31 - Collision Information

Warning

SAFETY NOTICE

CAUTION: **All service and rebuilding instructions contained herein are applicable to, and for the convenience of, the automotive trade only. All test and repair procedures on components or assemblies in non-automotive applications should be repaired in accordance with instructions supplied by the manufacturer of the total product.**

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service produces recommended and described in this publication were developed for professional service personnel, and are effective methods for performing vehicle repair. Following these procedures will help ensure efficient economical vehicle performance and service reliability. Some service procedures require the use of special tools designed for specific procedures. These special tools should be used as recommended throughout this publication.

Special attention should be exercised when working with spring-or tension-loaded fasteners and devices such as E-Clips, Circlips, Snap rings, etc., since careless removal may cause personal injury. Always wear safety goggles when working on vehicles or vehicle components.

It is important to note that this publication contains various Cautions and Warnings. These should be read carefully in order to minimize risk of personal injury or the possibility that improper service methods may damage the vehicle or render it unsafe. It is important to note that these Cautions and Warnings cover only the situations and procedures FCA US LLC has encountered and recommended. FCA US LLC cannot possibly know, evaluate, and advise the service trade of all conceivable ways in which service may be performed, or of the possible hazards of each. Consequently, FCA US LLC has not undertaken any such broad service review. Accordingly, anyone uses a service procedure or tool that is not recommended in this publication must be certain that neither personal safety, nor vehicle safety, will be jeopardized by the service methods they select.

USE OF HEAT DURING REPAIR

WARNING: FCA US LLC engineering's position on the use of heat during collision repair is as follows:

- **Any body panel or frame component damaged which is to be repaired and reused, must be repaired using the "cold straightening" method. No heat may be used during the straightening process.**
- **During rough straightening prior to panel replacement, damaged panels or frame components may be heated to assist in body/frame realignment. The application of heat must be constrained to the parts which will be replaced and not allowed to affect any other components.**

This "no heat" recommendation is due to the extensive use of high strength and advanced high strength steels in FCA US LLC products. High-strength materials can be substantially and negatively affected from heat input which will not be obviously known to the repairer or consumer.

Ignoring these recommendations may lead to serious compromises in the ability to protect occupants in a future collision event, reduce the engineered qualities and attributes, or decrease the durability and reliability of the vehicle.

This statement supersedes any previously released information by the FCA US LLC.

Failure to follow these instructions may result in serious or fatal injury.

RESTRAINTS WARNING

WARNING: To avoid serious or fatal injury on vehicles equipped with the Supplemental Restraint System (SRS), never attempt to repair the electrically conductive circuits or wiring components related to the SRS for which there is no MOPAR wiring repair kit. It is important to use ONLY the recommended splicing kit and procedure. For applicable and available MOPAR wiring repair kits, please visit the MOPAR Connection Repair Kit Web Site. Inappropriate repairs can compromise the conductivity and current carrying capacity of those critical electrical circuits, which may cause SRS components not to deploy when required, or to deploy when not required. Only minor cuts or abrasions of wire and terminal insulation where the conductive material has not been damaged, or connector insulators where the integrity of the latching and locking mechanisms have not been compromised may be repaired using appropriate methods.

WARNING: To avoid serious or fatal injury during and following any seat belt or child restraint anchor service, carefully inspect all seat belts, buckles, mounting hardware, retractors, tether straps, and anchors for proper installation, operation, or damage. Replace any belt that is cut, frayed, or torn. Straighten any belt that is twisted. Tighten any loose fasteners. Replace any belt that has a damaged or ineffective buckle or retractor. Replace any belt that has a bent or damaged latch plate or anchor plate. Replace any child restraint anchor or the unit to which the anchor is integral that has been bent or damaged. Never attempt to repair a seat belt or child restraint component. Always replace damaged or ineffective seat belt and child restraint components with the correct, new and unused replacement parts listed in the Mopar® Parts Catalog. Failure to follow these instructions may result in possible serious or fatal injury.

WARNING: To avoid serious or fatal injury on vehicles equipped with side curtain or seat (pelvic and thorax) airbags, disable the Supplemental Restraint System (SRS) before attempting any Occupant Restraint Controller (ORC) diagnosis or service. The ORC contains a rollover sensor, which enables the system to deploy the side curtains or seat airbags in the event of a vehicle rollover event. If an ORC is accidentally rolled during service while still connected to battery power, the side curtain and seat airbags will deploy. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbags, airbag curtains, knee blocker, seat belt tensioner, impact sensor or instrument panel component diagnosis or service. Disconnect the Intelligent Battery Sensor (IBS)/negative battery cable assembly from the negative battery post, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

WARNING: To avoid potential physical injury or damage to sensitive electronic circuits and systems, always disconnect and isolate the battery negative (ground) cable and the positive cable, then ground the positive cable to discharge the Occupant Restraint Controller (ORC) capacitor before performing any welding operations on the vehicle. Failure to take the proper precautions could result in accidental airbag deployment, possible damage to the Supplemental Restraint System (SRS) circuits and components, and possible damage to other electronic circuits and components. Whenever a welding process is being performed within 12 inches (30 centimeters) of an electronic module or wiring harness, then that module or harness should be relocated out of the way, or disconnected. Always protect against component or vehicle damage from weld spatter by using weld blankets and screens.

WARNING: To avoid serious or fatal injury, do not attempt to dismantle an airbag unit or tamper with its inflator. Do not puncture, incinerate or bring into contact with electricity. Do not store at temperatures exceeding 93° C (200° F). An airbag inflator unit may contain sodium azide and potassium nitrate. These materials are poisonous and extremely flammable. Contact with acid, water, or heavy metals may produce harmful and irritating gases (sodium hydroxide is formed in the presence of moisture) or combustible compounds. An airbag inflator unit may also contain a gas canister pressurized to over 17.24 kPa (2500 psi). Failure to follow these instructions may result in possible serious or fatal injury.

WARNING: **To avoid serious or fatal injury when handling a seat belt tensioner retractor or buckle, proper care should be exercised to keep fingers out from under the retractor or buckle cover and away from the seat belt webbing or cable where it exits from the retractor or buckle cover.**

WARNING: **To avoid serious or fatal injury, replace all Supplemental Restraint System (SRS) components only with parts specified in the Mopar® Parts Catalog. Substitute parts may appear interchangeable, but internal differences may result in inferior occupant protection.**

WARNING: **To avoid serious or fatal injury, the fasteners, screws, and bolts originally used for the Supplemental Restraint System (SRS) components must never be replaced with any substitutes. These fasteners have special coatings and are specifically designed for the SRS. Anytime a new fastener is needed, replace it with the correct fasteners provided in the service package or specified in the Mopar® Parts Catalog.**

WARNING: **To avoid serious or fatal injury when a steering column has an airbag unit attached, never place the column on the floor or any other surface with the steering wheel or airbag unit face down. Failure to follow these instructions may result in possible serious or fatal injury.**

Position Statements

RECONDITIONED WHEEL USAGE

FCA US LLC Position

FCA US LLC does not recommend that customers use “reconditioned” wheels (wheels that have been damaged and repaired) because they can result in a sudden catastrophic wheel failure which could cause loss of control and result in injury or death.

For clarification:

- Cosmetic refinishing for the purpose of repairing a superficial flaw is an acceptable procedure providing it is limited to paint or clear coat only, the wheel is not modified in any way, and there is no exposure to paint curing heat over 93 degrees Celsius (200 degrees Fahrenheit).
- Damaged wheels are those which have been bent, broken, cracked or sustained some other physical damage which may have compromised the wheel structure.
- . Repaired indicates that the wheel has been modified through bending, welding, heating, straightening, or material removal to rectify damage.
- Re-plating of chrome plated wheels, or chrome plating of original equipment painted or polished wheels is not an acceptable procedure as this may alter mechanical properties and affect fatigue life. Additionally, FCA US LLC Global Warranty Administration does not allow refinishing of wheels under warranty.

This statement supersedes any previously released information by FCA US LLC. Release

Release Date: August 11, 2010

For more information, log on to www.MoparRepairConnection.com.

REPLACEMENT SEAT COVERS AND SEAT COVER REPAIRS

FCA US LLC Position

FCA US LLC vehicles, systems and components are engineered, tested and manufactured to help protect vehicle occupants based upon government mandated and internal corporate requirements relative to durability, noise vibration & harshness, occupant protection and vehicle safety.

Supplemental Seat-Mounted Side Air Bags provide enhanced protection to help protect an occupant during a side impact. When the seat-mounted side air bag deploys, it opens the seam between the front and side of the seat's trim cover. Modifications to the seat system, including the seat cover, may change the way the air bag deploys, which could adversely affect the performance of the Supplemental Seat-Mounted Side Air Bag causing serious injury.

"Modifications" include:

- Any change to the seat back cover such as material, thread, stitch design and alterations or misplacement of the features which guide the deploying air bag into position.
- Any non-approved seat-cover replacements.

Only Authentic Mopar® Repair Parts, and approved Mopar® accessories such as Katzkin® Leather seat covers, are designed, engineered, manufactured and tested to the FCA US LLC internal and government mandated standards. The use of parts not specifically designed and tested by FCA US LLC may compromise the integral balance between these safety systems.

FCA US LLC only approves of repairs or modifications to the supplemental seat-mounted side air bag system, including the seat system or seat cover, where Authentic Mopar Repair Parts or Mopar Accessories are used for Chrysler, Jeep® Dodge and Ram vehicles. Any unapproved repairs or modifications performed not using Mopar parts, or not following FCA US LLC approved published repair guidelines and procedures, may increase the risk of injury to current or future vehicle owners and occupants.

This statement supersedes any previously released information by FCA US LLC.

Release Date: June 21, 2011

For more information, log on to www.MoparRepairConnection.com.

SALVAGED AIR BAGS OR OTHER SALVAGED RESTRAINT SYSTEM COMPONENT UASAGE

FCA US LLC Position

FCA US LLC does not support the use of any Supplemental Restraint System (SRS) component, seatbelt component, or any other occupant protection component which has been removed from a vehicle previously damaged, flooded, burned, scrapped or removed from use for any other reason – commonly referred to as “salvage parts”.

Restraint system components are engineered, tested and manufactured to protect vehicle occupants based upon both government mandated and internal corporate requirements relative to vehicle safety and occupant protection. New Mopar® replacement parts are required to be equivalent to the originally installed parts and are tested to ensure these requirements are met. While some salvage parts may visually appear equivalent, there can be dramatic differences in the design and functional characteristics which could have a negative effect on the vehicle occupants in a future collision event. These specific design and functional characteristics can only be determined through destructive testing.

Salvage components may have been affected by:

- Crash impact loads
- Incorrect, improper or inadequate disassembly and removal procedures
- Weathering or environmental exposure outside of that expected during normal use
- Flooding
- Smoke or heat damage
- Abuse

Additionally, salvage components are not traceable should a component recall be required in the future.

It is in the best interest of the current or future vehicle owner and/or occupants that repairs to the SRS, seatbelt and occupant protection system are made using new original equipment parts. Anything less than this may expose operators and occupants too unnecessary risk.

This statement supersedes any previously released information by FCA US LLC. Release Date: August 11, 2010

For more information, log on to www.MoparRepairConnection.com.

SCAN TOOL POSITION STATEMENT

FCA US LLC vehicles, systems and components are engineered, tested and manufactured to help protect vehicle occupants. They are engineered to meet or exceed both government mandated and internal corporate requirements relative to durability, Noise Vibration and Harshness (NVH) and vehicle safety. Use of the Mopar® wiTECH vehicle diagnostic tester (Mopar Scan Tool) is an important part of FCA US vehicle service and maintenance. This tool contains software that aftermarket tools may not contain and can assess whether any FCA US vehicle's safety and security systems contain active or stored Diagnostic Trouble Codes (DTCs).

Safety and security related systems, such as antilock brakes, Supplemental Restraint Systems (SRS) - air bags, Occupant Restraint Controller (ORC), seat belts, active head restraints, forward facing camera and radar, blind spot monitoring, and other automated electronic driver assistance systems, MUST be tested for fault codes (DTCs) that could be active (current) or stored following a collision. Use of the Mopar wiTECH vehicle diagnostic tester is necessary before and after collision repair.

ANY of the following conditions could trigger DTCs prior to or during collision repairs, which could result in improper vehicle performance:

- Vehicle is involved in an accident or collision, even though the damage may appear minor
- Vehicle has been in an accident with or without air bag deployment
- Voltage loss, including battery disconnects and hybrid battery disabling
- Significant vehicle disassembly including, but not limited to, bumpers, door handles, headlamps and mirrors
- Interior trim repair or removal
- Glass removal and replacement operations

Any repairs performed without using Mopar parts and not following published repair guidelines and procedures, may expose current or future vehicle owners and occupants to unnecessary risk.

If faults were stored in the DTC memory for any safety or security system, then these systems MUST be serviced according to the repair procedures in Service Information. After performing repairs, recheck the system to determine if any active or stored DTCs remain; if so, take appropriate service action to ensure proper function.

SRS AIR BAG SQUIB STATUS

Multistage air bags with multiple initiators (squibs) MUST be checked to determine that all squibs were used during the deployment event. The Driver Air Bag (DAB) and Passenger Air Bag (PAB) are deployed by electrical signals generated by the Occupant Restraint Controller (ORC) through the driver or passenger squib circuits (up to 3) to the initiators in the air bag inflators. Typically, all initiators are exhausted and all potentially hazardous chemicals are burned during an air bag deployment event.

However, it is possible for only one initiator to be exhausted; therefore, you MUST always confirm that all initiators have been cycled to minimize the risk of improper handling or disposal of potentially live pyrotechnic or hazardous materials. This procedure must be performed using the Mopar wiTECH diagnostic scan tool or at a company such as Collision Diagnostic Services that diagnostically remotely scans the vehicle using FCA US scan tools in conjunction with their patented asTech device, to verify the status of all air bag squibs, prior to removing deployed air bags from the vehicle for disposal.

- Service Information can be obtained at www.oem1stop.com
- Mopar wiTECH scan tools can be purchased from https://mopar.snapon.com

STRUCTURAL REPAIR PARTS USAGE

FCA US LLC Position

FCA US LLC vehicles, systems and components are engineered, tested and manufactured to protect vehicle occupants based upon both government mandated and internal corporate requirements relative to durability, Noise/Vibration/Harshness (NVH), occupant protection and vehicle safety.

The overall structural integrity of the vehicle is dependent on its inherent design specifications. Sheet metal and glass are critical elements in the design of specific crush zones that allow the energy of a collision to be absorbed in a predictable way and maximize the effectiveness of the restraint system to protect the occupants. The use of parts not specifically designed and tested by FCA US LLC may compromise the integral balance between these safety systems.

Only Authentic Mopar® Repair Parts and glass are designed, engineered, manufactured and tested to the FCA US LLC internal and government mandated standards and are the only ones equivalent to the originally installed parts.

FCA US LLC does not approve of or recognize structural repair procedures where Authentic Mopar Parts are not used for Chrysler, Jeep® Dodge and Ram vehicles. Any repairs performed not using Mopar parts, and not following published repair guidelines and procedures, may expose current or future vehicle owners and occupants to unnecessary risk.

When restoring a collision damaged vehicle to pre-loss condition, consideration must be given to the following:

- All structural distortion has been identified and corrected using appropriate structural straightening equipment (“frame rack”) and a three-dimensional measuring system.
- All damaged panels have been repaired or replaced.
- All replaced panels provide the as-built structural equivalence and corrosion protection of the original panels.
- Unless partial replacement procedures are documented in a FCA US LLC publication, structural panels must be installed in their entirety – partial replacement or “sectioning” of panels may compromise vehicle structure.
- FCA US LLC does not support the use or re-use of any structural component which has been removed from a vehicle previously damaged, flooded, burned, scrapped or removed from use for any other reason - commonly referred to as “salvage parts”.
- While some salvage parts may “appear” equivalent, there can be dramatic differences in the design and functional characteristics which cannot be determined by a visual inspection and which could have a negative effect on the vehicle occupants in a future collision event.
- Salvage components may have been affected by crash impact loads, incorrect, improper or inadequate disassembly and removal procedures, weathering or environmental exposure outside of that expected during normal use.
- Salvage components are not traceable should a component recall be required in the future.

This statement supersedes any previously released information by FCA US LLC. Release Date: August 11, 2010

For more information, log on to www.MoparRepairConnection.com.

USE OF HEAT DURING REPAIR

FCA US LLC Position

FCA US LLC Service Engineering's position on the use of heat during collision repair is as follows:

- Any damaged body panel or frame component, which is to be repaired, must be repaired using the "cold straightening" method. No heat may be used during the straightening process.
- During rough straightening prior to replacement, damaged panels or frame components may be heated to assist in body/frame realignment. This application of heat, if absolutely necessary, must be constrained to the parts which will be replaced and not allowed to affect any other components.

This "no heat" recommendation is due to the extensive use of high-strength and advanced high-strength steels in FCA US LLC vehicles. High-strength materials can be substantially and negatively affected from heat input which will not be obviously known to the repairer or consumer. Additionally, application of heat will alter or destroy material coatings utilized for corrosion protection and which may not be restorable.

Ignoring these recommendations may lead to serious compromises in the ability to protect occupants in a future collision event, reduce the engineered qualities and attributes, or decrease the durability and reliability of the vehicle.

This statement supersedes any previously released information by FCA US LLC.

Release Date: August 11, 2010

For more information, log on to www.MoparRepairConnection.com.

Standard Procedure

SERVICE AFTER A SUPPLEMENTAL RESTRAINT SYSTEM DEPLOYMENT

Any vehicle which is to be returned to use following a Supplemental Restraint System (SRS) component deployment must have the deployed restraints replaced. In addition, the following guidelines MUST be observed.

- **Following ANY major vehicle impact damage in the vicinity of an impact sensor or the ORC** - It is critical that the mounting surfaces and mounting brackets for the Occupant Restraint Controller (ORC), front impact sensors and side impact sensors located within the proximity of the impact damage be closely inspected and restored to their original conditions. Because the ORC and each impact sensor are used by the SRS to monitor or confirm the direction and severity of a vehicle impact, improper orientation or insecure fastening of these components may cause airbags not to deploy when required, or to deploy when not required.
- **Following ANY airbag deployment event** - The Lower Anchors and Tethers for CHildren (LATCH) provisions, the upper tether anchors and all interior trim panels must also be inspected.
- **If an active head restraint is deployed** - An inertia-based Active Head Restraint (AHR) unit that is undamaged following a deployment automatically resets itself. These units are designed with the intention of reuse. (Refer to 10 - Restraints/RESTRAINT, Active Head/Standard Procedure).
- **If the driver airbag is deployed** - If the Driver AirBag (DAB) has been deployed, the DAB, the clockspring, the steering column assembly including the intermediate shaft and coupler, both front seat belt anchor tensioners, both front seat belt retractor and tensioner assemblies, both rear outboard seat belt retractor and tensioner assemblies (if equipped), any front seat belt buckle in use and all rear seat belt retractors and buckles in use must be replaced. The front impact sensors and the steering wheel must also be inspected.
- **If the knee airbag is deployed** - If the driver Knee AirBag (KAB) has been deployed, the KAB and the instrument panel steering column opening cover must also be replaced. The instrument panel must also be inspected.
- **If the passenger airbag is deployed** - If the Passenger AirBag (PAB) has been deployed, the PAB, the PAB wire harness or connector and the instrument panel must be replaced.
- **If a seat airbag is deployed** - If a Seat AirBag (SAB) has been deployed, the SAB, the seat back frame, the seat back foam, the seat back trim cover and the side impact sensors on the same side of the vehicle as the deployed airbag must be replaced. Both front seat belt anchor tensioners, both front seat belt retractor and tensioner assemblies, any front seat belt buckle in use and all rear seat belt retractors and buckles in use must be replaced.
- **If a seat belt tensioner is deployed** - The seat belt retractor and anchor tensioners are deployed in conjunction with the front airbags. All seat belt tensioners must be replaced if any airbag in the vehicle except the driver KAB has been deployed.
- **If a side curtain airbag is deployed** - If a side curtain airbag (also known as a Side AirBag Inflatable Curtain/ SABIC) has been deployed, the SABIC, the trim on the upper A, B and C-pillars as well as the side impact sensors on the same side of the vehicle as the deployed airbag must be replaced. The headliner, both front seat belt anchor tensioners, both front seat belt retractor and tensioner assemblies, any front seat belt buckle in use and all rear seat belt retractors and buckles in use must be replaced. The deploy brackets on the B-pillar and C-pillar for the same side of the vehicle as the deployed airbag must be closely inspected following a side curtain airbag deployment.

The components identified with the deployed SRS components in the preceding list are not intended for reuse and will be damaged or weakened as a result of an airbag deployment, which may or may not be obvious during a visual inspection. All other vehicle components should be closely inspected following any SRS component deployment, but are to be replaced only as required by the extent of the visible damage incurred.

AIRBAG SQUIB STATUS

Multistage airbags with multiple initiators (squibs) which must be checked to determine that all squibs were used during the deployment event. The Driver AirBag (DAB) and Passenger AirBag (PAB) in these vehicles are deployed by electrical signals generated by the Occupant Restraint Controller (ORC) through the driver or passenger squib 1 and squib 2 circuits to the two initiators in the airbag inflators. Typically, both initiators are used and all potentially hazardous chemicals are burned during an airbag deployment event. However, it is possible for only one initiator to be used; therefore, it is always necessary to confirm that both initiators have been used in order to avoid the improper handling or disposal of potentially live pyrotechnic or hazardous materials. The following procedure should be performed using a diagnostic scan tool to verify the status of both airbag squibs before either deployed airbag is removed from the vehicle for disposal.

CAUTION: Deployed front airbags have initiators (squibs) in the airbag inflator may or may not have live pyrotechnic material within the inflator. Do not dispose of these airbags unless you are certain

of complete deployment. Refer to the Hazardous Substance Control System for information regarding the potentially hazardous properties of the subject component and the proper safe handling procedures. Then dispose of all non-deployed and deployed airbags and seat belt tensioners in a manner consistent with state, provincial, local and federal regulations.

1. Be certain that the diagnostic scan tool contains the latest version of the proper diagnostic software. Connect the scan tool to the 16-way Data Link Connector (DLC). The DLC is located on the driver side lower edge of the instrument panel, outboard of the steering column.
2. Turn the ignition to ON.
3. Using the scan tool, read and record the active (current) Diagnostic Trouble Code (DTC) data.

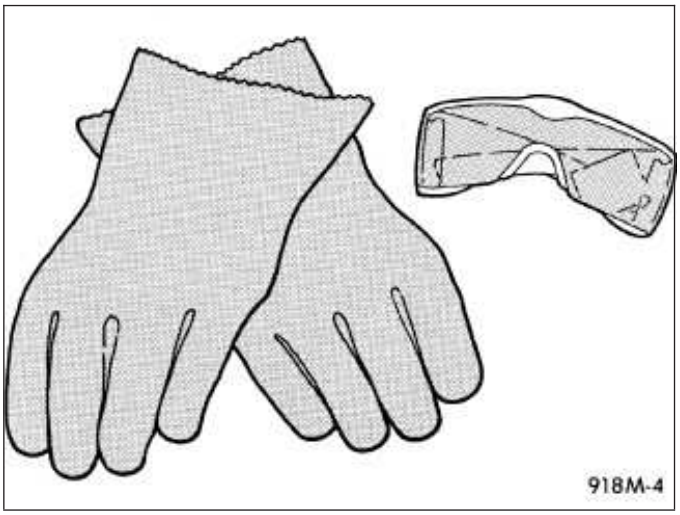
Using the active DTC information, refer to the **Airbag Squib Status** table to determine the status of both DAB squibs and both PAB squibs.

AIRBAG SQUIB STATUS		
IF THE ACTIVE DTC IS:	**CONDITIONS**	**SQUIB STATUS**
Driver or Passenger Squib 1 open	**AND** the stored DTC minutes for both Driver or Passenger squibs are within 15 minutes of each other	Both Squib 1 and 2 were used.
Driver or Passenger Squib 2 open		
Driver or Passenger Squib 1 open	**AND** the stored DTC minutes for Driver or Passenger Squib 2 open is GREATER than the stored DTC minutes for Driver or Passenger Squib 1 by 15 minutes or more	Squib 1 was used; Squib 2 is live.
Driver or Passenger Squib 2 open		
Driver or Passenger Squib 1 open	**AND** the stored DTC minutes for Driver or Passenger Squib 1 open is GREATER than the stored DTC minutes for Driver or Passenger Squib 2 by 15 minutes or more	Squib 1 is live; Squib 2 was used.
Driver or Passenger Squib 2 open		
Driver or Passenger Squib 1 open	**AND** Driver or Passenger Squib 2 open is NOT an active code	Squib 1 was used; Squib 2 is live.
Driver or Passenger Squib 2 open	**AND** Driver or Passenger Squib 1 open is NOT an active code	Squib 1 is live; Squib 2 was used.

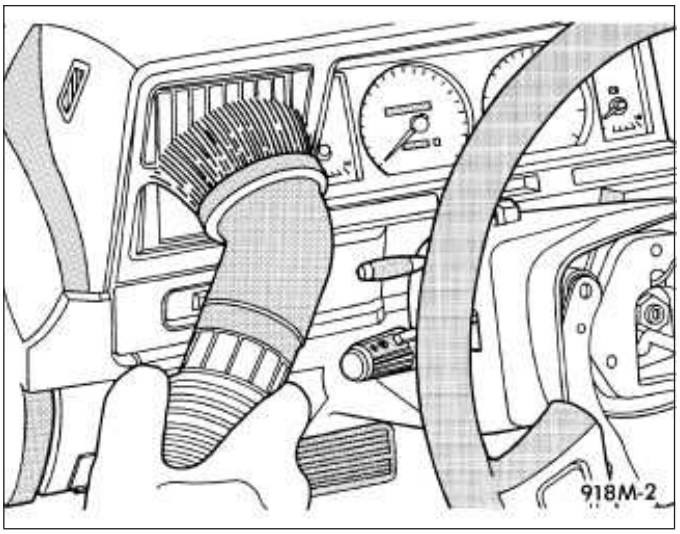
NOTE: If none of the Driver or Passenger Squib 1 or 2 open are active codes, the status of the airbag squibs is unknown. In this case the airbag should be handled and disposed of as if the squibs were both live.

CLEANUP PROCEDURE

WARNING: To avoid serious or fatal injury, if you experience skin irritation during cleanup, run cool water over the affected area. Also, if you experience irritation of the nose or throat, exit the vehicle for fresh air until the irritation ceases. If irritation continues, see a physician.



Following a Supplemental Restraint System (SRS) component deployment, the vehicle interior will contain a powdery residue. This residue consists primarily of harmless particulate by-products of the small pyrotechnic charge that initiates the propellant used to deploy a SRS component. However, this residue may also contain traces of sodium hydroxide powder, a chemical by-product of the propellant material that is used to generate the inert gas that inflates the airbag. Since sodium hydroxide powder can irritate the skin, eyes, nose, or throat, be certain to wear safety glasses, rubber gloves, and a long-sleeved shirt during cleanup.



1. Begin the cleanup by using a vacuum cleaner to remove any residual powder from the vehicle interior. Clean from outside the vehicle and work your way inside, so that you avoid kneeling or sitting on a non-cleaned area.
2. Be certain to vacuum the heater and air conditioning outlets as well. Run the heater and air conditioner blower on the lowest speed setting and vacuum any powder expelled from the outlets.

   CAUTION: Deployed front airbags have initiators (squibs) in the airbag inflator may or may not have live pyrotechnic material within the inflator. Do not dispose of these airbags unless you are certain of complete deployment. Refer to the AIRBAG SQUIB STATUS heading within this information. All damaged, ineffective, or non-deployed Supplemental Restraint System (SRS) components which are replaced on vehicles are to be handled and disposed of properly. If an airbag or seat belt tensioner unit is ineffective or damaged and non-deployed, refer to the Hazardous Substance Control System for information regarding the potentially hazardous properties of the subject component and the proper safe handling procedures. Then dispose of all non-deployed and deployed airbags and seat belt tensioners in a manner consistent with state, provincial, local and federal regulations.
3. Next, remove the deployed SRS components from the vehicle. Refer to the appropriate service removal procedures.
4. You may need to vacuum the interior of the vehicle a second time to recover all of the powder.

SQUIB CIRCUIT DAMAGE

In addition to the preceding guidelines, be aware that the heat created by the initiator during an airbag or tensioner deployment will cause collateral damage to the connected wiring (squib circuits) and connector insulators. There are two methods by which an airbag or seat belt tensioner may be connected to the vehicle electrical system. The first method involves a short pigtail harness and connector insulator that are integral to the airbag or tensioner unit and are replaced as a unit with the service replacement airbag or seat belt tensioner. This connection method typically requires no additional wiring repair following a deployment.

However, the second connection method involves a wire harness takeout and connector insulator that are connected directly to the airbag or tensioner initiator or squib. These direct-connect type take outs and connector insulators **MUST** be repaired following an airbag or seat belt tensioner deployment using the approved Supplemental Restraint System Wiring Repairs procedure. (Refer to 10 - Restraints - Standard Procedure).

HANDLING NON-DEPLOYED SUPPLEMENTAL RESTRAINTS

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the Supplemental Restraint System (SRS) before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the SRS. Failure to take the proper precautions could result in accidental airbag deployment.

At no time should any source of electricity be permitted near the inflator on the back of a non-deployed airbag or seat belt tensioner. When carrying a non-deployed airbag, the trim cover or airbag cushion side of the unit should be pointed away from the body to minimize injury in the event of an accidental deployment. If the airbag unit is placed on a bench or any other surface, the trim cover or airbag cushion side of the unit should face upward to minimize movement in the event of an accidental deployment.

When handling a non-deployed seat belt tensioner, take proper care to keep fingers out from under the retractor or buckle cover and away from the seat belt webbing or cable where it exits from the retractor or buckle cover. In addition, the Supplemental Restraint System (SRS) should be disarmed whenever any steering wheel, steering column, seat belt tensioner, airbag, impact sensor or instrument panel components require diagnosis or service. Failure to observe this warning could result in accidental airbag deployment and possible personal injury.

All damaged, ineffective or non-deployed airbags and seat belt tensioners which are replaced on vehicles are to be handled and disposed of properly. If an airbag or seat belt tensioner unit is ineffective or damaged and non-deployed, refer to the Hazardous Substance Control System for information regarding the potentially hazardous properties of the subject component and the proper safe handling procedures. Then dispose of all non-deployed and deployed airbags and seat belt tensioners in a manner consistent with state, provincial, local and federal regulations.

POST COLLISION SCAN TOOL INSPECTION

Before any repair decisions are made, access to FCA US LLC service information is required. Diagnostic Trouble Codes (DTCs) do not identify which part needs to be replaced, rather DTCs are a piece of the diagnostic process that will lead a trained and qualified technician to the correct test to accurately diagnose the damage. Be certain of proper battery support when scanning.

Collision damage pre-scan before repairs- All vehicles that are in a collision need to have a diagnostic scan done at the beginning of the repair process, preferably during the estimating process, to determine damaged systems that may not be obvious. If proper battery support is not possible due to collision damage the scan should be performed during the repair process as soon as the battery can support the system and operate safely.After the repair process is completed the vehicle will need to be scanned again to be certain the systems involved are functioning properly. A Malfunction Indicator Light (MIL) may not illuminate for a particular system yet a Diagnostic Trouble Codes (DTC) may be present, active or stored, compromising the proper function of the system. Identifying system faults will significantly reduce unexpected repairs at or near the end of the repair process. It will reduce the need for additional charges and benefit the vehicle being delivered without delay. The use of the Mopar scan tool wiTECH™ will be necessary to access DTC's. and to perform many of the programming and initialization of modules. If the wiTECH™ scan tool is not available it can be obtained through an FCA US dealership service center or through a company such as Collision Diagnostics Services that can remotely use the wiTECH™ scan tool in conjunction with their patented asTech™ device. DTC identification is only part of the repair process as it will most likely be necessary to access the service and diagnostic information to understand proper operation, wiring and diagnosis and testing of the system and DTC.

The vehicle will also need to have a diagnostic scan done upon the completion of repairs to determine that all systems are functioning properly and if any of the systems are in need of repair, reprogramming or initialization.

Pre-Scan Process

1. Conduct a customer consultation.
   a. Gain customer authorization to scan the vehicle and to share the data with the appropriate parties involved (sublet technician, insurer, repair facility personnel).
2. Check for Malfunction Indicator Lamps (MILs) and/or information display messages.
   a. The 12-volt electrical system must be enabled to identify any MILs.
   b. Not all systems will illuminate MILs, even if there is damage to that system.
3. Document any MILs and/or information display messages.
4. Identify Driver Assistance Systems (DAS) which the vehicle is equipped with. These systems include but are not limited to Adaptive Cruise Control (ACC), Forward Collision Warning (FCW), Lane Sensing.
5. Document the DAS the vehicle is equipped with.
6. Document potential damage to DAS component(s), DAS mounting location(s), damage that may affect DAS , or parts that will need to be removed and installed near DAS.
7. Identify any calibration, initialization and aiming requirements for DAS parts, including required calibration, initialization and aiming requirements following removal and installation
   a. FCA US LLC service information as found on TechCONNECT
   b. Mopar TECH AUTHORITY
   c. RTS - OEM Calibration Requirements Search (https://rts.i-car.com/oem-calibration-requirements-search.html
8. Identify enable and disable switches
   a. The system may require enablement/disablement for calibration procedure.
   b. If the system is turned off, it may not be able to be calibrated.
   c. Systems that can be enabled or disabled should be documented, so that the system can be set to the customer's preferences.
9. Perform the pre-scan.
   a. A pre-scan is not possible if the 12-volt electrical system and vehicle communication networks are disabled or cannot be maintained throughout the scan.
   b. If the pre-scan is not possible due to vehicle damage, it should be done as soon as the repair progress allows it to be done safely.
10. Document DTCs and other data.
    a. Does not include black box info, speed of accident/accident recreation
    b. Include pending, current and past DTCs.
11. Access the service information to identify system(s) affected by DTCs.
    a. Access the FCA vehicle specific service and diagnostic information.
    b. Check FCA vehicle specific information for service bulletins and recalls information that relate to DTCs.
12. Determine likely related and unrelated DTCs.
    a. Key cycles/time stamps/freeze frame data.

Post Repair Calibrations and Post Scan Process

1. Perform all required calibration/initialization/aiming steps, following the FCA service information procedures.
   a. Some systems will require the vehicle to be driven to perform calibration/ initialization/aiming within the require driving parameters.
   b. Some systems will not detect issues within the system until the vehicle is driven within the required parameters.
   c. Some systems will require special tools and/or aiming equipment for calibration/initialization/aiming equipment
   d. Some systems will require both.
2. Perform post-scan.
3. If related DTC's return, access the diagnostic information to troubleshoot the cause of the error.

RECALIBRATION OF SENSORS AND MODULES

During the collision repair process, depending on the type and location of the damage, sensors and modules of electronic systems that are removed and/or replaced. These system sensors, modules and motors may require recalibration, relearning, initialization or verification testing.

These systems and components may include but are not limited to-

- Occupant restraint systems such as- air bags, seat belt tensioners. impact sensors and Occupan t Restraint Controller (ORC)
- Vehicle safety systems such as- Lane Departure Warning (LDW), Adaptive Cruise Control (ACC), Anti-lock Brake System (ABS) and park assist
- Vehicle options such as- power liftgate, power roof systems, power windows and power seat systems.
- Vehicle standard functions such as- Body Control Module (BCM), Powertrain Control Module and door module

Access to the service information will be necessary to perform the procedures. The service information can be found on techCONNECT™ and techAUTHORITY™.

The procedures may require one or a combination of-

The procedures may require one or a combination of-

- wiTECH™ scan tool
- Specialty tools or equipment (for example; Forward Facing Camera (FFC)
- Established driving parameters
- Operation of the component's switches

If the wiTECH™ scan tool is not available it can be obtained through an FCA US dealership service center or through a company such as Collision Diagnostics Services that can remotely use the wiTECH™ scan tool in conjunction with their patented asTech™ device.

BASECOAT/CLEARCOAT FINISH

CAUTION: Do not use abrasive chemicals, abrasive compounds or harsh alkaline based cleaning solvents on the painted surfaces of a vehicle. Failure to follow this caution can result in damage to vehicle finish.

The original equipment paint finish is a multi step process that involves multi step cleaning, applying electro deposition primer (E-coat), anti-chip primer, basecoat, and clearcoat steps.

On most vehicles a two-part paint application (basecoat/clearcoat) is used. The vehicle's "color" paint that is applied over primer is called basecoat. A clearcoat paint is then applied to protect the basecoat from ultraviolet light and provides a durable high-gloss finish.

FINESSE SANDING, BUFFING, AND POLISHING

CAUTION: Do not remove more than 0.5 mils of clearcoat finish when sanding, hand buffing or polishing. Basecoat paint must retain clearcoat for durability.

CAUTION: If the finish has been finesse sanded in the past, it cannot be repeated. Failure to follow this caution can result in damage to vehicle finish.

NOTE: Finesse sanding should only be performed by a trained automotive paint technician.

Minor acid etching, orange peel, or smudging in a clearcoat or single-stage finish can be reduced with light finesse sanding, hand buffing and polishing. Use a Paint Thickness Gauge #PR-ETG-2X or equivalent to determine clearcoat or single-stage paint thickness before and after the repair.

PAINT TOUCH-UP

If the painted metal surface of a vehicle becomes scratched or chipped to metal, it should be touched-up as soon as possible to avoid corrosion.

WARNING: Use an OSHA approved respirator and safety glasses when spraying paint or solvents. Failure to follow this warning may result in possible personal injury or death.

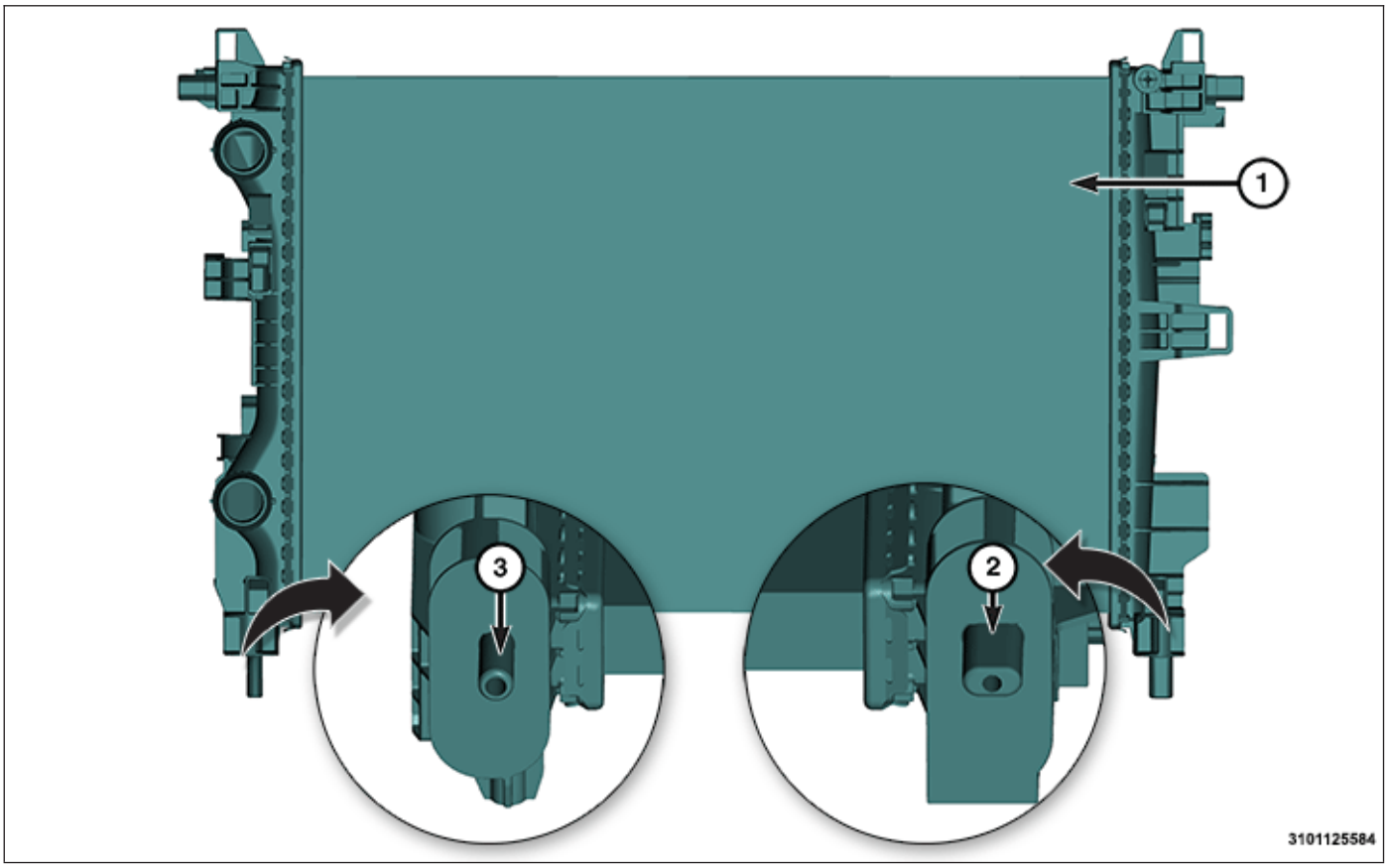
When repairing painted metal surfaces, for best results, use MOPAR® Scratch Filler/Primer, Touch-Up Paints and Clear Top Coat.

1. Scrape any loose paint and corrosion from inside the scratch or chip.

   WARNING: Avoid prolonged skin contact with petroleum or alcohol–based cleaning solvents. Failure to follow this warning can result in possible personal injury or death.

   NOTE: Skin contact with petroleum or alchohol-based cleaning solvents can be avoided by wearing nitrile gloves.
2. Clean affected area with MOPAR® Tar/Road Oil Remover or equivalent, and allow to dry.
3. Fill the inside of the scratch or chip with a coat of filler/primer. Do not overlap primer onto good surface finish. The applicator brush should be wet enough to puddle-fill the scratch or chip without running. Do not stroke brush applicator on body surface. Allow the filler/primer to dry hard.
4. Cover the filler/primer with color touch-up paint. Do not overlap touch-up color onto the original color coat around the scratch or chip. Butt the new color to the original color, if possible. Do not stroke applicator brush on body surface. Allow touch-up paint to dry hard.
5. On vehicles with clearcoat, apply clear top coat to touch-up paint with the same technique as described in step 4. Allow clear top coat to dry hard. If desired, the clearcoat can be lightly finesse sanded (1500 grit) and polished with rubbing compound.

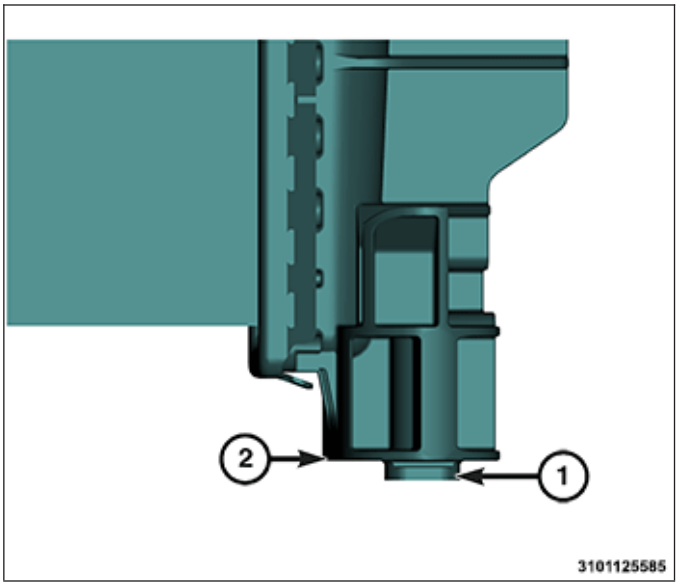
RADIATOR MOUNTING PIN REPAIR



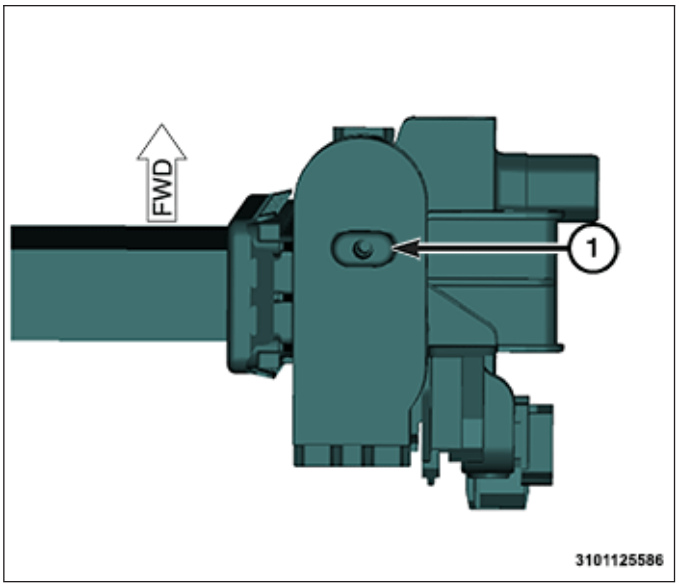
1. Inspect the radiator (1) to be certain no other damage exists that would prevent the radiator from working properly.
2. Determine the correct radiator repair pin(s) to be used.
   - The right side of the radiator has the oval shaped 4-way location pin (2)
   - The left side of the radiator has the round shaped 2-way location pin (3)

NOTE: Repair steps for right side shown. Left side steps are the same except where noted.

3. With the use of an angle grinder equipped with an 80 grit sanding disc, or equivalent, remove any remaining pin material (1) so that the mounting surface (2) is smooth and flush.

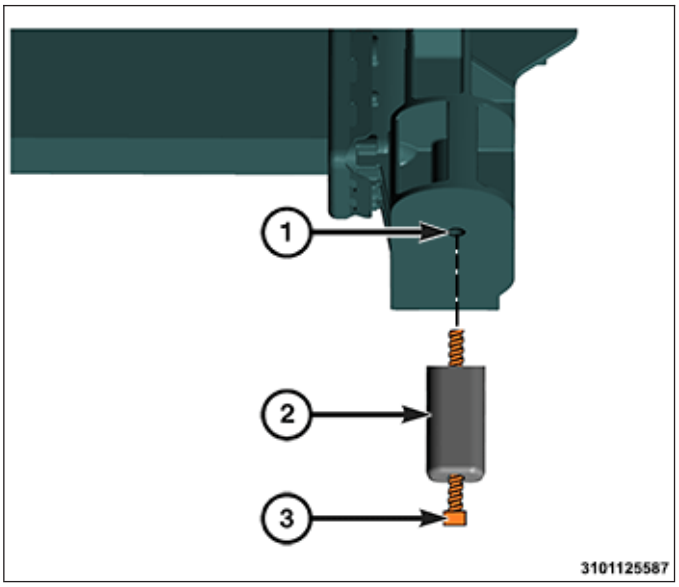


4. If servicing the right side oval radiator mounting pin (1), position the service pin so the flat surfaces are positioned fore-aft as shown.



NOTE: Be certain right side oval radiator mounting pin (1) remains in position as it is tightened.

5. Loosely install the service pin (2) and screw (3) into the hole (1) on the mounting surface on the radiator.
6. Tighten the bolt to proper torque specifications 3.5 n·m (31 in lbs).



NET, FORM AND PIERCE REPAIR

CAUTION: Failure to follow these recommendations could result in damage or failure to the part and the related parts.

Net, form and pierce is a manufacturing process which takes place during the original build of the vehicle. The original part will have a beveled platform that will decrease toward the fastener location mounting hole. Replacement parts in these areas may not include bevel (form) or fastener hole (pierce) and will need to be adapted for proper fit and finish.

The primary locations which may utilize net, form and pierce are:

- Fender reinforcement (at front end module mount)
- Fender tower mounts
- Hood hinge (lower half)
- Rear body header (liftgate hinge mounts)
- Strut tower (at upper control arm mount)

NOTE: Shock tower is net, pierce only.

NOTE: The thickness of shims is not to exceed the original thickness of the factory bevel. If more shims are needed damage is still present and must be repaired properly.

If the replacement part did not come with a fastener hole, one of equal size and location will have to be drilled. Body shims should be used in the fender reinforcement to front end module. The hood hinge area, fender tower mounts, and rear body header will utilize washers as spacers where a specific spacer does not exist. The shims and spacers should be sealed between each other and to the stationary surface. Care should be taken when smoothing sealer around washers to give an undetectable repair. Refinish the repair area per the paint manufacturer's recommendations for corrosion resistance and appearance purposes.

RIVET NUT PROCEDURE

CAUTION: Failure to follow these recommendations could result in damage to the vehicle

Rivet nuts are used for parts installations, when access to the back mounting area is limited or boxed in. It is important to achieve a full seat on the first attempt due to the lack of accessibility on the back side of the rivet nut. Poor seating of the rivet nut will result in part failure, loose parts and possible water leaks.

The use of a commercially available threaded insert tool will be necessary. There are several styles and types readily available. Examples of multi fit choices are the Matco® 203F and the Snap On® HP650M, or you may select one with equivalent capabilities. If a multi fit option is not chosen, it must be capable of a thread size of **M6×1.00**. Follow the tool manufacturer recommended directions for proper installation.

NON-STRUCTURAL SHEET METAL REPAIR

Safety Notice

CAUTION: All Service and rebuilding instructions contained herein are applicable to, and for the convenience of, the automotive repair industry only.

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended and described in this publication were developed for professional service personnel, and are effective methods for performing vehicle repair. Following these procedures will help ensure efficient and economical vehicle performance and service reliability. Some service procedures require the use of special tools designed for specific procedures. These special tools should be used as recommended throughout this publication.

It is important to note this publication contains various **Cautions** and **Warnings**. These should be read carefully in order to minimize risk of personal injury or the possibility that improper service may damage the vehicle or render it unsafe. It is important to note that these cautions and warnings cover only the situations and procedures FCA US LLC has encountered and recommended. FCA US LLC cannot possibly know, evaluate, and advise the service trade of all conceivable ways in which service may be performed, or the possible hazards of each. Consequently, FCA US LLC has not undertaken any broad service review. Accordingly, anyone that uses a service procedure or tool that is not recommended in this publication must be certain that neither personal safety, nor vehicle safety will be jeopardized by the service methods they select.

Safety Precautions

WARNING: Always wear an approved respirator, as well as skin and eye protection per adhesive manufacturer recommendations as stated in the product Safety Data Sheets (SDS).

Adhesives:

- Safety Data Sheets (SDS) must be available and understood before adhesives are handled.
- All personnel should be instructed on the proper procedures to prevent skin contact with solvents, curing agents, and uncured base adhesives, which could cause allergic reactions or sensitization.

Types of Structural Adhesives

Overview: There are three basic chemistries used in the collision repair industry. The types of adhesives used include Acrylic, Epoxy and Urethane. To achieve optimal results, it is best to use the chemistry that bonds best to the substrate being repaired, is easiest to use and offers the most permanent, non-detectable repair at the most economical repair cost. All three chemistries have their strengths and weaknesses.

NOTE: Structural adhesives that meet FCA US LLC's approved replacement materials specifications include - LORD Fusor 2098, LORD Fusor 112B and 3M 08116

Adhesive Types:

- **Acrylic Adhesives -** Bond all types of bare metals and are excellent for cross bonding aluminum to steel. They have good Noise Vibration Harshness (NVH) properties and offer anti-corrosion properties, so primers must be removed in the bond area. Most acrylics have a fast room temperature cure and respond well to force curing. They are stable with regards to temperature and moisture during cure. However, both of these can effect shelf life. Acrylics are the most forgiving of the three chemistries with regards to mix ratio accuracy.
- **Epoxy Adhesives -** Bond well to ridged and semi-ridged plastics, steel and aluminum and are generally easy to sand and feather edge. Some may be too ridged for flexible substrates and they often require primers on bare metal applications. Epoxies can be heat cured to increase strength and accelerate the curing process. They have a long and stable shelf life. Always purge the air out of the cartridges and use mix nozzles.
- **Urethane Adhesive -** Typically flexible and bond well to plastics. However, they usually require primers on metal surfaces to protect against corrosion. Urethanes have good seam sealing and NVH qualities and are frequently the optimal choice for seam sealers. They are sensitive to moisture during cure, packaging and storage. Single component urethanes usually have a much shorter shelf life than two component urethanes. Mix ratios are critical for urethanes. In most cases it cannot vary more than ± 5%. Therefore, hand mixing is not recommended. Urethanes are the most unforgiving of the three chemistries with regards to mix ratio accuracy.

LORD Fusor 2098 Curing Chart

Cure Time x Cure Temperature = Pounds Per Square Inch

CURE TIME	CURE TEMPERATURE				
	10°C (50°F)	21°C (70°F)	38°C (100°F)	65°C (150°F)	65°C (200°F)
10-minutes	X	X	X	5.7 psi	1689.4 psi
20-minutes	X	X	0.0 psi	1199.3 psi	3175.2 psi
40-minutes	X	X	0.0 psi	2710.0 psi	3574.7 psi
1-hour	X	X	49.1 psi	2925.7 psi	X
2-hours	X	X	1368.7 psi	3776.1 psi	X
4-hours	X	23.8 psi	2713.2 psi	X	X
5-hours	X	90.4 psi	X	X	X
6-hours	X	292.0 psi	X	X	X
8-hours	39.1 psi	914.5 psi	X	X	X
16-hours	754.1 psi	1758.2 psi	X	X	X
1-day	1571.1 psi	2656.2 psi	X	X	X

JOINT AND REPAIR TYPES	REFERENCE
Backer Panel Joint	Backer Panel Joint
Door Skin	Door Skin Replacement
Body Side Aperture / Quarter Panel	Side Aperture / Quarter Panel
Metal Fatigue/Stress Cracks	Metal Fatigue/Stress Crack

Backer Panel Joint

Overview: Backer panel procedures may be used to achieve a smooth joint between panel sections. The backer panel works well in areas where there is not enough room to smooth or feather in an overlap joint. The backer panel joint is a common repair for rocker panels, quarter panels and body side apertures.

NOTE: OEM panel replacement such as a quarter panel, side aperture and rocker panel will always require the weld bonding procedure at the pinch weld flange area(s).

Preparation:

NOTE: Be certain vehicle is evenly supported at normal suspension points.

1. Restore structural dimensions as well as all related mating flanges.

   NOTE: It will be difficult to abrade the underside mating surface of the original panel, however this is an important step and should be done effectively.
2. Create a 50 mm. (2 in.) backer panel out of an unused portion of original or new sheetmetal panel, whichever contains the appropriate shape. Be certain it has a precise fit to the back of the panels it will join.
3. All paint, primer, adhesive and any other corrosion protective coatings must be removed from the mating surfaces as well as the backer panels themselves, prior to application of adhesive. Grind a 25 mm. (1 in.) contact area on all panels where backer panel bonding will take place. The metal should be completely bare and shiny in appearance, if the metal appears pewter in color all of the galvanized coating has not been removed.
4. Pre-fit the backer panel to the panel(s) being joined, to ensure proper fit. If screws will be used to hold the panels in place during curing, dry fit them now to be certain of proper fit later. There should be a 0.8 - 1.6 mm. (1/32 - 1/16 in.) gap between the two outer panels, no gap on backer panels.
5. Without a mixing tip attached, purge a small amount of structural adhesive from the cartridge. This will ensure an even flow of both components.
6. Attach a mixing tip and dispense a mixing tube's length of adhesive from the cartridge.

Application:

NOTE: Review temperature curing chart before application of any adhesive.

NOTE: Refer to the structural adhesives manufacturer for information on work, handling and curing times.

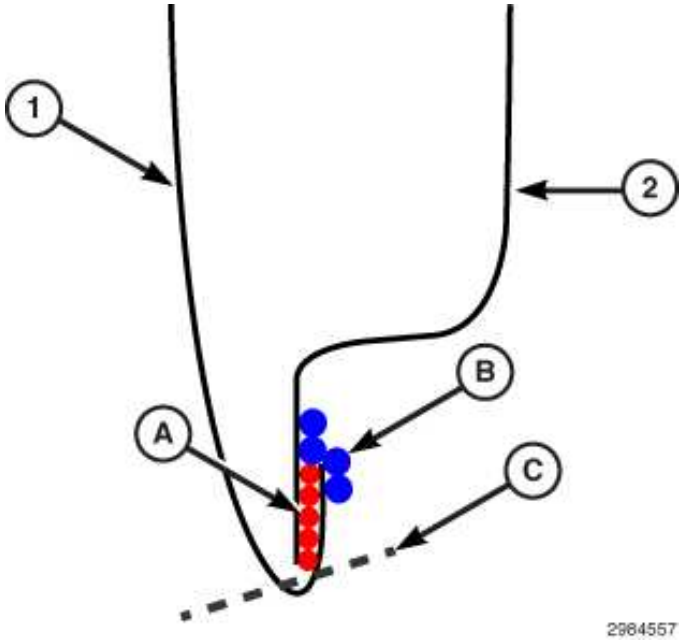
7. Apply a 10 - 13 mm. (3/8 - 1/2 in.) bead of structural adhesive to the bare metal mating surfaces of the backer panels. Evenly apply the adhesive over the complete bonding surface. Apply a 10 - 13 mm. (3/8 - 1/2 in.) bead of structural adhesive to bare metal mating surfaces. Use a body filler applicator to level the adhesive, making sure to cover all bare metal to protect against corrosion.
8. Position the new backer panel(s), making sure not to separate after contact. Lifting will create air bubbles and weaken the bond. **Adjustments must be made by sliding, not lifting the panel(s).**
9. Clamp tightly and evenly. Adhesive has glass beads that will prevent complete squeeze out. Install screws to the "hard to clamp areas".
10. Remove excess adhesive from all joints prior to adhesive cure.
11. Allow adhesive to cure, per manufacturer recommendations. When fully cured, expect the acrylic adhesive to be a little tacky, as this is a normal characteristic of the adhesive.
12. Remove clamps and screws.
13. Repeat procedure for installation of new panel.
14. Remove any remaining adhesive with a grinder or abrasive disc. All adhesive must be removed from the cosmetic repair area to ensure proper adhesion of further repair and refinish materials.
15. Bevel the center of the screw holes and apply fiber-reinforced waterproof body filler to the screw holes and section seam. When cured, sand and apply conventional body filler and block sand as necessary. Prime and paint per paint manufacturer recommendations.
16. Apply inner panel corrosion inhibiting materials (Mopar Cavity Wax part #6804292970 or equivalent) to panel areas that do not have foam injected in them.

Door Skin Replacement

Overview: Depending on the type of door to be repaired, a full skin or a belt cut will be required. Belt cut replacement is necessary when a door with a full skin, around the window opening, has an angle that makes it to difficult to get tools into to do a quality hem flange installation. A butt-joint is used at this seam.

Preparation:

1. Belt cut skins will require determining and cutting of the sectioning locations on the original panel and on the replacement panel.
2. Remove the door skin by grinding the outer edge (C) until the hem flange is perforated.
3. Cut around weld nuggets and spot welds with a spot weld cutting bit or similar weld removal tool, if necessary.
4. If panel is attached with adhesive you may use heat, from a heat gun or inductor only, up to 204°C. (400F°). This will aid in loosening the bond.
5. With an air chisel and a flat bladed bit, remove outer skin and any remaining hem flange.
6. Grind any remaining weld nuggets flush with door frame, and remove all adhesive, paint, E-coating and corrosion protective coatings from the area where the **structural adhesive** will be applied, and where the 'butt-joint" is to take place. The metal should be completely bare and shiny in appearance, if the metal appears pewter in color all of the galvanized coating has not been removed.
7. Straighten door flange and any remaining damage on door shell using the hammer and dolly method.
8. The area of the new door skin that will make contact with the door shell will need to be scuffed with a course abrasive pad or ground with a 50 grit grinding disc. This will vary upon adhesive manufacturers, be certain to check adhesive manufacturer recommendations.



Door Skin

NOTE: Drain holes must remain clear of obstructions from adhesives and sealers.

1 - DOOR SKIN (OUTER)
2 - DOOR SHELL (INNER)
A - STRUCTURAL ADHESIVE
B - SEAM SEALER
C - HEM FLANGE CUT LINE (BOTTOM EDGE SHOWN, SURROUNDING EDGES TYPICAL)

9. Dry fit the new panel for margin and beltline alignment. Determine where to place clamps to hold the panel in place, as necessary.

CAUTION: Be certain the fit is good from the skin to door and door to door opening. Cured adhesive is extremely strong and will not allow for "adjustments".

10. Without a mixing tip attached, purge a small amount of structural adhesive from the cartridge. This will ensure an even flow of both components.
11. Attach a mixing tip and dispense a mixing tube's length of adhesive from the cartridge.

NOTE: Refer to the structural adhesives manufacturer for information on work, handling and curing times.

Installation:

NOTE: Do not apply adhesive within 25 mm. (1 in.) of the belt cut location.

12. Apply a 10 - 13 mm. (3/8 - 1/2 in.) bead of structural adhesive to bare metal mating surfaces. Use a body filler applicator to level the adhesive, making sure to cover all bare metal to protect against corrosion.

NOTE: When applying adhesives be certain any and all drain holes remain open and clear of obstructions.

13. Apply a second bead of adhesive to ensure proper bead thickness.
14. Position the new panel. If repositioning is necessary slide the panel, do not lift or separate panels. **Adjustments must be made by sliding, not lifting the panel(s).** Apply clamps to hold panel in position, as necessary.

NOTE: There are many tools readily available to aid in the hem flange folding process.

15. Roll the hem flange over. Remove excess adhesive. This will save time, as compared to waiting until cured.
16. Re-check door gap and flushness to the vehicle opening and adjust as necessary.
17. Allow the adhesive to cure per manufacturer recommendations. When fully cured, expect the adhesive to be a little tacky, as this is a normal characteristic of the adhesive. Remove clamps, if used.
18. Remove any excess cured adhesive with a grinder or abrasive disc. All adhesive must be removed from the

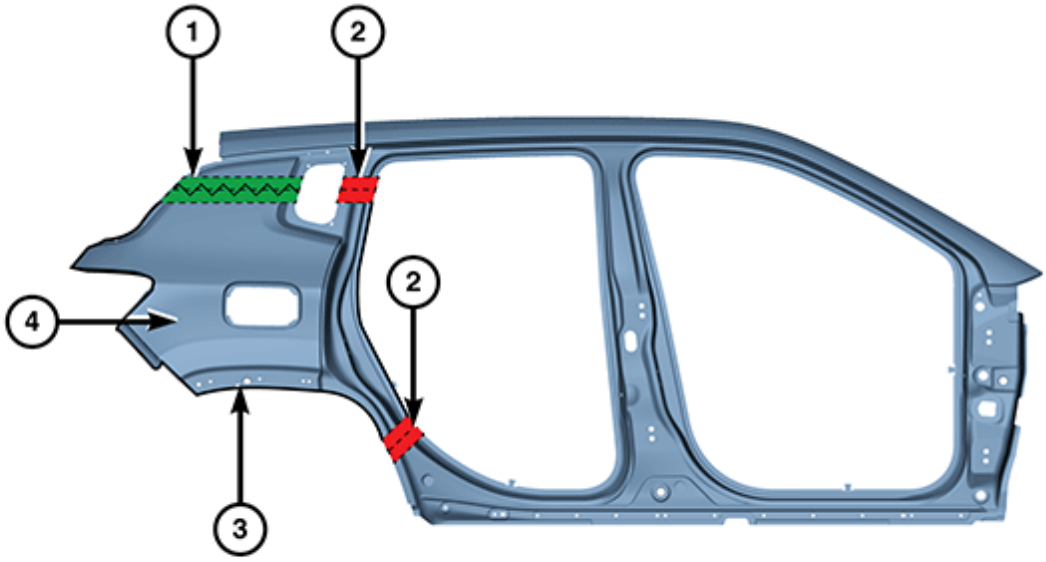
cosmetic repair area to ensure proper adhesion of repair and refinish materials.
19. Weld the butt-joint with Gas Metal Arc Welding (GMAW), if a belt cut was used. Clean and dress welds accordingly.
20. Apply fiber-reinforced waterproof body filler to the section seam, as necessary. When cured sand and apply conventional body filler and block sand.
21. Apply an epoxy or anti-corrosion primer. When cured, lightly scuff.
22. Seam seal the entire door. Duplicate the factory seam sealer. Apply a discrete bead around the rest of the door to seal and protect, maintaining the original appearance.
23. Prime and paint per paint manufacturers recommendations.
24. Apply inner panel corrosion inhibiting materials (Mopar Cavity Wax part #68042970AA , or equivalent).

