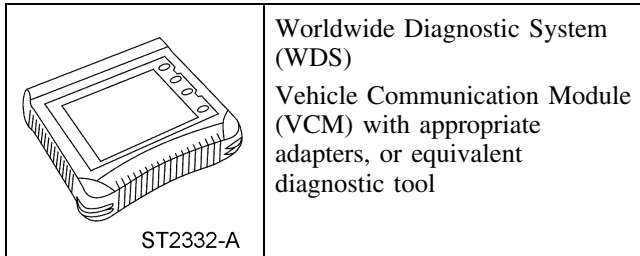


DIAGNOSIS AND TESTING

Diagnostic Instructions — Air Bag and Safety Belt Pretensioner Supplemental Restraint System (SRS)

Special Tool(s)



The symptom chart can be used to help locate the air bag supplemental restraint system (SRS) concerns if no diagnostic trouble codes (DTCs) are retrieved and the listed symptoms are observed. Whether or not the listed symptoms are observed, always carry out the following:

1. Retrieve all DTCs stored in the restraints control module (RCM) memory. For additional information, refer to Retrieve Continuous DTCs in this section.
2. Run the On-Demand Self Test to determine what DTCs are currently being sensed by the RCM. Refer to On-Demand Self Test in this section.
3. If the stored DTCs are different than the current DTCs, always repair the current DTCs first.
4. If memory displays different continuous DTCs than the On-Demand Self Test, carry out in the following order:
 - On-Demand Self Test
 - Memory (Retrieve Continuous DTCs)

A DTC can indicate several concerns. The DTCs are to assist in system diagnosis and are not to be considered definitive. Always refer to the pinpoint test corresponding to the DTC to determine where the concern lies and to repair the concern correctly.

The SRS diagnostics can be divided into 3 sections:

- Diagnostic test modes
- PID/data monitor and record
- Active command modes

Diagnostic Test Modes

Two menu options are available under the diagnostic test modes:

- Retrieve Continuous DTCs
- On-Demand Self Test

Retrieve Continuous DTCs

During vehicle operation the restraints control module (RCM) will detect and store both intermittent and hard failure DTCs in nonvolatile memory. The DTC strategy employed by the RCM incorporates a time-out scheme for determining when a concern exists in the system. This requires a concern to exist for up to one minute in the system before the RCM will detect it. For the RCM to determine that a concern no longer exists, the concern must be absent for up to one minute. The actual detection time-outs vary with each DTC. The DTCs can be retrieved with a diagnostic tool using the retrieve continuous DTCs option. Any DTCs stored in the RCM will be displayed on the diagnostic tool along with a brief description of the DTC. If no DTCs are present, the diagnostic tool will display a SYSTEM PASSED message. This option can also be used to clear DTCs from the RCM memory, as long as the concern no longer exists. Once 128 key cycles have been recorded since the concern was last detected, the DTC will automatically be removed from memory.

To retrieve or clear DTCs, follow these steps:

1. Connect the diagnostic tool to the data link connector (DLC).
2. Turn the ignition switch to the ON position.
3. Follow the manufacturer's instructions for the diagnostic tool being used.
4. **NOTE:** Before proceeding with the clearing operation, make note of the DTCs displayed. Once cleared, continuous DTCs cannot be retrieved if a fault is not currently present. All continuous DTCs will be displayed on the screen.
5. Clear the DTCs.

DIAGNOSIS AND TESTING (Continued)**On-Demand Self Test**

The On-Demand Self Test option is used to verify that no electrical concerns exist with the air bag supplemental restraint system (SRS). Upon entering the self test, the restraints control module (RCM) will make an electrical check of each electrical component in the system. If a concern is detected, a DTC is displayed on the diagnostic tool with a brief description of the DTC. Concerns detected during the self test are not stored in memory, unless the same concern was also detected during normal vehicle operation. The self test should always be run after any repair to verify that the repair was successful.

To run the On-Demand Self Test, follow these steps:

1. Connect the diagnostic tool to the data link connector (DLC).
2. Turn the ignition switch to the ON position.
3. Follow the manufacturer's instructions for the diagnostic tool being used.
4. The RCM will run the On-Demand Self Test and display on-demand DTCs (reflecting hard system concerns) on the screen.

Bit-Mapped Diagnostic Trouble Codes (DTCs)

Many of the continuous and on-demand DTCs that can be present in the RCM are bit-mapped DTCs that utilize PIDs (flagged faults). Bit-mapped DTCs are conceptually different from the previous style of DTCs. Previously, DTCs identified a specific concern for a given component and pointed to a particular diagnostic path. In the diagnostic path, PIDs are sometimes used to determine the root cause. Bit-mapped DTCs do not identify the specific concern. A bit-mapped DTC identifies the component(s) in which the concern exists. The next level (PIDs or flagged faults) identifies the specific concern.

