

31 - COLLISION INFORMATION.....2

31 - Collision Information

Warning	3	SHEET MOULDING COMPOUND/CARBON	
USE OF HEAT DURING REPAIR	4	REPAIR AND PAINTING	98
Caution	4	Specifications	113
SAFETY NOTICE	5	FASTENER TORQUE	114
CAUTIONS	6	FRAME DIMENSIONS	119
Description	6	GAP AND FLUSH DIMENSIONS	127
CHASSIS – BODY STRUCTURE	7	LOADS AND REINFORCEMENTS	146
CARBON FIBER COMPOSITE MATERIAL ...	14	MATERIAL IDENTIFICATION	147
FIBERGLASS (SMC – SHEET MOULDED		PAINT CODES	149
COMPOUND)	17	REAR CHASSIS FRAME REFERENCE	
Special Tools	18	HOLES	150
SPECIAL TOOLS	19	THERMOHARDENING RECYCLABLE MATERI-	
Standard Procedure	20	ALS	151
BASE COAT/CLEARCOAT FINISH	21	THERMOPLASTIC RECYCLABLE MATERI-	
BODY PANEL REPLACEMENT	22	ALS	152
CARBON FIBER THREADED INSERT		THERMOSETTING ELASTOMERS	153
REPAIR	79	VEHICLE DIMENSIONS	155
COSMETIC CARBON FIBER REPAIR	82	VEHICLE IDENTIFICATION NUMBER	157
FINESSE SANDING, BUFFING, AND POLISH-		Locations	158
ING	87	BODY MARKING	159
HOISTING	88	LOCATION OF IDENTIFICATION PLATES AND	
MONOCOQUE DAMAGE DIAGNOSTICS ...	90	BODY MARKING	160
REAR RAIL EXTENSION	93	BODY PAINTWORK IDENTIFICATION	
		PLATE	161

Warning

USE OF HEAT DURING REPAIR

WARNING: Chrysler Group 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 Chrysler Group 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 Chrysler Group LLC.

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

Caution

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 Chrysler Group LLC has encountered and recommended. Chrysler Group 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, Chrysler Group 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.

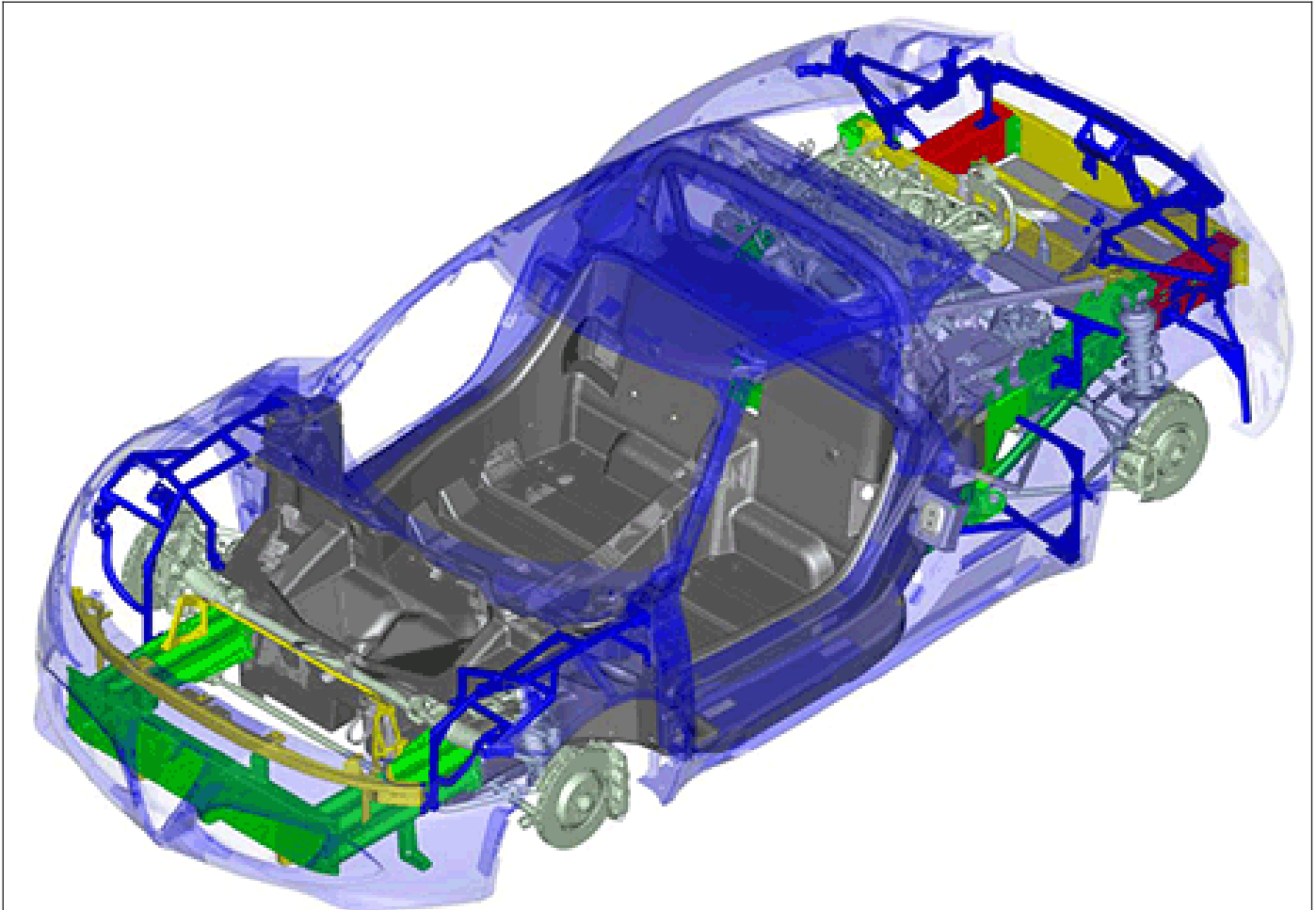
CAUTIONS

- CAUTION:** Work carefully on the trim details and use the recommended tools correctly to prevent damage.
- CAUTION:** Before working on the electrical system (connectors, electrical components, wiring, etc.) turn the ignition key to STOP and disconnect the battery.
- CAUTION:** The battery terminals must only be disconnected with the ignition key at STOP or extracted, never with the key at MAR (Accessory/On/Run) or with engine started. The battery terminals must only be disconnected at least 1 minute after turning the ignition key to STOP and having closed the driver side door to prevent the hydraulic system pressurization stage, which starts when the door is opened, from being interrupted before its completion.
- CAUTION:** When reconnecting the cables, also make sure the driver's door is closed.
- CAUTION:** All mounting screws for components (structural and nonstructural) mounted to the carbon chassis, outside the car, are made of stainless steel. The use of mounting elements in other materials may induce "galvanic" corrosion. Therefore, when installing, take particular care to reuse (or replace if applicable) mounting elements with the characteristics described above.

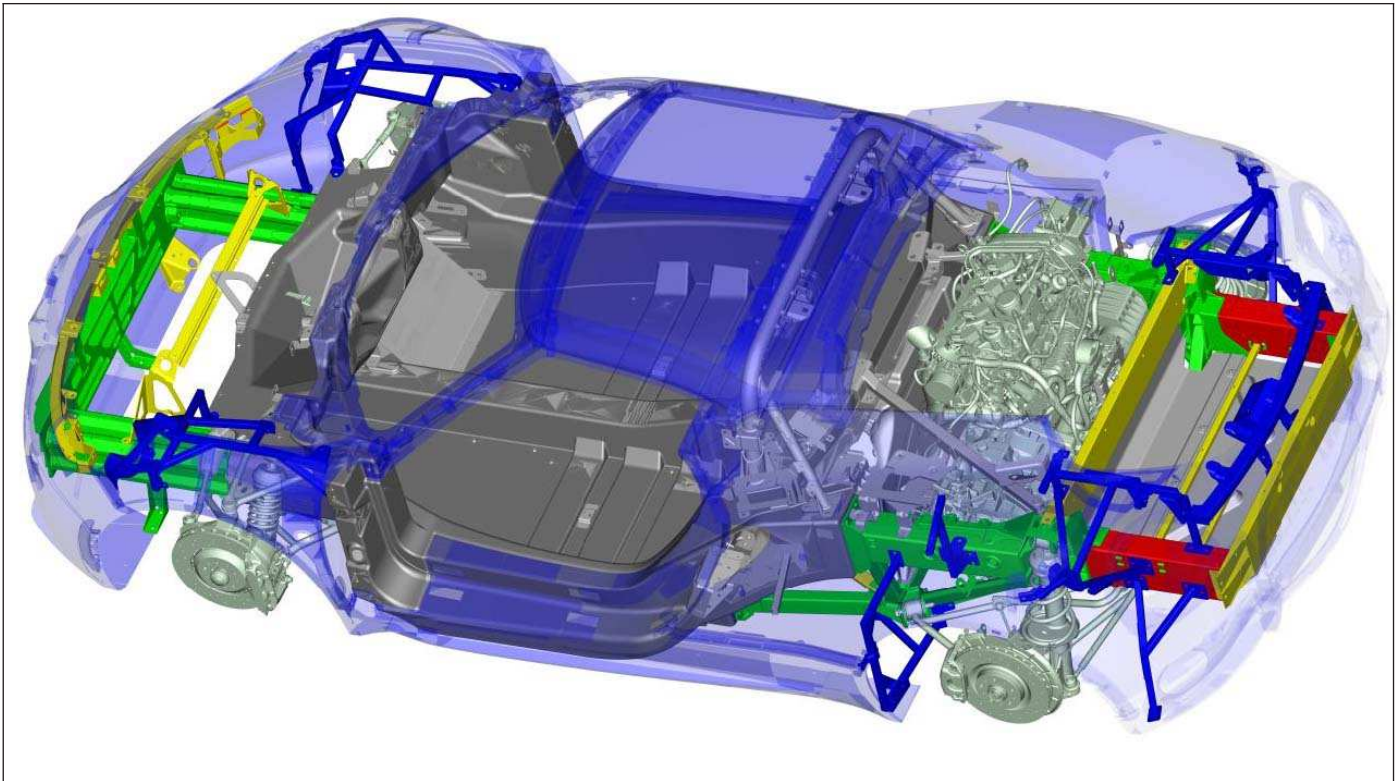
Description

CHASSIS – BODY STRUCTURE

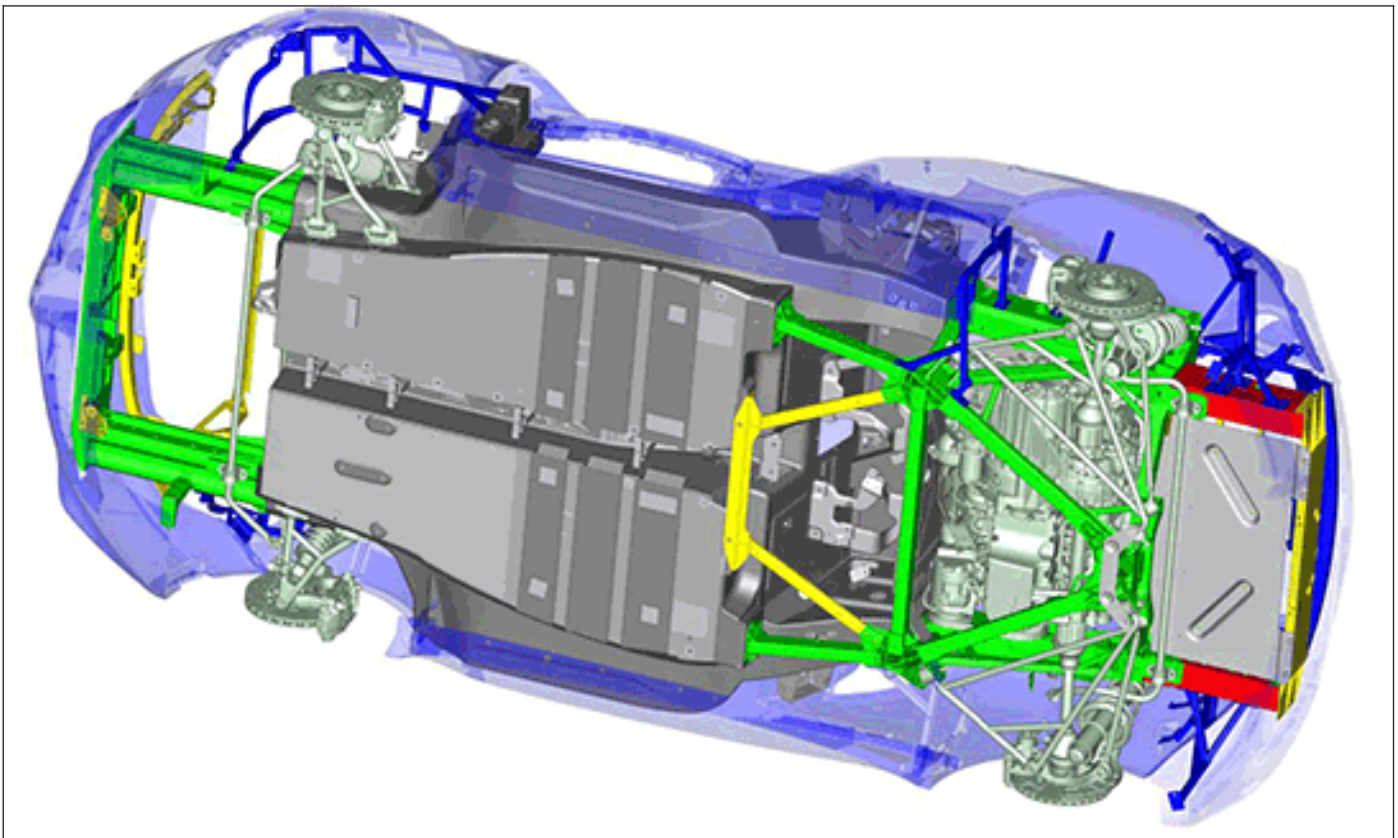
After 45 years, Alfa Romeo has resumed and “democratized” the 33 Stradale concept, creating the 4C. The great technological development and the newly developed design techniques of the last 20 years have allowed the use of materials which were previously used only for military and aerospace applications.



Composite materials in particular have evolved very quickly and their characteristics have made them attractive for sectors which are sensitive to performance, such as car racing, that require very limited production volumes and are not so subject to cost restrictions.



Applications of composite materials for manufacturing vehicle chassis have so far been limited to supercars costing at least 200,000 euros, or vehicles with very limited usage possibilities on roads open to traffic.



The 4C makes extensive use of composite materials, and is offering for the first time a true sports car with carbon fiber body at the price of a prestigious saloon.

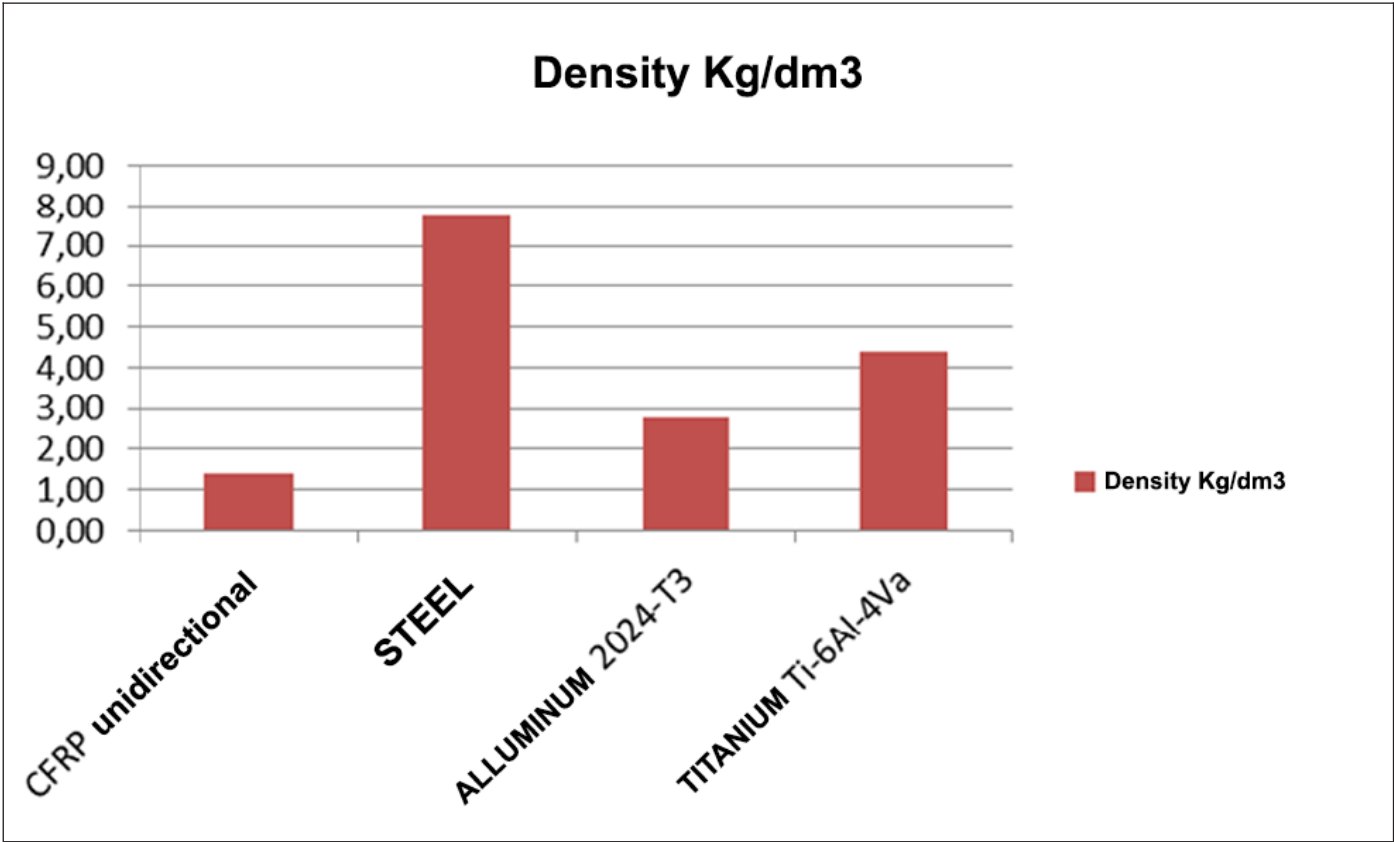
The technicians had to face many challenges:

