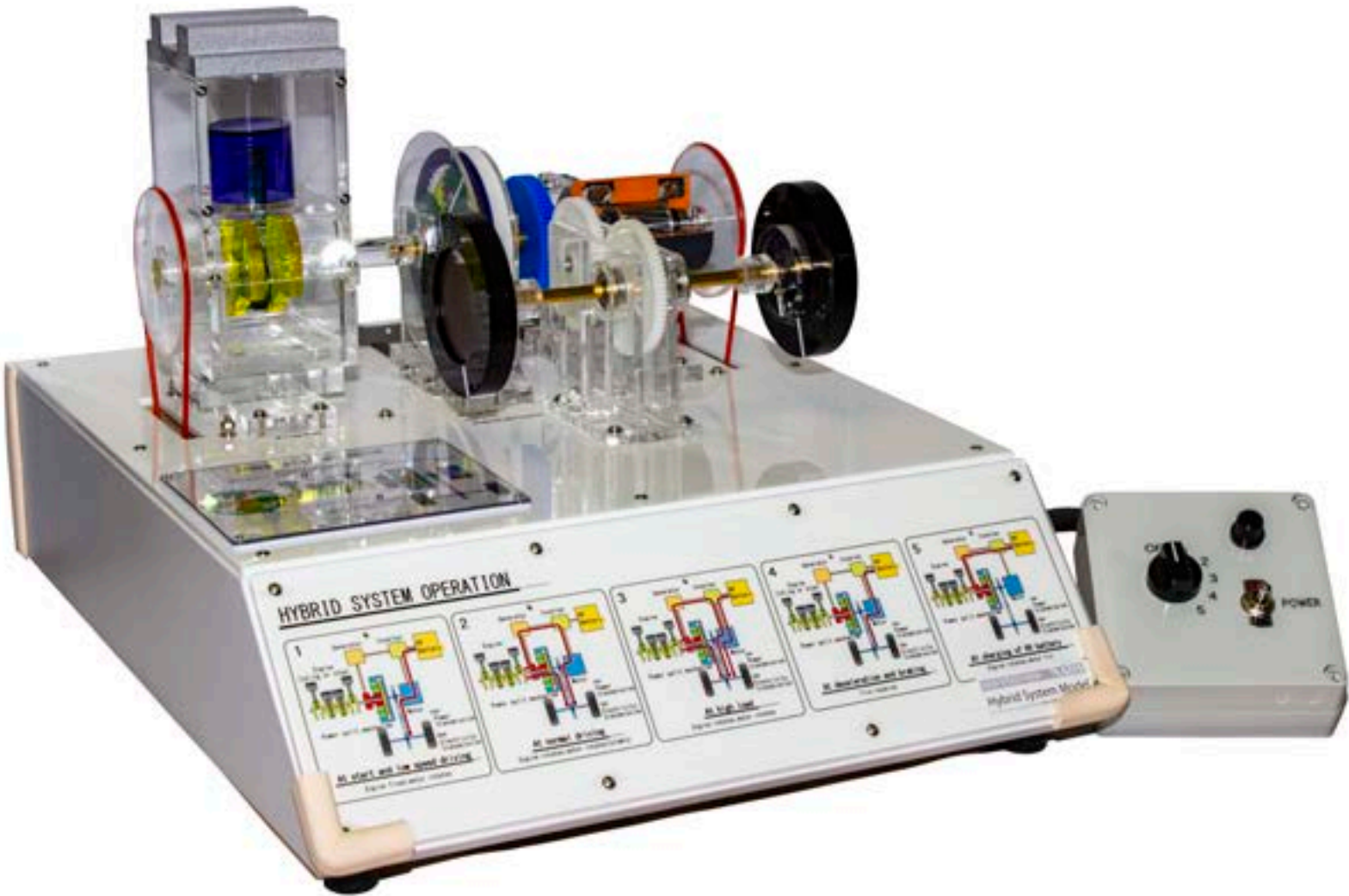


HYBRID SYSTEM MODEL MOTOR DRIVEN N98-V502-HBM



This unit works with American Electrical Standard at 115VAC.