Body Side Aperture / Quarter Panel

Overview: FCA US LLC's recommended repair procedure for body side aperture / quarter panel replacement include butt joints using backer panels with structural adhesive at the sectioning joint, or a welded backer panel with a welded butt joint using Gas Metal Arc Welding (GMAW). Resistance spot welding with structural adhesive, referred to as weld bonding, should be used at all pinch welds and may be used at the drain trough and tail panel areas as well. With the exception of the sectioning joint, the rule to follow is "Re-assemble as it was built from the OEM". For further information on Weld / Weld Bonding, (Refer to Collision Information - Standard Procedure). GMAW (plug or puddle) welds may be used in place of Squeeze Type Resistance Spot Welding (STRSW) only in areas that specifically use spot welds and in areas that access limitations will not allow STRSW. GMAW cannot be used in the weld bonding process. Never weld with GMAW within 25 mm. (1 in.) of any area where structural adhesive is used. The weld "heat zone" will destroy the properties of the adhesive.

Vehicle design will determine if the sectioning location is to be in the pillar or the roof line area. For locations and warnings that may apply to the body side aperture / quarter panel sectioning locations reference Sectioning

Procedures (Refer to Collision Information / Standard Procedure).



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Body Side Aperture

1 - WELDED SECTION JOINT WITH BACKER PANEL
2 - ADHESIVE SECTION JOINTS WITH BACKER PANEL
3 - WELD BONDING AREAS (WHERE ACCESSIBLE)
4 - BODY SIDE APERTURE

Preparation:

NOTE: Be certain vehicle is evenly supported at normal suspension points.

1. Restore structural dimensions as well as all related mating flanges.
2. Once sectioning locations have been established, cut original and replacement panels at the pre-determined locations. Remove spot welds within sectioned parameter.

   NOTE: Be careful not to destroy any areas that may be able to be used as backer panels.
3. If panel is attached with adhesive, you may use heat, from a **non-flame** heat source, up to 204°C. (400F°). This will aid in loosening the bond.
4. Use an air chisel with a flat bladed bit to remove original panel.
5. Using a hammer and dolly, restore any and all damage to mating surfaces.
6. Create backer panels to be used at the adhesive butt joints (2). Refer to Backer Panel Joint.

   NOTE: It will be difficult to abrade the underside mating surface of the original panel, where backer panel is to be used, however this is important step and should be done effectively.

   NOTE: Due to the length of the butt joint along the C-pillar a welded section joint (1) with a 13 mm (0.5 in) welded backer panel is required.
7. Grind all mating surfaces with a 50 grit grinding disk. Remove all adhesive, sealers, paint, E-coating and corrosion protective coatings from the area where the structural adhesive and welds will be applied. The metal should be completely bare and shiny in appearance, if the metal appears pewter in color all of the galvanized coating has not been removed.
8. Pre- drill any GMAW plug / puddle weld holes that may be necessary, with a 8mm. (5/16in.) hole.
9. With the aid of an assistant, dry fit the panel. Apply clamps to hold panel in place, making note of locations. Install screws where accessibility prohibits the use of clamps. This will aid in proper alignment during installation.
10. Without a mixing tip installed, purge a small amount of structural adhesive from the cartridge. This will ensure an even flow of both components.

11. Attach a mixing tip and dispense a mixing tube's length of adhesive from the cartridge.

NOTE: Using scrap metal and adhesive, make test coupon samples and perform peel test to ensure your STRSW equipment is ready to apply welds as required. The Weld/Weld Bonding section will provide further information on peel testing and equipment set-up, (Refer to Collision Information - Standard Procedure).

NOTE: Refer to the structural adhesives manufacturer for information on work, handling and curing times.

LORD Fusor 2098 Curing Chart

Cure Time x Cure Temperature = Pounds Per Square Inch

CURE TIME	CURE TEMPERATURE				
	10°C (50°F)	21°C (70°F)	38°C (100°F)	65°C (150°F)	65°C (200°F)
10-minutes	X	X	X	5.7 psi	1689.4 psi
20-minutes	X	X	0.0 psi	1199.3 psi	3175.2 psi
40-minutes	X	X	0.0 psi	2710.0 psi	3574.7 psi
1-hour	X	X	49.1 psi	2925.7 psi	X
2-hours	X	X	1368.7 psi	3776.1 psi	X
4-hours	X	23.8 psi	2713.2 psi	X	X
5-hours	X	90.4 psi	X	X	X
6-hours	X	292.0 psi	X	X	X
8-hours	39.1 psi	914.5 psi	X	X	X
16-hours	754.1 psi	1758.2 psi	X	X	X
1-day	1571.1 psi	2656.2 psi	X	X	X

Installation:

12. Install backer panels, refer to Backer Panel Joint.
13. Apply 10 - 13mm. (3/8 - 1/2in.) bead of structural adhesive to the area where the two panels are to be bonded and weld bonded. **Do not apply to areas that will only be STRSW or GMAW welded.**
14. Smooth the adhesive with a body filler spreader or equivalent, to cover all bare metal surfaces. Apply a second bead of adhesive to ensure proper adhesive thickness.
15. With the aid of an assistant place the panel to the vehicle. If the panel needs to be adjusted, slide the panel.

NOTE: Adjustments must be made by sliding, not lifting the panel(s). Lifting will cause air bubbles and weaken the bond.

16. Install clamps and screws to locations determined during the dry fit process.
17. Remove all squeeze out of adhesive, prior to curing.

NOTE: Structural adhesive manufacturers will vary on time allowed for completion of STRSW in weld bond zones. Check and follow adhesive manufacturer recommendations.

18. Apply STRSW to weld bond areas (3) immediately.
19. Once fully cured, remove clamps and screws. When fully cured, expect adhesive to remain a little tacky, as this is a normal characteristic of the adhesive.
20. Complete STRSW and / or GMAW (plug / puddle) welds.
21. Finish / Dress the welds as necessary. If screws were necessary bevel the screw holes. Prepare the joint and screw holes by grinding the area with 50 grit grinding disc. Get in seams as best as possible without thinning the metal.
22. Remove any excess cured adhesive with a grinder or abrasive disc. All adhesive must be removed from the cosmetic repair area to ensure proper adhesion of repair and refinish materials.
23. Apply fiber-reinforced waterproof body filler to screw holes and joint. Complete the repair using conventional body filler, and block sanding.
24. Apply an epoxy or anti-corrosion primer. When cured, lightly scuff and then apply seam sealer as necessary.
25. Prime and paint per paint manufacturer recommendations.
26. Apply inner panel corrosion inhibiting materials (Mopar Cavity Wax part #68042970AA, or equivalent).

Metal Fatigue/Stress Crack

Overview: On rare occasions you may encounter metal fatigue, also referred to as stress cracks. This will appear as a crack starting at an edge and trailing away. Follow these steps for a proper repair:

1. Locate the trailing end of the crack and drill a 3 mm. (1/8 in.) hole at the very point at which it stops. This is referred to as "Stop Drilling".
2. Remove all contaminants and coatings including primer, paint and anti-corrosion, from the repair area. Surface should be clean and shiny (if pewter in color then anti-corrosion has not been removed).
3. Identify the type of metal to be welded and the recommended welding process for that metal as found in Standardized Steel Identification (Refer to 31 - Collision Information/Specifications/Standardized Steel Identification).
4. Stitch weld the seam/crack closed using the recommended welding process and in accordance with the welding guidelines as found in Weld/Weld Bonding (Refer to 31 - Collision Information/Standard Procedure/ Welding and Weld Bonding).
5. Dress the welds as necessary. **Careful not to thin the base metal.**
6. Depending on the location and visibility of the repair surface refinishing will vary from body filler, finishing and painting to simply applying an epoxy or anticorrosion primer and rubberized undercoating, Mopar part #05093417AA or equivalent.
7. Apply inner panel corrosion inhibiting materials (Mopar Cavity Wax part #68042970AA or equivalent).

WELDING AND WELD BONDING

Safety Notice

CAUTION: All Service and rebuilding instructions contained herein are applicable to, and for the convenience of, the automotive repair industry only

The service procedures recommended and described in this publication were developed for professional service personnel, and are effective methods for performing vehicle repair.

It is important to note this publication contains various **Cautions** and **Warnings**. These should be read carefully in order to minimize risk of personal injury or the possibility that improper service may damage the vehicle or render it unsafe. FCA US LLC cannot possibly know, evaluate and advise the service trade of all conceivable ways in which service may be performed, or the possible hazards of each. Consequently, FCA US LLC has not undertaken any broad service review. Accordingly, anyone that uses a service procedure or tool that is not recommended in this publication must be certain that neither personal safety, nor vehicle safety will be jeopardized by the service methods they select.

Safety Precautions

WARNING:

- **When Welding and/or working with Adhesives always wear safety goggles and gloves to prevent contact with chemicals and to prevent weld spatter, sparks, and sharp metal from causing bodily injury.**
- **Wear an approved respirator while welding and during the application of adhesives to prevent inhalation of harmful vapors.**
- **Always remove NVH (Noise Vibration and Harshness) foam from welding repair area, as material is flammable.**

WARNING: Failure to follow these instructions may result in possible serious or fatal injury

Welding

- Comply with all federal, state and local regulations to avoid any injuries due to shock, fires, fumes, sparks and liquids.
- All flammable materials or liquid should be stored in tightly sealed and labeled containers, and used only in well ventilated areas.
- No spark producing equipment should be permitted in any area where flammable materials are being handled or stored.

Adhesives:

- Safety Data Sheets (SDS) must be available and understood before adhesives are handled.
- All personnel should be instructed on the proper procedures to prevent skin contact with solvents, curing agents, and uncured base adhesives, which could cause allergic reactions or sensitization.

Introduction

The purpose of this document is to clearly explain the welding options available to the collision repair technician and how to determine that welding repairs are made properly. The primary types of welding covered in this section are Squeeze Type Resistant Spot Welding (STRSW), Gas Metal Arc Welding (GMAW), Metal Active Gas (MAG) Brazing and Weld Bonding (a combination of STRSW and structural adhesive). Proper training and weld testing are required to ensure that a safe, high quality, vehicle repair is made.

INDEX	REFERENCE
Training and Qualification	Training and Qualification

Panel Removal

WARNING: Always Wear Safety Goggles, Work Gloves, Hearing Protection and a Dust Mask when removing welded panels this way. Failure to follow these instructions could result in serious or fatal injury.

When removing panels and components for replacement, care must be taken not to damage the underlying component. On welded and "Weld Bonded" panels spot welds must be removed using a spot weld cutting type tool, or equivalent. On panels that are adhesive bonded or weld bonded it is acceptable to use heat up to **204°C. (400°F.)**, from a **Non-Open Flame** heat source such as a heat gun. This will loosen the bond, so less damage is inflicted to the mating surface. After panel is removed, any remaining weld nugget should be ground smooth. Cut-off wheels should not be used, as there is potential to remove material from the base material which would weaken the final repair. Place an air hammer with a flat bladed chisel bit (or equivalent) in between panels and remove the panel. Care should be taken as to not damage mating flanges and the surrounding components.

Key Points of a Welding Repair

- Poor fit up will adversely affect weld quality and may result in a weld failure due to excessive metal stretching around the nugget.
- Clamps/Clecos should be used to bring parts together and hold them in position.
- Clamps/Clecos should be insulated when using STRSW to control weld current shunting (This can be accomplished with specialized clamps or by placing a insulating material such as cardboard between the clamp jaws and the panels.)
- Number, size and location of welds should closely duplicate the original assembly. Do not place the new spot weld directly on the original spot weld location. Placement of a new weld over an original weld location may lead to metal fatigue or poor weld quality.
- Surface of the steel parts should be clean and free of scale, rust, paint, cured adhesives/sealers and any other contaminants that could adversely affect the quality of the weld joint. This includes the removal of any E-coat applied to the service part within 25 mm. (1 in.) of any welds.
- Proper corrosion protection must be installed when repairs are complete, (Refer to 31 - Collision Information/ Standard Procedure/Corrosion Protection).
- If the joint originally had adhesive, all E-coat must be removed where the adhesive is to be reapplied.
- "Weld-thru" primers are not recommended anywhere.
- Do not remove base material from the base panel when releasing welds.

NOTE: FCA US LLC recommends the same quantity of welds as the original panel, but placement of the new weld should NOT be put directly on the original spot weld location. Placement of a new weld over an original weld location may lead to metal fatigue or poor weld quality.

Requirements of a Welding Repair

The number one requirement of any welding repair is to restore the vehicle to its OEM condition. Materials and technologies should duplicate original OEM conditions as much as possible. To meet this requirement, the technician must ensure the following:

- Panel layering (shingling) is the same as original
- Part fit up is correct
- Equivalent sealers and/or adhesives are utilized
- Welds are replaced in the same size, quantity and location
- "Weld-thru" primers are NOT recommended
- Structural adhesives and sealers must be replaced where they were located

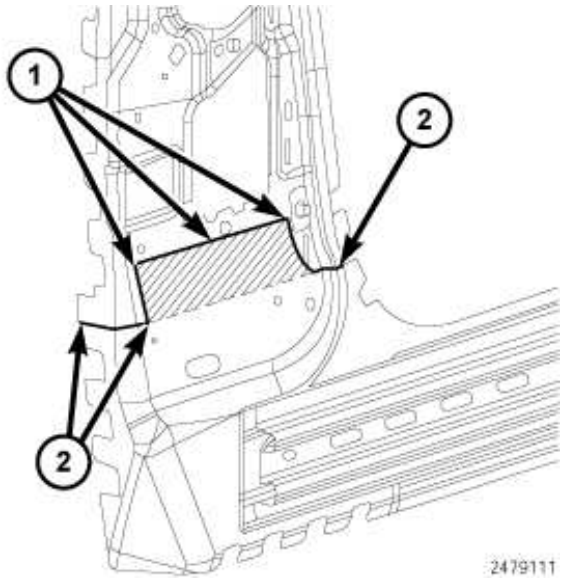
A significant amount of structural adhesive is used at the OEM to improve joint strength. It may be difficult to determine if the material between the panels is an adhesive or a sealer, and for this reason, the following guideline should be used: **If in doubt, use a two-component, corrosion inhibiting, structural adhesive.** GMAW welding is not recommended within 25 mm. (1 in.) of the adhesive as it creates heat that will destroy the adhesive. STRSW on the other hand, can weld through the adhesive and will not destroy its properties.

NOTE: Structural adhesives that meet FCA US LLC materials recommendations for adhesive strength and corrosion protection qualities include Lord Fusor #2098, Lord Fusor #112B and 3M #08116 .

Modified Lap Joint

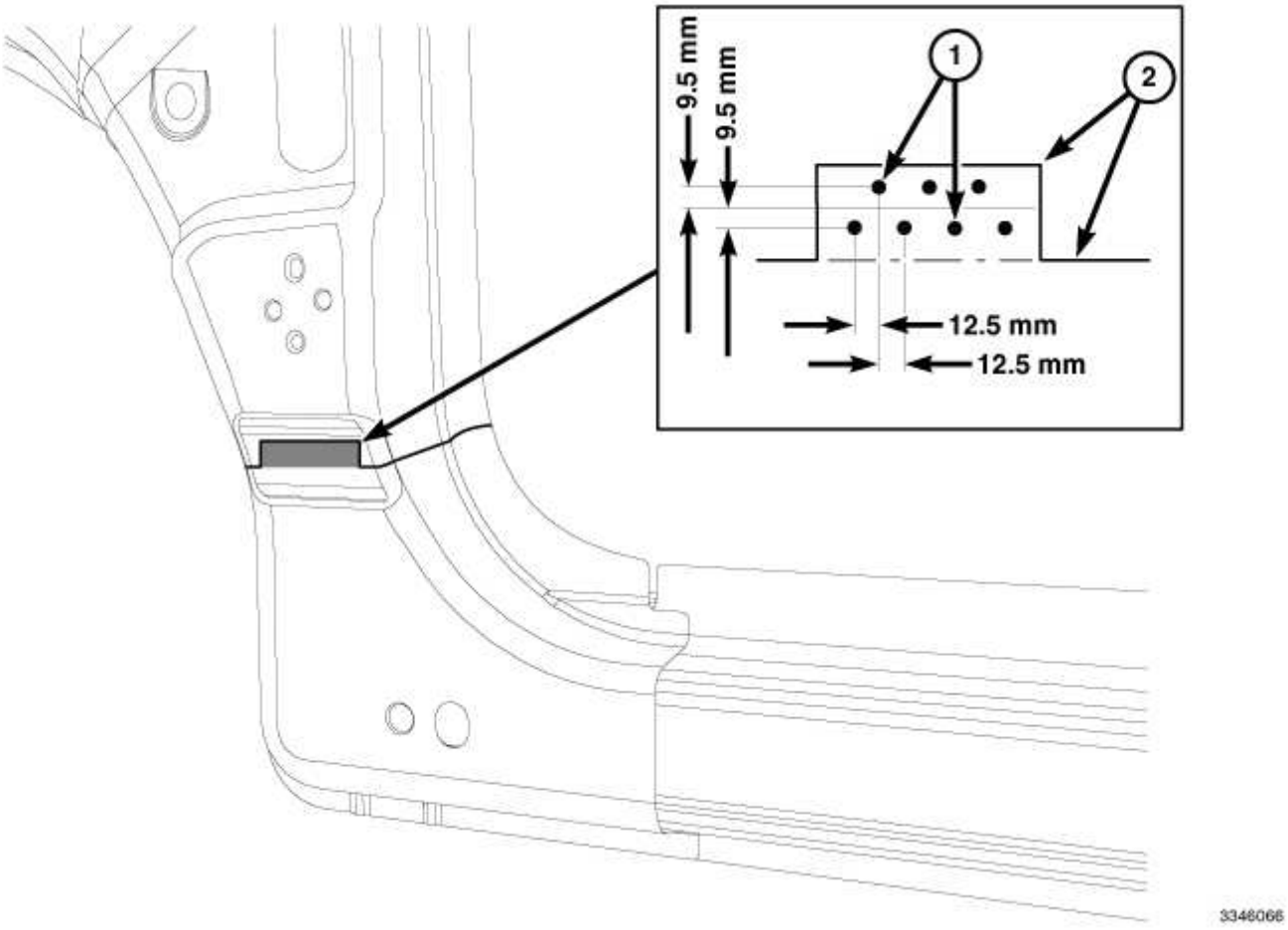
NOTE: Parts shown for example purposes only. Emphasis is on joint design and proper plug weld placement.

The repair joint is a combination lap-joint (1) and butt-joints (2) – the panels are lapped in the flat areas and butted in contoured locations and at weld flanges. The graphic better illustrates this process.



Modified Lap Joint

1 - LAP-JOINT WELDS
2 - BUTT-JOINT WELDS



Plug Weld Layout

1 - MIG PLUG WELDS
2 - MIG SEAM WELD

The MIG plug welds, or "puddle welds" should be made after drilling 8 mm (5/16 in) holes and should be staggered 12.5 mm (0.5 in) apart following the centerline of the lap and should be alternating above and below the centerline 9.5 mm (3/8 in.).

In the lap-jointed area, staggered MIG plug welds (1) are used to augment the joint and **all edges** of the lapped panel seam (2) should be **completely** welded.

Types of Welding

Squeeze Type Resistant Spot Welding (STRSW)

- STRSW relies on the resistance of the material being welded to create heat as a current is passed through. The materials being welded are squeezed together, and as current passes through, resistance causes heat buildup. The force of the tips and the heat from the current allow the materials to fuse together. The current is removed and the force from the welding tips is held during a cool down cycle. When the cool down cycle is complete, the pressure is released and the next weld is positioned.
- Learning how to create weld coupons, refer to Test Weld Coupon and then performing a destructive test using these coupons, is the key to successfully using STRSW. FCA US LLC requires a physical test using test coupons and the methods outlined in this document to test welds prior to making repairs.
- Tip condition is very important for producing proper welds. Inspect tips often and either dress or change per equipment manufacturer recommendations.
- High-quality welding equipment must be used or welds may be inadequate. Also, the equipment must be able to produce repeatable welds from the beginning of the repair to the end.

Gas Metal Arc Welding (GMAW) or "MIG"

- GMAW is an arc welding process where the electrode wire is fed through a weld gun and is surrounded by a shielding gas. The term MIG comes from early uses on aluminum where argon was used as shielding gas and

the process was referred to as Metal Inert Gas welding. The GMAW process is currently the most common in the uni-body repair environment.

Flux Core Arc Welding (FCAW)

- FCAW is an arc welding process where electrode wire is fed through a weld gun and is not surrounded by a shielding gas.
- The welding zone is protected by the use of flux that is located in the center of electrode wire.
- The surface of the completed will have slag left behind from the flux that will need to be removed prior to any refinishing process

Metal Active Gas (Mag) Brazing

- MAG brazing, also known as mig brazing is a brazing process where the electrode wire is fed through a weld gun and is surrounded by argon as shielding gas.
- The application of the process is similar to GMAW. However, it utilizes a different electrode and shielding gas and does not melt the base material.
- Due to the lower melting point of the electrode, it produces a much smaller heat affected zone than GMAW.

Weld Bonding

- A method of joining metals using STRSW in conjunction/combination with a structural adhesive.
- Weld bonding provides the customer with a superior repair as compared to the traditional plug/puddle welding process using GMAW. Structural adhesive should not be used in a joint that did not originally contain it.
- The repair joint or seam should duplicate the OE build as closely as possible, unless otherwise stated in the collision information.

NOTE: FCA US LLC DOES NOT approve or endorse the use of structural adhesives alone in the replacement of body panels.

Weld Processes

Squeeze Type Resistance Spot Welding (STRSW)

Applications

- With advancements in equipment technologies, such as computer program controlled and inverters, STRSW is not restricted to light gauge sheet metal any longer. Heavier gauges of high strength and coated steel, currently used in vehicle structures, can now be welded in the field, providing destructive testing is performed on each combination. This is to ensure quality welds are being maintained.

Equipment Requirements

- Equipment must produce two sided welds
- Equipment must have been tested to SAE J2667 with satisfactory results obtained
- Equipment must have the capability to create welds that comply with the Minimum Weld Nugget Requirement Chart
- Technician must have the appropriate sheet metal measuring equipment to ensure their welds meet the minimum weld nugget size for the actual panels being welded

Gas Metal Arc Welding (GMAW) or ″MIG″

Applications

- Sheet metal repairs where STRSW is not available or practical, and truck frame repairs.
- The most common usage of GMAW on uncoated or galvanneal coated steel will utilize a 75% Argon - 25% CO2 shielding gas mix, and AWS specification ER70S6 wire. When welding galvanized material, Flux Core Arc Welding (FCAW) using AWS specification E71T-GS wire should be used to avoid weld porosity from the zinc in the galvanizing.

Weld Process

COMPONENT PARTS	TRUCK FRAME		BODYSHELL EXTERIOR & UNDERBODY PANELS			
	Zinc and Zinc Iron Alloy coated sheet steels					
WELDING PROCESS	GAS METAL ARC (Note: 1)	FLUX CORED ARC	GAS METAL ARC (Note: 1)	MAG BRAZE (Note: 2)	GAS METAL ARC (Note: 1)	FLUX CORED ARC
Material Type	High Strength and Structural Quality Steels which includes HSLA, Martensitic, and Dual Phase materials					

COMPONENT PARTS	TRUCK FRAME		BODYSHELL EXTERIOR & UNDERBODY PANELS			
Material Thickness Range	2 mm - 4 mm		0.6 mm - 1.02 mm		>1.02 mm - 3.0 mm	
ELECTRODE TYPE (AWS SPEC. A5.18)	AWS CLASS. ER70S-6	AWS CLASS. E71T-11	AWS CLASS. ER70S-6	AWS CLASS. ERCuAl-A2	AWS CLASS. ER70S-6	AWS CLASS. E71T-11
ELECTRODE SIZE	0.035	0.045	0.023 - 0.025	0.035	0.035	0.045
ELECTRODE MAKER	Lincoln®	Lincoln® NR-211-MP	Lincoln®		Lincoln®	Lincoln® NR-211-MP
WIRE FEED SPEED (in/min)	245-250 Vertical Down 70-90 Flat & Horizontal	110 Vertical Down 70-90 Flat & Horizontal	95-115 All Welds	150-155 Flat & Horizontal	245-250 Vertical Down 70-90 Flat & Horizontal	110 Vertical Down 70-90 Flat & Horizontal
TRAVEL SPEED (in/min)			10			
VOLTAGE	19-20	15-18	16-19	18-19	19-20	15-18
POLARITY	DCEP	DCEN	DCEP	DCEP	DCEP	DCEN
GAS FLOW (cfh)	25-35	N/A	25-35	25-35	25-35	N/A
ELECTRICAL STICKOUT (in)	1/2 - 5/8	3/8 - 1/2	1/2 - 5/8	5/8 - 3/4	1/2- 5/8	3/8 - 1/2
GAS TYPE	75% Ar 25% CO2	N/A	75% Ar 25% CO2	100% Ar	75% Ar 25% CO2	N/A
TYPE OF ARC TRANSFER	Short Circuit		Short Circuit	Pulse	Short Circuit	

These Procedure Specifications are appropriate as of this publication. Procedures may be superseded with new spec's at a later date.

Always process to the Thinner Material Thickness (TMT)

All persons performing welding must be qualified to weld in all positions.

NOTE:

1. Must remove Zinc Coating on both sides of metal at the weld zone.
2. MAG Braze welding process requires use of Pulse Arc® or STT® welding machine.

Equipment Requirements

- The preferred GMAW welder will be a 220V. unit with minimum output capacity of 150 amps (250 amps suggested to avoid equipment limitations).

Limitations

- Welds must be "dressed", or ground down before applying topcoats.
- GMAW cannot weld through paints, sealers, or adhesives. Additionally, the zinc used in coated steels can lead to reduced weld strength due to porosity. This porosity problem on materials with heavy coatings can be dealt with by using FCAW.
- Due to the heat affected zone, structural adhesives cannot be applied within 25mm. (1in.) of GMAW welds.

Testing

- Weld coupons identical to the repair situation need to be created to help set up the welding equipment and weld process. These coupons then should be destructively tested to ensure proper quality welds are being made.

Post Weld Procedures

- When welding has been completed, welds in cosmetic locations must be dressed.
- Welds will need to be smoothed down to the height of the surrounding panel without any thinning of the sheet metal. This can be accomplished using one of many sanding or grinding products available in the aftermarket.
- Slag must always be removed prior to refinishing to restore corrosion protection and appearance.

- Corrosion inhibiting materials must be applied to seal the weld zone from future corrosion.

Metal Active Gas (MAG) Brazing

Applications

- Is the recommended method for attaching steel that is greater than 600 MPa when accessibility to perform STRSW or weld bonding is not possible.
- It has a reduced heat affected zone as compared to GMAW.
- The lower heat involved will not affect the strength properties of the metal being welded

Flux Core Arc Welding (FCAW)

Applications

- Thicker gauge coated steels where the thickness of the metal is between 1.02 mm and 4 mm and tensile strength is below 600 MPa, such as truck frames.
- This type of welding is recommended for galvanized or zinc coated steels, due to porosity issues caused when welding with GMAW.
- AWS specification E71T-GS wire is recommended.

Minimum Weld Nugget Requirement Chart

*Governing Metal Thickness (GMT)	**Minimum Weld Nugget Diameter
0.64 mm. - 0.79 mm.	3.5 mm.
0.8 mm. - 0.99 mm.	4.0 mm.
1.0 mm. - 1.29 mm.	4.5 mm.
1.3 mm. - 1.59 mm.	5.0 mm.
1.6 mm. - 1.89 mm.	5.5 mm.
1.9 mm. - 2.29 mm.	6.0 mm.
2.3 mm. - 2.69 mm.	6.5 mm.
2.7 mm. - 3.04 mm.	7.0 mm.

*Governing Metal Thickness (GMT) = The minimum weld nugget for two thickness welds shall be based on the thinner of the two sheets being welded. The minimum weld nugget diameter for three thickness welds shall be based on the middle gauge of the three panels being welded (not necessarily the middle panel).

**Minimum nugget diameter should be measured with a vernier caliper. If the weld is not round, measure the major and minor diameter and average.

Equipment Limitations

- Each brand/model is limited to material capacity that can be welded.
- The facility power supply will impact equipment performance.

Access Limitations

- Due to the existing structure of the vehicle being repaired, each weld must be evaluated for feasibility. Due to power limitations of the equipment, tongs that are long and deep enough for certain welds may not be available, and the weld will need to be made by another method.

CAUTION: All NVH foam must be removed from the repair area of the vehicle, as material is flammable.

Preparation

- Prior to making repairs with STRSW, weld coupons must be created for testing. The test joint must be an exact duplicate of the original joint, including layering and adhesive application. The testing is required to ensure the repair restores the vehicle to its originally produced condition using the minimum weld nugget requirement chart.
- To correctly identify the material being welded or tested, the technician must posses an accurate material thickness gauge.
- No "improvements" to the vehicle design are allowed as this could have a negative impact on the vehicle as a whole. The repair should mirror what was used on the vehicle at the assembly plant.
- Note, the weld is affected by more than just the thickness or number of panels being welded, but also material coatings. Zinc based anti-corrosion coatings (i.e., galvannealing, galvanizing), sealers, adhesives, and E-coat will affect welder performance.
- When preparing an E-coated panel for STRSW the E-coat must be removed from both of the mating flanges

within 25 mm. (1 in.) of any flange. Corrosion protection is required anytime you remove E-coat. A scuffing disc should be used to remove the E-coat without damaging other sheet metal coatings
- With advancements in technology some STRSW welders now have computer controlled programs. These technologically advanced welders are capable of measuring the thickness and resistance of the panels being welded including multiple tiers and types of metal. The computer program is able to process the information to provide the proper spot weld consistently.
- If the panel originally had structural adhesives it should be reapplied prior to welding. The adhesive should have a corrosion inhibitor and cover all bare metal.
- Prior to creating weld coupons and the final body repairs, all coatings and dirt/road debris must be removed.

Testing

- Weld coupons identical to the repair situation need to be made prior to performing any repair. These coupons must be tested (peel test) to determine if the weld nugget meets the minimum size outlined above in the Minimum Weld Nugget Requirement Chart. Keep in mind that different material coatings, coating thickness, material thickness, and joint configurations have a direct impact on nugget size.

Weld Bonding

NOTE: Structural adhesive manufacturers will vary on time allowed for completion of STRSW in weld bond zones. Check and follow adhesive manufacturer recommendations.

Application

- Weld bonding is the STRSW welding process utilizing structural adhesive between the panels that are resistance welded together. The adhesive creates a very stiff structure, while the welding eliminates concerns of the adhesives' peel strength.
- Additionally, the adhesive acts as a sealer and provides a high level of corrosion protection.

Sealers and Adhesives

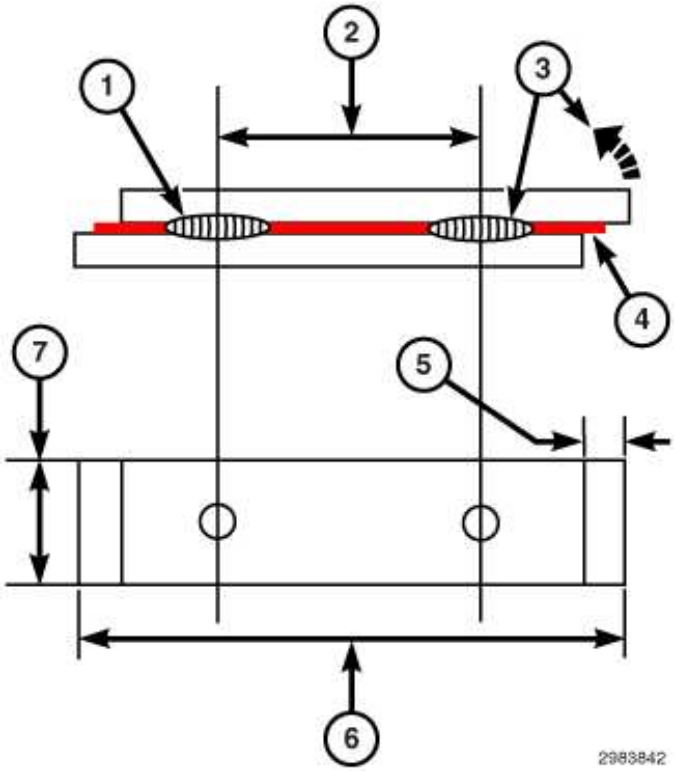
- Sealers are materials placed on top of a seam to control water and air intrusion.
- Adhesives, providing structural improvements, are found between panels welded together. Adhesives also provide the qualities of sealers when applied correctly.
- The FCA US LLC recommendation is to replace any suspected adhesive with a two-component, corrosion inhibiting structural adhesive when any repairs are made, providing the STRSW process is applicable.

Test Weld Coupon

NOTE: Periodically check the electrodes tips to determine wether the faces have been contaminated, damaged or increased in size. If any of these conditions have occurred, replace or re-face the electrode tips per equipment manufacturer recommendations.

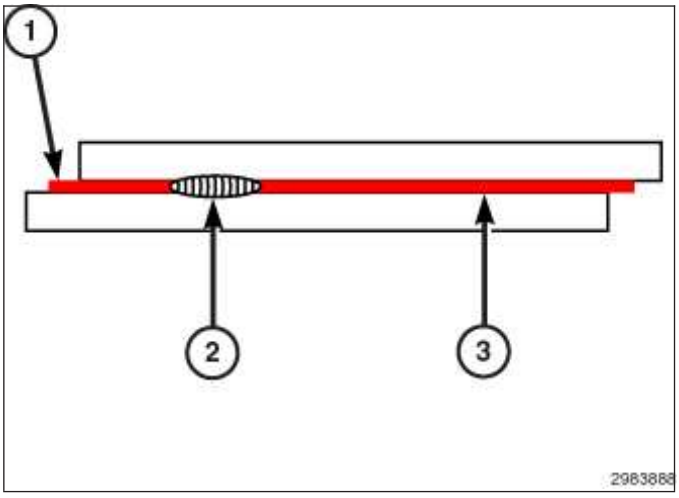
Weld Examples

Current Level Low for Both Welds



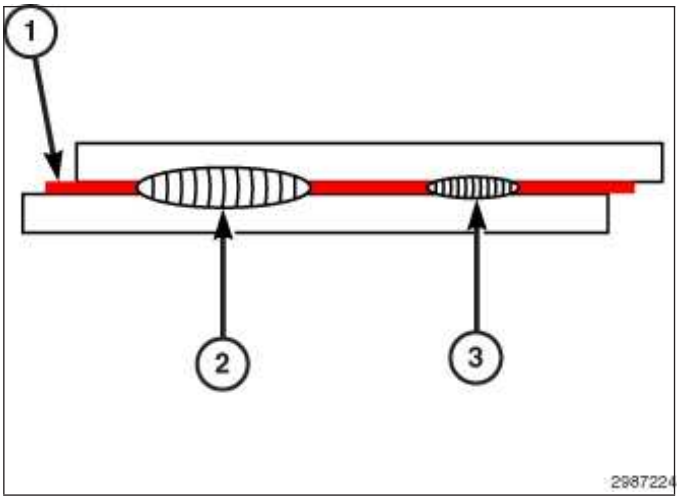
Weld Coupon

1 - FIRST WELD TOWARD END OF COUPON, AT LEAST 12.5 mm. (0.5 in.) FROM ANY EDGE
2 - DISTANCE MUST EQUAL THE SPACING FROM THE REPAIR WELD TO THE CLOSEST EXISTING WELD ON THE VEHICLE
3 - TEST THE SECOND WELD BY PEELING APART IN DIRECTION SHOWN (USING PLIERS OR EQUIVALENT
4 - STRUCTURAL ADHESIVE
5 - APPROXIMATELY 13 mm. (0.5 in.)
6 - APPROXIMATELY 100 mm. (4 in.)
7 - APPROXIMATELY 25 mm. (1 in.)



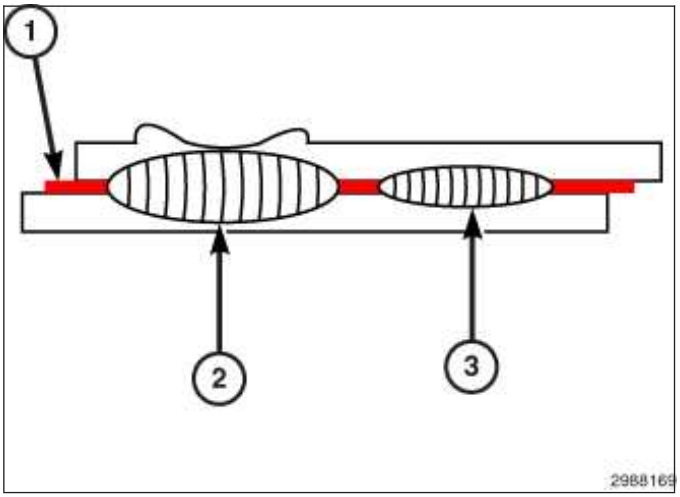
1 - STRUCTURAL ADHESIVE
2 - WELD TOO SMALL
3 - WELD NON-EXISTENT

Current Level Medium for Both Welds



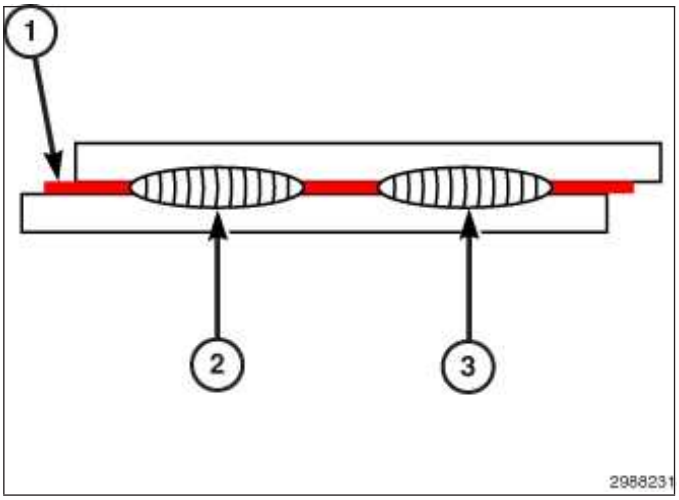
1 - STRUCTURAL ADHESIVE
2 - WELD CORRECT SIZE
3 - WELD TOO SMALL

Current Level High for Both Welds



1 - STRUCTURAL ADHESIVE
2 - WELD HAS HEAVY EXPULSION OF METAL AND SURFACE MARKINGS
3 - WELD CORRECT SIZE

Current Level Adjusted to Provide Acceptable Welds



1 - STRUCTURAL ADHESIVE
2 - WELD CORRECT SIZE
3 - WELD CORRECT SIZE

1. Select the proper spot welding tong/arm which provides the best access to the areas of the vehicles where the spot welds are to be made.
2. Obtain metal of the same thickness and coating (i.e., bare, galvanneal, or galvanized) to be welded. This metal will be used for spot welder set up. Damaged sheet metal taken from the vehicle being repaired may be used if it is from the area from which the work is to take place. The sheet metal must be flat, free of cracks, wrinkles and scored metal.
3. Using the procedure outlined in Test Weld Coupon, prepare the test coupons.
4. Clean and prepare both mating coupons. If using adhesives, verify the recommendations of the adhesive manufacturer. All contaminates such as rust scale, dirt, paint, and existing sealers and adhesives must be removed. Remove any E-coat within 25 mm. (1 in.) of where the welds are to be placed.
5. If the panel joint originally contained structural adhesive, it should be applied to the coupon at this time.
6. Install the equipment manufacturers recommended electrode tips.
7. Adjust the welding electrode tip force, and clamp time per manufacturer recommendations.

   NOTE: Galvanneal and galvanized coated steel will require more force
8. As shown in Test Weld Coupon, place first weld at a position at least 12.5 mm. (0.5 in.) away from end weld coupons. Then make the second weld. The weld spacing should be the same distance as the original welds or the closest existing weld, whichever is the least on the vehicle being repaired.
9. Destructively test the **second** weld to determine the size of the resistance spot weld produced (see examples in Test Weld Coupon. If the weld is insufficient, adjust the welder per the welder manufacturer recommendations and repeat steps 7, 8 and 9 until the proper weld size is achieved.

NOTE: If the first weld becomes too ″hot″ before the second weld reaches the correct size, reduce the current settings for the first weld and continue increasing the current setting for the second weld until the proper size for the second has been reached.

Final Weld Preparation

CAUTION: All NVH foam must be removed from the repair area of the vehicle, as material is flammable.

1. Visually verify that mating flanges are free of scale, rust, dirt, paint and cured adhesives/sealers, as well as wrinkles. If cracked, wrinkled or scored metal exists the condition needs to be corrected at this time.
2. E-coat within 25 mm. (1 in.) needs to be removed for STRSW. If Weld Bonding, E-coat should be ground off completely along seam.

   NOTE: Corrosion resistance coating (i.e., galvanneal, galvanized) should not be removed during cleanup of components.
3. Verify that the welder control settings are the same required to produce the second weld on the test coupons.
4. If adhesive is to be used, apply it at this time. Clamp the component to the vehicle.

   NOTE: Insulated clamps should be used, as not to shunt the weld current.

   NOTE: During the welding of the component it will be necessary to visually verify that the weld being made is not placed directly over an existing weld.

5. Perform the welds on the vehicle.

   NOTE: Structural adhesive manufacturers will vary on time allowed for completion of weld bond zones. Check and follow adhesive manufacturer recommendations. Reference the time temperature chart (Refer to Non-Structural Sheet Metal Repair/Types of Structural Adhesives).

6. If adhesive was used, clean up any excessive squeezeout prior to adhesive curing.

Training and Qualification

Training

As with any equipment, proper training is required, and in the case of welding equipment this is no exception. The goal of automobile facilities and technicians is to restore the vehicle to its OEM condition.

Training must be considered a two-fold process:

- The technician must be well versed in how the equipment operates, how adjustments are made and what effects those adjustments have on the weld. The technician must also clearly understand the maintenance of the equipment and the impact of poor maintenance on welds and equipment longevity.
- The second and most important, aspect of the training, is weld quality confirmation. Destructive testing of weld coupons must be performed to ensure the minimum weld size is created. Physical appearance of the weld is not enough to determine the quality of the weld. Additionally, poor welds may also reduce the durability, or quality , of the repaired vehicle in time.

It is required that technicians have received training regardless of the welding equipment or method they utilize. Both training in the specific field of welding, and the particular equipment, are necessary to ensure safe, durable, quality welds are obtained.

Qualification

To demonstrate welding skill, it is highly important that technicians obtain certification from an organization such as the American Welding Society (AWS) or a certificate from the Inter-Industry Conference on Auto Collision Repair (ICAR).

SECTIONING LOCATIONS AND PROCEDURES

WARNING: Sectioning of components may only be performed in the described areas if damage to component does not extend past sectioning location. Should damage extend past sectioning location entire component replacement is the only acceptable repair

WARNING: FCA US LLC engineering's position on the use of heat during collision repair is as follows:

- **Any body panel or frame component damaged which is to be repaired and reused, must be repaired using the "cold straightening" method. No heat may be used during the straightening process.**
- **During rough straightening prior to panel replacement, damaged panels or frame components may be heated to assist in body/frame realignment. The application of heat must be constrained to the parts which will be replaced and not allowed to affect any other components.**

This "no heat" recommendation is due to the extensive use of advanced high strength steels in FCA US LLC products. High-strength materials can be substantially and negatively affected from heat input which will not be obviously known to the repairer or consumer.

Ignoring these recommendations may lead to serious compromises in the ability to protect occupants in a future collision event, reduce the engineered qualities and attributes, or decrease the durability and reliability of the vehicle.

This statement supersedes any previously released information by the FCA US LLC.

Failure to follow these instructions may result in serious or fatal injury.

CAUTION:

- **All restraint systems should be disabled before beginning repairs.**
- **Electronic modules located within 305 mm (12 in.) of any welding should be isolated.**
- **Protect vehicle from weld spatter damage.**
- **Vehicle service manual should be referenced for guidelines and warnings.**

Service assemblies for body components may be disassembled if utilization of the subcomponents is more appropriate to the repair or to reduce vehicle disruption. The structural and non-structural metal on the Jeep Compass (MP) may be sectioned in several areas providing the prescribed methods below are adhered to.

The joint should whenever possible be performed in as "flat" an area as possible to simplify the repair. While the joint may include "holes" and formations, it is suggested they be avoided but where this is not possible, the technician must ensure that the additional material thickness does not impede installation of fasteners, etc. that the hole exists for.

All dimensions are to be restored to factory specifications prior to full or partial component replacement.

CAUTION: NVH foam should be removed from the weld area, as material may be flammable.

CAUTION: Do not apply any corrosion protection or NVH foam prior to completion of welding, as materials are flammable.

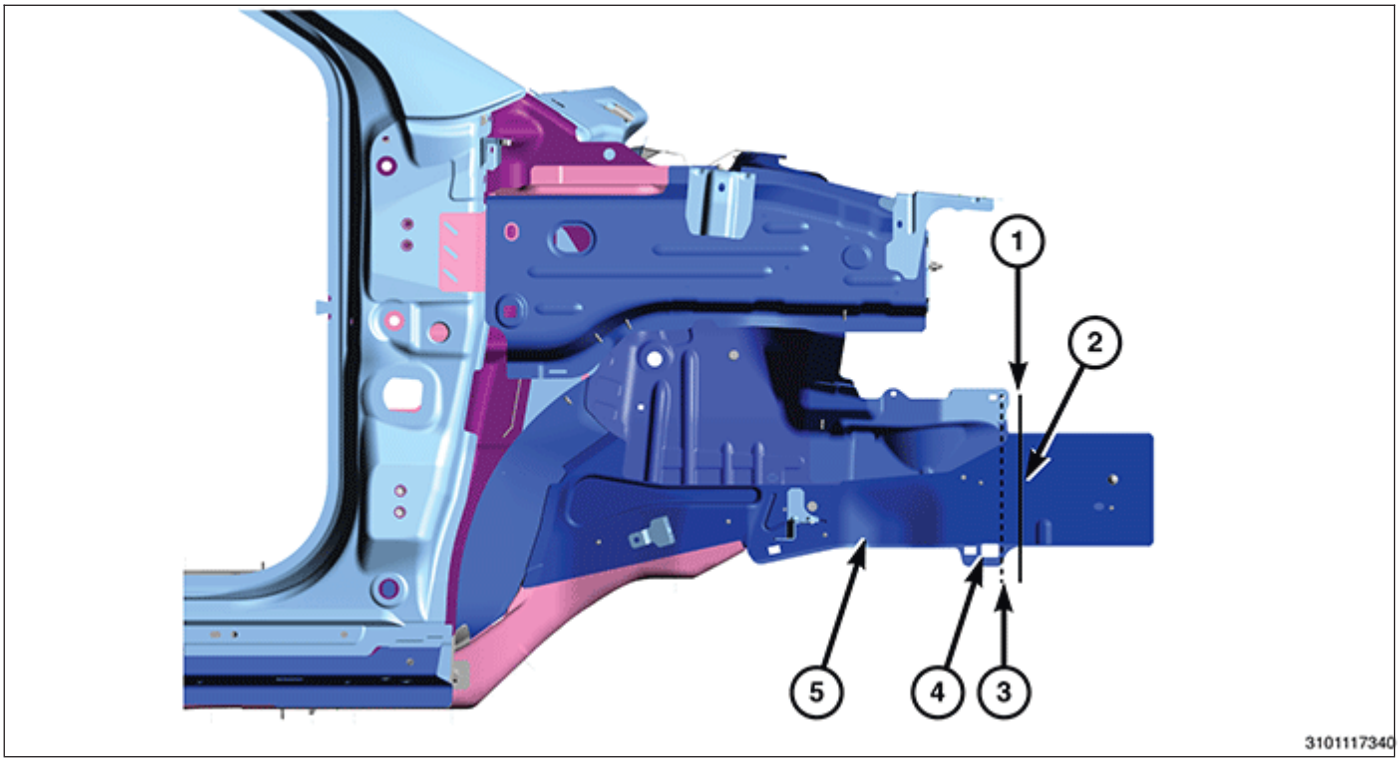
The described sectioning locations only explain joint location and type. All other welds along the sectioned portion of the component must be replaced. Squeeze Type Resistance Spot Welding (STRSW) is the method to be used. If accessibility prevents application of spot welds, MIG plug welds are to be used. Welding of structural panels through 3 or more tiers of panel stack ups will require 9.5 mm. plug welds. Exterior panels should be installed using 8 mm. plug welds. For further information (Refer to Collision Information - Specifications) Weld Process.

When welding is completed apply inner panel rust proofing, such as Mopar Cavity Wax Kit (part #68042969AA), Mopar Wax Refill (part #68042970AA), or equivalent. Apply to the inner cavity areas in two applications with a 30-minute flash period between the applications. Pay particular attention to areas which have been welded. Corrosion protection should always be restored to manufacturer specifications. For further information on Corrosion Protection (Refer to Collision Information - Standard Procedure).

Finish, sealers, adhesives and silencers should be reapplied or replaced to OEM locations and specifications (Refer to Collision Information - Locations).

DESCRIPTION	FIGURE
RIGHT FRONT RAIL	Right Front Rail
LEFT FRONT RAIL	Left Front Rail
BODY SIDE APERTURE	Body Side Aperture
INNER BODY SIDE COMPONENTS **DO NOT SECTION AREAS**	Inner Body Side Components - Do Not Section
LIFTGATE DRAIN TROUGH AND D-PILLAR REINFORCEMENTS	Liftgate Drain Trough and D-Pillar
ROOF RAIL AND D-PILLAR COMPOSITE REINFORCEMENTS	Roof Rail and D-Pillar Composite Reinforcements
REAR INNER UPPER QUARTER PANEL	Rear Inner Upper Quarter Panel
REAR RAIL	Rear Rail

Right Front Frame Rail



1 - Sectioning Cut Line
2 - Drawn Arc Weld Stud
3 - Measure From Front Edge Of The Principle Location Point
4 - Principle Location Point
5 - Right Front Frame Rail (410 MPa)

WARNING: **Sectioning of components may only be performed in the described areas if damage to component does not extend past sectioning location. Should damage extend past sectioning location entire component replacement is the only acceptable repair**

WARNING: **Failure to follow these directions may result in serious or fatal injury**

NOTE: **It will be necessary to order the complete front rail and create the sectioning pieces at the same cut lines.**

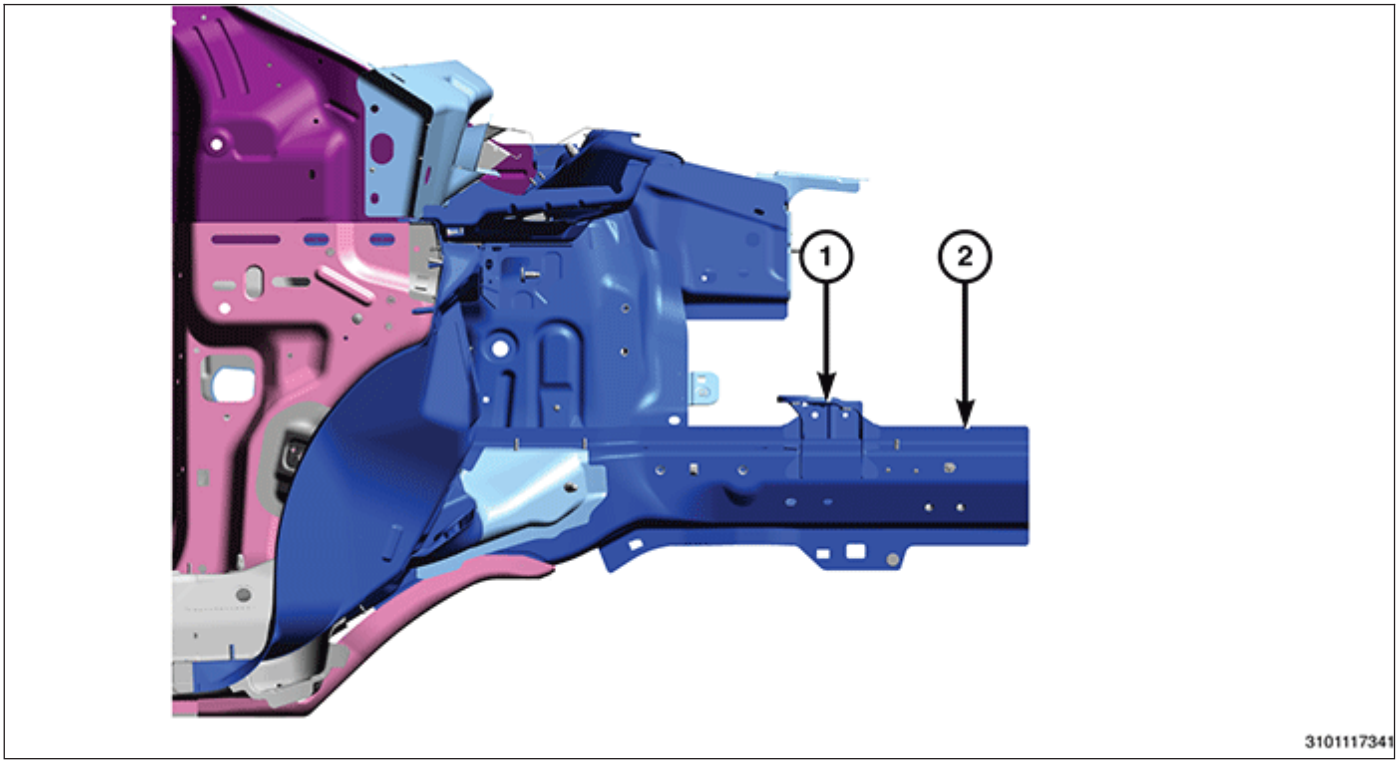
NOTE: **To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.**

The right front frame rail (5) sectioning cut line (1) is located 30 mm (1.2 in.) forward of the Principle Location Point (4).

A butt-joint with a 13 mm. (0.5 in.) weld backer is to be used.

Removal of the drawn arc weld stud (2) may be necessary to perform the sectioning procedure. Be certain to measure and note the location of the drawn arc weld stud prior to removal, to aid in proper placement of the stud. Upon completion of the welding and dressing of the sectioning joint, the drawn arc stud is to be replaced with a mig weld surrounding the base of the stud.

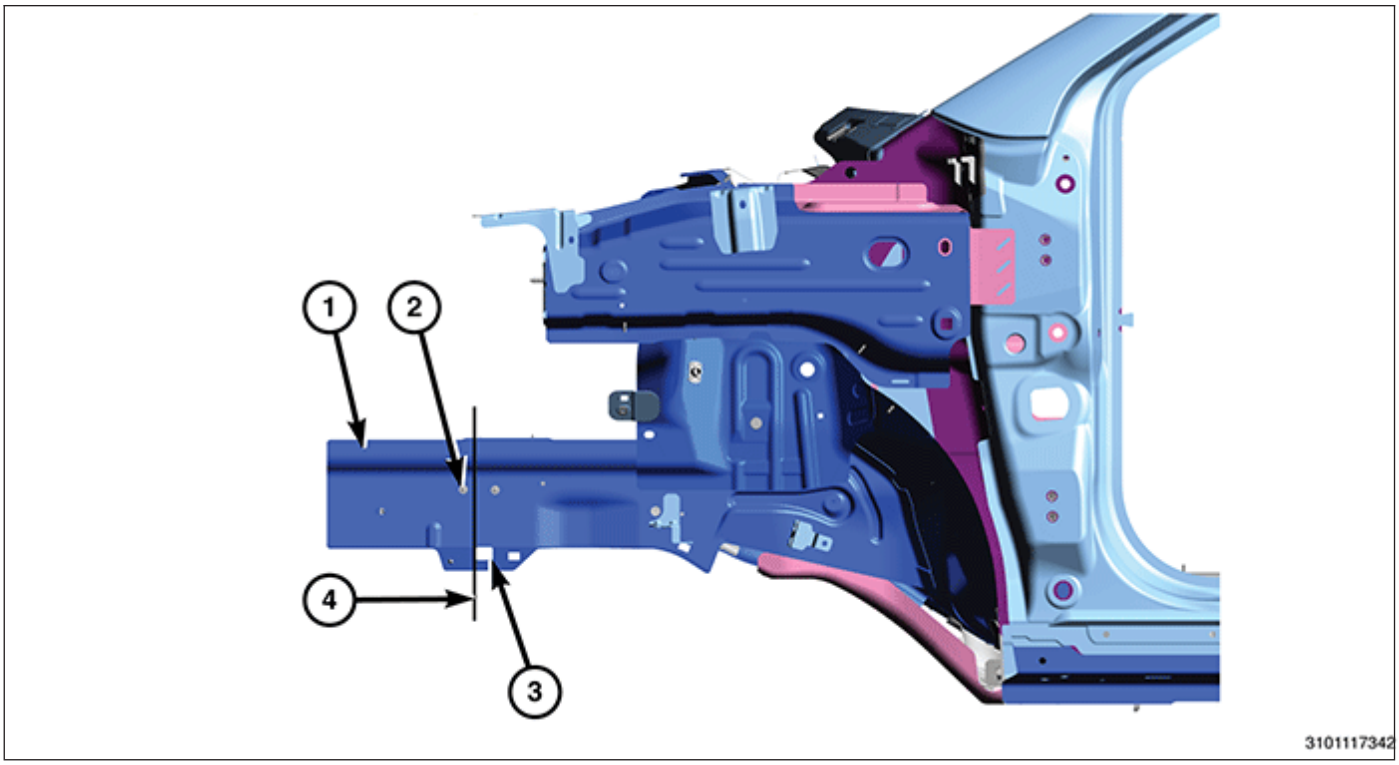
Left Front Frame Rail



Inner Left Front Frame Rail

1 - Battery Tray Bracket (410 MPa)
2 - Inner Left Front Frame Rail (410 MPa)

It will be necessary to remove the battery tray bracket (1) from the inner left front frame rail (2).



Outer Left Front Frame Rail

1 - Outer Left Front Frame Rail (410 MPa)
2 - Drawn Arc Weld Stud
3 - Principle Location Point
4 - Sectioning Cut Line

WARNING: Sectioning of components may only be performed in the described areas if damage to component does not extend past sectioning location. Should damage extend past sectioning location entire component replacement is the only acceptable repair

WARNING: Failure to follow these directions may result in serious or fatal injury

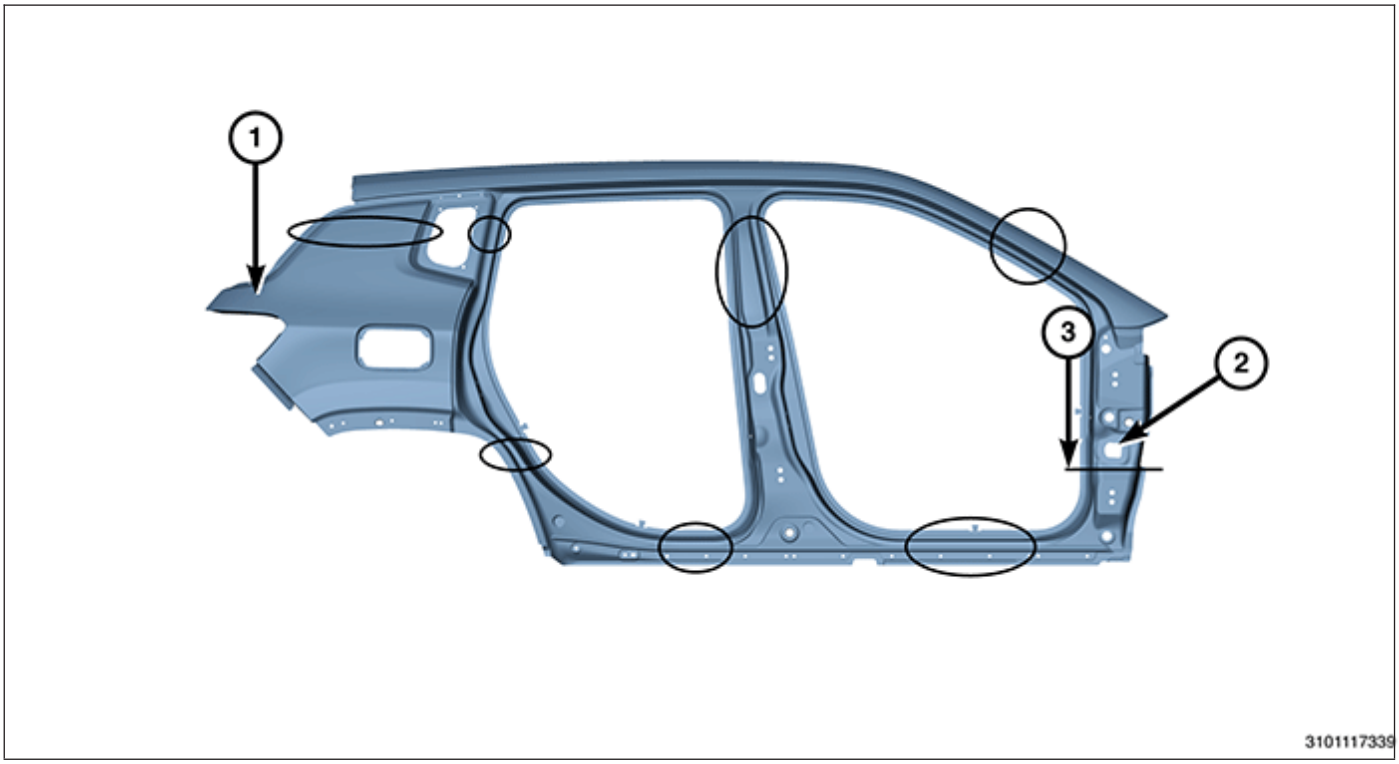
NOTE: It will be necessary to order the complete front rail and create the sectioning pieces at the same cut lines.

NOTE: To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.

The left front frame rail (1) sectioning cut line (4) is located at the forward edge of the principle location point (3). A butt-joint with 13 mm. (0.5 in.) weld backer is to be used.

Removal of the drawn arc weld stud (2) may be necessary to perform the sectioning procedure. Be certain to measure and note the location of the drawn arc weld stud prior to removal, to aid in proper placement of the stud. Upon completion of the welding and dressing of the sectioning joint, the drawn arc stud is to be replaced with a mig weld surrounding the base of the stud.

Body Side Aperture



Outer Body Side Aperture

NOTE: Right side shown, left side typical.

NOTE: The Cowl Side Hinge Pillar area is dedicated to where it is to be sectioned, as compared to the general locations within the outlined areas.

1 - Outer Body Side Aperture (270 MPa)
2 - Front Door Wiring Harness Hole
3 - Outer Body Side Aperture Hinge Pillar Sectioning Location

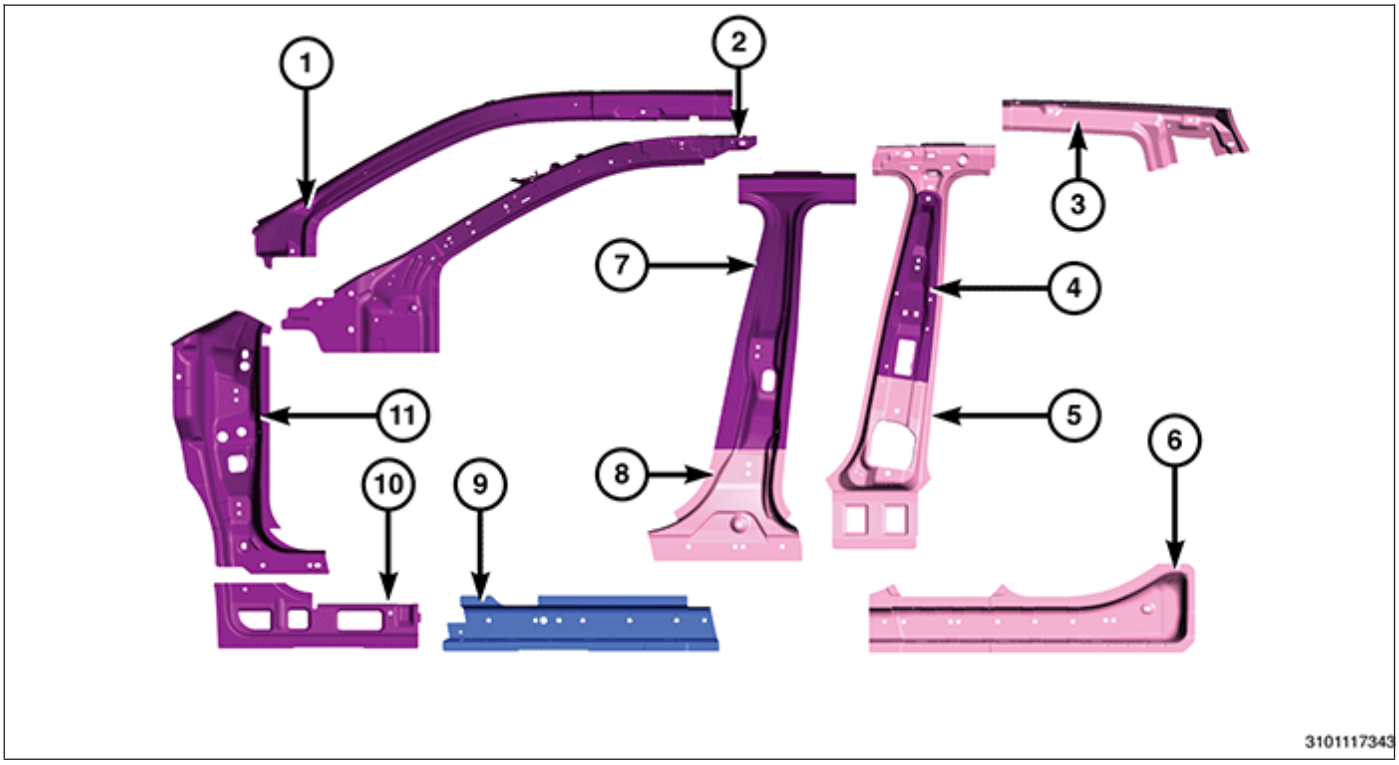
The Outer Body Side Aperture has many areas in which it may be sectioned in.

