

OPERATION

The chime warning system operates on battery voltage received through a fuse in the Totally Integrated Power Module (TIPM) on a non-switched fused B(+) circuit so that the system may operate regardless of the ignition switch position. The chime warning system also monitors the ignition switch position so that some chime features are functional only with the ignition switch in the ON position, while others are functional regardless of the ignition switch position.

The chime warning system provides an audible indication to the vehicle operator or occupants under the following conditions:

- **Airbag Indicator Warning** - The ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Compartment Node/CCN) transducer will generate one short chime when the ignition switch is in the ON position, and an electronic message is received over the Controller Area Network (CAN) data bus from the Occupant Restraint Controller (ORC) requesting airbag indicator illumination. This warning will only occur following completion of the airbag indicator bulb test, and will only occur once during any ignition cycle.
- **Compass Mini-Trip Computer Global Reset** - The EMIC transducer will generate one short chime when the ignition switch is in the ON position, and an electronic message is received over the CAN data bus from the optional Compass Mini-Trip Computer (CMTC) requesting that the CMTC average fuel economy, trip odometer and distance to empty data be reset. The CMTC monitors hard wired inputs from the US/M (United States/Metric) and RESET button switches to determine the proper reset messages to send to the EMIC.
- **Door Ajar Indicator Warning** - The EMIC transducer will generate one short chime when the ignition switch is in the ON position, a hard wired input is received indicating that the status of any door ajar switch has changed, and an electronic message is received over the CAN data bus indicating that the vehicle is moving.
- **Electronic Stability Program/Brake Assist System Warning** - The EMIC transducer will generate one short chime when the Electronic Stability Program (ESP)/Brake Assist System (BAS) has been manually disabled by the vehicle operator using the ESP/BAS traction control switch on the instrument panel.
- **Electronic Stability Program/Brake Assist System Fault Warning** - The EMIC transducer will generate one short chime each time the Electronic Stability Program (ESP)/Brake Assist System (BAS) indicator is illuminated in the instrument cluster. This warning indicates a failure condition has been monitored affecting the operation of the ESP/BAS related components or circuits. This warning will only occur following completion of the ESP/BAS indicator bulb test, and will only occur once during any ignition cycle.
- **Engine Coolant Temperature High Warning (Diesel Engine Only)** - The EMIC transducer will generate a single chime tone when the check gauges indicator is illuminated for a high or critical engine coolant temperature condition. The EMIC uses electronic **engine coolant temperature** messages received from the diesel Engine Control Module (ECM) over the CAN data bus to illuminate the check gauges indicator for a coolant temperature high condition.
- **Electronic Vehicle Information Center Data Reset** - The EMIC transducer will generate one short chime when the ignition switch is in the ON position, and an electronic message is received over the CAN data bus from the optional Electronic Vehicle Information Center (EVIC) requesting that the EVIC average fuel economy, trip odometer, distance to empty or customer programmable features data be reset. The EVIC monitors hard wired inputs from the EVIC control push button switches to determine the proper reset messages to send to the EMIC.
- **Fasten Seat Belt Indicator Warning** - The EMIC transducer will generate repetitive chimes at a slow rate to announce that a hard wired input from the seat belt switch indicates that the driver side front seat belt is not fastened with the ignition switch in the ON position. The chime warning system also supports the enhanced seatbelt reminder (beltminder) when this feature is enabled. (Refer to 08 - Electrical/8J - Instrument Cluster/INDICATOR, Seatbelt Warning - Operation).
- **Head/Park Lamps-On Warning** - The EMIC transducer will generate repetitive chimes at a fast rate to indicate that hard wired inputs from the driver door ajar switch, the headlamp switch, and the ignition switch indicate that the exterior lamps are turned ON with the driver side front door opened and the ignition switch in the OFF position.

The chimes will continue to sound until the exterior lamps are turned OFF, the driver side front door is closed, or the ignition switch is turned to the ON position, whichever occurs first.

