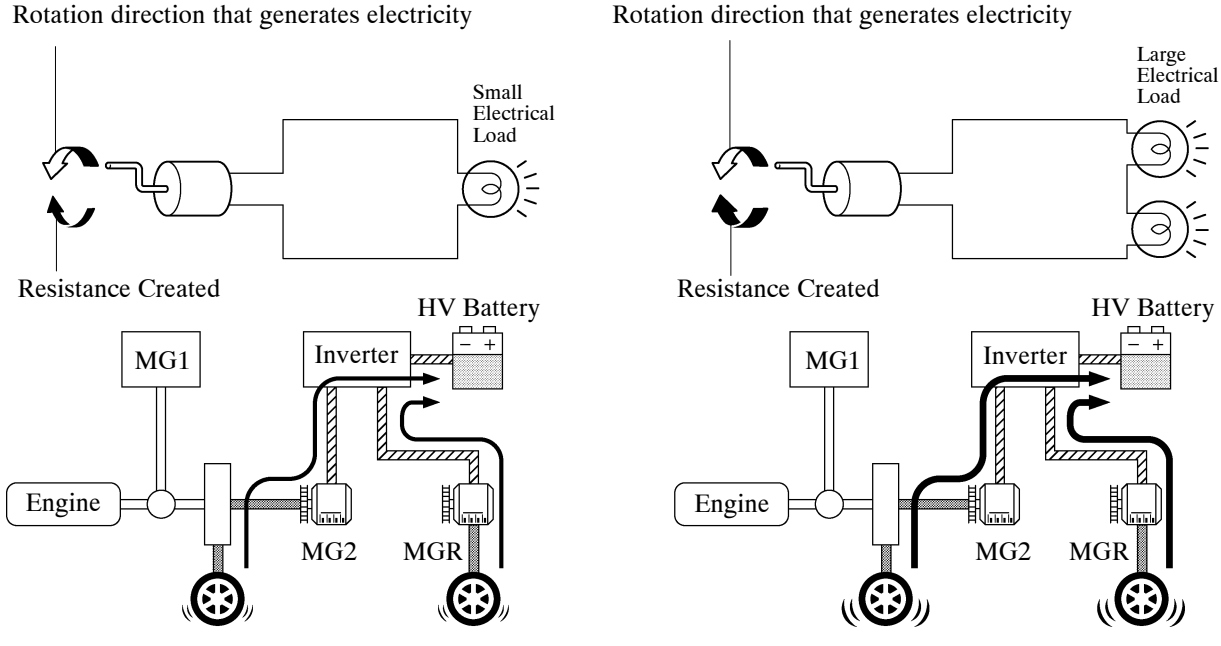
■ REGENERATIVE BRAKING COOPERATIVE CONTROL

1. General

The regenerative braking cooperative control does not rely solely on the braking force of the hydraulic brake system to supply the brake force required by the driver. Instead, by performing cooperative control with the THS-II (TOYOTA Hybrid System-II), this control provides a joint braking force provided by regenerative braking and hydraulic braking.
As a result, this control minimizes the waste of kinetic energy associated with the normal hydraulic braking, as this control recovers the kinetic energy by converting it into electrical energy.

- Regenerative braking consists of a resistance to rotation that is created by a motor generator acting as a generator (MG2 and MGR). This resistance force created by generating electricity will oppose the direction of rotation of rotor of the motor generator, forcing it to slow down. The greater the generated amperage (battery charging amperage), the greater the resistance force will be.
- The front and rear drive axles are joined electrically by MG2 and MGR, which drive the respective axles.
- The rotational movement of the drive wheels drives MG2 and MGR, causing them to operate as generators. As a result, the brake force of MG2 and MGR which results from generating electricity is transmitted to the drive wheels. This brake force is controlled by the THS-II system, via control of the amount of electricity generated.



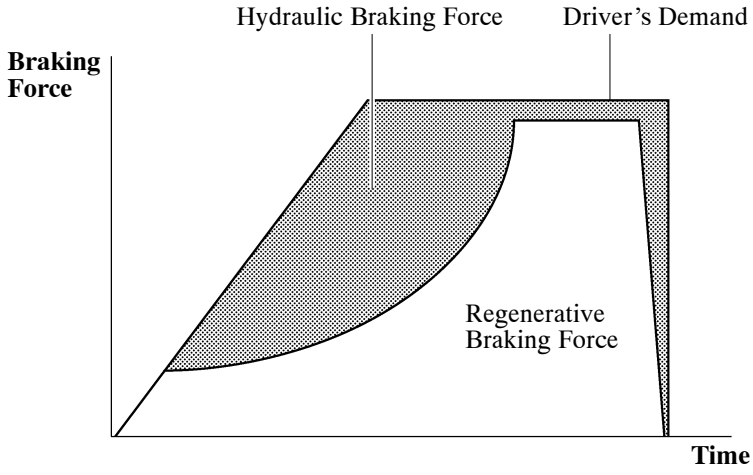
Brake Force: Small **Brake Force: Large**

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2. Apportioning of the Brake Force

The apportioning of the brake force between hydraulic braking and regenerative braking varies depending on the vehicle speed and length of time the brakes are applied.

- The apportioning of the brake force between hydraulic braking and regenerative braking is accomplished by controlling the hydraulic brakes so that the total brake force of hydraulic braking and regenerative braking matches the brake force required by the driver.
- If regenerative braking becomes impossible due to a THS-II malfunction, the brake system performs control so that the entire brake force required by the driver is supplied by the hydraulic brake system.



Changes in Braking Force Apportionment