A diagnostic tool must be used to view the PIDs (flagged faults) of a bit-mapped DTC. Once a diagnostic tool has retrieved a bit-mapped DTC, the diagnostic tool will provide the option to "FLAG" that DTC. When the option to "FLAG" the DTC is available, it must be carried out to identify the specific concern that is present. When the option to "FLAG" the DTC has been carried out, the diagnostic tool will then display the PIDs (flagged faults) for the DTC, including the status or state that exists (on-demand DTC) or existed (continuous DTC).

To view and flag bit-mapped DTCs, follow these steps:

1. Connect the diagnostic tool to the data link connector (DLC).
2. Turn the ignition switch to the ON position.
3. Follow the manufacturer's instructions for the diagnostic tool being used.
4. Carry out an On-Demand Self Test or retrieve continuous DTCs.
5. Select the DTC and the "FLAG" option on the diagnostic tool.
6. The diagnostic tool will display PIDs for the DTC. Record all flagged faults.

PID/Data Monitor and Record

The PID/Data Monitor and Record option allows the diagnostic tool operator to read the state of several parameter IDs (PIDs) to aid in diagnosing the system. PIDs are measurements of parameters such as voltages, resistances, etc., calculated by the restraints control module (RCM) and sent to the diagnostic tool for display. Many of the PIDs supported by the RCM are calculated periodically and are, therefore, not true real time readings.

To retrieve PIDs, follow these steps:

1. Connect the diagnostic tool to the data link connector (DLC).
2. Turn the ignition switch to the ON position.
3. Follow the manufacturer's instructions for the diagnostic tool being used.
4. Record all PIDs that are to be retrieved and initiate PID retrieval. PIDs are updated continuously on the display.

DIAGNOSIS AND TESTING (Continued)**Active Commands**

This command allows the technician to verify operation of the air bag indicator, the passenger air bag (PAD) indicator and chime. When the air bag output command is executed, the indicator(s) and the chime are activated simultaneously for approximately 4 seconds. All 3 of the devices are deactivated automatically.

Lamp Fault Codes

When the restraints control module (RCM) detects a system fault, it will cause the air bag indicator to flash a coded sequence; a lamp fault code (LFC). The code is 2 digits. The first digit is flashed with a 0.5-second interval between pulses. There is a 2-second pause before the second digit is flashed which also has a 0.5-second interval between pulses. There is a 5-second pause between each display of an LFC.

Each LFC is flashed 5 times after which the air bag indicator will remain lit for the remainder of the key-on cycle. If there are multiple LFCs, each LFC will flash in order of priority.

Each LFC has one or more associated diagnostic test codes (DTCs).

Diagnostic Trouble Codes (DTCs)

While the lamp fault codes (LFCs) are an indication of a general concern in the passive restraints system, the diagnostic trouble codes (DTCs) are more specific. The DTCs can be retrieved from the restraints control module (RCM) with a diagnostic tool via the data link connector (DLC).

The following table lists the DTCs in numerical order.

Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table

DTC ^a	LFC ^b	Description	Action To Take
—	Steady	RCM Disconnected or Inoperative	GO to Pinpoint Test A.
B1231	13	Longitudinal Acceleration Threshold Exceeded (Crash Data Memory Full)	INSTALL a new RCM and impact sensors
B1317	Continuous	Battery Voltage High	CHECK battery voltage; to be below 16 volts. REFER to Section 414-00.
B1318	Continuous	Battery Voltage Low	CHECK battery voltage; to be above 9 volts. REFER to Section 414-00.
B1342	12	RCM is Faulted	INSTALL a new RCM. REFER to Restraints Control Module (RCM) in this section.
B1869	NONE Continuous lamp Secondary air bag warning sounds if another fault is present	Air Bag Warning Indicator Circuit Open or Short to Ground	GO to Pinpoint Test B.
B1870	NONE Continuous lamp Secondary air bag warning sounds if another fault is present	Air Bag Warning Indicator Circuit Short to Battery	GO to Pinpoint Test C.
B1884	18	PAD Warning Lamp Circuit Failure	GO to Pinpoint Test D.