- **Key-In-Ignition Warning** - The EMIC transducer will generate repetitive chimes at a fast rate to indicate that hard wired inputs from the driver door ajar switch, the ignition switch, and the key-in ignition switch circuitry of the ignition switch indicate that the key is in the ignition lock cylinder with the driver side front door open and the ignition switch in the OFF position. The chimes will continue to sound until the key is removed from the ignition lock cylinder, the driver side front door is closed, or the ignition switch is turned to the ON position, whichever occurs first.
- **Low Fuel Indicator Warning** - The EMIC transducer will generate one short chime when the low fuel indicator is illuminated by the instrument cluster circuitry. This chime will only occur once during any ignition cycle.
- **Low Oil Pressure Warning (Diesel Engine Only)** - The EMIC transducer will generate repetitive chimes at a fast rate when the check gauges indicator is illuminated for a low oil pressure condition. The EMIC uses electronic **engine speed** and **oil pressure** messages received from the diesel Engine Control Module (ECM) over the CAN data bus indicating that the engine is running and that the oil pressure is low to illuminate the check gauges indicator. The chimes will continue to sound for five seconds, until the **oil pressure** message indicates that the oil pressure is not low, or until the **engine speed** message indicates that the engine is not running, whichever occurs first. This chime will only occur once during any ignition cycle.
- **Low Wash Indicator Warning** - The EMIC transducer will generate one short chime when the low washer fluid indicator is illuminated by the instrument cluster circuitry. This chime will only occur once during any ignition cycle.
- **Overspeed Warning** - The EMIC transducer will generate repetitive chimes at a slow rate to indicate that the vehicle speed is over a pre-programmed speed value. The EMIC monitors electronic **vehicle speed** messages received over the CAN data bus. This feature is only enabled on an EMIC that has been programmed with a Middle East Gulf Coast Country (GCC) country code.
- **Park Brake Reminder** - The EMIC transducer will generate one short chime to announce that the hard wired input from the park brake switch and an electronic **vehicle speed** message received over the CAN data bus indicate that the park brake is applied and the vehicle is moving. This chime will repeat each time the input conditions are met.
- **Sentry Key Customer Learn Mode Announcement** - The EMIC transducer will generate one short chime to confirm that an electronic **Customer Learn** mode message has been received over the CAN data bus to indicate that the Sentry Key REmote Entry Module (SKREEM) (also known as the Wireless Control Module/WCM) is prepared for programming additional sentry key transponders. This chime feature is only active on vehicles equipped with the optional Sentry Key system, and sold in a market where Customer Learn programming is an allowed feature.
- **Trans Overtemp Indicator Warning** - On vehicles equipped with an automatic transmission only, the EMIC transducer will generate repetitive chimes at a slow rate when the transmission overtemp indicator is illuminated by the instrument cluster circuitry for a high or critical transmission fluid temperature condition. This chime will repeat each time the trans overtemp indicator is cycled from OFF to ON.
- **Turn Signal/Hazard Warning Flasher Emulation** - The EMIC relay will generate repetitive clicks at a slow rate to emulate an electromechanical flasher when the turn signal or hazard warning system are operating. The EMIC relay will generate repetitive clicks at a fast rate to indicate that the right or left turn signals are operating with one or more bulbs ineffective. In either case, the clicks will continue until the turn signal and hazard warning systems are turned OFF.
- **Turn Signal On Warning** - The EMIC transducer will generate repetitive chimes at a slow rate to indicate that a turn signal has been active continuously for 1.6 kilometers (1 mile) with the vehicle speed greater than 22 kilometers-per-hour (15 miles-per hour). Vehicles built for markets other than the United States and Canada have a revised distance threshold of 4 kilometers (2.49 miles) for this feature. The chime will continue until the turn signal input becomes inactive or until the electronic **vehicle speed** message indicates that the speed is less than 22 kilometers-per-hour (15 miles-per-hour), whichever occurs first. The hazard warning flashers will not activate this chime feature.

- **Warning Indicator Announcement** - The EMIC transducer will generate one short chime each time the check gauges indicator is illuminated by the instrument cluster circuitry. The check gauges indicator may be illuminated when any critical engine or transmission systems are operating outside of their normal parameters. The instrument cluster monitors electronic messages received over the CAN data bus to determine when to illuminate the check gauges indicator.

The EMIC provides chime service for all available features in the chime warning system. The EMIC relies upon its internal programming, numerous hard wired inputs, and electronic message inputs received from other modules over the CAN data bus network to provide the chime warning system features. The internal programming of the EMIC determines the priority of each chime request input that is received, as well as the rate and duration of each chime that is to be generated.

The hard wired circuits between components related to the chime warning system may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the chime warning system or the electronic controls or communication between modules and other devices that provide some features of the chime warning system. The most reliable, efficient, and accurate means to diagnose the chime warning system or the electronic controls and communication related to chime warning system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.