OPERATES ELECTRICALLY



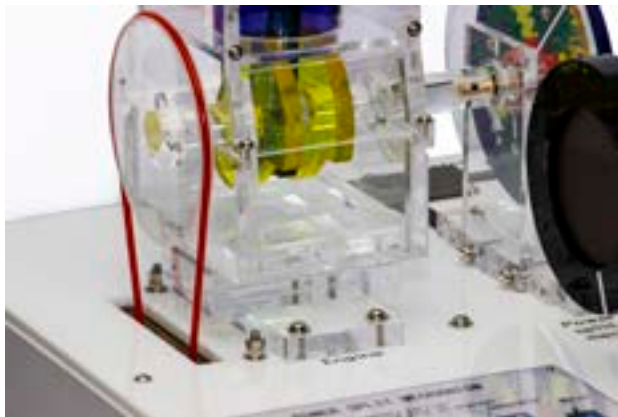
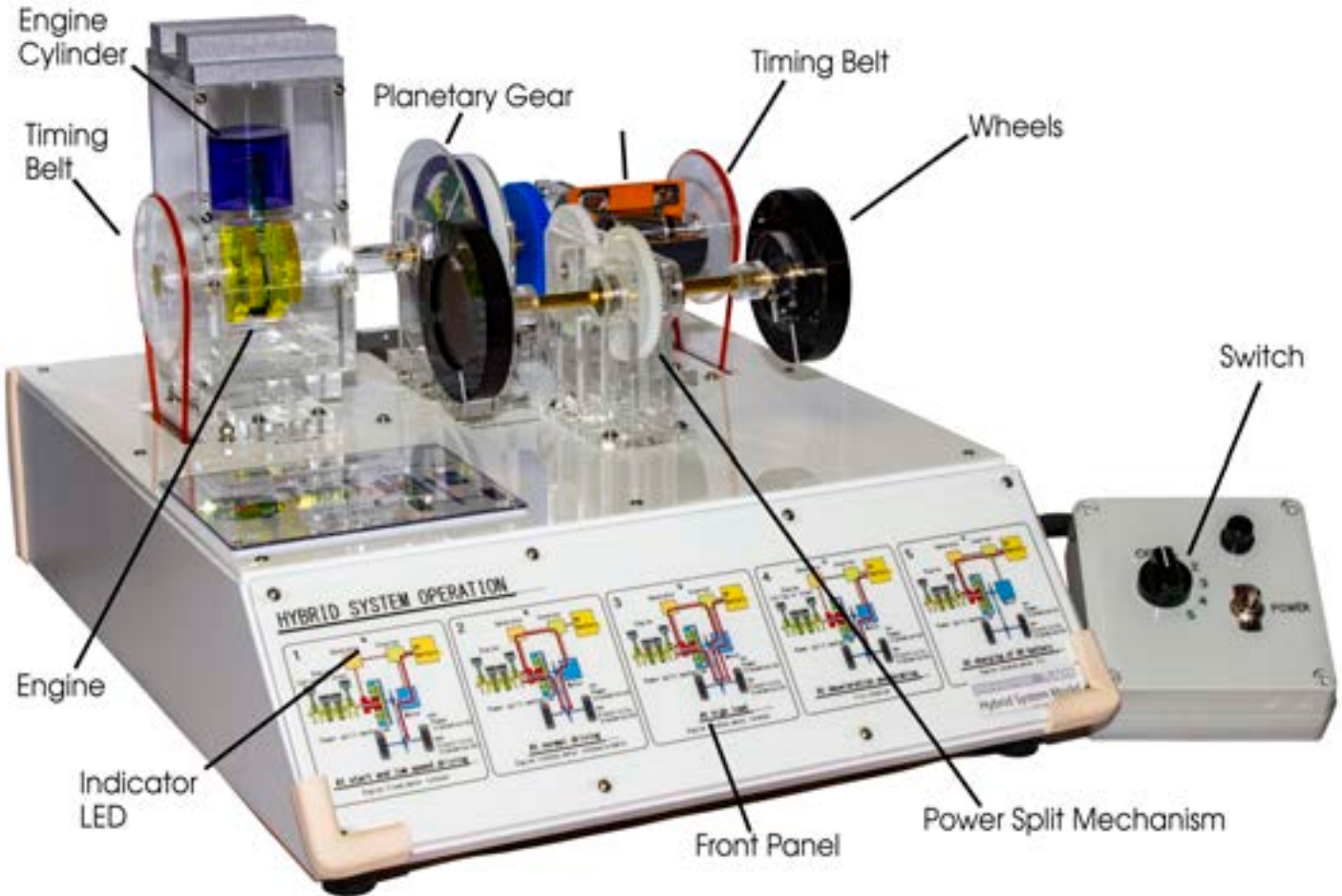
MOUNTED ON BASE

