FIGURE 24.1  Engine coolant temperature is too high.

FIGURE 24.2  Engine oil pressure is too low.
FIGURE 24.3 Water detected in fuel. Note the draining of water from the fuel filter assembly on a vehicle equipped with a diesel engine.

FIGURE 24.4 Maintenance required. This usually means that the engine oil is scheduled to be changed or other routine service items need to be replaced or checked.

FIGURE 24.5 Malfunction indicator lamp (MIL), also called a check engine light. The light means the engine control computer has detected a fault.
FIGURE 24.9 Fault detected in base brake system.

FIGURE 24.10 Brake light bulb failure detected.

FIGURE 24.11 Exterior light bulb failure detected.
FIGURE 24.12 Worn brake pads or linings detected.

FIGURE 24.13 Fault detected in antilock brake system.

FIGURE 24.14 Low tire pressure detected.
FIGURE 24.18 Headlights on.

FIGURE 24.19 Low traction detected. Traction control system is functioning to restore traction (usually flashes when actively working to restore traction).

FIGURE 24.20 Vehicle stability control system either off or working/flashing.
Dash Warning Lights and Driver Information Systems

FIGURE 24.21 Traction control system has been turned off.

TRAC OFF

FIGURE 24.22 Indicates that the cruise control is on and able to maintain vehicle speed if set. Sometimes a symbol that looks like a small speedometer is used to indicate that the cruise control is on.

CRUISE

FIGURE 24.23 A typical oil pressure sending unit provides a varying amount of resistance as engine oil pressure changes. The output from the sensor is a variable voltage.
FIGURE 24.24 A temperature gauge showing normal operating temperature between 180°F and 215°F, depending on the specific vehicle and engine.

FIGURE 24.25 A typical head-up display showing zero miles per hour, which is actually projected on the windshield from the head-up display in the dash.

FIGURE 24.26 The dash-mounted control for the head-up display on this Cadillac allows the driver to move the image up and down on the windshield for best viewing.
Dash Warning Lights and Driver Information Systems

FIGURE 24.27 A typical head-up display (HUD) unit.

FIGURE 24.28 Typical ignition switch positions. Notice the bulb check position between "on" (run) and "start." These inputs are often just voltage signals to the body control module and can be checked using a scan tool.

FIGURE 24.29 Many newer vehicles place the ignition switch on the dash and incorporate anti-theft controls. Note the location of the accessory position.
FIGURE 24.30 A night-vision camera behind the grille of a Cadillac.

FIGURE 24.31 A vehicle speed sensor located in the extension housing of the transmission. Some vehicles use the wheel speed sensors for vehicle speed information.

FIGURE 24.32 (a) Some odometers are mechanical and are operated by an electric stepper motor. (b) Many vehicles are equipped with an electronic odometer.
FIGURE 24.33 A fuel tank module assembly that contains the fuel pump and fuel-level sensor in one assembly.

FIGURE 24.34 Global positioning systems use 24 satellites in high earth orbits whose signals are picked up by navigation systems. The navigation system computer then calculates the location based on the position of the satellite overhead.

FIGURE 24.35 A typical GPS display screen showing the location of the vehicle.
FIGURE 24.36 A typical navigation display showing various options. Some systems do not allow access to these functions if the vehicle is in gear and/or moving.

FIGURE 24.37 The three-button OnStar control is located on the inside rearview mirror. The left button (telephone handset icon) is pushed if a hands-free cellular call is to be made. The center button is depressed to contact an OnStar advisor and the right emergency button is used to request that help be sent to the vehicle’s location.

FIGURE 24.38 A typical view displayed on the navigation screen from the backup camera.
FIGURE 24.39 A typical fisheye-type backup camera usually located near the center on the rear of the vehicle near the license plate.

FIGURE 24.40 A typical backup sensor display located above the rear window inside the vehicle. The warning lights are visible in the inside rearview mirror.

FIGURE 24.41 The small round buttons in the rear bumper are ultrasonic sensors used to sense distance to an object.
A lane departure warning system often uses cameras to sense the road lines and warns the driver if the vehicle is not staying within the lane, unless the turn signal is on.