System Outline

1.ABS Operation

If the brake pedal is depressed suddenly, the ABS controls the hydraulic pressure of all four wheel cylinders automatically to avoid wheel locking and ensure the directional and steering stability of the vehicle. If the brake pedal is depressed suddenly, the skid control ECU controls the solenoids in the actuators using the signals from the sensors to move the brake fluid from the cylinders to the reservoir in order to reduce the braking pressure. Also, If the skid control ECU detects that the fluid pressure in the wheel cylinder is insufficient, the ECU controls the solenoids in the actuators to increase the braking pressure.

2.Traction Control Operation

The traction control system controls the engine torque, the hydraulic pressure of the driving wheel cylinders, and any wheel slippage which may occur during vehicle takeoff or acceleration of the vehicle. This is to ensure optimal driving power and vehicle stability corresponding to the road conditions.

3.VSC Operation

Unexpected road conditions, vehicle speed, an emergency situation, and other external factors may cause excessive under- or over-steering of the vehicle. If this occurs, the VSC system automatically adjusts the engine power and wheel brakes to reduce the under- or over-steer.

To reduce over-steering :
If the VSC system determines that the over-steer is excessive, it activates the brakes for the outer turning wheels depending on the degree of the over-steer to produce moment toward the outer side of the turn and reduce the over-steer.

To reduce under-steering :
If the VSC system determines that the under-steer is excessive, it adjusts the engine power and activates the rear wheel brakes to reduce the under-steer.

4.Fail Safe Function

If an error occurs in the skid control ECU, sensor signals, and/or actuators, the skid control ECU inhibits the brake actuator control and sends an error signal to the engine control module. According to the error signal, the brake actuator may turn off the solenoid at which time the engine control module will reject any electronic throttle open requests from the VSC system. As a result, the vehicle continues to operate, but without the ABS, TRC, and VSC systems.

5.Downhill Assist Control Operation

The downhill assist control operation controls the braking action of each wheel to help prevent out-of-balance vehicle posture when descending a steep hill or traveling at a speed exceeding the threshold of wheel gripping capability. When the downhill assist control is in operation, the brake system controls the vehicle speed within a range of 5 to 7 km/h.

6.Hill-Start Assist Control Operation

When starting on a steep hill and facing uphill, the hill-start support control automatically applies the brakes momentarily - from the moment when the driver releases his foot from the brake pedal until he steps on the accelerator pedal - to help the driver start the vehicle safely and smoothly.

Please bear in mind, however, that it activates the brake system for a maximum of 3 seconds.