Manual of Operations
IMPORTANT!
Read the following before using this equipment:
Carefully follow all instructions and observe all precautions given in this manual

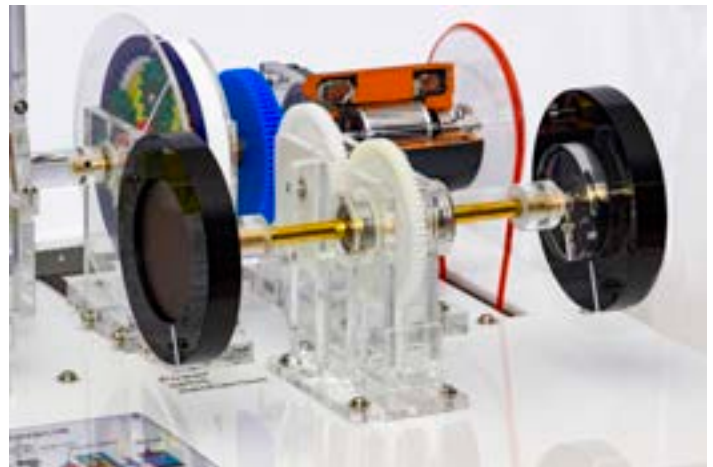


GETTING TO KNOW THE MODEL

This automotive training aid is a 3-Dimensional model of a parallel series Hybrid System employed in the Toyota Prius. The front panel has 5 illustrations to demonstrate the 5 different operational stages within a Hybrid engine. This Hybrid model is motor driven via an electrical source to maximize demonstration time and to visibly explain the moving components in real time.

