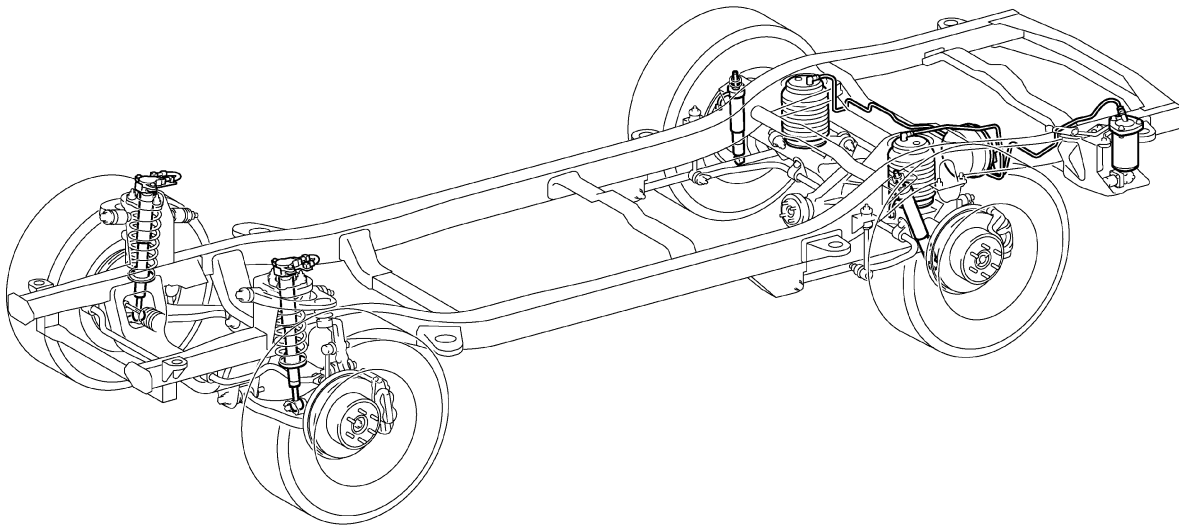


SUSPENSION AND AXLE

■ SUSPENSION

1. General

- The front suspension is double-wishbone type. The upper arm has been mounted high and the suspension geometry has been optimized in order to realize a suspension that offers both driving stability and ride comfort at high levels.
- An air suspension has been adopted in the rear suspension. It has been designed to ensure a practically constant vehicle height and maintain a constant sprung resonance frequency regardless of the load factor. Thus, both driving stability and ride comfort are achieved.
- The Electronic Modulated Suspension has been adopted as standard equipment. Thus, both excellent ride comfort and handling that are comparable to those of passenger cars have been achieved without affecting the vehicle's offroad performance.



Electronic Modulated Suspension and Rear Air Suspension

233CH53

► Specification ◀

Tread	Front and Rear	mm (in.)	1575 (62.0)
Front Wheel Alignment*	Caster	degree	3° 17'
	Camber	degree	0° 1'
	Toe-In	mm (in.)	1 (0.04)
	King Pin Inclination	degree	12° 29'

*: Unloaded Condition

2. Electronic Modulated Suspension and Rear Air Suspension

General

Although the electronic modulated suspension and rear air suspension are controlled by the suspension control ECU, these are independent systems. However, these systems share the following input signals: wheel speed, engine speed, and stoplight switch signals.

Electronic Modulated Suspension	<ul style="list-style-type: none"> ● Through electronic control, the electronic modulated suspension automatically controls the damping force of the shock absorbers, thus realizing excellent ride comfort and controllability. ● The electronic modulated suspension is a semi-active type. The suspension control ECU estimates the vehicle conditions in accordance with the signals from the sensors and the absorber control switch. Then, it changes the flow of the oil in the shock absorbers by actuating their actuators, in order to control their damping force. ● Non-linear H^∞ control has been adopted to effect basic control of the damping force. ● By operating the absorber control switch, the driver can select 4 levels of damping forces of the shock absorbers.
Rear Air Suspension	<ul style="list-style-type: none"> ● This system uses pneumatic cylinders instead of the coil springs that are used in a conventional rear suspension. The suspension control ECU analyzes the information based on the switches, sensors, and input signals, operates the compressor & motor with dryer, and uses the solenoid valves to control the vehicle height. ● The suspension control ECU detects, via the 2 height control sensors, the changes in the rear vehicle height that results from the number of occupants or the amount of the load. Then, the suspension control ECU controls the height control solenoid valves and the compressor & motor with dryer in order to automatically adjust the rear vehicle height to a constant (normal) vehicle height. ● Furthermore, three vehicle heights can be selected by operating the height control switch: HI, Normal, and LO. The HI vehicle height ensures the vehicle's drive-through performance on rough roads. The LO vehicle height facilitates the entry and exit of the occupants and the loading and unloading of cargo. The Normal vehicle height helps realize excellent controllability and riding comfort during normal driving.