The cowl side is to be sectioned 40 mm. (1.6 in.) Front Door wiring harness pass thru hole (2). All other outlined areas represent general sectioning areas and may be sectioned within.

NOTE: To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.

A Butt-joint with a 13 mm (0.5 in.) welded backer panel is to be used in all sectioning areas of the outer body side aperture.

Inner Body Side Components - Do Not Section



Do Not Section

NOTE: **Left side shown, right side similar.**

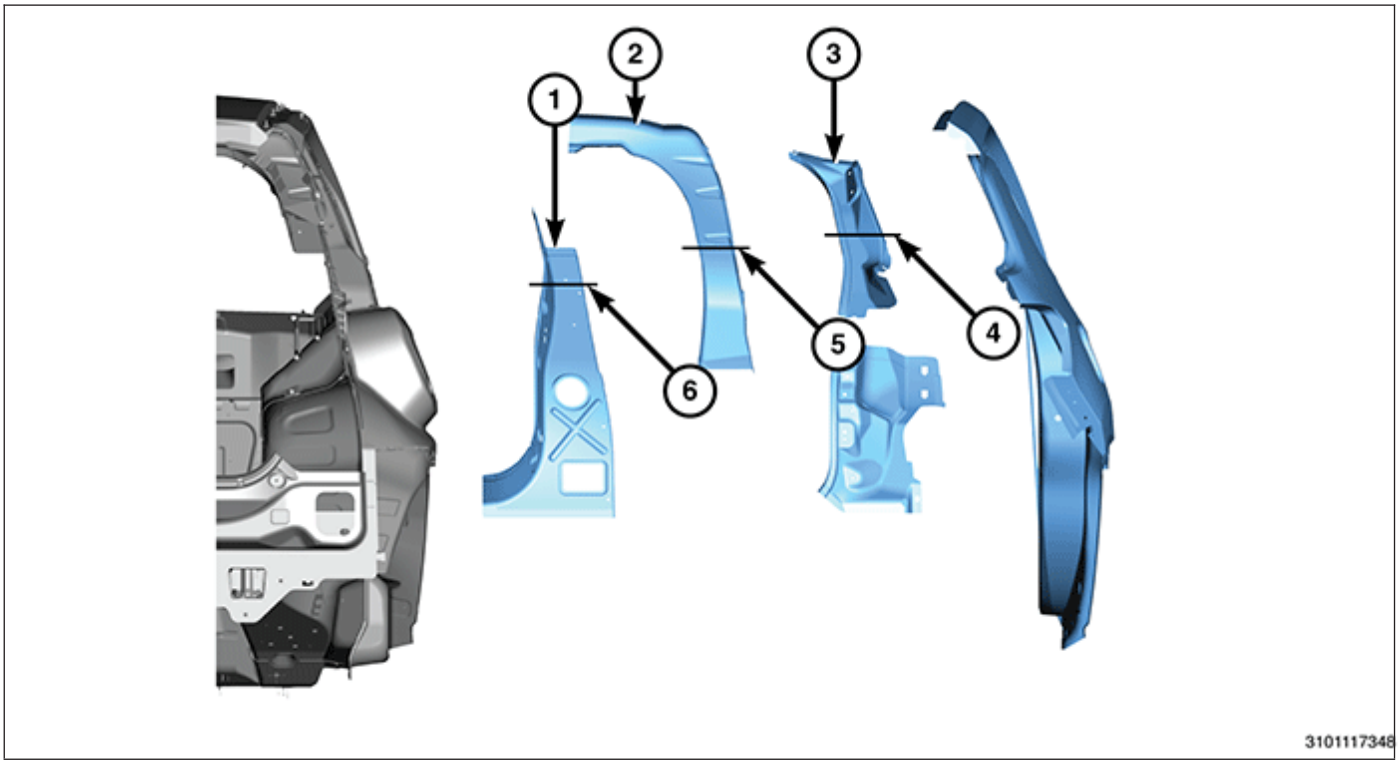
BODY SIDE REINFORCEMENTS AND PANELS — DO NOT SECTION

1- A-pillar Outer Reinforcement (1300 MPa)
2- A-pillar Inner Panel (1300 MPa)
3- Roof Side Rail Reinforcement (690 MPa)
4- B-pillar Restraint Reinforcement (1300 MPa)
5- Inner B-pillar (690 MPa)
6- Sill Outer Rear Reinforcement (780 MPa)
7- B-pillar Outer Upper Reinforcement (1300 MPa)
8- B-pillar Lower Upper Reinforcement (550 MPa)
9- Sill Outer Reinforcement (860 MPa)
10- Body Side Aperture Sill Reinforcement (1300 MPa)
11- A-Pillar Lower Reinforcement (1300 MPa)

Due to the usage of the type of metal and / or the tensile strength involved on the inner components and reinforcements sectioning of these parts are not allowed. Complete replacement of the component or reinforcement is the only acceptable repair.

It will be necessary to use a **Tungsten Carbide Drill Bit** to release the spot welds along the areas where these parts join other components.

Liftgate Trough And D-Pillar Reinforcements



Drain Trough and D-pillar

NOTE: Right side shown, left side similar.

1- D-pillar Inner Lower Reinforcement (270 MPa)
2- D-pillar Outer Upper Reinforcement (270 MPa)
3- Liftgate Drain Trough Panel (270 MPa)
4- Liftgate Drain Trough Sectioning Location
5- D-pillar Outer Upper Reinforcement Sectioning Location
6- D-pillar Inner Lower Reinforcement Sectioning Location

Lower damage to the liftgate opening and access to the to lower components are the most common need for sectioning in these areas. Sectioning in these areas will allow for partial replacement without disturbing unnecessary components.

NOTE: To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.

When sectioning these areas a “Modified lap joint” is to be used. Further information on “Modified Lap Joints “ can be found in the “Welding and Weld Bonding” section (Refer to Collision Information/Standard Procedure/Welding and Weld Bonding).

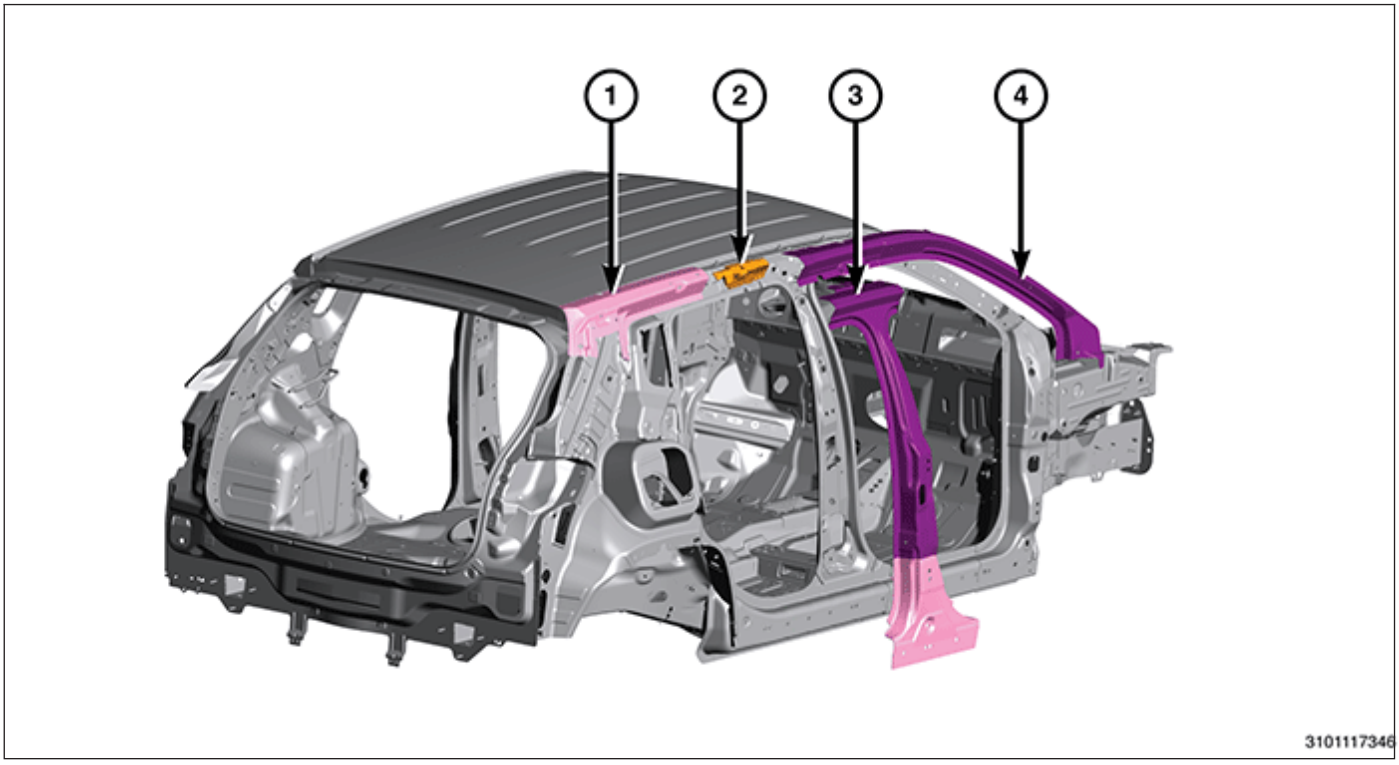
Roof Rail And D-pillar Composite Reinforcements

WARNING: Composite Reinforcements must be installed to maintain roof strength standards

WARNING: Failure to follow these directions may result in serious or fatal injury

If the roof rail composite reinforcement or the D-pillar composite reinforcement or any component that makes contact with the composite reinforcement is replaced it will need to be re-secured. **Composite Reinforcements**

absolutely must be reinstalled.



Roof Rail Composite Reinforcement

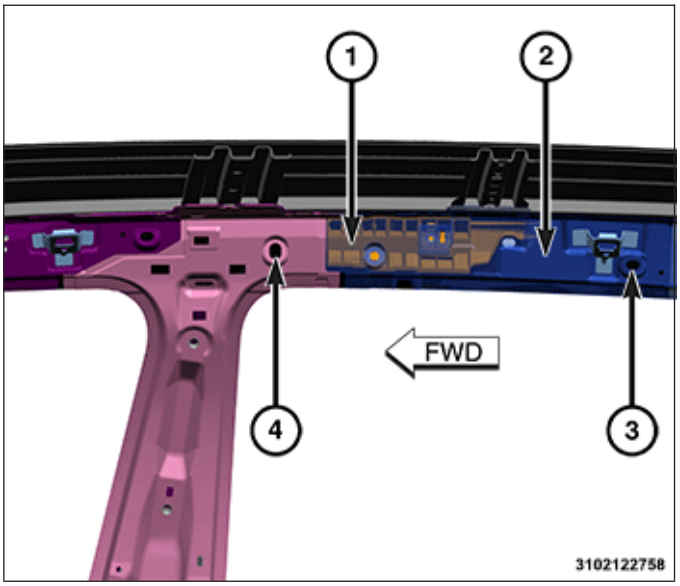
1- Roof Side Rail Reinforcement (690 MPa)
2- Roof Rail Composite Reinforcement
3- B-pillar Reinforcement (1300 MPa)
4- A-pillar Outer Reinforcement (1300 MPa)

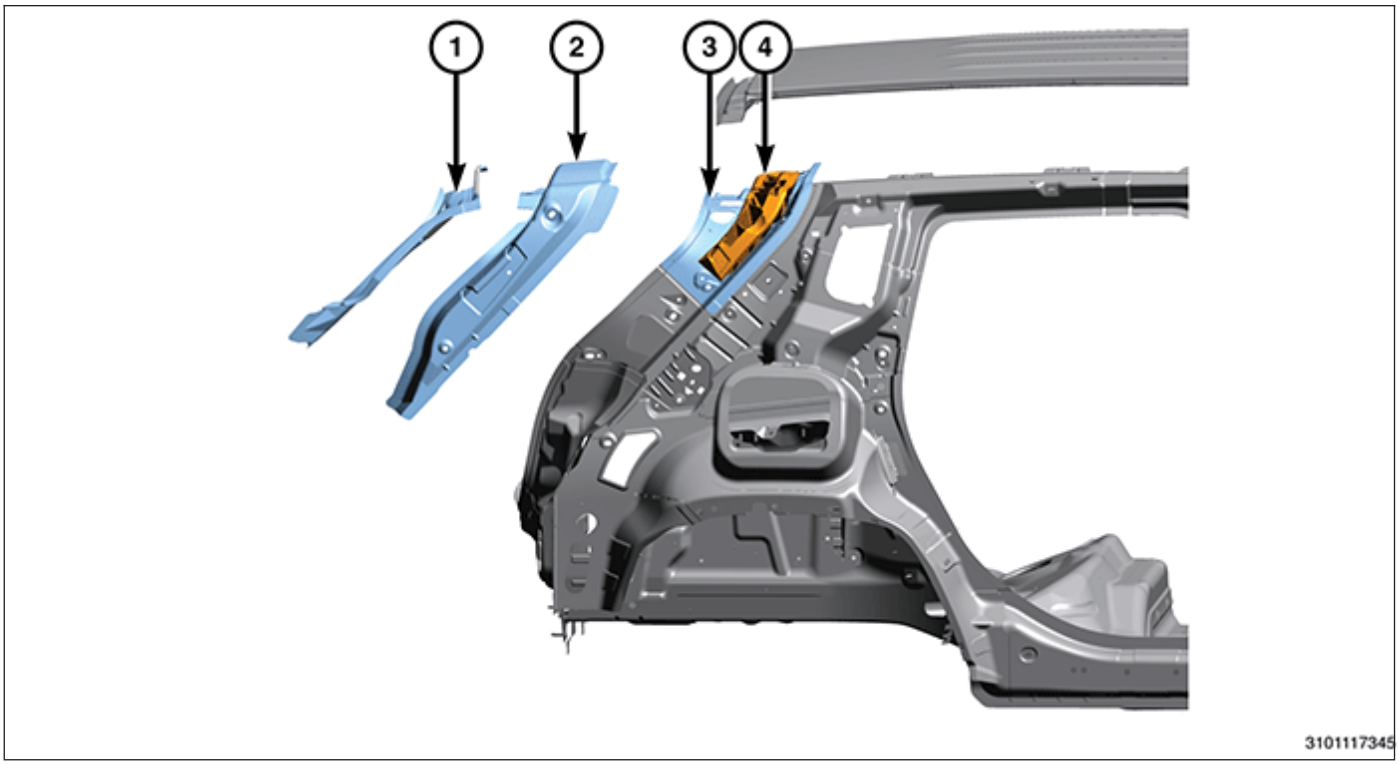
Replace the new or the re-used undamaged, roof rail composite reinforcement with structural adhesive during the repair process. Approved structural adhesive include LORD Fusor 112B and 3M 08116.

When mounting the composite reinforcement align the alignment tabs with the corresponding holes in mating components.

Upon completion of the repair the roof rail composite reinforcement (1) will need to be back filled with flexible foam adhesive such as Lord Fusor #121, 3M 8463 or Crest CFF Flexi-Foam.

The roof rail inner panel (2) is transparent to better show the location of roof rail composite reinforcement (1). The b-pillar inner panel hole (4) and the roof rail inner panel hole (3) will allow for a a mixing tip from the flexible foam adhesive to be inserted. Apply the flexible foam adhesive where the roof rail composite reinforcement (1) meets the outer components.





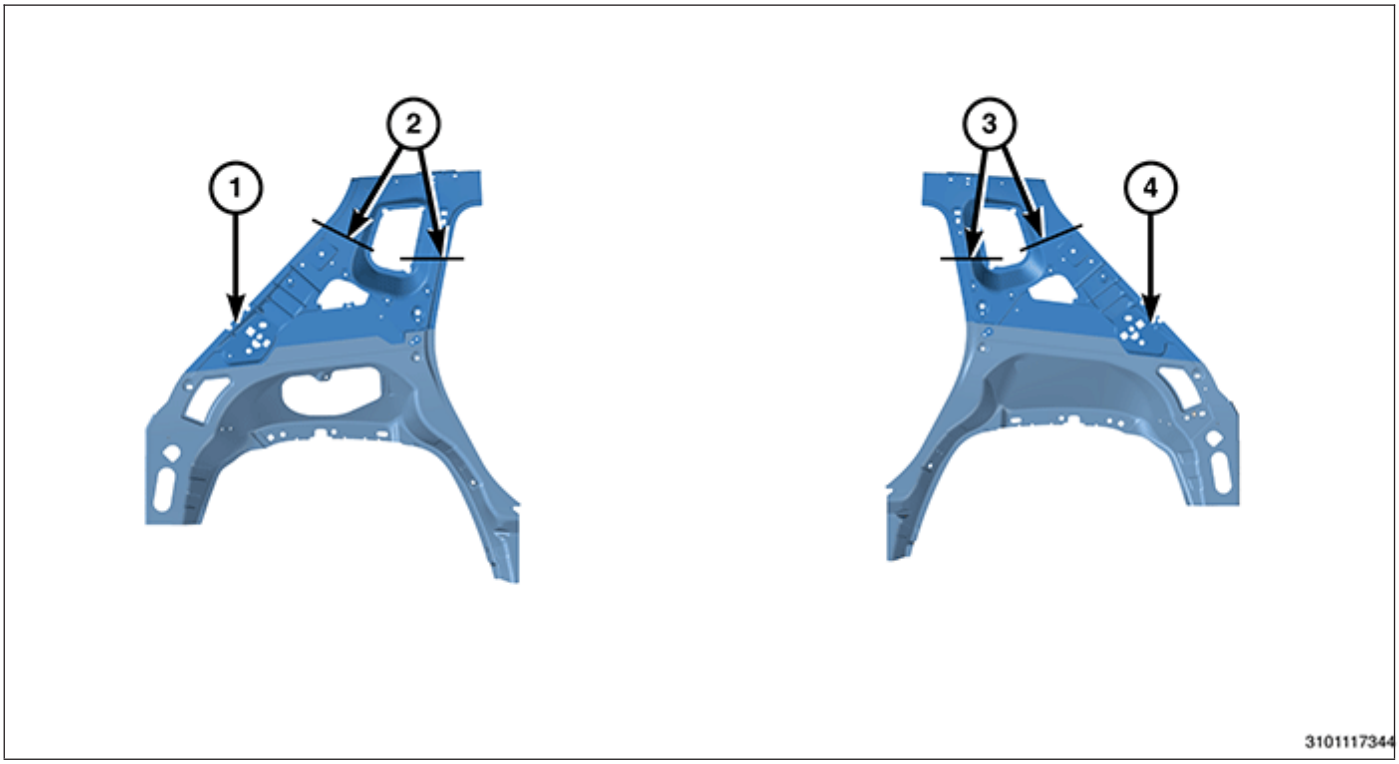
D-pillar Composite Reinforcement

1- Liftgate Drain Trough Panel (270 MPa)
2- D-pillar Outer Upper Reinforcement (270 MPa)
3- D-pillar Inner Upper Reinforcement (270 MPa)
4- D-pillar Composite Reinforcement

Replace the new or the re-used undamaged D-pillar composite reinforcement with structural adhesive during the repair process. Approved structural adhesive include LORD Fusor 112B and 3M 08116.

When mounting the composite reinforcement align the alignment tabs with the corresponding holes in mating components.

Rear Inner Upper Quarter Panel



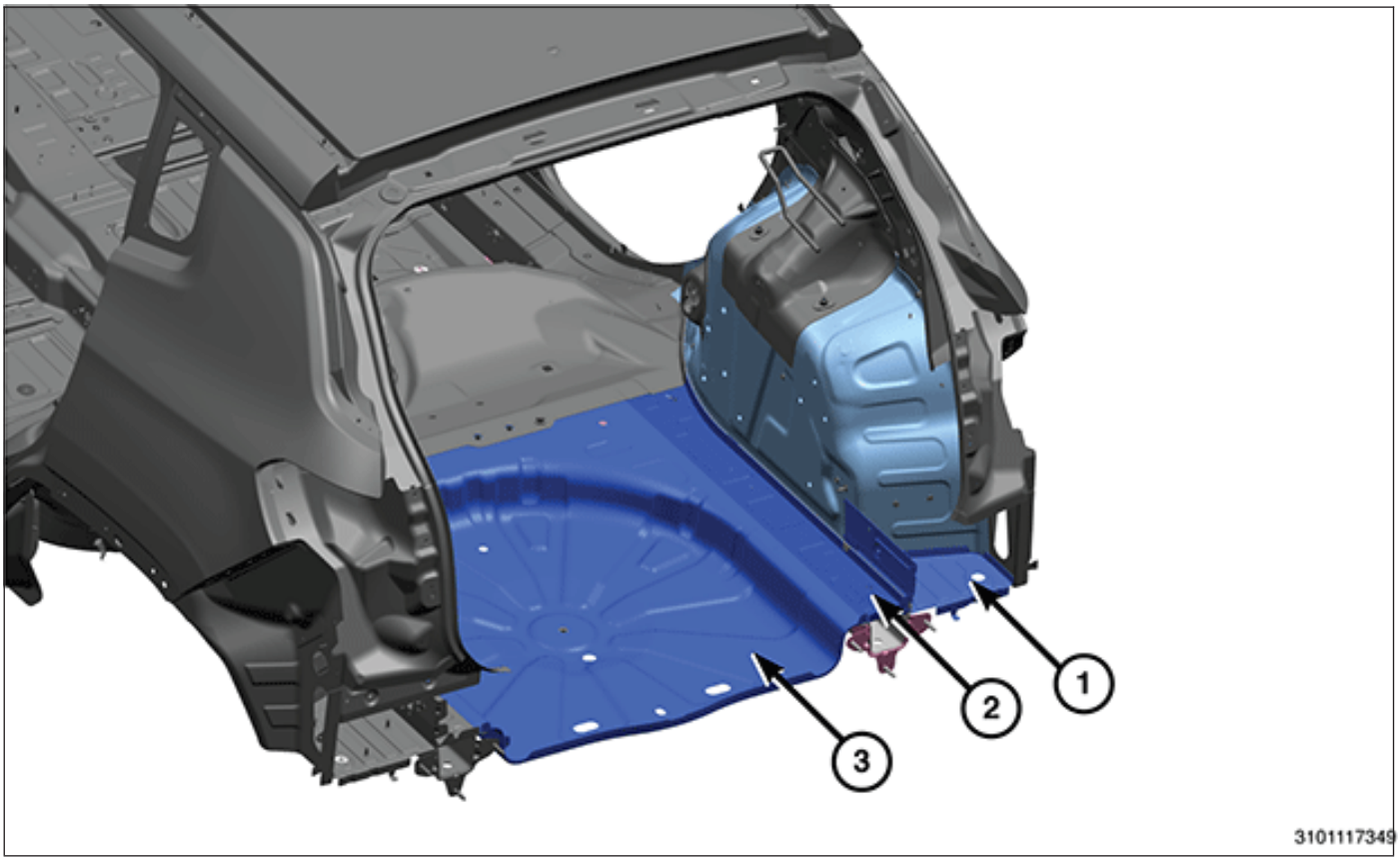
Inner Upper Quarter Panels

1 - Right Inner Upper Quarter Panel (270 MPa)
2 - Right Inner Upper Quarter Panel Sectioning Location
3 - Left Inner Upper Quarter Panel (270 MPa)
4 - Left Inner Upper Quarter Panel Sectioning Location

NOTE: To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.

The inner upper quarter panel is to be sectioned using modified lap joints. Further information on “Modified Lap Joints“ can be found in the “Welding and Weld Bonding” section (Refer to Collision Information/Standard Procedure/Welding and Weld Bonding).

Rear Rail



Rear Rail Cover

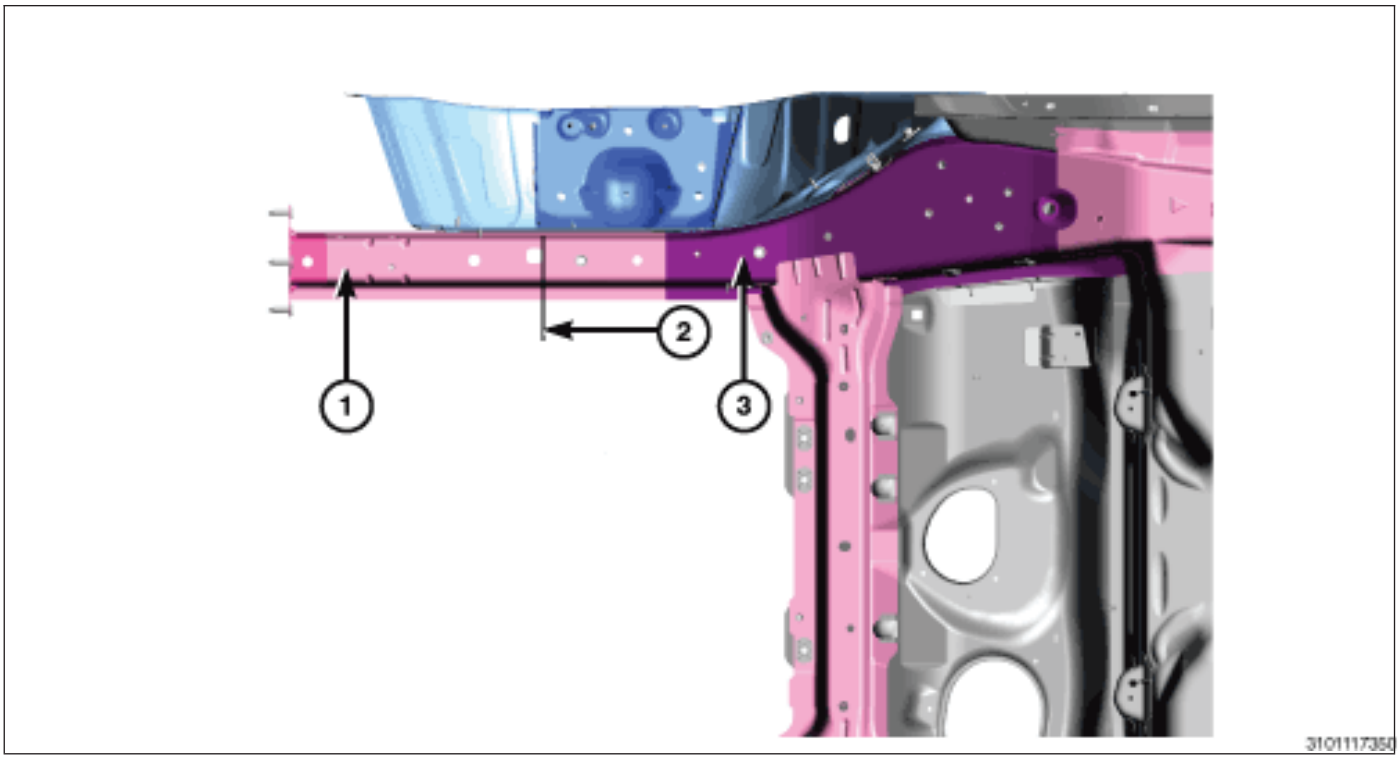
NOTE: Right side shown, left side similar.

1 - Rear Floor Extension (310 MPa)
2 - Rear Rail Cover (310 MPa)
3 - Rear Floor Pan (310 MPa)

WARNING: Sectioning of components may only be performed in the described areas if damage to component does not extend past sectioning location. Should damage extend past sectioning location entire component replacement is the only acceptable repair

WARNING: Failure to follow these directions may result in serious or fatal injury

Remove the rear floor extension (1), rear rail cover (2) and rear floor pan (3).



Rear Frame Rail

NOTE: Right side shown, left side similar.

1- Rear Rail: Rearward Portion (410 MPa)
2- Rear Rail Sectioning Cut Line
3- Rear Rail: Forward Portion (1300 MPa)

NOTE: It will be necessary to order the complete rear rail and create the sectioning portions at the same cut lines.

The rear rail (1) sectioning cut line (2) is located at the forward edge of the square Principle Location Point (PLP).

NOTE: To prevent warping, apply 25 mm. (1 in.) stitch welds until the sectioning joint is completely welded.

A butt-joint with a 13 mm (0.5 in) weld backer is to be used.

HOISTING AND JACKING

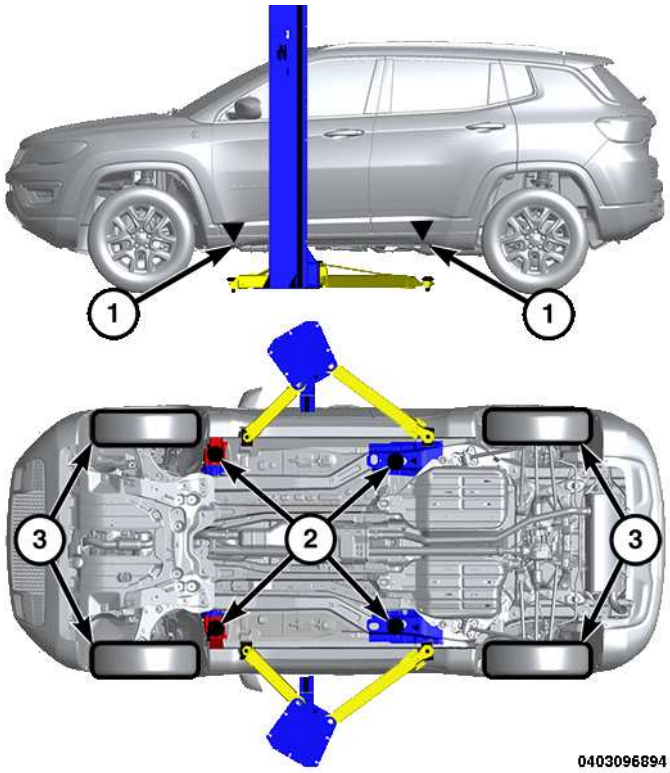
WARNING: **The hoisting and jack lifting points provided are for a complete vehicle. When the engine or rear suspension is removed from a vehicle, the center of gravity is altered making some hoisting conditions unstable. Properly support or secure vehicle to hoisting device when these conditions exist. Failure to follow these instructions may result in serious or fatal injury.**

CAUTION: **Do not position hoisting device on any suspension component, including the front or rear suspension crossmembers. Do not hoist on the front and rear bumpers, the lower radiator crossmember, or the front engine mount.**

Do not attempt to raise one entire side of the vehicle by placing a floor jack midway between the front and rear wheels. This practice may result in permanent damage to the body.

CAUTION: **Due to variations in hoist design it may be necessary to use the secondary lift points to avoid damage to the body or trim parts.**

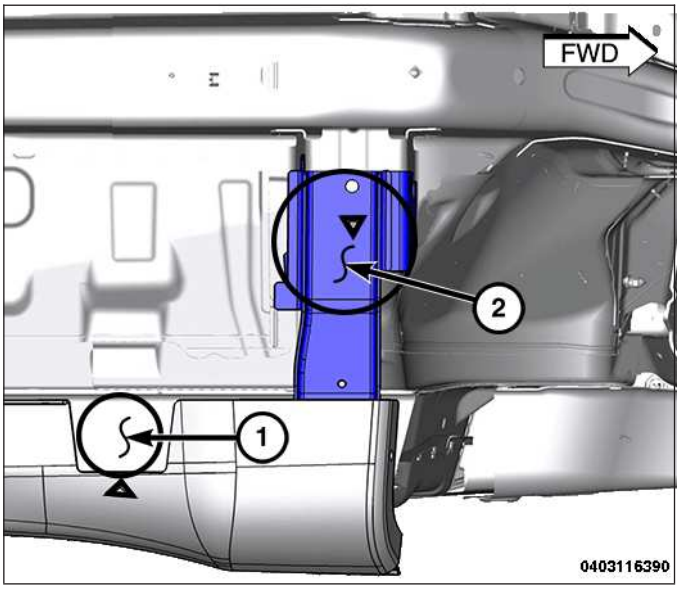
Refer to Owner's Manual provided with vehicle for proper emergency jacking procedures.



LIFTING POINTS

1 - FRAME CONTACT LIFT (SINGLE POST)
1 - CHASSIS LIFT (DUAL LIFT)
1 - OUTBOARD LIFT (DUAL LIFT)
2 - ALTERNATE LIFTING LOCATIONS
2 - FLOOR JACK
3 - DRIVE ON HOIST

NOTE: **The following highlighted locations are provided to identify safe and effective lifting areas for the MP. In the event that the standard SAE lift pads and/or appropriate lift arm lengths are not available to meet the sill molding openings for flange lifting (1), the alternate lift point locations shown (2) should be utilized.**



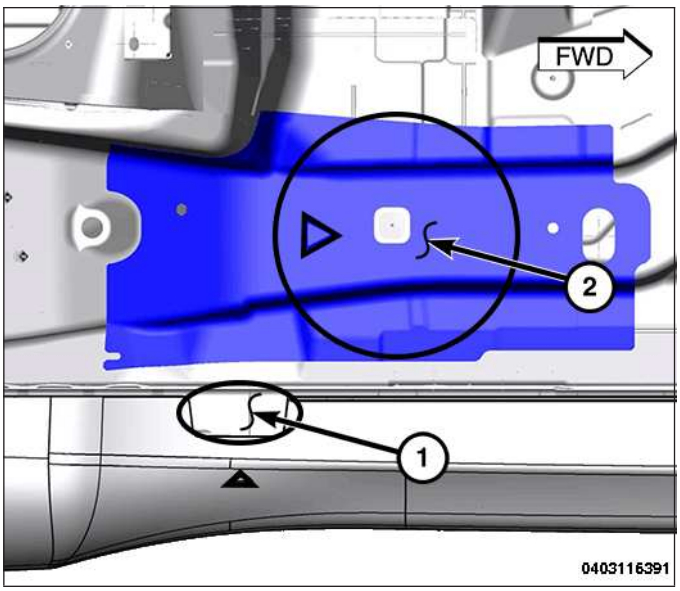
FRONT LIFTING LOCATIONS

A hoist with asymmetrical hoist arms can not be adjusted to a position which will allow the hoist adapters to engage the service hoisting locations on the down standing weld flange (1) on the sill at both the rear and the front of the vehicle. Therefore, the secondary service hoisting location will need to be used at the front of the vehicle. The secondary front service hoisting location is the front torque box.

When properly positioned, a floor jack can be used to lift the vehicle and support the raised vehicle with jack stands.

A floor jack or any lifting device must never be used on any part of the underbody other than the described areas.

There are SAE approved triangles (2) in the body indicating where the lifting points are for the vehicle.



REAR LIFTING LOCATIONS

STATIONARY GLASS

WARNING: **Do not operate the vehicle within 24 hours of windshield installation. It takes at least 24 hours for urethane adhesive to cure. If it is not cured, the windshield may not perform properly in an accident.**

- **Urethane adhesives are applied as a system. Use glass cleaner, glass prep solvent, glass primer, PVC (vinyl) primer and pinch weld (fence) primer provided by the adhesive manufacturer. If not, structural integrity could be compromised.**
- **FCA US LLC does not recommend glass adhesive by brand. Technicians should review product labels and technical data sheets, and use only adhesives that their manufactures warrant will restore a vehicle to the requirements of FMVSS 212. Technicians should also insure that primers and cleaners are compatible with the particular adhesive used.**
- **Be sure to refer to the urethane manufacturer's directions for curing time specifications, and do not use adhesive after its expiration date.**
- **Vapors that are emitted from the urethane adhesive or primer could cause personal injury. Use them in a well-ventilated area.**
- **Skin contact with urethane adhesive should be avoided. Personal injury may result.**
- **Always wear eye and hand protection when working with glass.**

CAUTION: **Protect all painted and trimmed surfaces from coming in contact with urethane or primers.**

Be careful not to damage painted surfaces when removing moldings or cutting urethane around windshield.

Common glass tools needed to remove Stationary Glass

- 1– Extractor® Express™ or equivalent, equipped with flat blade
- 2– Two handled wire type cut out tool
- 3– Cold knife equipped wit a 25 mm (1 in.) blade
- 4 – Cold knife equipped with an 38 mm (1.5 in.) blade
- 5 – Long knife

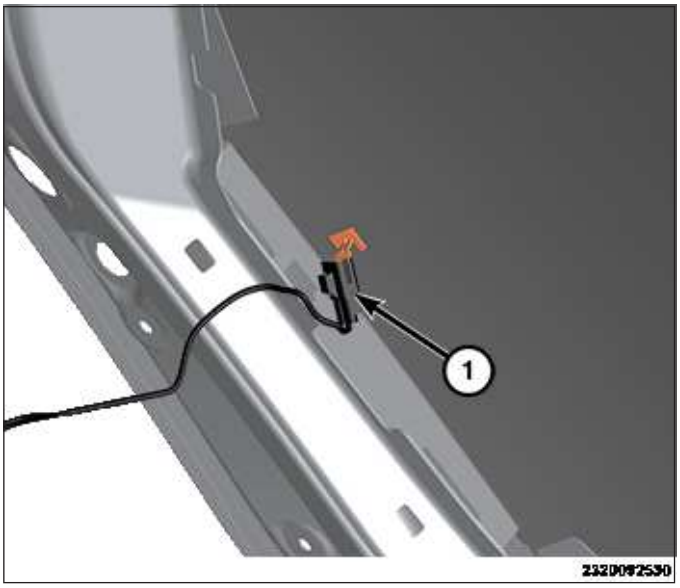
DESCRIPTION	FIGURE
Backlite Glass	Backlite Glass
Quarter Panel Glass	Quarter Glass
Windshield	Windshield

BACKLITE GLASS

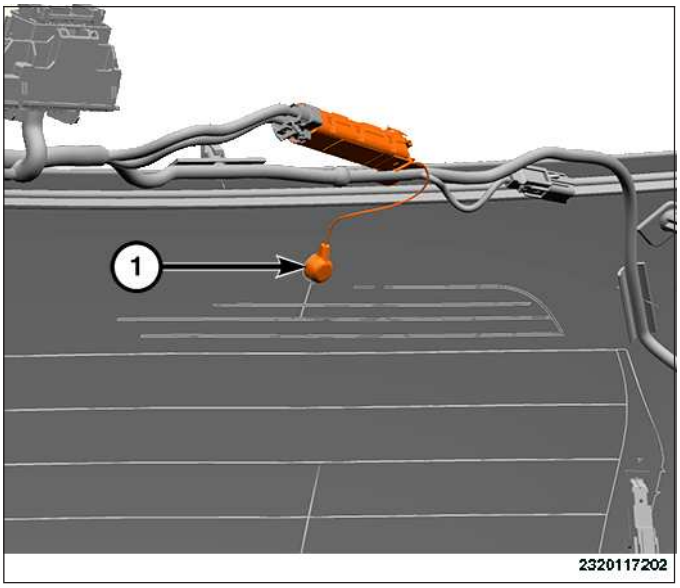
Removal

1. Before proceeding with the following repair procedure, review all warnings and cautions. (Refer to 31-Collision/Standard Procedures/Stationary Glass)
2. Remove liftgate trim panels in accordance to the service information.
3. Remove the lamp bar in accordance to the service information.
4. Remove the spoiler in accordance to the service information.
5. Remove rear window wiper arm (2) if equipped, in accordance to the service information.

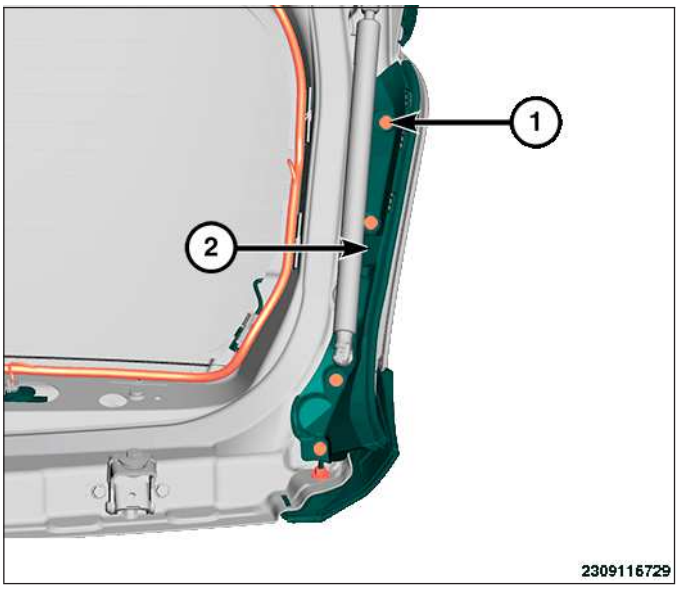
6. Disconnect the heated backlite electrical connectors (1).



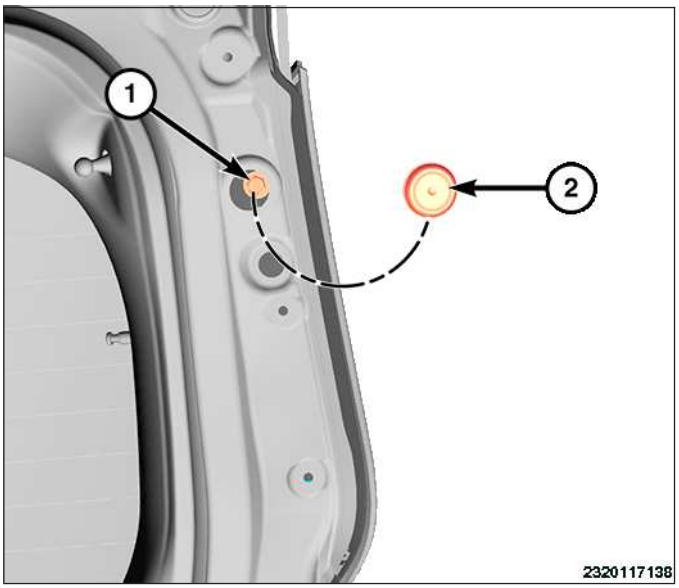
7. Disconnect the antenna wire harness connector (1), if equipped.



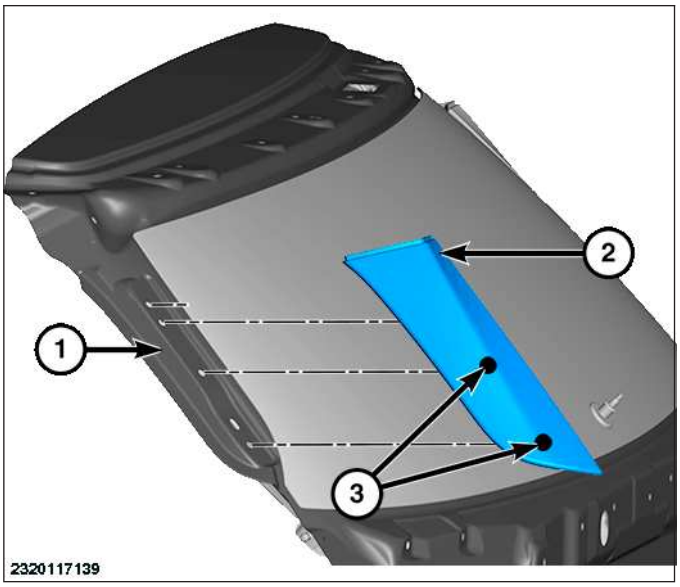
8. Remove the four push pin fasteners (1) from each pinch sensor (2) and position aside the sensors, if equipped.



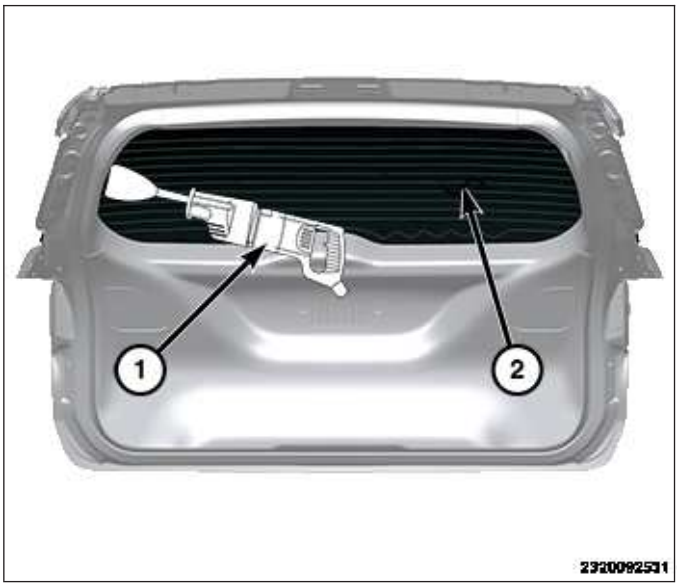
9. Remove the plastic plugs (2) from each side and remove the bolts (1).



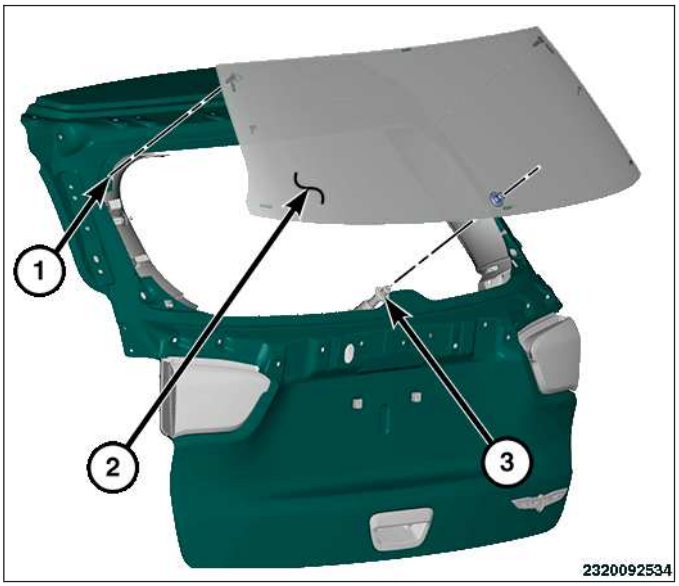
10. Using trim stick C-4755 or equivalent, release the clips (3) and remove the side appliques (2).



11. Using an assistant and a windshield cut-out tool (1), cut and separate the urethane adhesive securing the glass (2) to the liftgate fence.



12. Carefully remove the glass (1).

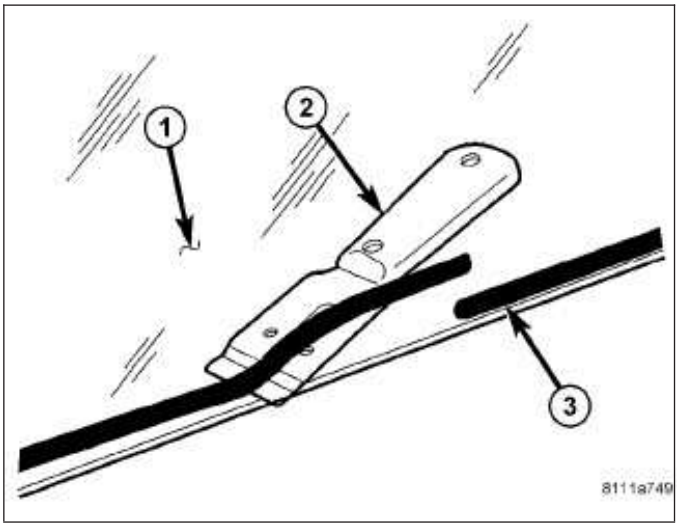


Installation

WARNING: **Do not operate the vehicle within 24 hours of glass installation. It takes at least 24 hours for urethane adhesive to cure. If it is not cured, the glass may not perform properly if the vehicle is in an accident.**

CAUTION: **Roll down the left and right front door glass and open the rear glass slider (if available) before installing backlite to avoid pressurizing the passenger compartment if a door is slammed before urethane is cured. Water leaks can result.**

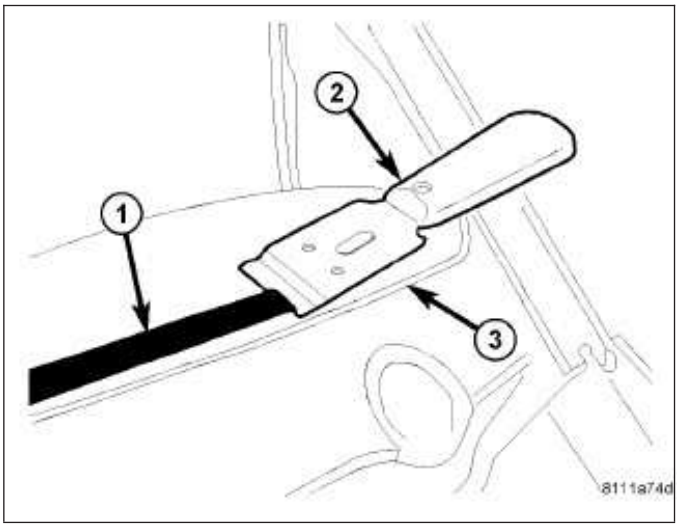
CAUTION: **Protect all painted and trimmed surfaces from coming in contact with urethane or primers.**



1. If the liftgate glass (1) is being reused, remove the as much original urethane (3) as possible from the glass surface using a razor knife (2).

NOTE: **To prevent corrosion, do not damage paint on liftgate glass fence when removing original urethane.**

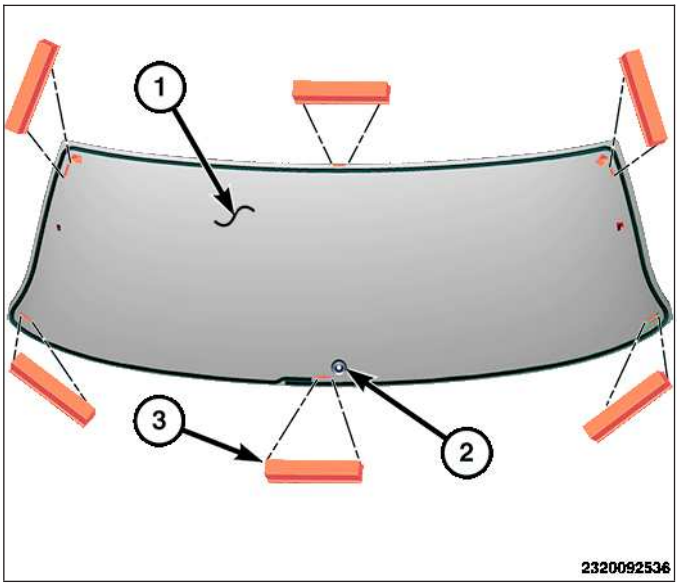
NOTE: **The liftgate glass fence should be cleaned of most of its old urethane adhesive. A small amount of old urethane, approximately 1 mm in height should remain on the fence. Do not completely remove all old urethane from the fence, the paint finish and bonding strength will be adversely affected.**



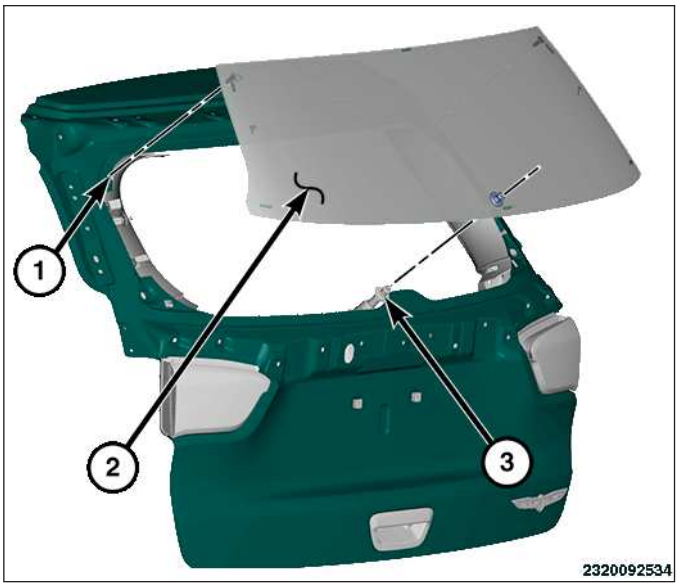
2. Using a razor knife (2), level the original bead of urethane (1) on the liftgate glass fence (3) to a thickness of approximately 1 mm (0.04 in.) and remove the loose adhesive.

NOTE: **Spacers (3) located on the liftgate glass (1) should be replaced with new spacers if any are missing or damaged.**

3. Position new spacers (3) on the glass as shown.

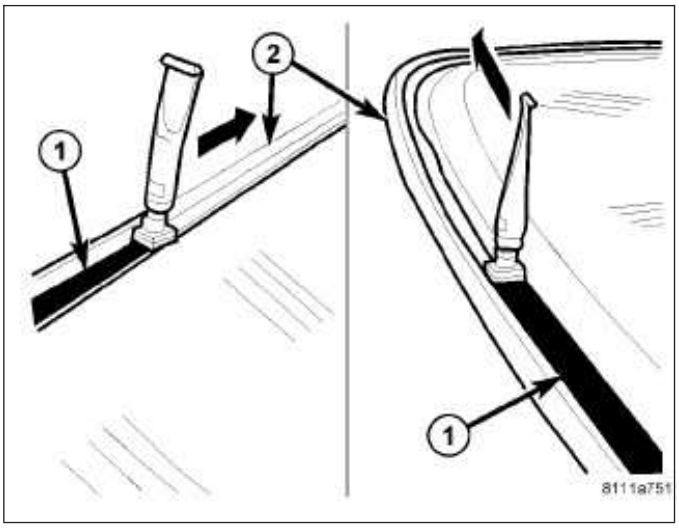


4. Position the liftgate glass (2) over the wiper shaft (3) and onto the liftgate.
5. Position liftgate glass (1) in center of liftgate opening and resting partially on the guide pins (1).
6. Mark the liftgate glass and the liftgate glass fence with masking tape to use as a reference for installation.
7. Using an assistant, remove the liftgate glass from the liftgate glass opening and place it on a suitable padded work surface.

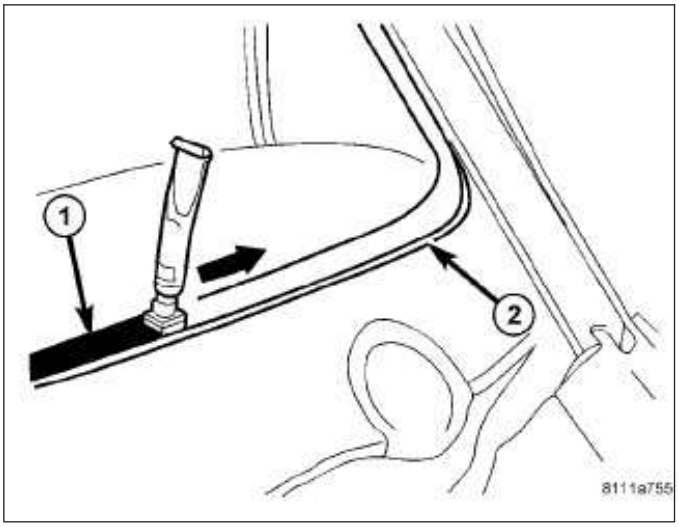


WARNING: Do not use solvent based glass cleaners to clean the windshield before applying glass prep and primer or poor glass adhesion may result.

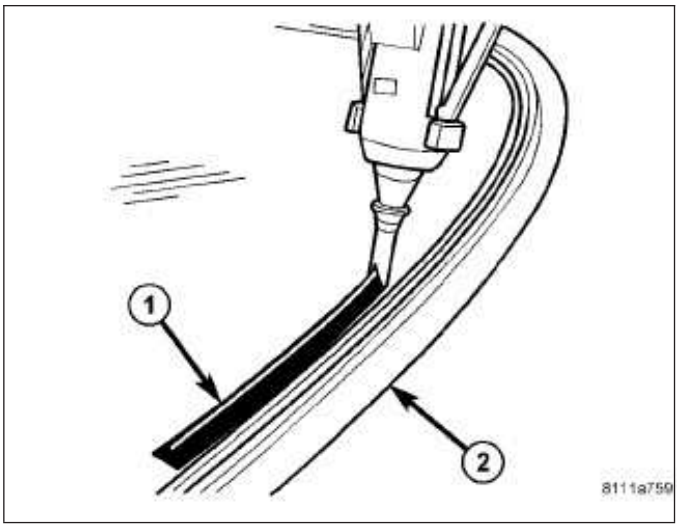
8. Clean the inside of the liftgate glass with an ammonia based glass cleaner and a lint-free cloth.
9. Apply glass prep adhesion promoter 25 mm (1 in.) wide (1) around the perimeter of the liftgate glass (2) and 5 mm (0.2 in.) from the edge of the glass and let air dry without wiping.
10. Apply glass primer 25 mm (1 in.) wide (1) around the perimeter of the liftgate glass (2) and 5 mm (0.2 in.) from the edge of the glass. Allow at least three minutes drying time.
11. Using a flashlight, verify that the primer is completely and evenly installed along the perimeter of the liftgate glass.
12. Re-prime any area that is not fully and evenly primed.



13. Clean the liftgate glass fence with an ammonia based glass cleaner and a lint-free cloth.
14. Apply pinch weld primer 25 mm (1 in.) wide (1) around the liftgate glass fence (2). Allow at least three minutes drying time.
15. Using a flashlight, verify that the primer is completely and evenly installed along the liftgate glass fence.
16. Re-prime any area that is not fully and evenly primed.



CAUTION: Always apply bead of adhesive to the backlite. Always install the backlite within 5 minutes after applying adhesive.

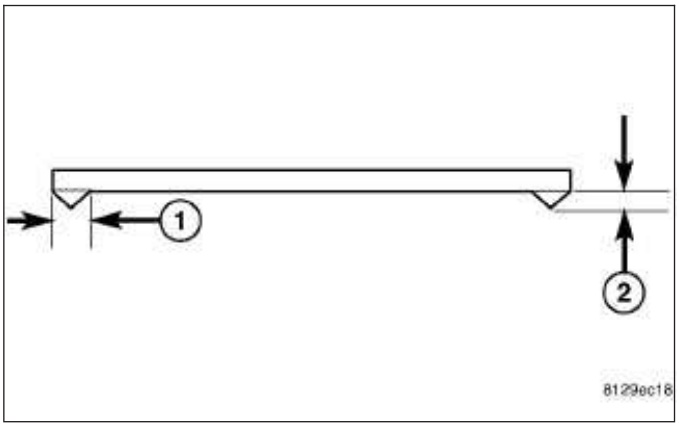


NOTE: If the original urethane adhesive has been exposed for more than 12 hours, the entire adhesive area will need to be re-primed prior to installing new adhesive.

Apply bead of adhesive (1) with a triangular nozzle directly to the liftgate seal starting at bottom in center of the liftgate.

17. Apply approximately a 7 mm (0.3 in.) wide and 13 mm (0.5 in.) tall bead of adhesive (1) with a triangular nozzle approximately 6 mm (0.230 in.) from the edge of the glass (2) starting at the bottom center of the liftgate glass.

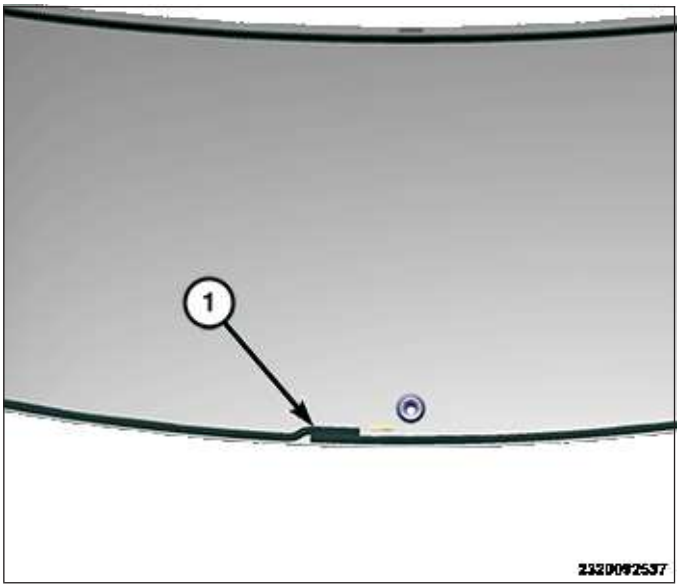
    NOTE: Make sure the bead of adhesive is placed on the primer fully.



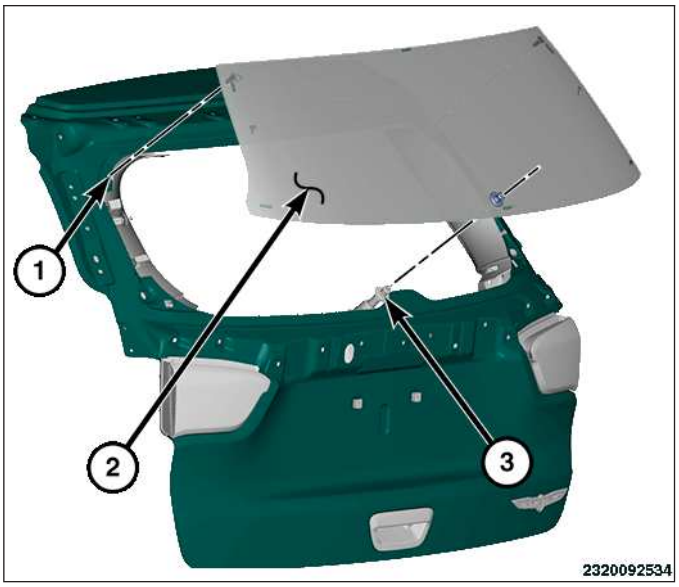
1 - ADHESIVE WIDTH 7 mm (0.275 in)
2 - ADHESIVE HEIGHT 13 mm (0.50 in)

18. Run the end of the adhesive bead (1) on the liftgate glass parallel to the start of the bead and smooth the ends flush.

    NOTE: Make sure there are no gaps present in the adhesive bead and ends.



19. Using an assistant, position the liftgate glass (1) over the liftgate glass opening.
20. Using the tape as reference points, align the liftgate glass to the opening.
21. Carefully lower the liftgate glass onto the liftgate glass fence. Guide the liftgate glass into its proper location.



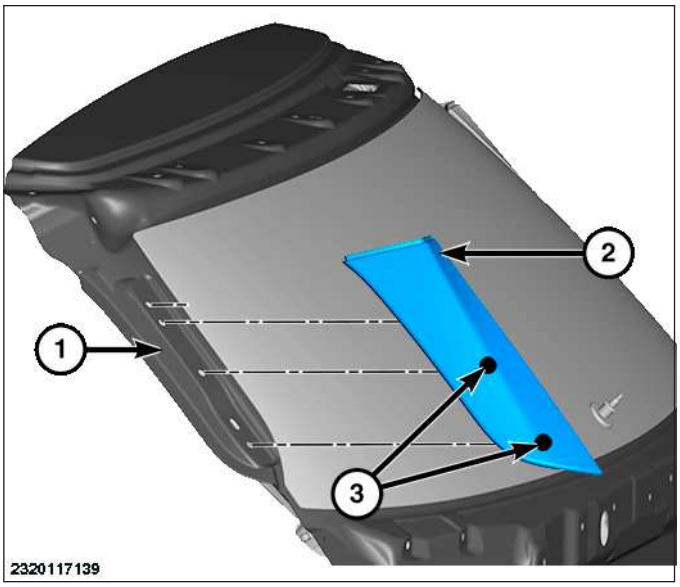
CAUTION: It is no longer possible to move the backlite after installation. The backlite should never be pressed into place by more than one person, because the backlite can break if pressed simultaneously on both sides.

22. Push the liftgate glass inward until the liftgate glass comes into contact with the retention pins located on each side of the liftgate glass fence (3) and lining up at the top and bottom.