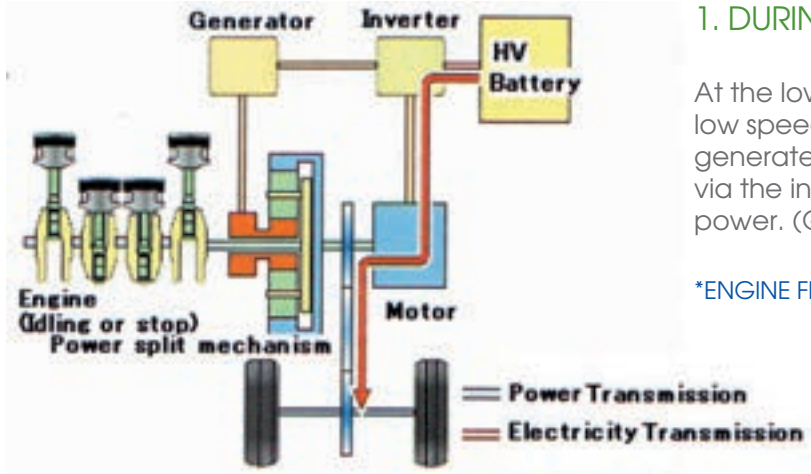


ENGINE TIMING BELT



ELECTRIC MOTOR TIMING BELT

OPERATION



1. DURING LIGHT ACCELERATION

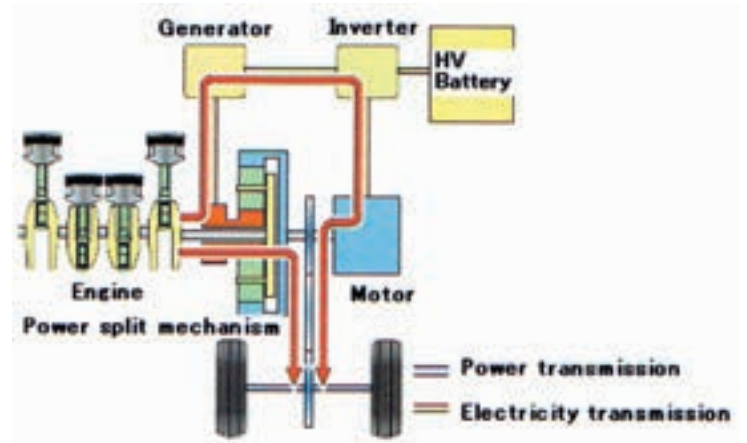
At the low engine efficiency sphere, such as driving at a low speed, the engine stops and the electric power generated by the hybrid battery is supplied to the motor via the inverter. As a result, the vehicle cruises by motor power. (Green light)

*ENGINE FIXED, MOTOR ROTATES

2. DURING NORMAL DRIVING

The power dividing mechanism divides power from the engine so that one portion powers the wheels while the other portion powers the generator. This mechanism supplies the motor with the necessary driving power in addition to supplying the generator with energy. This controls the power distribution at maximum efficiency. (Green light)

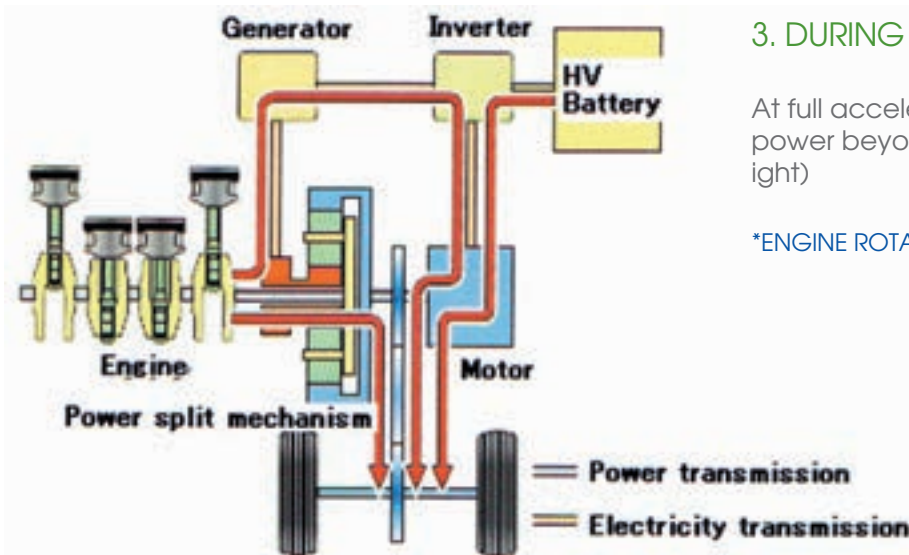
*ENGINE ROTATES, MOTOR ROTATES (SLOWLY)



3. DURING FULL ACCELERATION

At full acceleration, this feature adds additional power beyond the "Cruising" status. (Green light)

