SRS Occupant Detection System (ODS) Troubleshooting & Repair Information

(Supersedes Job Aid, dated January 2012, to revise the information marked by the black bars)

REVISION SUMMARY

Information was added under Sections 2 and 4.

This job aid helps explain the operation and repair procedures for the ODS (occupant detection system), the OPDS (occupant position detection system), and the SWS (front passenger's seat weight sensor) system.

Use the chart below to locate the information or service procedure that you will be doing.

If you need to know or do this…	Review this job aid section
Prepare the vehicle and front passenger's seat for ODS/OPDS/SWS initialization or calibration.	**Section 1** Vehicle & Front Passenger's Seat Set-Up
Understand ODS seat weight sensor function, or how and what each HDS ODS inspection checks.	**Section 2** ODS Seat Weight Sensor & HDS Inspections
Determine the correct HDS inspection to do during SRS or front passenger's seat repairs.	**Section 3** ODS Repair Summary Table
The ODS/OPDS/SWS doesn't initialize.	**Section 4** ODS/OPDS/SWS Doesn't Initialize
Overview of ODS terminology and evolution.	**Section 5** ODS Terminology & System Evolution

Section 1: Vehicle & Front Passenger's Seat Set-up

To prepare a vehicle and its front passenger's seat for ODS/OPDS/SWS initialization and calibration, do the following:

NOTE: These instructions provide general guidelines. Refer to the appropriate service manual for model-specific information.

- Remove all objects from the front passenger seat cushion, the seat-back pocket, and from under and around the seat and frame; this includes removing any accessory parts that could interfere with your SRS ODS checks and repairs, such as seat covers, seat pads, or back support items.
- Verify that all components attached to the front passenger’s seat have been correctly installed.
- Verify that collision repair work has been fully completed. During your inspection, check that all SRS parts for that vehicle's collision type were replaced, as specified in "Component Replacement/Inspection After Deployment," found in the SRS section of the vehicle service manual, and that all the replaced parts have the correct part numbers for that vehicle's VIN.

  NOTE: To determine what SRS parts were replaced, you may have to contact the body shop that did the collision work.
- Position the front passenger's seat:
  - Move the seat to its rear-most position.
  - Adjust seat height to its lowest position.
  - Lean the seat-back to its most upright position (seat-back straight up with zero recline).

- Settle the seat weight sensors after the seat is properly set-up by doing this:
  - Drive the vehicle at 22 mph (36 km/h), then park the vehicle on level ground.
  - Turn off the engine and HVAC system. Close the windows and doors.
  - During the calibration procedure, DO NOT sit in or touch the front passenger's seat. Also, avoid introducing temperature changes within the vehicle.
- Moisture on the front passenger's seat may affect initialization and operation of the OPDS sensor. If it is necessary to dehumidify the seat, do the following before doing the calibration procedure:
  - Start the engine.
  - Close the windows and doors.
  - Run the A/C system in recirculation mode for **30 minutes**.

Section 2: ODS Seat Weight Sensor Operation & HDS Inspections

Most recent vehicles have an ODS seat weight sensor (SWS) that disables the front passenger's front airbag under certain conditions.

ODS Seat Weight Sensor (SWS) Operation

- If the weight on the front passenger's seat is between about 7 and 65 lb. (as determined by the SWS), the ODS disables the front passenger's front airbag, and the "Passenger Airbag OFF" indicator light comes on.
- If the empty front passenger's seat weight reads under a predetermined weight (as determined by the SWS), the ODS disables the front passenger's front airbag, but the "Passenger Airbag OFF" indicator light does not come on.

ODS Seat Weight Sensor (SWS) HDS Inspections

There are three different ODS seat weight sensor inspections that can be done using the HDS:

1. **Seat Output Check**
   - This inspection checks only the empty front passenger seat's weight as a "quick check" of the existing seat weight sensor's calibration.
   - If the empty seat reads under a predetermined weight on the HDS, the sensor is operating normally and the check is complete.
     - An empty seat should read 0 lbs./kg. plus or minus a predetermined amount, (usually about 6-9 lb./2.7 - 4 kg, varies by model). This may be a negative value (below 0).
     - If the the empty seat weight is reading the maximum value (about 279 lb./127 kg), there is a problem with one or more of the seat weight sensors, or the ODS/SWS unit has not been calibrated.
   - The Seat Output Check typically does not require that the vehicle be driven.
2. **Operational Check After Vehicle Collision**
   - This inspection checks the seat weight both empty and with the calibration weights on the front passenger's seat to fully check the seat weight sensor's operation.
   - This check should be done after ANY collision, even if the airbags did not deploy.
3. **Operational Check After Replacing Front Seat Components (except weight sensors and ODS/SWS unit)**
   - This check is similar to Inspection 2 (Operational Check After Vehicle Collision).
   - If replacing the seat weight sensors and/or the ODS/SWS unit, SWS INITIALIZATION must be done using the HDS to "zero out" the existing calibration.