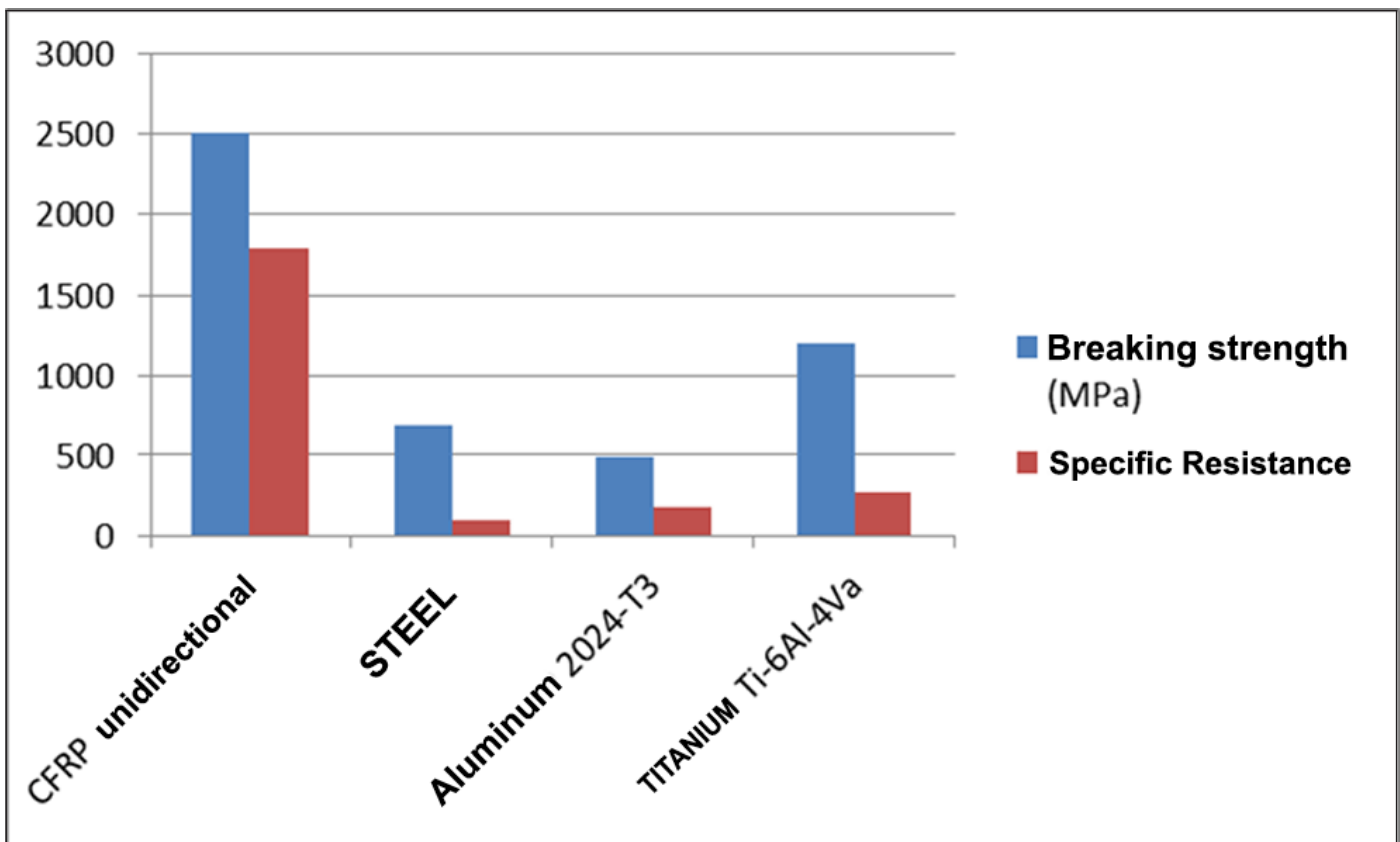
- High cost of materials

- Difficulty mass production application
- High design complexity

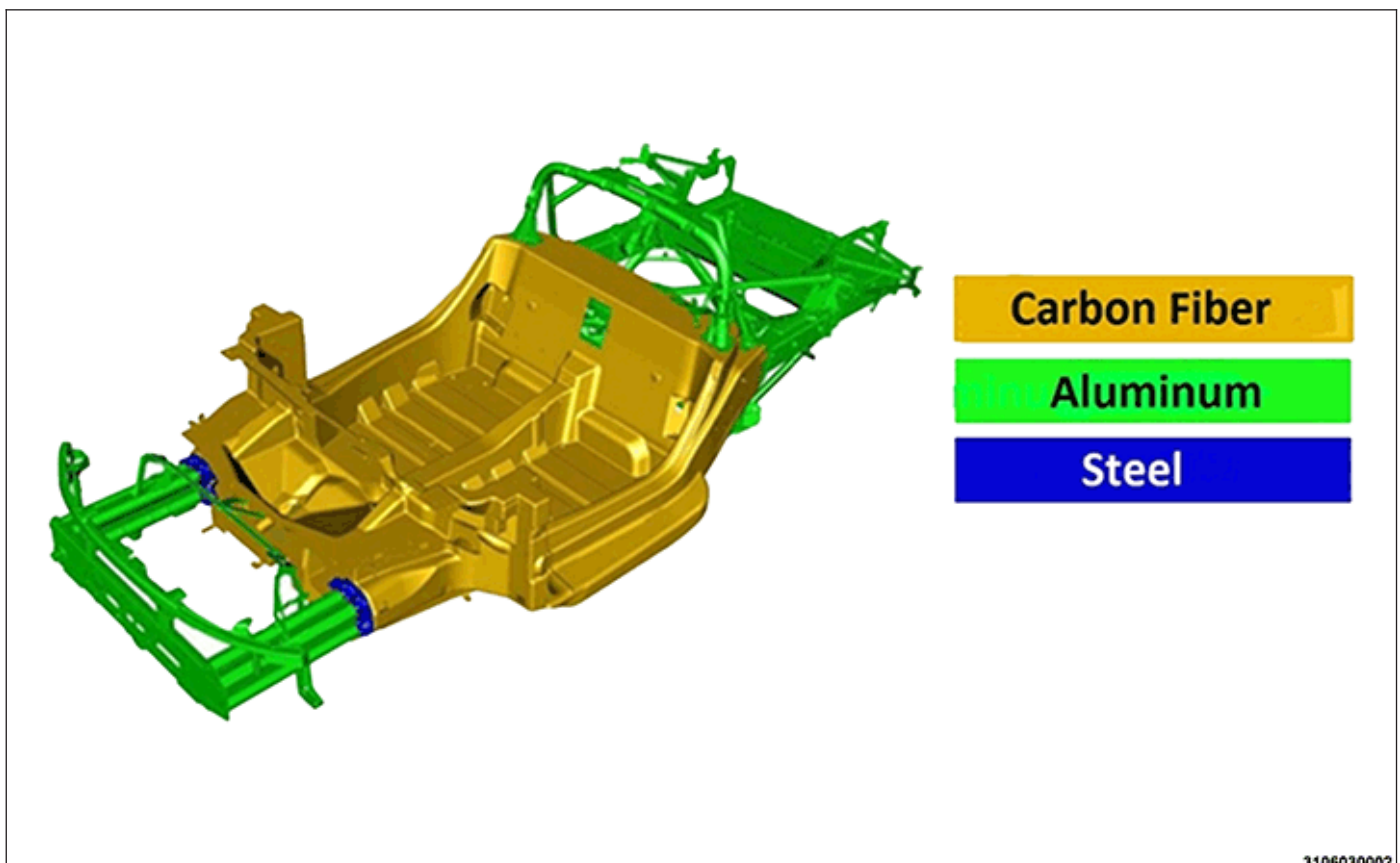
All this contributes to obtaining two main advantages: a high level of integration between components (a single complex carbon part instead of many welded or bolted steel parts) and a considerable reduction of weight.

To understand the advantages provided by the use of carbon it is useful to compare this material with "conventional" alloys and metals, called "isotropic" since they have the same strength characteristics in all directions. Carbon fiber, on the other hand, is processed to guarantee a one-way direction of the fibres, and improve the material's robustness in one specific direction. The direction of the fibres in each part of the component (in this case the chassis) is decided during the design stage, in order to maximize the resistance to the stress experienced by the car during use. The following diagrams highlight the differences compared to isotropic materials: taking steel as a reference, the density (i.e. the weight of a specific volume of the material) of carbon fiber is seven times lower, while resistance is five times higher.





The 4C is not only the first sports car of its category to offer a carbon fiber chassis, it also improves production of a wide range of components, adopting innovative production methods that are difficult to apply to mass production, where the conventional use of pressed steel predominates.



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As can be seen in the images above (and below), the 4C chassis is dominated by the central carbon fiber "tub",

which houses the passenger compartment and includes the attachment points of the front suspension

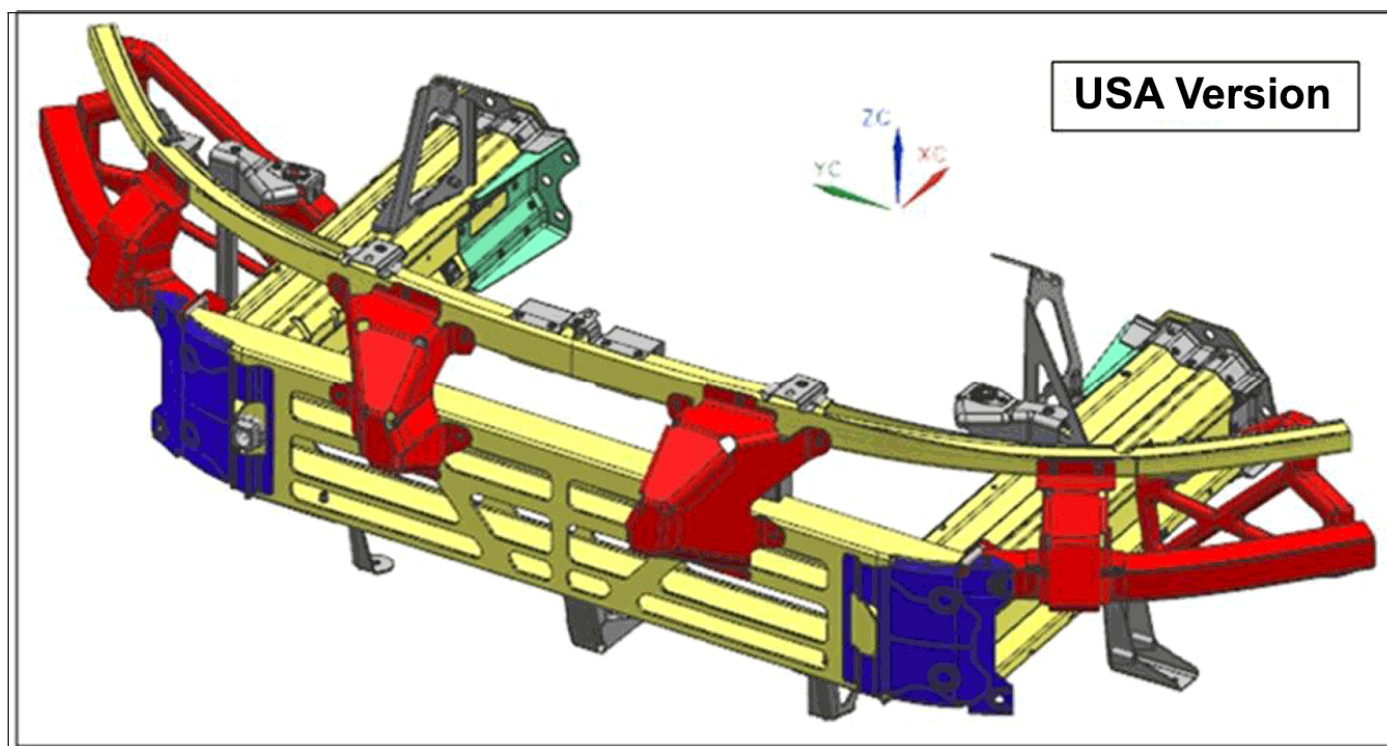
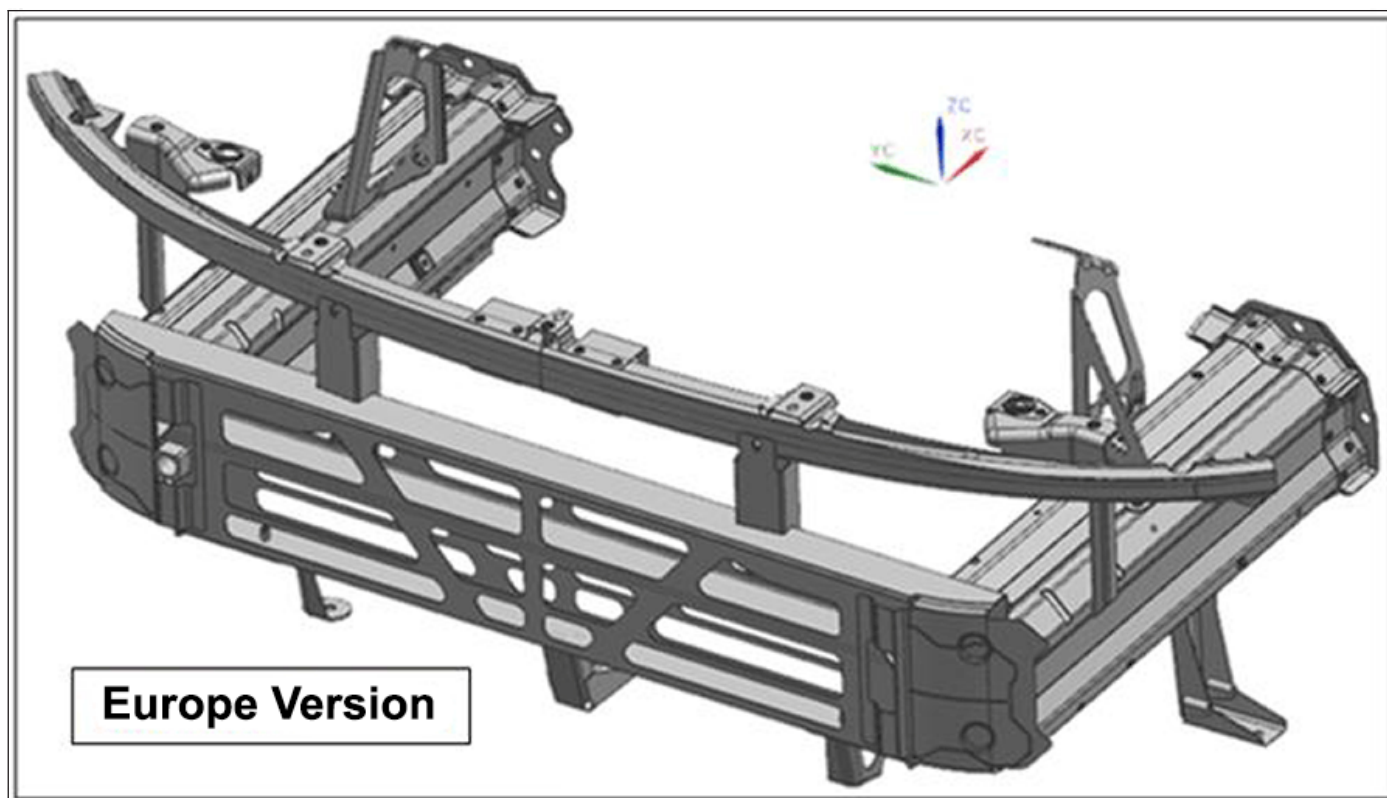


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In the various carbon layers there are brackets with threaded holes (in the front and rear part), on which the front and rear aluminium frames are installed.

A sturdy high resistance steel roll-bar is positioned behind the passengers. This prevents passenger compartment deformation in the event of roll over. The roll-bar is also screwed onto the carbon chassis, thanks to two steel brackets with threaded holes inside the carbon layers. The aluminium structure protects against frontal impacts, while the second aluminium structure creates a "cradle" on the back, to which the mechanical part of the car (engine and transmission) is attached, and includes the attachments of the rear suspension and a further lower structure with controlled deformation, which protects against rear impacts. Both the front and rear aluminium structures and the aluminium tub feature significant differences on the versions to be sold on the US market, in order to comply with the various regulations in force for crash tests in that country.

The differences in the European and US versions of the front chassis are indicated below. (front view)

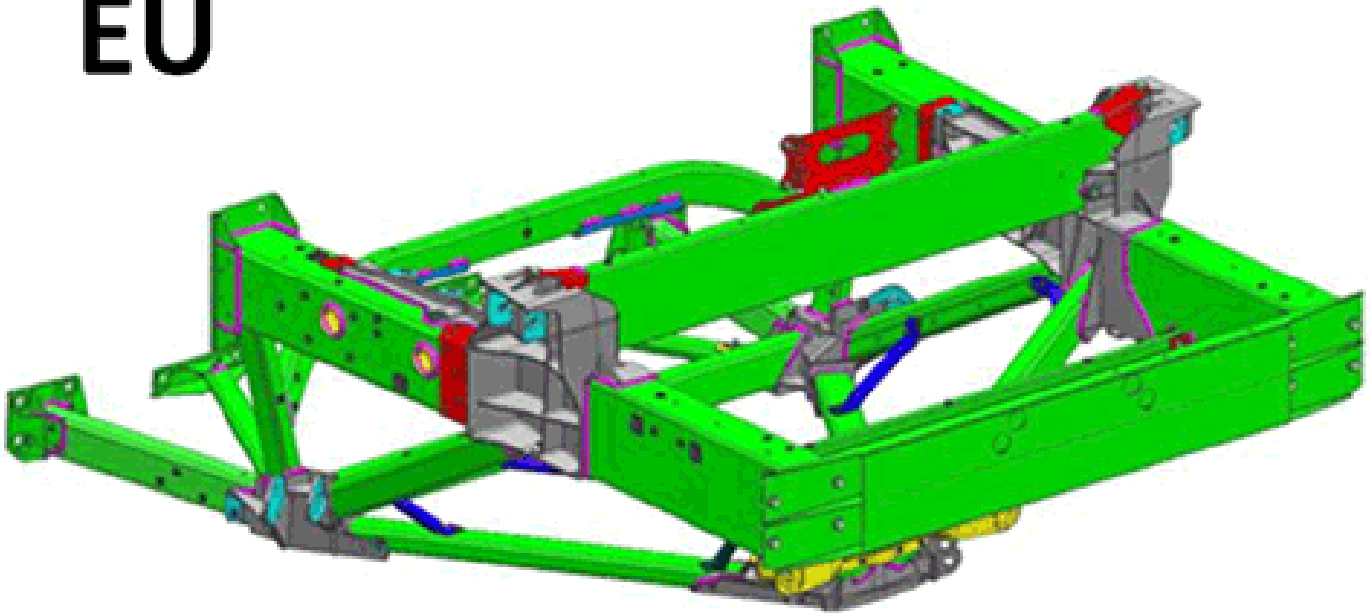


There are differences between the European and US versions of the aluminium front chassis. The various colors indicate the different characteristics of the US and European chassis.

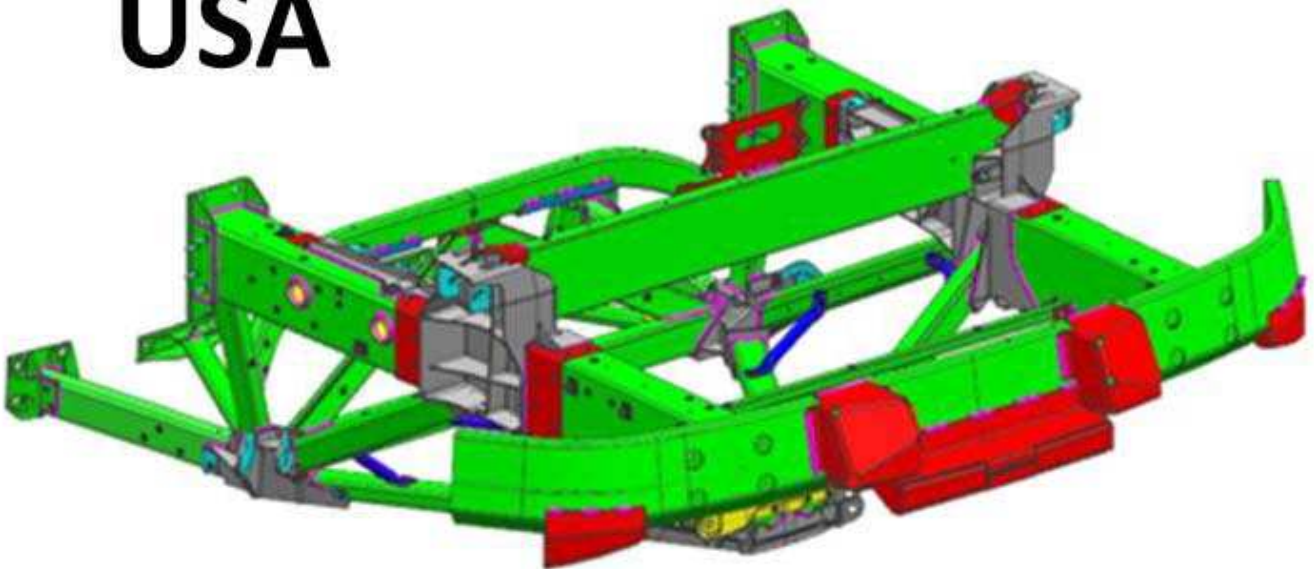
- Parts in red: specific parts added
- Parts in blue: parts in common but different thickness
- Parts in yellow: same volume but different thickness
- Parts in grey: parts in common

The following, on the other hand, are the differences relating to the European and US versions of the rear chassis.

