

# Uniform Procedures For Collision Repair

## D031S—Skin

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v.2.3



### 1. Description

This procedure describes the complete or partial replacement of a steel door skin. Replacement procedures are included for doors on or off the vehicle. Inspection and evaluation requirements are also included.



### 2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality replacement of steel door skins. 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**

- CP01S Corrosion Protection
- DO01 Hinges
- DO21 Door
- PS01 Personnel Safety
- RF01S Surface Preparation
- RF41 Finish Application
- ST21S Metal Repair
- ST31 Body Fillers
- WE01S GMA (MIG) Plug Weld
- WE11S GMA (MIG) Fillet Weld

#### **3.2 Other Information**

- Equipment-specific information
- Product-specific information
- Vehicle-specific repair information



## 4. Equipment And Material Requirements

### 4.1 Equipment

The use of this equipment is included in this procedure:

- air chisel
- grinder
- heat gun
- flanging tool
- front-edge crimping tool

### 4.2 Welding Equipment

Use GMA (MIG) welding equipment as described in **WE01S** or **WE11S**.

### 4.3 Door Skin Replacement Materials

The use of these materials is included in this procedure:

- seam sealers
- structural adhesive
- anti-corrosion materials
- sound-deadening pads and foams
- hinge lubricant



## 5. Damage Analysis

Inspect a door skin for these conditions or types of damage:

- excessive filler or paint film thickness
- separation of the skin from the inner structure
- visible damage
- corrosion
- improper previous repairs
- damaged or missing trim, labels, seals, etc.

Determine whether the door skin should be repaired or replaced. If replacement is required, determine if the skin can be properly replaced without removing the door from the vehicle. Follow the vehicle maker's recommendations for the use of door-skin bonding adhesives.





## 6. Personnel Safety

### 6.1 General Safety

General safety information is in **PS01**.

Make sure the door is properly supported, and use proper lifting techniques during removal and installation.

### 6.2 Welding Safety

Welding safety information is in **WE01S** or **WE11S**.

### 6.3 Metal Repair Safety

Metal repair safety information is in **ST21**.

### 6.4 Hinge Safety

Door hinge safety information is in **DO01**.



## 7. Environmental Safety

Does not apply.



## 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.
- Carefully remove computer modules when welding or heating within 300 mm (12"), or a greater distance when recommended by the vehicle maker.

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## 8. Vehicle Protection (cont'd)

- Protect 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.

### 8.2 Door And Cosmetic Areas

When removing or replacing steel doors:

- Protect the door from damage during removal, storage, and installation.
- Protect adjacent areas from damage.
- Protect glass, upholstery, and other cosmetic areas from damage caused by welding or cutting sparks. Remove interior or exterior trim and adjacent parts that cannot be protected.



## 9. Repair Procedure

For replacing a door skin with the door on the vehicle, see **9.1** and **9.2**. For replacing a door skin with the door off the vehicle, see **9.3** and **9.4** for mechanically fastened hinges, or **9.3** and **9.5** for welded-on hinges.

### 9.1 Door Skin Removal—On Vehicle

To remove a complete or partial steel door skin, with the door on the vehicle:

1. Protect the interior and adjacent panels.
2. Remove the interior trim, as necessary for access.
3. Remove all attached exterior parts.
4. Protect or remove the door glass.
5. Straighten the door to ensure alignment to the door opening.
6. Cut an access hole in the center of the door skin, staying at least 25 mm (1") from the door edges. Do not damage the door frame.
7. Disconnect and remove the door handle and lock cylinder.
8. Remove the door-skin center section that was cut out for access.
9. Remove any sealant or foam remaining on the door **intrusion beam**. Avoid damaging the finish or removing any **zinc coating**.
10. Locate and mark **sectioning** locations forward and rearward of the window opening, at or above the belt line, if required.
11. Cut the sectioning joint, if required.
12. Remove any welds along the belt line, if required.

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## 9. Repair Procedure (cont'd)

- 13. Remove the remaining door skin from the door frame. Use heat to soften the adhesive. Do not damage the door frame.
- 14. Remove any spot weld **nuggets** from the door frame.
- 15. Straighten the edge of the door frame, as necessary.
- 16. Check the door alignment to the door opening.