   NOTE:
   - For ODS seat weight sensor inspections 2 and 3, the HDS software requires driving the vehicle 22 mph to properly check the seat weight sensor's operation and calibration. Driving the vehicle at that speed creates vibrations that remove any binding that could be present in the weight sensors.
   - Operating the vehicle on a lift or on safety stands (instead of driving the vehicle) will not properly load the body structure, and may negatively affect the calibration procedure.

Section 3: ODS Repair Summary Table

Use this table to help determine which ODS system check to do with the HDS after front passenger's seat repairs, or after collision repairs:

Repair Done	ODS Check to Complete
OPDS unit was replaced (earlier vehicles with OPDS only, or separate OPDS and SWS units).	ODS Unit Initialization
OPDS sensor replaced.	OPDS Initialization
Vehicle involved in a collision (quick check of SWS system; empty seat weight only).	Seat Output Check
Vehicle involved in a collision (full check of SWS system).	After Vehicle Collision
SWS unit was replaced (earlier vehicles separate SWS unit).	SWS Unit Was Replaced
SRS unit or front passenger's seat components EXCEPT the ODS unit or seat weight sensors were replaced.	After Replacing Front Passenger's Seat Components
Seat-back cover replaced.	OPDS Initialization
Seat weight sensors replaced.	SWS Initialization
ODS unit replaced.	ODS Unit Initialization

Section 4: ODS/OPDS/SWS Doesn't Initialize

The occupant detection system (ODS) or occupant position detection system (OPDS) may not initialize if there are SRS DTCs or an SRS unit problem. The scan tool is the preferred method for initialization because it has the ability to confirm proper completion. If normal troubleshooting doesn't resolve the problem, do this:

- If the system cannot be initialized by the HDS after several attempts, check for service bulletins covering manual initilization procedures for the vehicle and system you are working on, in the online service information system. These bulletins are only provided for certain vehicles. Only perform manual initilization or calibrations if directed by a published service bulletin or Tech Line.
- Loosen the seat mounting, shake the seat vigorously, then retorque the seat mounting bolts to the proper specification. This may free up a binding seat weight sensor so that initialization can occur.
- To determine whether the problem preventing initialization is in the seat or elsewhere in the system, install a known-good seat. If the SRS system initializes, the problem is in the original seat assembly. If it still won't initialize, the problem is in the SRS unit, or another part of the SRS system.
- Due to seat movement and wear, damaged seat wiring harnesses may cause DTCs and SRS/ODS initialization failure.

Section 5: ODS Terminology & System Evolution

Occupant detection systems have evolved through several configurations and subsystems since their introduction. Through the years, the design of these systems and service manual terminology have also changed, as detailed in this table:

Occupant Position Detection System (OPDS)	Seat Weight Sensors (SWS)	Driver's Seat Position Sensor (SPS)
• First ODS subsystem adopted.	• Next ODS subsystem added.	• Introduced along with SWS.
• Originally a stand-alone system mounted in the seat-back.	• Part of the front passenger's seat base or seat frame assembly.	• This system detects the position of the driver's seat and reduces airbag deployment force if the seat is adjusted fully forward.
• Part of the front passenger's seat-back assembly.	• Determines the presence and size of the front passenger to control whether the passenger airbag deploys.	• Requires operational check/ inspection after seat position sensor components are replaced.
• Detects the height and position of the front passenger to control side airbag deployment.	• Requires an operational check/inspection (Seat Output Check) after any vehicle collision, when seat components are replaced, or if there is a client concern about the "PASSENGER AIRBAG OFF" indicator.	
• Requires initialization when the seat cover, the seat back/OPDS sensor, or the ODS/OPDS unit is replaced.	• Requires recalibration (SWS Initialization) when seat weight sensors or the ODS/SWS unit is replaced.	

NOTE:

- When seat weight sensors were first added, there was a separate SWS unit mounted under the front passenger's seat.
- Since most current vehicles have both systems, the OPDS and SWS units were integrated into a single ODS unit.
- The HDS and service manual terminology has changed several times; however, noting the HDS descriptions on the right side of the screen will lead to the correct actions to do.