

## OPERATION

The check gauges indicator gives an indication to the vehicle operator when certain instrument cluster gauge readings reflect a condition requiring immediate attention. This indicator is controlled by a transistor on the instrument cluster circuit board based upon cluster programming and electronic messages received by the cluster from the Powertrain Control Module (PCM) on vehicles equipped with a gasoline engine, or from the Engine Control Module (ECM) on vehicles equipped with a diesel engine over the Controller Area Network (CAN) data bus.

The check gauges indicator Light Emitting Diode (LED) is completely controlled by the instrument cluster logic circuit, and that logic will only allow this indicator to operate when the instrument cluster receives a battery current input on the fused ignition switch output (run-start) circuit. Therefore, the LED will always be OFF when the ignition switch is in any position except ON or START. The LED only illuminates when it is provided a path to ground by the instrument cluster transistor. The instrument cluster will turn ON the check gauges indicator for the following reasons:

- **Bulb Test** - Each time the ignition switch is turned to the ON position the check gauges indicator is illuminated for about two seconds as a bulb test.
- **Engine Temperature High Message** - Each time the cluster receives three consecutive electronic messages from the PCM or ECM indicating the engine coolant temperature is high, the check gauges indicator will be illuminated and a single chime is sounded. The indicator remains illuminated until the cluster receives a message from the PCM or ECM indicating that the engine coolant temperature is not high, or until the ignition switch is turned to the OFF position, whichever occurs first.
- **Engine Oil Pressure Low Message** - Each time the cluster receives three consecutive electronic messages from the PCM or ECM indicating the engine oil pressure is low, the check gauges indicator will be illuminated and a single chime is sounded. The indicator remains illuminated until the cluster receives a message from the PCM or ECM indicating that the engine oil pressure is not low, or until the ignition switch is turned to the OFF position, whichever occurs first. The cluster will only turn the indicator ON in response to an engine oil pressure low message if the engine speed is greater than zero.
- **System Voltage Low (Charge Fail) Message** - Each time the cluster receives three consecutive electronic messages from the PCM or ECM indicating the electrical system voltage is low (charge fail condition) or that the battery temperature sensor input is an open circuit, the check gauges indicator will be illuminated and a single chime is sounded. The indicator remains illuminated until the cluster receives a single message from the PCM or ECM indicating the electrical system voltage is not low, or until the ignition switch is turned to the OFF position, whichever occurs first.
- **System Voltage High Message** - Each time the cluster receives three consecutive electronic messages from the PCM or ECM indicating the electrical system voltage is high, the check gauges indicator will be illuminated and a single chime is sounded. The indicator remains illuminated until the cluster receives a single message from the PCM or ECM indicating the electrical system voltage is not high, or until the ignition switch is turned to the OFF position, whichever occurs first.
- **Actuator Test** - Each time the cluster is put through the actuator test, the check gauges indicator will be turned ON, then OFF again during the bulb check portion of the test to confirm the functionality of the LED and the cluster control circuitry.

The PCM (gasoline engine) or ECM (diesel engine) continually monitors the engine temperature, oil pressure and electrical system voltage, then sends the proper messages to the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN). For further diagnosis of the check gauges indicator or the instrument cluster circuitry that controls the LED, (Refer to 08 - Electrical/8J - Instrument Cluster - Diagnosis and Testing).

For proper diagnosis of the PCM, the ECM, the EMIC, the CAN data bus or the electronic communication related to check gauges indicator operation a diagnostic scan tool is required. Refer to the appropriate diagnostic information.