### 9.2 Door Skin Installation—On Vehicle

To install a complete or partial steel door skin, with the door on the vehicle:

- 1. Perform a trial fit of the replacement parts. Ensure that proper flanging, sealing, and appearance can be obtained without removing the door from the vehicle.
- 2. Transfer reinforcements from the original door skin to the replacement part, as necessary.
- 3. Apply corrosion-resistant primer to the door frame.
- 4. Install sound-deadening pads to the replacement door skin, as required.
- 5. Cut the replacement door skin to match the sectioning joints on the door, if required.
- 6. Partially **flange** the front edge of the replacement door skin.
- 7. Test-fit the replacement panel. Mark the location of the skin before removal.
- 8. Prepare the weld mating surfaces along the belt line and the sectioning joints, if welding is required.
- 9. Apply **weld-through primer** to all steel weld mating surfaces that do not have zinc coating or where the zinc coating was removed. Follow the vehicle maker's recommendations. Due to the poor adhesion property of some weld-through primers, it may have to be removed from all exposed surfaces after welding, before applying other coatings and sealants.
- 10. Apply non-shrinking seam sealer or foams to the door intrusion beam, as required.
- 11. Apply door-skin bonding primer and adhesive to the replacement part flange areas and sectioning joints, if a door-skin bonding adhesive is to be used, following the vehicle and adhesive makers' recommendations.
- 12. Position the door skin on the door frame. Ensure that the front flange is around the door frame.
- 13. Position the door skin, ensuring that all remaining flange areas are properly positioned around the door frame.
- 14. Partially flange the door skin around the door frame.
- 15. Verify that the door skin is properly aligned to the door opening and the sectioning joints. Adjust as necessary.

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## 9. Repair Procedure (cont'd)

- 16. Complete the flanging process of the door skin around the door frame.
- 17. Recheck the door skin alignment to the door opening and the sectioning joints. Adjust as necessary.
- 18. Make test welds, before welding on the vehicle, using the same type and thickness metal that will be welded on the vehicle. Make the test welds in the same position as the welds on the vehicle, using weld-through primer if applicable. Visually inspect and **destructively test** the welds before welding on the vehicle.
- 19. Make any required welds along the belt line and the sectioning joints. If the door skin is a weld-on type, follow the vehicle maker's welding recommendations. If no recommendations exist, make welds in the same locations used by the vehicle maker.
- 20. **Dress and metal-finish the welds**, as necessary.
- 21. Apply corrosion-resistant primer to the weld areas or areas damaged by the collision or repairs, as required.
- 22. Apply and finish **body fillers** in the sectioning locations, if necessary.
- 23. Apply seam sealers, as necessary, to restore the hem flange seal and appearance.
- 24. Apply anti-corrosion compounds, as required.
- 25. Refinish the door opening, door frame, and areas where hardware will be installed, as required to restore the appearance. Refinish **cosmetic surfaces** after all body repairs are complete.
- 26. Transfer or install replacement parts such as door handles, locks, window regulators and tracks, latch assemblies, etc.
- 27. Install all removed interior trim.
- 28. Install all exterior trim, labels, weatherstripping, etc., as necessary.
- 29. Lubricate the hinges and latch, as necessary. Follow the vehicle maker's recommendations.
- 30. Test the operation of the door glass and all electrical accessories. Correct any defects.
- 31. Perform air and water leak tests to ensure proper door-to-body and glass-to-door seals.
- 32. Continue vehicle reassembly.

### 9.3 Door Skin Removal—Off Vehicle

To remove a complete or partial steel door skin, with the door off the vehicle:

- 1. Straighten the door to ensure proper alignment to the door opening.
- 2. Support and remove the door from the vehicle.

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## 9. Repair Procedure (cont'd)

- 3. Disconnect and remove all attached exterior parts.
- 4. Protect or remove the door glass.
- 5. Identify and mark sectioning locations forward and rearward of the window opening, at or above the belt line, if required.
- 6. Cut the sectioning joints, if required.
- 7. Remove any welds along the belt line, if required.
- 8. Grind off the hem flanges. Do not damage the door frame.
- 9. Remove the door skin.
- 10. Remove the hem flange from the door frame.
- 11. Remove any sealant or foam remaining on the door intrusion beam. Avoid damaging the finish or removing any zinc coating.
- 12. Remove any remaining spot weld nuggets from the door frame.
- 13. Straighten the edge of the door frame.
- 14. Check the fit of the door frame to the door opening.