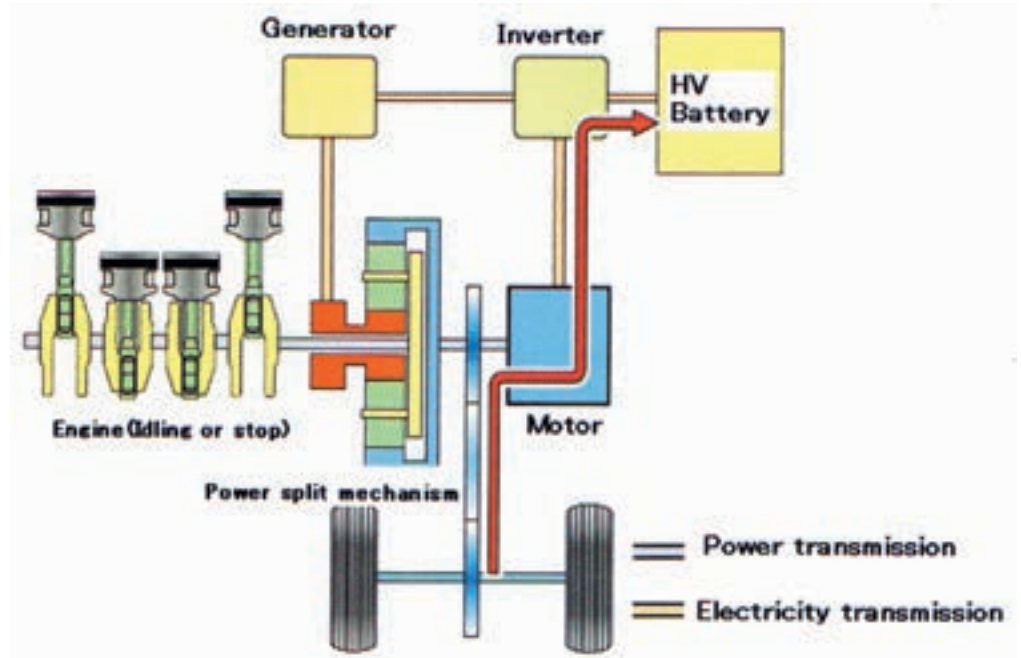
*ENGINE ROTATES, MOTOR ROTATES



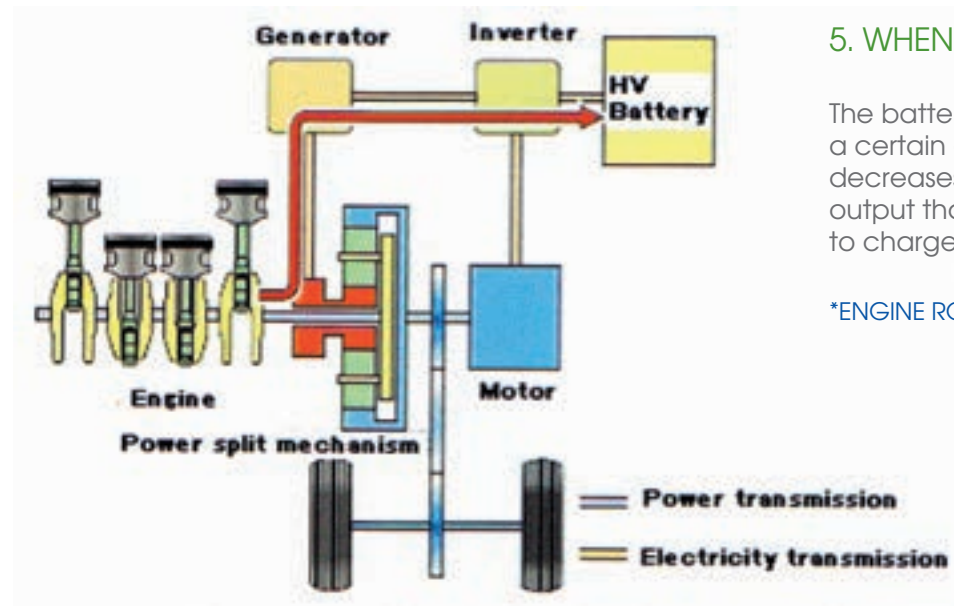
4. DURING DECELERATION AND STOPPING

During deceleration, the motor is used as a generator when the rotation of the wheels creates friction between the road and the wheel. Thus, converting kinetic energy into electric energy, which recovers (charges) the hybrid battery.

