



RE22

Airbag Systems, Side

**Uniform
Procedures For
Collision Repair
UPCR**

© Copyright 1999 Inter-Industry Conference On Auto Collision Repair

v.4.0



1. Description

This procedure describes methods for the repair, replacement, inspection, and testing of side airbag systems. Side airbag systems for the front and rear of the vehicle are included.



2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality repair of side airbag systems. This procedure is intended for use by professionals who are qualified through training and experience.



3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

- DO21 Door
- EL01 Wire Repair
- HM01 Hazardous Materials
- PS01 Personnel Safety
- RE01 Seat Belt
- RE21 Airbag Systems
- RE31 Tensioners, Seat Belt
- RE51 Integrated Safety Seat
- SE01 Seats, Manual
- SE11 Seats, Power

3.2 Other Information

- Equipment-specific information
- Vehicle-specific diagnostic information
- Vehicle-specific repair information



4. Equipment And Material Requirements

4.1 Equipment

The use of this equipment is included in this procedure:

- digital volt-ohmmeter (DVOM)
- jumper wires
- electro-static discharge (ESD) strap

Caution: Ensure that the DVOM has an output less than 10 mA (0.01 A) on the lowest ohmmeter range, with the probes shorted.

Various side airbag systems may require these additional items:

- airbag simulator or load tool
- shorting bar or shorting connector
- universal or vehicle-specific breakout box
- universal or vehicle-specific scan tool
- vehicle-specific airbag system tester
- vehicle-specific test harness
- special wire repair tools

(cont'd)



4. Equipment And Material Requirements (cont'd)

Follow the vehicle maker's recommendations.

This equipment may be required for manually deploying side airbag modules:

- vehicle-specific manual deployment tool
- switch or special deployment tool
- 6 m (20 ft) wiring harness
- charged battery



5. Damage Analysis

5.1 Airbag Parts

- airbag module and trim cover
- airbag system labels
- diagnostic, backup power, and resistor modules and brackets
- sensors and sensor brackets
- wiring harnesses and connectors
- seat belts, see **RE01**
- seat belt tensioners, if equipped, see **RE31**
- front airbag systems, see **RE21**

If an airbag deployment occurred, refer to the vehicle maker's information for parts that must be inspected, tested, and replaced. Vehicle makers may require replacement of all seat belts in use during a collision of specified severity, or if there was an airbag deployment. Follow the vehicle maker's recommendations.

Damaged airbag system parts must be replaced with new parts. Vehicle makers may allow minor repairs of the wiring harness. Follow the vehicle maker's recommendations.

5.2 Related And Adjacent Parts

Inspect the following related and adjacent parts for damage:

- door assemblies on the side of the impact or deployment, see **DO21**
- inner door trim panels on the side of the impact or deployment
- seats and headrests on the side of the impact or deployment
- integrated child seat, if equipped, see **RE51**
- sensor mounting locations

The vehicle maker may require replacement of the inner door panel, seat, or seat headrest, depending on the location of the side airbag module and the method of deployment.

(cont'd)



5. Damage Analysis (cont'd)

5.3 System Operation Check

If there has not been a side airbag deployment and there is no visible damage to the side airbag system parts, check the operation of the system. See **11.2**.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Safety With Non-Deployed Side Airbags

Before working on a collision-damaged vehicle with an undeployed side airbag, disarm the passive restraint system following the vehicle maker's procedure.

To prevent injury from an accidental deployment during repairs, even if the system is disarmed:

- Disconnect the negative battery terminal and wait for the energy reserve module to discharge.
- Do not work in the area where the airbags would deploy, even if the system is disarmed.
- Keep areas in front of the airbag modules clear of loose objects.
- Use an airbag module simulator or load tool during testing, if required by the vehicle maker.
- Be aware that electronic memory savers supply enough power to deploy an airbag.
- Do not apply electrical power to any part unless directed by a service manual. This includes using an ohmmeter or other self-powered test equipment.