DIAGNOSIS AND TESTING (Continued)**Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table (Continued)**

DTC^a	LFC^b	Description	Action To Take
B1890	18	PAD Warning Lamp Circuit Short To Battery	GO to Pinpoint Test E.
B1891	53	Air Bag Tone Warning Indicator Short to Battery	GO to Pinpoint Test F.
B1892	53	Air Bag Tone Warning Indicator Circuit Failure	GO to Pinpoint Test G.
B1921	14	Air Bag Diagnostic Monitor Ground Circuit Open	GO to Pinpoint Test H.
B2290	16	Occupant Classification System Fault	GO to Pinpoint Test I.
B2292	33	Restraint System — Safety Belt Pretensioner Status (Driver Pretensioner Circuit Failure)	GO to Pinpoint Test J.
B2292	34	Restraint System — Safety Belt Pretensioner Status (Passenger Pretensioner Circuit Failure)	GO to Pinpoint Test J.
B2293	19	Restraint System — Air Bag Status (Driver Front Air Bag Circuit Failure)	GO to Pinpoint Test K.
B2293	21	Restraint System — Air Bag Status (Passenger Front Air Bag Circuit Failure)	GO to Pinpoint Test K.
B2295	22	Restraint System — Side Air Bag Status (Driver Seat Side Air Bag Circuit Failure)	GO to Pinpoint Test L.
B2295	23	Restraint System — Side Air Bag Status (Passenger Seat Side Air Bag Circuit Failure)	GO to Pinpoint Test L.
B2296	42	Restraint System — Impact Sensor Status (Front Impact Severity Sensor Circuit Failure)	GO to Pinpoint Test M.
B2296	43	Restraint System — Impact Sensor Status (Driver Side Impact Sensor Circuit Failure)	GO to Pinpoint Test M.
B2296	44	Restraint System — Impact Sensor Status (Passenger Side Impact Sensor Circuit Failure)	GO to Pinpoint Test M.
B2434	51	Driver Safety Belt Buckle Switch Circuit Short to Ground	GO to Pinpoint Test N.
B2435	51	Driver Safety Belt Buckle Switch Resistance Out of Range	GO to Pinpoint Test O.
B2438	52	Passenger Safety Belt Buckle Switch Circuit Short to Ground	GO to Pinpoint Test P.
B2439	52	Passenger Safety Belt Buckle Switch Resistance Out of Range	GO to Pinpoint Test Q.

DIAGNOSIS AND TESTING (Continued)**Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table (Continued)**

DTC^a	LFC^b	Description	Action To Take
B2477	NONE Continuous lamp Secondary air bag warning sounds if another fault is present	Module Configuration Failure	INSTALL a new RCM. REFER to Restraints Control Module (RCM) in this section.
B2691	51	Driver Safety Belt Buckle Switch Circuit Fault	GO to Pinpoint Test R.
B2692	52	Passenger Safety Belt Buckle Switch Circuit Fault	GO to Pinpoint Test S.
B2909	16	Belt Tension Sensor Fault	GO to Pinpoint Test T.
C1414	15	Incorrect Vehicle Identification Code	GO to Pinpoint Test U.
C1947	49	Seat Track Position Switch Circuit Short to Ground	GO to Pinpoint Test V.
C1948	49	Seat Track Position Switch Circuit Resistance Out of Range	GO to Pinpoint Test W.
C1981	49	Seat Track Position Switch Circuit Fault	GO to Pinpoint Test X.
—	—	No Communication With The Restraints Control Module (RCM)	GO to Pinpoint Test Y.

a DTC: Diagnostic trouble code, retrieved using diagnostic tool.

b LFC: Lamp fault code, flashed on air bag indicator.

Inspection and Verification

1. Verify the customer concern by checking the air bag indicator in the instrument cluster. For additional information, refer to Prove Out the System in this section.
2. Visually inspect for obvious signs of mechanical and electrical damage using the following chart.
4. If the on-demand self test is passed and no DTCs are retrieved, GO to [Symptom Chart](#).
5. If DTCs are retrieved, refer to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table.

Visual Inspection Chart

Mechanical	Electrical
• Damaged restraints control module (RCM) bracket • Damaged front crash sensor or bracket	• Blown fuse(s) • Damaged wiring harness • Loose or corroded connectors • Circuitry open/shorted • Damaged shorting bars

3. If the concern is not visually evident, use the diagnostic tool to retrieve diagnostic trouble codes (DTCs) and carry out the on-demand self test.

DIAGNOSIS AND TESTING (Continued)**Symptom Chart****Symptom Chart**

Condition	Possible Sources	Action
The air bag warning indicator is illuminated continuously	- Ignition circuits. - Ground circuits. - RCM internal concern. - Connector shorting bar. - RCM camming beam. - RCM disconnected. - Other circuitry. - Instrument cluster.	GO to Pinpoint Test A.
Air bag indicator flashing	- Air bag/pretensioner supplemental restraint system (SRS) fault. - RCM connector not fully seated.	- REFER to DTC Priority Table. - ENGAGE the RCM connector.
Audible tone — DTCs retrieved	Air bag SRS system fault.	GO to Pinpoint Test B.
No communication with the restraints control module (RCM)	- Diagnostic tool. - Data link connector (DLC). - RCM internal concern. - Circuitry.	GO to Pinpoint Test Y.