When the engine brake and foot brake are employed, the recovery brake system uses the most efficient option. The hydraulic brake supplement enables a more efficient recovery (charging) of the hybrid battery. (Red light)



*TIRE ROTATES



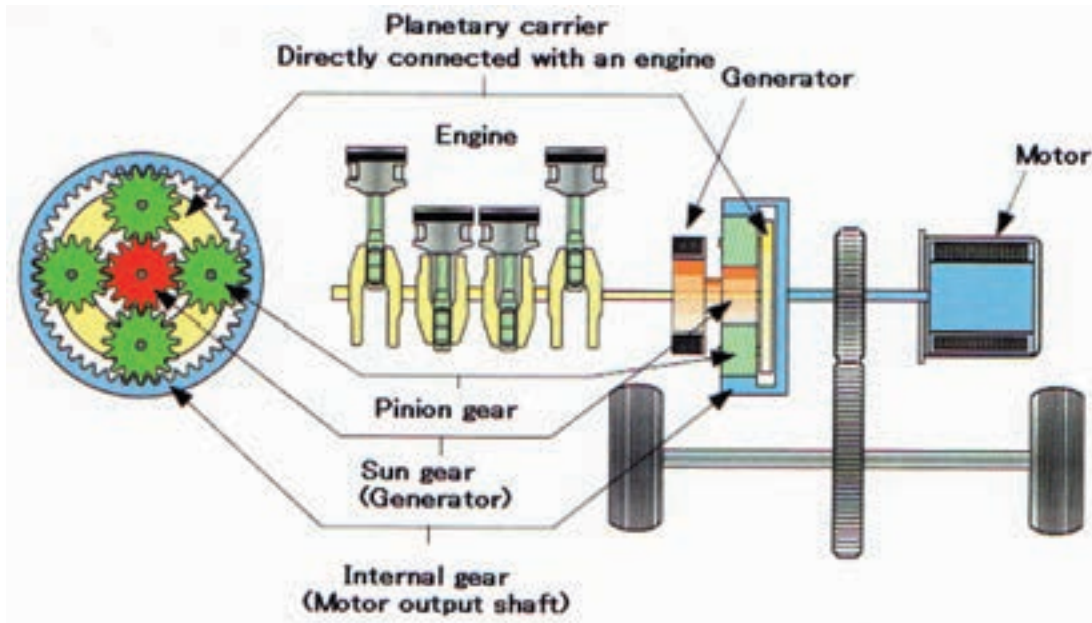
5. WHEN THE HV BATTERY IS CHARGING

The battery is constructed to maintain a certain charge. When the voltage decreases, there is an increase in engine output that increases electricity generation to charge the hybrid battery. (Red light)