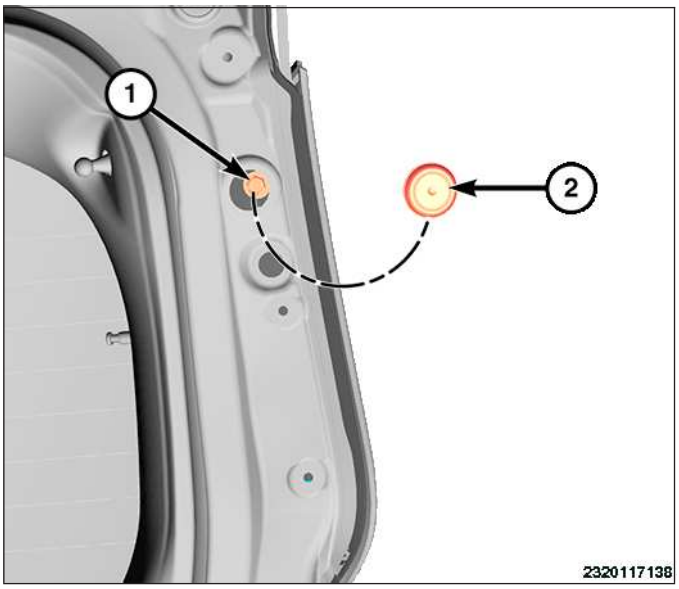
CAUTION: Roll down the left and right front door glass and open the rear glass slider (if available) before installing backlite to avoid pressurizing the passenger compartment if a door is slammed before urethane is cured. Water leaks can result.

23. If equipped, install the rear wiper arm (2) in accordance to the service information.

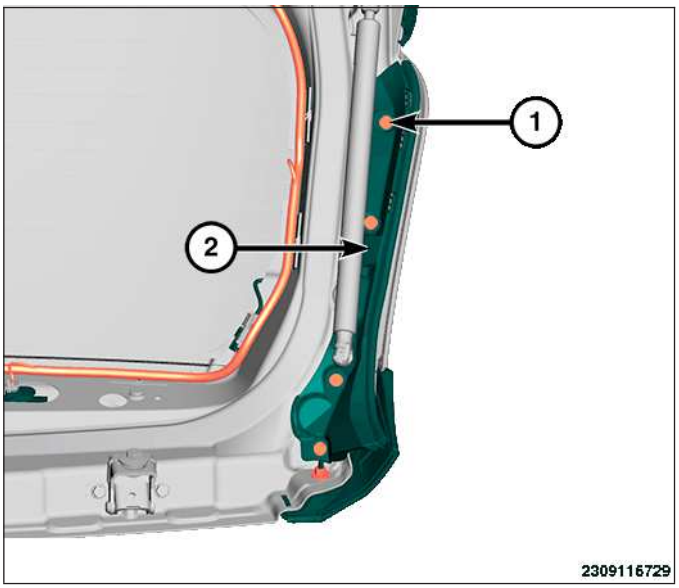
24. Position the appliques (2) back into place on the liftgate (1) aligning the top pins and seating the clips (3) fully.



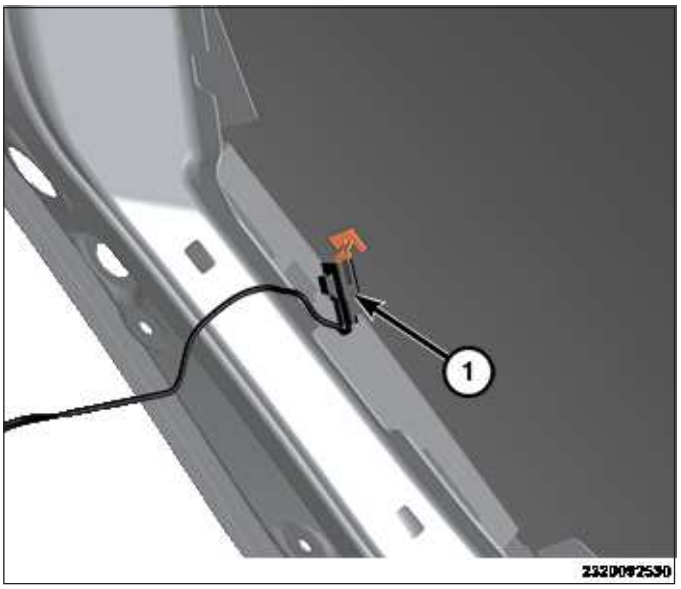
25. Install the bolts (1) and install the plastic plugs (2).



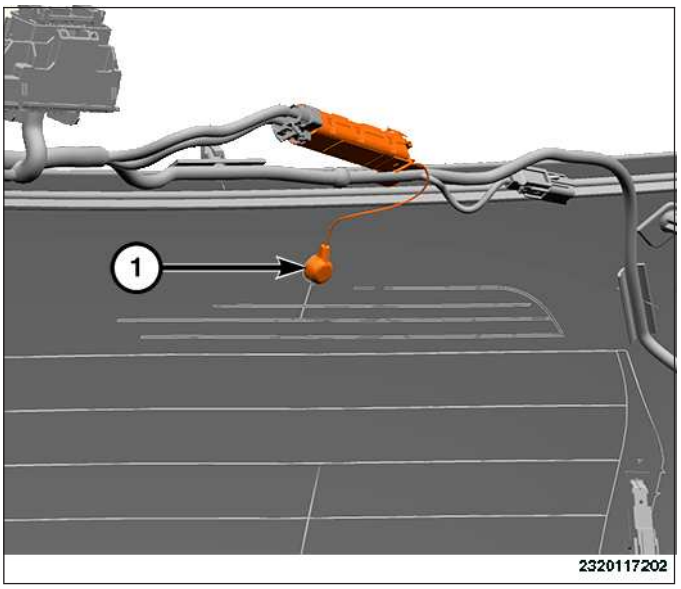
26. Install the pinch sensors (2) and seat the push pin fasteners (1) fully, if equipped.



27. Connect the heated glass wire harness connectors (1).



28. Connect the antenna wire harness connector (1), if equipped.



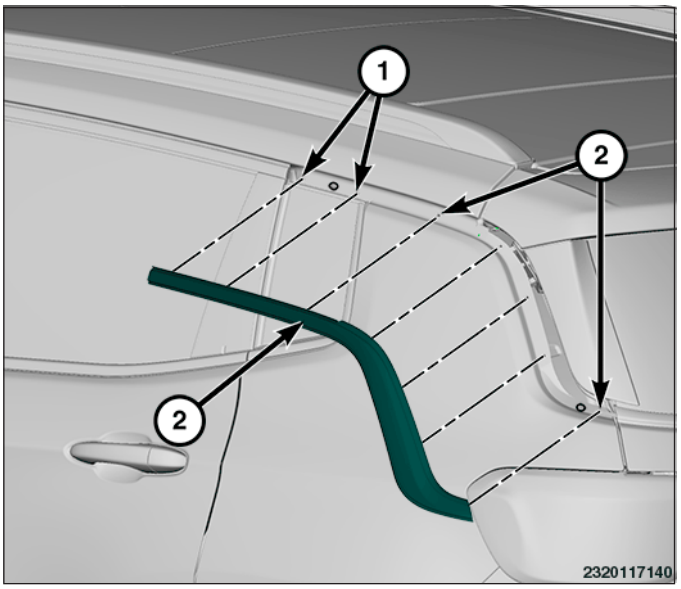
29. Install the spoiler in accordance to the service information.
30. Install the lamp bar in accordance to the service information.
31. Install the liftgate trim panels in accordance to the service information.

QUARTER GLASS

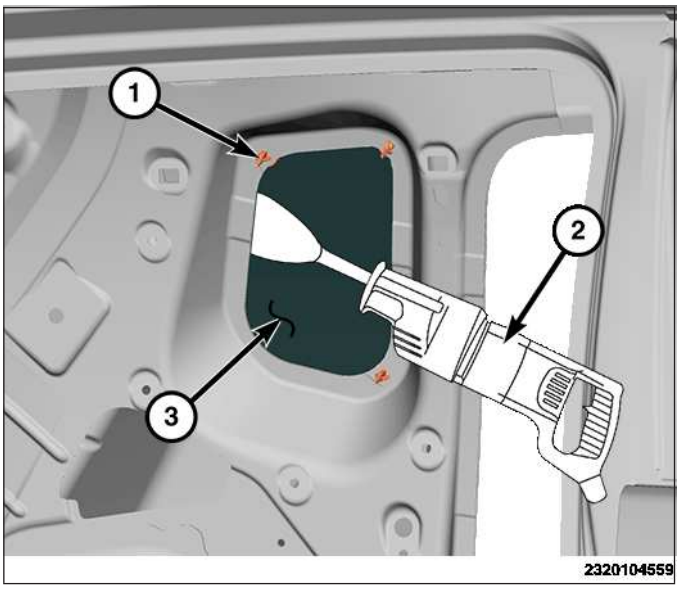
Removal

1. Before proceeding with the following repair procedure, review all warnings and cautions. (Refer to 31-Collision/Standard Procedures/Stationary Glass)
2. Remove the quarter trim panel in accordance to the service information.

3. Using trim stick C-4755 or equivalent, release the front two pin clips (1) and the five rear retaining clips (2).
4. Remove the molding (3).

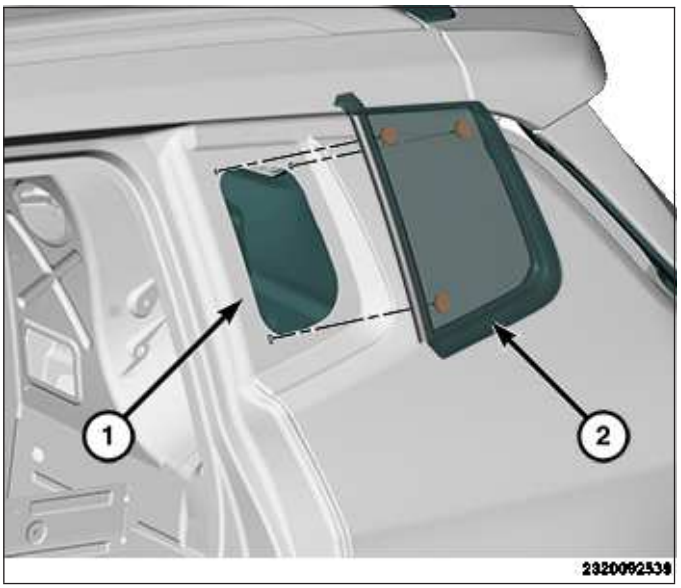


5. Using a glass extraction tool (2) or equivalent, cut and separate the urethane adhesive and the alignment pins (1) that secures the quarter glass (3) to window fence.



CAUTION: Be careful not to damage painted surfaces when removing moldings or cutting urethane around the fixed glass/windshield.

6. Carefully push the quarter window glass (2) from the opening (1).



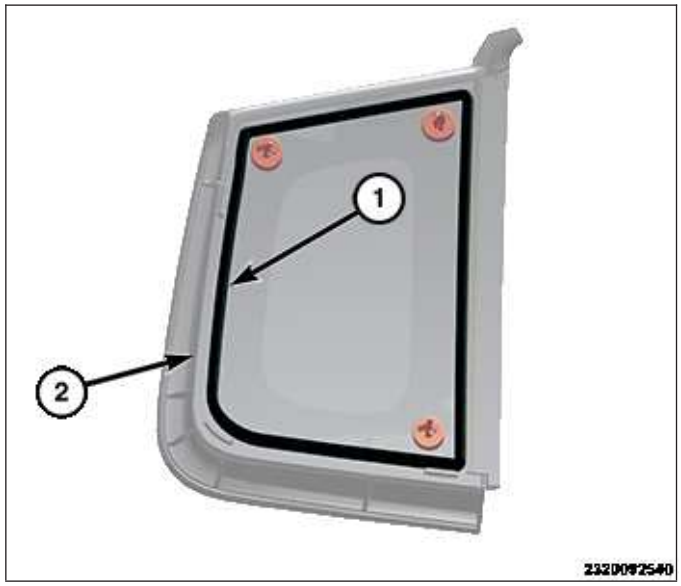
Installation

WARNING: **Do not operate the vehicle within 24 hours of quarter glass installation. It takes at least 24 hours for urethane adhesive to cure. If it is not cured, the quarter glass may not perform properly if the vehicle is in an accident.**

CAUTION: **To help prevent water leaks, partially roll down the left and right door glass before installing the quarter glass. This avoids pressurizing the passenger compartment if a door is slammed before the urethane is cured.**

CAUTION: **Protect all painted and trimmed surfaces from coming in contact with urethane or primers.**

NOTE: **To prevent corrosion, do not damage paint on the quarter glass fence when removing original urethane.**



NOTE: **The quarter glass fence should be cleaned of most of its old urethane adhesive. A small amount of old urethane, approximately 1 mm (.04 in) in height should remain on the fence. Do not completely remove all old urethane from the fence, the paint finish and bonding strength will be adversely affected.**

1. Using a razor knife, level the original bead of urethane on the fence to a thickness of approximately 1 mm (0.04 in).
2. If the quarter glass (2) is being reused, remove as much of the original urethane as possible from the glass surface using a razor knife.

WARNING: **Do not use solvent based glass cleaners to clean the quarter glass before applying glass prep and primer or poor glass adhesion may result.**

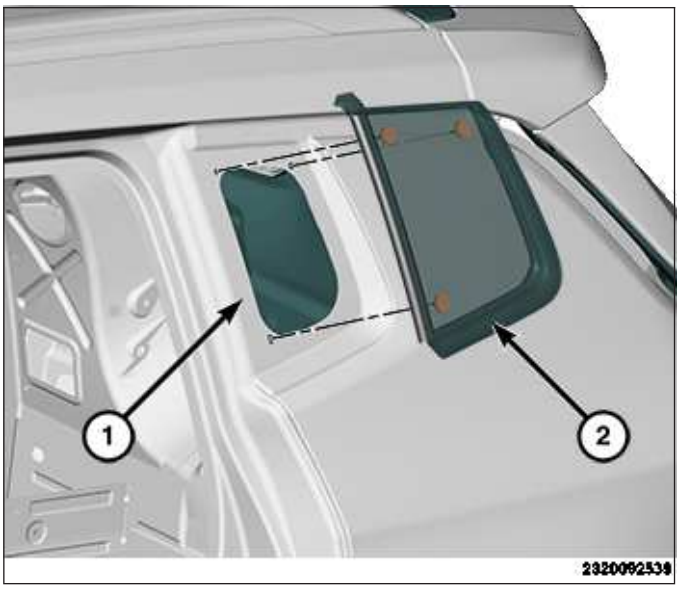
3. Clean the inside of the quarter glass (2) with an ammonia based glass cleaner and a lint-free cloth.
4. Apply glass prep adhesion promoter 25 mm (1 in) wide around the perimeter of the glass and 5 mm (0.2 in) from the edge of the glass and wipe dry with a clean lint-free cloth until no streaks are visible.
5. Apply glass primer 25 mm (1 in) wide around the perimeter of the glass and 5 mm (0.2 in) from the edge of the glass. Allow at least three minutes drying time.
6. Using a flashlight, verify that the primer is completely and evenly installed along the perimeter of the quarter glass.
7. Re-prime any area that is not fully and evenly primed.
8. Clean the quarter glass fence with an ammonia based glass cleaner and a lint-free cloth.
9. Apply pinch weld primer 15 mm (0.75 in) wide around the quarter glass fence. Allow at least three minutes drying time.
10. Using a flashlight, verify that the primer is completely and evenly installed along the quarter glass fence.
11. Re-prime any area that is not fully and evenly primed.

CAUTION: **Always apply the bead of adhesive to the quarter glass. Always install the quarter glass within 5 minutes after applying the adhesive.**

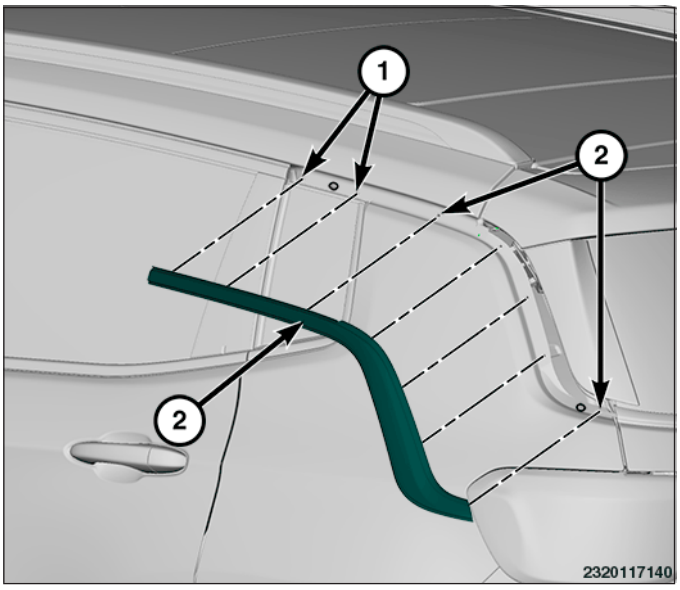
NOTE: **If the original urethane adhesive has been exposed for more than 12 hours, the entire adhesive area will need to be re-primed prior to installing new adhesive.**

12. Apply approximately a 10 mm (0.4 in) wide bead of adhesive with a triangular nozzle approximately 6 mm (0.230 in) from the edge of the glass starting at the bottom center of the quarter glass.
13. Run the end of the adhesive bead (1) on the quarter glass (2) parallel to the start of the bead and smooth the ends flush.

14. Place the quarter glass (2) into the window opening and insert mounting studs through the holes (1) in the window fence.
15. Install the quarter trim panel in accordance to the service information.



16. Position the molding (3) back into place aligning the front and rear guide pins.
17. Seat the front retaining pin clips (1) fully.
18. Seat the rear five retaining clips (2) onto the pins fully.



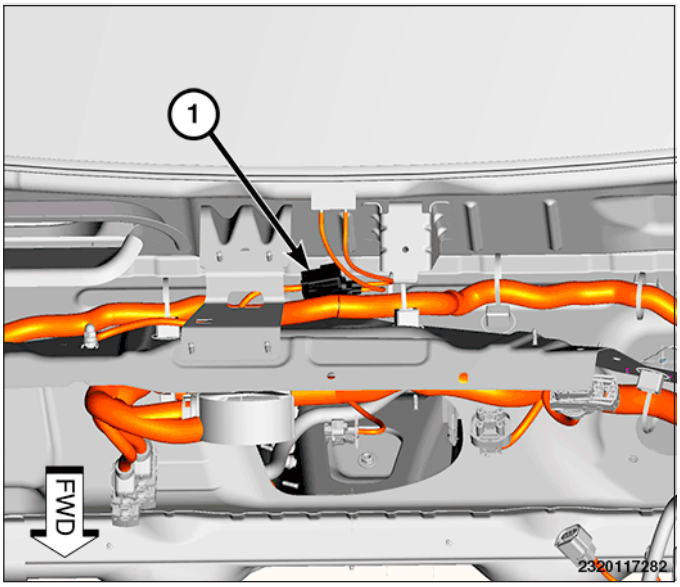
WINDSHIELD

Removal

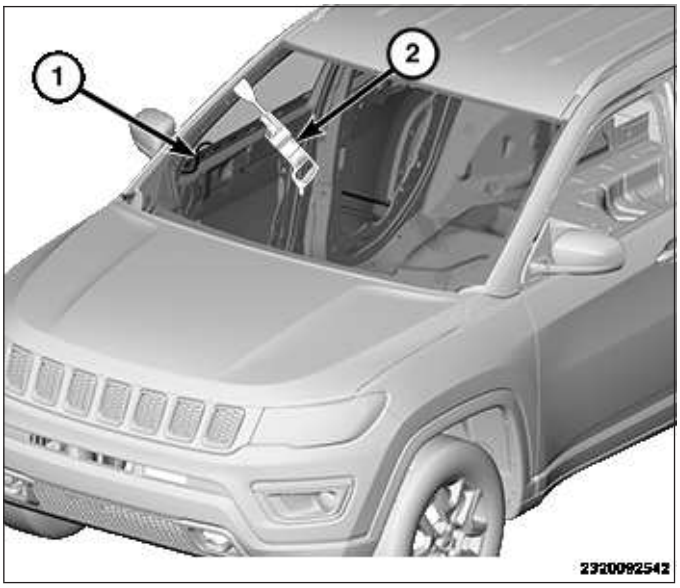
1. Before proceeding with the following repair procedure, review all warnings and cautions. (Refer to 31-Collision/Standard Procedures/Stationary Glass)
2. Remove the rear view mirror in accordance with the service information.
3. If equipped, remove the humidity sensor controls in accordance with the service information.
4. If equipped, remove the Forward Facing Camera (FFC) in accordance with the service information.
5. If equipped, remove the light rain sensor in accordance with the service information.
6. Remove the cowl grille in accordance with the service information.

CAUTION: Be careful not to damage painted surfaces when removing moldings or cutting urethane around the windshield.

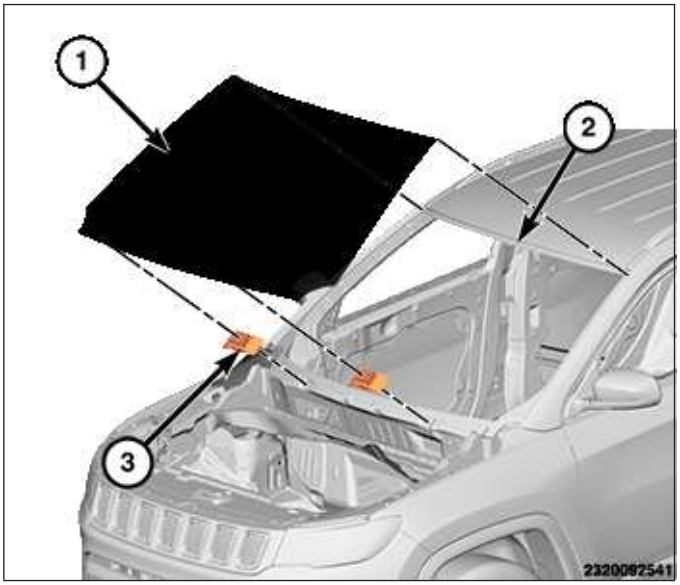
7. Disconnect the heated wiper park wire harness connector (1), if equipped.



8. Using an assistant and a windshield cut-out tool (2), cut and separate the urethane adhesive securing the windshield (1) to the windshield fence.



9. Carefully remove the windshield (1) from the vehicle.
10. Remove and replace the windshield retaining clips (3) if damaged.

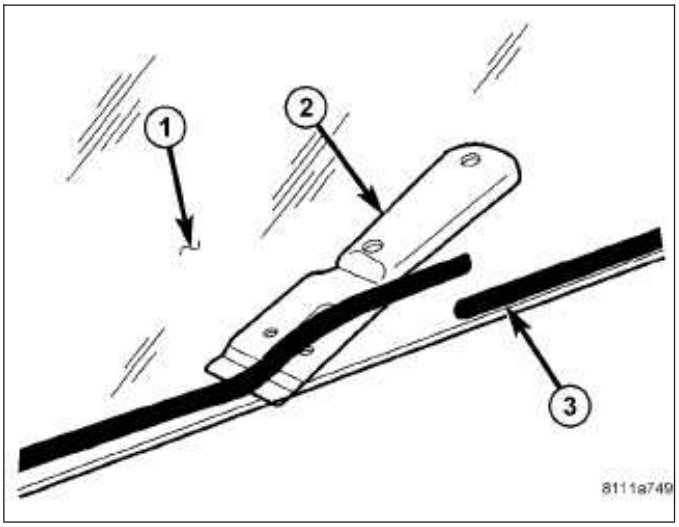


Installation

WARNING: Do not operate the vehicle within 24 hours of windshield installation. It takes at least 24 hours for urethane adhesive to cure. If it is not cured, the windshield may not perform properly if the vehicle is in an accident.

CAUTION: To help prevent water leaks, partially roll down the left and right door glass before installing the windshield. This avoids pressurizing the passenger compartment if a door is slammed before the urethane is cured.

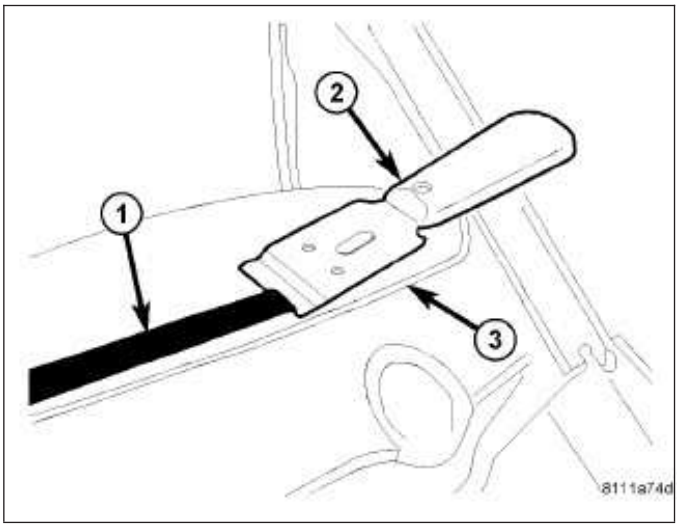
CAUTION: Protect all painted and trimmed surfaces from coming in contact with urethane or primers.



1. If the windshield (1) is being reused, remove as much original urethane (3) as possible from the glass surface using a razor knife (2).

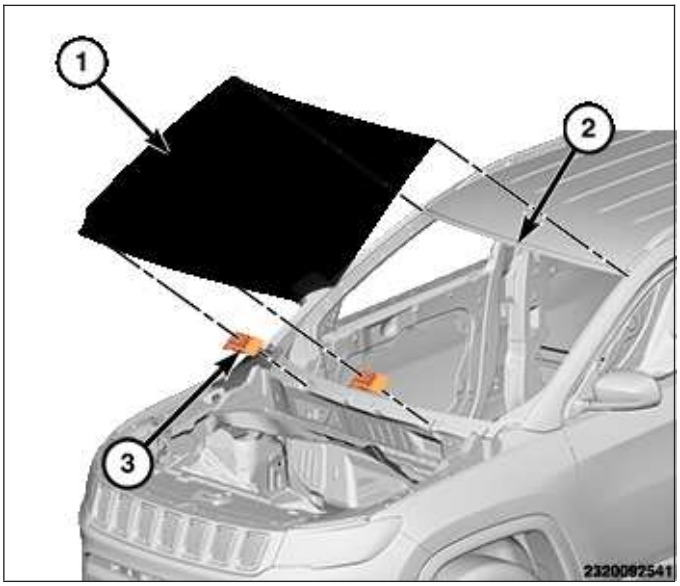
NOTE: To prevent corrosion, do not damage paint on windshield fence when removing original urethane.

NOTE: The windshield fence should be cleaned of most of its old urethane adhesive. A small amount of old urethane, approximately 1 mm in height should remain on the fence. Do not completely remove all old urethane from the fence, the paint finish and bonding strength will be adversely affected.



2. Using a razor knife (2), level the original bead of urethane (1) on the windshield fence (3) to a thickness of approximately 1 mm (0.04 in.) and remove the loose adhesive.

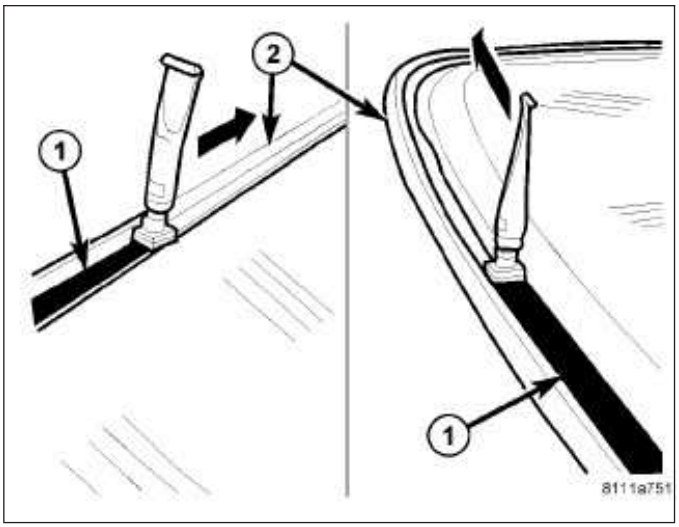
NOTE: Retention clips (3) located near the cowl at the bottom of the windshield fence (2) should be replaced with new clips if any are missing or damaged.



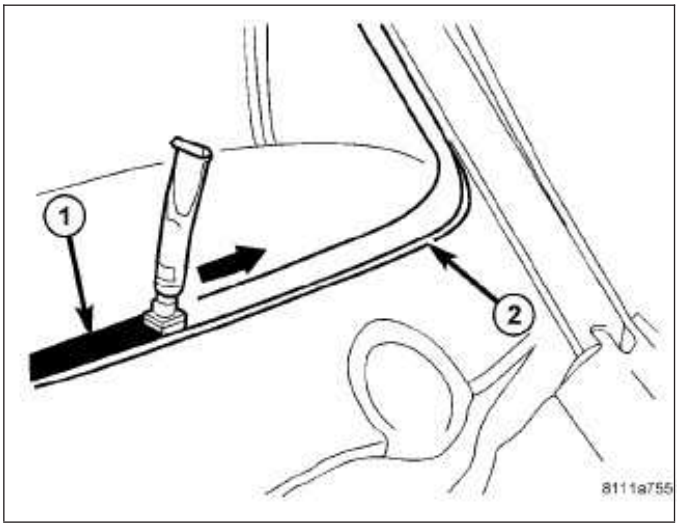
3. Position new retention clips (3) on the cowl top as shown.
4. Using an assistant, position the windshield into the windshield opening and against the windshield fence (2).
5. Verify the windshield lays evenly against the fence at the top, bottom and sides of the opening. If not, the fence must be formed to the shape of the windshield.
6. Mark the windshield and the windshield fence with pieces of masking tape to use as a reference for installation.
7. Using an assistant, remove the windshield from the windshield opening and place it on a suitable padded work surface.

WARNING: **Do not use solvent based glass cleaners to clean the windshield before applying glass prep and primer or poor glass adhesion may result.**

8. Clean the inside of the windshield with an ammonia based glass cleaner and a lint-free cloth.
9. Apply glass prep adhesion promoter 25 mm (1 in.) wide (1) around the perimeter of the windshield (2) and 5 mm (0.2 in.) from the edge of the glass and wipe dry with a clean lint-free cloth until no streaks are visible.
10. Apply glass primer 25 mm (1 in.) wide (1) around the perimeter of the windshield (2) and 5 mm (0.2 in.) from the edge of the glass. Allow at least three minutes drying time.



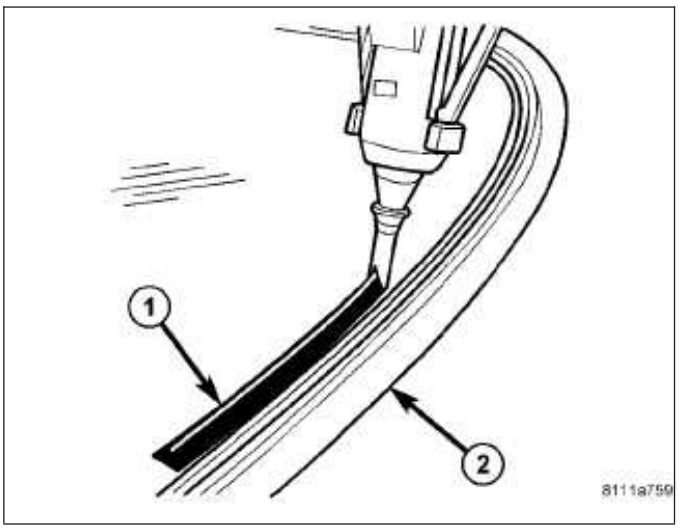
11. Using a flashlight, verify that the primer is completely and evenly installed along the perimeter of the windshield.
12. Re-prime any area that is not fully and evenly primed.
13. Clean the windshield fence with an ammonia based glass cleaner and a lint-free cloth.
14. Apply pinch weld primer 25 mm (1 in.) wide (1) around the windshield fence (2). Allow at least three minutes drying time.
15. Using a flashlight, verify that the primer is completely and evenly installed along the windshield fence.
16. Re-prime any area that is not fully and evenly primed.



CAUTION: **Always apply the bead of adhesive to the windshield. Always install the windshield within 5 minutes after applying the adhesive.**

NOTE: **If the original urethane adhesive has been exposed for more than 12 hours, the entire adhesive area will need to be re-primed prior to installing new adhesive.**

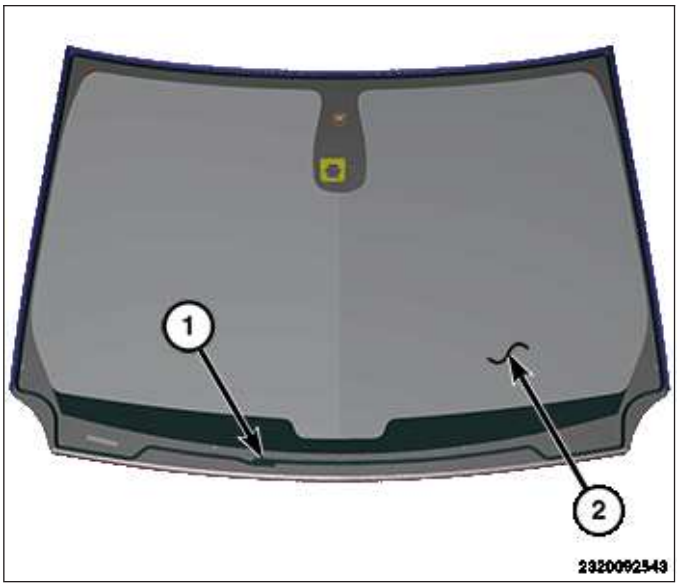
17. Apply approximately a 7 mm (0.3 in.) wide and 13 mm (0.5 in.) tall bead of adhesive (1) with a triangular nozzle approximately 6 mm (0.230 in.) from the edge of the glass (2) starting at the bottom center of the windshield.



NOTE: **Make sure the bead of adhesive is placed on the primer fully.**

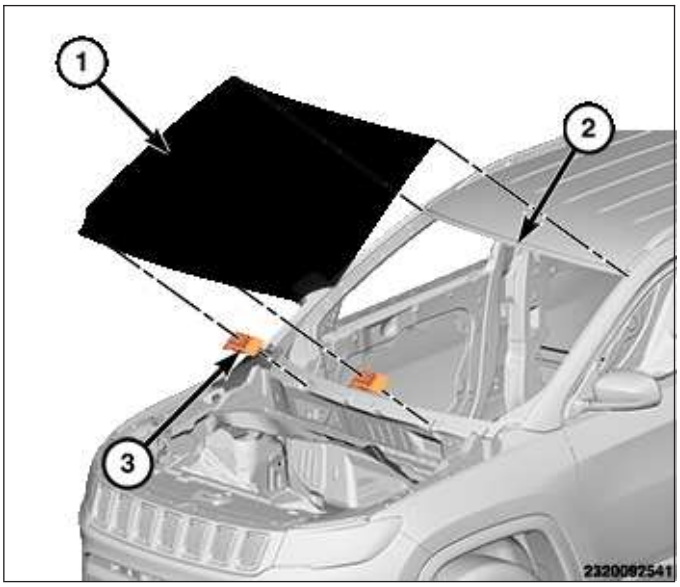
18. Run the end of the adhesive bead (1) on the windshield (2) parallel to the start of the bead and smooth the ends flush.

    NOTE: Make sure there are no gaps present in the adhesive bead and ends.



19. Using an assistant, position the windshield (1) over the windshield opening.
20. Using the tape as reference points, align the windshield to the opening.
21. Carefully lower the windshield onto the windshield fence. Guide the windshield into its proper location.

    CAUTION: It is not possible to move the windshield after installation. The windshield should never be pressed into place by more than one person, because the windshield can break if pressed simultaneously on both sides.



22. Push the windshield inward until the windshield comes into contact with the retention clips located on each side of the windshield fence (3).
23. If equipped, install the light rain sensor in accordance to the service information.
24. If equipped, install the Forward Facing Camera (FFC) in accordance to the service information.
25. If equipped, install the humidity sensor controls, in accordance to the service information.
26. Install the rear view mirror in accordance to the service information.
27. Install the cowl grille in accordance to the service information.

CORROSION PROTECTION

Corrosion Protection Restoration

"Corrosion protection" encompasses all the materials and coatings which protect a vehicle from corrosion and include:

- Coated steels
- E-coat primer on the complete body
- Body sealing to eliminate water and air intrusion where panels join
- Structural adhesives in some joints
- Chip resistant primer applications on the entire body
- Paint application
- Underbody corrosion protection
- Inner panel corrosion protection added to repair areas

Corrosion protection must be restored during a repair anytime it may have been compromised. All areas that have been subjected to structural pulls, clamping, straightening, welding, or any other any other operation that may have imparted damage to the corrosion protection system will need to be addressed.

In the repair process corrosion protection is addressed in three phases: pre-refinish, refinish and post-refinish.

Pre-refinish

In the pre-finish phase, structural adhesives, seam sealers and other applied coatings are installed. Sheet metal seams are sealed to prevent water intrusion into the "dry" areas of the vehicle, such as passenger compartment, and also to prevent intrusions of contaminates, such as water and road salt, into seams causing corrosion. Lap joints, hem flanges, and any panel mating locations need to be addressed during the repair and treated to duplicate the original vehicle build.

All bare metal should be epoxy primed prior to applying seam sealer, following the refinish material provider's instructions for doing so, unless the manufacture of the sealer specifically states otherwise.

When working around pinch weld flanges, seam sealer should be installed to duplicate the original appearance and function. If it is unclear whether the original sealing material **between** the flanges is strictly a sealer or structural adhesive, always default to a structural adhesive such as LORD Fusor 2098, LORD Fusor 112B, or 3M 08116. For additional information related to weld-bonding and welding around adhesives and sealers, (Refer to 31 - Collision Information - Standard Procedure).

Roof and closure panels will require the use of anti-flutter foam. Where inner panel supports meet external panels, the proper replacement materials in these areas are Mopar part No. 04864015AB, or equivalent, or LORD Fusor 121, or 3M 04274 Noise Vibration Harshness (NVH) dampening material.

Any disturbed or removed NVH foam needs to be replaced. Use Mopar part No. 05142864AA, LORD Fusor 130, or 3M 8463.

All hem flanges on closure panels should be sealed whether sealer is apparent or not. This includes those disturbed during the repair, and those on new replacement panels. Either duplicate the existing bead in shape or size, or where one is not obvious, seal the hem flange in a discrete fashion. Hem flanges should be sealed using Mopar part No.04318026, LORD Fusor 129, or 3M 08308.

Lap joints, such as in floor pans, should be sealed to duplicate the sealer visible, but also addressed on any exterior surface by sealing the lap wether visible or not.

NOTE: FCA US LLC does not recommend the use of any type of ″weld-thru″ primer during repairs. Weld-bonding with corrosion protecting adhesives or sealers, along with final application of inner panel corrosion protection is the proper method.

Refinish

All painted surfaces should be coated using a FCA US LLC approved refinish material. The refinish process includes application of undercoats, primers (filler & sealer), basecoats and clearcoat. These approved materials have been tested to the same material standards as the production materials.

Post-refinish

All new panels, and repair areas, must have inner panel corrosion protection applied after the painting operation is complete, but before all the trim is reinstalled. Mopar Cavity Wax No. 68042970AA, or 3M Rustfighter

#08891 should be applied to all interior cavities, weld flanges, hem flanges as well as any are affected by the repair especially where any type of welding was performed. Inner panel corrosion protection should be applied using "pressure pot" equipment with wands which provide 360-degree material coverage for closed cavities, and directional spray wands for visible coverage (Mopar kit #04271235). Additionally, the corrosion protecting material must be applied in two coats with a minimum 30-minute flash time between applications.

Wheel wells and underbody panels which have been involved in the repair process should also have a final undercoating applied. Use Mopar No. 05093417AA, or equivalent, and apply with "pressure pot" style application equipment.

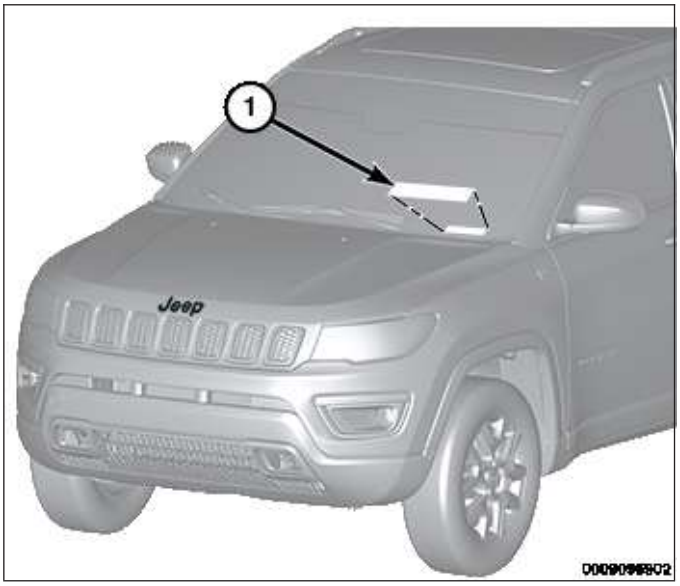
Following this arrangement, choice of materials, and proper application, the repaired vehicle should be as well protected against corrosion as it was prior to the repair.

Technical Specifications

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (VIN) can be viewed through the windshield at the upper left corner (1) of the instrument panel, near the left windshield pillar. The VIN consists of 17 characters in a combination of letters and numbers that provide specific information about the vehicle. Refer to the vehicle identification number decoding charts below, for decoding information.

To protect the consumer from theft and possible fraud the manufacturer is required to include a Check Digit at the ninth position of the vehicle identification number. The check digit is used by the manufacturer and government agencies to verify the authenticity of the vehicle and official documentation. The formula to use the check digit is not released to the general public.



VEHICLE IDENTIFICATION INFORMATION	DECODING CHARTS
2017 Jeep Compass	2017 VIN DECODING INFORMATION
2018 Jeep Compass	2018 VIN DECODING INFORMATION

2017 VIN DECODING INFORMATION

POSITIONS 1 - 3: WORLD MANUFACTURER IDENTIFIER

1	2	3	Manufacturer	Vehicle Type
3	C	4	Chrysler de Mexico Toluca	MPV

POSITION 4: BRAKE SYSTEM & GVWR

Brake system	GVWR Range		Active Belts, Air Bags	Active Belts, Air Bags, Side Bags-Front Row	Active Belts, Air Bags, Side Bags-All Rows	Active Belts, No Air Bags	Active Belts, GVWR > 10, 000 lbs.
	Pounds	Kilograms					
Hydraulic	4001-5000	(1815-2267 kg)	—	—	N	—	—

Positions 5 - 7:

Define the following: brand, marketing name, drive wheels, cab/body type, drive position, and price series.

Jeep Compass MPV

FWD			AWD			BODY TYPE	DRIVE POSITION	SERIES
J	C	A	J	D	A	Sport Utility - 4 Door	Left Hand Drive	SPORT 4X2
J	C	B	J	D	B			LATITUDE 4X2
J	C	C	J	D	C			LIMITED 4X4
J	C	D	J	D	D			TRAILHAWK 4X4
J	C	E	J	D	E			BASE 4X2

POSITION 8: ENGINE

Engine Code	**B**
Displacement	2.4L
	—
Cylinders	I4
Fuel	Gasoline
Manufacturer	FCA
2017 Compass	184

POSITION 9: CHECK DIGIT

0 through 9 or X

POSITION 10: MODEL YEAR

H = 2017

POSITION 11: ASSEMBLY PLANT

Code	Plant	City	State	Country
T	Toluca Assembly	Toluca	Mexico	Mexico

POSITION 12 - 17: PLANT SEQUENCE NUMBER

A six digit number assigned by assembly plant.

2018 VIN DECODING INFORMATION

POSITIONS 1 - 3: WORLD MANUFACTURER IDENTIFIER

1	2	3	Manufacturer	Vehicle Type
3	C	4	Chrysler de Mexico Toluca	MPV

POSITION 4: BRAKE SYSTEM & GVWR

Brake system	GVWR Range		Active Belts, Air Bags	Active Belts, Air Bags, Side Bags-Front Row	Active Belts, Air Bags, Side Bags-All Rows	Active Belts, No Air Bags	Active Belts, GVWR > 10, 000 lbs.
	Pounds	Kilograms					
Hydraulic	4001-5000	(1815-2267 kg)	—	—	N	—	—

Positions 5 - 7:

Define the following: brand, marketing name, drive wheels, cab/body type, drive position, and price series.

Jeep Compass MPV

FWD			AWD			BODY TYPE	DRIVE POSITION	SERIES
J	C	A	J	D	A	Sport Utility - 4 Door	Left Hand Drive	SPORT 4X2
J	C	B	J	D	B			LATITUDE 4X2
J	C	C	J	D	C			LIMITED 4X4
J	C	D	J	D	D			TRAILHAWK 4X4
J	C	E	J	D	E			BASE 4X2

POSITION 8: ENGINE

Engine Code	**B**
Displacement	2.4L
	—
Cylinders	I4
Fuel	Gasoline
Manufacturer	FCA
2017 Compass	184

POSITION 9: CHECK DIGIT

0 through 9 or X

POSITION 10: MODEL YEAR

J = 2018

POSITION 11: ASSEMBLY PLANT

Code	Plant	City	State	Country
T	Toluca Assembly	Toluca	Mexico	Mexico

POSITION 12 - 17: PLANT SEQUENCE NUMBER

A six digit number assigned by assembly plant.

STANDARDIZED MATERIAL IDENTIFICATION

In an effort to reduce confusion over the large number of steel grades in use, and the repairability and weldability concerns involved with each, FCA US LLC has instituted new nomenclature which is applicable to material call-outs and Body In White (BIW) views released for use in the repair industry.

All materials listed in the key may not be used on a given model, nor may every panel be identified in the blow-up (ex: some groups do not show fascias).

WARNING: FCA US LLC engineering's position on the use of heat during collision repair is as follows:

- **Any body panel or frame component damaged which is to be repaired and reused, must be repaired using the "cold straightening" method. No heat may be used during the straightening process.**
- **During rough straightening prior to panel replacement, damaged panels or frame components may be heated to assist in body/frame realignment. The application of heat must be constrained to the parts which will be replaced and not allowed to affect any other components.**

This "no heat" recommendation is due to the extensive use of advanced high strength steels in FCA US LLC products. High-strength materials can be substantially and negatively affected from heat input which will not be obviously known to the repairer or consumer.

Ignoring these recommendations may lead to serious compromises in the ability to protect occupants in a future collision event, reduce the engineered qualities and attributes, or decrease the durability and reliability of the vehicle.

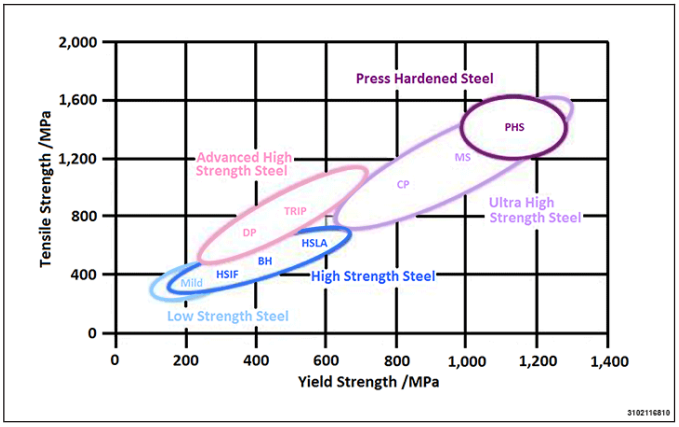
This statement supersedes any previously released information by the FCA US LLC.

Failure to follow these instructions may result in serious or fatal injury.

Information on sectioning of components will be identified in **Non-Structural Sheet Metal Repair, Sectioning Locations and Procedures and Welding and Weld Bonding** , (Refer to 31- Collision Information /Standard Procedure).

NOTE: Corrosion protection must be restored after repair.

Steels



- **Low Strength Steels (LS)** - Include Mild Steels. Good repairability and weldability (least sensitive to heat). May be attached using the preferred Squeeze Type Resistance Spot Welding (STRSW) process, weld bonding where appropriate, or MIG welding.
- **High Strength Steels (HSS)** - Includes High Strength Interstitial-Free (HSIF), Baked Hardened (BH) and High Strength Low Allow (HSLA) steels. Some repairability and good weldability (the higher the strength of the steel, the greater the sensitivity to heat). May be attached using STRSW, weld bonding, and MIG welding unless otherwise noted in Sectioning Locations and Procedures (Refer to 31- Collision/Standard Procedure/Sectioning Locations and Procedures.
- **Advanced High Strength Steels (AHSS)** - Includes Dual Phase (DP) and Transformation Induced Plasticity (TRIP) steels. Very limited repairability and weldability (very sensitive to heat). Attach only at OE defined locations. Specialized cutters are required with many materials in this group. May be attached using STRSW, weld bonding and Metal Active Gas (MAG) brazing, to minimize heat affected zone, unless otherwise noted in Sectioning Locations and Procedures (Refer to 31- Collision/Standard Procedure/Sectioning Locations and Procedures.
- **Ultra High Strength Steels (UHSS)** - Includes Complex Phase (CP) and Martinistic Steels (MS). Very limited repairability and weldability (very sensitive to heat). Attach only at OE defined locations using OE defined procedures. Specialized cutters are required with many materials in this group. May be attached using STRSW, weld bonding and Metal Active Gas (MAG) brazing to minimize heat affected zone.
- **Press Hardened Steels (PHS)** - Includes hot-stamped boron materials which are also termed "press hardened". No repairability and limited weldability (very sensitive to heat). Attach only at OE defined locations. Specialized cutters are required with many materials in this group. May be attached using STRSW, weld bonding and Metal Active Gas (MAG) brazing to minimize heat affected zone.

Magnesium

- **Magnesium** No repairability, replacement of components only. Special care must be used when working around magnesium parts due to combustibility.

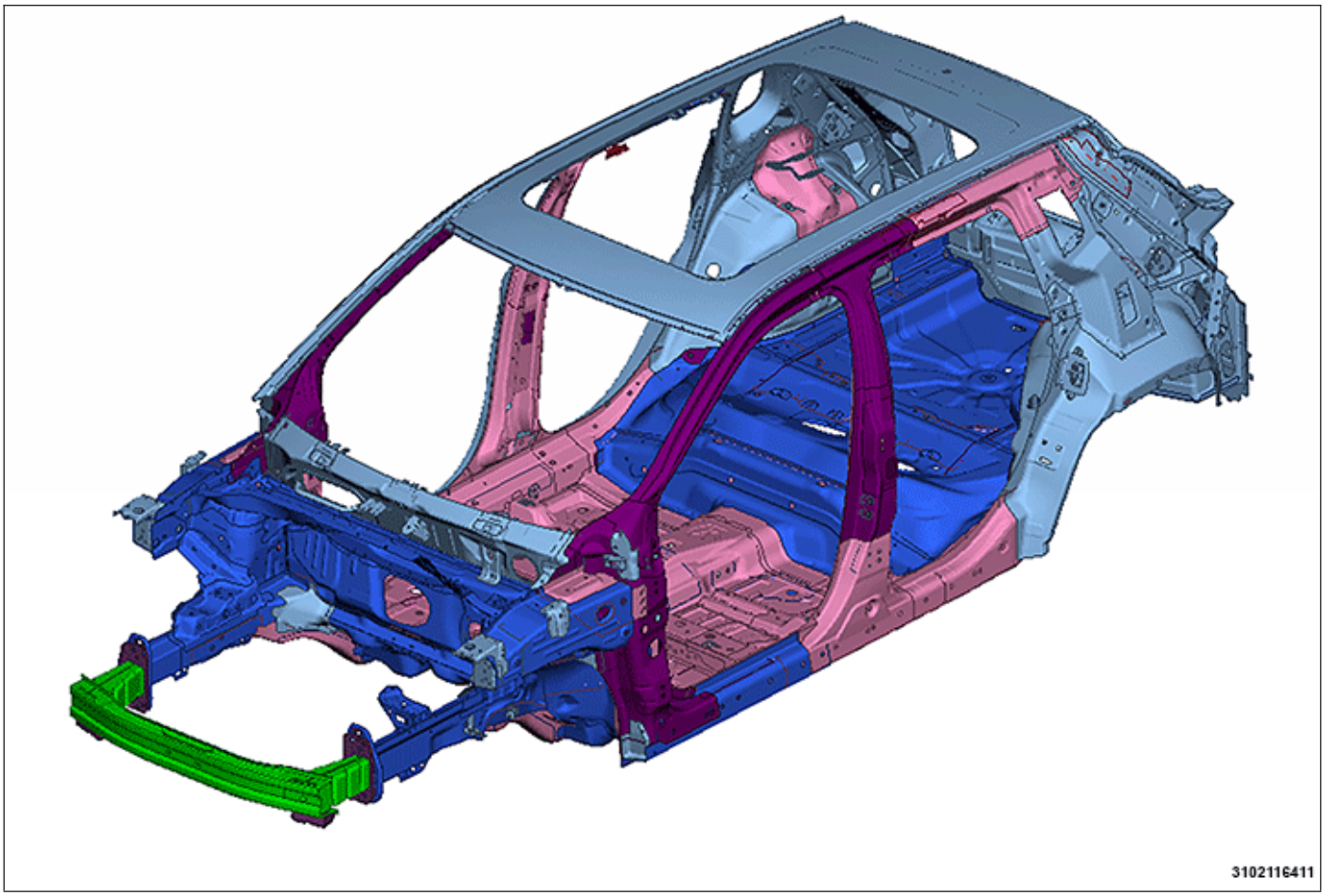
Aluminum

- **Aluminum Sheets** - Including 5000, 6000 and 7000 series aluminum sheets. Stamped aluminum sheet metal panels may be repairable with specialized tools and techniques.
- **Aluminum Extrusion Profiles** - Also known as extruded aluminum. Extruded aluminum sheet may be repairable with specialized tools and techniques but never when used in structural usage such as impact bars, engine cradles, suspension components.
- **Cast Aluminum**- Cast Aluminum is non-repairable and must be replaced.

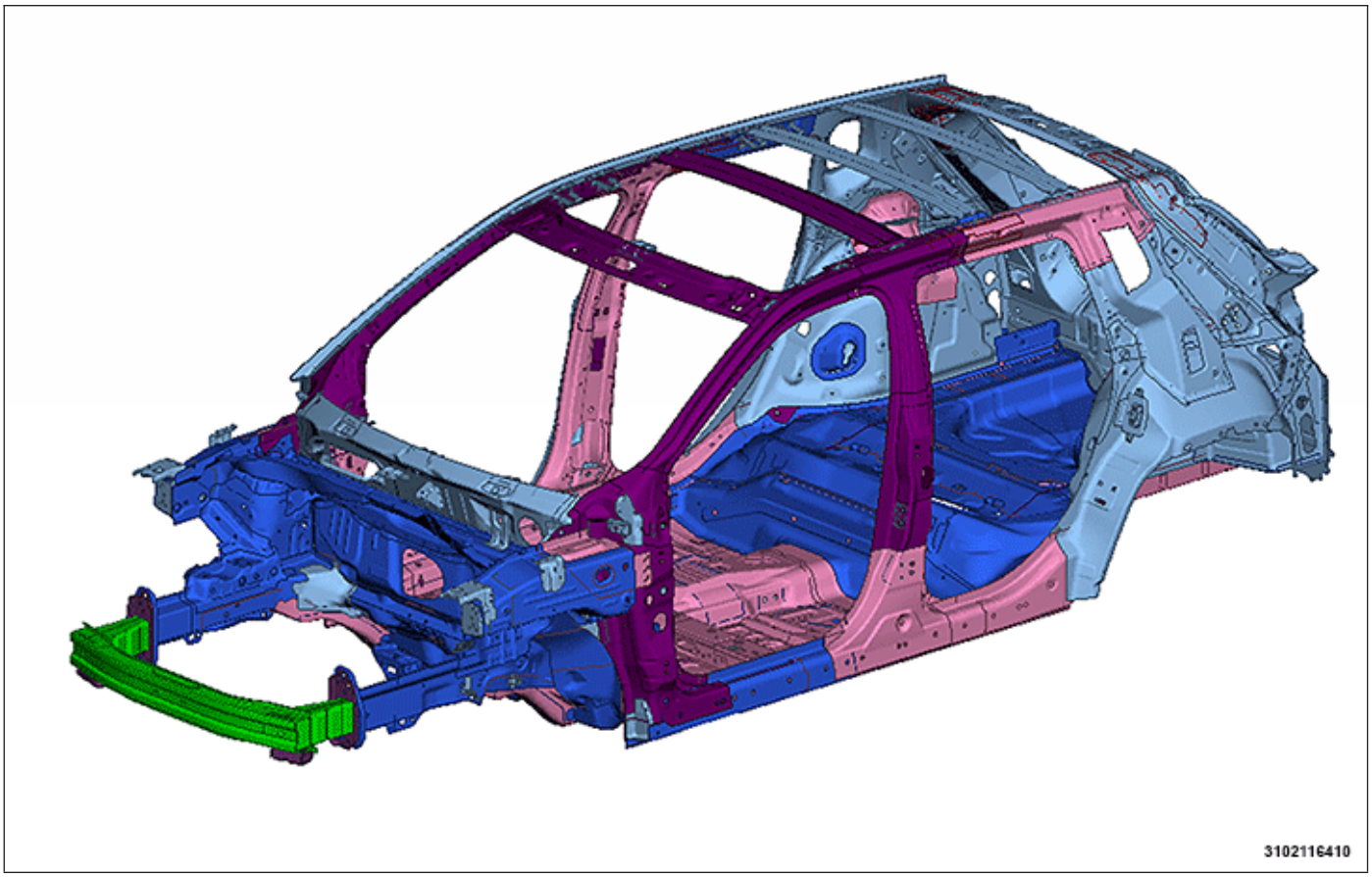
Plastics

- **Fiber Reinforced Plastics** - Composite materials may be fiber reinforced (example Kevlar) or co-molded assemblies of steel and plastic. Any of these require specialized repair materials and processes.
- **Duroplastics** - Including Sheet Molded Compound (SMC). Some repairability depending upon the type of plastic involved, the degree of damage, and the component function. Cosmetic components such as fascias have a higher degree of repair allowed than those components which can carry components and loads. Where SMC components are bonded to steel structure, FCA US LLC will identify the proper adhesive to attach the replacement panel. Repair materials for duroplastics are commonly available in the collision repair market.
- **Thermoplastics** - Some repairability depending upon the type of plastic involved, the degree of damage, and the component function. Cosmetic components such as fascias have a higher degree of repair allowed than those components which can carry components and loads. Repair materials for thermoplastics are commonly available in the collision repair market.