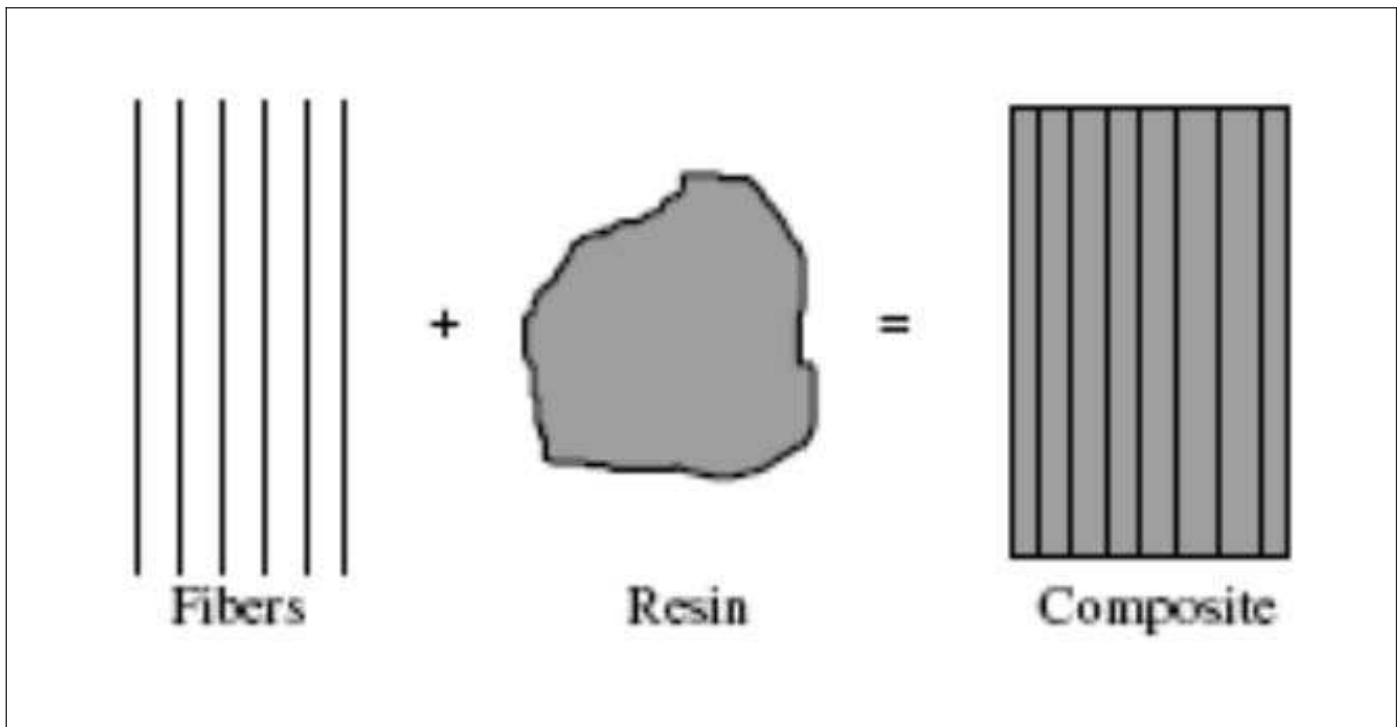
EU



USA

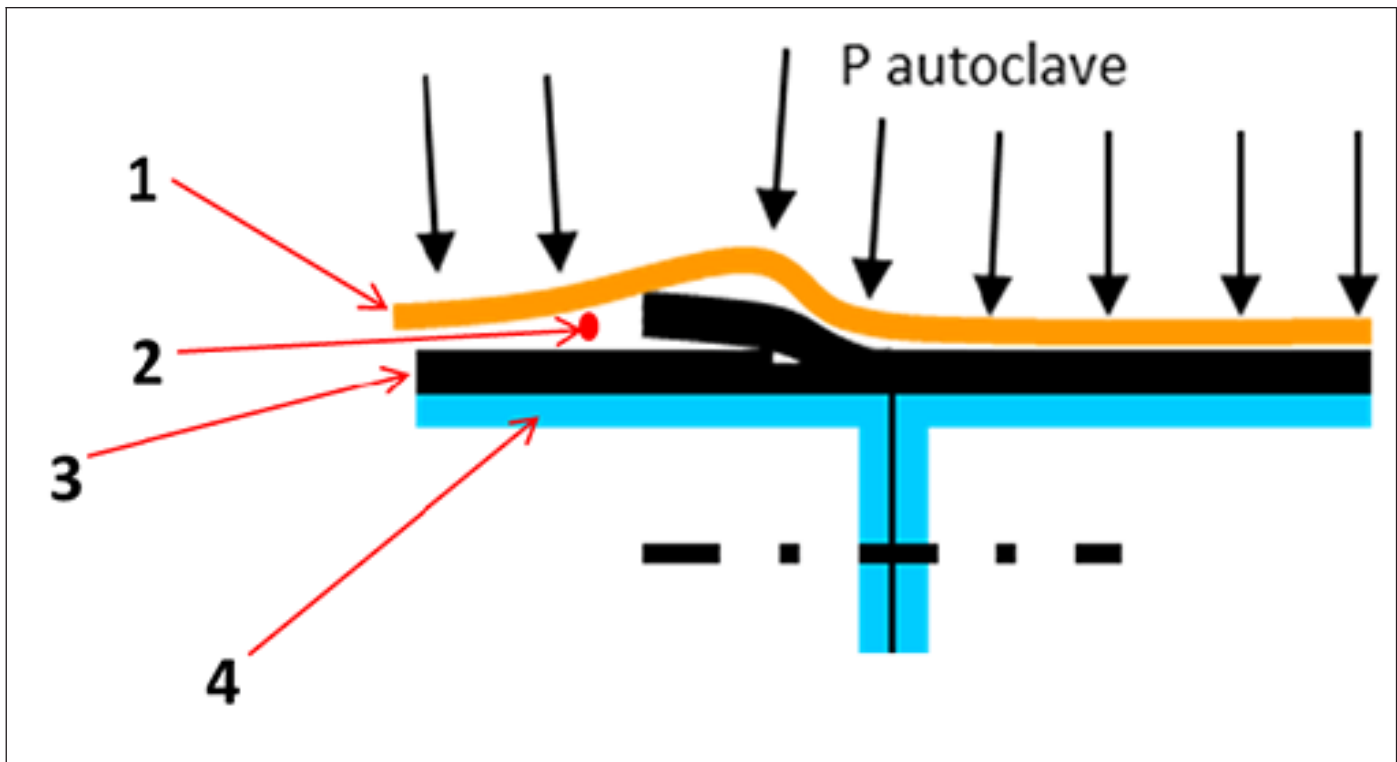


CARBON FIBER COMPOSITE MATERIAL



The composite material in carbon fiber is obtained by a series of fibers (carbon, naturally) immersed in a resin matrix. The resin is the "glue", which has the dual purpose of giving the desired shape to the carbon fiber and at the same time allow the loads to be correctly transmitted between the various fibers. The carbon fiber gives the desired mechanical characteristics to the material produced. The Alfa 4C carbon monocoque uses a specific fiber called PREPREG.

Prepreg is simply a carbon fiber pre-impregnated with resin. The Prepreg fiber is stored in flexible rolls. On the outside they look like fabric rolls used in the textile industry. The first step of the carbon monocoque production process consists of making the specific cuts by means of numerically controlled machines. Then the entire surface of the die (4) of the monocoque is covered with the cuts obtained (3). Once the entire die is covered with the fiber, a sealed bag (1) is placed on it.



The purpose of the bag is to create an isolated chamber (2) with respect to the outside. Air at ambient pressure is present in this chamber. A suitable valve on the bag is used to suck up the air, in order to maintain a slight vacuum in the chamber (2) with respect to the outside, bonding the bag (1) to the fiber. Now the die, prepared in this way, is ready to be placed in an autoclave, to undergo the thermal cycle.



The so called "polymerization" of the resin takes place inside the autoclave. Basically, a thermal cycle is performed inside the autoclave in which temperature and pressure are kept under control. Temperature is increased until a maximum of about 150-170° C (302-338° F) and the area inside the autoclave is kept at a pressure of about 5-6 bar (73-87 psi) during the entire cycle. During the period in the autoclave, the resin in the carbon fibers melts, becomes liquid, and due to external pressure, and being in a chamber with a slight vacuum, can spread and fill the various empty areas between one fiber and another, thus creating an actual mesh. In the final stages of the thermal cycle, the temperature is gradually reduced, in order to allow the resin to become stiffer and give the fiber the shape of the die. The instant in which resin polymerization takes place is the key moment of the cycle: this is when the component assumes the desired mechanical characteristics.

FIBERGLASS (SMC – SHEET MOULDED COMPOUND)

SMC (sheet moulding compound), commonly defined fiberglass, is a thermosetting material made of fiberglass sheets, minerals, pigments and unsaturated polyester resins, recently widespread thanks to its excellent chemical-physical and mechanical characteristics. The production technology consists of hot-shaping in coupled (male-female) steel dies. SMC is pressed at a temperature of about 150° C (302° F) and a pressure of 50-120 kg/cm² (711-1706 psi). Hot-polymerization allows a perfectly homogeneous product to be obtained at the end of the treatment.

A particular property of SMC is the possibility of changing its components as necessary, in order to obtain specific characteristics according to the application requirements. In particular, by changing orientation and the type of fiberglass it is possible to obtain significant differences in the chemical-physical characteristics of the finished product, and therefore to improve the performance required according to the various applications.

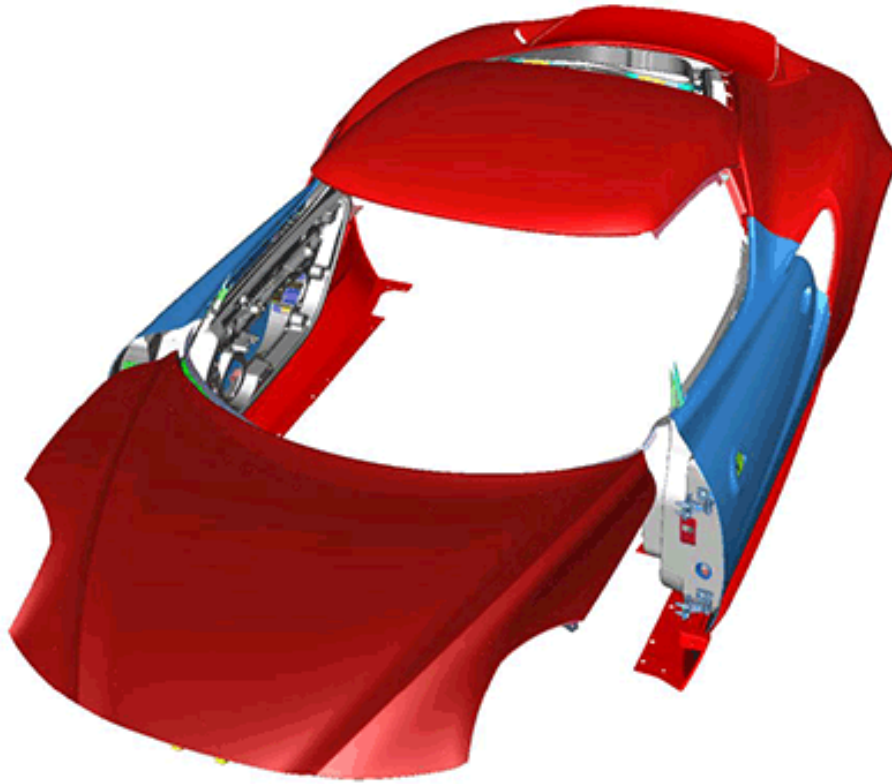
The main advantages obtained by using this material are:

- significant weight/performance ratio with respect to other materials
- high thermal and mechanical resistance
- high dielectric rigidity
- low specific weight
- optimal dimensional stability
- excellent resistance to corrosion of chemicals and atmospheric agents

In addition, the finished product has the following characteristics:

- homogeneous and smooth surface
- pleasant design
- low weight and easy transport
- easy assembly and processing
- low installing cost
- high safety for personnel during handling of parts
- unlimited life and absolute lack of maintenance.

On Alfa Romeo 4C the external "skin" is almost completely in fiberglass.



Special Tools

SPECIAL TOOLS

Tool	Name	Function
2014100000	Right lifting trolley	Vehicle positioning on a lift
2014101000	Left lifting trolley	Vehicle positioning on a lift

Standard Procedure

BASE COAT/CLEARCOAT FINISH

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

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.

On most vehicles a two-part paint application (basecoat/clearcoat) is used. Color paint that is applied to primer is called basecoat. A clear coat paint is then applied to protect the basecoat from ultraviolet light and to provide a durable high-gloss finish.

BODY PANEL REPLACEMENT

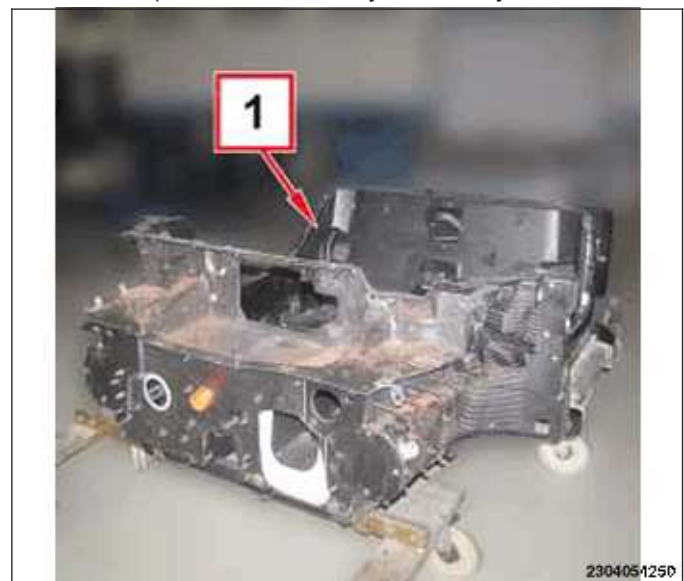
BODY PANEL	REFERENCE
Body Shell/Carbon Fiber Monocoque	Refer to Carbon Fiber Monocoque
Bulkhead Partition Panel	Refer to Bulkhead Partition Panel
Door	Refer to Door
Front Fender	Refer to Front Fender
Fender Mounting Bracket	Refer to Fender Mounting Bracket
Hood	Refer to Hood
Liftgate	Refer to Liftgate
Sill Trim Panel	Refer to Sill Trim Panel
Quarter Panel (Left)	Refer to Left Quarter Panel
Quarter Panel (Right)	Refer to Right Quarter Panel
Quarter Panel Front Mounting Bracket	Refer to Quarter Panel Front Bracket
Quarter Panel Rear Mounting Bracket	Refer to Quarter Panel Rear Bracket
Roof Panel	Refer to Roof
Windshield Frame	Refer to Windshield Frame

Body Tub/Carbon Fiber Monocoque

1. Raise and support the vehicle (Refer to 31 - Collision Information/Standard Procedure/Hoisting).
2. Drain the transmission fluid in accordance with the service information (Refer to 21 - Transmission and Transfer Case/Automatic - C635 DDCT/FLUID/Standard Procedure).
3. Drain the brake and/or clutch fluid in accordance with the service information (Refer to 05 - Brakes, Base/Standard Procedure/Brake and/or Cluth Fluid Check Level and Top Up As Necessary).
4. Remove the passenger side footrest in accordance with the service information (Refer to 23 - Body/Interior/FOOTREST/Removal and Installation).
5. Remove the engine cooling radiator in accordance with the service information (Refer to 07 - Cooling/Engine/RADIATOR, Engine Cooling/Removal and Installation).
6. Remove the left front headlamp cluster unit in accordance with the service information (Refer to 08 - Electrical/Lamps/Lighting - Exterior/CLUSTER, Front Light, Left or Right/Removal and Installation).
7. Remove the right front headlamp cluster unit in accordance with the service information (Refer to 08 - Electrical/Lamps/Lighting - Exterior/CLUSTER, Front Light, Left or Right/Removal and Installation).
8. Remove the fuel tank in accordance with the service information (Refer to 14 - Fuel System/Fuel Delivery, Gas/TANK, Fuel/Removal and Installation).
9. Remove the power unit with dual clutch transmission in accordance with the service information (Refer to 09 - Engine/Power Unit With Dual Clutch Transmission/Removal and Installation).
10. Remove the rear fascia in accordance with the service information (Refer to 13 - Frame and Bumpers/Bumpers/FASCIA, Rear/Removal and Installation).
11. Remove the center belly pan in accordance with the service information (Refer to 13 - Frame and Bumpers/Under Body Protection/BELLY PAN, Center/Removal and Installation).
12. Remove the rear floor console in accordance with the service information (Refer to 23 - Body/Interior/CONSOLE, Rear Floor/Removal and Installation).
13. Remove the headliner in accordance with the service information (Refer to 23 - Body/Interior/HEADLINER/Removal and Installation).
14. Remove the liftgate (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/[Liftgate](#)).
15. Remove the liftgate trim (in accordance with the service information Body/Decklid/Hatch/Liftgate/Tailgate/PANEL, Trim, Liftgate/Removal and Installation).
16. Remove the a-pillar rain gutter molding in accordance with the service information (Refer to 23 - Body/Exterior/MOLDING, Rain Gutter A-pillar/Removal and Installation).
17. Remove the roof rain gutter molding in accordance with the service information (Refer to 23 - Body/Exterior/MOLDING, Rain Gutter Roof/Removal and Installation).

18. Remove the left and right doors (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Door](#)).
19. Remove the right and left seats in accordance with the service information (Refer to 23 - Body/Seats/SEAT/ Removal and Installation).
20. Remove the right and left front fenders (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Front Fender](#)).
21. Remove the right quarter panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Right Quarter Panel](#)).
22. Remove the lower door opening seal in accordance with the service information (Refer to 23 - Body/ Weatherstrip/Seals/SEAL, Door Opening, Lower/Removal and Installation).
23. Remove the liftgate latch cable in accordance with the service information (Refer to 23 - Body/Decklid/Hatch/ Liftgate/Tailgate/CABLE, Liftgate Latch/Removal and Installation).
24. Remove the left quarter panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Left Quarter Panel](#)).
25. Remove the instrument panel carrier in accordance with the service information (Refer to 23 - Body/Instrument Panel/CARRIER, Instrument Panel/Removal and Installation).
26. Remove the windshield in accordance with the service information (Refer to 23 - Body/Stationary Glass/ WINDSHIELD/Removal and Installation).
27. Remove all the remaining electrical and/or mechanical components from the body tub/carbon fiber monocoque.

NOTE: For clarity the body tub/carbon fiber monocoque is shown at bench.



INSTALLATION

NOTE: Check that there is no damage on the body tub/carbon fiber monocoque. Otherwise, replace it with a new one.