### 9.4 Door Skin Installation—Off Vehicle, Mechanically Fastened Hinges

To install a complete or partial door skin, with the door off the vehicle:

- 1. Perform a trial fit of the replacement parts.
- 2. Apply corrosion-resistant primer to the door frame.
- 3. Install sound-deadening pads to the replacement door skin, as required.
- 4. Cut the replacement door skin to match the sectioning joints on the door, if required.
- 5. Partially flange the front edge of the replacement door skin.
- 6. Test-fit the replacement door skin. Mark the location of the skin before removal.
- 7. Prepare the weld mating surfaces along the belt line and the sectioning joints, if welding is required.
- 8. Apply weld-through primer to all steel weld mating surfaces that do not have zinc coating or where the zinc coating was removed. Follow the vehicle maker's recommendations. Due to the poor adhesion property of some weld-through primers, it may have to be removed from all exposed surfaces after welding, before applying other coatings and sealants.
- 9. Apply non-shrinking seam sealer and foams to the door intrusion beam, as required.
- 10. Apply door-skin bonding primer and adhesive to the replacement part flange areas and sectioning joints, if a door-skin bonding adhesive is to be used, following the vehicle and adhesive makers' recommendations.

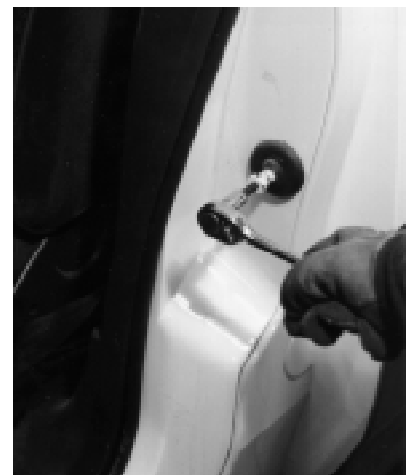


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## 9. Repair Procedure (cont'd)

- 11. Position the door skin on the door frame. Ensure that the front flange is around the door frame.
- 12. Position the door skin, ensuring that all remaining flange areas are properly positioned around the door frame.
- 13. Partially flange the door skin around the door frame.
- 14. Verify that the door skin is properly aligned to the door frame and the sectioning joints. Adjust as necessary.
- 15. Complete the flanging process of the door skin around the door frame.
- 16. Support the door while aligning the hinges.
- 17. Install the hinge mounting fasteners loosely.
- 18. Install all removed shims in their original locations.
- 19. Reinstall the hinge pins and bushings, if required.
- 20. Close the door enough to check the alignment of the door and the door skin to the adjacent panels. Adjust as necessary.
- 21. Torque the hinge mounting fasteners to the vehicle maker's recommendations.
- 22. Recheck the door skin alignment to the door opening and the sectioning joints. Adjust as necessary.
- 23. Make test welds, before welding on the vehicle, using the same type and thickness metal that will be welded on the vehicle. Make the test welds in the same position as the welds on the vehicle, using weld-through primer if applicable. Visually inspect and destructively test the welds before welding on the vehicle.
- 24. Make any required welds along the belt line and the sectioning joints. If the door skin is a weld-on type, follow the vehicle maker's welding recommendations. If no recommendations exist, make welds in the same locations used by the vehicle maker.
- 25. Dress and metal-finish the welds, as necessary.
- 26. Apply corrosion-resistant primer to the weld areas or areas damaged by the collision or repairs, as required.
- 27. Apply and finish body fillers in the sectioning locations, if necessary.
- 28. Apply seam sealers, as necessary, to restore the hem flange seal and appearance.
- 29. Apply anti-corrosion compounds, as required.
- 30. Verify the proper operation of the door checks or brakes.
- 31. Install the striker pin.
- 32. Check the door for proper latching. Align the striker and latch assembly, as necessary.
- 33. Reroute any electrical wiring and mirror cables to their original locations.
- 34. Reconnect all electrical connectors, as necessary.



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## 9. Repair Procedure (cont'd)

- 35. Test the operation of the door glass and all electrical accessories. Correct any defects.
- 36. Refinish the door opening, door frame, and areas where hardware will be installed, as required to restore the appearance. Refinish cosmetic surfaces after all body repairs are complete.
- 37. Transfer or install replacement parts such as door handles, locks, window regulators and tracks, latch assemblies, etc.
- 38. Install all removed interior trim.
- 39. Install all exterior trim, labels, weatherstripping, etc., as necessary.
- 40. Lubricate the hinges and latch, as necessary. Follow the vehicle maker's recommendations.
- 41. Test the operation of the door glass and all electrical accessories. Correct any defects.
- 42. Perform air and water leak tests to ensure proper door-to-body and glass-to-door seals.
- 43. Continue vehicle reassembly.

