FIGURE 27.1 An electronically controlled suspension system can help reduce body roll and other reactions better than most conventional suspension systems.

Figures:
- Conventional Suspension
- Electronically Controlled Suspension

FIGURE 27.2 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 27.3 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 27.4 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 27.5 Typical suspension position sensor.
FIGURE 27.6 A three-wire suspension position sensor schematic.

FIGURE 27.7 A suspension height sensor.

FIGURE 27.8 The steering wheel position (handwheel position) sensor wiring schematic and how the signal varies with the direction that the steering wheel is turned.
FIGURE 27.9 The handwheel position sensor is located at the base of the steering column.

FIGURE 27.10 Steering wheel (handwheel) position sensor schematic.

FIGURE 27.11 The VS sensor information is transmitted to the EBCM by Class 2 serial data.
FIGURE 27.12 An air pressure sensor.

FIGURE 27.13 A schematic showing the lateral acceleration sensor and the EBCM.

FIGURE 27.14 The lateral accelerometer sensor (G-sensor) is usually located under the center console.
FIGURE 27.15 Yaw rate sensor showing the typical location and schematic.

FIGURE 27.16 A magnetic field is created whenever an electrical current flows through a coil of wire wrapped around an iron core.

FIGURE 27.17 When magnets are near each other, like poles repel and opposite poles attract.
FIGURE 27.18 When electrical current magnetizes the plunger in a solenoid, the magnetic field moves the plunger against spring force.

Figure 27.19 This air supply solenoid blocks pressurized air from the air spring valves when off.

FIGURE 27.20 An actuator motor uses a permanent magnet and four stator coils to drive the air spring control rod.
FIGURE 27.21 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 27.22 Selectable ride as used on Chevrolet and GMC pickup trucks.

FIGURE 27.23 ALC maintains the same ride height either loaded or unloaded by increasing or decreasing the air pressure in the rear air shocks.
FIGURE 27.24 A typical schematic showing the air suspension compressor assembly and sensor.

FIGURE 27.25 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 27.26 The air spring compressor assembly is usually mounted on rubber cushions to help isolate it from the body of the vehicle.
FIGURE 27.27 A solenoid valve at the top of each spring regulates airflow into and out of the air spring.

FIGURE 27.28 Schematic showing computer command ride system.

FIGURE 27.29 Diagram of the components and connections of the real-time damping and road-sensing suspension system.
FIGURE 27.30 Schematic showing the shock control used in the RSS system.

FIGURE 27.31 Bi-state dampers (shocks) use a solenoid to control fluid flow in the unit to control compression and rebound actions.

FIGURE 27.32 A typical CCR module schematic.
FIGURE 27.33 The three dampening modes of a CCR shock absorber.

FIGURE 27.34 Integral shock solenoid.

FIGURE 27.35 A typical ZF Sachs self-leveling shock, as used on the rear of a Chrysler minivan.
FIGURE 27.36 Schematic of the ALC system.

FIGURE 27.37 Air compressor assembly can be located at various locations depending on the vehicle.

FIGURE 27.38 The exhaust solenoid is controlled by the rear integration module.
FIGURE 27.39 Vehicles that use magneto-rheological shock absorbers have a sensor located near each wheel, as shown on this C6 Corvette.

FIGURE 27.40 The controller for the magneto-rheological suspension system on a C6 Corvette is located behind the right front wheel.

FIGURE 27.41 A cutaway of a magneto-rheological shock absorber as displayed at the Corvette Museum in Bowling Green, Kentucky.
Most electronic level-control sensors can be adjusted, such as this General Motors unit.