1. Install the electrical and/or mechanical components on the body tub/carbon fiber monocoque, tightening the corresponding mounting components (screws/nuts).
2. Install the windshield in accordance with the service information (Refer to 23 - Body/Stationary Glass/ WINDSHIELD/Removal and Installation).
3. Install the instrument panel carrier in accordance with the service information (Refer to 23 - Body/Instrument Panel/CARRIER, Instrument Panel/Removal and Installation).
4. Install the left quarter panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Left Quarter Panel](#)).
5. Install the liftgate latch cable in accordance with the service information (Refer to 23 - Body/Decklid/Hatch/ Liftgate/Tailgate/CABLE, Liftgate Latch/Removal and Installation).
6. Install the lower door opening seal in accordance with the service information (Refer to 23 - Body/Weatherstrip/ Seals/SEAL, Door Opening, Lower/Removal and Installation).
7. Install the right quarter panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Right Quarter Panel](#)).
8. Install the right and left front fenders (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Front Fender](#)).
9. Install the right and left seats in accordance with the service information (Refer to 23 - Body/Seats/SEAT/ Removal and Installation).
10. Install the left and right doors (Refer to 31 - Collision Information/Standard Procedures/Body Panel

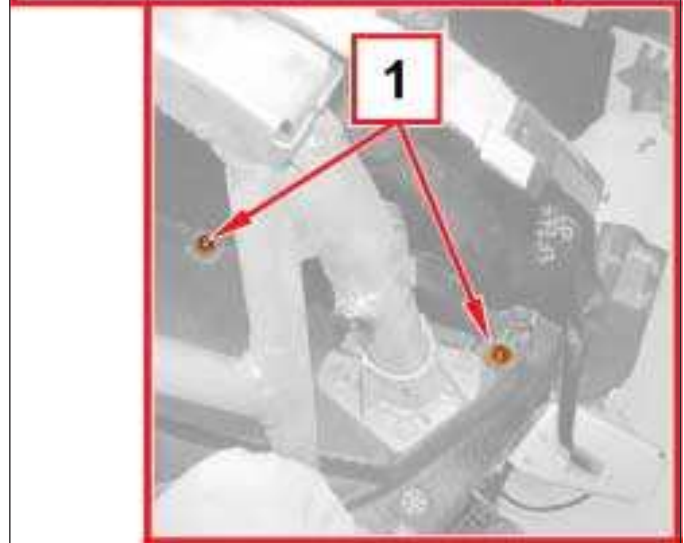
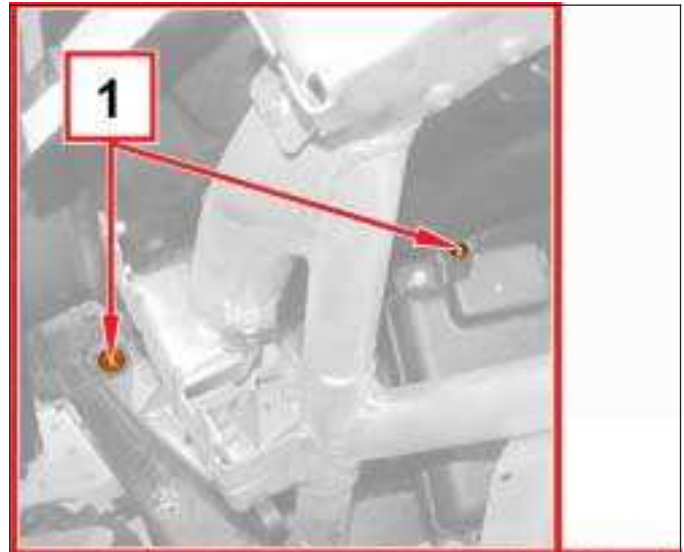
Replacement/ [Body Panel Replacement/Door](#)).

11. Install the roof rain gutter molding in accordance with the service information (Refer to 23 - Body/Exterior/ MOLDING, Rain Gutter Roof/Removal and Installation).
12. Install the a-pillar rain gutter molding in accordance with the service information (Refer to 23 - Body/Exterior/ MOLDING, Rain Gutter A-pillar/Removal and Installation).
13. Install the liftgate trim in accordance with the service information Body/Decklid/Hatch/Liftgate/Tailgate/PANEL, Trim, Liftgate/Removal and Installation).
14. Install the liftgate (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Liftgate](#)).
15. Install the headliner in accordance with the service information (Refer to 23 - Body/Interior/HEADLINER/ Removal and Installation).
16. Install the rear floor console in accordance with the service information (Refer to 23 - Body/Interior/CONSOLE, Rear Floor/Removal and Installation).
17. Install the center belly pan (Refer to 13 - Frame and Bumpers/Under Body Protection/BELLY PAN, Center/ Removal and Installation).
18. Install the rear fascia in accordance with the service information (Refer to 13 - Frame and Bumpers/Bumpers/ FASCIA, Rear/Removal and Installation).
19. Install the power unit with dual clutch transmission in accordance with the service information (Refer to 09 - Engine/Power Unit With Dual Clutch Transmission/Removal and Installation).
20. Install the fuel tank in accordance with the service information (Refer to 14 - Fuel System/Fuel Delivery, Gas/ TANK, Fuel/Removal and Installation) .
21. Install the right front headlamp cluster unit in accordance with the service information (Refer to 08 - Electrical/ Lamps/Lighting - Exterior/CLUSTER, Front Light, Left or Right/Removal and Installation).
22. Install the left front headlamp cluster unit in accordance with the service information (Refer to 08 - Electrical/ Lamps/Lighting - Exterior/CLUSTER, Front Light, Left or Right/Removal and Installation).
23. Install the engine cooling radiator in accordance with the service information (Refer to 07 - Cooling/Engine/ RADIATOR, Engine Cooling/Removal and Installation).
24. Install the passenger side footrest in accordance with the service information (Refer to 23 - Body/Interior/ FOOTREST/Removal and Installation).
25. Fill the transmission fluid in accordance with the service information (Refer to 21 - Transmission and Transfer Case/Automatic - C635 DDCT/FLUID/Standard Procedure).
26. Fill the brake and/or clutch fluid in accordance with the service information (Refer to 05 - Brakes, Base/ Standard Procedure/Brake and/or Clutch Fluid Check Level and Top Up As Necessary).
27. Bleed the brake system in accordance with the service information (Refer to 05 - Brakes, Base/Standard Procedure/Brake and/or Clutch Fluid Check Level and Top Up As Necessary).
28. Remove the support and lower the vehicle.
29. Check the front wheels geometry and adjust if necessary in accordance with the service information (Refer to 02 - Front Suspension/Wheel Alignment/Standard Procedure).
30. Check the rear wheels geometry and adjust if necessary in accordance with the service information (Refer to 02 - Front Suspension/Wheel Alignment/Standard Procedure).
31. Check the front headlamps cluster light beam position and adjust if necessary in accordance with the service information (Refer to 08 - Electrical/Lamps/Lighting - Exterior/Standard Procedure).

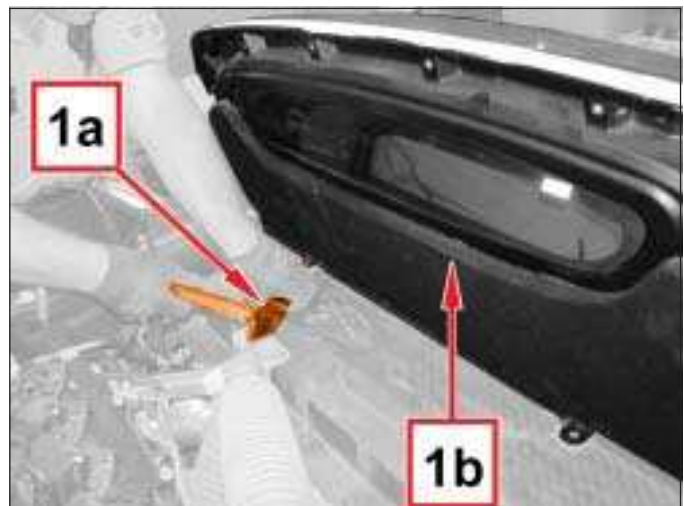
Bulkhead Partition Panel

Removal

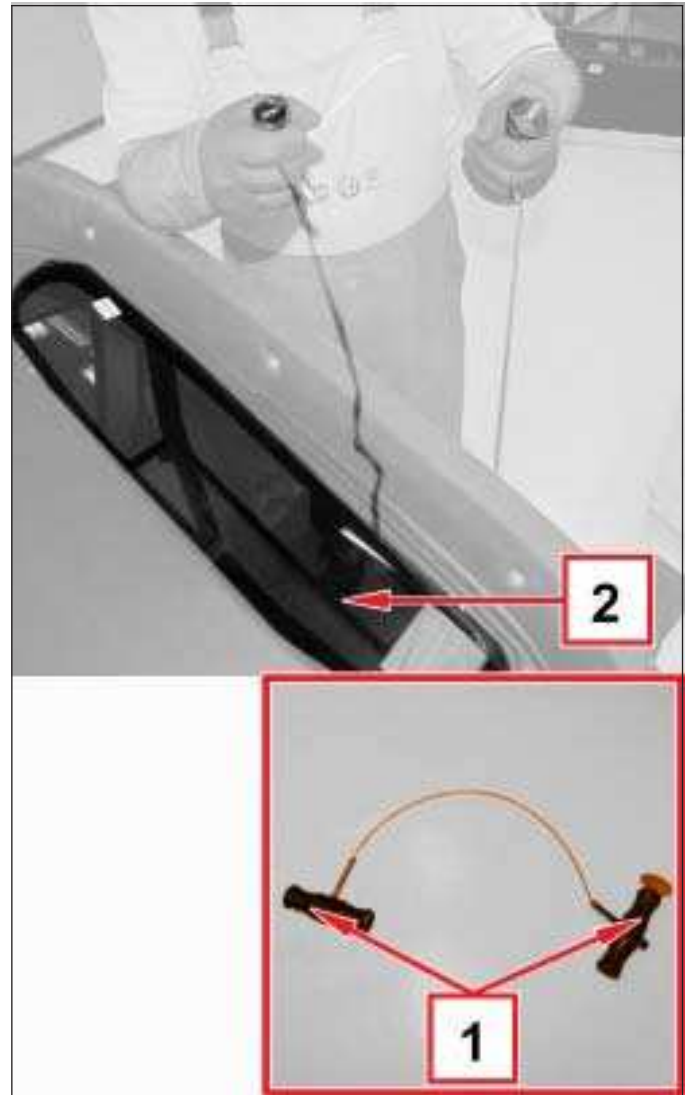
1. Disconnect and isolate the negative battery cable.
2. Remove the roof (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Roof Panel](#)).
3. Remove the roll bar in accordance to the service information.
4. Remove the sill trim panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Sill Trim Panel](#)).
5. Undo the screws mounting (1) the partition to the monocoque.



6. Using a dedicated blade (1a), remove the partition between passenger compartment and engine compartment (1b).

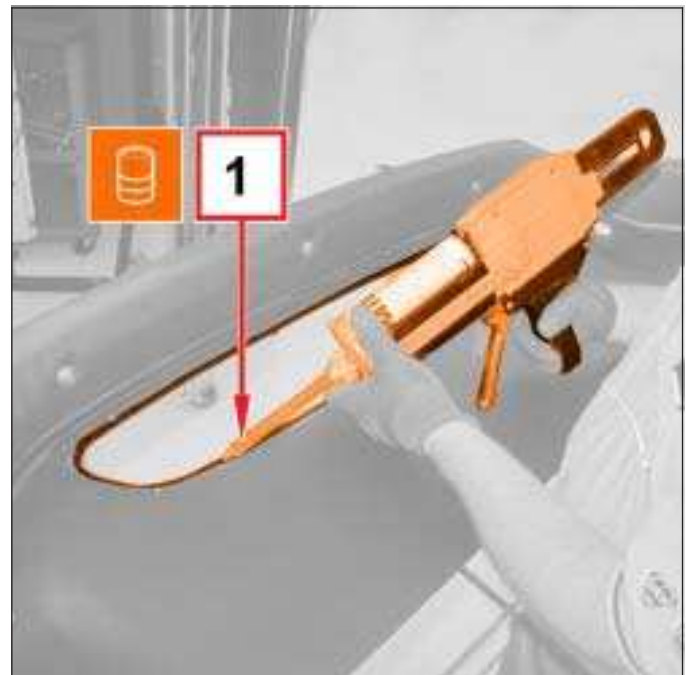


7. If necessary, work at bench and cut the partition glass as described below:
8. Cut a length of piano wire of about 50 cm then, using pliers, introduce one end of the piano wire through the strip of sealant mounting the rear window.
9. Secure the ends of the wire to the traction handles (1).
10. Following the profile of the partition glass, cut the strip of sealant.
11. When necessary, position a spatula next to the tool to protect the internal parts of the car.
12. Remove the partition glass (2).



Installation

1. If removed, proceed to bond the new partition glass as described below:
2. Using a suitable tool, cut and level the strip of sealant in the partition glass housing, leaving a thickness of between 0.25 and 1 mm, taking care not to scratch the paintwork. The thickness of the sealant remaining in the housing will act as a support for the new bonding.
3. Degrease the bonding area on the body and on the partition glass with heptane.
4. Extrude a 6 mm strip of sealant (1) along the perimeter of the partition glass.

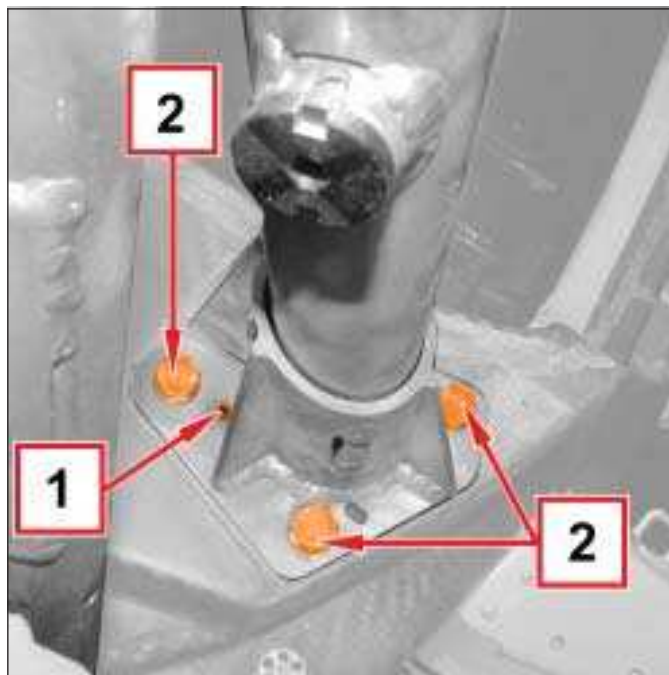


Component	Type	Name	Classification	Quantity	Validity
—	Sealant	SIMSON ISR 70-08P	—	—	—

5. Gently position the partition glass.
6. Wait for approximately 45 minutes before proceeding to install the partition in its housing.

CAUTION: The roll bar must be installed before the partition is bonded and is required as a reference for the correct repositioning of the partition.

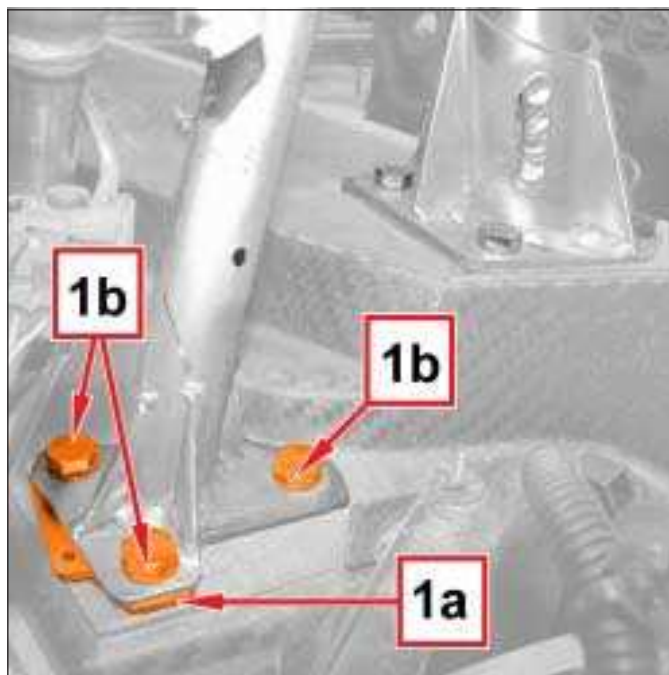
7. Position the roll bar in its housing, referring on both sides to the locating pin (1).
8. Loosely install the lower roll bar mounting screws (2) without tightening to torque.



9. From both sides, insert the spacers (1a) so that the remaining gap is covered and loosely install the remaining lower mounting screws (1b) for the roll bar without tightening to torque.

CAUTION: A maximum of 6 spacers may be inserted.

10. Tighten the lower mounting screws for the roll bar.

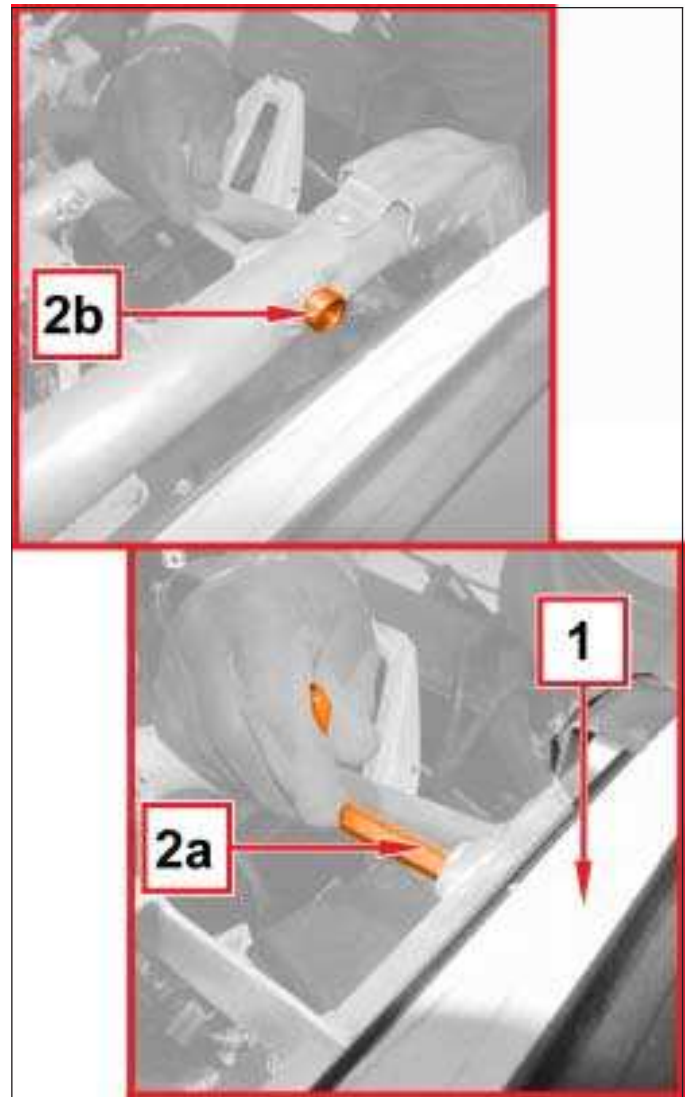


Component	Mounting	Size	Value (NM)
Roll-bar (on carbon monocoque)	Screw	M10X1.5X 35	36 + 45°

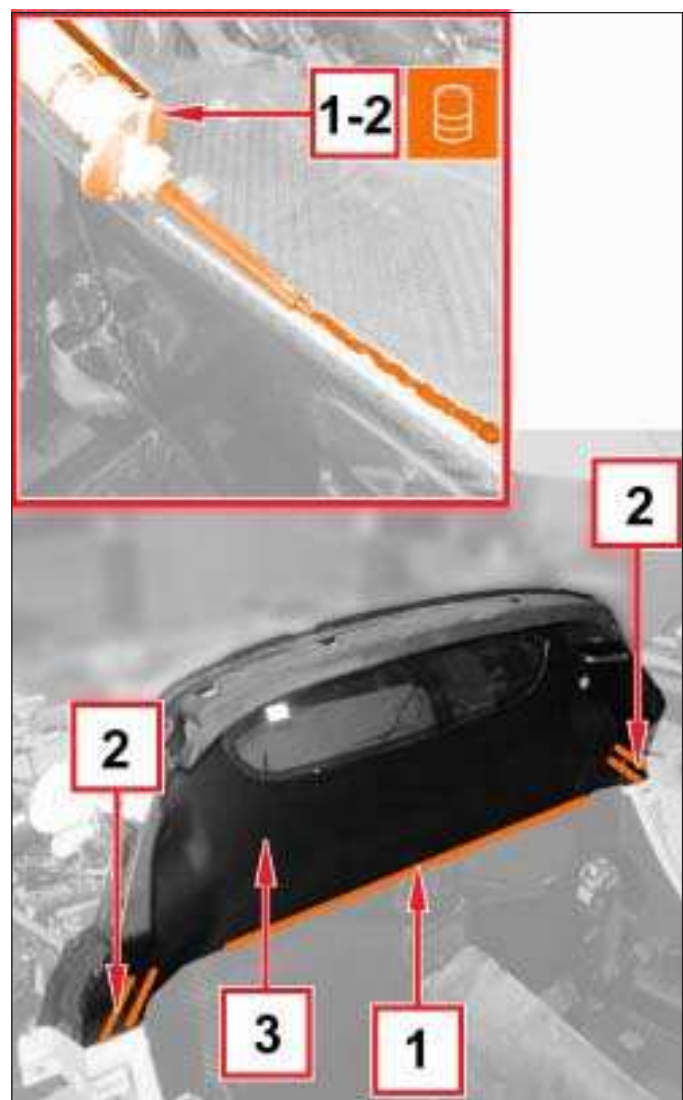
11. Clean the body and partition bonding area thoroughly of residual sealant and degrease using heptane.