### 9.5 Door Skin Installation—Off Vehicle, Welded-On Hinges

To install a complete or partial door skin, with the door off the vehicle:

- 1. Perform a trial fit of the replacement parts.
- 2. Apply corrosion-resistant primer to the door frame.
- 3. Install sound-deadening pads to the replacement door skin, as required.
- 4. Cut the replacement door skin to match the sectioning joints on the door, if required.
- 5. Partially flange the front edge of the replacement door skin.
- 6. Test-fit the replacement door skin. Mark the location of the skin before removal.
- 7. Prepare the weld mating surfaces along the belt line and the sectioning joints, if welding is required.
- 8. Apply weld-through primer to all steel weld mating surfaces that do not have zinc coating or where the zinc coating was removed. Follow the vehicle maker's recommendations. Due to the poor adhesion property of some weld-through primers, it may have to be removed from all exposed surfaces after welding, before applying other coatings and sealants.
- 9. Apply non-shrinking seam sealer and foams to the door intrusion beam, as required.
- 10. Apply door-skin bonding primer and adhesive to the replacement part flange areas and sectioning joints, if a door-skin bonding adhesive is to be used, following the vehicle and adhesive makers' recommendations.

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## 9. Repair Procedure (cont'd)

- 11. Position the door skin on the door frame. Ensure that the front flange is around the door frame.
- 12. Position the door skin, ensuring that all remaining flange areas are properly positioned around the door frame.
- 13. Partially flange the door skin around the door frame.
- 14. Verify that the door skin is properly aligned to the door opening and the sectioning joints. Adjust as necessary.
- 15. Complete the flanging process of the door skin around the door frame.
- 16. Support the door while aligning the hinges.
- 17. Install the hinge pins and bushings.
- 18. Close the door enough to check the alignment of the door and the door skin to the adjacent panels. Adjust as necessary.
- 19. Recheck the door skin alignment to the door opening and the sectioning joints. Adjust as necessary.
- 20. Make test welds, before welding on the vehicle, using the same type and thickness metal that will be welded on the vehicle. Make the test welds in the same position as the welds on the vehicle, using weld-through primer if applicable. Visually inspect and destructively test the welds before welding on the vehicle.
- 21. Make any required welds along the belt line and the sectioning joints. If the door skin is a weld-on type, follow the vehicle maker's welding recommendations. If no recommendations exist, make welds in the same locations used by the vehicle maker.
- 22. Dress and metal-finish the welds, as necessary.
- 23. Apply corrosion-resistant primer to the weld areas or areas damaged by the collision or repairs, as required.
- 24. Apply and finish body fillers in the sectioning locations, if necessary.
- 25. Apply seam sealers, as required, to restore the hem flange seal and appearance.
- 26. Apply anti-corrosion compounds, as required.
- 27. Refinish the door opening, door frame, and areas where hardware will be installed, as required to restore the appearance. Refinish cosmetic surfaces after all body repairs are complete.
- 28. Transfer or install replacement parts such as door handles, locks, window regulators and tracks, latch assemblies, etc.
- 29. Install all removed interior trim.
- 30. Install all exterior trim, labels, weatherstripping, etc., as necessary.
- 31. Lubricate the hinges and latch, as necessary. Follow the vehicle maker's recommendations.
- 32. Test the operation of the door glass and all electrical accessories. Correct any defects.

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## 9. Repair Procedure (cont'd)

- 33. Perform air and water leak tests to ensure proper door-to-body and glass-to-door seals.
- 34. Continue vehicle reassembly.



## 10. Use Of Recycled (Salvage) Parts

Does not apply.



## 11. Inspection And Testing

### 11.1 Inspection Of Replaced Steel Door Skins

After door skin installation, inspect steel doors for these conditions:

- proper finish appearance and film thickness
- proper alignment with adjacent panels
- proper latching and release
- proper operation of the door checks or brakes
- proper installation of all interior trim, labels, weatherstripping, and fasteners
- proper operation of the electrical accessories; such as interior lighting, key chime, door ajar warning lamp, passive restraints, and security system, if applicable
- proper operation of mirrors, door glass, and door locks
- ease of operation
- proper lubrication
- proper weatherstrip sealing
- open drain holes

Correct any defects.