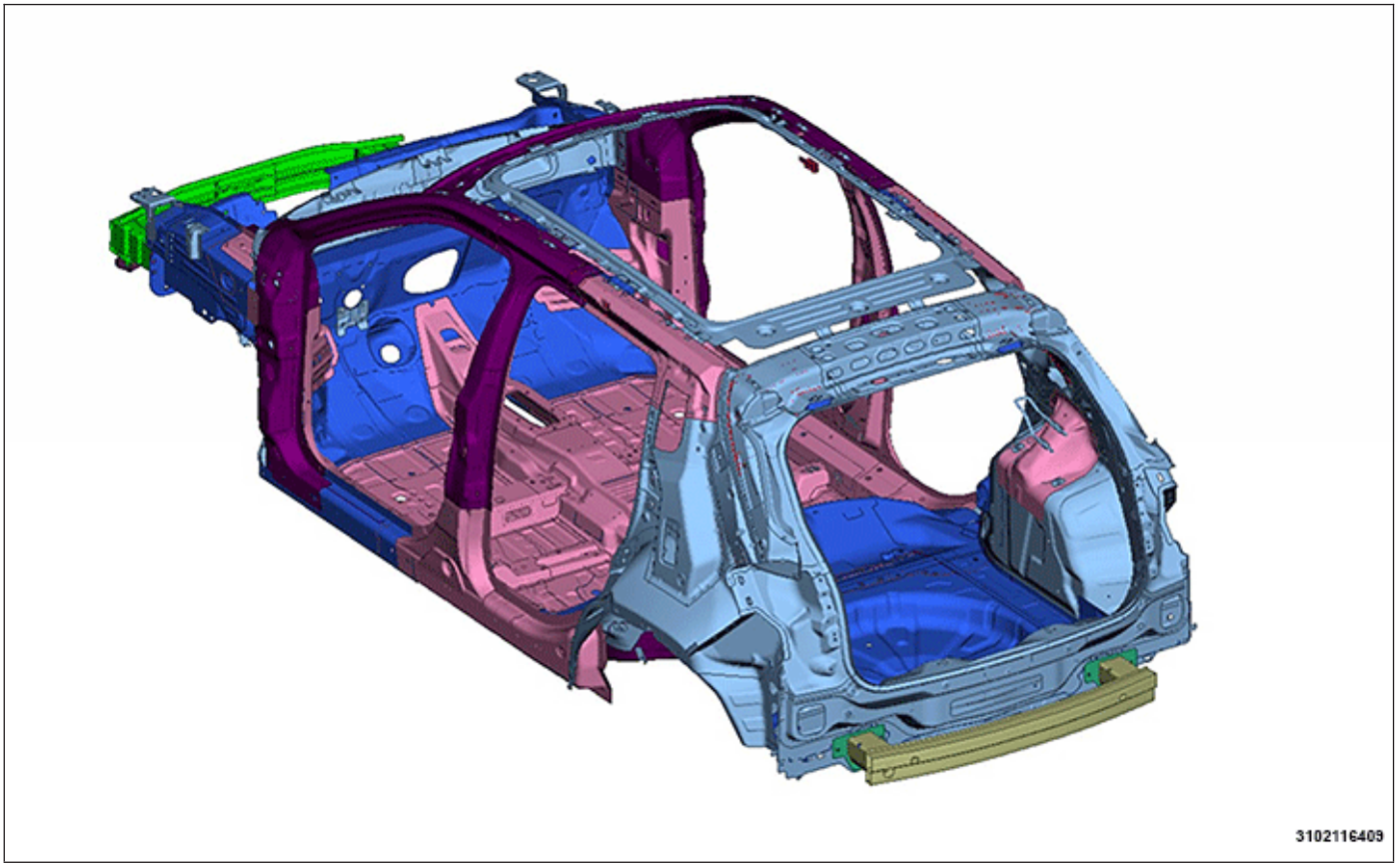
Materials: corresponding metallurgical classes		Color code
Steels	Low Strength Steels: Mild steels	
	High Strength Steels (HSS): High Strength Interstitial-free Steels (HSIF), Bake Hardening Steels (BH), High Strength Low Alloy Steels (HSLA)	
	Advanced High Strength Steels (AHSS): Dual Phase Steels (DP), Transformation Induced Plasticity Steels (TRIP)	
	Stainless Steels: Austenitic stainless steels	
	Ultra High Strength Steels (AHSS): Complex Phase Steels (CP), Martensitic Steels (MS)	
	Press Hardened Steels (PHS)	
Aluminum	Aluminum sheets: 7xxx series	
	Aluminum sheets: 6xxx series Aluminum extrusion profiles 7xxx	
	Aluminum sheets: 5xxx series	
	Aluminum extrusion profiles 6xxx	
	Aluminum extrusion profiles 7xxx	
	Cast aluminum	
	Magnesium	
Plastics	Fibre reinforced plastics	
	Duroplastics, including Sheet Molding Compounds (SMC)	
	Thermoplastics	
Other materials: Material identified in the graphic shown		



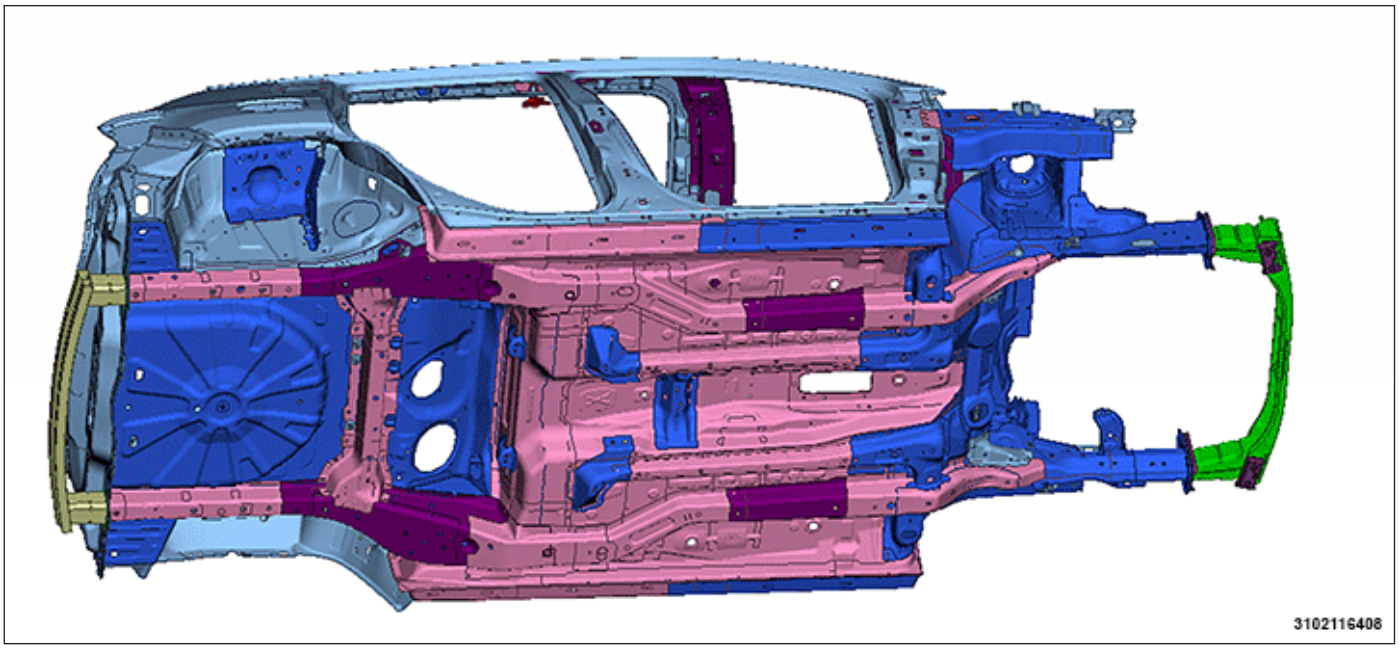
BODY IN WHITE COMPONENT IDENTIFICATION - TOP VIEW FRONT



BODY IN WHITE COMPONENT IDENTIFICATION - TOP VIEW FRONT

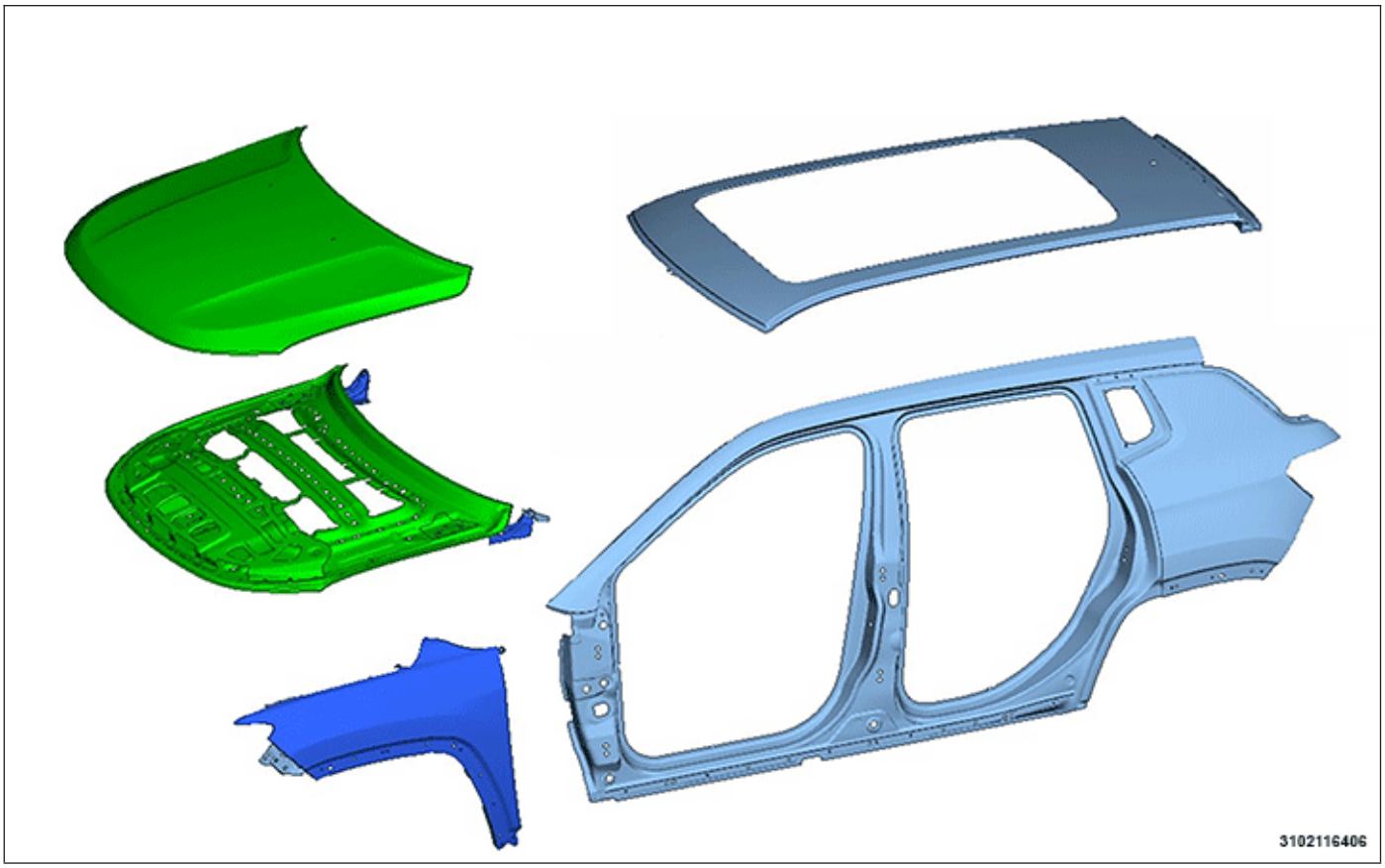


BODY IN WHITE COMPONENT IDENTIFICATION - TOP VIEW REAR

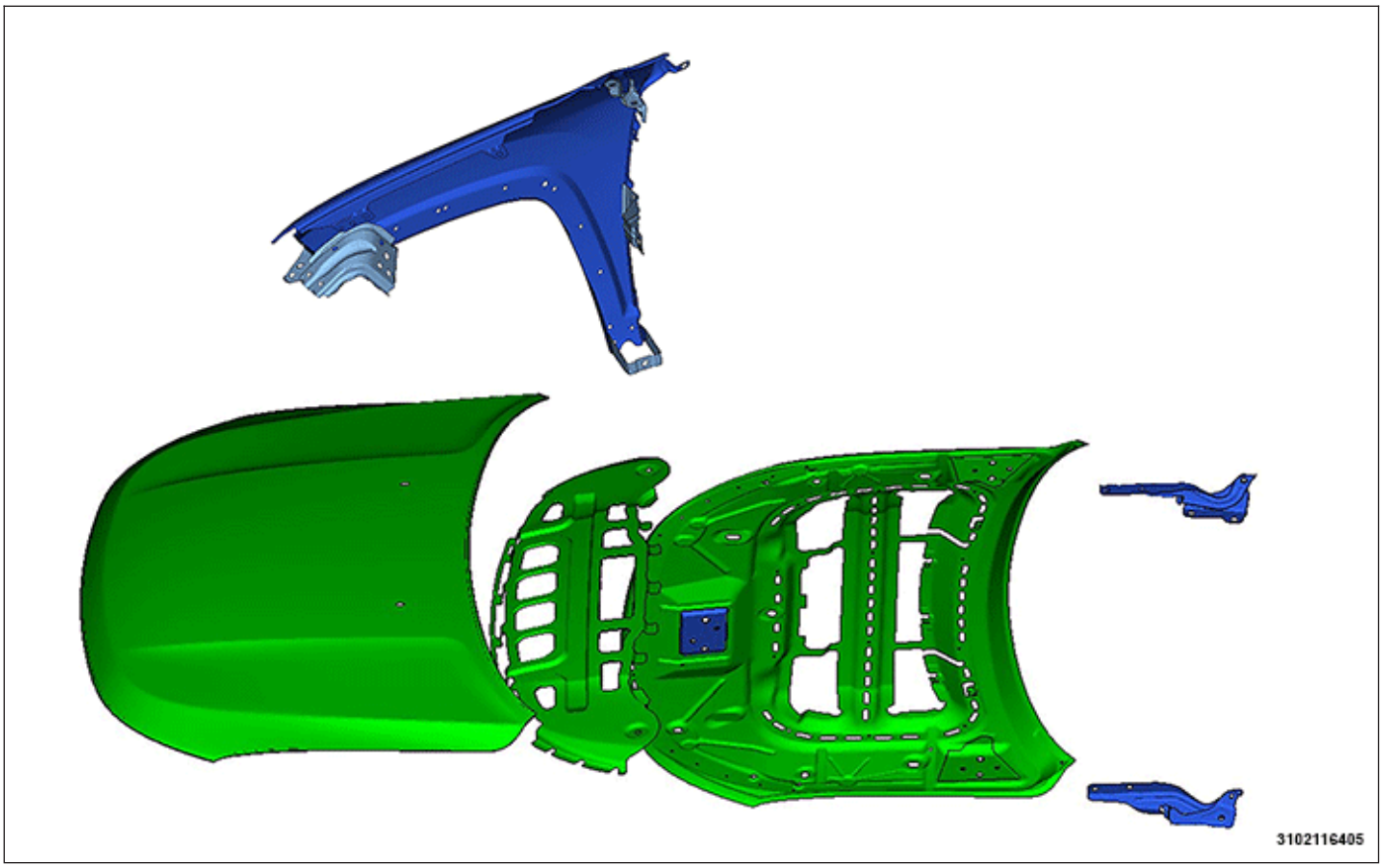


BODY IN WHITE COMPONENT IDENTIFICATION - BOTTOM VIEW REAR

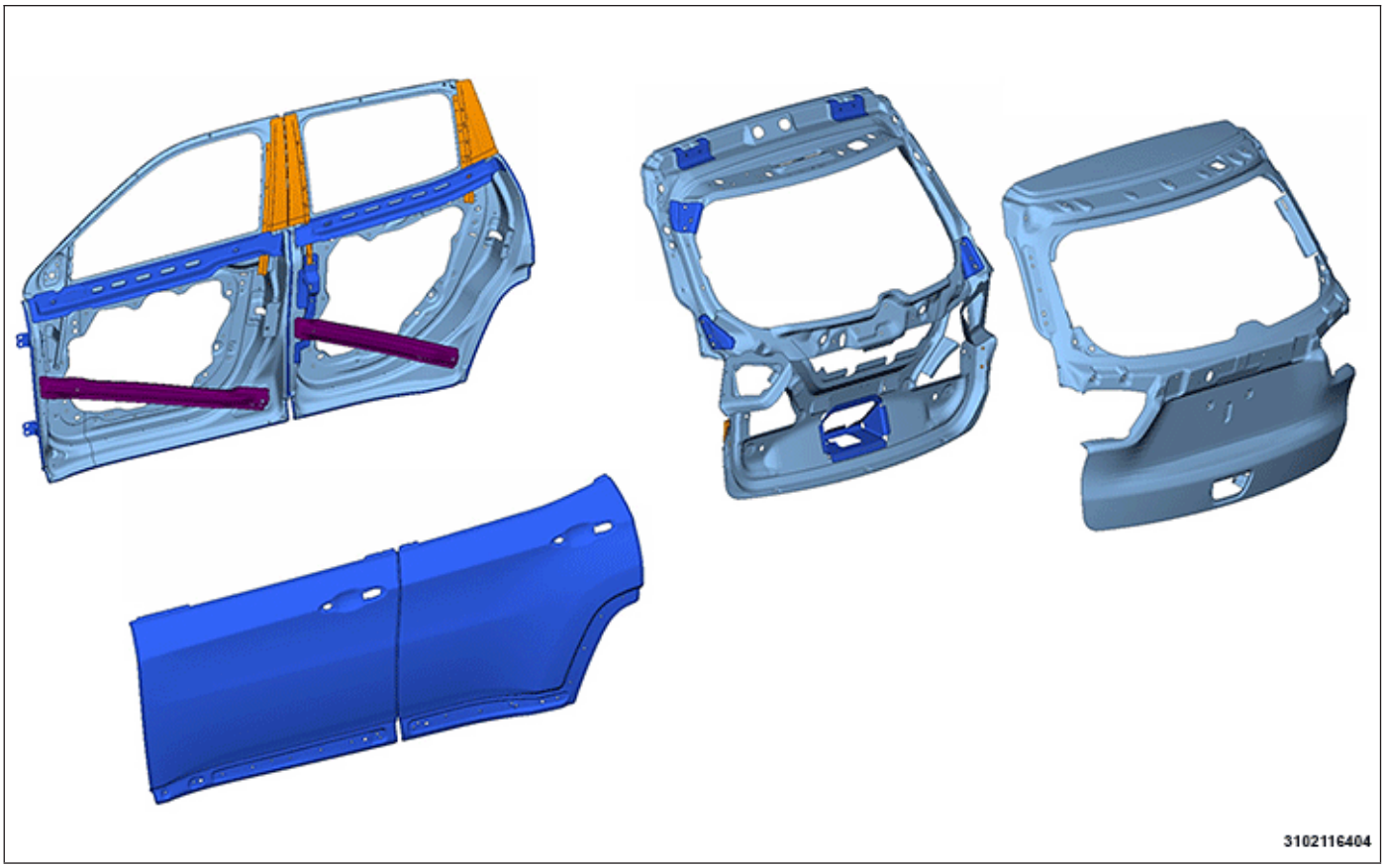
BODY IN WHITE COMPONENT IDENTIFICATION - BOTTOM VIEW REAR



HOOD, FENDER, ROOF AND OUTER BODY SIDE APERTURE



FENDER AND HOOD (VIEW 2)



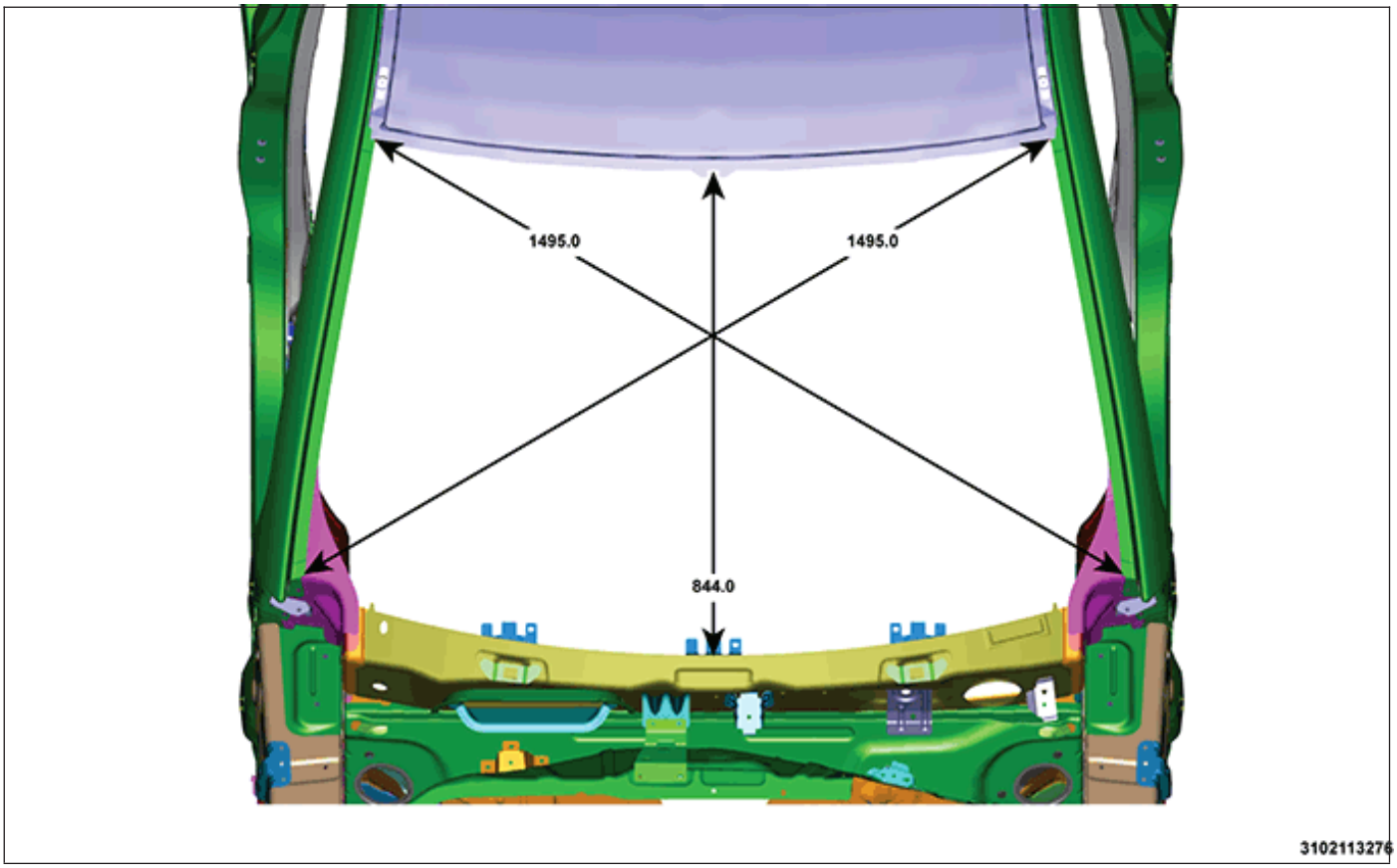
FRONT DOOR, REAR DOOR AND LIFTGATE

BODY OPENING DIMENSIONS

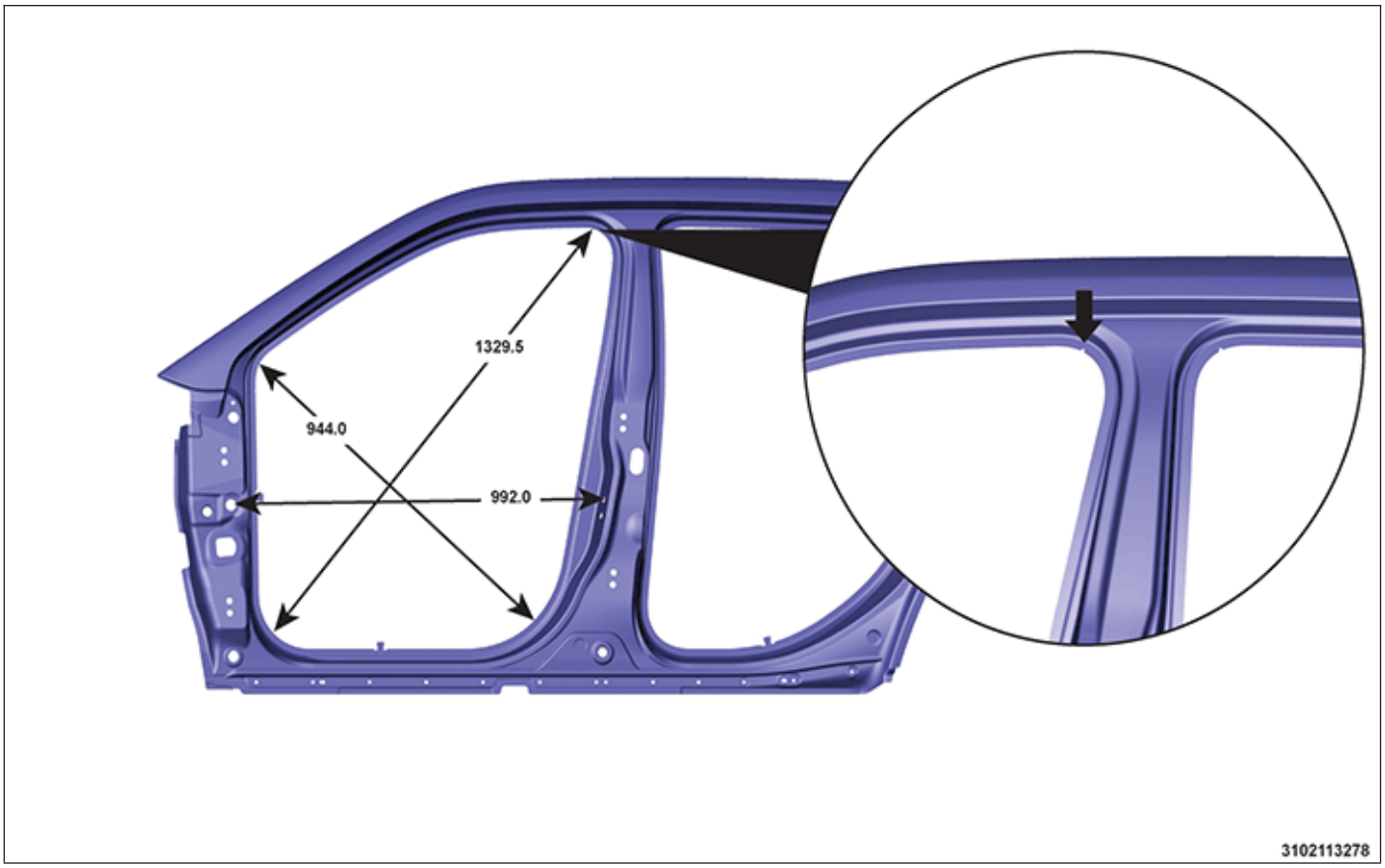
NOTE: Body opening dimensions are listed in metric scale millimeter (mm). Principal Locating Points (PLP), fastener locations, and holes are measured to center, unless noted otherwise.

Position the vehicle on a level work surface. Remove any weatherstrips, door strikers or any other parts that may interfere with the reference point.

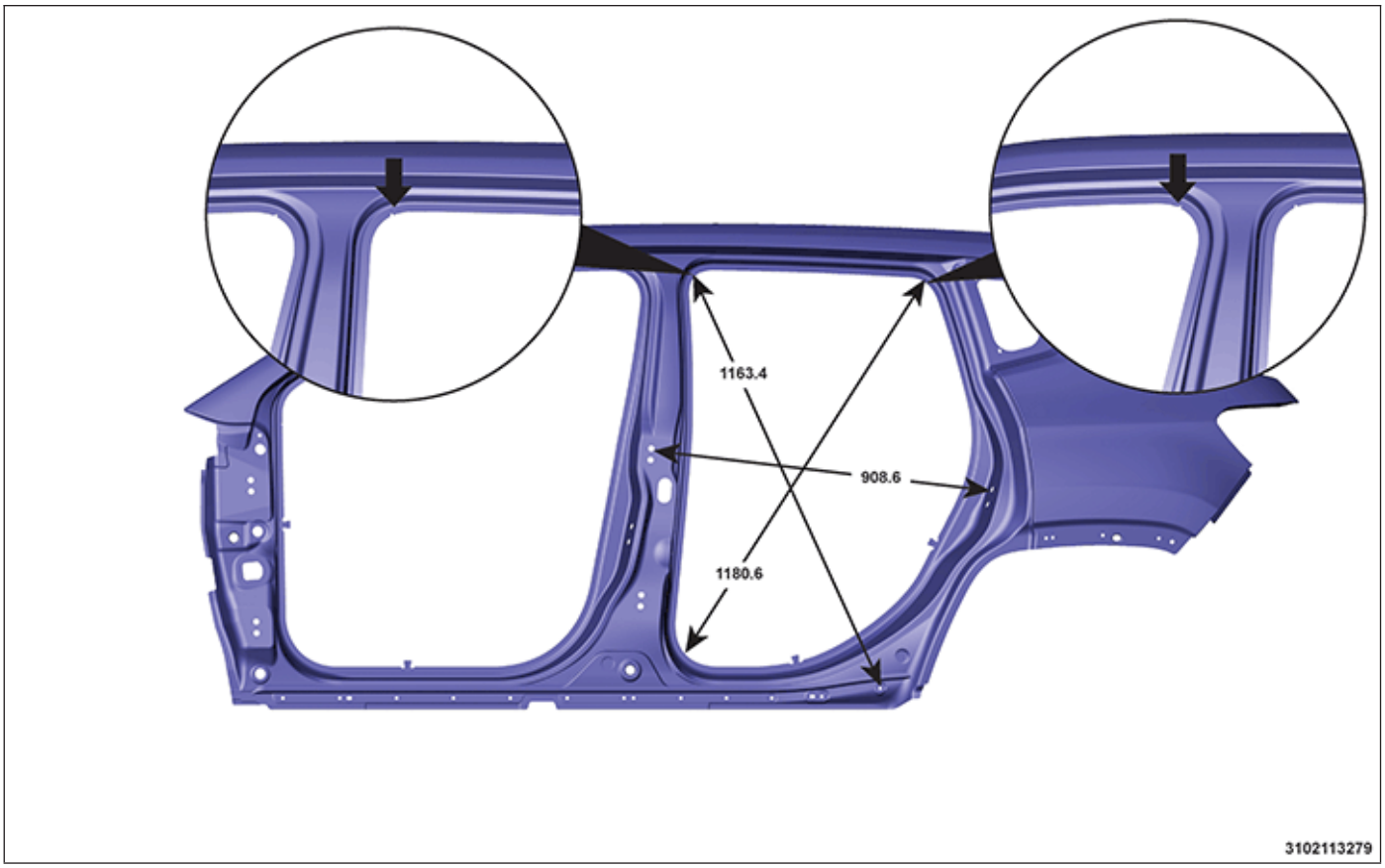
DESCRIPTION	FIGURE
Windshield Opening	Figure 1
Front Door Opening	Figure 2
Rear Door Opening	Figure 3
Liftgate Opening	Figure 4



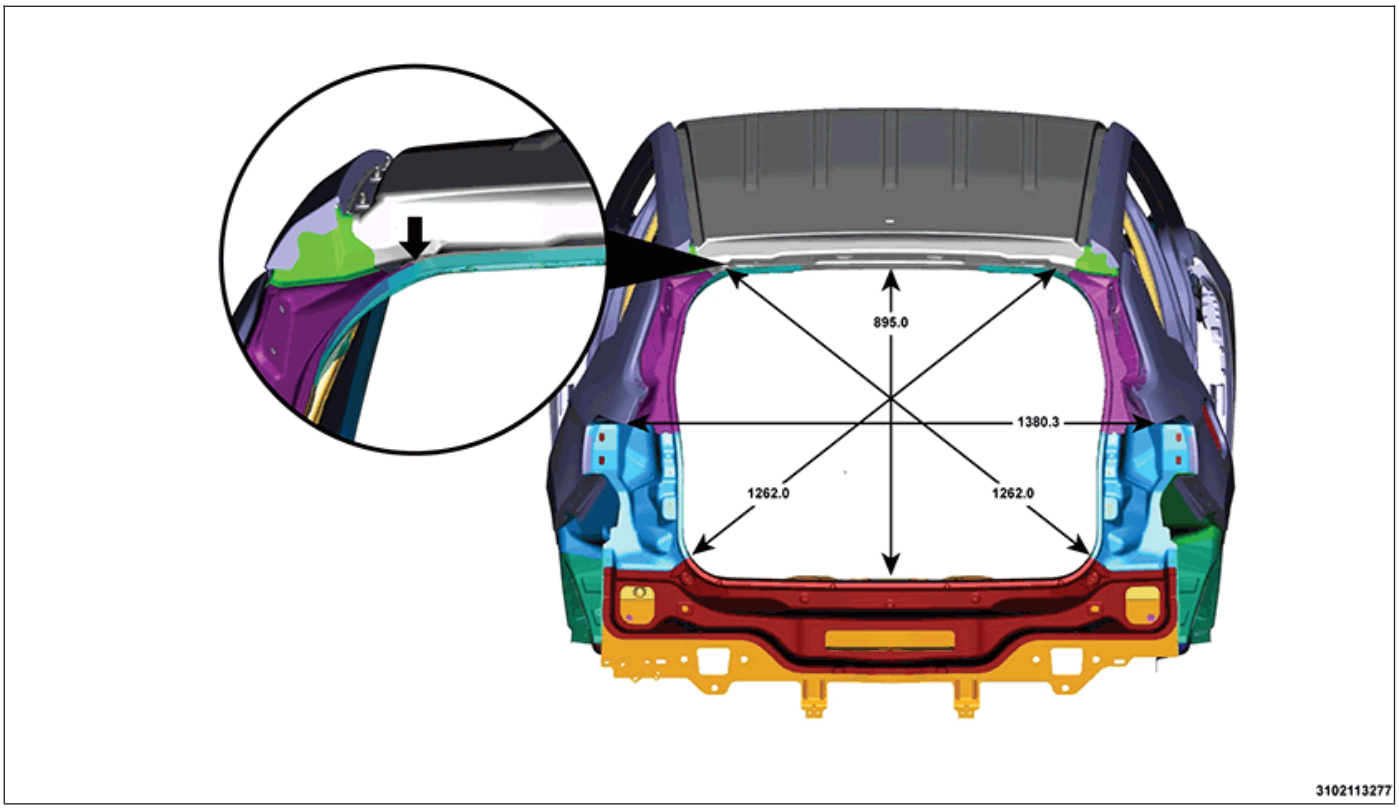
Windshield Opening



Front Door Opening



Rear Door Opening



Liftgate Opening

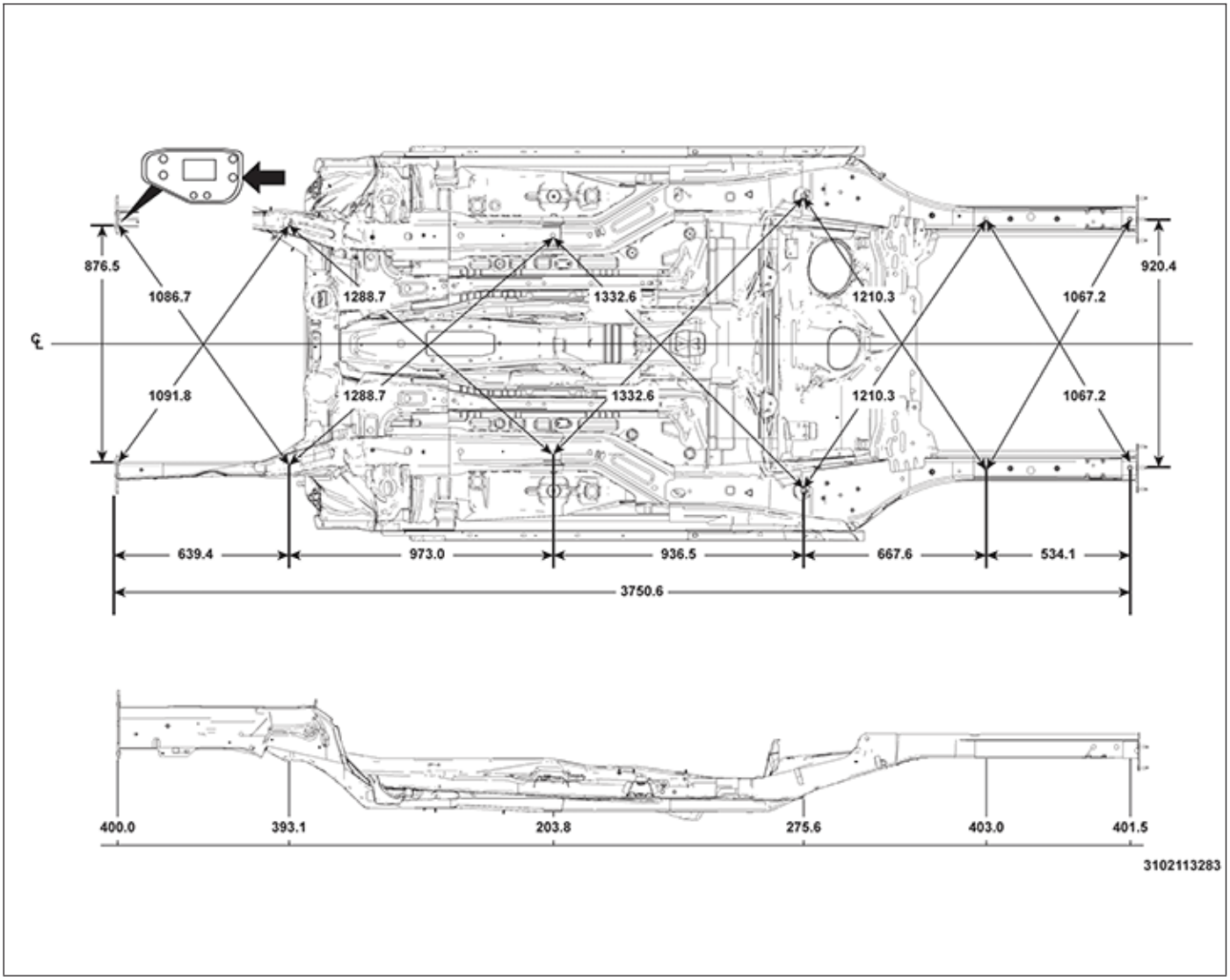
FRAME DIMENSIONS

NOTE: Frame dimensions are listed in metric scale millimeter (mm). All dimensions are from center to center of Principal Locating Point (PLP), or from center to center of PLP and fastener location.

VEHICLE PREPARATION-

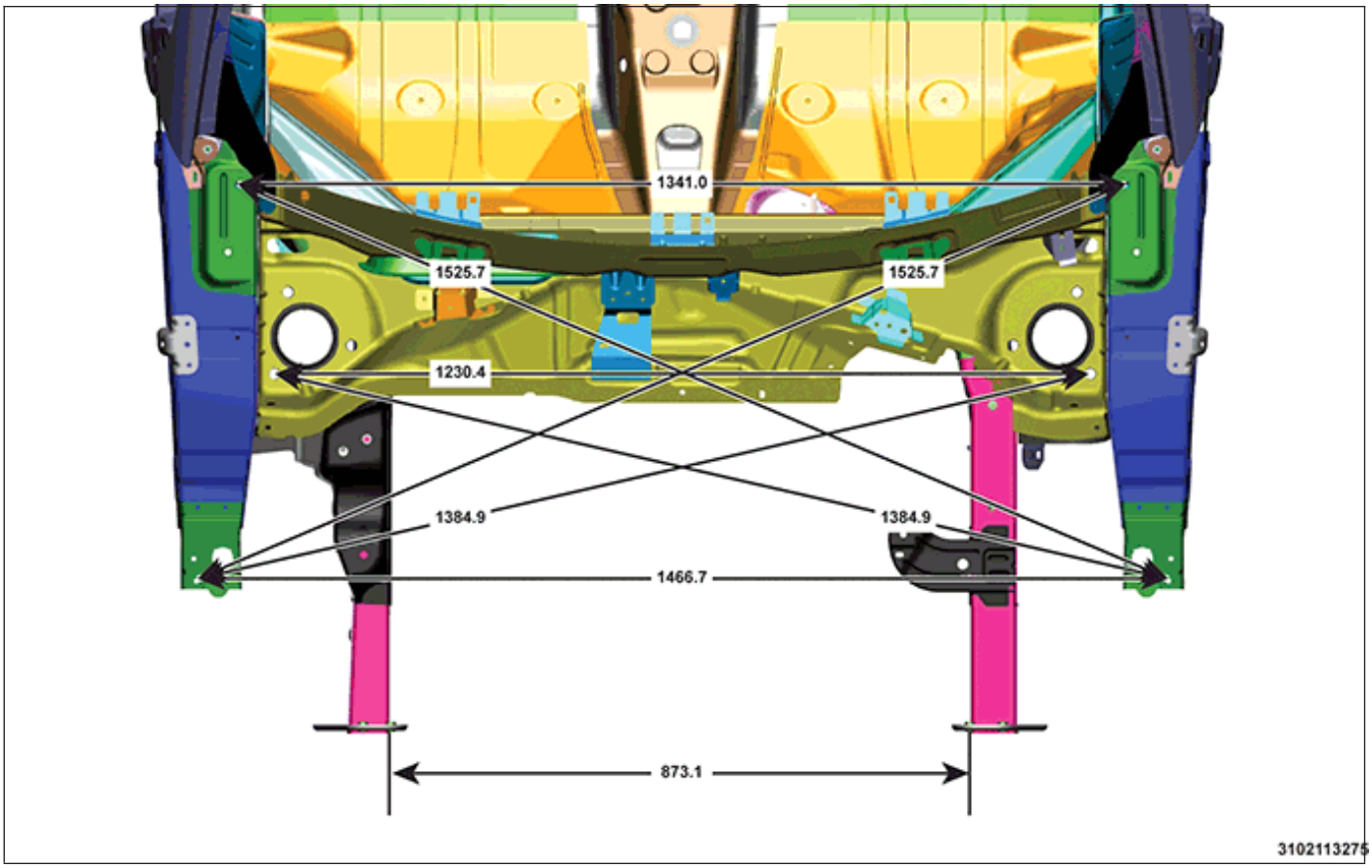
Position the vehicle on a level work surface. Using screw or bottle jacks, adjust the vehicle PLP heights to the specified dimension above a level work surface. Vertical dimensions can be taken from the work surface to the locations indicated were applicable.

INDEX



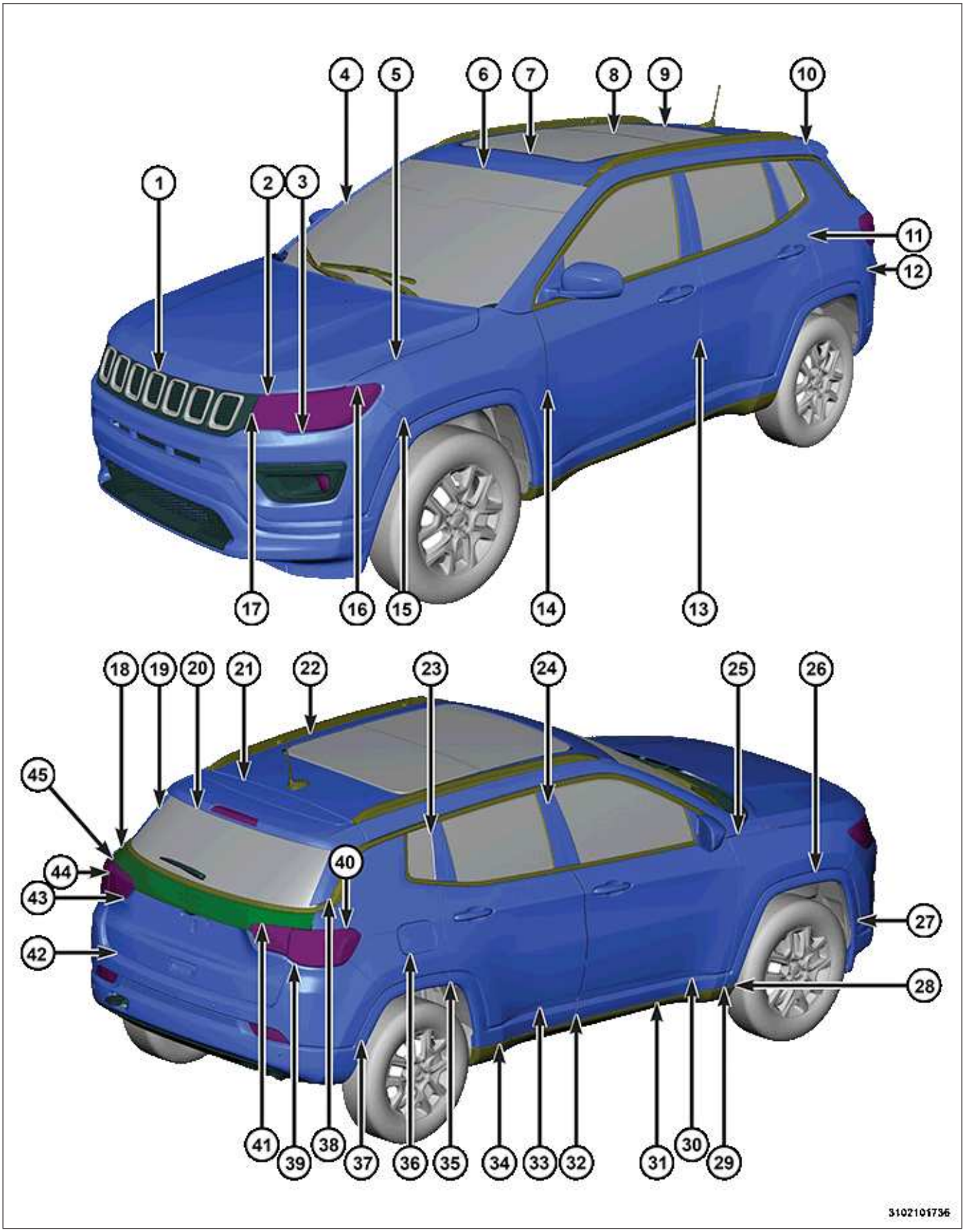
Under Body Dimensions

NOTE: The front measurement is from the bottom of the siderail plate aligned with the center of the front bumper reinforcement bottom inboard mounting hole.



Under Hood Dimensions

GAP AND FLUSH DIMENSIONS



NOTE: All dimensions are in millimeters.

- **O/F = Over Flush**
- **U/F = Under Flush**
- **U/D = Up/Down**
- **F/A = Fore/Aft**

DIMENSION	DESCRIPTION	GAP	FLUSH
1	Hood to Upper Grill Bezel	Varies +/- 1.5	—
2	Headlamp to Hood	Varies +/- 1.5 Consistent within 1.5	Headlamp U/F inboard 10.5 +/- 1.5 Transition to O/F 1.0 outboard
3	Headlamp to Upper Front Fascia	1.0 + 1.3/- 1.0 Consistent within 1.5	Headlamp O/F 5.0 +/- 1.0 at center Transition to 0.0 inboard
4	Windshield to Body Side Aperture	4.0 +/- 2.0	—
5	Hood to Fender	3.5 +/- 1.0 Parallel within 1.0 Side to side within 1.5	Hood U/F 2.0 +/- 1.0 at front Consistent within 1.0 Side to side within 1.0 Transition to 1.0 at bottom
6	Windshield to Roof	4.0 +/- 1.5	Windshield U/F 2.0 +/- 1.5
7	Front Power Sunroof Glass to Roof	0.0 to seal	Front Sunroof Glass U/F 0.0 to 2.5 Consistent within 1.0
8	Front Sunroof Glass to Rear Sunroof Glass	1.5 +/- 0.0	Front Sunroof Glass O/F 0.5 + 1.5
9	Rear Sunroof Glass to Roof	0.0 to seal	Rear Sunroof Glass O/F 0.0 to 2.5 Consistent within 1.0
10	Liftgate Spoiler to Body Side Aperture	6.0 +/- 1.5 Parallel within 1.5 Side to side within 2.0	Spoiler U/F 2.0 +/- 1.5 Consistent within 1.5
11	Rear Door to Body Side Aperture	4.0 +/- 1.0 Parallel within 1.0	Rear Door O/F 0.5 +/- 1.0 Transition to 0.0 at top
12	Upper Rear Fascia to Body Side Aperture	0.0 to 0.5	0.0 +/- 0.5
13	Front Door to Rear Door	4.0 +/- 1.0 Parallel within 1.0	Front Door O/F 0.5 +/- 1.0 Transition to 0.0 at top
14	Fender to Front Door	4.0 +/- 1.0 Parallel within 1.0	Fender O/F 0.5 +/- 1.0 at Transition to 0.0 at top
15	Upper Fascia to Fender	0.0 to 0.5	0.0 +/- 0.5
16	Headlamp to Fender	1.0 +/- 1.0 Consistent within 1.0	Headlamp U/F 3.5 +/- 1.0 inboard Transition to 3.5 to 4.5 outboard
17	Headlamp to Upper Grille Bezel	1.2 +/- 1.0 Consistent within 1.0	0.0 +/- 1.0 Consistent within 1.0
18	Light Bar to Body Side Aperture	4.0 +/- 1.5 Parallel within 1.5 Side to side within 2.5	Light Bar U/F 1.0 +/- 1.5 0.0 +/- 1.0 at top Side to side within 2.0

DIMENSION	DESCRIPTION	GAP	FLUSH
19	D-pillar Applique to Liftgate Glass	2.0 +/- 2.0 Parallel within 2.0 Side to side within 2.0	—
20	Spoiler to Liftgate Glass	2.0 +/- 1.0	—
21	Liftgate to Roof	6.5 +/- 1.0 Parallel within 1.0	Liftgate U/F 2.0 +/- 1.0 Consistent within 1.0
22	Roof to Body Side Aperture (Ditch Width)	36.0 +/- 1.5 Parallel within 1.5 Side to side within 2.0 Transition to 35.5 at rear	—
23	Quarter Glass Moulding to C-pillar Applique	4.0 +/- 1.5 Parallel within 1.5	Quarter Glass Encap U/F 1.5 +/- 1.5
24	Front Door Applique to Rear Door Applique	4.0 +/- 2.0 Parallel within 2.0	Front O/F 0.0 +/- 1.5 Consistent within 1.5
25	Fender to Body Side Aperture	3.0 +/- 1.0 inboard Side to side within 1.0 Transition to 2.5 outboard	0.0 +/- 1.0 Consistent within 1.0 inboard Side to side within 1.5 Transition to Fender U/F 1.5 to 0.5 outboard
26	Wheel Flare to Fender	0.0 + 1.0	Flare O/F 1.0 +/- 2.0 at front Transition to 1.5 to 0.5 at rear
27	Wheel Flare to Lower Fascia	2.5 +/- 1.0 at outboard	0.0 +/- 2.0
28	Wheel Flare to Sill Moulding	4.0 +/- 2.0	0.0 +/- 2.0
29	Front Door Cladding to Fender Wheel Flare	5.5 +/- 2.0 at outboard	Cladding U/F 0.5 +/- 2.0
30	Front Door Cladding to Front Door	Varies +/- 1.0 Parallel within 1.0	Varies +/- 1.0 Parallel within 1.0
31	Front Door Cladding to Sill Moulding	6.0 +/- 2.0	Varies +/- 2.0
32	Rear Door Cladding to Front Door Cladding	6.5 +/- 2.0	0.0 +/- 2.0
33	Rear Door Cladding to Rear Door	Varies +/- 1.0 Parallel within 1.0	Varies +/- 1.0 Parallel within 1.0
34	Rear Door Cladding to Sill Moulding	6.0 +/- 2.0	Varies +/- 2.0
35	Rear Door Cladding to Wheel Flare	6.0 +/- 2.0	0.0 +/- 2.0
36	Fuel Filler Door to Body Side Aperture	2.5 +/- 1.0 Parallel within 1.0	Door U/F 1.0 +/- 1.0 Consistent within 1.0
37	Wheel Flare to Lower Rear Fascia	2.0 +/- 1.0 at front 2.3 at notch	0.0 +/- 2.0
38	Body Side Aperture Moulding to D-pillar Applique	6.5 +/- 1.5 Parallel within 1.5 at top Side to side within 1.5 Transition to 6.0 at Liftgate	Moulding O/F 4.5 +/- 1.5 at top Consistent within 1.5 Transition to 4.0 to 2.5 at bottom

DIMENSION	DESCRIPTION	GAP	FLUSH
39	Body Side Aperture Lamp to Upper Fascia	1.5 +/- 1.2 Parallel within 1.2 Side to side within 1.5	Taillamp O/F 0.7 +/- 1.2 at outboard Transition to 1.3 at inboard
40	Body Side Aperture Lamp to Body Side Aperture	1.5 +/- 1.0 Parallel within 1.0	Taillamp U/F 3.0 +/- 1.0 at inboard top Transition to O/F 0.5 at outboard lower
41	Liftgate Lamp to Light Bar	1.5 +/- 1.5 Parallel within 1.5 Side to side within 1.5	Taillamp U/F 3.0 +/- 1.5 at outboard Transition to 1.0 inboard
42	Upper Rear Fascia to Liftgate	Cross car 4.0 +/- 1.5 U/D 5.5 +/- 1.8 Parallel within 1.5	Varies +/- 1.7 Consistent within 1.7
43	Liftgate Lamp to Liftgate	1.5 +/- 1.0	Taillamp U/F 8.0 +/- 1.5 at bottom Transition to 8.5 outboard
44	Body Side Aperture Lamp to Liftgate Lamp	4.0 +/- 2.0 Parallel within 1.5 Side to side within 2.0	Varies + 2.0 /- 1.7 Consistent within 1.5 Side to side within 2.0
45	Body Side Aperture Lamp to Light Bar	4.0 +/- 2.0 Parallel within 1.0	Taillamp U/F 5.5 +/- 2.0 at inboard Transition to 5.0 outboard

PAINT CODES

Exterior vehicle body color(s) are identified on the Vehicle Certification Label or the Body Code Plate.

The first digit of the paint code listed on the vehicle indicates the sequence of application, i.e.: P = primary coat, Q = secondary coat. The color names provided in the Paint and Trim Code Description chart are the same color names used on most repair product containers.

PAINT COLOR INFORMATION	INFORMATION LOCATION
2017 - Paint Color Chart	2017 PAINT CODES
2018 - Paint Color Chart	2018 PAINT CODES

2017 PAINT CODES

EXTERIOR COLORS

EXTERIOR COLOR	PAINT CODE
Brilliant Black Pearl Coat	AXR
Black Clear Coat	DX8
Redline Pearl Coat	JRM
Billet Silver Metallic Clear Coat	JSC
Jazz Blue Pearl Coat	KBX
Olive Green Pearl Coat (Verde Olivo)	KFP
Pearl White Tri-Coat	KWH
White Clear Coat (Bianco)	KW3
Diamond Black Pearl Coat	KXJ
Granite Crystal Metallic Clear Coat	LAU
Hydro/Laser Blue Pearl Coat	MBJ
Rhino Clear Coat	MSQ
Spitfire Orange Clear Coat	NF2
Nitro Yellow-Green Clear Coat	RF2

INTERIOR COLORS

INTERIOR COLOR	Order Code	COLOR CODE
Black / Ruby Red	XC	DX9 / LR5
Black / Ski Grey	XS	DX9 / PS4
Black / Sandstorm	XU	DX9 / LTU
Black	X9	DX9

2018 PAINT CODES

EXTERIOR COLORS

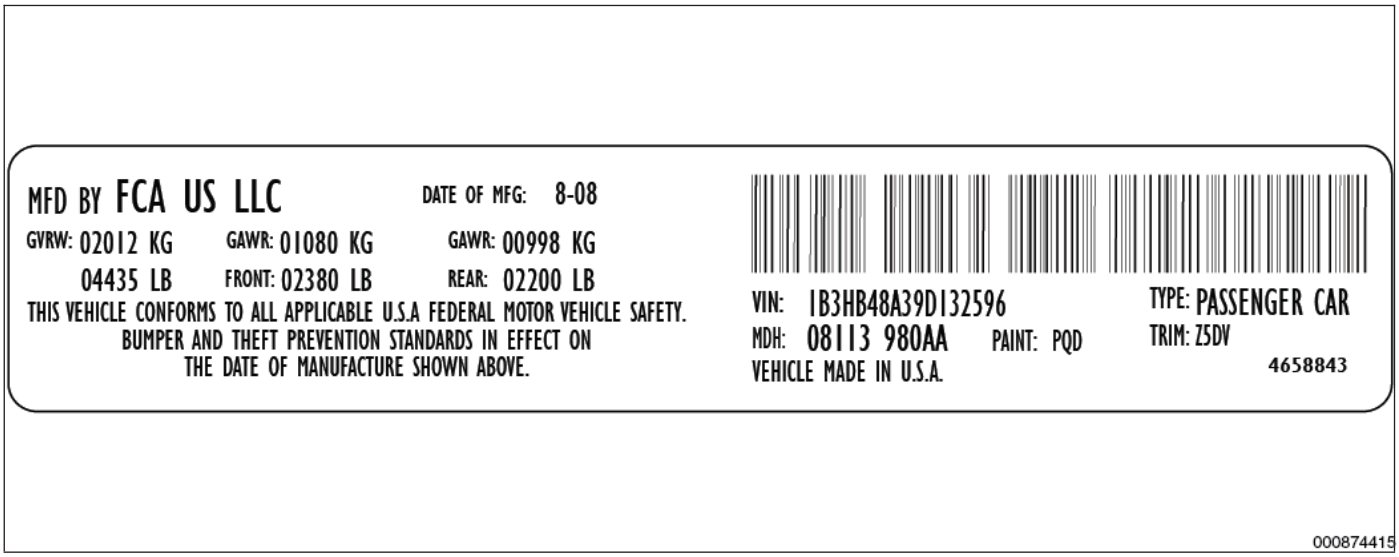
EXTERIOR COLOR	PAINT CODE
Brilliant Black Pearl Coat	AXR
Black Clear Coat	DX8

EXTERIOR COLOR	PAINT CODE
Redline Pearl Coat	JRM
Billet Silver Metallic Clear Coat	JSC
Jazz Blue Pearl Coat	KBX
Olive Green Pearl Coat (Verde Olivo)	KFP
Pearl White Tri-Coat	KWH
White Clear Coat (Bianco)	KW3
Diamond Black Pearl Coat	KXJ
Granite Crystal Metallic Clear Coat	LAU
Hydro/Laser Blue Pearl Coat	MBJ
Rhino Clear Coat	MSQ
Spitfire Orange Clear Coat	NF2
Nitro Yellow-Green Clear Coat	RF2

INTERIOR COLORS

INTERIOR COLOR	Order Code	COLOR CODE
Black / Ruby Red	XC	DX9 / LR5
Black / Ski Grey	XS	DX9 / PS4
Black / Sandstorm	XU	DX9 / LTU
Black	X9	DX9

VEHICLE CERTIFICATION LABEL



NOTE: Typical example of label shown.

A vehicle certification label is attached to every FCA US LLC vehicle. The label certifies that the vehicle conforms to all applicable Federal Motor Vehicle Standards. The label also lists:

- Month and year of vehicle manufacture.
- Gross Vehicle Weight Rating (GVWR). Gross Axle Weight Ratings (GAWR) The gross front and rear axle weight ratings are based on a minimum rim size and maximum cold tire inflation pressure.
- Vehicle Identification Number (VIN).
- Type of vehicle.
- Type of rear wheels.
- Bar code.
- Month, Day and Hour (MDH) of final assembly.
- Paint and Trim codes.
- Country of origin.

The label is located on the driver-side door shut-face.

Locations

SEALERS AND SOUND DEADENERS

Terminology

- **Work Time :** The length of time a sealer can continue to be applied or tooled effectively.
- **Set Time :** Time when there is no longer product transfer.
- **Handling Time :** The time when a part can be safely transported and sealer can no longer be tooled or repositioned.
- **Full Cure Time :** Time when a sealer has reached full strength.
- **Paintable Time :** Established time when refinish materials can safely be applied to a sealer.

Sealers

- **Brushable :** Single component sealer applied with a brush.
- **Flowable :** Sealer with low viscosity and self-leveling characteristics.
- **Pumpable :** A two component or one component sealer that seals interior and exterior joints and voids.
- **Resistance Weld-through :** Sealer / adhesive that can be used in conjunction with resistance spot welding.
- **Sealer Tape :** Preformed sealer.
- **Sprayable :** Sealer applied with a pneumatic dispenser to duplicate original textured appearance.
- **Thumb Grade :** Heavy bodied sealer for sealing large gaps and filling voids. Should remain soft and pliable.

Sound Deadeners

- **Non-Structural Flexible Acoustical :** Flexible foam with sealing and sound deadening properties.
- **Non-Structural Ridged Acoustical :** Ridged foam with sealing and sound deadening properties.
- **Mastic Pads** : Sound deadener pad that is preformed to fit a specific area.

Identifying Sealers

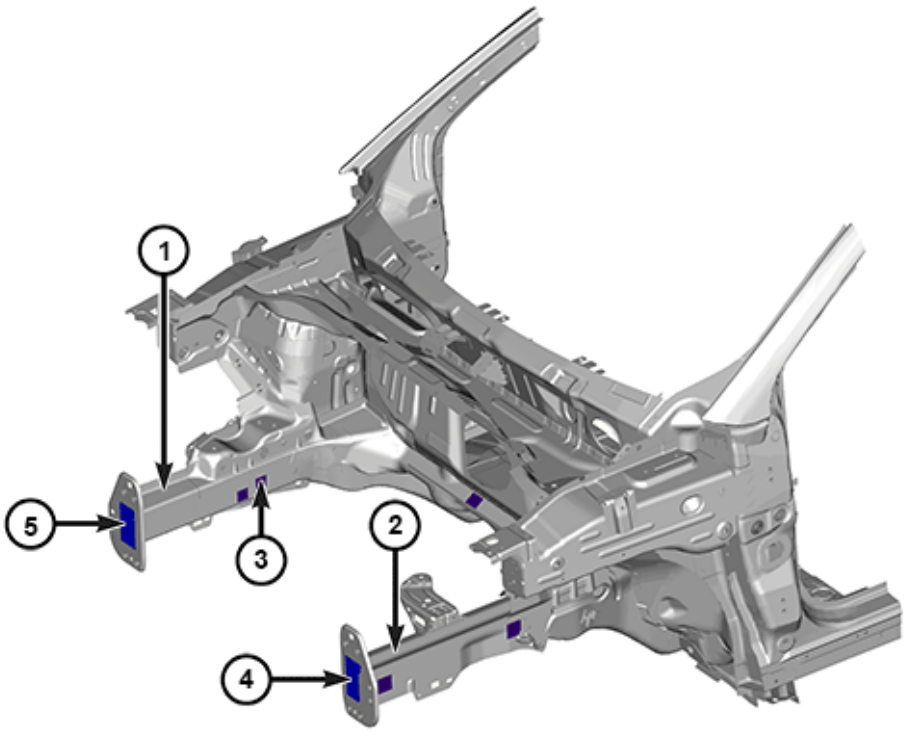
- Several types of sealers and sound deadeners are used during assembly. Therefore, specific applications may not be identified in this publication. General applications and the various types of products for repair will be featured to identify and replace OEM sealers and sound deadeners.

Helpful Sealer Tips

- Check shelf life or expiration date prior to beginning sealer applications.
- Be sure "work time" is appropriate for sealer application.
- Temperature, humidity and thickness of sealer will affect the work, set and paintable times.
- Test fit replacement panels prior to installation to be certain of a tight fit and proper seal.
- Equalize 2K Products according to adhesive manufacturer’s recommendations.
- Always follow manufacturer’s recommendations for storage, usage and application to achieve best performance of the product.