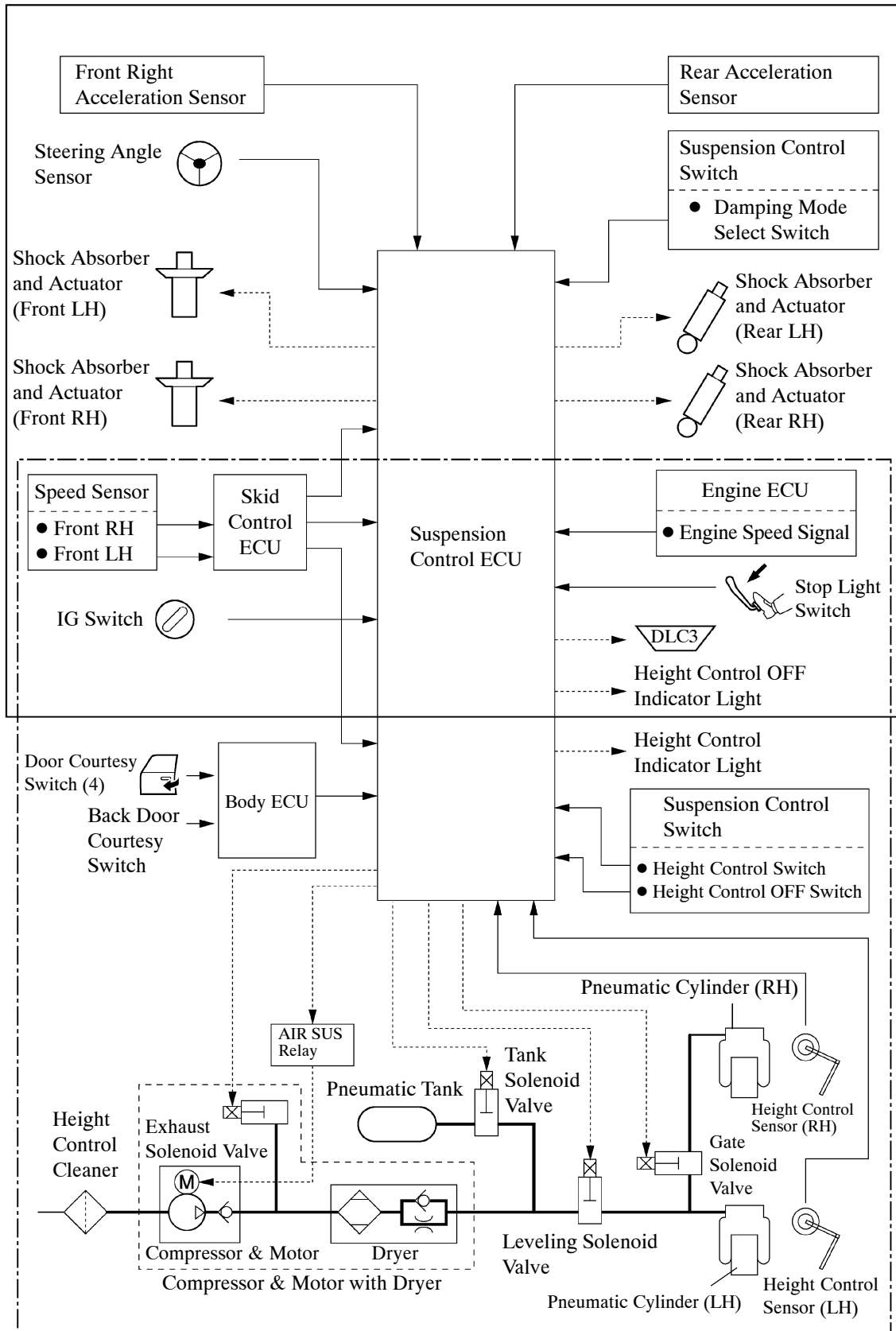
CAUTION

Before raising the vehicle on a jack or hoist, make sure to press the height control OFF switch to prohibit height control.

