

- (4) For the hybrid system, motor generators have different roles depending on the situation. Understanding the relationship between the rotation direction and torque can help to make the role of a motor generator easier to understand.
- (5) The table below shows the relationship of drive and electric generation for different combinations of plus or minus torque and forward or reverse rotation.

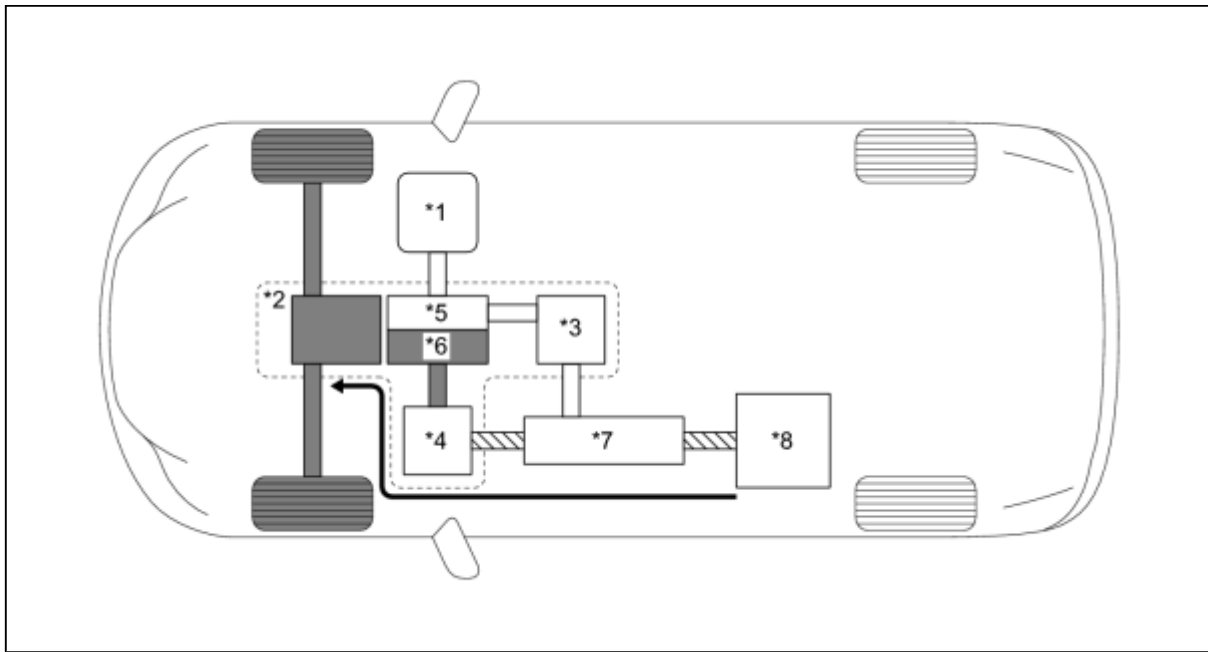
ROTATION DIRECTION	TORQUE CONDITION	ROLE OF COMPONENT
Forward (+) Rotation	Plus Torque	Drive
	Minus Torque	Electric Generation
Reverse (-) Rotation	Plus Torque	Electric Generation
	Minus Torque	Drive

- (6) As an example, if a motor generator is rotating in the forward (+) direction, and it applies minus torque, it will generate electricity (producing electrical power).




- (7) Alternately, if the motor generator is rotating in the reverse (-) direction and it applies minus torque, it will act as a drive source (consuming electrical power).

(c) Driving Condition B: Starting Off

- (1) When the vehicle is started off, the vehicle operates powered by MG2. If the required drive torque increases when running with MG2 only, MG1 is activated to start the engine.



Text in Illustration

*1	Engine (Stopped)	*2	Hybrid Vehicle Transaxle Assembly
*3	MG1 (Rotates Freely)	*4	MG2 (Drive)
*5	Power Split Planetary Gear Unit	*6	Motor Speed Reduction Planetary Gear Unit
*7	Inverter with Converter Assembly	*8	HV Battery
	Mechanical Power Path		Electrical Power Path
	Power Transmission	-	-

- (2) When the vehicle starts off under normal conditions, it runs using the motive force of MG2. While running under this condition, the rotational speed of the carrier (engine) is 0 rpm due to the engine being stopped. In addition, since MG1 does not generate any torque, no torque acts on the sun gear (MG1). However, the sun gear rotates freely in the (-) direction balancing the rotating ring gear.