SOUND DEADENER LOCATIONS

DESCRIPTION	FIGURE
Front Frame Rails	Figure 1
Hood	Figure 2
Fender	Figure 3
Dash Panel Outer	Figure 4
Dash Panel Inner (1 of 2)	Figure 5
Dash Panel Inner (2 of 2)	Figure 6
Roof Panel	Figure 7
Floor Pan (Interior)	Figure 8
Underbody	Figure 9
Floor Tunnel	Figure 10
Rear Wheelhouse (1 of 2)	Figure 11
Rear Wheelhouse (2 of 2)	Figure 12
Outer Wheelhouse and Closure Panel	Figure 13



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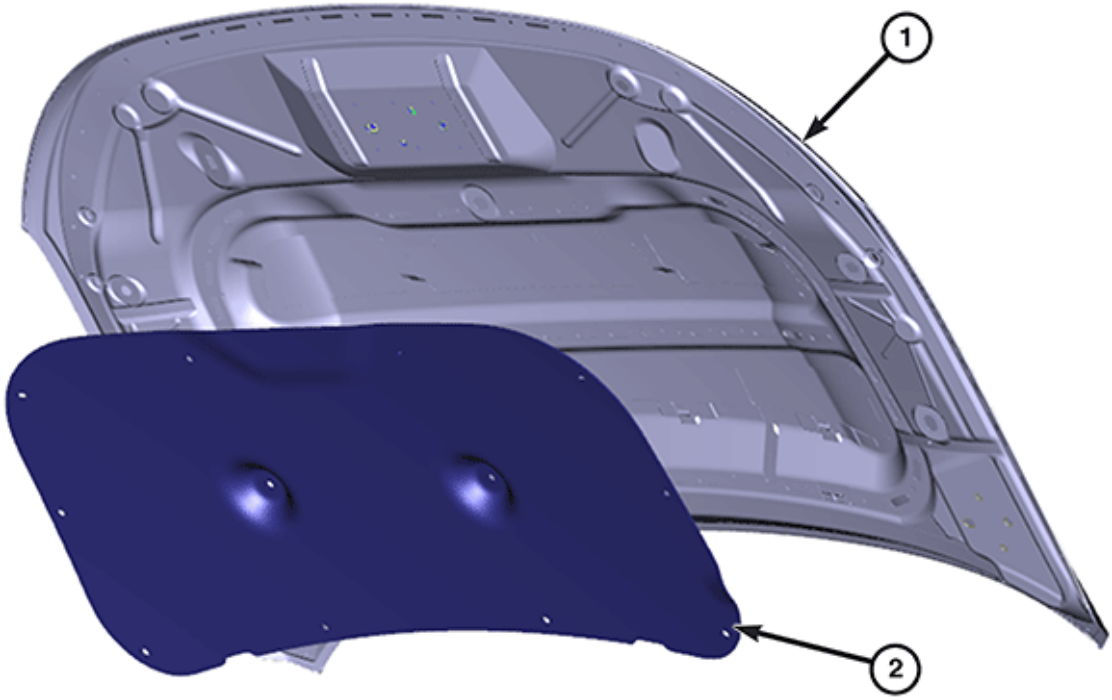
Front Frame Rails

1- Right Front Frame Rail
2- Left Front Frame Rail
3- Baffle Tape
4- Left Baffle Tape
5- Right Baffle Tape



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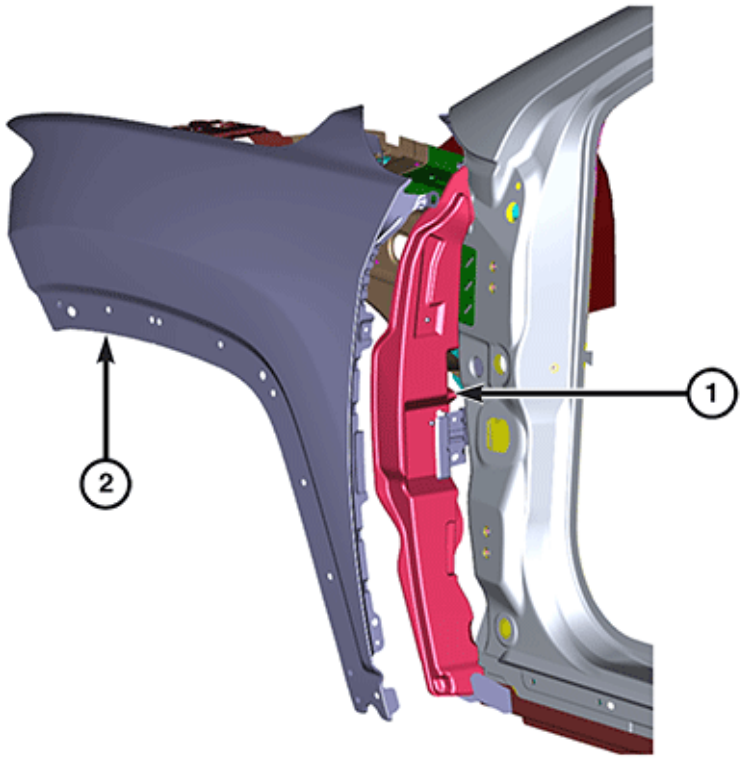
Hood

1- Hood
2- Hood Silencer



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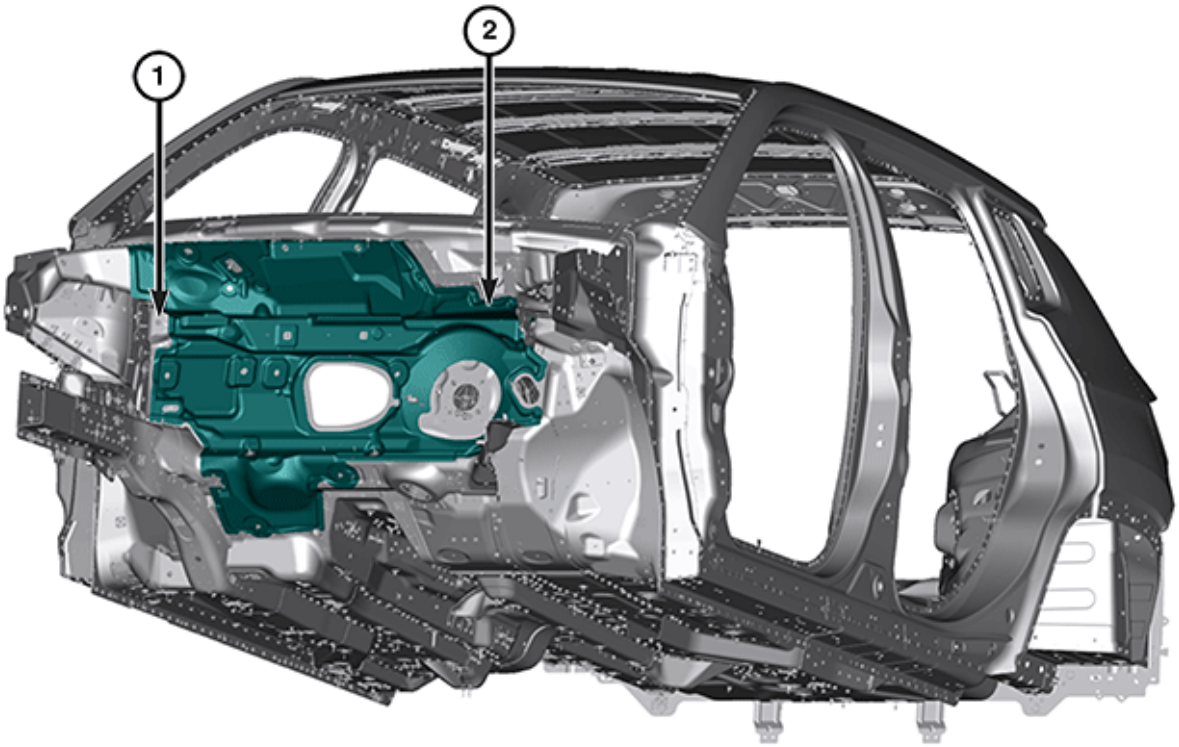
Fender

1- Cowl Side to Fender Silencer
2- Fender



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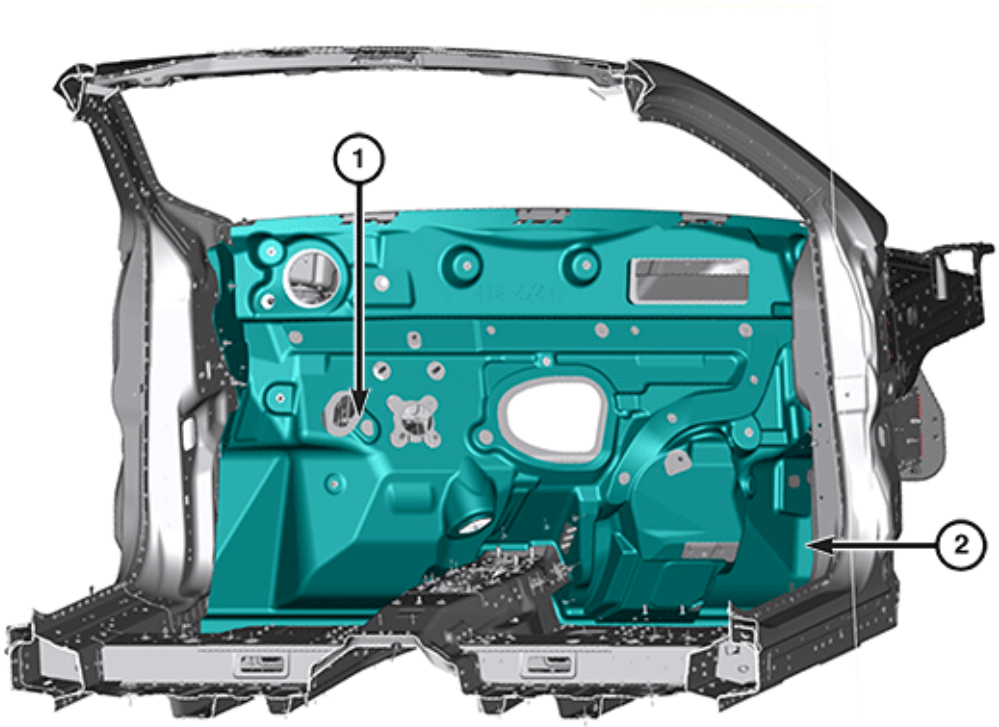
Dash Panel Outer

1- Dash Panel Outer
2- Dash Panel Silencer Pad



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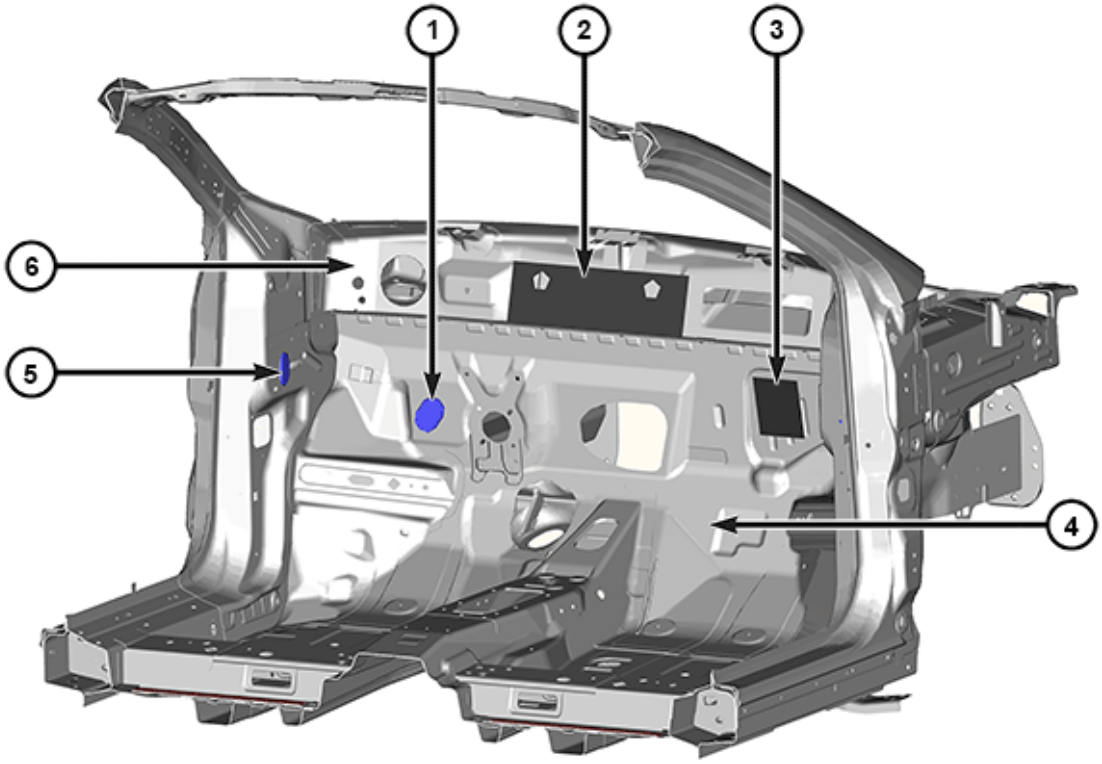
Dash Panel Inner (1 of 2)

1- Dash Panel Inner
2- Dash Panel Silencer Pad



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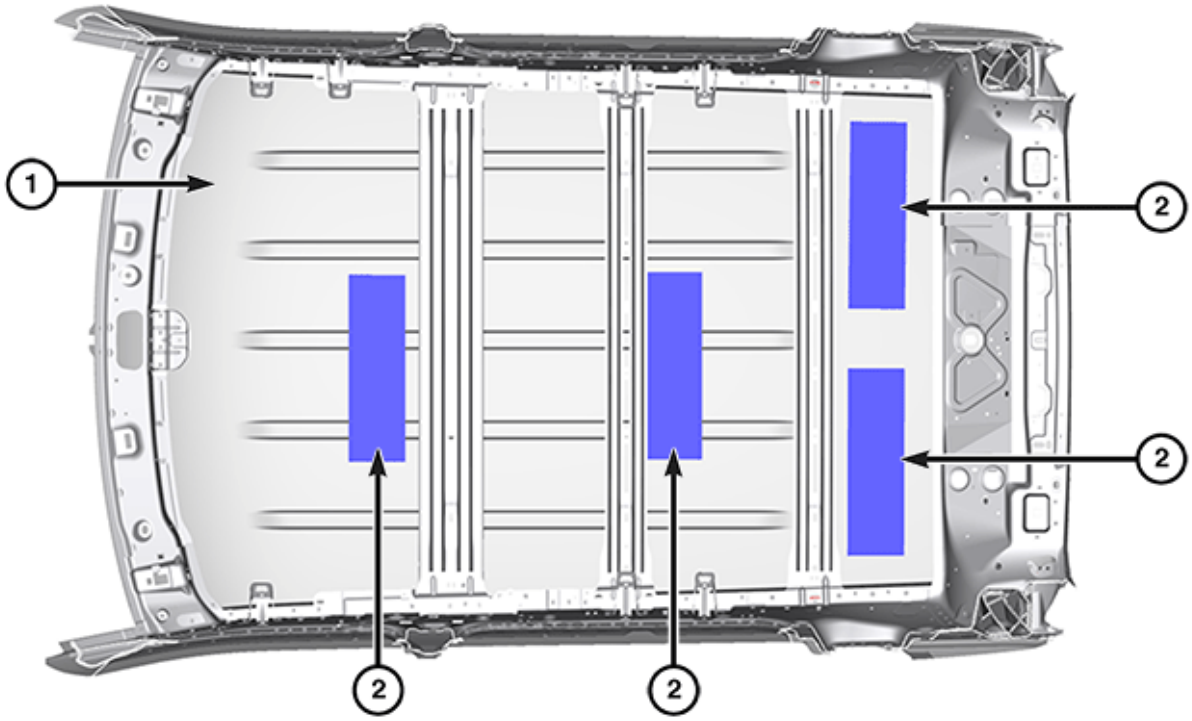
Dash Panel Inner (2 of 2)

1- Clutch Cable Plug
2- Cowl Panel Mastic Pad
3- Dash Panel Mastic Pad
4- Dash Panel
5- Cowl Side Panel Plug
6- Cowl Panel



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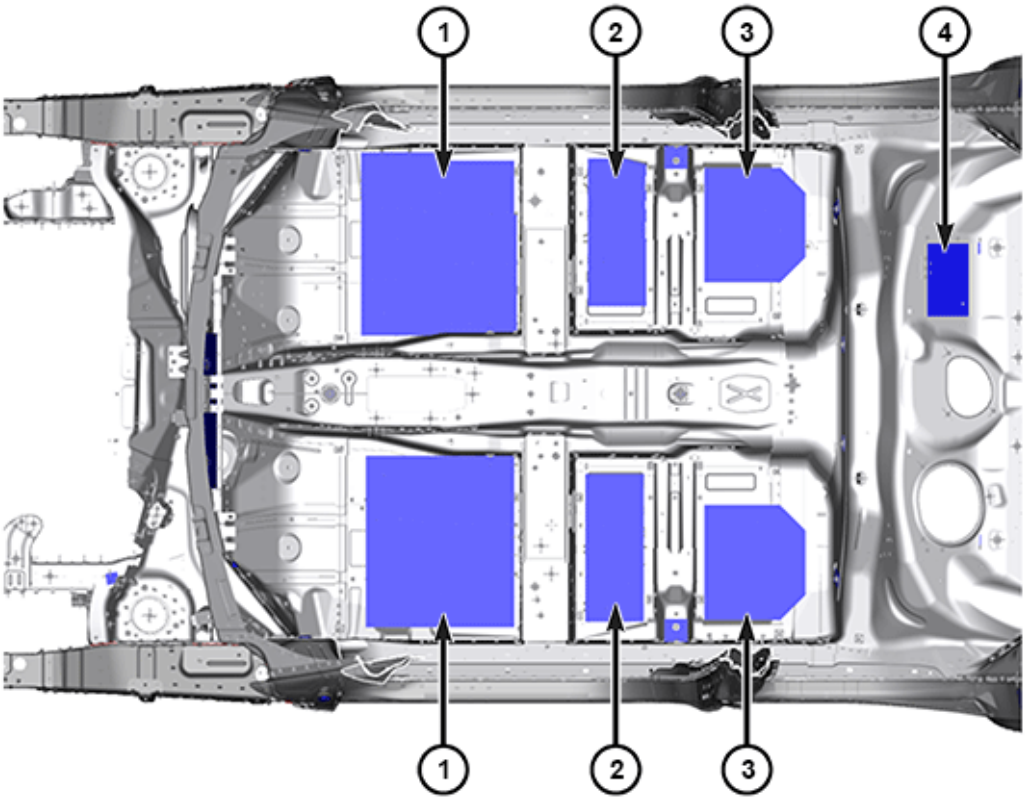
Roof Panel

1- Roof Panel
2- Roof Panel Mastic Pad



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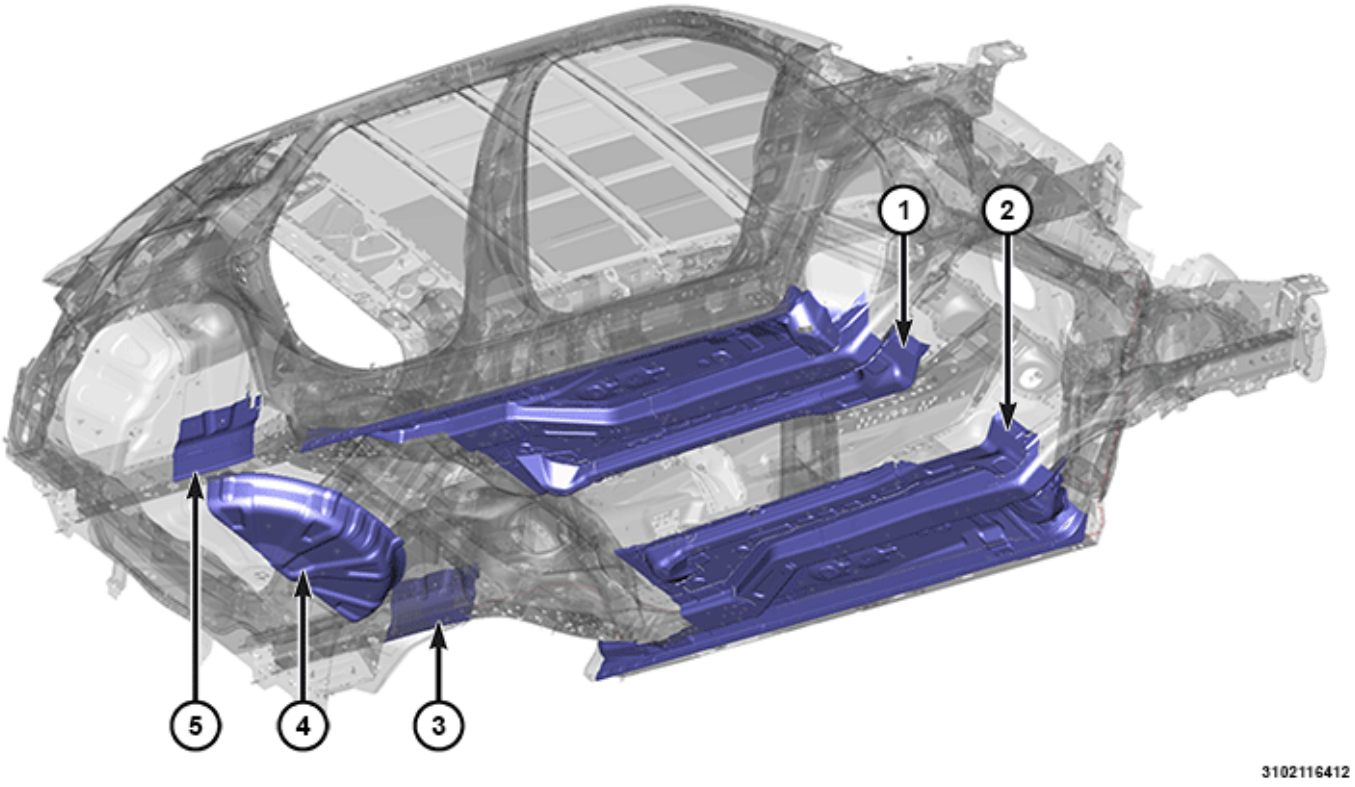
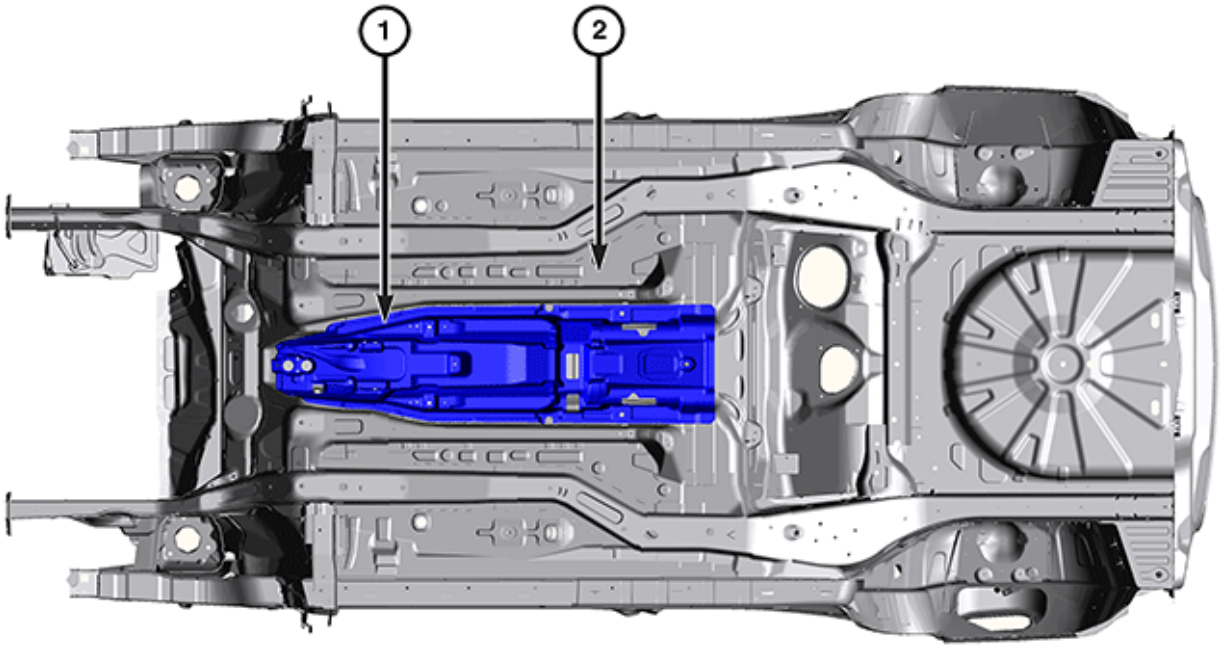
Floor Pan (Interior)

1- Front Floor Pan Front Mastic Pads
2- Front Floor Pan Mid Mastic Pads
3- Front Floor Pan Rear Mastic Pads
4- Center Floor Pan Mastic Pad



Underbody

1- Right Front Floor Pan Liquid applied Sound Deadener (LASD)
2- Left Front Floor Pan LASD
3- Left Wheelhouse LASD
4- Rear Floor Pan LASD
5- Right Wheelhouse LASD



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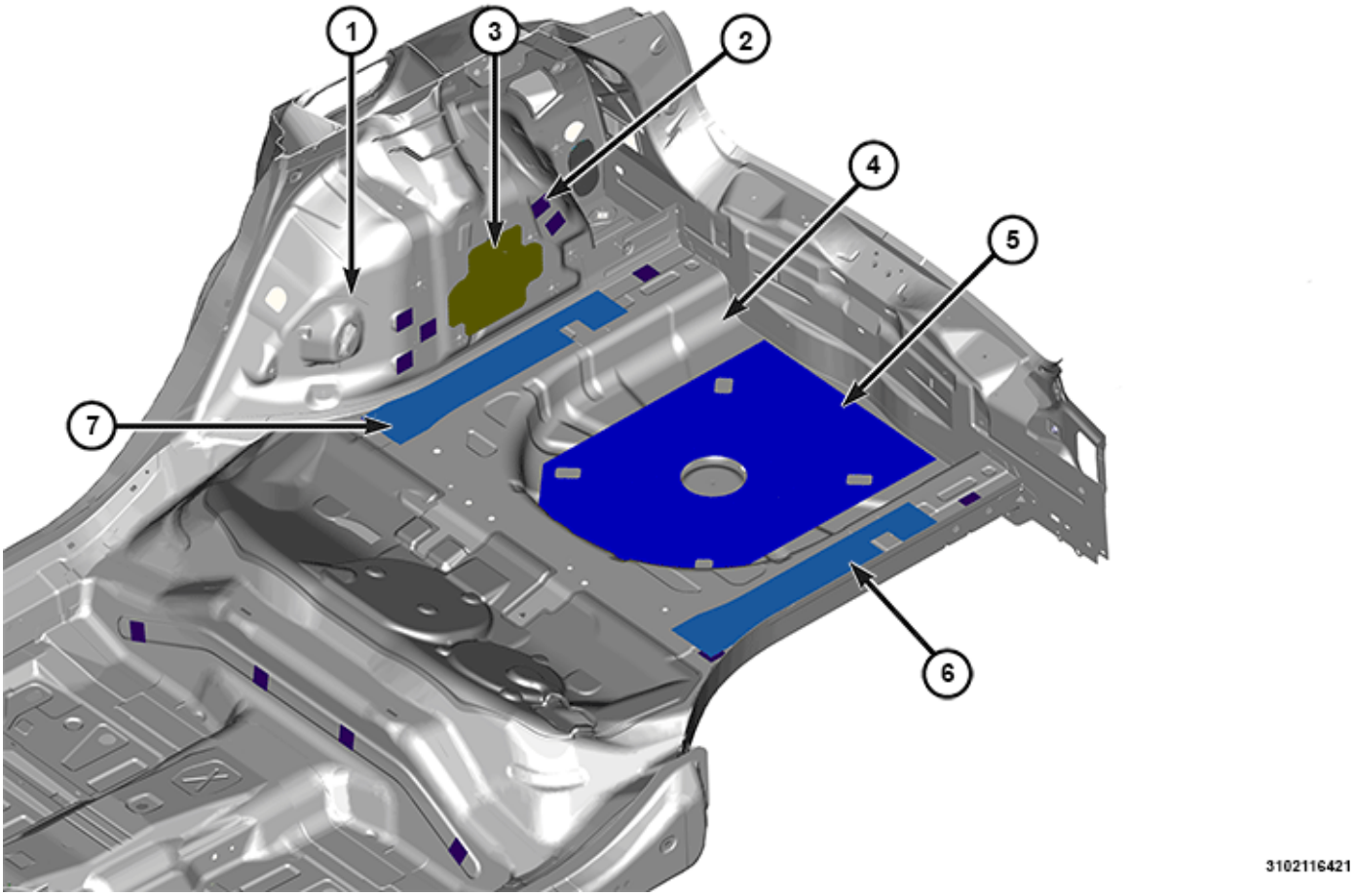
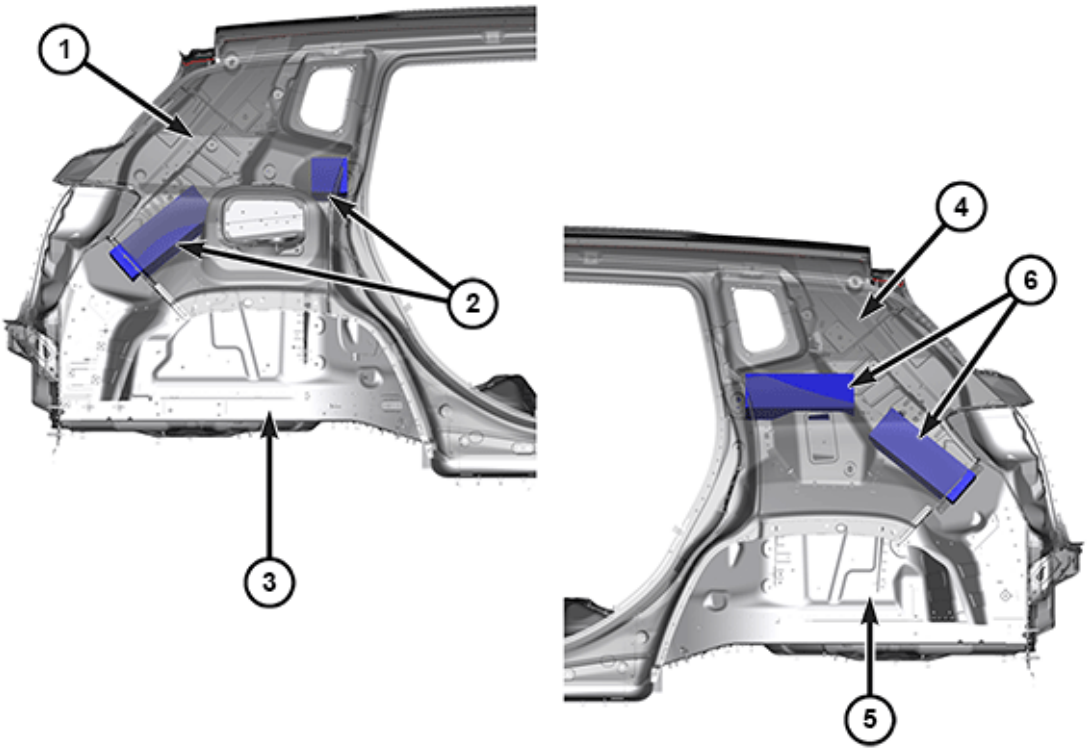
Floor Tunnel

1- Front Floor Pan
2- Tunnel Silencer



Rear Wheelhouse (1 of 2)

1- Right Inner Wheelhouse
2- Foil Butyl Tape
3- Inner Wheelhouse Acoustic liner
4- Rear Floor Pan
5- Rear Floor Pan Mastic Pad
6- Left Rear Frame Rail Underlayment
7- Right Rear Frame Rail Underlayment



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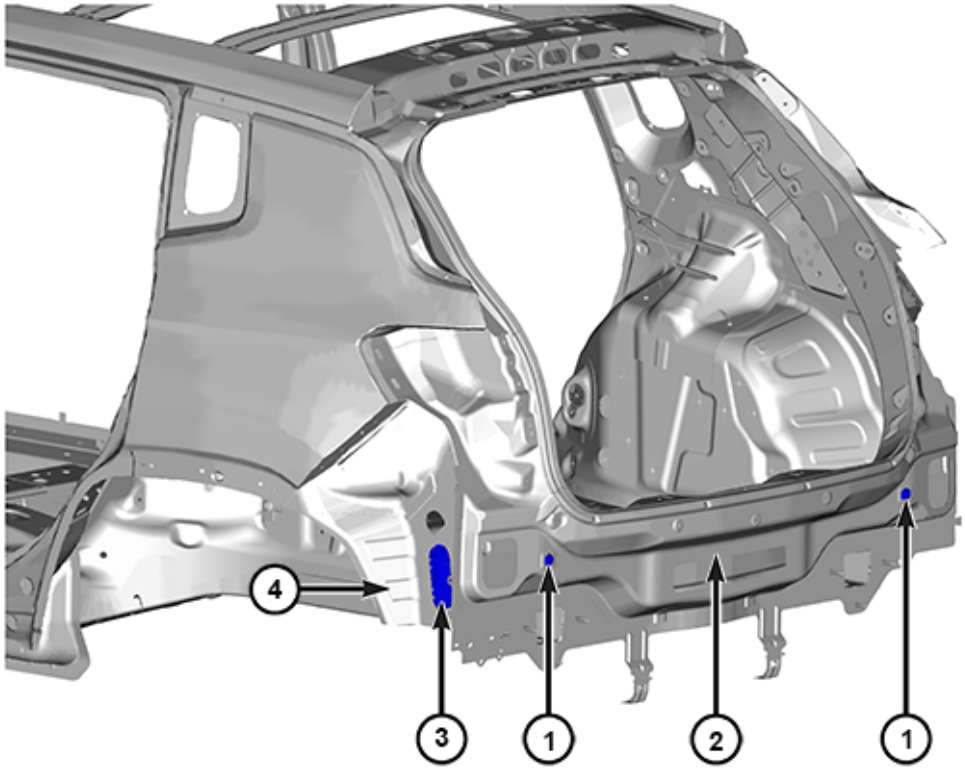
Rear Wheelhouse (2 of 2)

1- Right Body Side Aperture
2- Right Wheelhouse Stuffers
3- Right Outer Wheelhouse
4- Left Body Side Aperture
5- Left Outer Wheelhouse
6- Left Wheelhouse Stuffers



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Outer Wheelhouse and Closure Panel

1- Rubber Plug
2- Rear Closure Panel
3- Adhesive Plug
4- Left Outer Wheelhouse

STRUCTURAL ADHESIVE, FLEXIBLE ADHESIVES AND SEAM SEALER LOCATIONS

Structural adhesives, flexible adhesives and seam sealers should only be applied by trained technicians. Follow the manufactures instructions for proper applications of products.

Structural adhesive is applied by itself or in conjunction with Squeeze Type Resistance Spot Welds (STRSW) and is to be re-assembled in the same manner as vehicle build. Any situation where it is undetermined weather it is structural adhesives or seam sealer always default to structural adhesive.

Anti- flutter adhesive is applied to areas of the vehicle where adhesive properties with flexibility are required. Typically found on supports and braces throughout the closure panels, roof and body side gas fill areas.

Seam sealers are only to be used topically, never within weld flanges or hem flanges. All sealers being replaced should duplicate the factory style sealer in shape and size.

For additional information on Corrosion Protection, (Refer to Collision Information - Standard Procedure).

For additional information on Sealer and Sound Description, (Refer to Collision Information-Locations).

FCA US LLC approved replacement materials include –

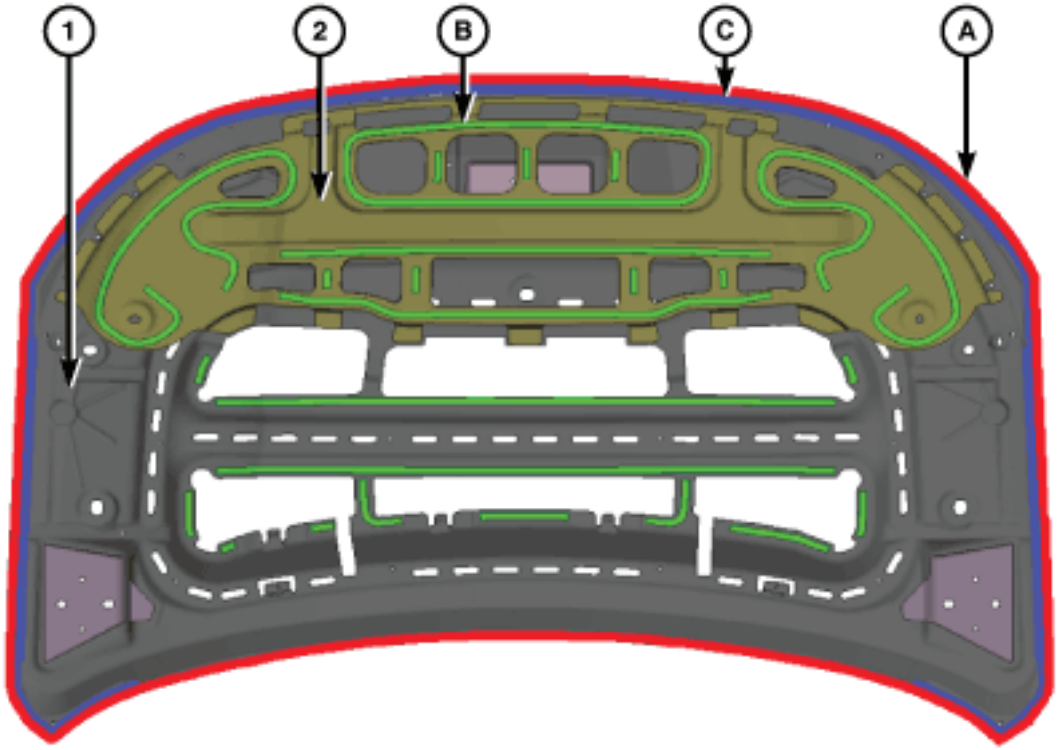
- **Structural Adhesives:** LORD Fusor 2098, LORD Fusor 112B and 3M 08116.
- **Anti-Flutter Adhesives:** LORD Fusor #121 or #124 (Flexible Foam), 3M #8463 Flexible Foam, Crest – CFF Flexi-Foam.
- **Seam Sealer:** Mopar #04318026, Fusor 129, 3M 08308.

MATERIAL TYPE	COLOR
Structural Adhesive	Red
Anti-Flutter Adhesive	Green

MATERIAL TYPE	COLOR
Seam Sealer	Blue

DESCRIPTION	FIGURE
Hood	Figure 1
Front Door	Figure 2
Rear Door	Figure 3
Liftgate	Figure 4
Engine Support Bracket	Figure 5
Engine Box	Figure 6
Engine Box (Lower View)	Figure 7
Front Suspension Tower	Figure 8
A-pillar Reinforcement and Load Path Beam	Figure 9
Cowl Top Panel/Cowl Plenum Panel-Exterior (1 of 2)	Figure 10
Cowl Top Panel/Cowl Plenum Panel-Exterior (2 of 2)	Figure 11
Cowl Top Panel/Cowl Plenum Panel-Interior (1 of 2)	Figure 12
Cowl Top Panel/Cowl Plenum Panel-Interior (2 of 2)	Figure 13
Dash Panel-Interior	Figure 14
Cowl Side Inner Panel/Sill Panel/ Dash Panel	Figure 15
Dash Panel and Front Floor-Interior (1 of 2)	Figure 16
Dash Panel and Front Floor-Interior (2 of 2)	Figure 17
Front Floor Underbody	Figure 18
Inner Load Beam/Cowl Side Panel	Figure 19
Body Side Aperture (Upper View)	Figure 20
Body Side Aperture (Front)	Figure 21
B-pillar Inner Panel	Figure 22
Body Side Aperture Sill Reinforcement	Figure 23
Sill Inner Panel	Figure 24
B-pillar Outer Reinforcement	Figure 25
A-pillar Outer Reinforcement and Body Side Aperture	Figure 26
Roof Rail Composite Insert	Figure 27
Roof Panel With Sunroof (1 of 2)	Figure 28
Roof Panel With Sunroof (2 of 2)	Figure 29
Roof Panel Standard (1 of 2)	Figure 30
Roof Panel Standard (2 of 2)	Figure 31
Center Floor- Interior (1 of 2)	Figure 32
Center Floor- Interior (2 of 2)	Figure 33
Center Floor- Exterior	Figure 34
Rear Floor- Interior (1 of 2)	Figure 35
Rear Floor- Interior (2 of 2)	Figure 36
Rear Floor- Exterior (1 of 2)	Figure 37
Rear Floor- Exterior (2 of 2)	Figure 38
Body Side Aperture- Rear (1 of 2)	Figure 39

DESCRIPTION	FIGURE
Body Side Aperture- Rear (2 of 2)	Figure 40
Rear Frame Rail and Floor Sidemember Close-out	Figure 41
Rear Inner Wheelhouse (1 of 3)	Figure 42
Rear Inner Wheelhouse (2 of 3)	Figure 43
Rear Inner Wheelhouse (3 of 3)	Figure 44
Rear Outer Wheelhouse- Right	Figure 45
Rear Outer Wheelhouse- Left	Figure 46
Rear Header Panel	Figure 47
Liftgate Drain Trough	Figure 48
Lower D-pillar	Figure 49
Rear Closure Panel	Figure 50



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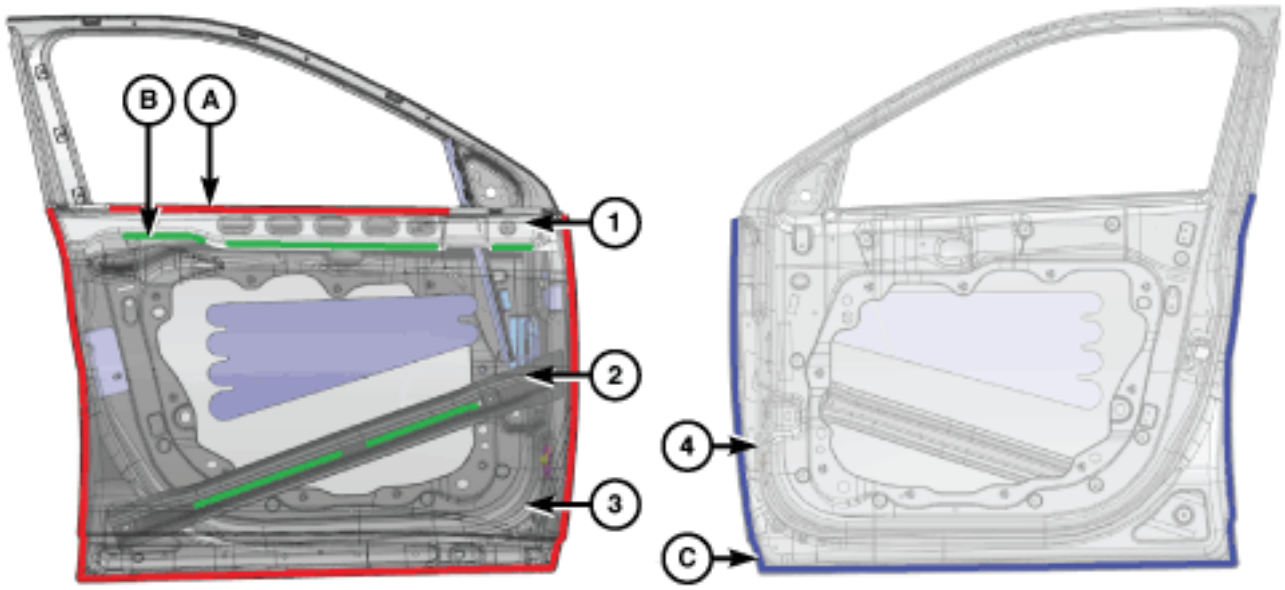
Hood

1- Inner Hood Panel
2- Inner Hood Slam Reinforcement
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



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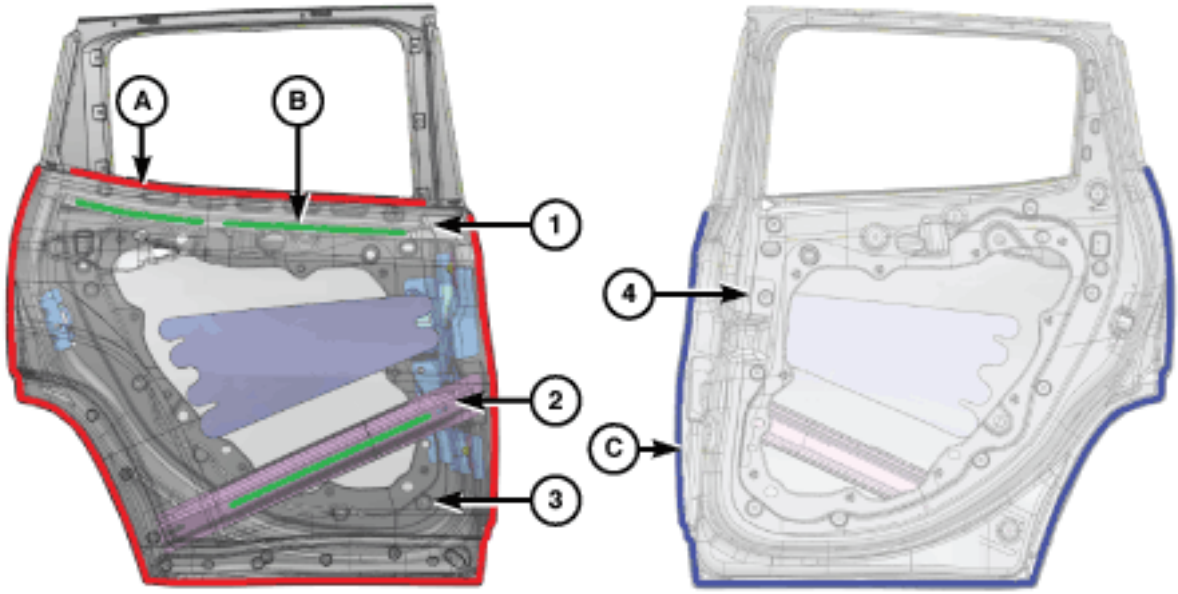
Front Door

1- Outer Belt Reinforcement
2- Impact Reinforcement Beam
3- Front Door Outer Panel (Transparent for clarity)
4- Inner Front Door Panel
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



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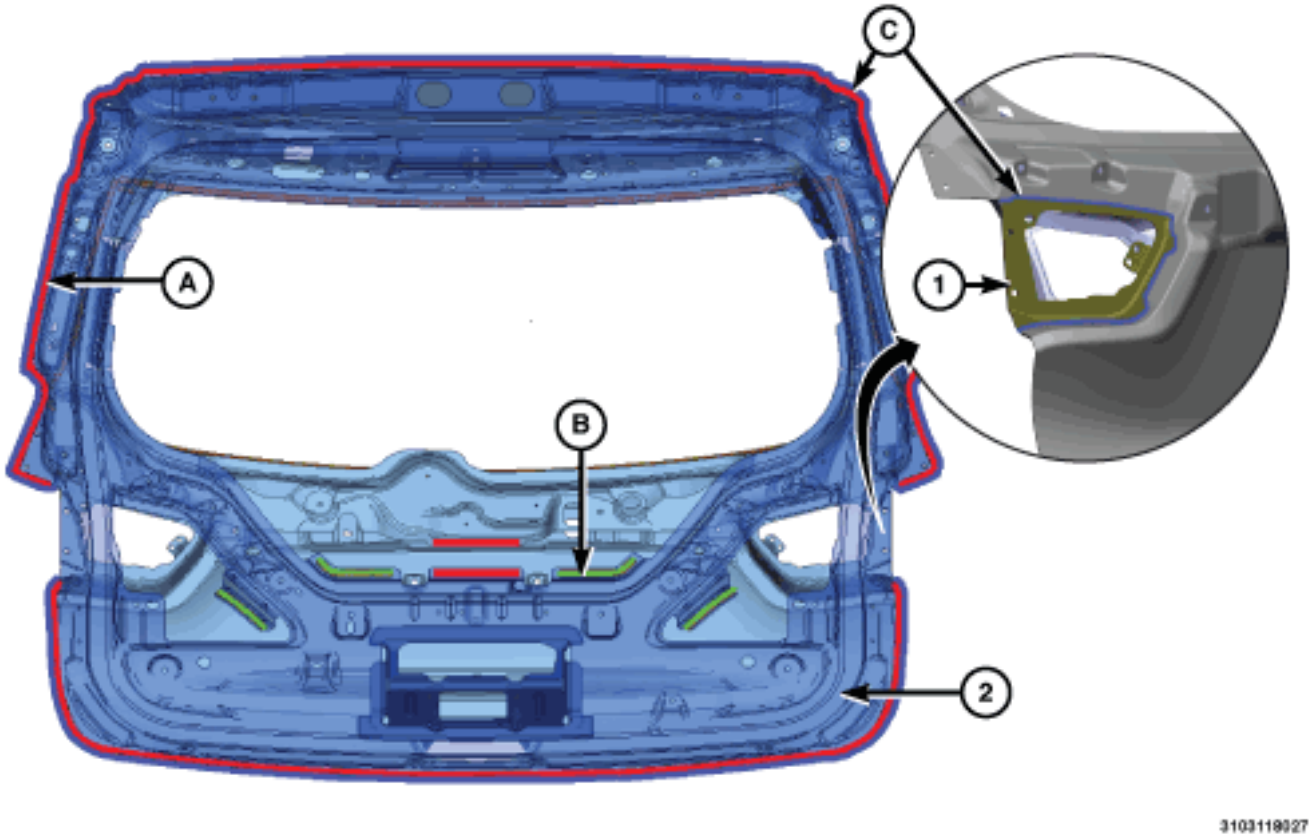
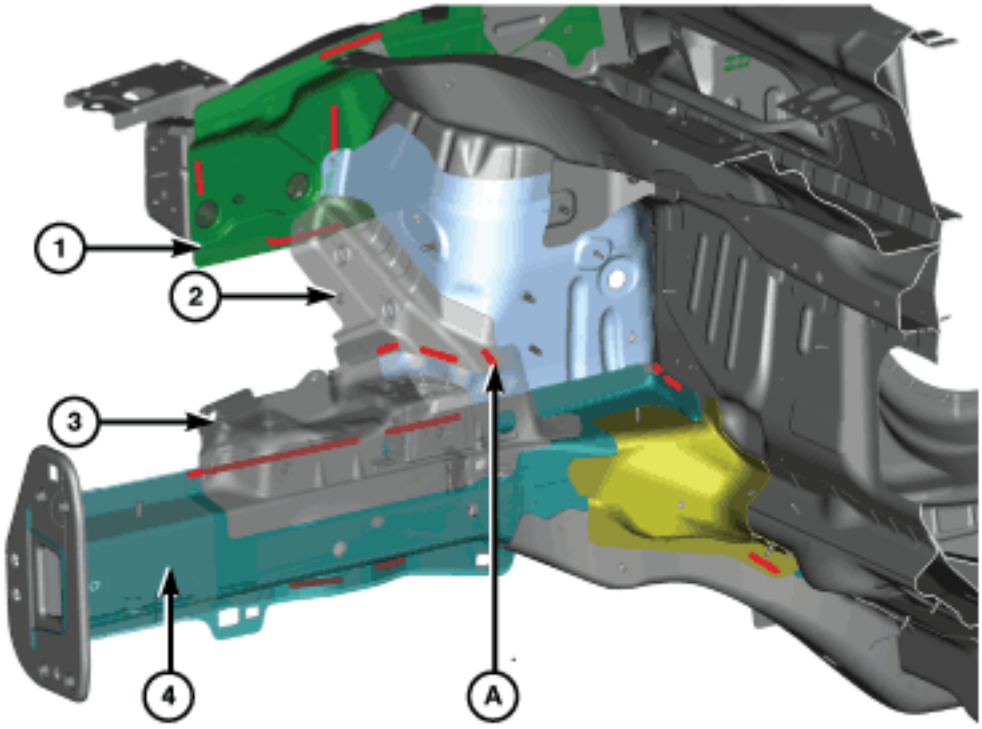
Rear Door

1- Outer Belt Reinforcement
2- Impact Reinforcement Beam
3- Rear Door Outer Panel (Transparent for clarity)
4- Inner Rear Door Panel
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



Liftgate

1- Liftgate Taillamp Pocket
2- Liftgate Inner Panel
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



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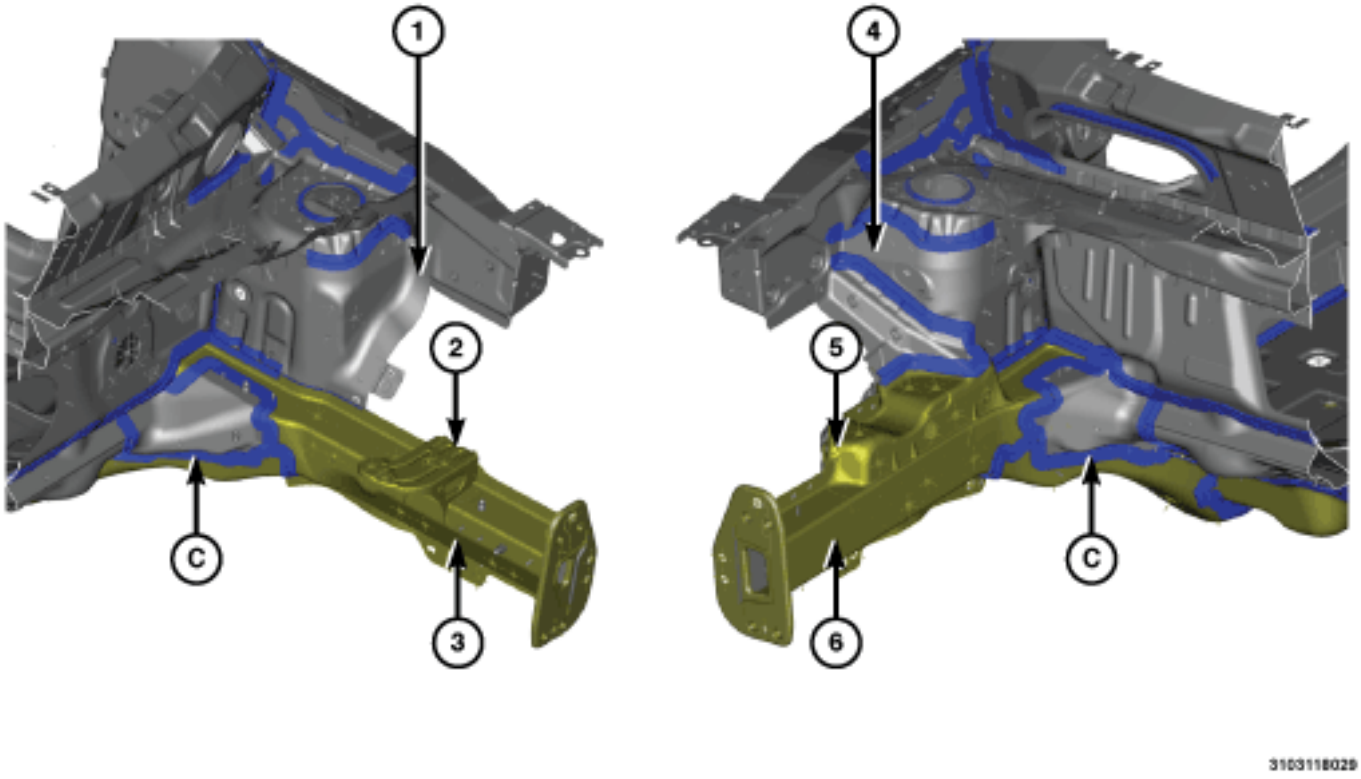
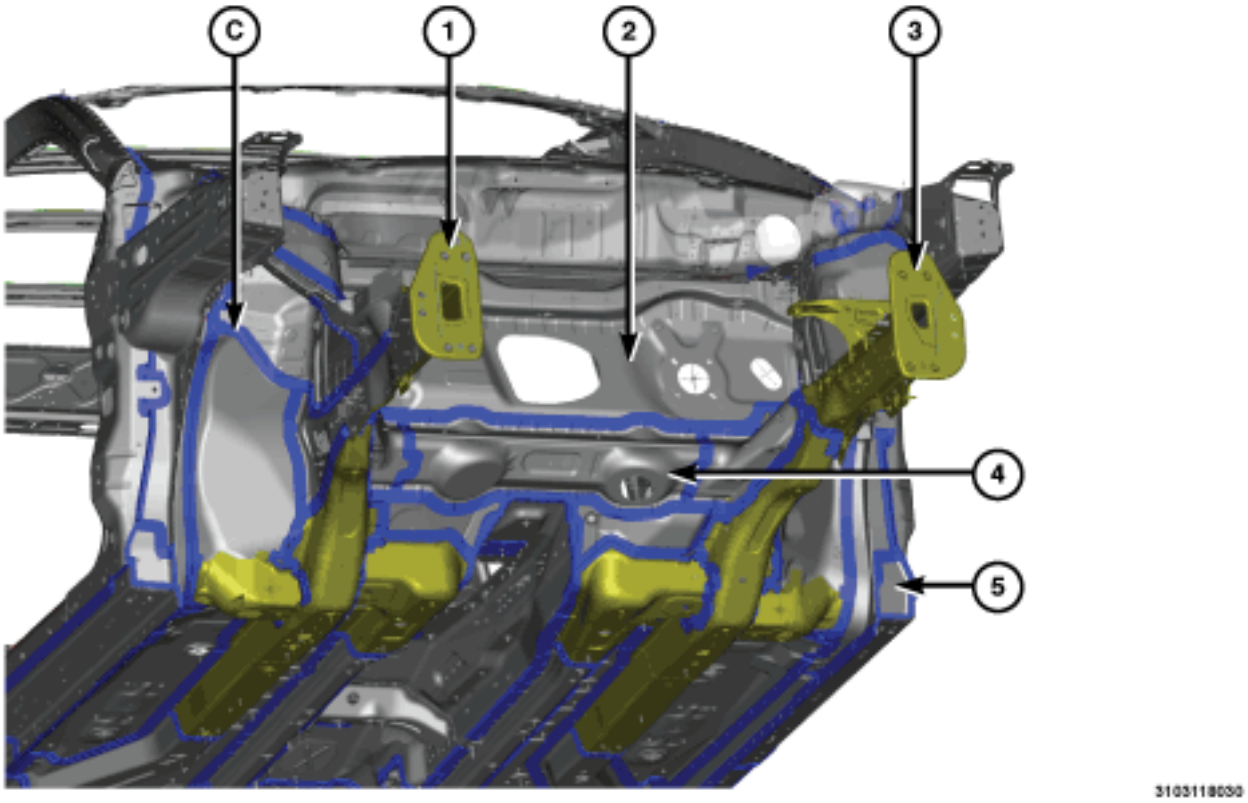
Engine Support Bracket

1- Inner Load Path Beam
2- Suspension Tower Reinforcement
3- Engine Support Bracket
4- Front Frame Rail
A- Structural Adhesive



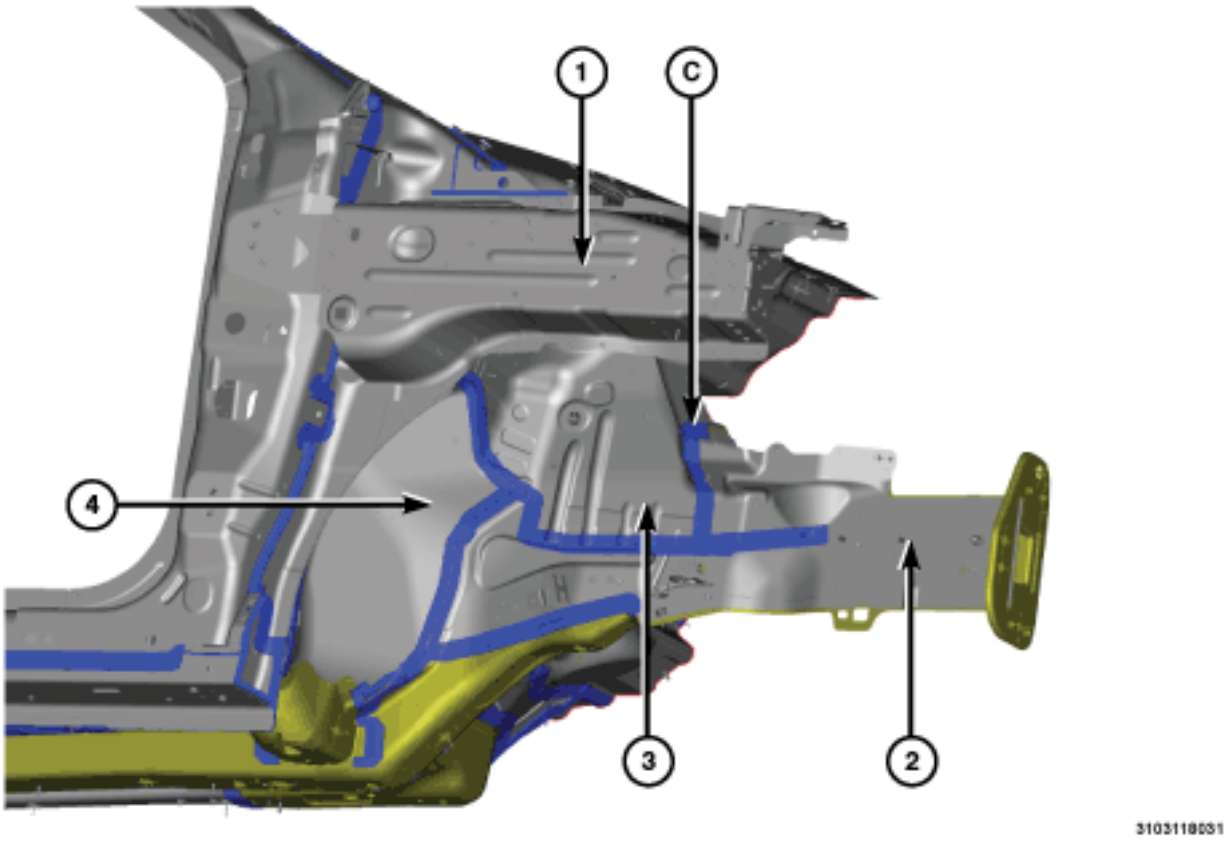
Engine Box

1- Left Suspension Tower
2- Battery Tray Bracket
3- Left Front Frame Rail
4- Right Suspension Tower
5- Engine Support Bracket
6- Right Front Frame Rail
C- Seam Sealer



Engine Box (Lower View)

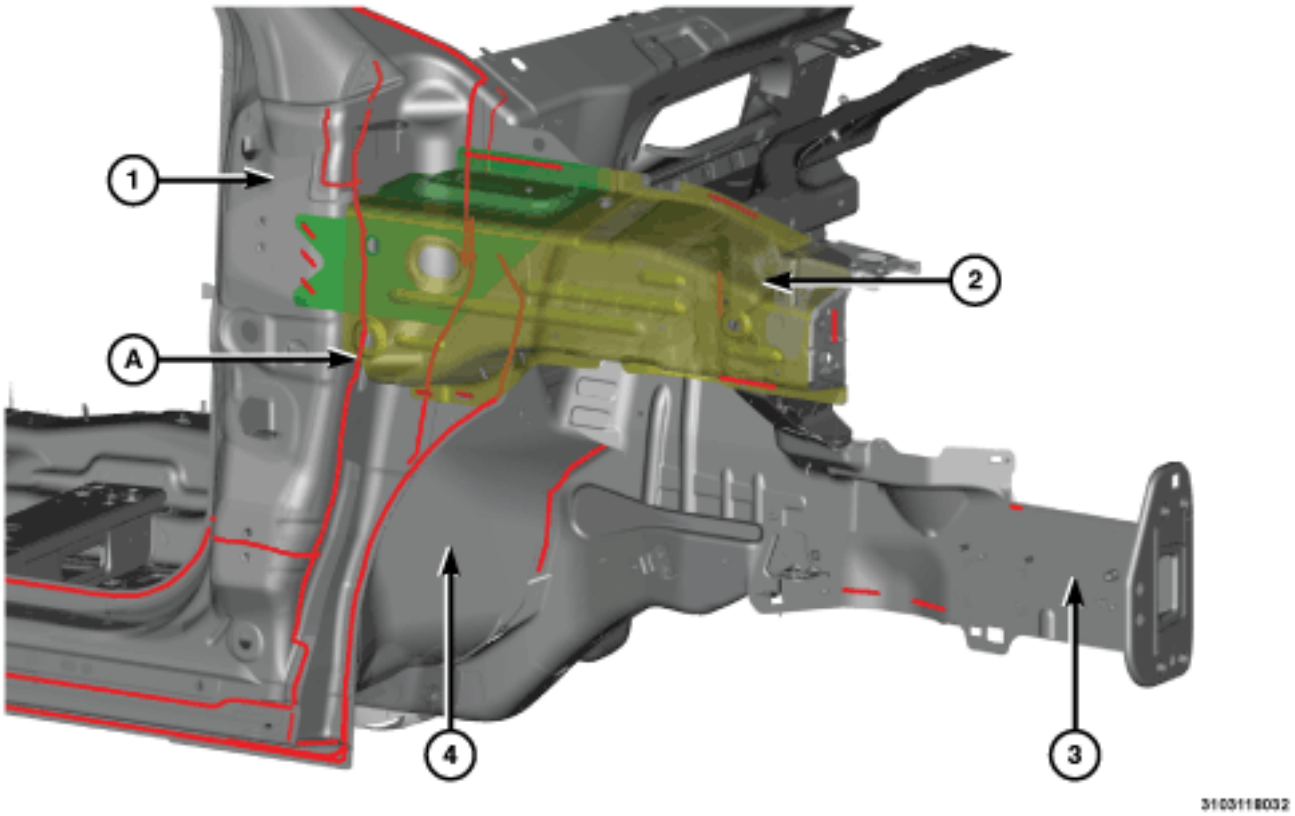
1- Right Front Rail
2- Dash Panel
3- Left Front Rail
4- Load Beam Reinforcement
5- Outer Sill Front End Cap
C- Seam Sealer



Front Suspension Tower

NOTE: Right side shown. Left side similar.

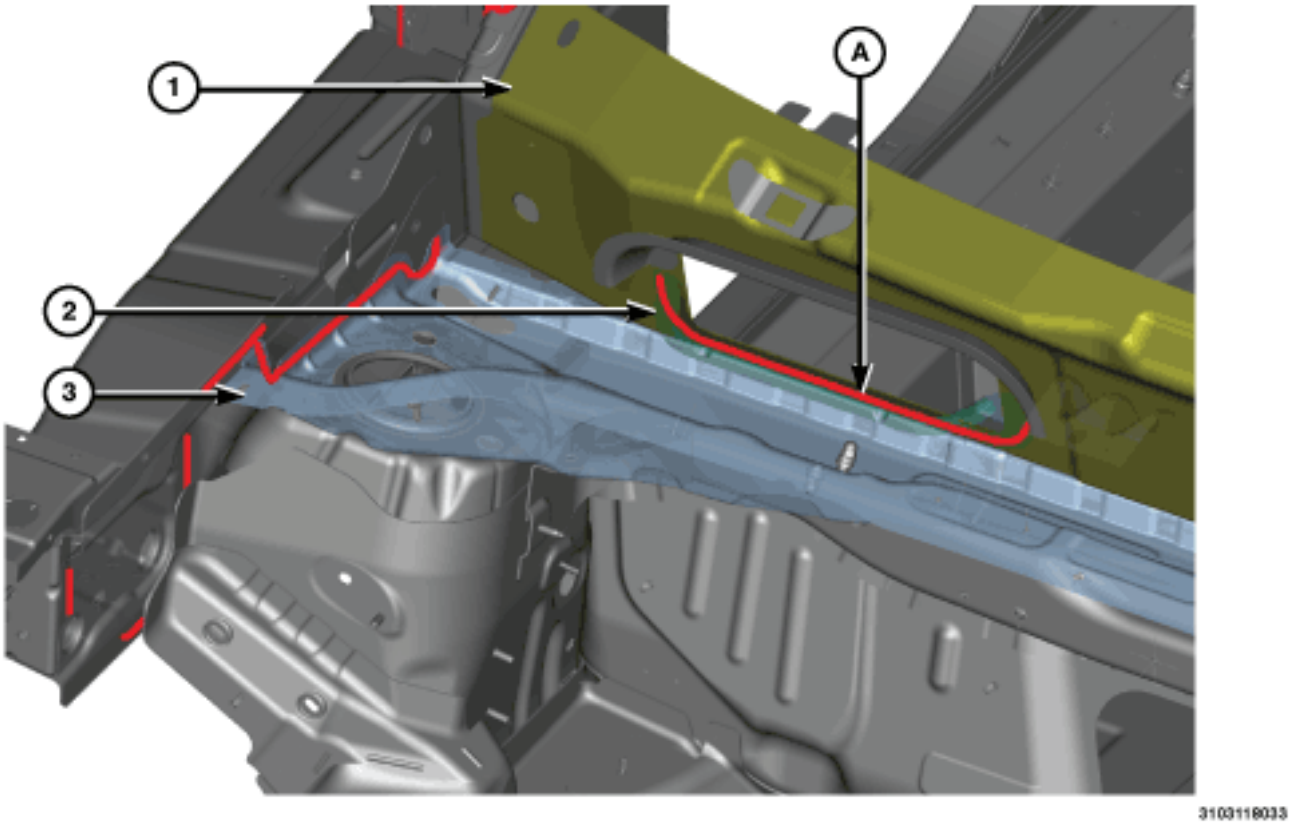
1- Load Beam Outer Panel
2- Front Frame Rail
3- Front Suspension Tower
4- Dash Panel
C- Seam Sealer



A-pillar Reinforcement and Load Path Beam

NOTE: Left side shown, right side similar.