12. Rest the partition temporarily and bring it closer into position.
13. Using a dedicated spanner (2a), bring the mounting buffers (2b) for the roll bar to end of travel on the partition.

NOTE: This operation prevents the deformation of the partition when the roll bar screws are tightened.



14. Extrude a 6 mm (0.24 in) strip of sealant (1) along the central partition contact area.
15. Extrude a 6 mm (0.24 in) strip of sealant (2) along the side partition contact areas.

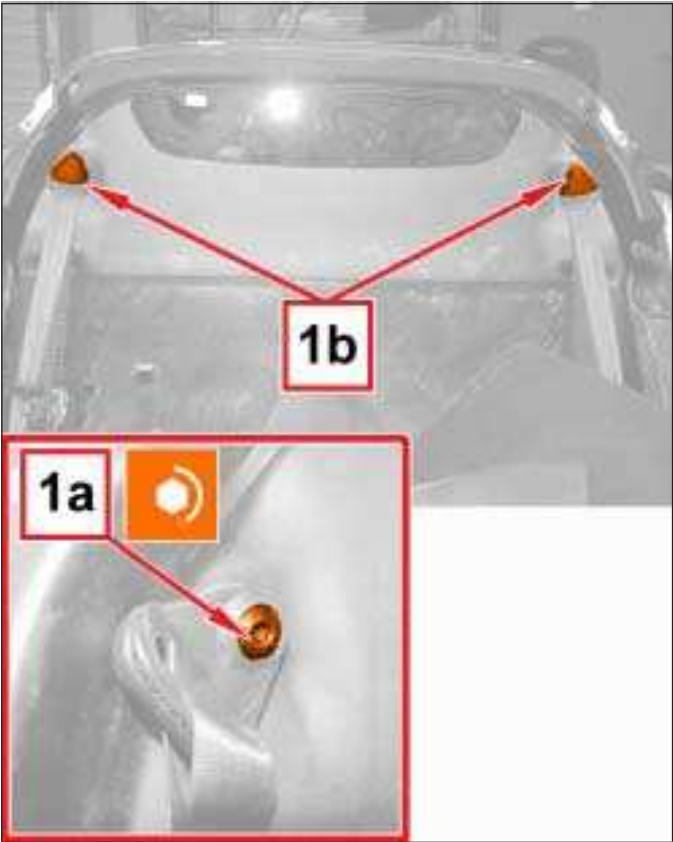


Component	Type	Name	Classification	Quantity	Validity
–	Sealant	SIMSON ISR 70–08P	–	–	–

16. Gently position the partition.
17. Tighten the screws mounting the partition to the monocoque.
18. Tighten the upper screws mounting the roll bar to the partition.

CAUTION: Wait for approximately 45 minutes before proceeding with the installation stage.

19. Tighten the mounting screws (1a) for the seat belts and install the caps (1b).



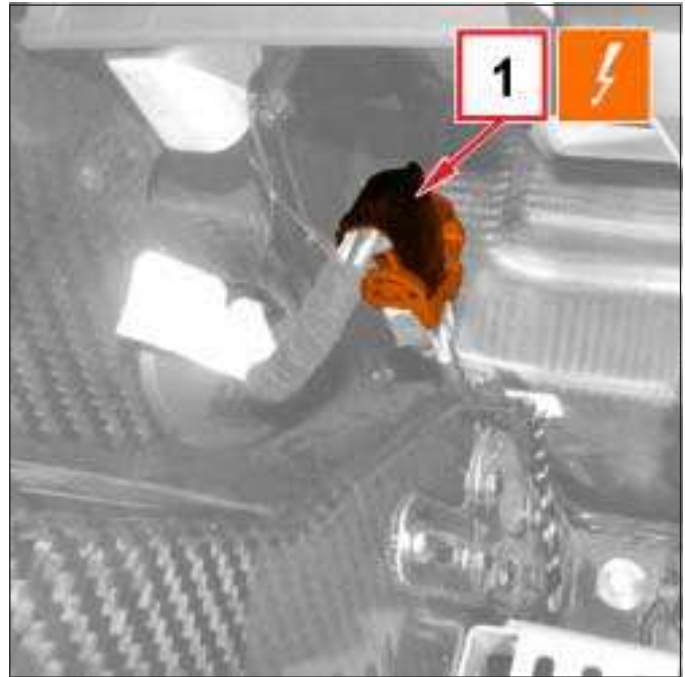
Component	Mounting	Size	Value (NM)
Seat belt components	Screw	7/16"	40

20. Secure the electrical wiring to the retaining clips.
21. Position the automatic twin clutch transmission in its housing and tighten the appropriate fastenings.
22. Connect the electrical connections for the automatic twin clutch transmission.
23. Position the transmission control unit in its housing and tighten the mounting screws.
24. Connect the connection for the electric pump current adjustment control unit.
25. Secure the wiring to the retaining clip.
26. Install the roof panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement/ [Roof Panel](#)).
27. Install the sill trim panel (Refer to 31 - Collision Information/Standard Procedures/Body Panel Replacement [Sill Trim Panel](#)).
28. Connect the negative battery cable.

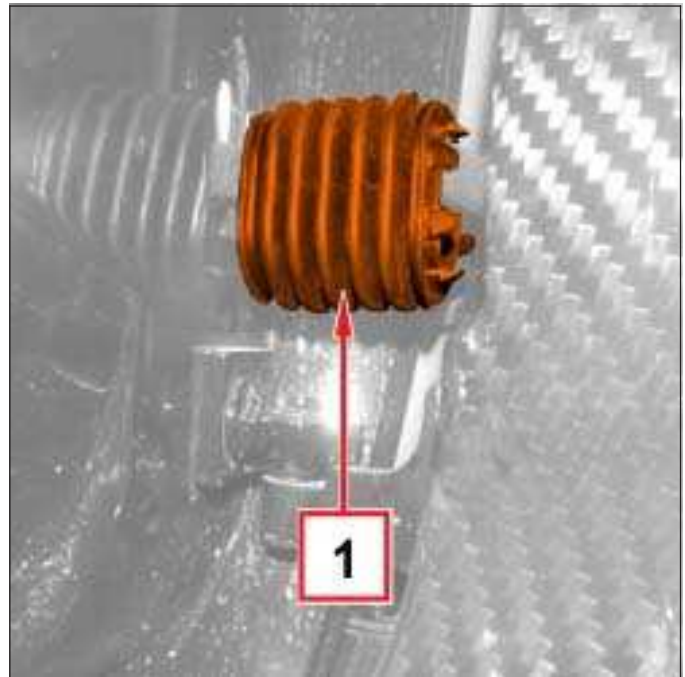
Door

REMOVAL

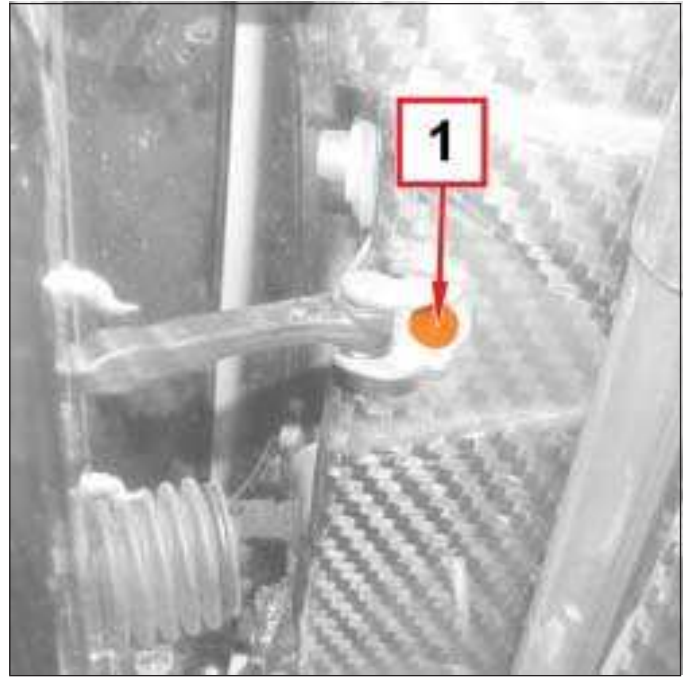
1. Disconnect and isolate the negative battery cable.
2. Disconnect the electrical connection for the front door coupling (1).



3. Release the corrugated cable duct (1) for the door wiring.

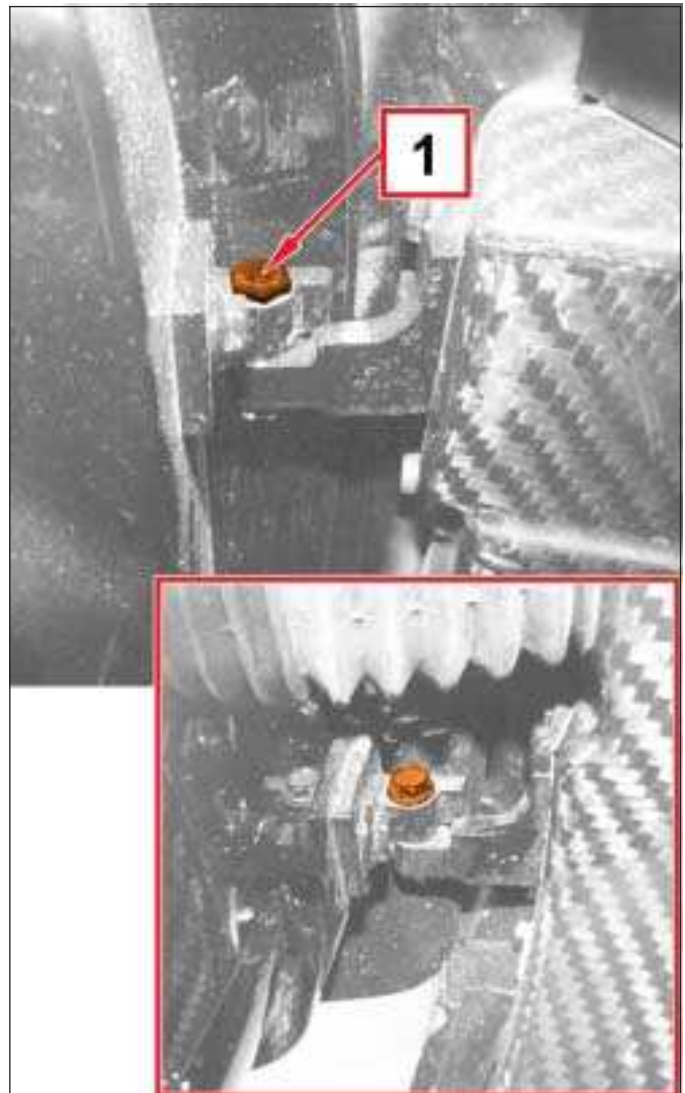


4. Undo the mounting screw (1) for the door check, body side.

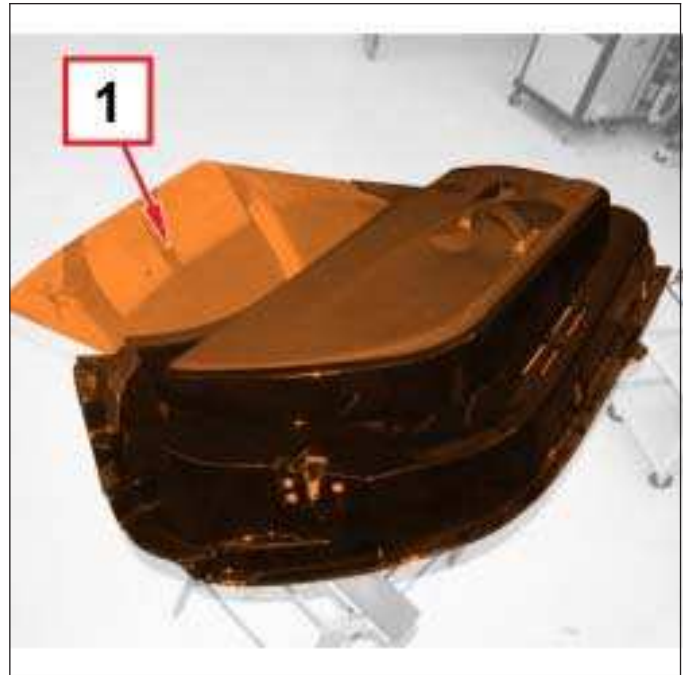


5. Undo the screw (1) mounting the moving hinge to the front door fixed hinge.

NOTE: Carry out the same operation on the remaining door hinge.



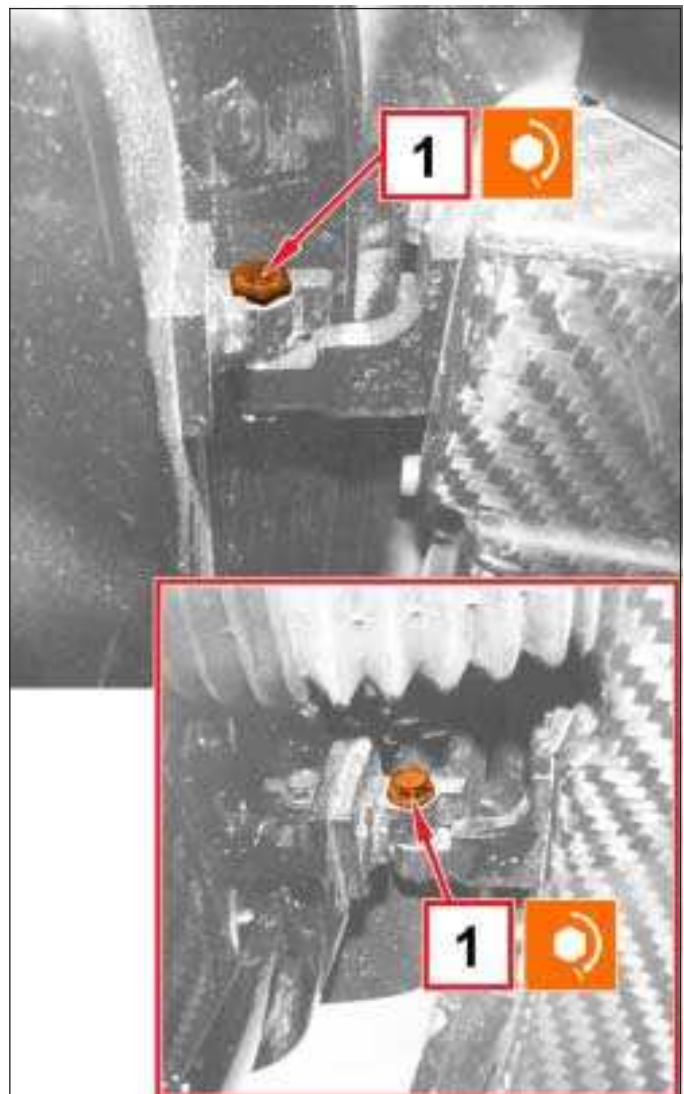
6. With the help of a second operator, remove the front door assembly (1).



INSTALLATION

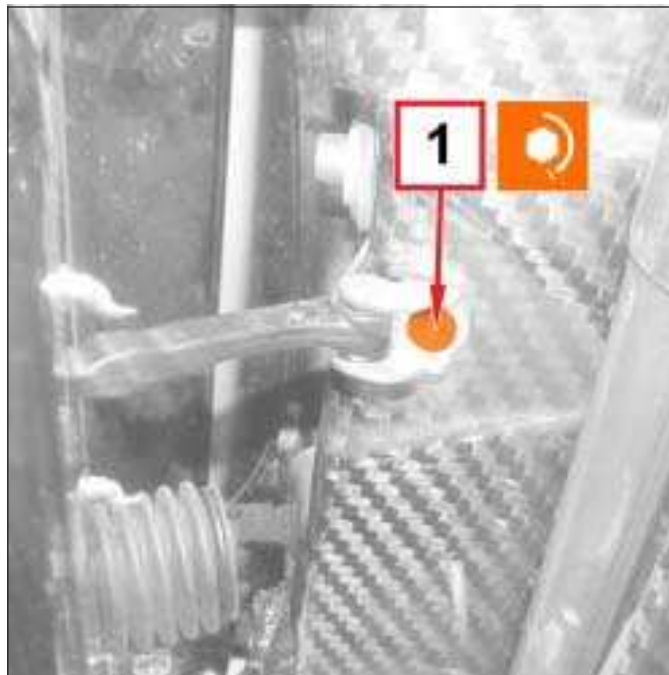
1. With the help of a second operator, position the front door in its housing.
2. Tighten the screw (1) mounting the moving hinge to the mounted hinge for the front door.

NOTE: Carry out the same operation on the remaining door hinge.



Component	Mounting	Size	Value (N·m)
Connection between front door fixed/moving hinges	Screw	M6	16

3. Tighten the mounting screw for the door check, body side.



Component	Fixing	Size	Value (N·m)
Door check strap (body side)	Screw	M8	26

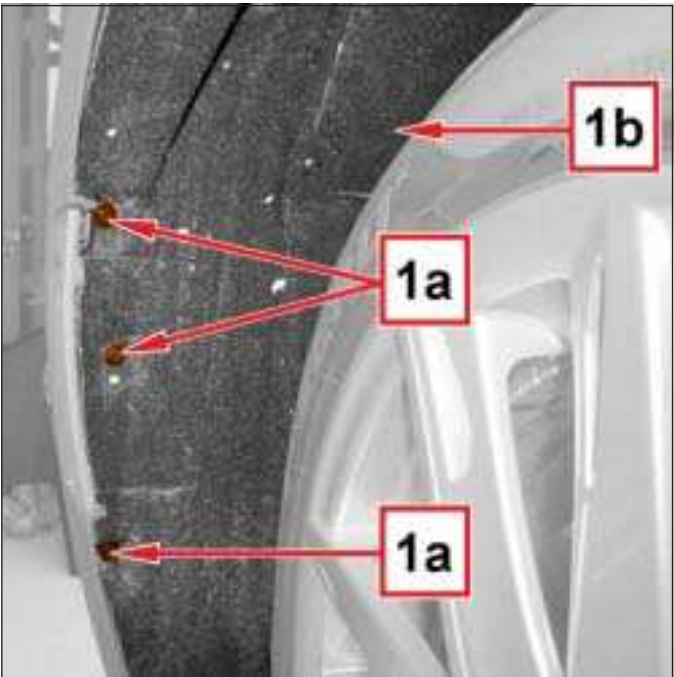
4. Position and secure the corrugated cable duct for the door wiring.
5. Connect the electrical connection for the front door coupling.
6. Connect the negative battery cable.
7. Check the door alignment and, if necessary, make the adjustments according to the service information.
8. Check the clearance values between the door and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Dimensions).