6.3 Safety When Manually Deploying Side Airbags

To prevent injury when manually deploying a side airbag:

- Whenever possible, deploy the airbag outside of the vehicle. Follow the vehicle maker's recommendations.
- When deploying the airbag inside the vehicle, make sure personnel, tools, and equipment are removed from inside the vehicle.-
- Follow the vehicle maker's procedures and equipment recommendations.
- Wear the proper hearing and eye protection.
- Deploy the airbag with the trim cover facing up.
- Stay at least 6 m (20 ft) from the airbag.
- Allow the airbag module to cool.

If an undeployed side airbag cannot be deployed using manual deployment procedures, it may have to be returned to the vehicle maker. See **7.2**.

(cont'd)



6. Personnel Safety (cont'd)

6.4 Safety With Replacement Side Airbags

To prevent injury when storing or handling replacement side airbags:

- Store a replacement side airbag module in a clean, dry place.
- Make sure the module is not exposed to extreme temperatures.
- Always carry the airbag module with the trim cover facing away from your body.
- Do not place an airbag module on the floor, bench, or storage shelves with the trim cover facing down.
- Do not carry any system parts by the wiring harness or pigtail.
- Follow the vehicle maker's recommendations if a part is dropped or shows visible signs of damage.
- Some airbag sensors and control modules contain mercury. Dispose of these sensors as hazardous waste.

6.5 Safety With Sodium Hydroxide

Some side airbag systems use sodium hydroxide powder as a lubricant. To prevent exposure to sodium hydroxide during side airbag cleanup:

- Wear rubber gloves, safety glasses, and a long-sleeved shirt.
- Avoid rubbing eyes, eating, or smoking until hands have been washed.
- Wash hands with mild soap and water after cleanup.
- Avoid kneeling or sitting on surfaces that have not been cleaned.
- Wear the proper respirator when sodium hydroxide powder may be present.



7. Environmental Safety

7.1 Hazardous Waste

Hazardous waste safety information is in **HM01**.

7.2 Shipping Undeployed Side Airbag Modules

Do not dispose of an undeployed airbag. If it cannot be manually deployed, return the undeployed airbag module to the vehicle maker. Follow these requirements:

- Use the same box that the replacement side airbag module was shipped in. There may be shipping instructions with the replacement module.
- Make sure the package is properly labeled for hazardous materials. Hazardous material shipping information is in **HM01**.



8. Vehicle Protection

8.1 Electronic Parts

To protect computers and other sensitive parts from damage:

- Follow the vehicle maker's recommendations for recording and resetting electronic memories.
- Ensure that the ignition switch is in the LOCK position, and the key is removed.
- Disconnect and isolate the negative battery cable, and disarm the passive restraint system. Follow the vehicle maker's recommendations.
- Wait the vehicle maker's specified time after disconnecting the battery before working on or near the airbag system.
- Carefully remove computer modules when welding or heating within 300 mm (12"), or a greater distance when recommended by the vehicle maker.
- Protect computer modules, connectors, and wiring from dirt, heat, static electricity, and moisture.
- Loosen or remove any wiring harnesses or electrical parts that could be damaged during the repair process.

To protect diagnostic or resistor modules:

- Avoid touching electrical terminals.
- Use an ESD strap when handling the module.
- Do not store modules near electric welders or other high-energy electrical equipment.
- Do not perform electrical tests unless directed by a service manual.
- Do not open the package of the replacement module until it is to be installed on the vehicle.
- Inspect replacement modules for the proper part number and absence of damage before installation.

8.2 Replacing Side Airbag System Parts

When replacing side airbag system parts:

- Replace parts with new OEM parts for the specific vehicle.
- Use all replacement fasteners that come with the part. Do not reuse old fasteners or substitute other fasteners.
- Torque fasteners to the vehicle maker's recommendations.
- Obtain and follow the vehicle maker's service procedures.



9. Repair Procedure

Parts identified as damaged or faulty must be replaced with new OEM parts supplied, or repaired following the vehicle maker's recommendations. Do not attempt to refinish the airbag to match the interior color. Do not plastic weld or perform adhesive repairs on the airbag cover.

9.1 Cleanup After Deployment

To clean the inside of the vehicle after a side airbag deployment:

- 1. Tape the airbag exhaust vents to contain the powder, if required.
- 2. Vacuum the vehicle interior, working from the perimeter toward the center.
- 3. Wrap the deployed airbags in a plastic bag and dispose of as non-hazardous material.