1- A-pillar Reinforcement
2- Load Path Beam
3- Front Frame Rail
4- Dash Panel
A- Structural Adhesive

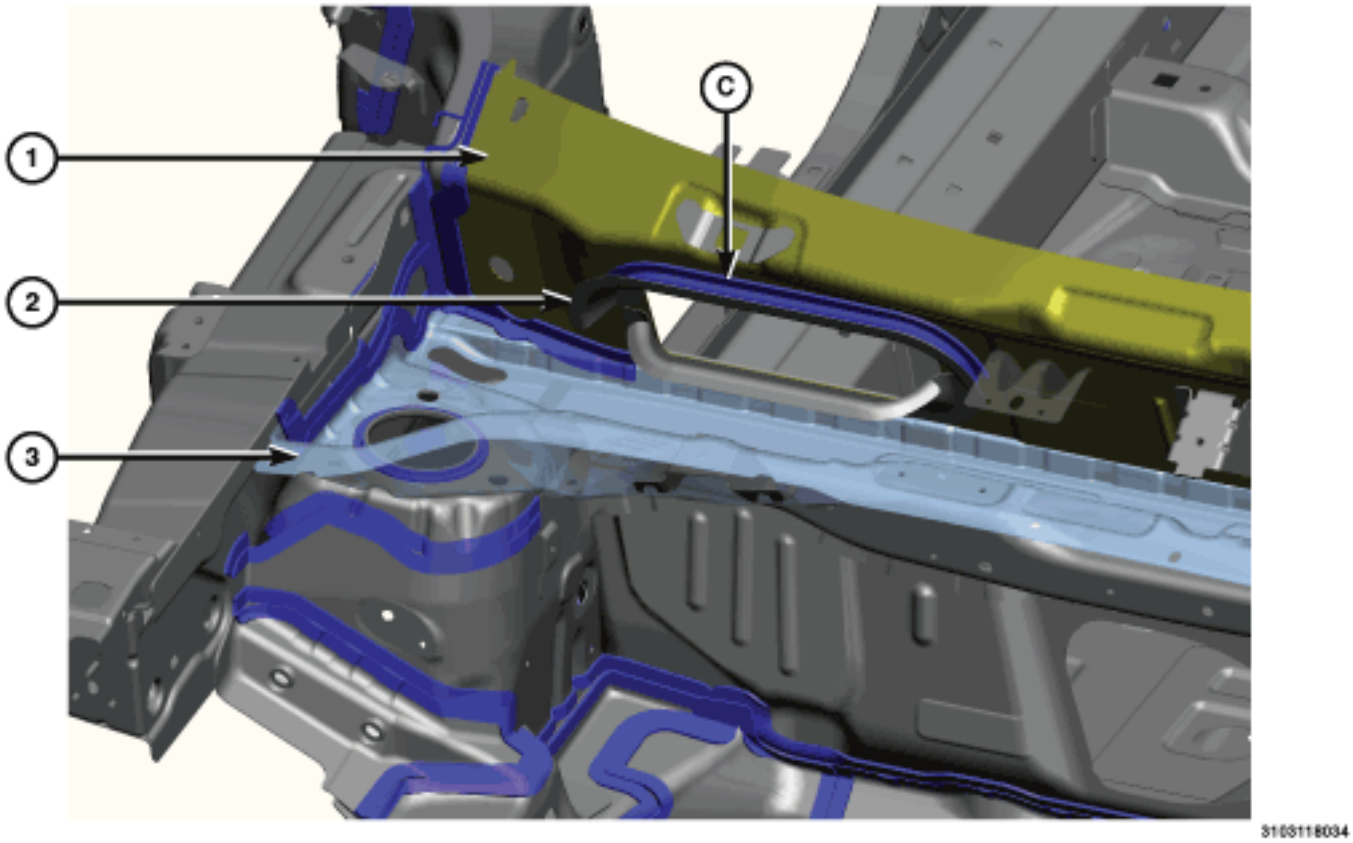


Cowl Top Panel/Cowl Plenum Panel-Exterior (1 of 2)

NOTE: Right side view shown, left side similar.

NOTE: Air Intake Bracket (2) is located on right side only.

1- Cowl Top Panel
2- Air Intake Bracket
3- Cowl Plenum Panel
A- Structural Adhesive

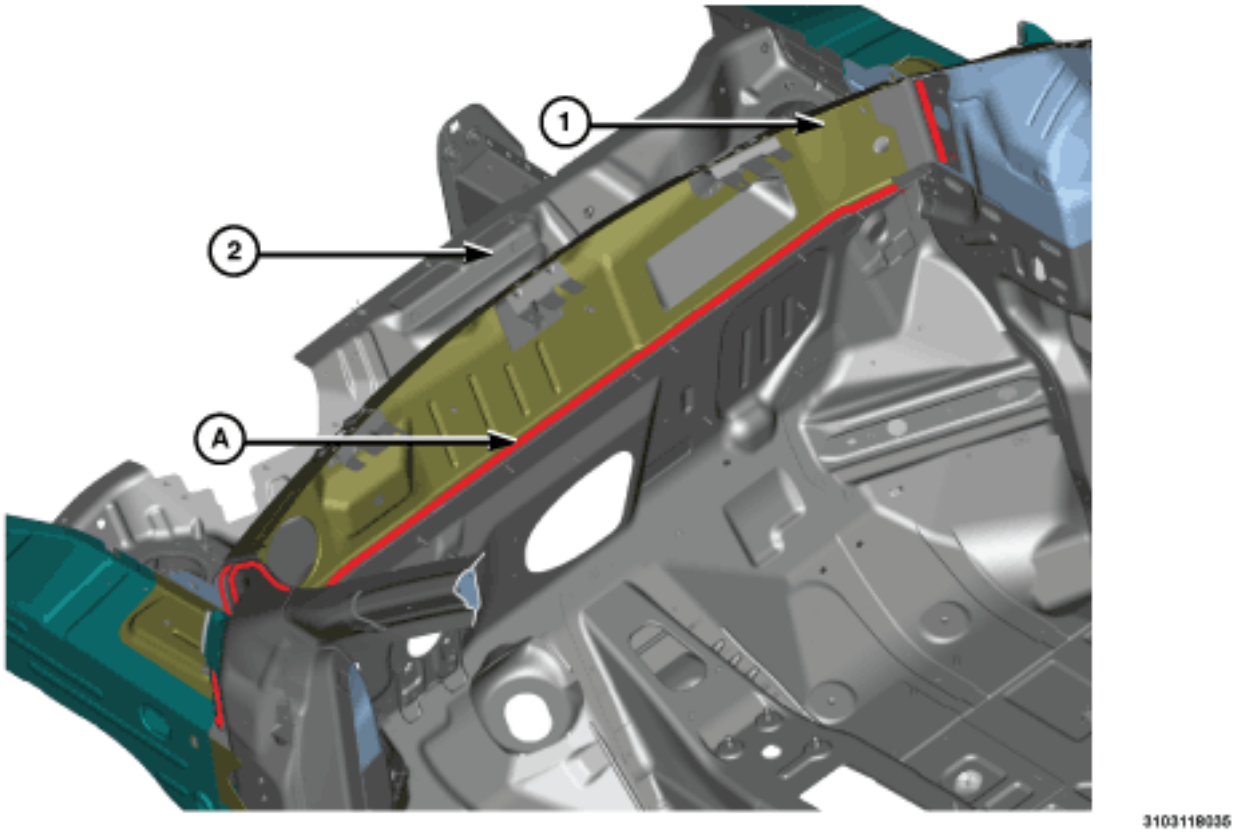


Cowl Top Panel/Cowl Plenum Panel-Exterior (2 of 2)

NOTE: Right side view shown, left side similar.

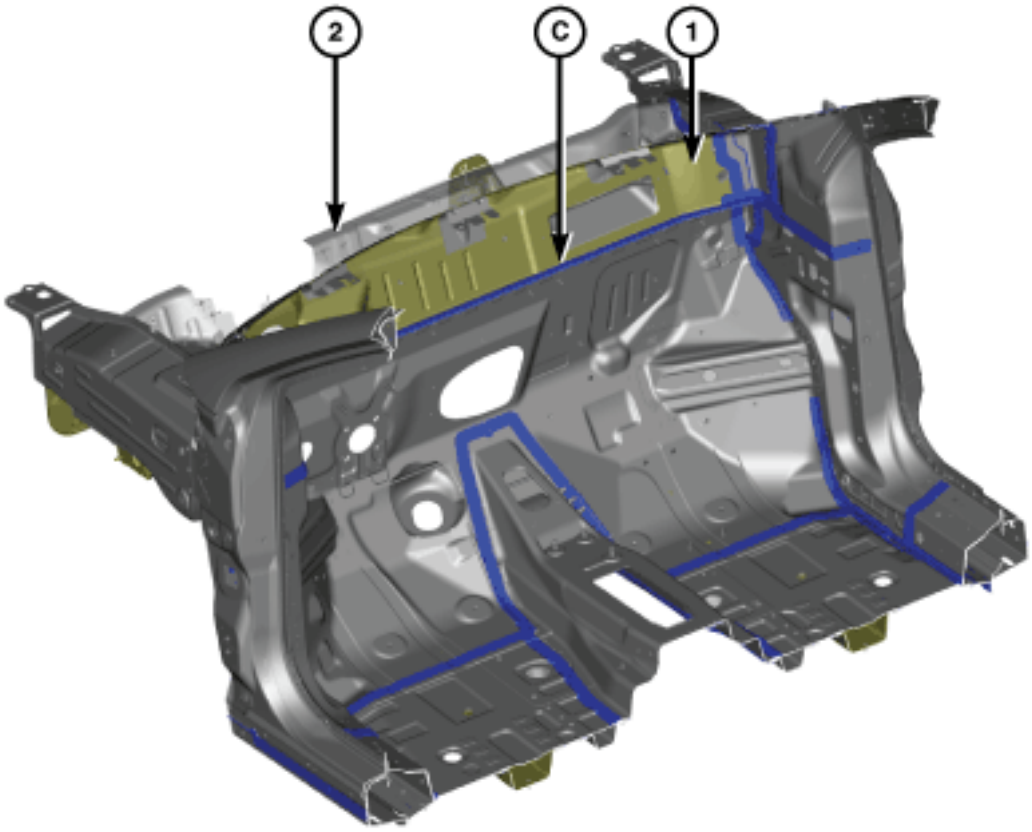
NOTE: Water Shield Bracket (2) is located on right side only

1- Cowl Top Panel
2- Water Shield Bracket
3- Cowl Plenum Panel
C- Seam Sealer



Cowl Top Panel/Cowl Plenum Panel-Interior (1 of 2)

1- Cowl Top Panel
2- Cowl Plenum Panel
A- Structural Adhesive



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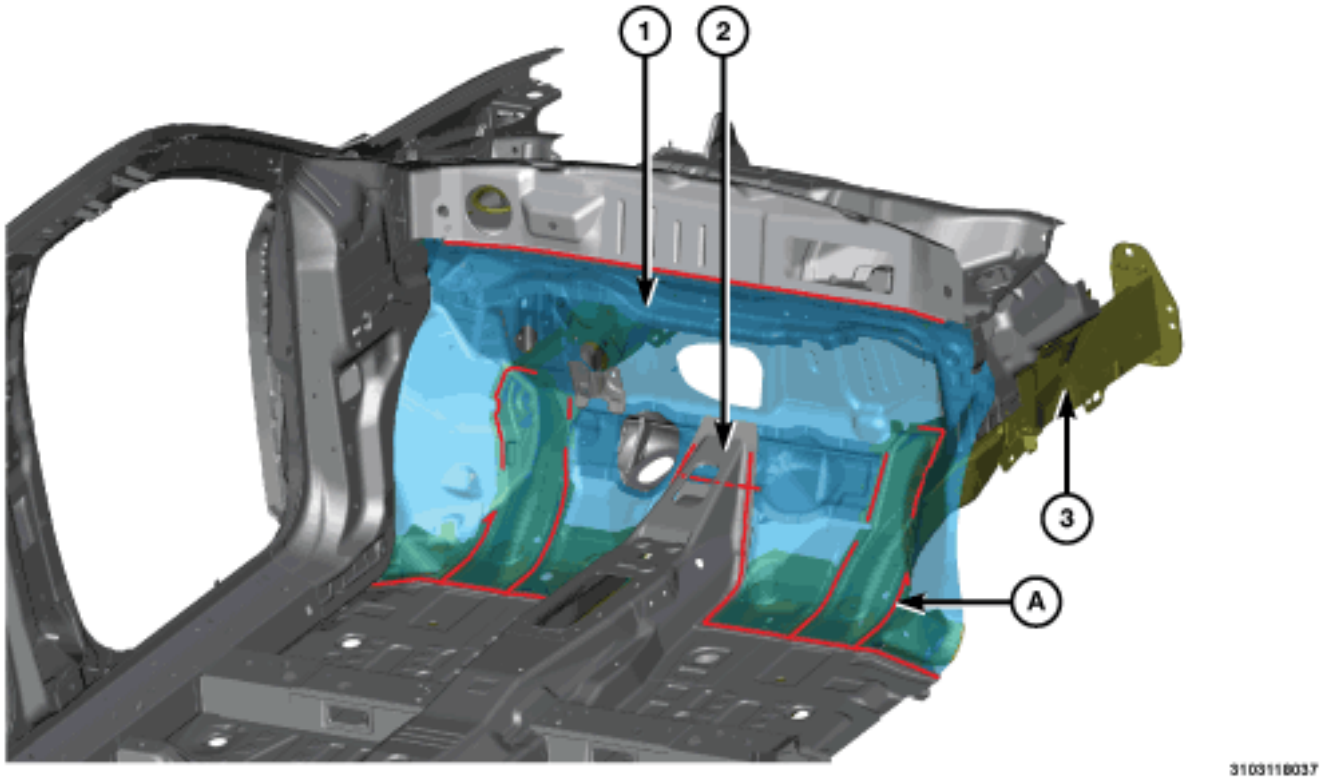
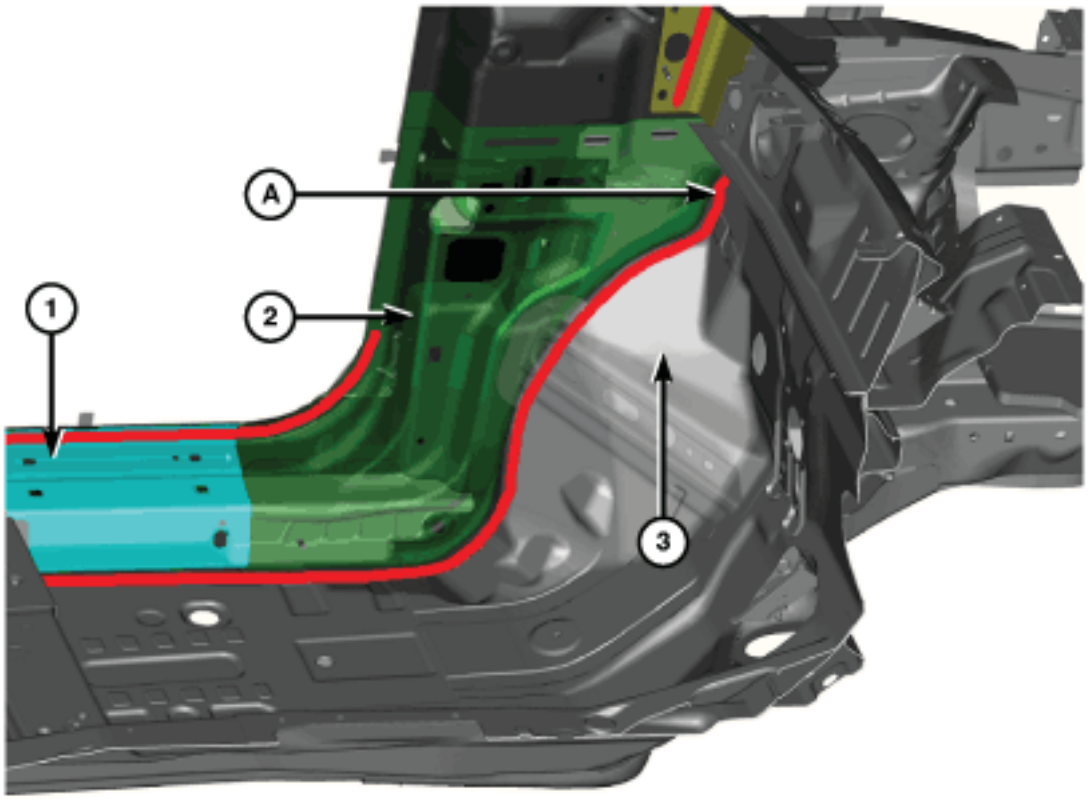
Cowl Top Panel/Cowl Plenum Panel-Interior (2 of 2)

1- Cowl Top Panel
2- Cowl Plenum Panel
C- Seam Sealer



Dash Panel-Interior

1- Dash Panel (Transparent for clarity)
2- Front Tunnel Panel
3- Front Frame Rail
A- Structural Adhesive



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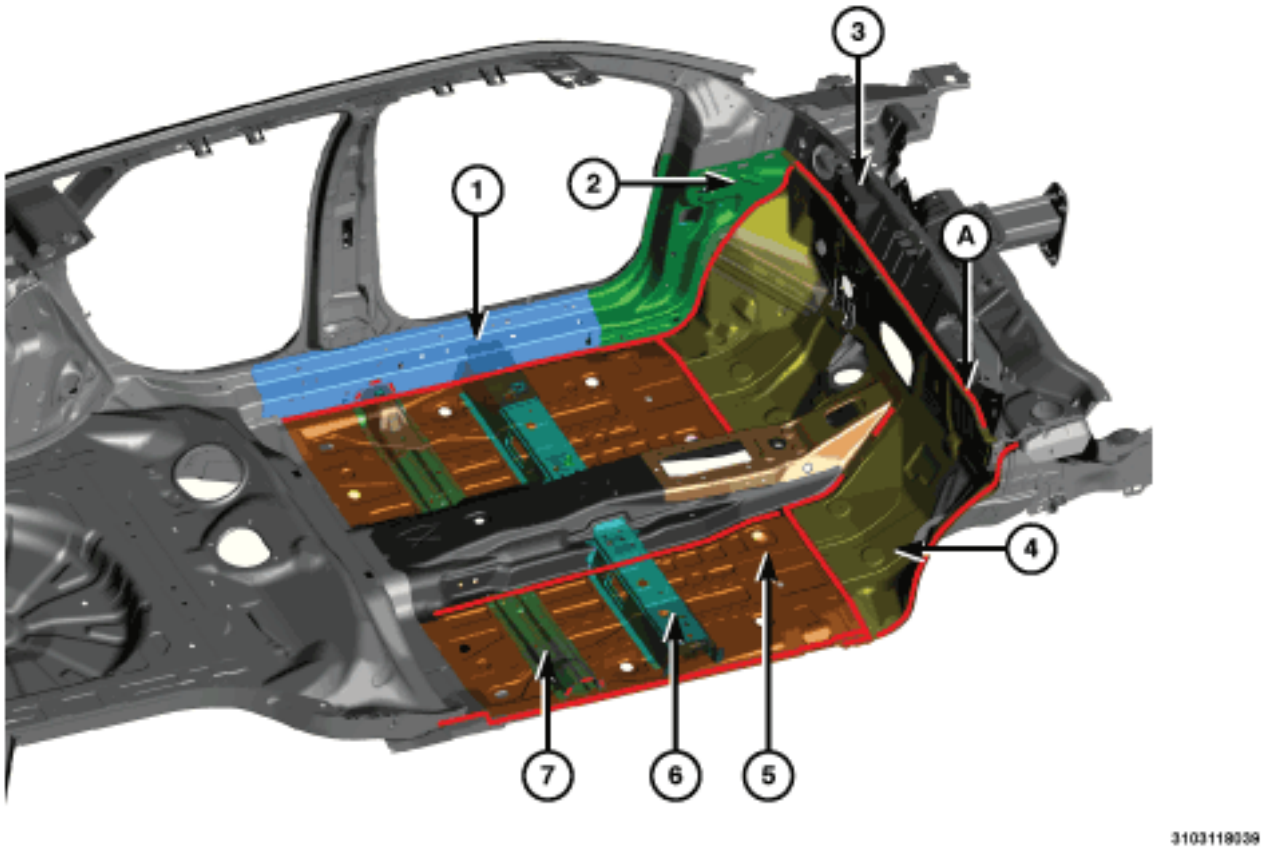
Cowl Side Inner Panel/Sill Panel/ Dash Panel

NOTE: Left side view shown, right side similar.

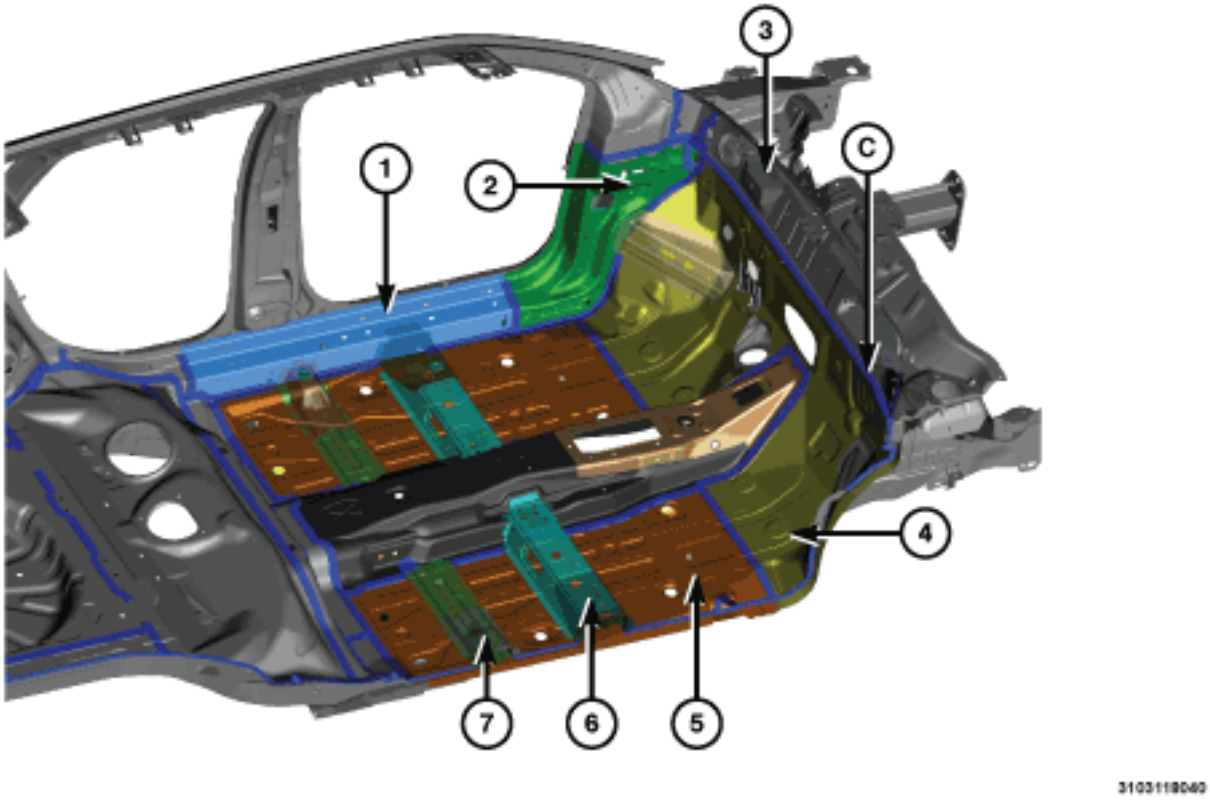
1- Sill Panel
2- Cowl Side Inner Panel
3- Dash Panel
A- Structural Adhesive



Dash Panel and Front Floor-Interior (1 of 2)

NOTE: Left side view shown, right side similar.

1- Sill Panel
2- Cowl Side Inner Panel
3- Cowl Top Panel
4- Dash Panel
5- Right Front Floor Pan Second Row Seat Tub Front Crossmember
6- Front Seat Front Crossmember
7- Front Seat Rear Crossmember
A- Structural Adhesive



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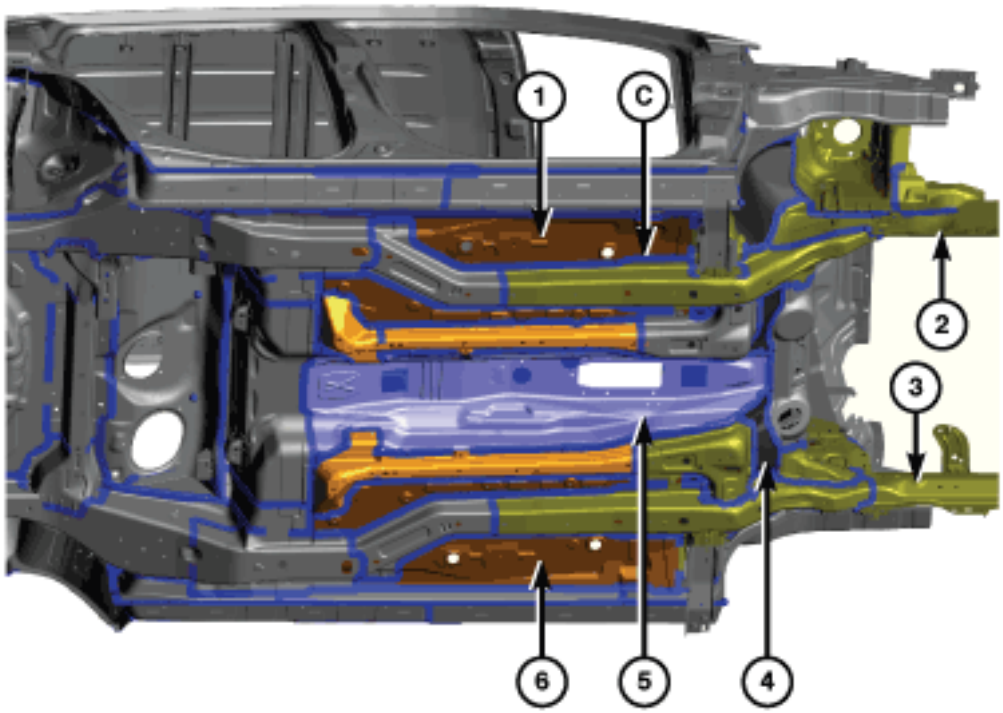
Dash Panel and Front Floor-Interior (2 of 2)

NOTE: Left side view shown, right side similar.

1- Sill Panel
2- Cowl Side Inner Panel
3- Cowl Top Panel
4- Dash Panel
5- Right Front Floor Pan
6- Front Seat Front Crossmember
7- Front Seat Rear Crossmember
A- Structural Adhesive



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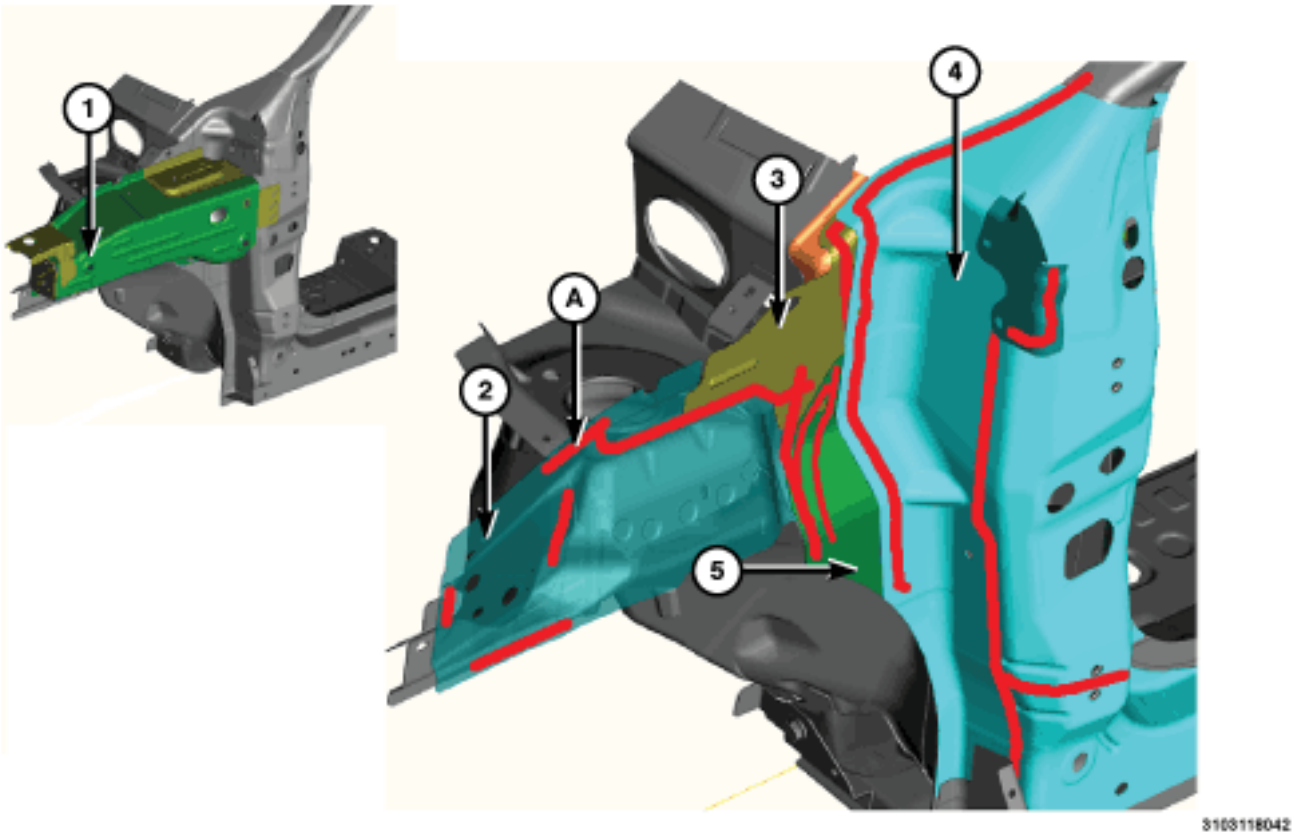
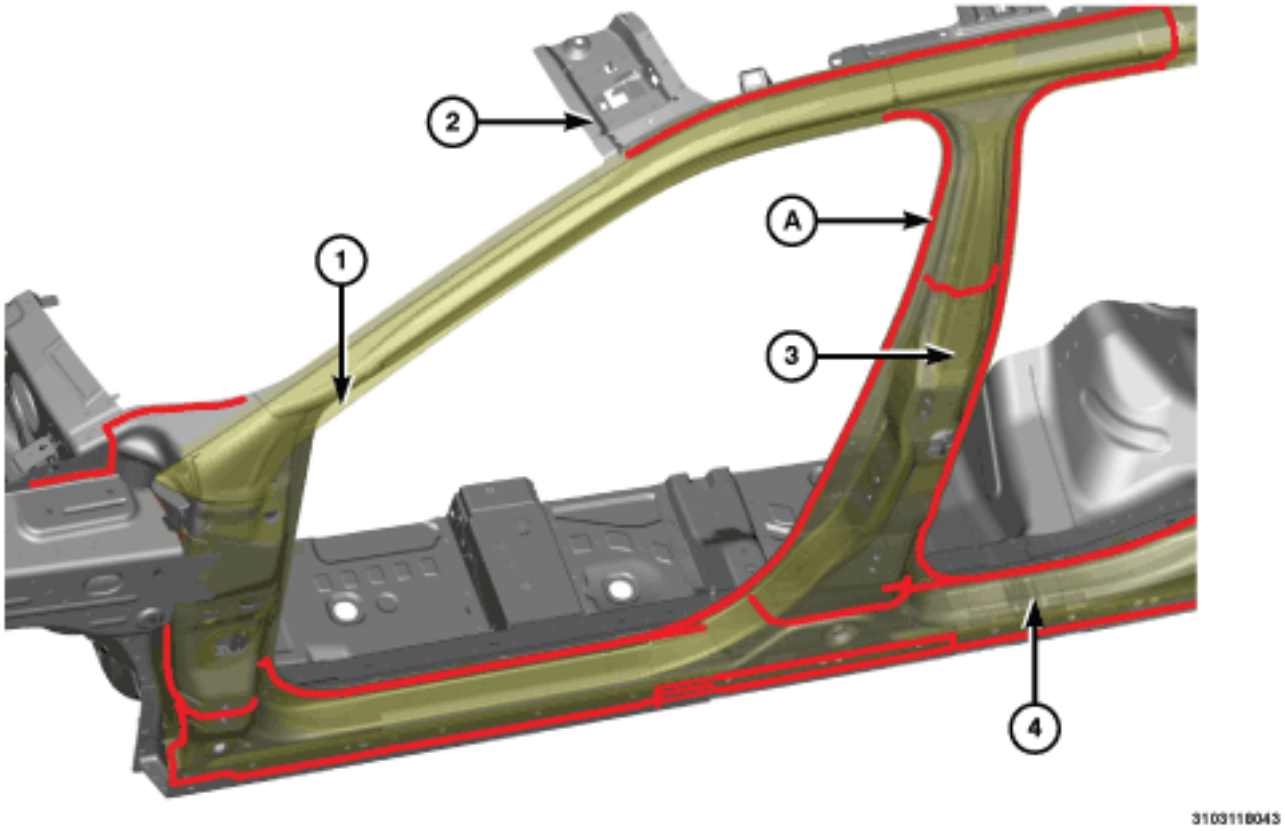
Front Floor Underbody

1- Right Front Floor Panel
2- Right Front Frame Rail
3- Left Front Frame Rail
4- Dash Panel
5- Tunnel Panel
6- Left Front Floor Panel
C- Seam Sealer



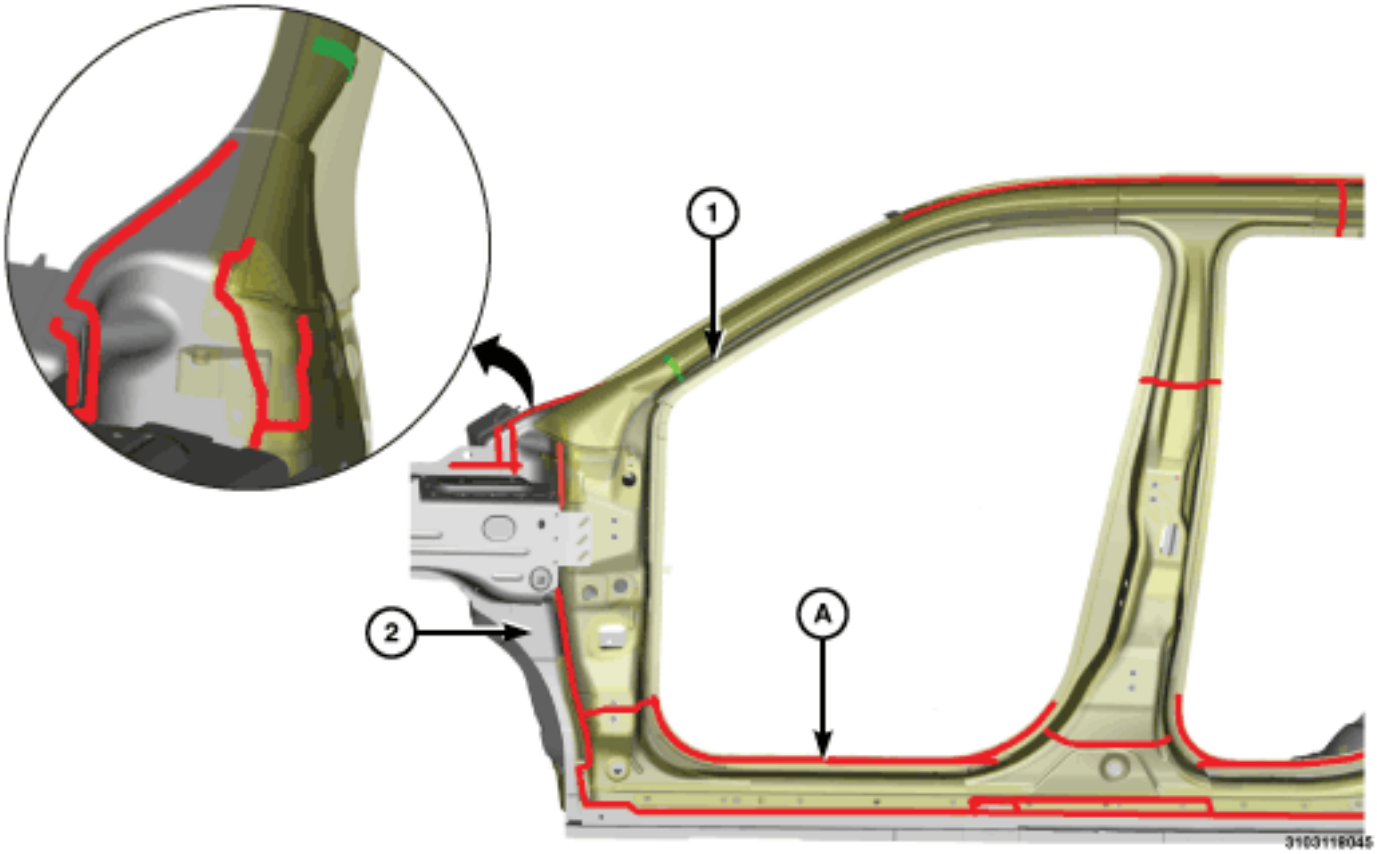
Inner Load Beam / Cowl Side Panel

1- Outer Load Beam Panel (Removed for clarity)
2- Inner Load Beam Panel
3- A-pillar Inner Upper Panel
4- Cowl Side Panel
5- Hinge Pillar Extension
A- Structural Adhesive



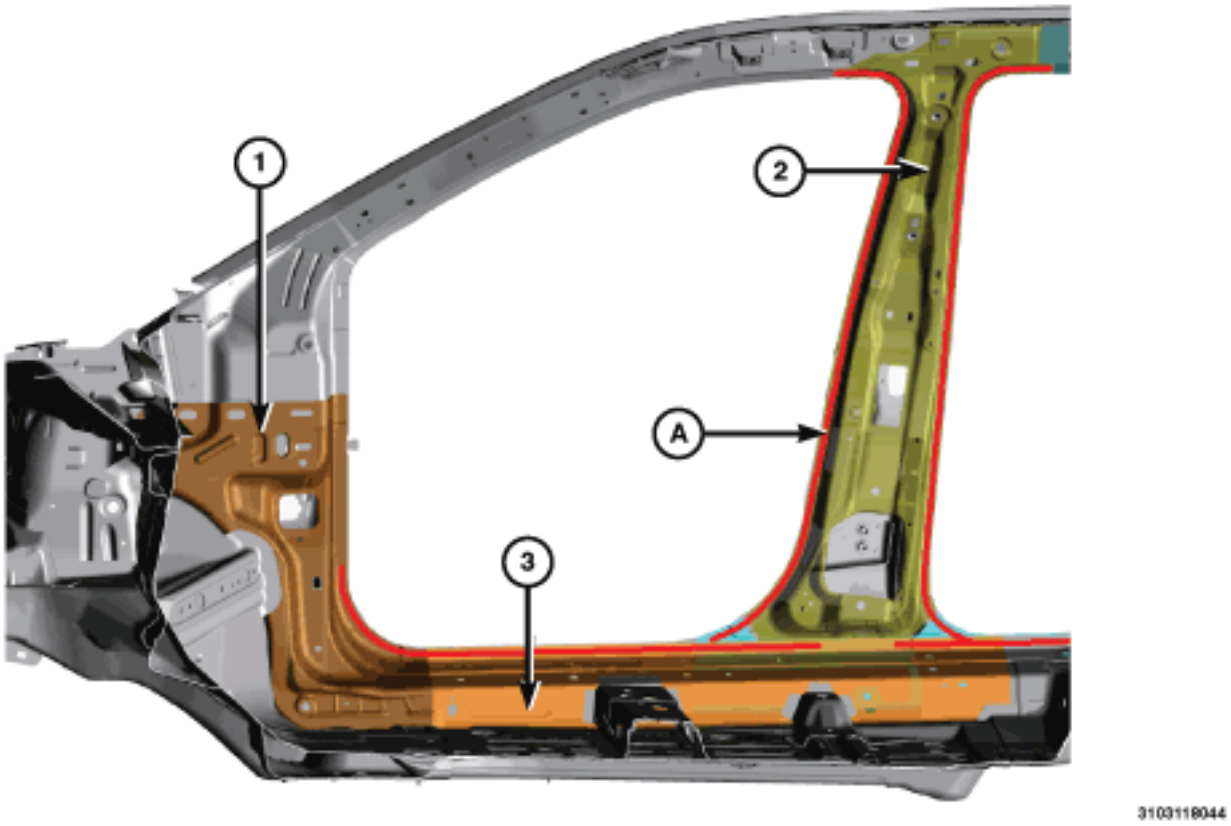
Body Side Aperture (Upper View)

1- Body Side Aperture (Transparent for clarity)
2- Front Header Extension
3- B-pillar Outer Reinforcement
4- Outer Sill Reinforcement
A- Structural Adhesive



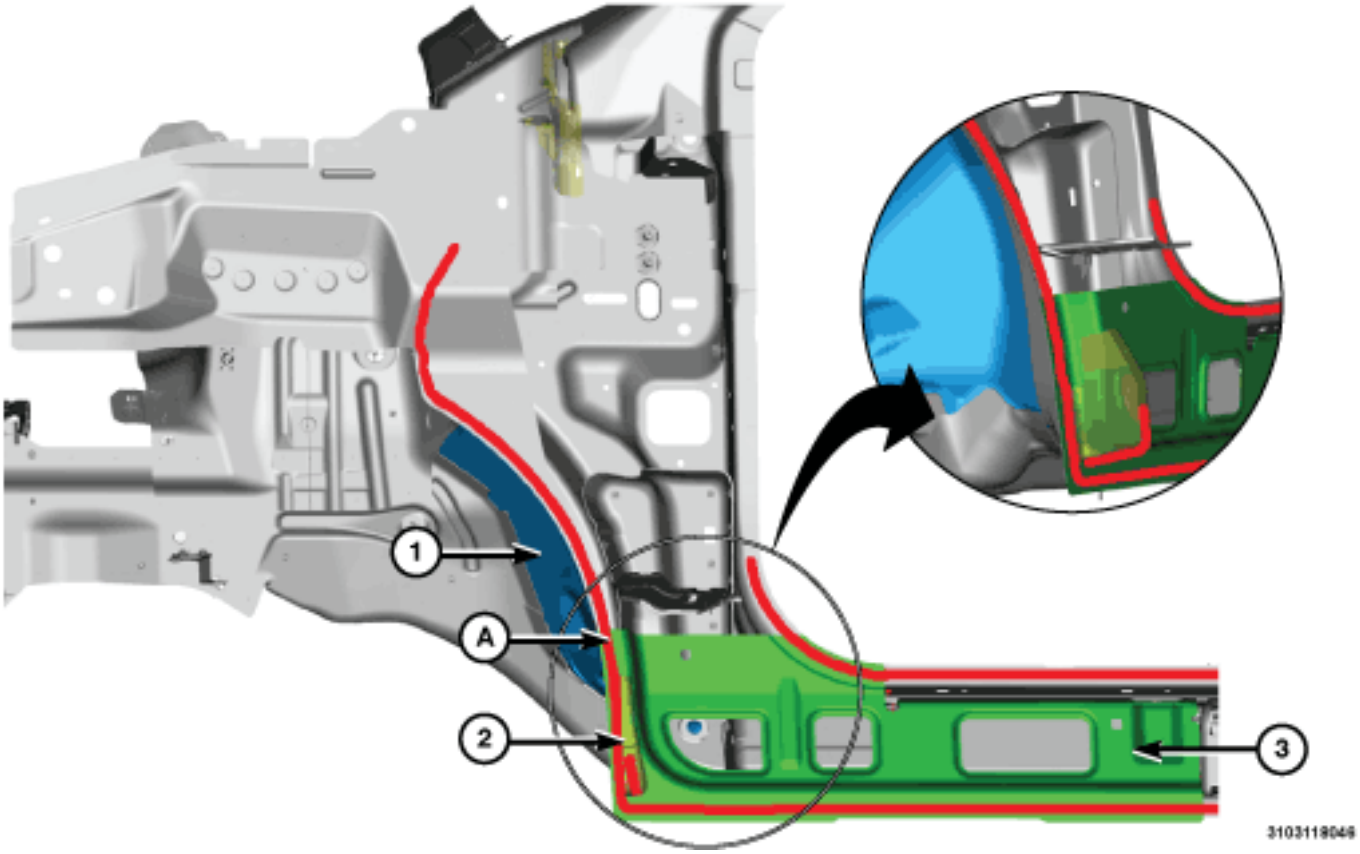
Body Side Aperture (Front)

1- Body Side Aperture (Transparent for clarity)
2- A-pillar Lower Reinforcement
A- Structural Adhesive



B-pillar Inner Panel

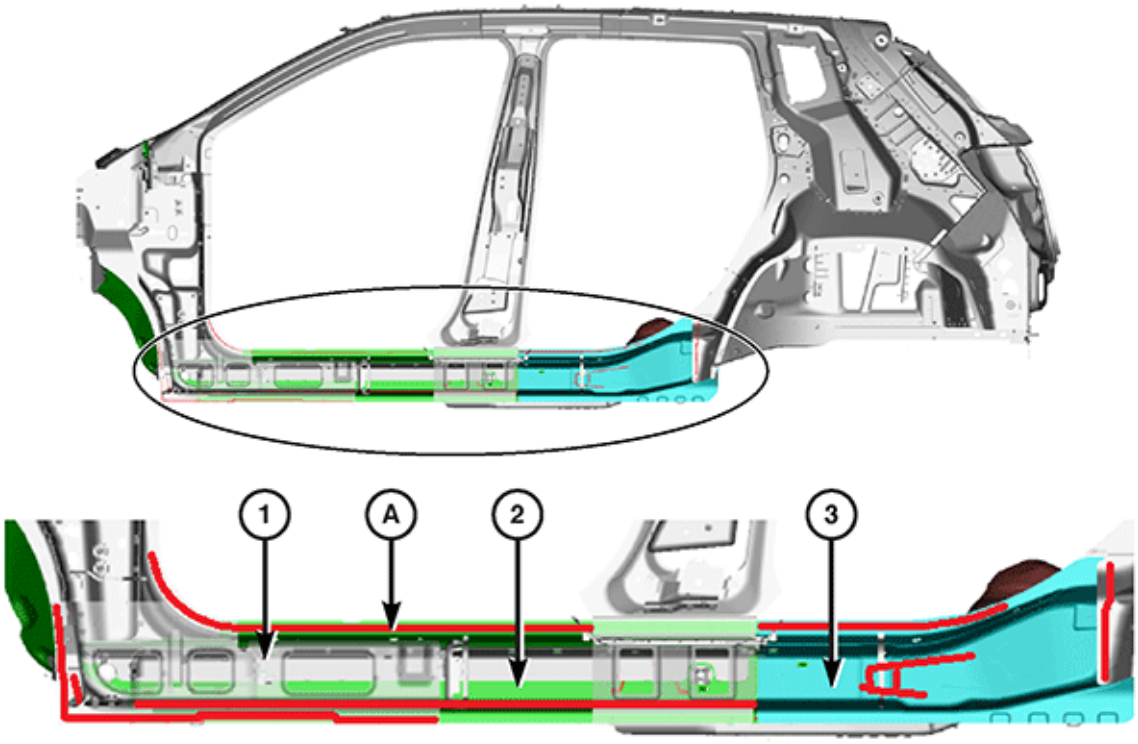
1- Cowl Side Panel
2- B-pillar Inner Panel
3- Inner Sill Panel
A- Structural Adhesive



Body Side Aperture Sill Reinforcement

NOTE: Left side shown, right side similar.

1- Dash Panel
2- Reinforcement Close-out
3- Body Side Aperture Sill Reinforcement
A- Structural Adhesive



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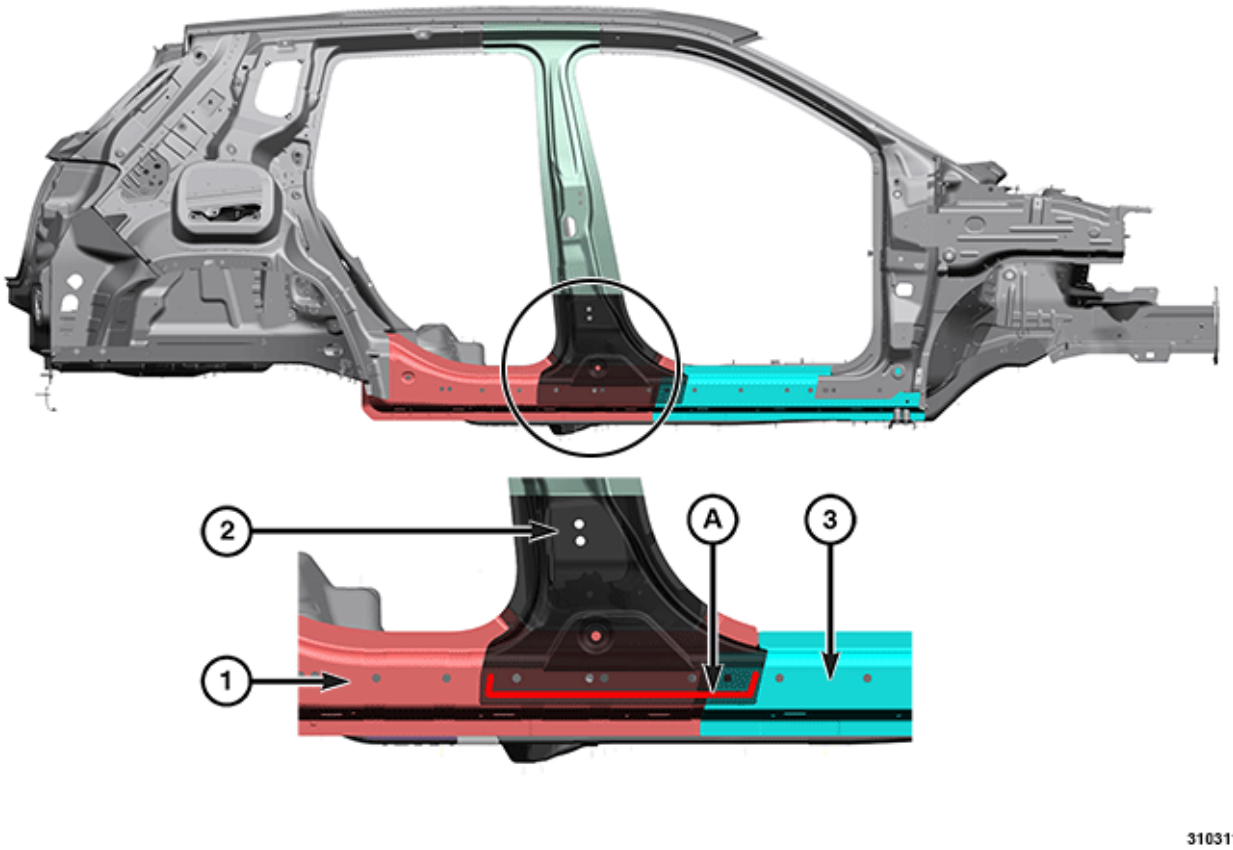
Sill Inner Panel

NOTE: Right side shown. left side similar.

1- Body Side Aperture Sill Reinforcement (Transparent for clarity)
2- Front Floor Pan Sill
3- Rear Sill Inner Panel
A- Structural Adhesive

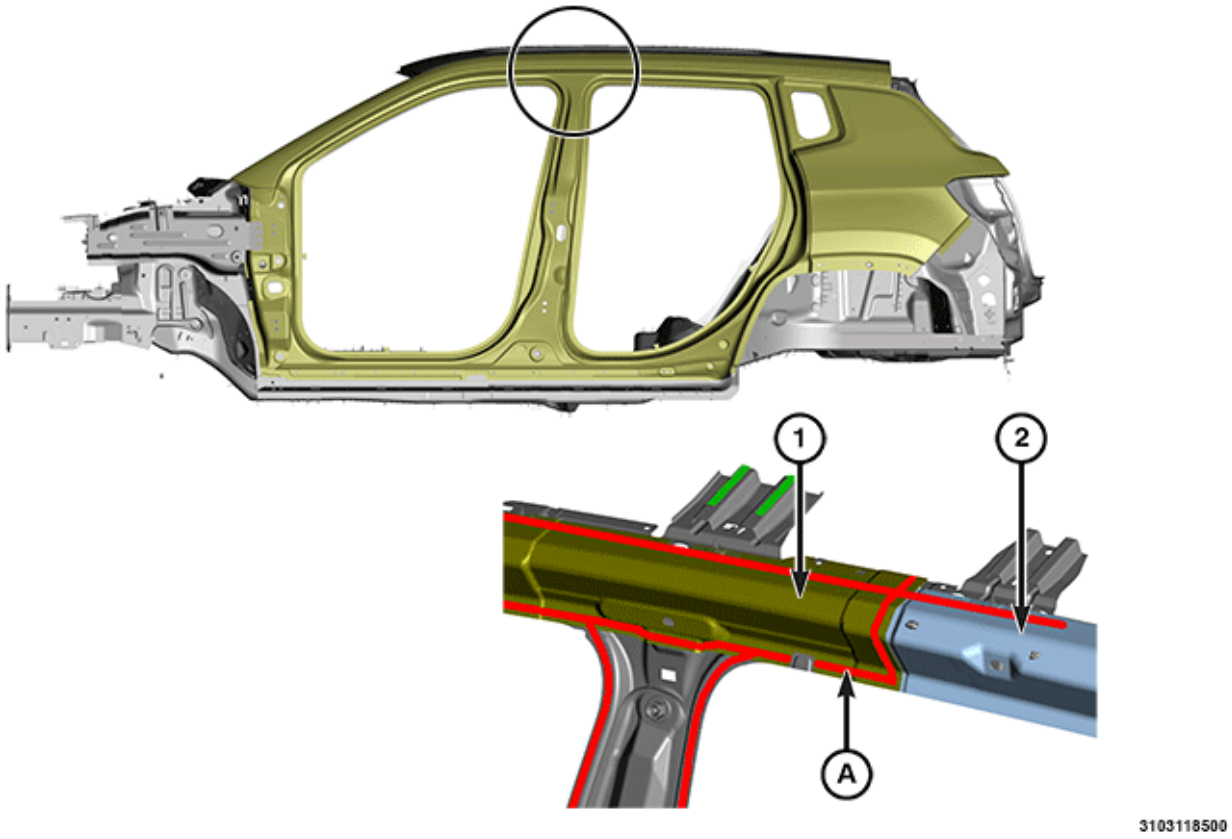


3103118459

B-pillar Outer Reinforcement

NOTE: Left side shown, right side similar.

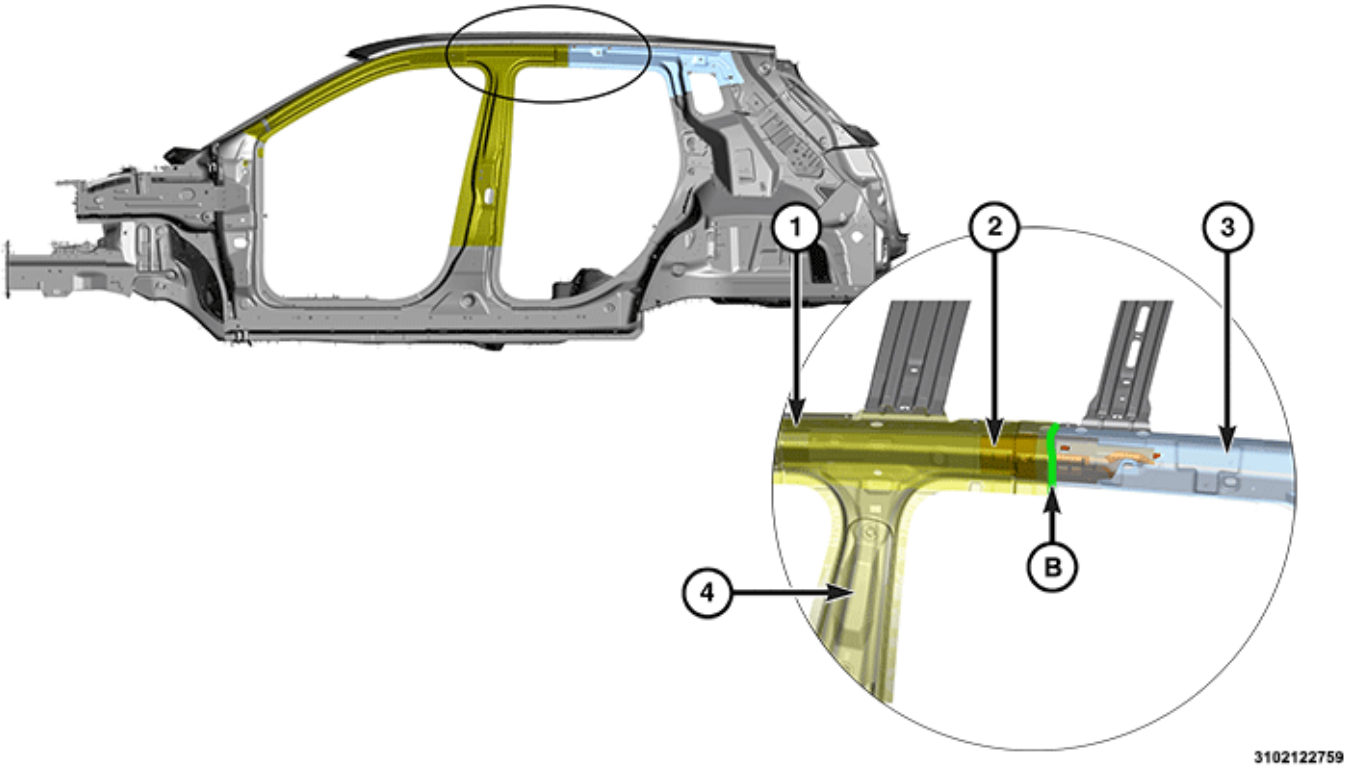
1- Sill Outer Rear Reinforcement
2- B-pillar Outer Rear Reinforcement (Transparent for clarity)
3- Sill Outer Front Reinforcement
A- Structural Adhesive



A-pillar Outer Reinforcement and Body Side Aperture

NOTE: Left side shown, right side similar.

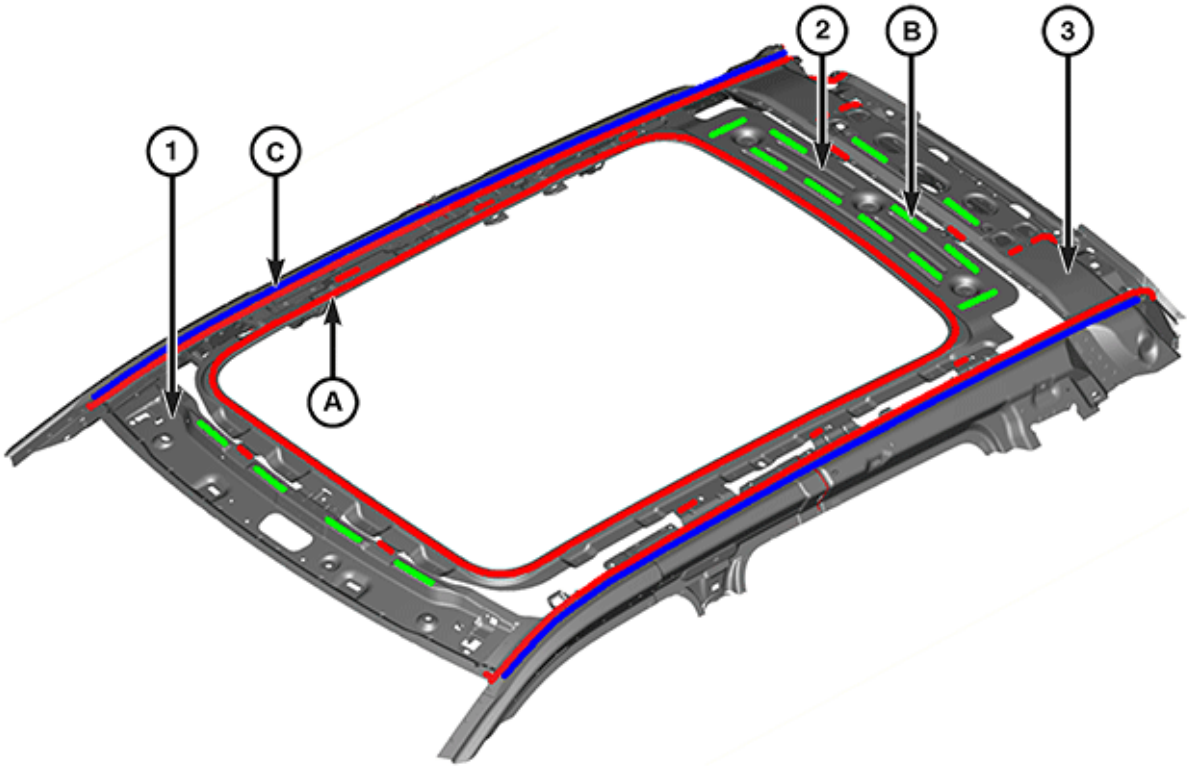
1- A-pillar Outer Reinforcement
2- Roof Side Rail Reinforcement
A- Structural Adhesive



Roof Rail Composite Insert

NOTE: Left side shown, right side similar.

1- A-pillar Outer Reinforcement (Transparent for clarity)
2- Roof Rail Composite Insert
3- Roof Side Rail Reinforcement (Transparent for clarity)
4- B-pillar Reinforcement (Transparent for clarity)
B- Anti-Flutter Adhesive



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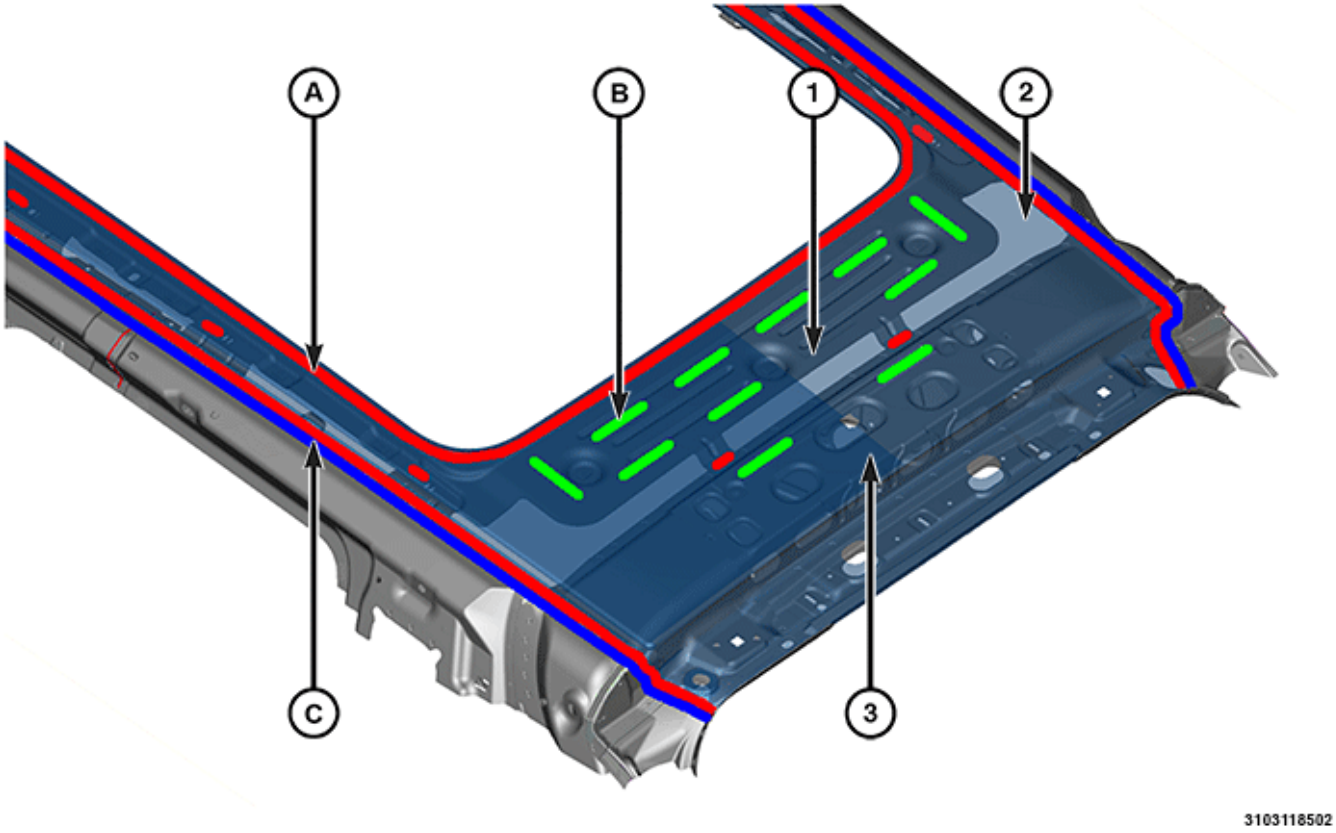
Roof With Sunroof (1 of 2)

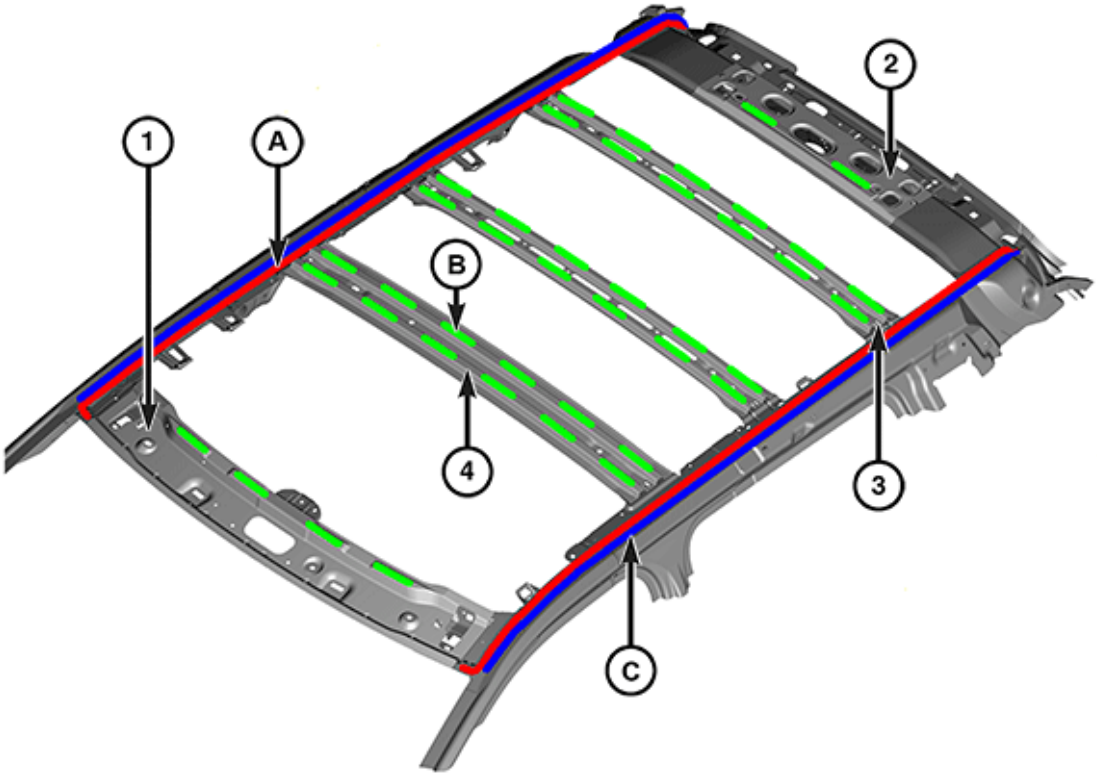
NOTE: Roof panel removed for clarity.

