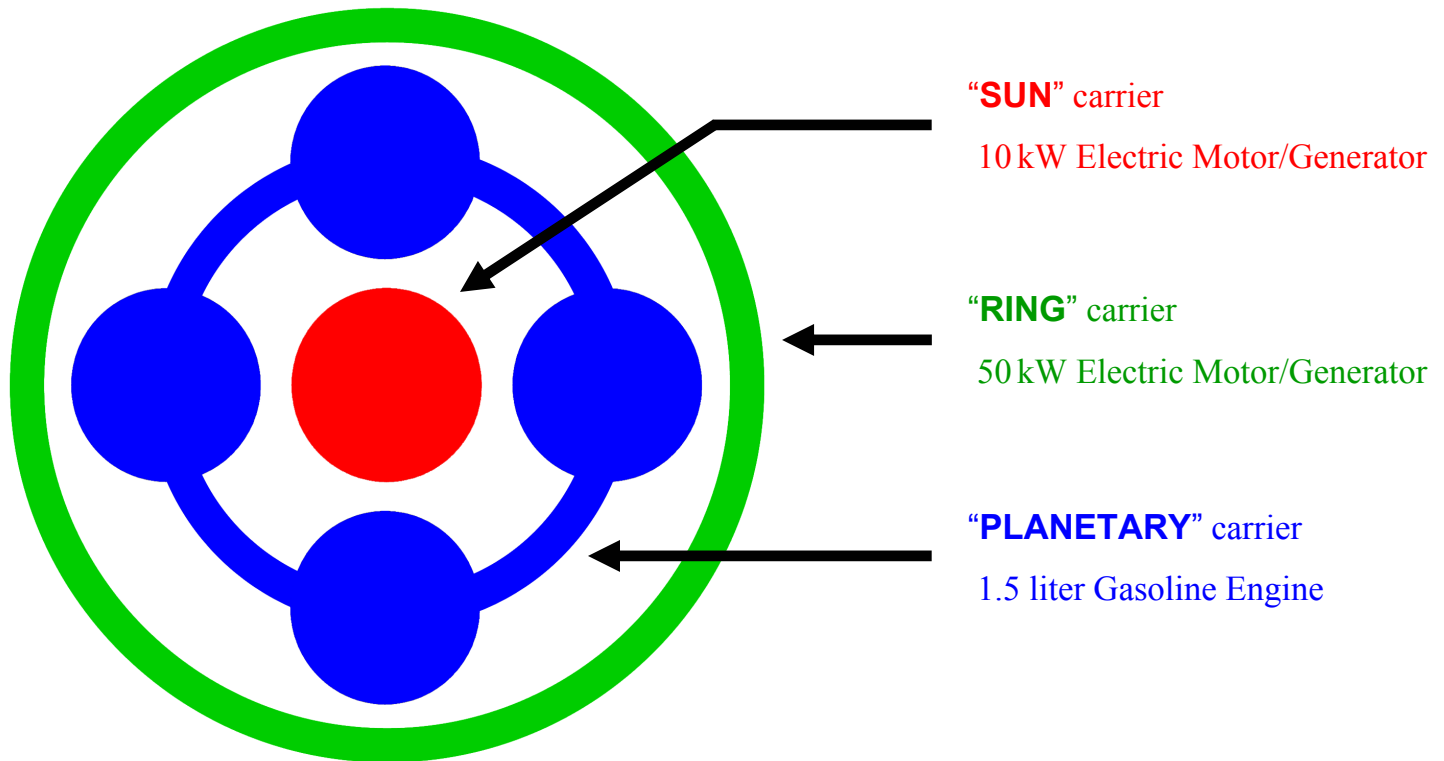


Toyota Prius: Power-Split-Device



Prius doesn't actually have a transmission, because there are no gears and the power carriers are permanently engaged. The illustration you see above is a simplified diagram of what Prius has for the transfer of power instead. It very closely resembles another component found in all vehicles, a differential. The only difference is that there are multiple sources of power, rather than just one; hence the name "**Power-Split-Device**". And to keep references simple, you may call it the "**PSD**".

Another reference for this device is a CVT (Continuously Variable Transmission), but it is not type found in both traditional vehicles and other types of hybrid, called: "**Cone & Belt**". Instead, this CVT is referred to as the "**Planetary**" type, due to the orbital movement of the components within.

The entire PSD is remarkably small, only the size of an adult hand's palm. Each of the carriers has the ability to rotate in its own unique way, providing a wide range of power options. The "**Ring**" carrier is sometimes powered by the battery-pack to provide the ability to drive using only electricity (both forward & backward), allowing the engine to stop running to save gas. At other times, the "**Ring**" carrier creates power, regenerating electricity when you use the brakes. The "**Planetary**" carrier is powered by the engine, which causes rotation of both the car's wheels (for driving forward) and the "**Sun**" carrier (for generating electricity). And while the "**Planetary**" & "**Sun**" carriers are spinning, the "**Ring**" carrier can join in to provide additional thrust to the wheels or to allow engine RPM to be reduced. Lastly, the "**Sun**" carrier is also used for starting the engine.