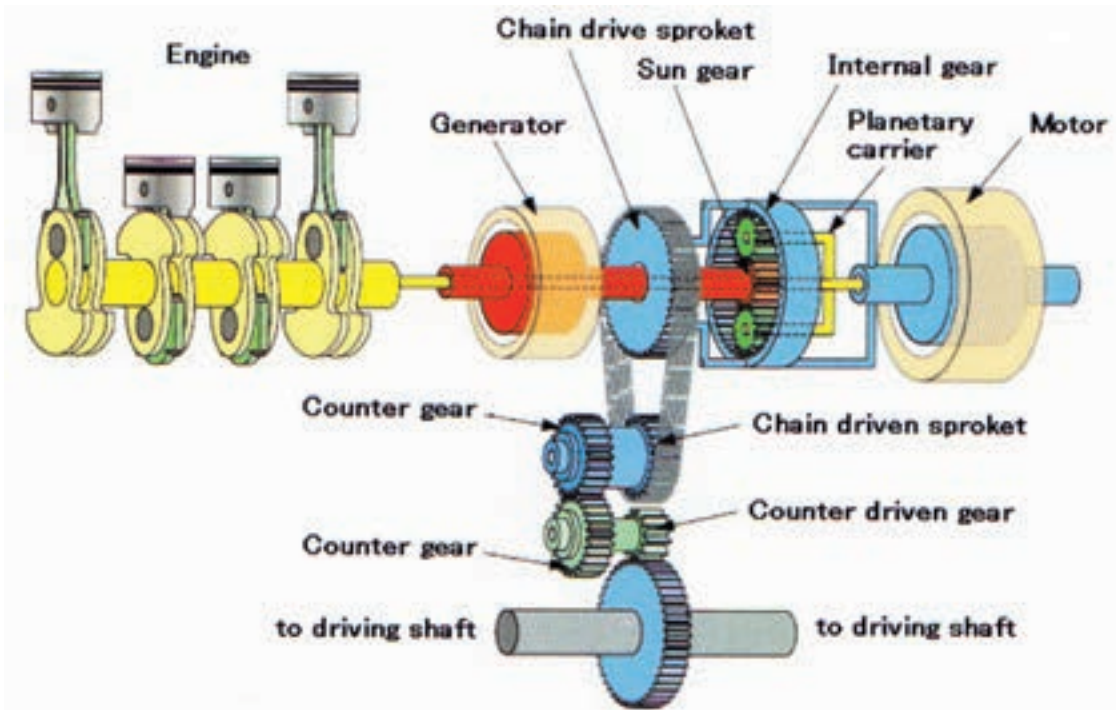
*ENGINE ROTATES, MOTOR FIXED

POWER SPLIT MECHANISM

Utilizing the planetary gear, the power split mechanism divides power between the motor, driving shaft, and generator.



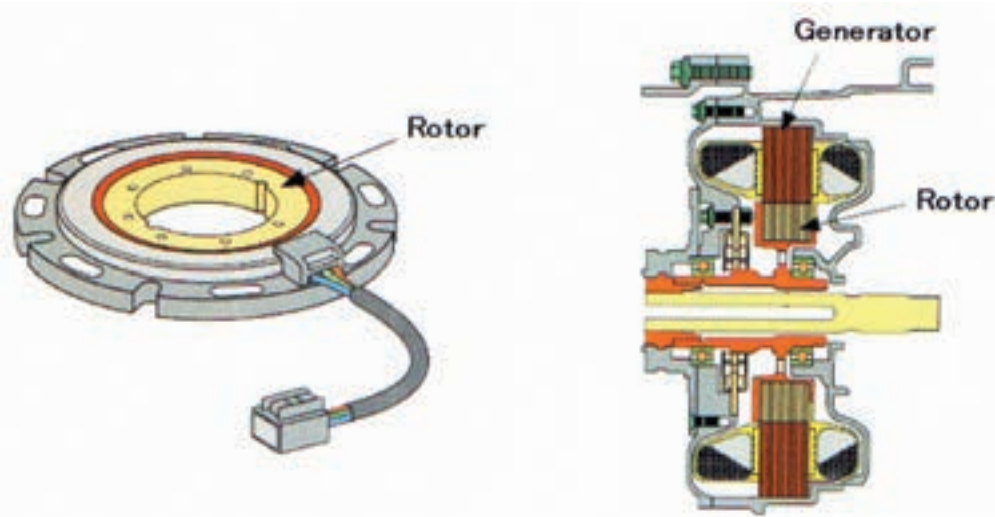
- Internal Gear →→→ Directly connected to the motor and the driving shaft
- Sun Gear →→→ Directly connected to the generator
- Planetary Gear →→→ Directly connected to the engine



THE FOLLOWING PARTS ARE NOT INCLUDED IN THE UNIT. THE POSITIONS OF THESE PARTS ARE NOTED ON THE UNIT.

GENERATOR

This component generates electricity and supplies the HV Battery to permit charging and propel the motor. The generator varies the quantity of electric power and controls the transaxle of the continuously variable transmission. It also acts as an engine starter.