1- Front Lower Header Panel
2- Sunroof Reinforcement Ring
3- D-Pillar Outer Upper Reinforcement
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



Roof With Sunroof (2 of 2)

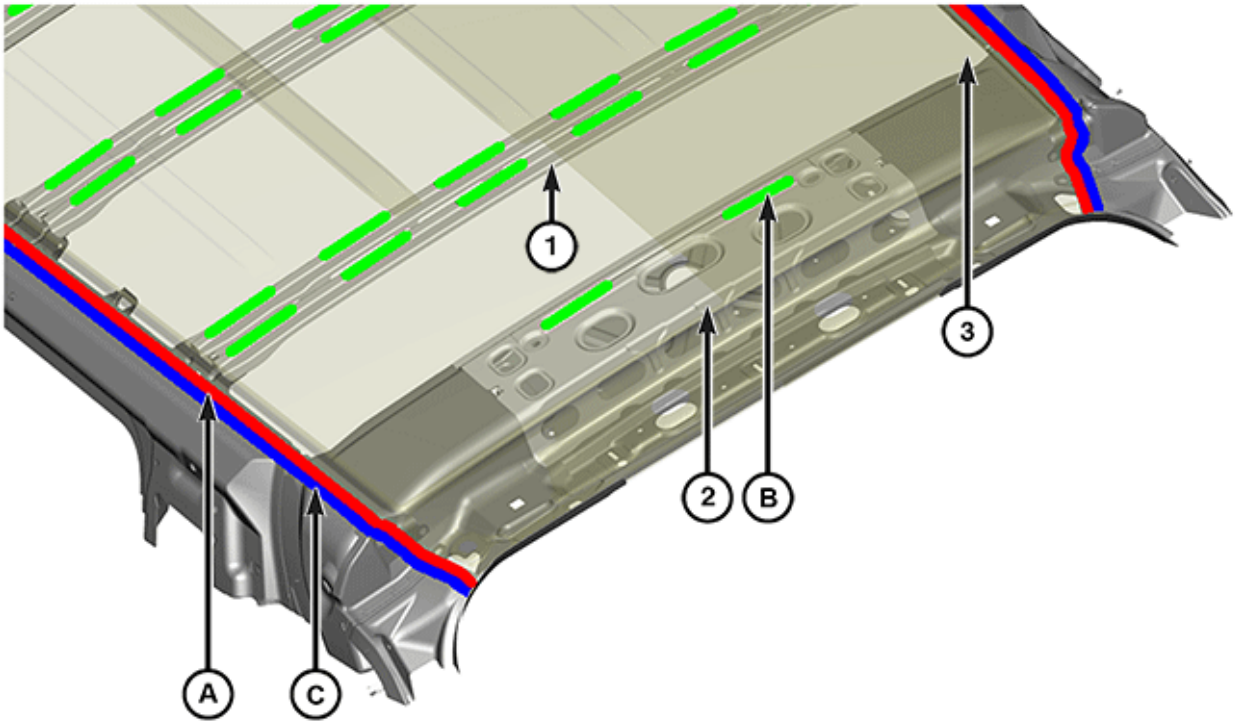
1- Sunroof Reinforcement Ring
2- Roof Panel (Transparent for clarity)
3- Rear Upper Header Panel
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



3103118503

Roof Panel Standard (1 of 2)

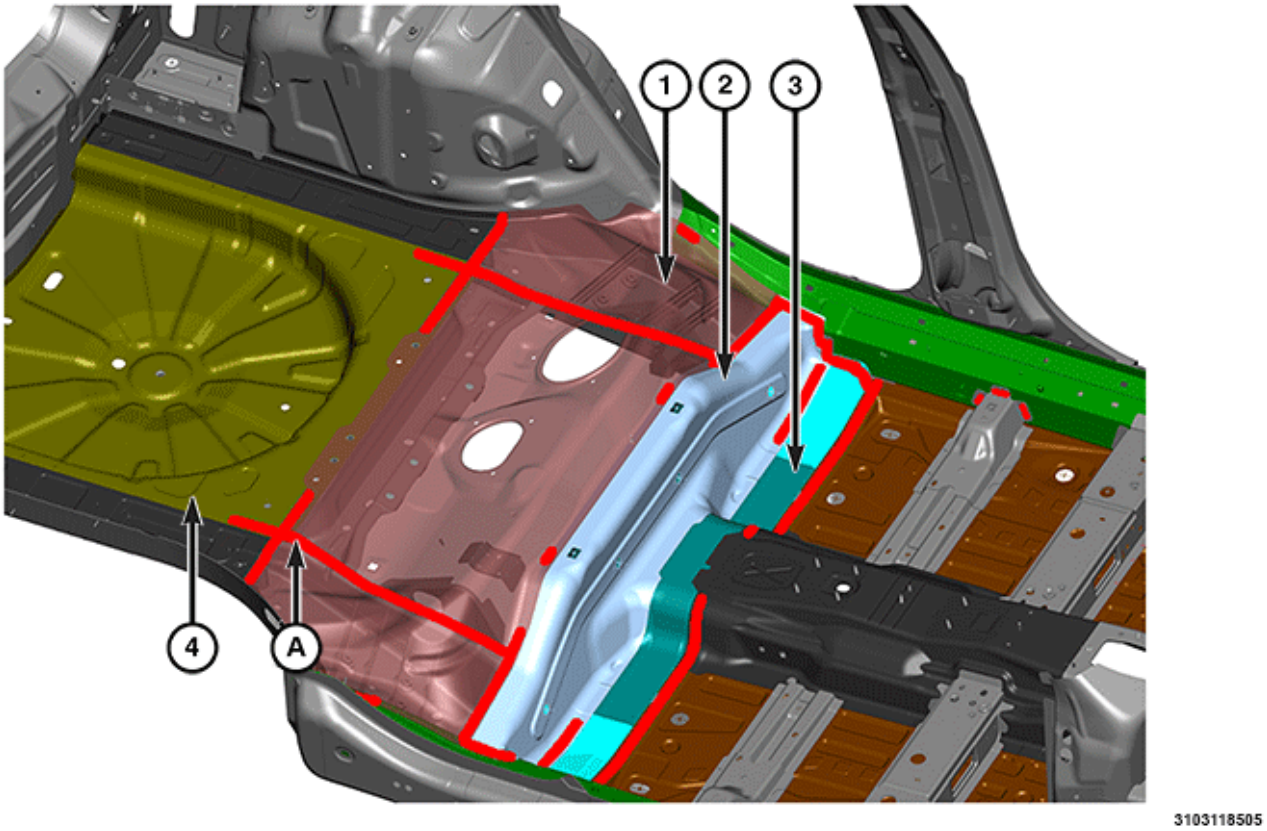
1- Front Header Panel
2- Rear Upper Header Panel
3- C-pillar Roof Bow
4- B-pillar Roof Bow
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



3103118504

Roof Panel Standard (2 of 2)

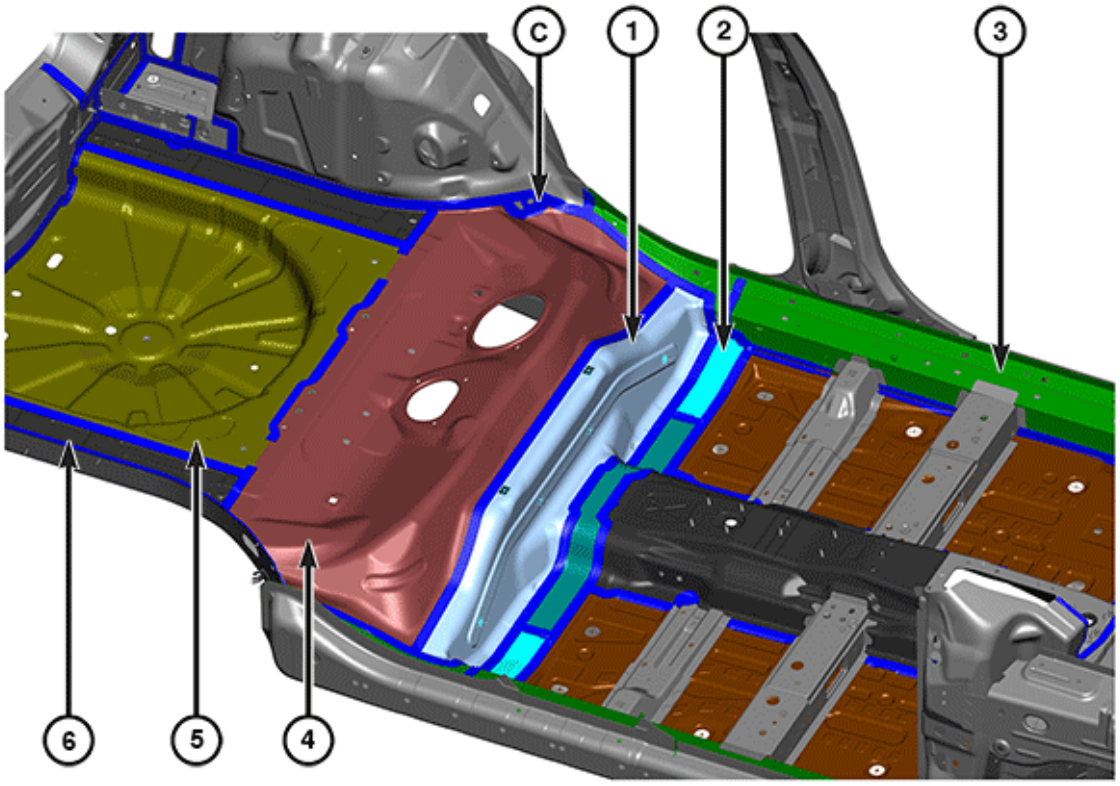
1- C-pillar Roof Bow
2- Rear Upper Header Panel
3- Roof Panel (Transparent for clarity)
A- Structural Adhesive
B- Anti-Flutter Adhesive
C- Seam Sealer



Center Floor- Interior (1 of 2)

NOTE: Left side view shown, right side similar.

1- Center Floor Pan
2- Rear Kick-up Crossmember
3- Rear Kick-up Reinforcement
3- Rear Floor Pan
A- Structural Adhesive

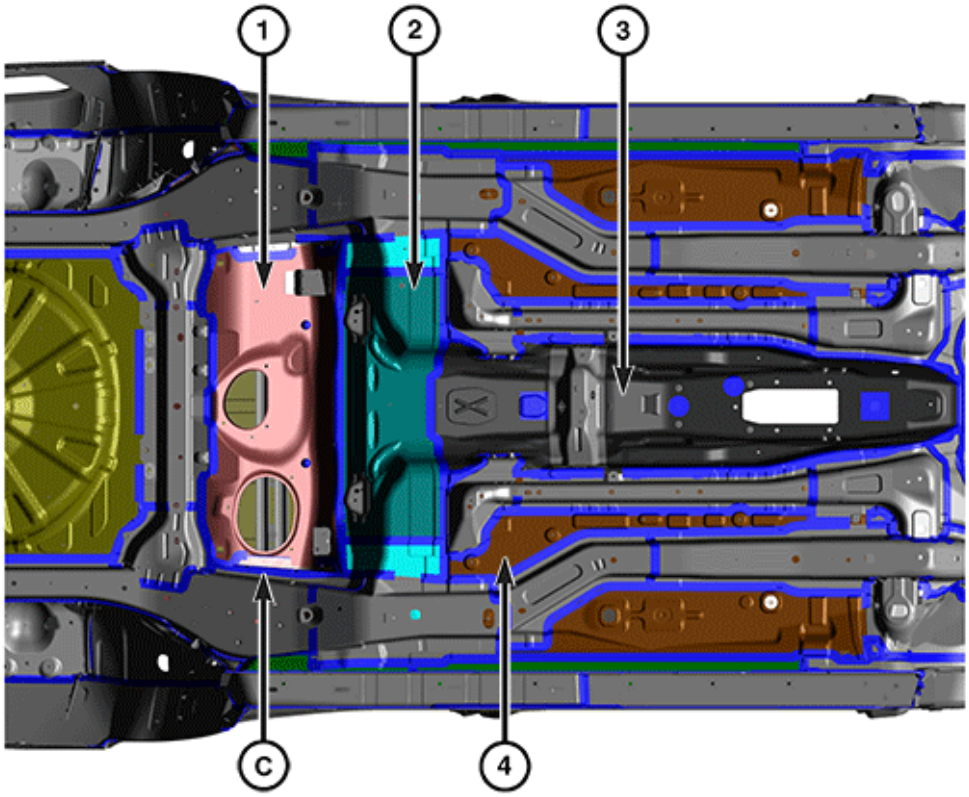


3103118506

Center Floor- Interior (2 of 2)

NOTE: Left side view shown, right side similar.

1- Rear Kick-up Crossmember
2- Rear Kick-up Reinforcement
3- Inner Sill Panel
4- Center Floor Pan
5- Rear Floor Pan
6- Rear Rail Cover
C- Seam Sealer



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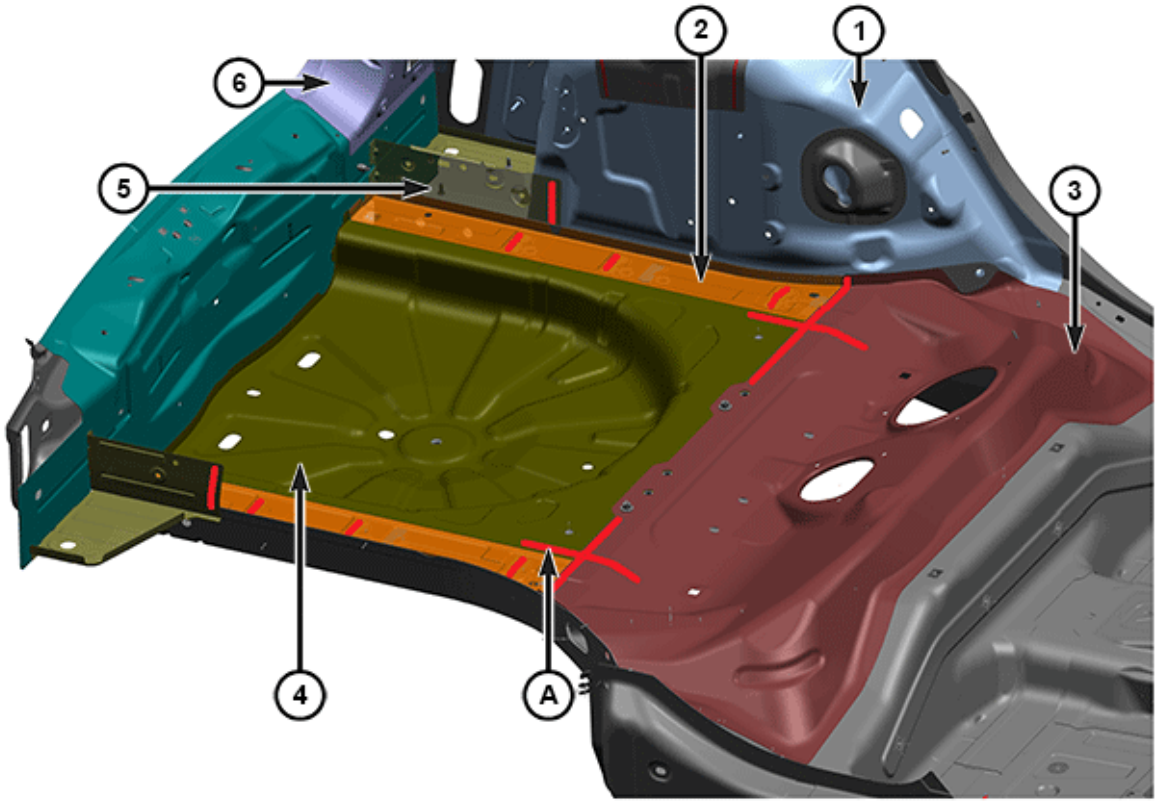
Center Floor- Exterior

1- Center Floor Pan
2- Rear Kick-up Reinforcement
3- Center Floor Tunnel
4- Front Floor Pan
C- Seam Sealer



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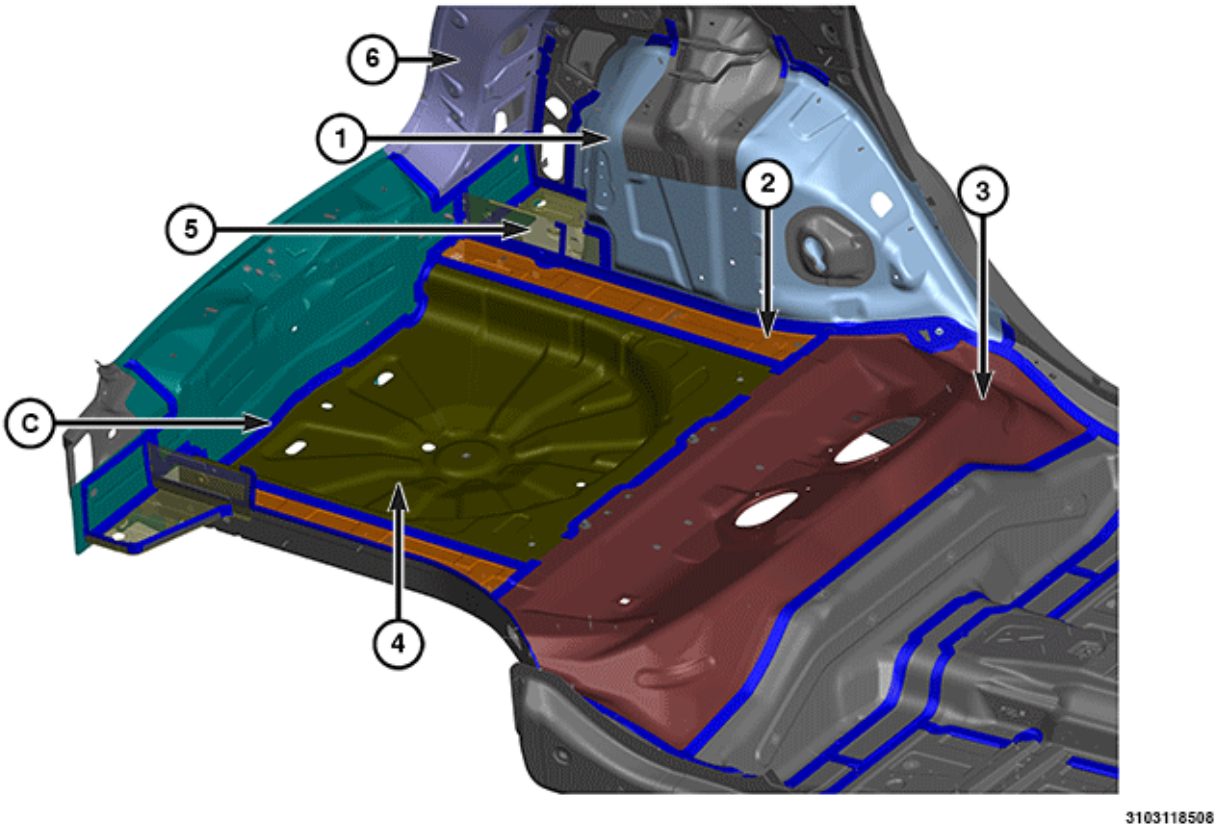
Rear Floor- Interior (1 of 2)

NOTE: Left side view shown, right side similar.

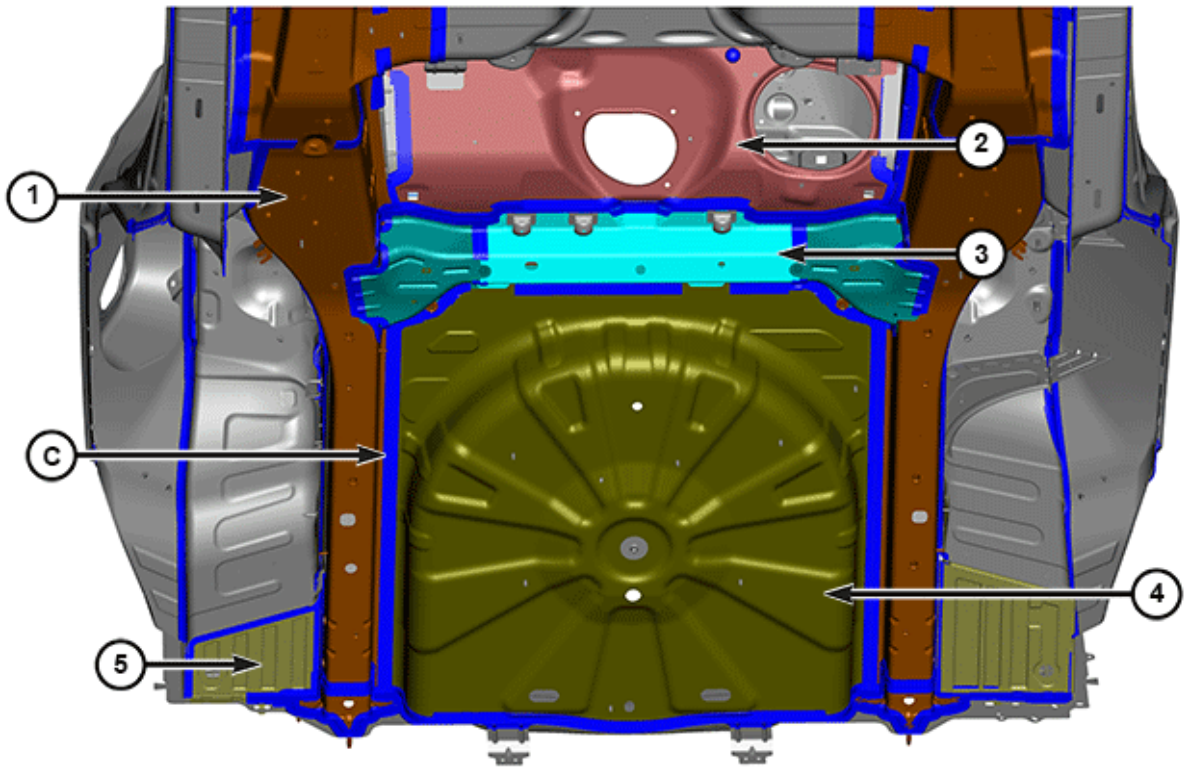
1- Inner Wheelhouse Panel
2- Rear Rail Cover
3- Center Floor Pan
4- Rear Floor Pan
5- Rear Floor Extension Panel (Transparent for clarity)
6- D-pillar Inner Lower Reinforcement
A- Structural Adhesive



Rear Floor- Interior (2 of 2)

NOTE: Left side view shown, right side similar.

1- Inner Wheelhouse Panel
1- Inner Wheelhouse Panel
2- Rear Rail Cover
3- Center Floor Pan
4- Rear Floor Pan
5- Rear Floor Extension Panel (Transparent for clarity)
6- D-pillar Inner Lower Reinforcement
C- Seam Sealer



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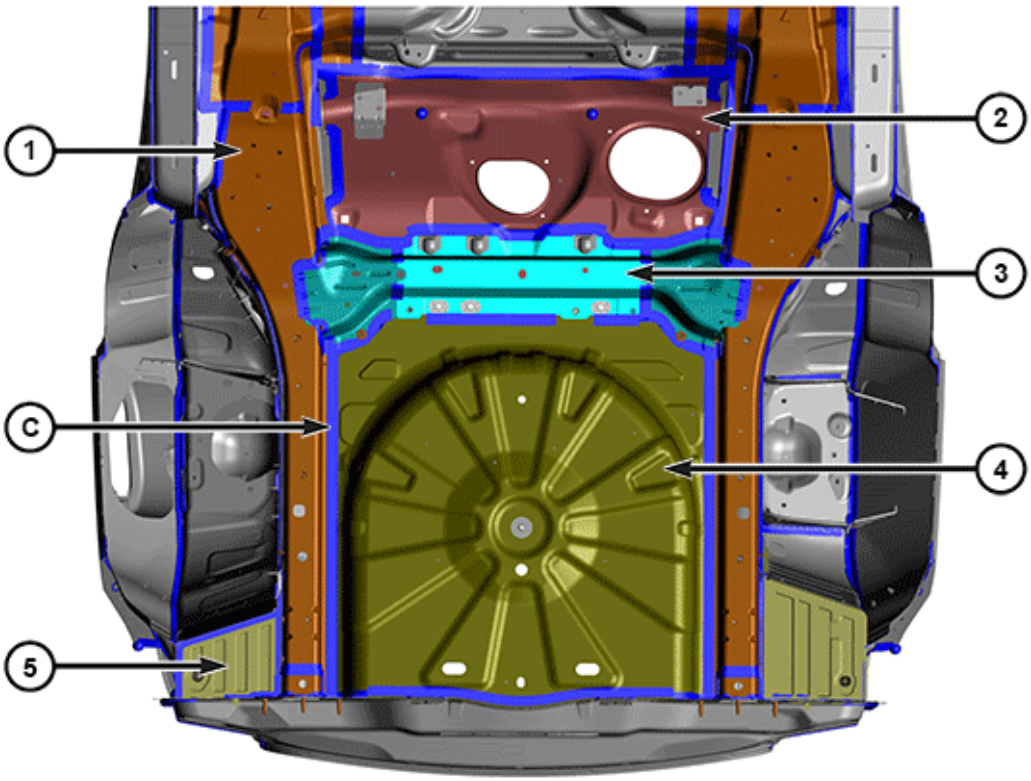
Rear Floor- Exterior (1 of 2)

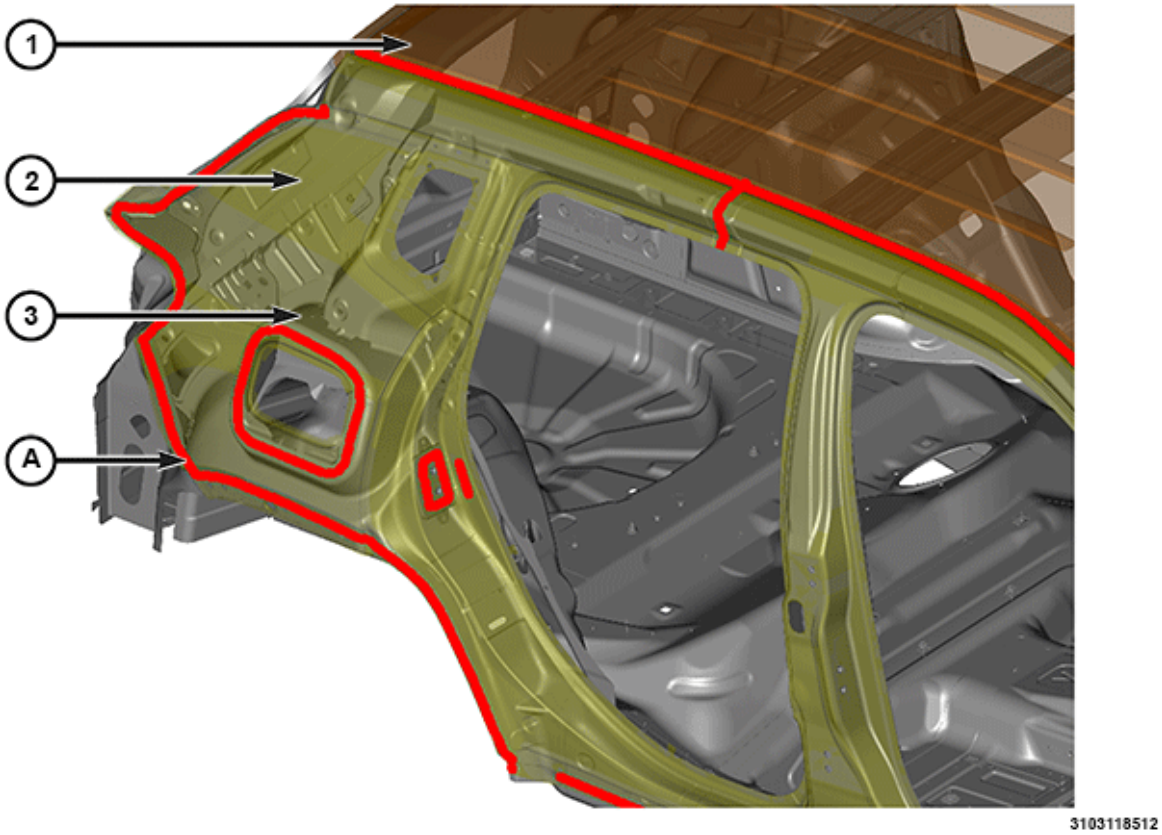
1- Rear Frame Rail
2- Center Floor Pan
3- Rear Seat Crossmember
4- Rear Floor Pan
5- Rear Floor Extension Panel
C- Seam Sealer



3103118511

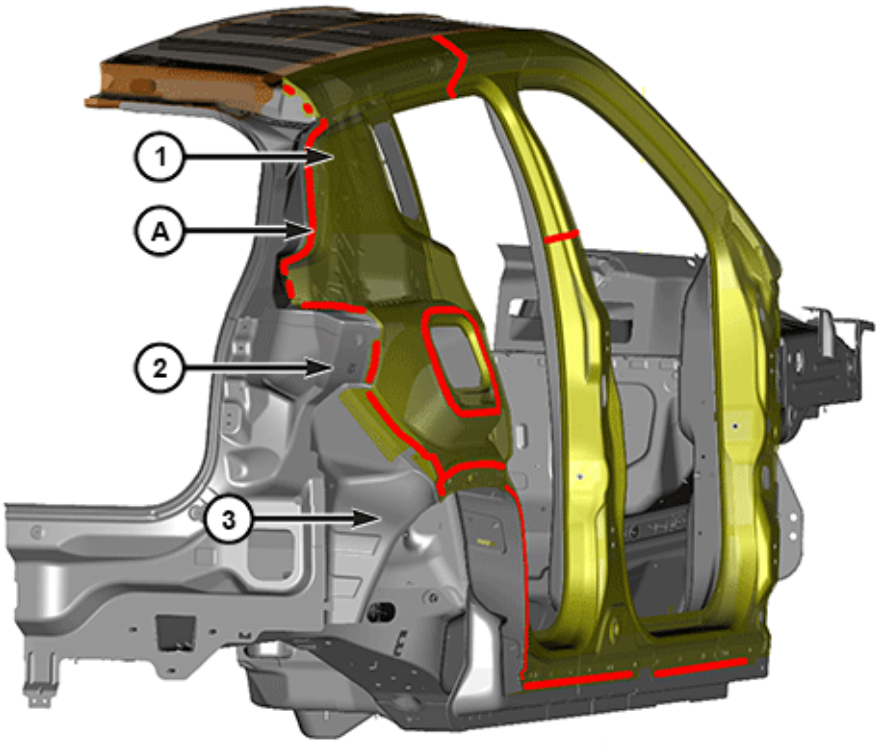
Rear Floor Pan- Exterior (2 of 2)

1- Rear Frame Rail
2- Center Floor Pan
3- Rear Seat Crossmember
4- Rear Floor Pan
5- Rear Floor Extension Panel
C- Seam Sealer



Body Side Aperture (1 of 2)

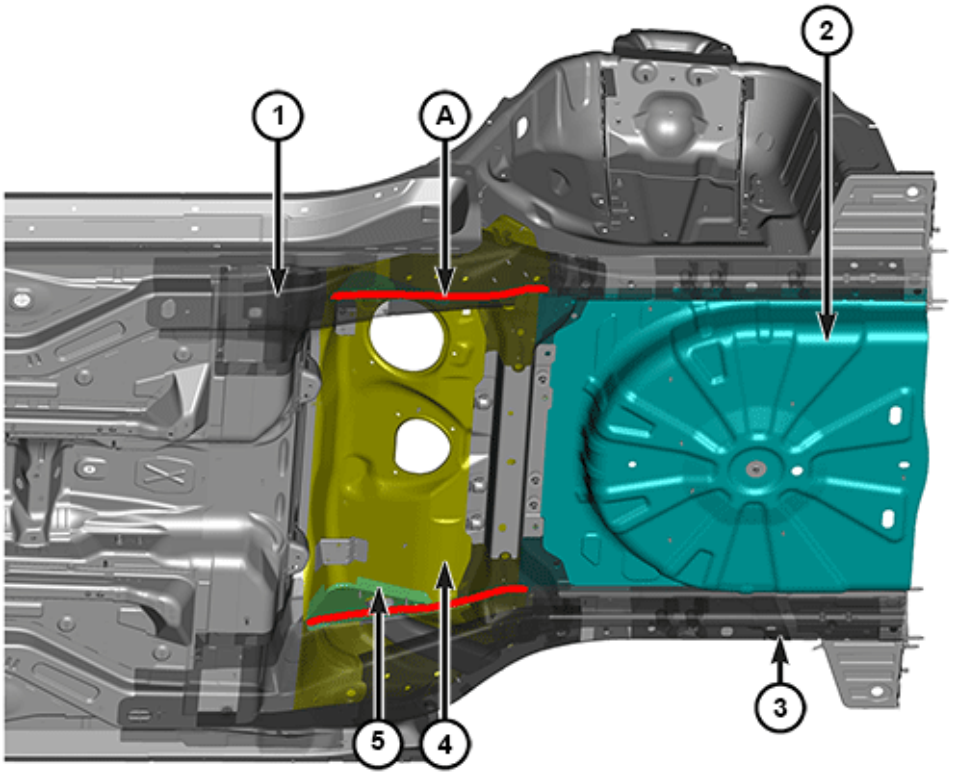
1- Roof Panel (Transparent for clarity)
2- Body Side Aperture (Transparent for clarity)
3- Fuel Filler Reinforcement
A- Structural Adhesive



3103118513

Body Side Aperture (2 of 2)

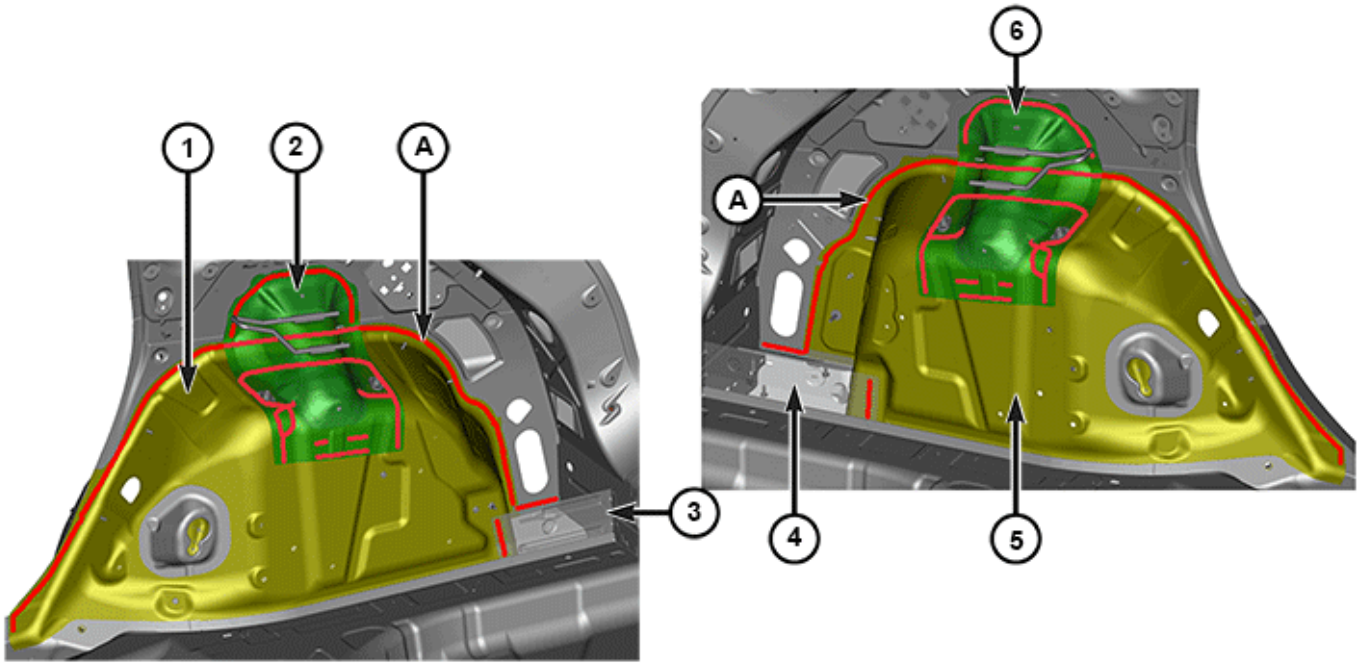
1- Body Side Aperture (Transparent for clarity)
2- Taillamp Panel
3- Outer Wheelhouse Panel
A- Structural Adhesive



3103118514

Rear Frame Rail

1- Left Rear Frame Rail (Transparent for clarity)
2- Rear Floor Pan
3- Left Rear Frame Rail (Transparent for clarity)
4- Center Floor Pan
5- Floor Sidemember Close-out
A- Structural Adhesive



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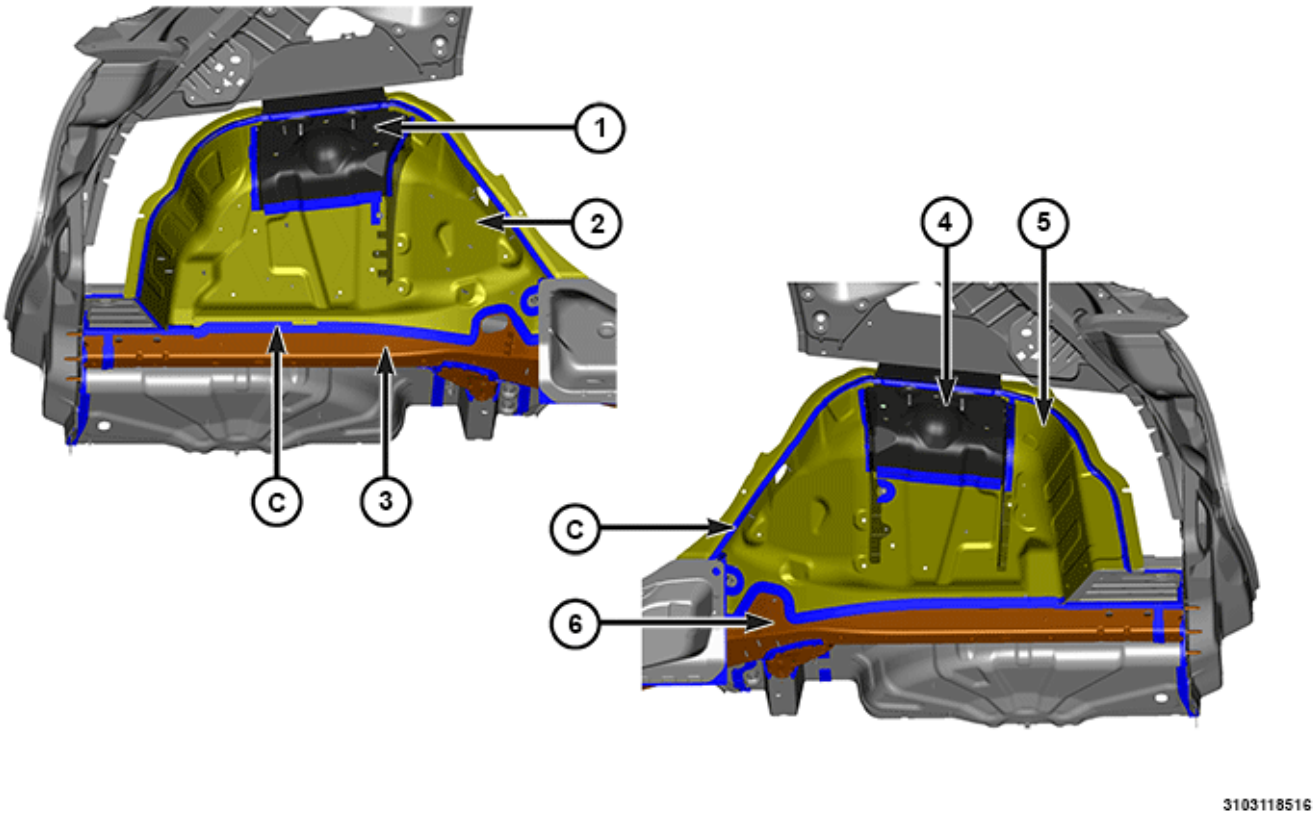
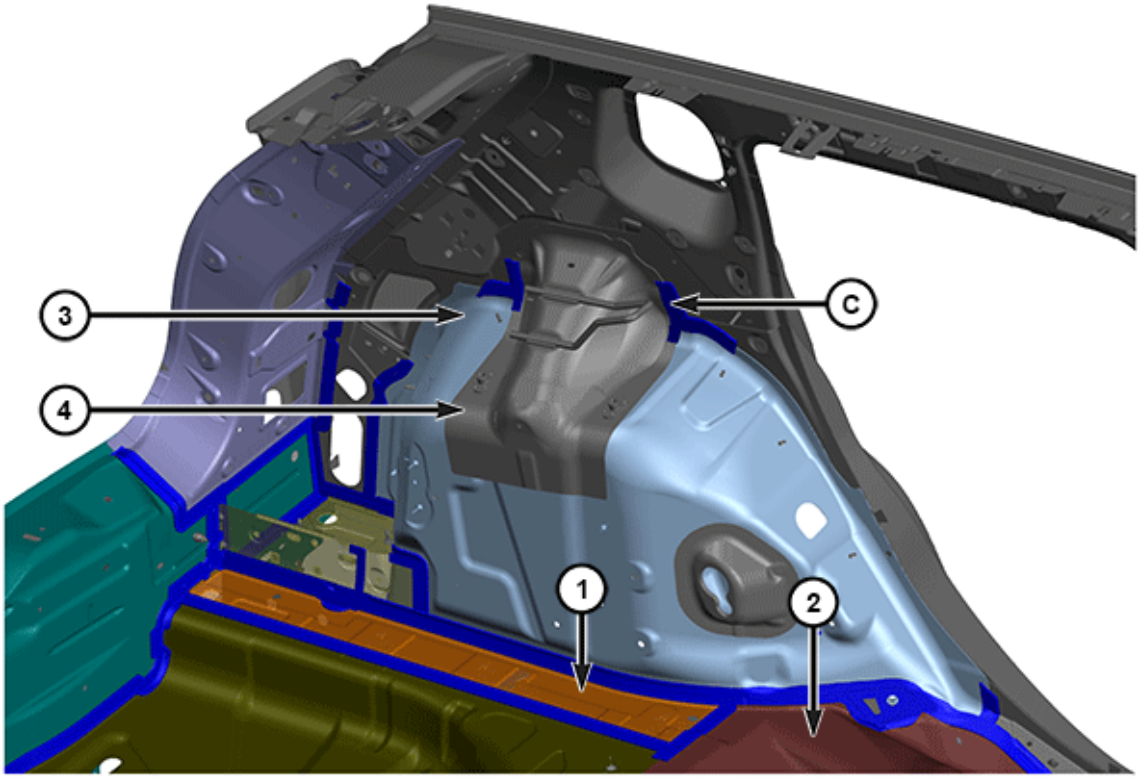
Rear Inner Wheelhouse (1 of 3)

1- Right Rear Inner Wheelhouse
2- Right Inner Wheelhouse Reinforcement (Transparent for clarity)
3- Right Floor Pan Extension (Transparent for clarity)
4- Left Floor Pan Extension (Transparent for clarity)
5- Left Rear Inner Wheelhouse
6- Left Inner Wheelhouse Reinforcement (Transparent for clarity)
A- Structural Adhesive



Rear Inner Wheelhouse (2 of 3)

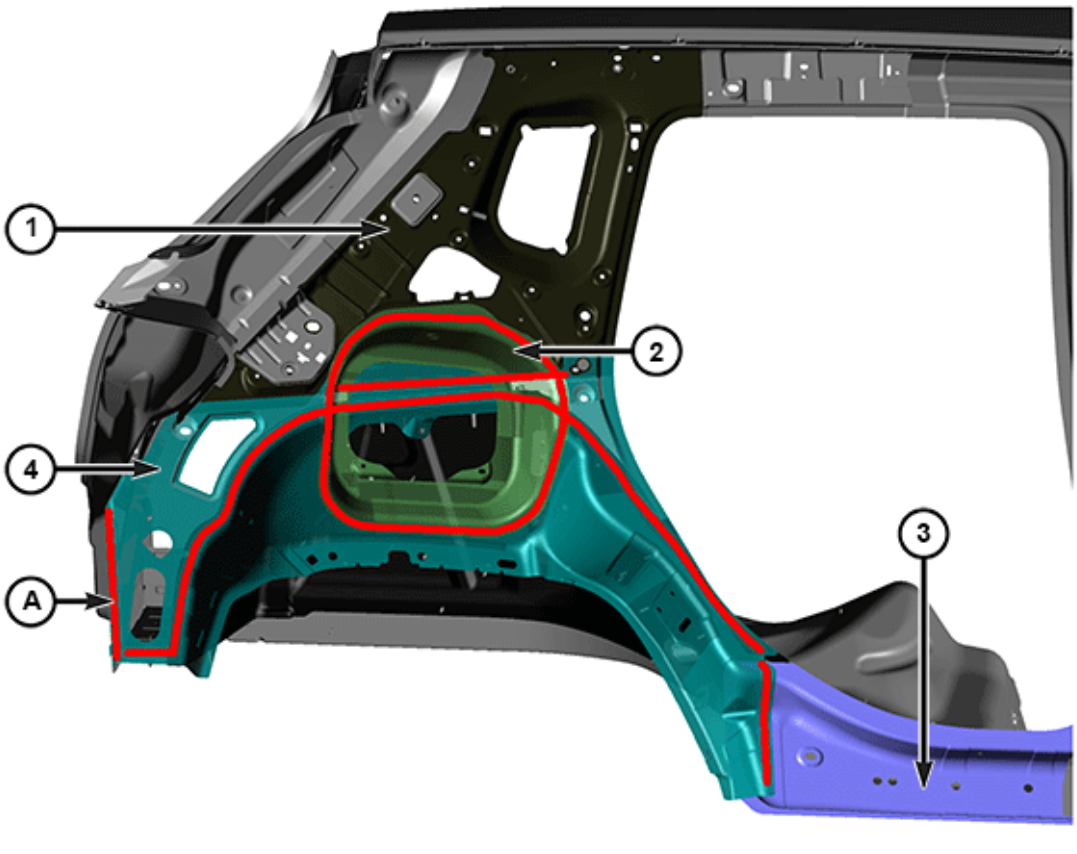
1- Right Shock Mounting Reinforcement
2- Right Rear Inner Wheelhouse
3- Right Rear Frame Rail
4- Left Shock Mounting Reinforcement
5- Left Rear Inner Wheelhouse
6- Left Rear Frame Rail
C- Seam Sealer



Rear Inner Wheelhouse (3 of 3)

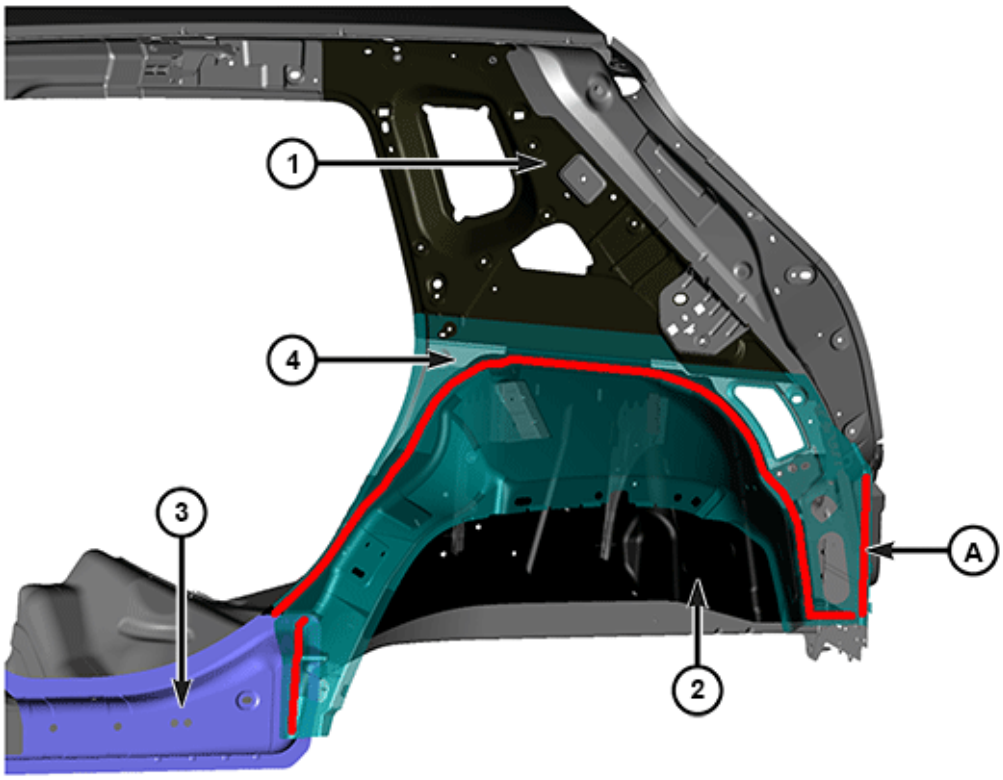
NOTE: Left side view shown, right side similar.

1- Rear Rail Cover
2- Center Floor Pan
3- Rear Inner Wheelhouse
4- Inner Wheelhouse Reinforcement
C- Seam Sealer



Rear Outer Wheelhouse- Right

1- Inner Quarter Panel
2- Fuel Filler Panel
3- Outer Sill Reinforcement
4- Outer Wheelhouse Panel
A- Structural Adhesive



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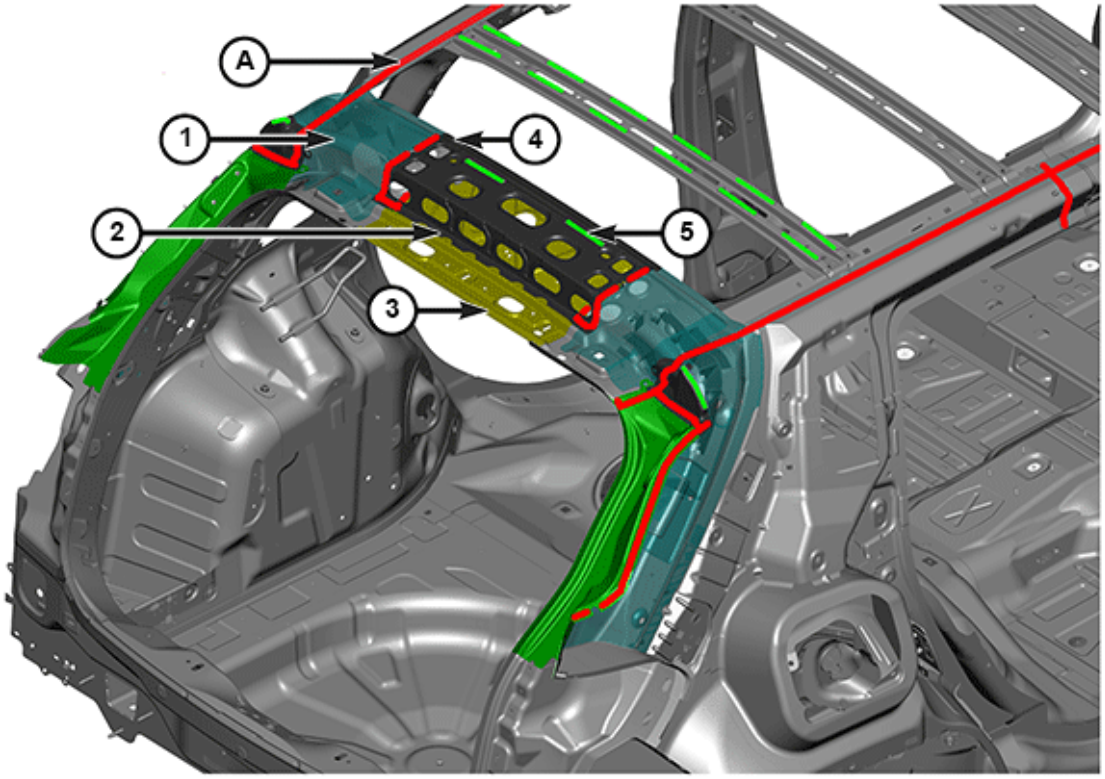
Rear Outer Wheelhouse- Left

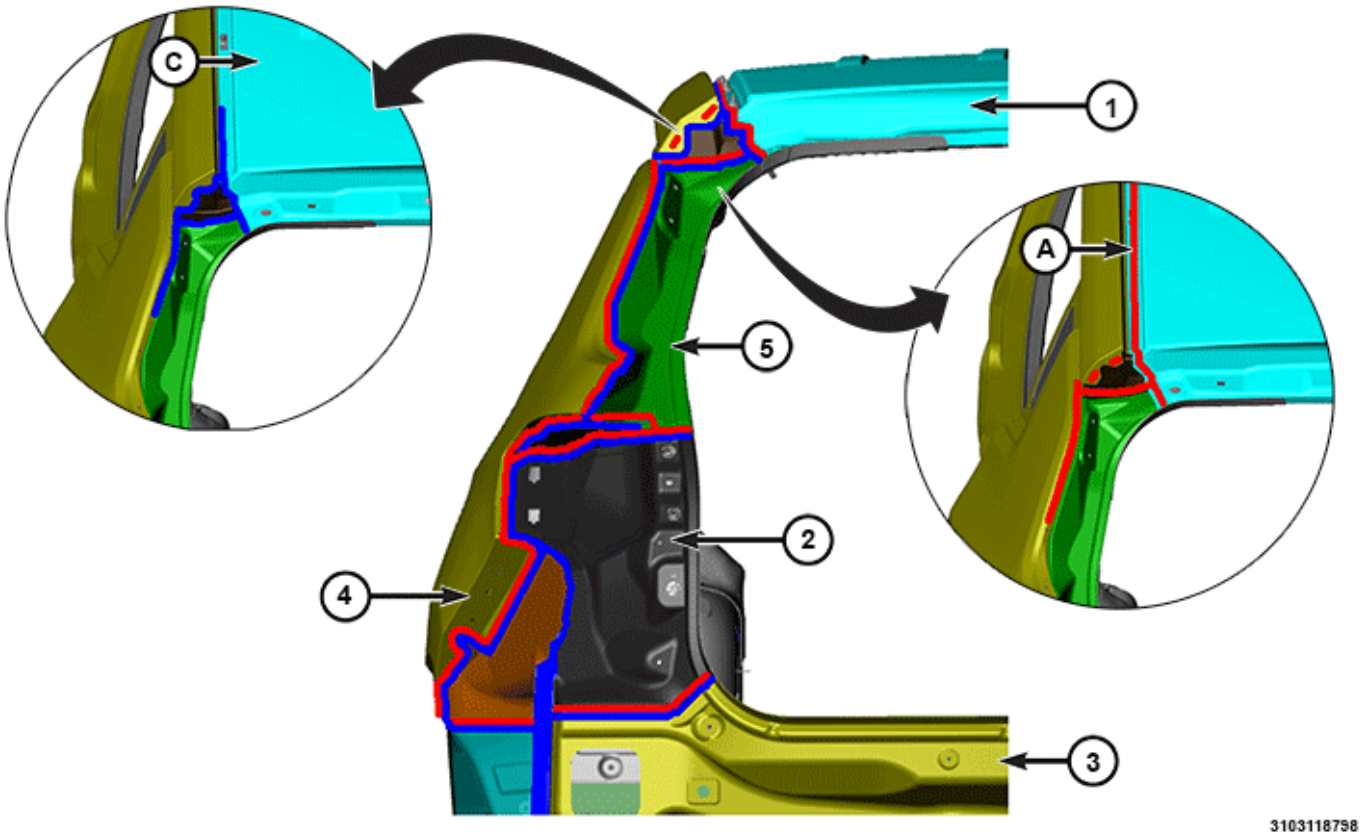
1- Inner Quarter Panel
2- Outer Wheelhouse Panel
3- Rear Sill Reinforcement
4- Outer Wheelhouse Panel
A- Structural Adhesive



3103118520

Rear Header Panel

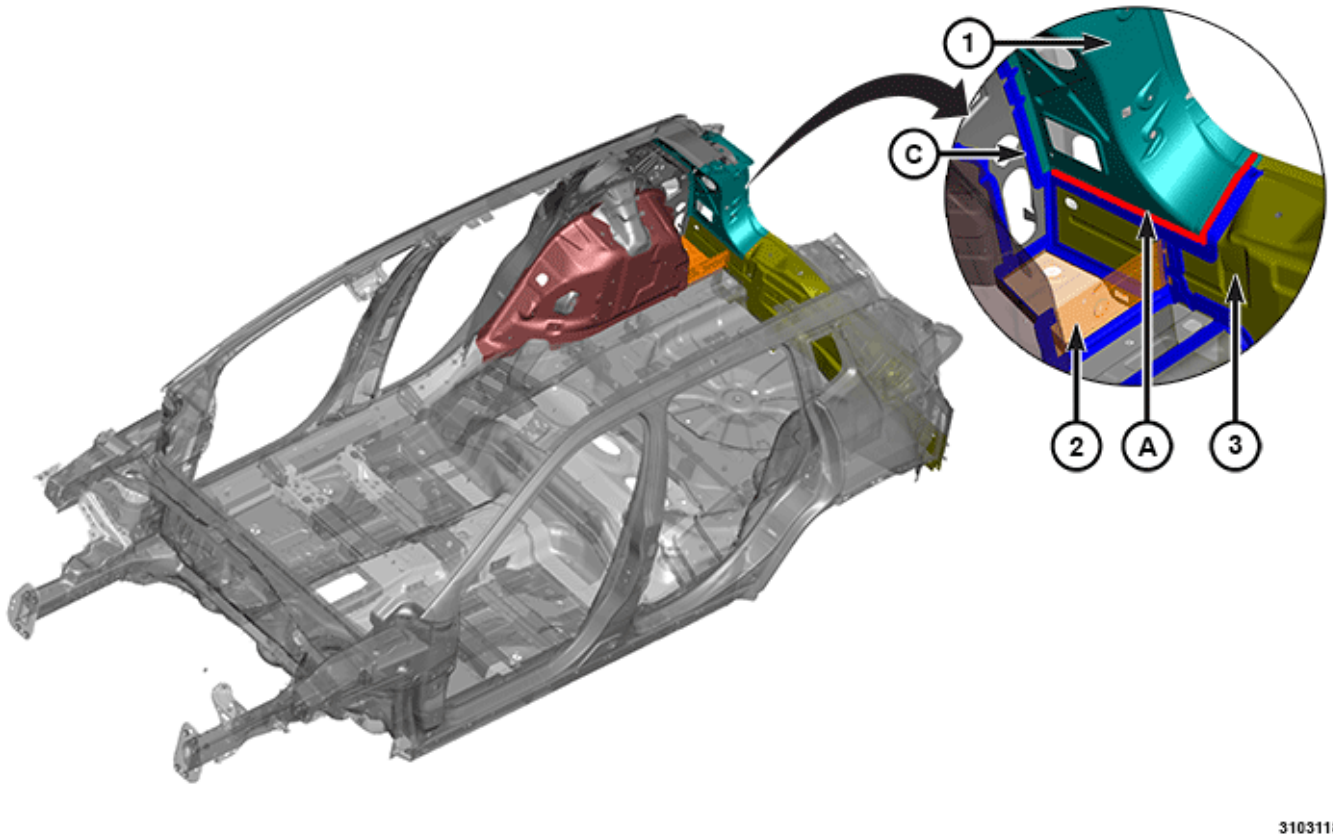
1- D-pillar Outer Upper Reinforcement (Transparent for clarity)
2- Rear Upper Header Panel
3- Rear Lower Header Panel
A- Structural Adhesive
B- Anti-Flutter Adhesive



Liftgate Drain Trough

NOTE: Left side view shown, right side similar.

1- Roof Panel
2- Taillamp Mounting Panel
3- Rear Closure Panel
4- Body Side Aperture
5- Liftgate Drain Trough
A- Structural Adhesive
C- Seam Sealer

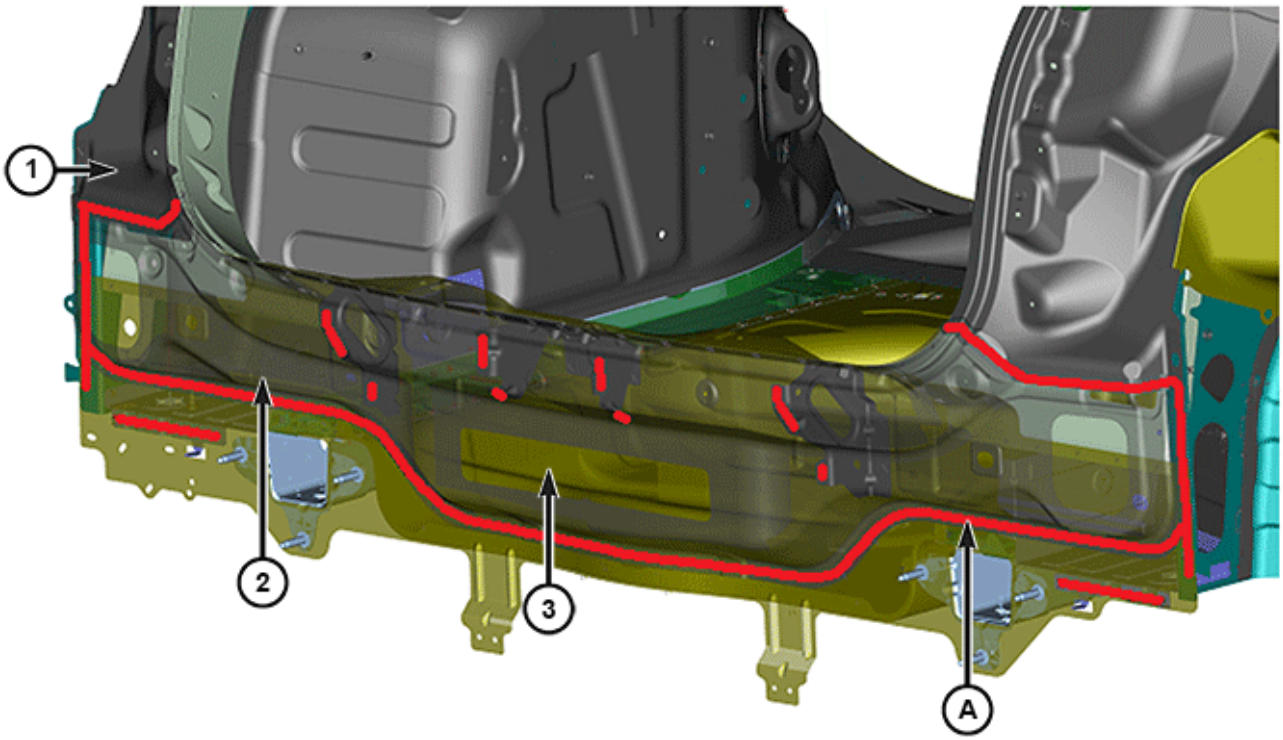


3103118797

Lower D-pillar

NOTE: Right side view shown, left side similar.

1- Inner Lower D-pillar Reinforcement
2- Rear Floor Extension Panel
3- Rear Sill Reinforcement
4- Rear Closure Panel
A- Structural Sealer
C- Seam Sealer



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Rear Closure Panel

1- Taillamp Mounting Panel
2- Outer Rear Closure Panel (Transparent for clarity)
3- Inner Rear Closure Panel
A- Structural Adhesive