Front Fender

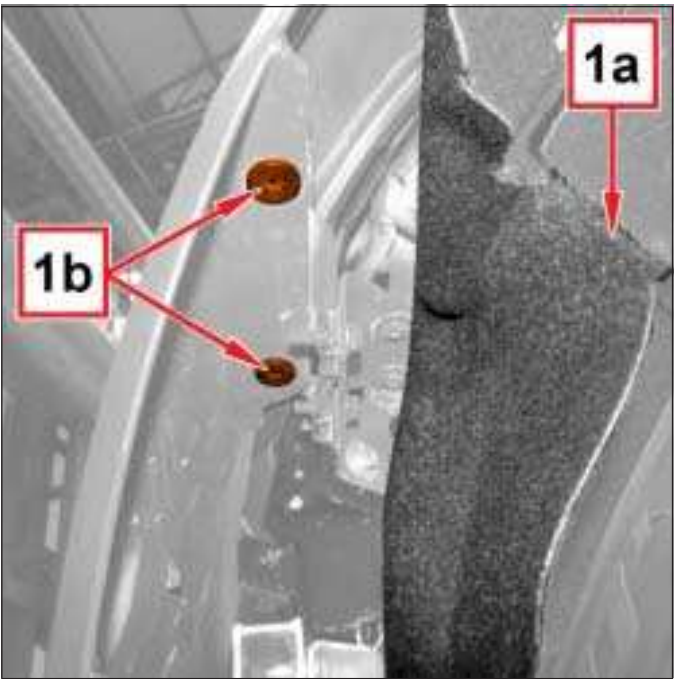
REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the hood (Refer to 31- Collision/Standard Procedure/Body Panel Replacement/ [Hood](#)).

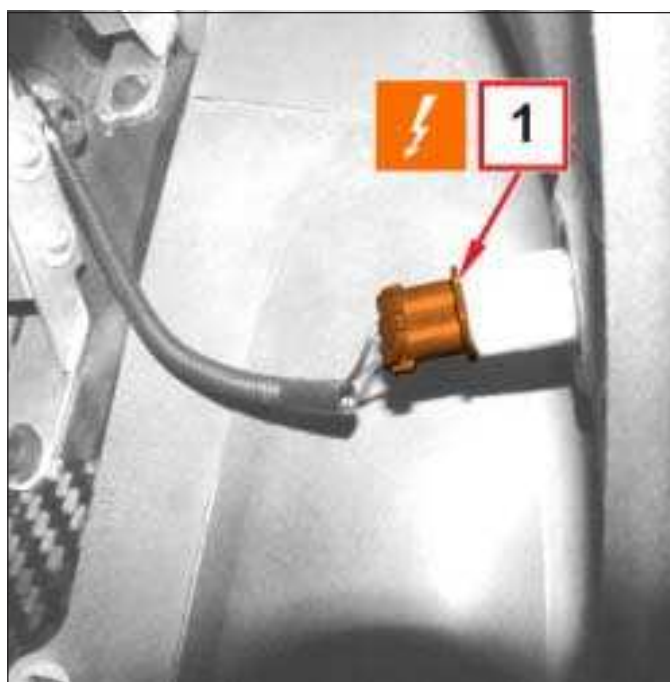
- Undo the front mounting screws (1a) for the wheelhouse splash shield (1b).



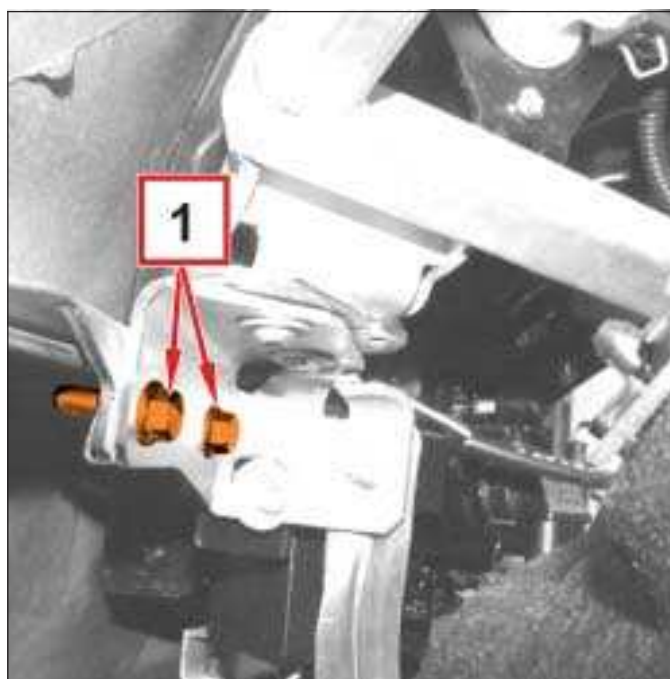
- Position the wheelhouse splash shield (1a) to one side and undo the side mounting screws (1b) from the front fascia.



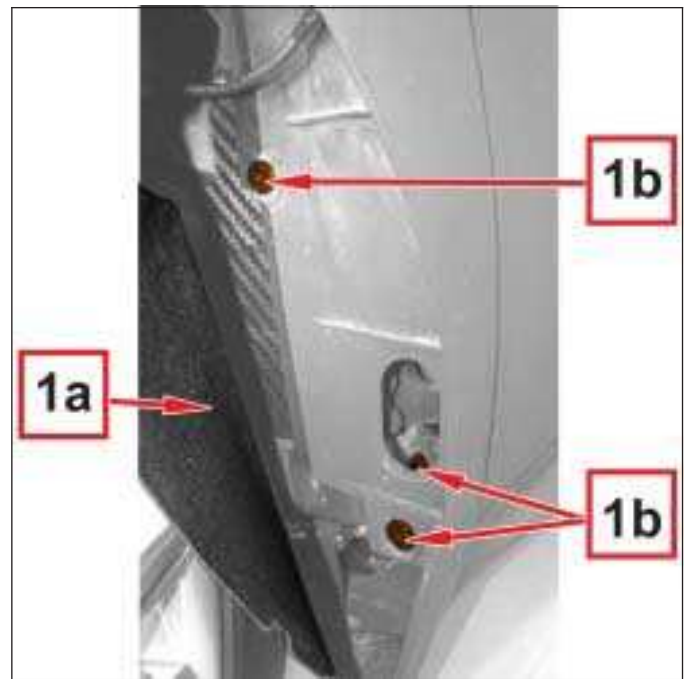
5. Disconnect the electrical connection (1) for the side repeater lamp.



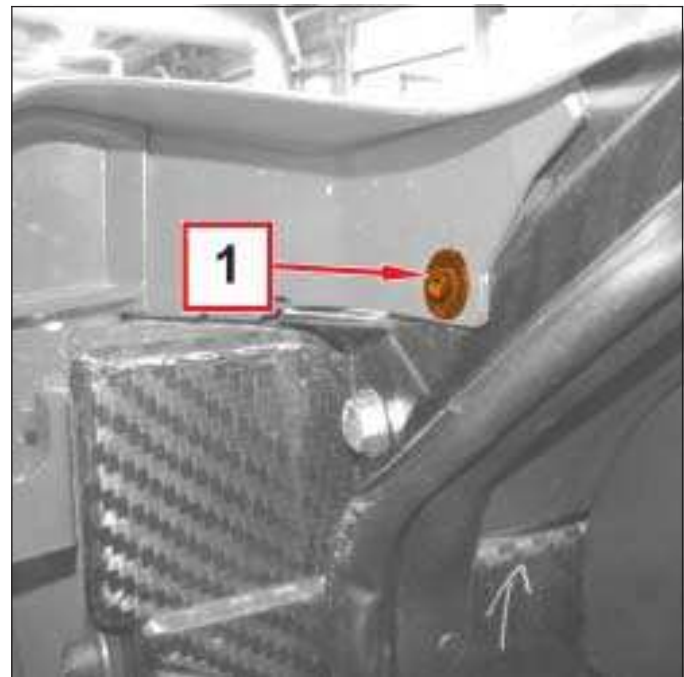
6. Undo the screws (1) mounting the front fender to the frame.



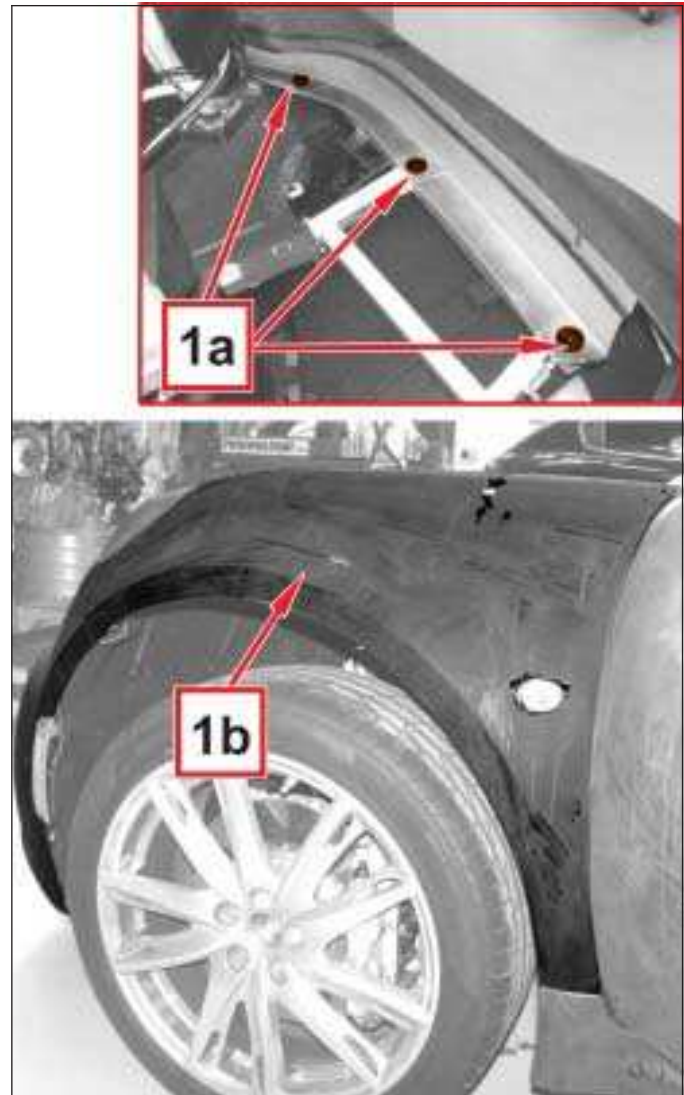
7. Remove the screw cover cap.
8. Release the wheelhouse splash shield (1a) and undo the rear mounting screws (1b) of the fender.



9. Undo the upper and lower mounting screws (1) of the fender, front door side.



10. Undo the upper mounting screws (1a) and remove the front fender (1b).



INSTALLATION

1. Install the front fender in its housing and tighten the upper mounting screws.
2. Tighten the upper and lower mounting screws of the fender, front door side.
3. Tighten the rear mounting screws of the fender and reposition the wheelhouse splash shield.
4. Position the screw cover cap.
5. Tighten the screws mounting the front fender to the frame.
6. Connect the electrical connection for the side repeater lamp.
7. Tighten the side mounting screws of the front fascia.
8. Tighten the front mounting screws for the wheelhouse splash shield.
9. Install the hood (Refer to 31- Collision/Standard Procedure/Body Panel Replacement/ [Hood](#)).
10. Connect the negative battery cable.
11. Check the clearance values between the front fender and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Specifications).

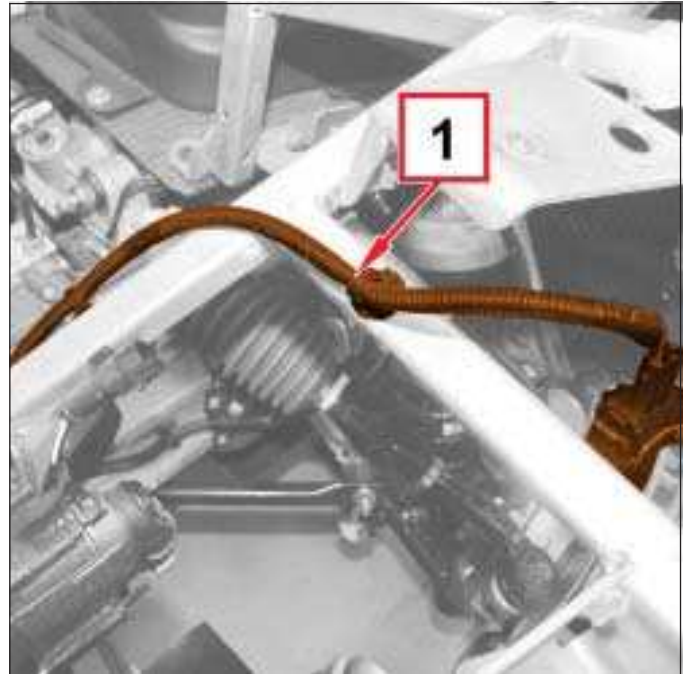
Fender Mounting Bracket

REMOVAL

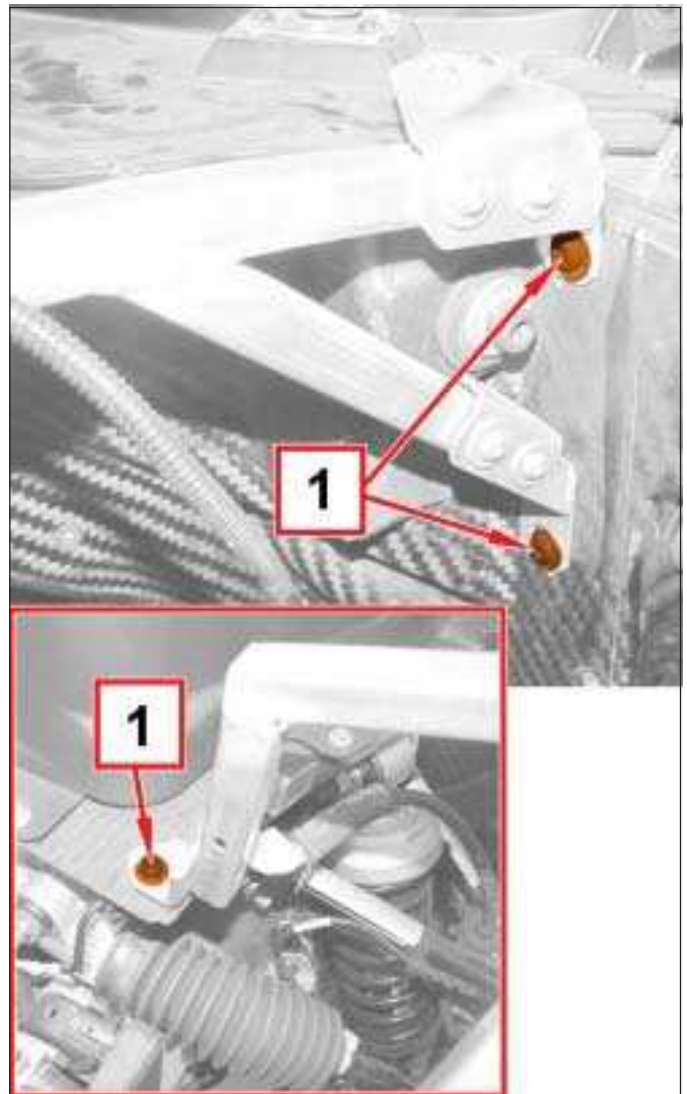
1. Raise and support the vehicle (Refer to 31 - Collision Information/Standard Procedure/Hoisting).
2. Disconnect and isolate the negative battery cable.
3. Remove the hood (Refer to 31 - Collision/Standard Procedure/Body Panel Replacement/ [Hood](#)).
4. Remove the front fascia in accordance to the service information.
5. Remove the front light cluster in accordance to the service information.
6. Remove the tire and wheel assembly from the front of the vehicle on the side being serviced .
7. Remove the wheelhouse splash shield, right or left, depending on the fender mounting bracket to be removed,

in accordance to the service information.

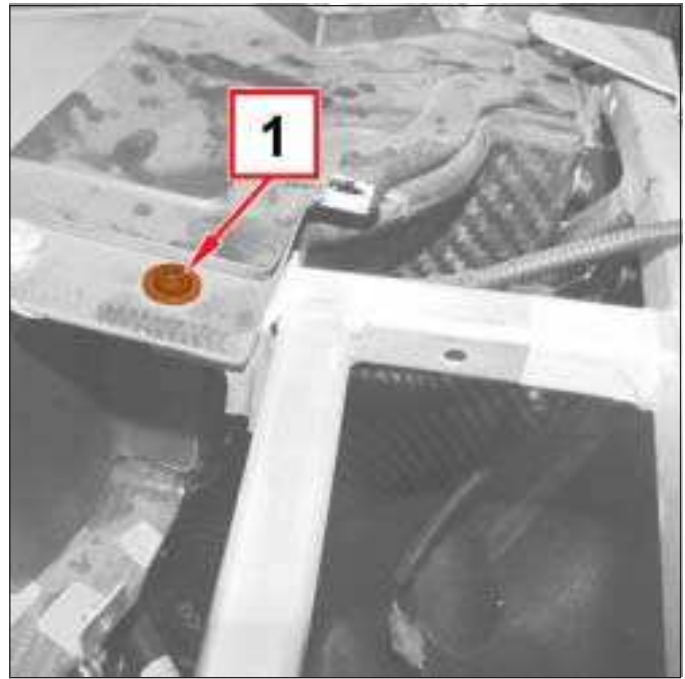
8. Release the electrical wiring (1) from the front fender mounting bracket.



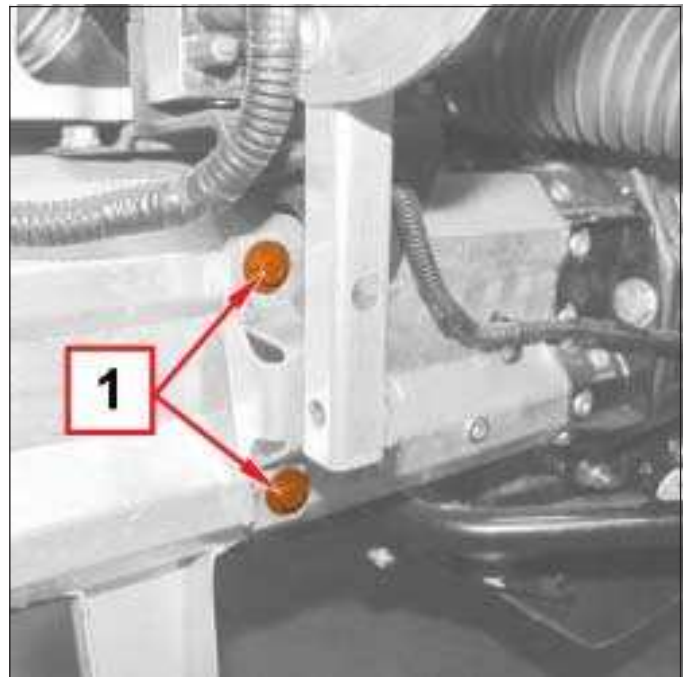
9. Undo the rear side mounting screws (1) for the front fender mounting bracket.



