FIGURE 9.1 An electronically controlled suspension system can help reduce body roll and other reactions better than most conventional suspension systems.

FIGURE 9.2 Input devices monitor conditions and provide information to the electronic control module, which processes the information and operates the actuators to control the movement of the suspension.
FIGURE 9.3 A typical electronic suspension height sensor, which bolts to the body and connects to the lower control arm through a control link and lever.

FIGURE 9.4 When suspension action moves the lever, it rotates the slotted disc and varies how much of the photo transistor is exposed to the LEDs, which vary the input signal.

FIGURE 9.5 Typical suspension position sensor.
FIGURE 9.6 A three-wire suspension position sensor schematic.

FIGURE 9.7 A suspension height sensor.

FIGURE 9.8 The steering wheel position (handwheel position) sensor wiring schematic and how the signal varies with the direction that the steering wheel is turned.
FIGURE 9.9 The handwheel position sensor is located at the base of the steering column.

FIGURE 9.10 Steering wheel (handwheel) position sensor schematic.

FIGURE 9.11 The VS sensor information is transmitted to the EBCM by Class 2 serial data.
**FIGURE 9.12** An air pressure sensor.

**FIGURE 9.13** A schematic showing the lateral acceleration sensor and the EBCM.

**FIGURE 9.14** The lateral accelerometer sensor (G-sensor) is usually located under the center console.
FIGURE 9.15 Yaw rate sensor showing the typical location and schematic.

FIGURE 9.16 A magnetic field is created whenever an electrical current flows through a coil of wire wrapped around an iron core.

FIGURE 9.17 When magnets are near each other, like poles repel and opposite poles attract.
FIGURE 9.18 When electrical current magnetizes the plunger in a solenoid, the magnetic field moves the plunger against spring force.

FIGURE 9.19 This air supply solenoid blocks pressurized air from the air spring valves when off.

FIGURE 9.20 An actuator motor uses a permanent magnet and four stator coils to drive the air spring control rod.
FIGURE 9.21 The stator coils of the actuator are energized in three ways to provide soft, medium, or firm ride from the air springs and shock absorbers.

FIGURE 9.22 Selectable ride as used on Chevrolet and GMC pickup trucks.

FIGURE 9.23 ALC maintains the same ride height either loaded or unloaded by increasing or decreasing the air pressure in the rear air shocks.
FIGURE 9.24 A typical schematic showing the air suspension compressor assembly and sensor.

FIGURE 9.25 The typical variable-rate air spring system uses three height sensors, two in the front and one in the rear, to monitor trim height and to provide input signals to the ECM.

FIGURE 9.26 The air spring compressor assembly is usually mounted on rubber cushions to help isolate it from the body of the vehicle.
A solenoid valve at the top of each spring regulates airflow into and out of the air spring.

Schematic showing computer command ride system.

Diagram of the components and connections of the real-time damping and road-sensing suspension system.
FIGURE 9.30 Schematic showing the shock control used in the RSS system.

FIGURE 9.31 Bi-state dampers (shocks) use a solenoid to control fluid flow in the unit to control compression and rebound actions.

FIGURE 9.32 A typical CCR module schematic.
FIGURE 9.33 The three dampening modes of a CCR shock absorber.

FIGURE 9.34 Integral shock solenoid.

FIGURE 9.35 A typical ZF Sachs self-leveling shock, as used on the rear of a Chrysler minivan.
FIGURE 9.39 Vehicles that use magneto-rheological shock absorbers have a sensor located near each wheel, as shown on this C6 Corvette.

FIGURE 9.40 The controller for the magneto-rheological suspension system on a C6 Corvette is located behind the right front wheel.

FIGURE 9.41 A cutaway of a magneto-rheological shock absorber as displayed at the Corvette Museum in Bowling Green, Kentucky.
FIGURE 9.42 Most electronic level-control sensors can be adjusted, such as this General Motors unit.