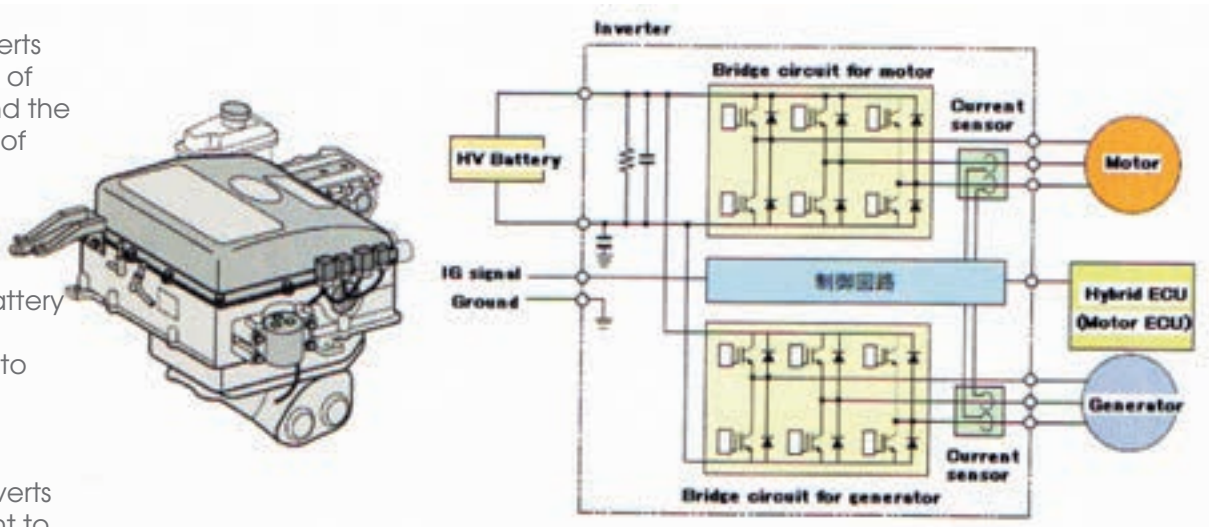


INVERTER

The inverter converts the direct current of the HV Battery and the alternate current of the motor and generator.

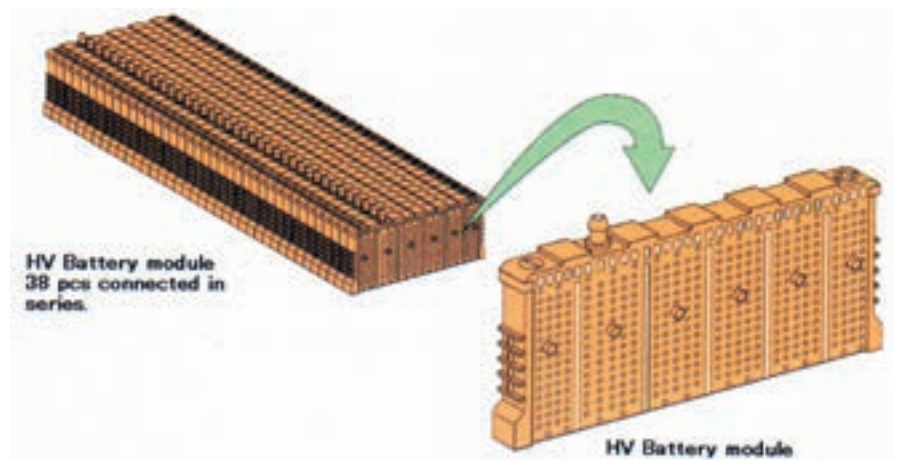
Generator → →
Charged in HV Battery
(converts from alternate current to direct current)

HV Battery → →
Motor Drive (converts from direct current to alternate current)



HV BATTERY MODULE

The HV Battery module (not included) is a combination of 6 pieces of 1.2V Nickel-Hydrogen batteries connected into one series. When 38 series are connected together, the HV Battery module generates 273.6V.



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