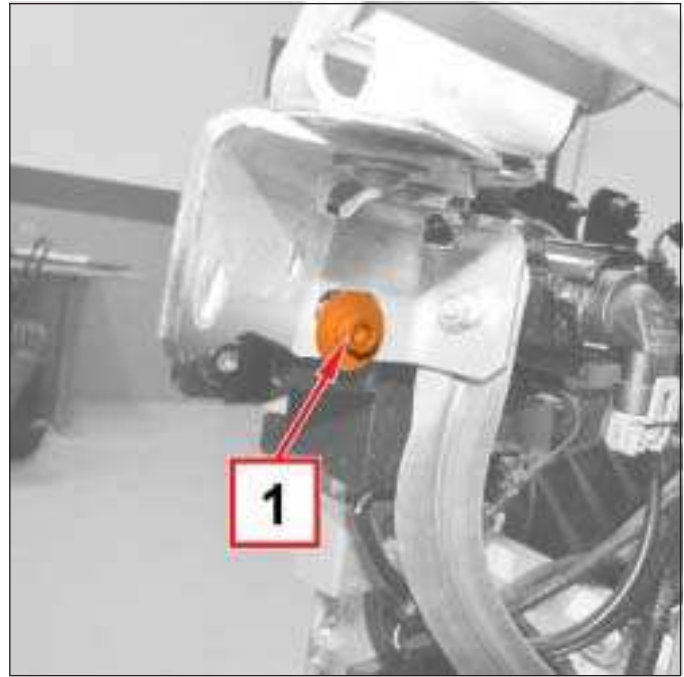
10. Undo the upper side mounting screw (1) for the front fender mounting bracket.



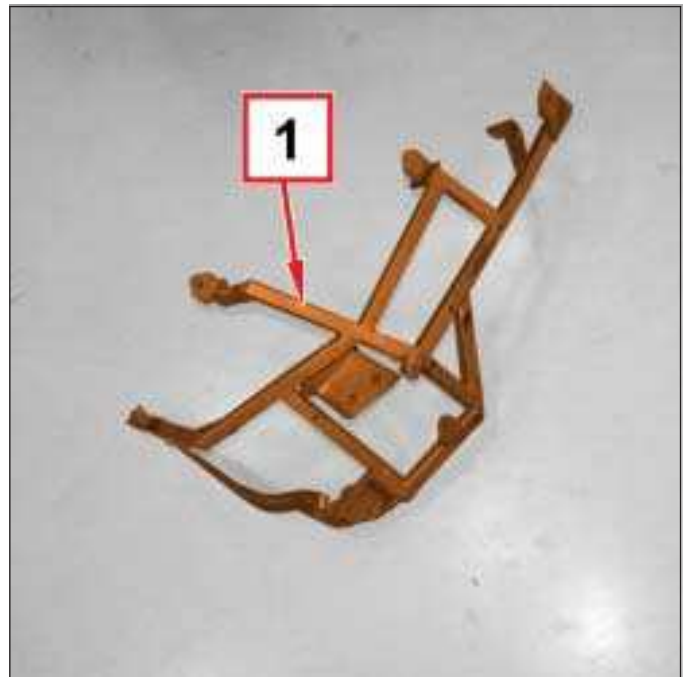
11. Undo the lower side mounting screws (1) for the front fender mounting bracket.



12. Undo the front side mounting screw (1) for the front fender mounting bracket.



13. Remove the front fender mounting bracket (1).



Installation

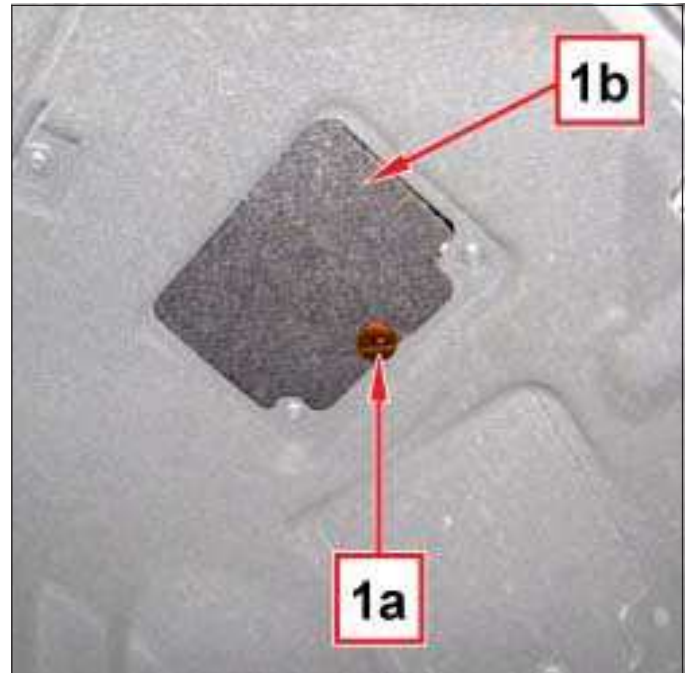
1. Install the front fender mounting bracket in its housing and tighten the corresponding mounting screws.
2. Secure the electrical wiring to the front fender mounting bracket.
3. Install the wheelhouse splash shield, right or left, depending on the fender mounting bracket that has been removed.
4. Install the additional wheel arch, right or left, depending on the fender mounting bracket that has been removed, in accordance with the service information.
5. Install the tire and wheel assembly to the front of the vehicle on the side being serviced, in accordance to the service information.
6. Install the front light cluster in accordance to the service information.
7. Install the front fascia in accordance to the service information.
8. Install the hood (Refer to 31 - Collision/Standard Procedure/Body Panel Replacement/ [Hood](#)).
9. Remove the support and lower the vehicle.
10. Connect the negative battery cable.

Hood

REMOVAL

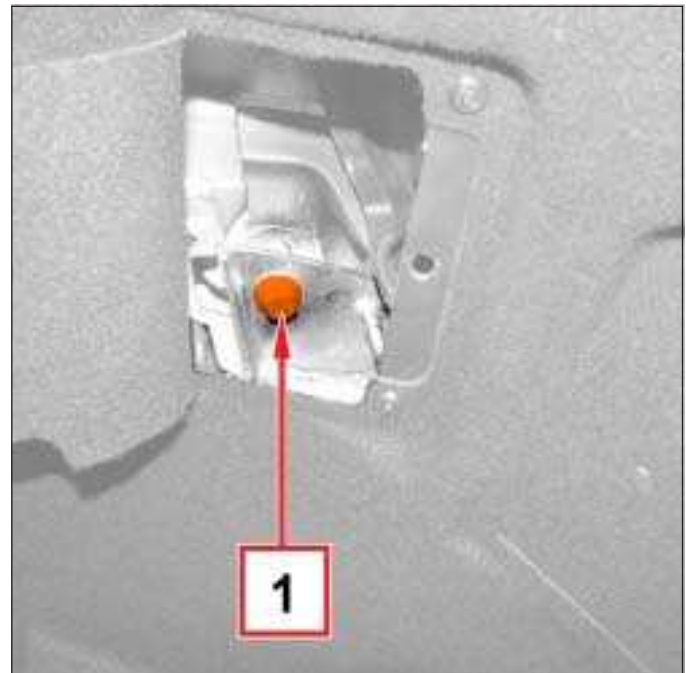
1. Remove the lower windshield weatherstrip seal according to the service information.
2. Adjust the mounting pin (1a) and raise the inspection cover (1b).

NOTE: Carry out the same operation on the other side.

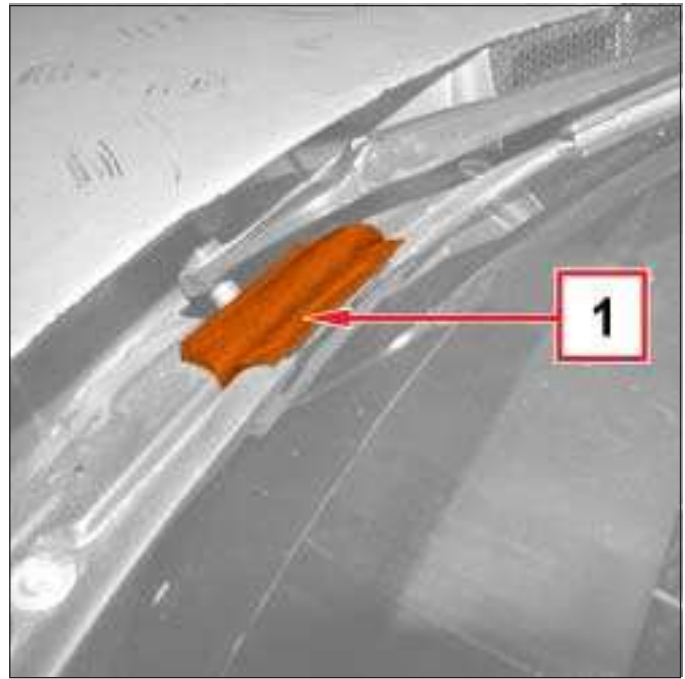


3. Undo the lower screw securing the hood (1).

NOTE: Carry out the same operation on the other side.



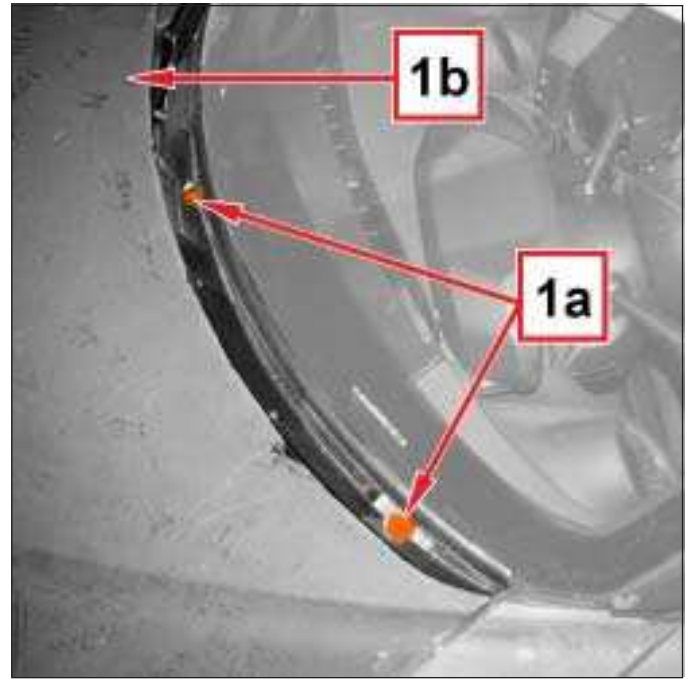
4. Remove the gasket (1) near the windshield wiper arm.



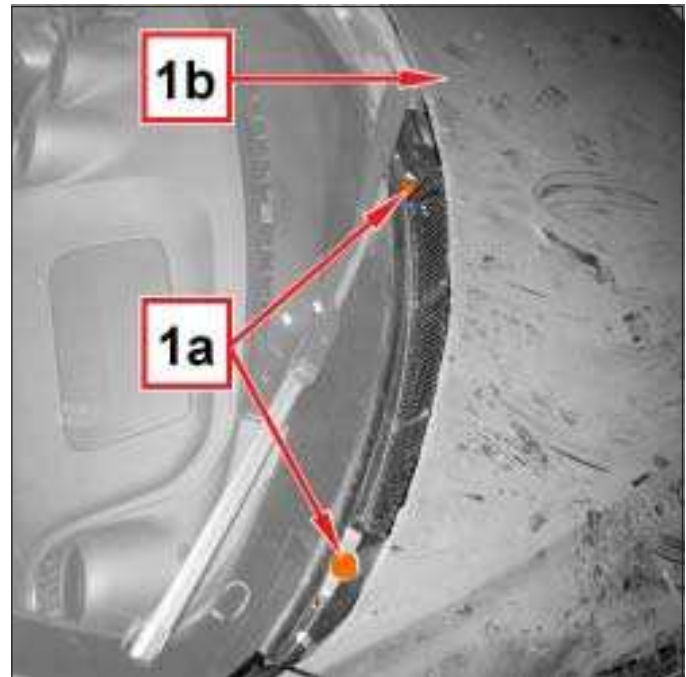
5. Position the windshield wiper arm (1) as shown in the figure.



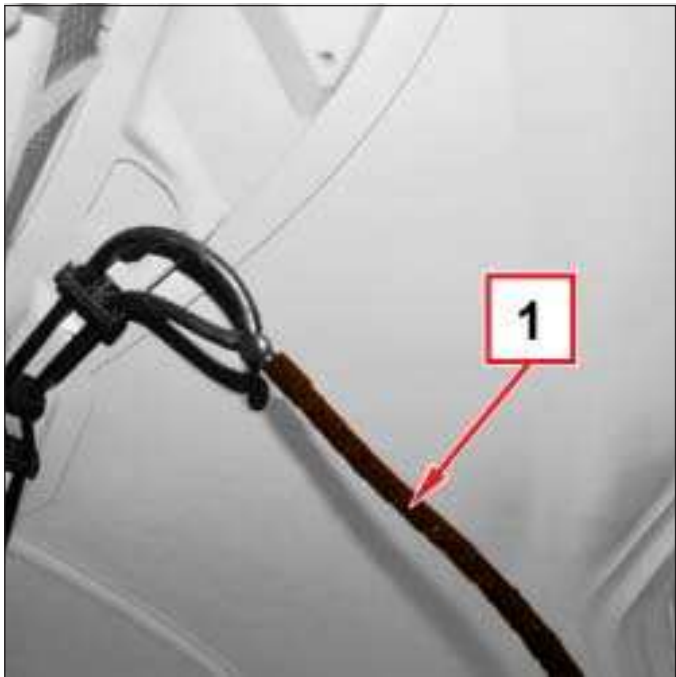
6. Undo the mounting screws (1a), left side, for the hood (1b).



7. Undo the mounting screws (1a), right side, for the hood (1b).



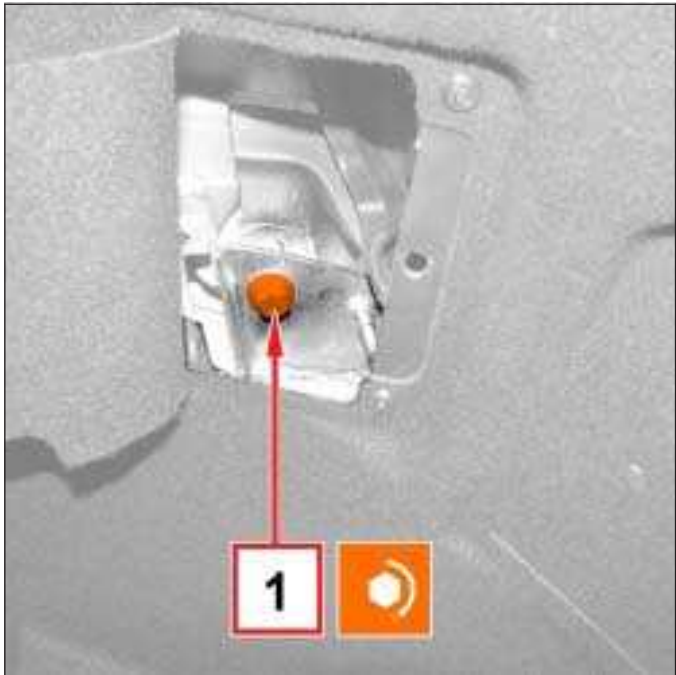
8. Raise the hood as necessary, and disconnect the windshield washer fluid delivery hose (1).
9. Remove the hood with the help of another operator.



INSTALLATION

1. Place the hood in position with the help of another operator.
2. Connect the windshield washer fluid delivery hose.
3. Tighten the upper screws securing the hood.

- NOTE:** Carry out the same operation on the other side.
4. Tighten the screws securing the hood (1).



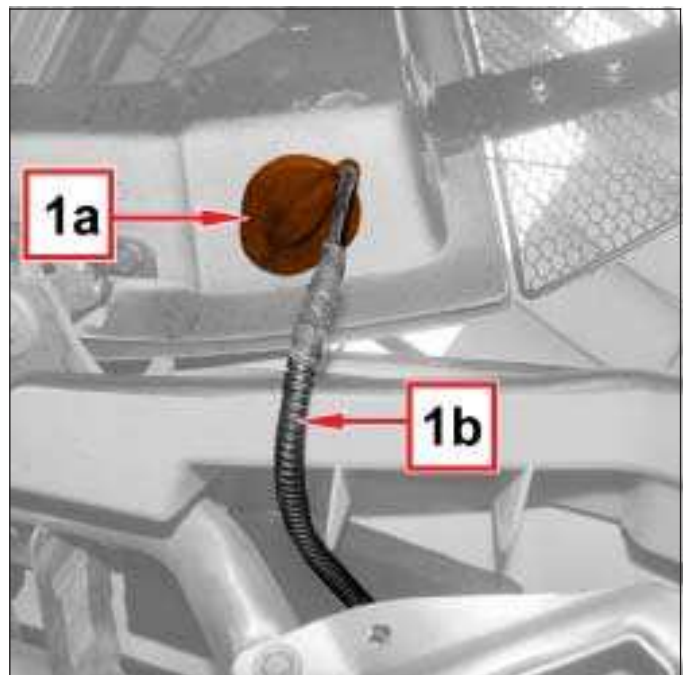
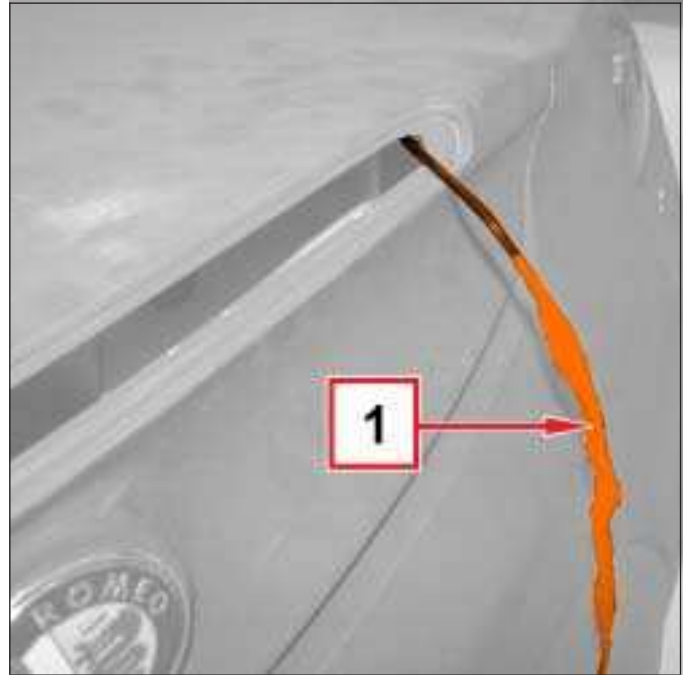
Component	Mounting	Size	Value (N·M)
Hood	Screw	M8x18	20

5. Install the windshield wiper arm in resting position.
6. Install the gasket at the base of the windshield wiper arm.
7. Lower the inspection covers and engage the mounting pins.
8. Install the lower windshield weatherstrip seal according to the service information.
9. Check the clearance values between the hood and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Specifications).