9.2 Deployed System

To service side airbag systems following a deployment:

- 1. Disarm the passive restraint system. Follow the vehicle maker's procedure.
- 2. Clean the vehicle interior and dispose of the deployed airbags. See **9.1**.
- 3. Install an airbag module simulator or load tool if required. Follow the vehicle maker's recommendations.
- 4. Perform the necessary damage repairs. Make sure the body structure and sensor mounting locations are properly restored.
- 5. Follow the vehicle maker's recommendations for post-deployment inspection and replacement of parts.
- 6. Re-activate the system. Keep any simulator or load tool installed.
- 7. Check the system operation. See **11.2**.

9.3 Undeployed System

To service side airbag systems when the airbags have not deployed:

- 1. Disarm the passive restraint system. Follow the vehicle maker's procedure. Use an airbag module simulator or load tool if required.
- 2. Perform the necessary damage repairs. Make sure the body structure and sensor mounting locations are restored.
- 3. Visually inspect airbag system parts for damage.
- 4. Replace the parts required by the vehicle maker. If a non-deployed airbag will be replaced, it must be manually deployed, following the vehicle maker's recommendations. See **9.4**.
- 5. Re-activate the system. Keep any simulator or load tool installed.
- 6. Check the system operation and erase any fault codes stored in the system. See **11.2**.

(cont'd)



9. Repair Procedure (cont'd)

9.4 Manual Deployment

To manually deploy a side airbag module outside of the vehicle:

- 1. Disconnect the wiring and remove the airbag module from the vehicle.
- 2. Follow the vehicle maker's recommendations for connecting the wiring harness and other special equipment to the airbag module.
- 3. Place the airbag module with the trim cover facing up on a bench or other surface away from any loose objects or heat sources, or secure the module with heavy wire to a spare tire to prevent recoil.
- 4. Clear a space at least 6 m (20 ft) in diameter where the airbag module will be deployed.
- 5. Put on appropriate hearing and eye protection.
- 6. Stretch the wiring harness to its full length and reconnect the module to the harness.
- 7. Touch the two wiring harness leads to the power source. The airbag should immediately deploy.
- 8. After the module has cooled, dispose of it as non-hazardous material.
- 9. If the module cannot be deployed, return it to the vehicle maker, as described in 7.2.

9.5 Wire Repair

Some vehicle makers do not allow wires to be repaired. Follow the vehicle maker's recommendations for making wire repairs on airbag systems.



10. Use Of Recycled (Salvage) Parts

Do not install salvage side airbag system parts.



11. Inspection And Testing

11.1 Inspection Of Replaced Sensors

Inspect the replaced side airbag sensors for these conditions:

- sensor mounting locations at the proper dimensional specification
- mounting brackets properly positioned
- fasteners torqued to the vehicle maker's recommendations
- proper ground connections
- proper routing of wire harnesses and pigtails

Correct any defects.

11.2 System Operation Check

To verify that a side airbag system is operating properly:

- 1. Install a scan tool or jumper wire to allow reading current and history trouble codes. Follow the vehicle maker's recommendations.
- 2. Turn the ignition switch ON.
- 3. Observe the operation of the airbag dash lamp. Make sure the lamp is displaying the proper sequence.
- 4. If the dash lamp indicates a system problem, follow the vehicle maker's diagnostic method, using the chart in the service manual. Not all systems use trouble codes. A specialty tester or scan tool may be required for diagnosing the system.
- 5. Make the necessary repairs and repeat steps 1–4.
- 6. Clear all stored codes using the vehicle maker's recommended procedure and equipment.
- 7. Disarm the system following the vehicle maker's recommendations.
- 8. Remove the airbag simulator or load tool, if installed.
- 9. Install the airbag modules.
- 10. Re-activate the system following the vehicle maker's recommendations.
- 11. Verify that the dash lamp goes out.
- 12. Road-test the vehicle to check the dash lamp and electrical accessories for proper operation.

If the dash lamp remains ON or continues to flash, there are still problems in the system. This does NOT mean the system is disabled. Make the necessary repairs and repeat steps 1–4.