► System Diagram ◀

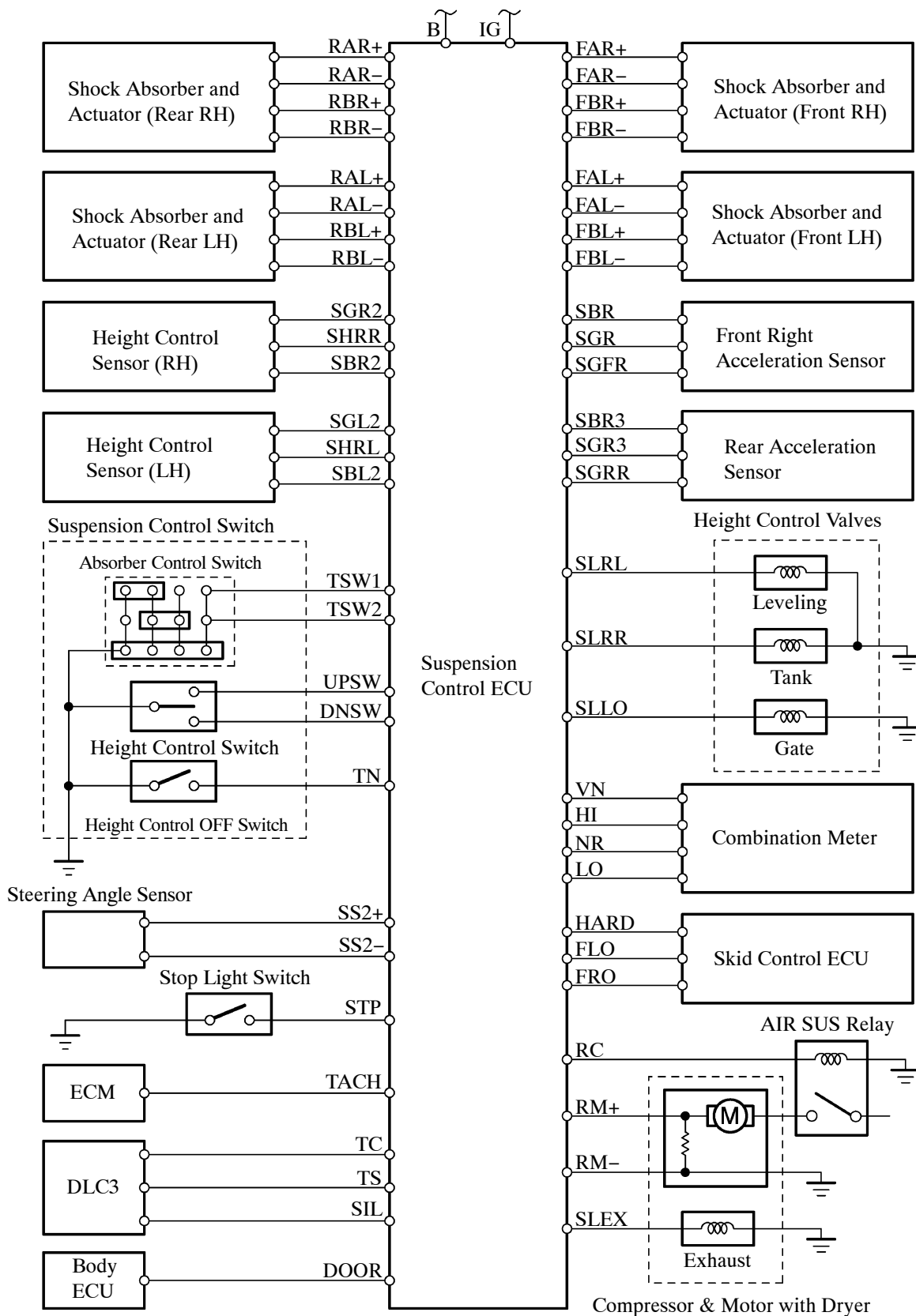
Electronic Modulated Suspension

*: VSC Operation Signal

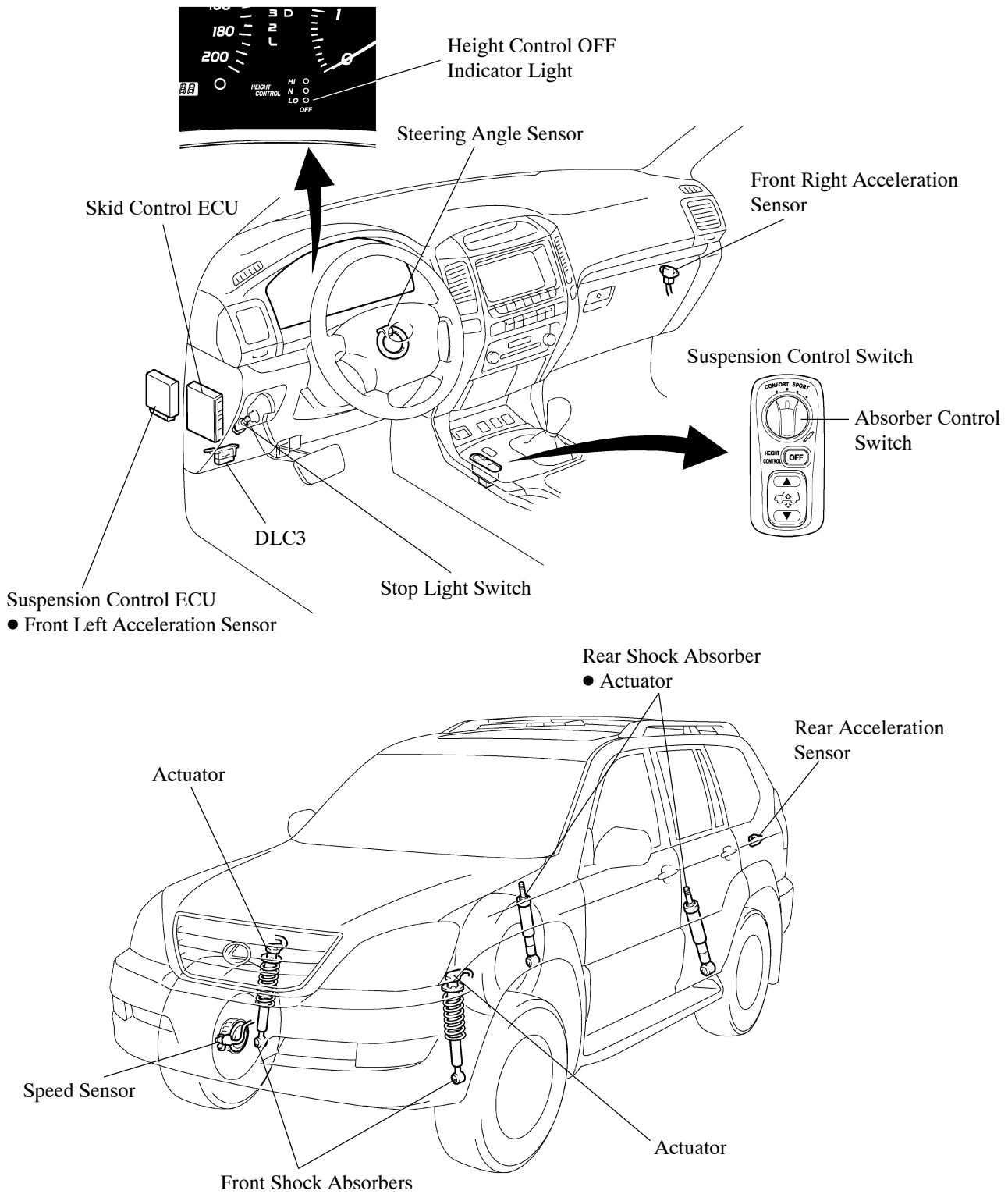


Rear Air Suspension

Wiring Diagram



Layout of Component in Electronic Modulated Suspension



Function of Component in Electronic Modulated Suspension

Component		Function
Suspension Control Switch	Absorber Control Switch	Selects the damping force of the shock absorber.
Combination Meter	Height Control OFF Indicator Light	Indicate the DTCs (Diagnostic Trouble Codes) of the Electronic Modulated Suspension.
Front Right Acceleration Sensor		Detects the vehicle's vertical (front right side) acceleration rate.
Rear Acceleration Sensor		Detects the vehicle's vertical acceleration rate.
Steering Angle Sensor		Detects the steering direction and angle of the steering wheel.
Front Shock Absorber and Actuator		Changes the damping force of the front shock absorber by the suspension control ECU signal.
Rear Shock Absorber (Built in actuator)		Changes the damping force of the rear shock absorber by the suspension control ECU signal.
ECM		Receives the signals of the crankshaft position sensor and sends it to the suspension control ECU.
Skid Control ECU		<ul style="list-style-type: none"> ● Receives the signals of the right and left front speed sensors and sends them to the suspension control ECU. ● Sends the VSC operation (front or rear skid condition) signal to the suspension control ECU. (with VSC models)
Front Right & Left Speed Sensors		Detects the wheel speed of the front wheels.
Stop Light Switch		<ul style="list-style-type: none"> ● Detects the brake condition. ● Detects the brake pedal depressed to clear of the DTCs.
Suspension Control ECU		<ul style="list-style-type: none"> ● Determines the condition of the vehicle based on the signals received from the sensors and switches and sends a control signal to the actuator located in the shock absorber. ● Blinks the height control OFF indicator light to output the DTCs (Diagnostic Trouble Codes) of the Electronic Modulated Suspension.
	Front Left Acceleration Sensor	Uses an internal acceleration sensor to detect the vehicle's vertical (front left side) acceleration rate.