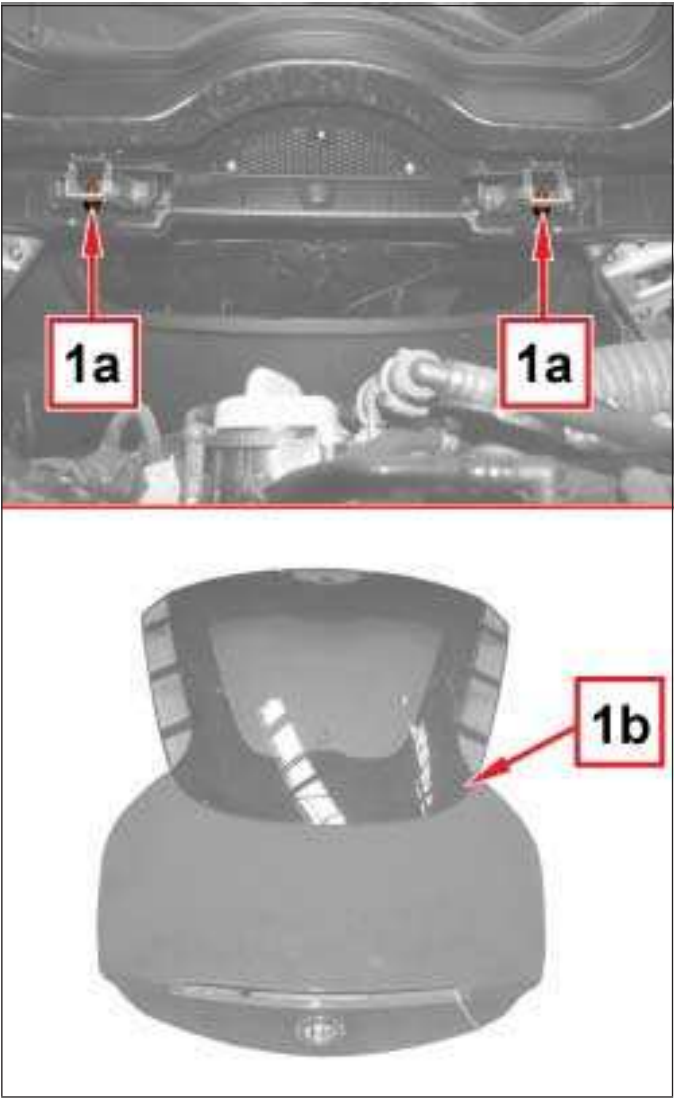
Liftgate

REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the center high mounted stop lamp according to the service information.
3. Secure a probe to the wiring of the center high mounted stop lamp.
4. Remove the cable duct plug (1a) and pull out the wiring (1b).



5. Undo the mounting screws (1a) and, with the help of a second operator, remove the liftgate (1b).



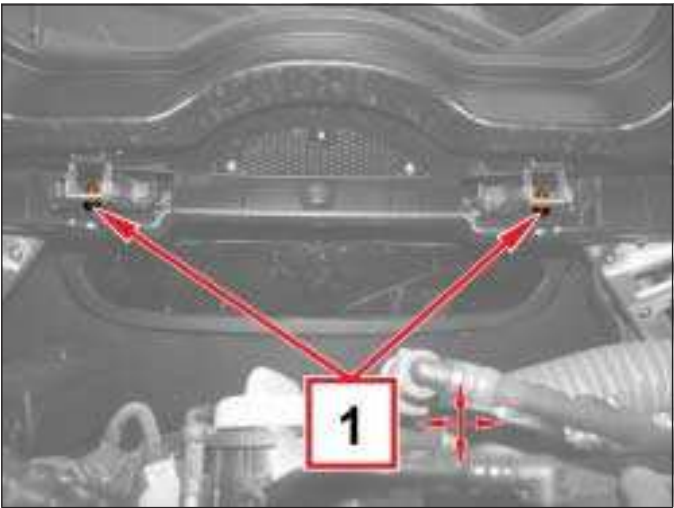
INSTALLATION

NOTE: The arrows indicate the possible movements for the adjustment.

1. With the help of another operator position the liftgate and insert the mounting screws (1), without tightening them.
2. Adjust the position of the liftgate, using the slotted holes of the screws.

NOTE: The arrows indicate the possible movements for the adjustment.

3. Tighten the mounting screws.



Component	Mounting	Size	Value (N·m)
Connection between liftgate fixed/moving hinges	Screw	M8x15	24

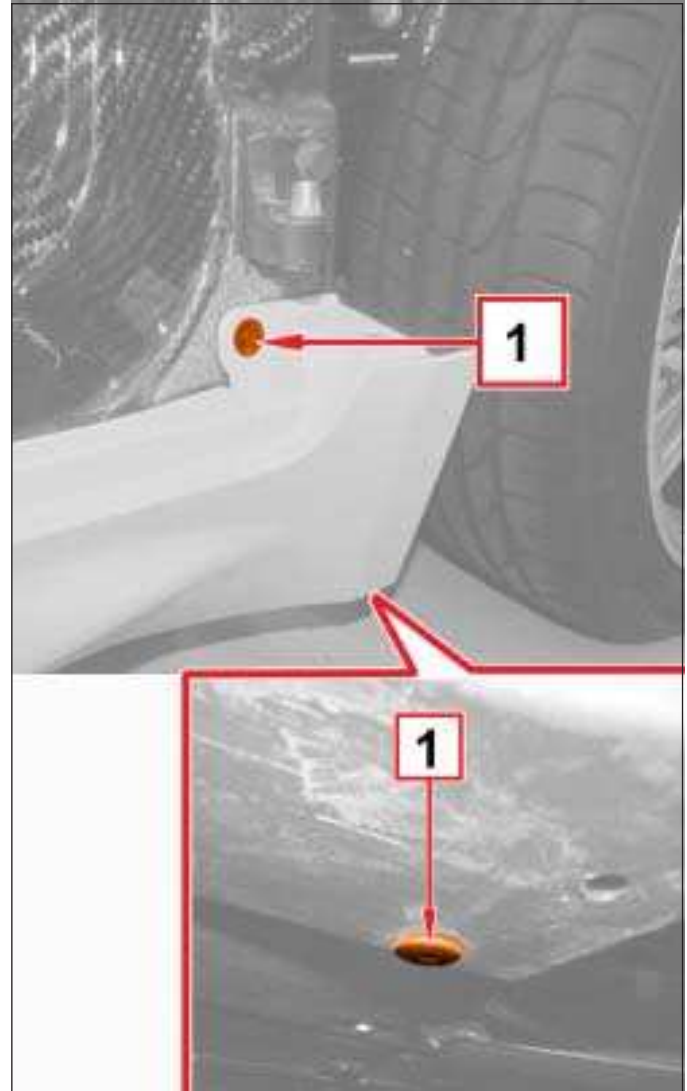
4. Using a probe slide the wiring inside the liftgate gate.
5. Position the cable duct cap.
6. Install the center high mounted stop lamp according to the service information.

7. Connect the negative battery cable.
8. Check the clearance values between the liftgate and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Specifications).

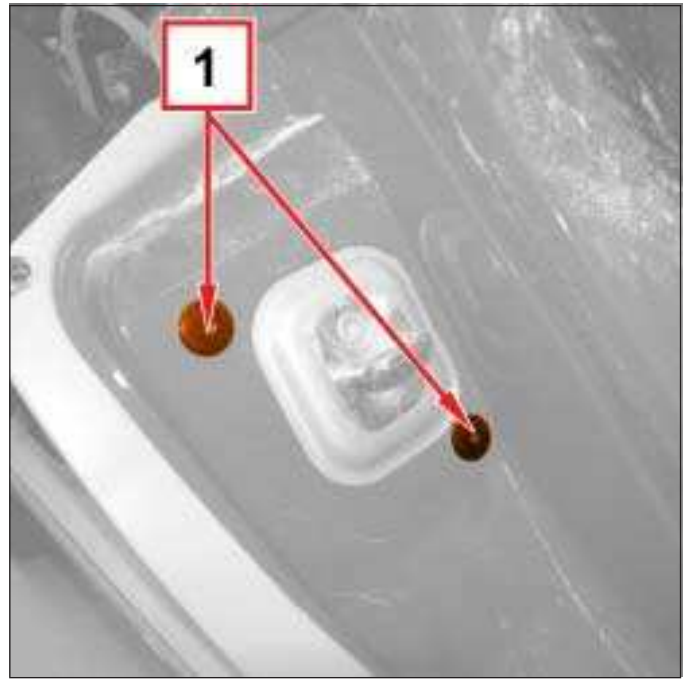
Sill Trim Panel

REMOVAL

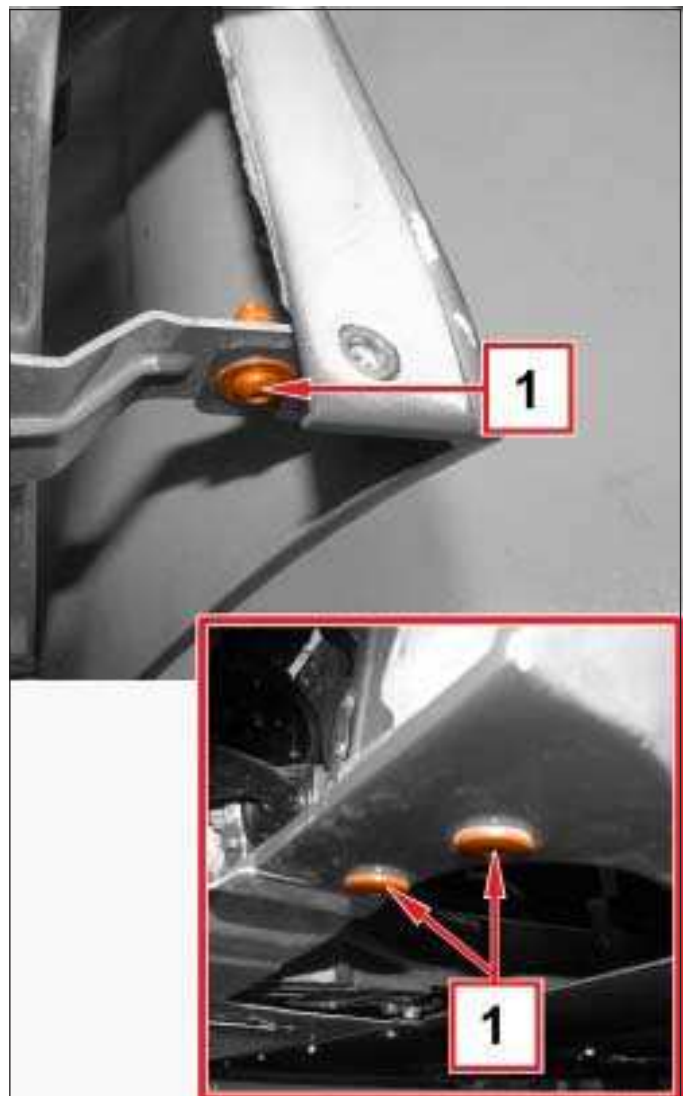
1. Unscrew the front fastenings (1) for the under-door side member external trim.



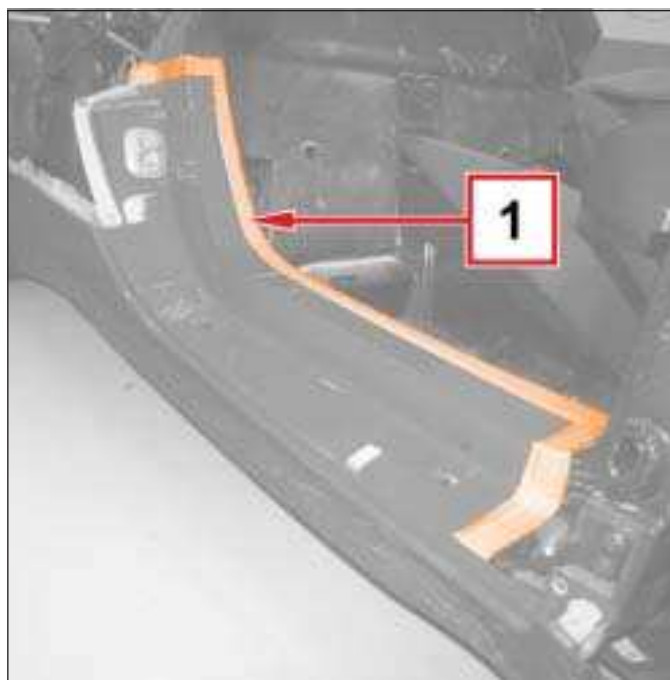
2. Unscrew the central fastenings (1) for the under-door side member external trim.



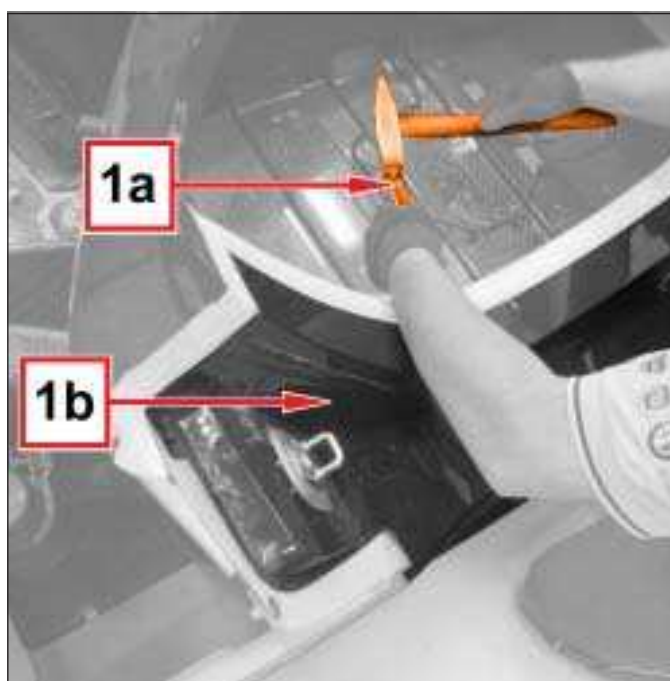
3. Unscrew the rear fastenings (1) for the under-door side member external trim.



4. Protect the carbon monocoque as appropriate (1).



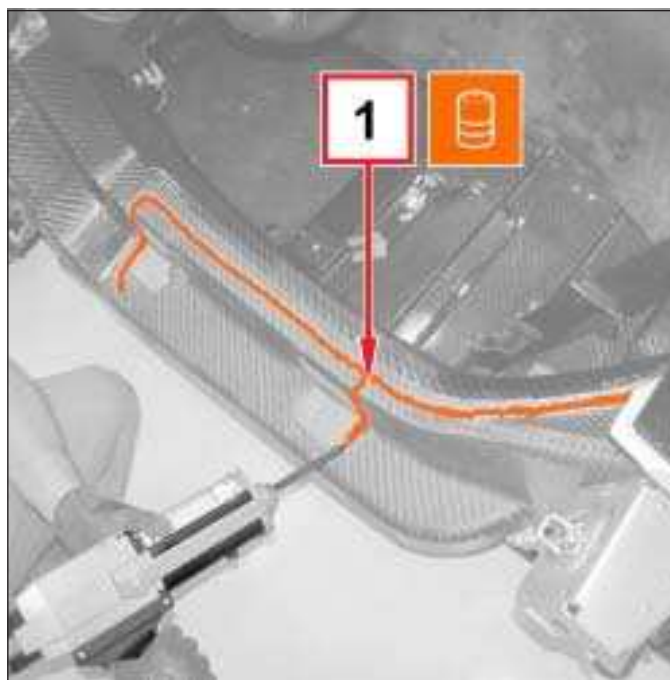
5. Using a dedicated blade (1a), remove the under-door side member external trim (1b).



Installation

1. Clean the body and under-door side member external trim bonding areas thoroughly of residual sealant and degrease using heptane.
2. Extrude a 6 mm strip of structural adhesive (1) along the perimeter which comes into contact with the under-door side member external trim as shown in the figure.

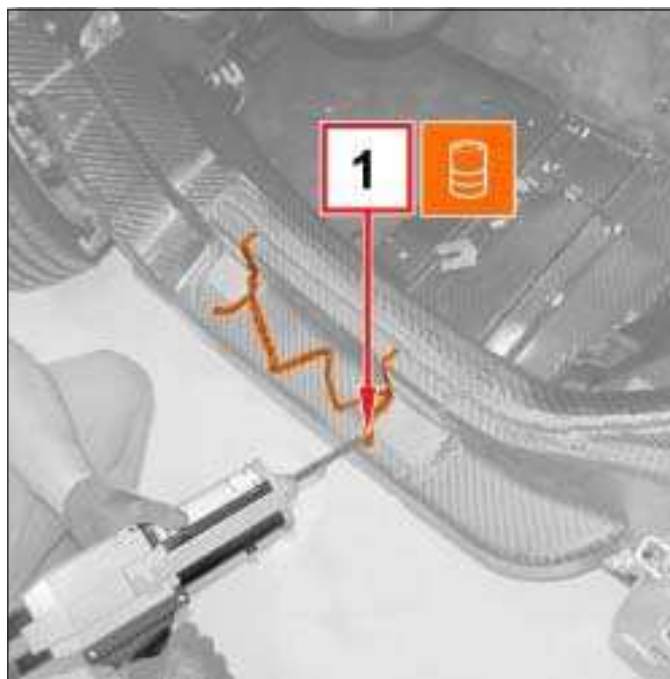
NOTE: Use approved structural repair adhesive
– Lord Fusor 112 or 3M 08116



Component	Type	Name	Classification	Quantity	Validity
–	Structural Adhesive	Lord Fusor 112 or 3M 08116	–	–	–

3. Extrude a 6 mm strip of structural adhesive (1) along the central area which comes into contact with the under-door side member external trim as shown in the figure.

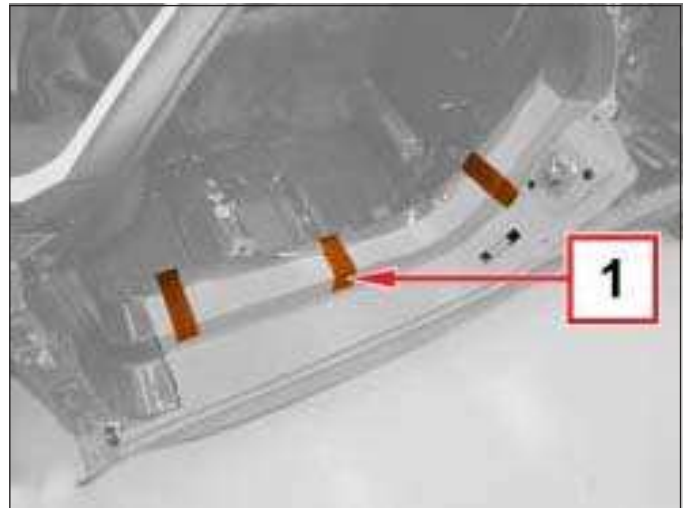
NOTE: Use approved structural repair adhesive
– Lord Fusor 112 or 3M 08116



Component	Type	Name	Classification	Quantity	Validity
–	Structural Adhesive	Lord Fusor 112 or 3M 08116	–	–	–

4. Gently position the side member external trim.
5. Position some adhesive tape (1) to facilitate the bonding of the side member external trim to the monocoque.
6. Tighten the rear fastenings for the under-door side member external trim.
7. Tighten the central fastenings for the under-door side member external trim.
8. Tighten the front fastenings for the under-door side member external trim.

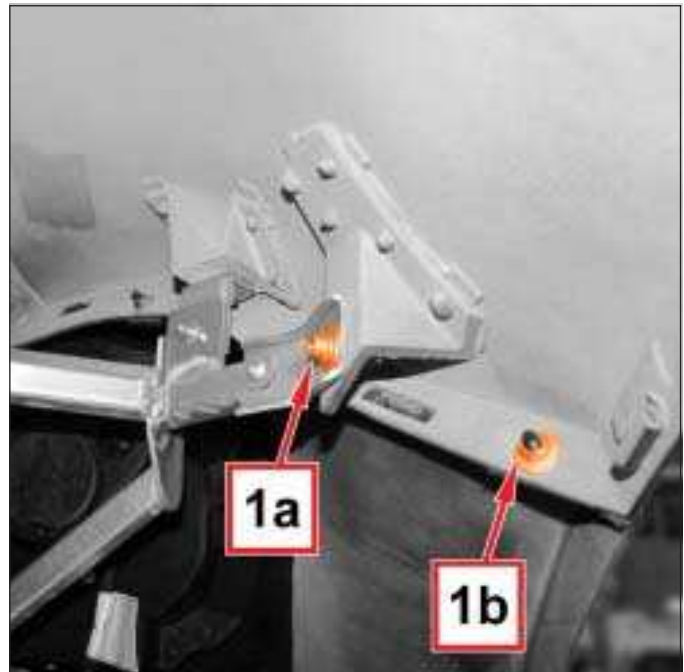
CAUTION: Follow adhesive manufacturer guidelines and wait the appropriate time before proceeding with any other operations.



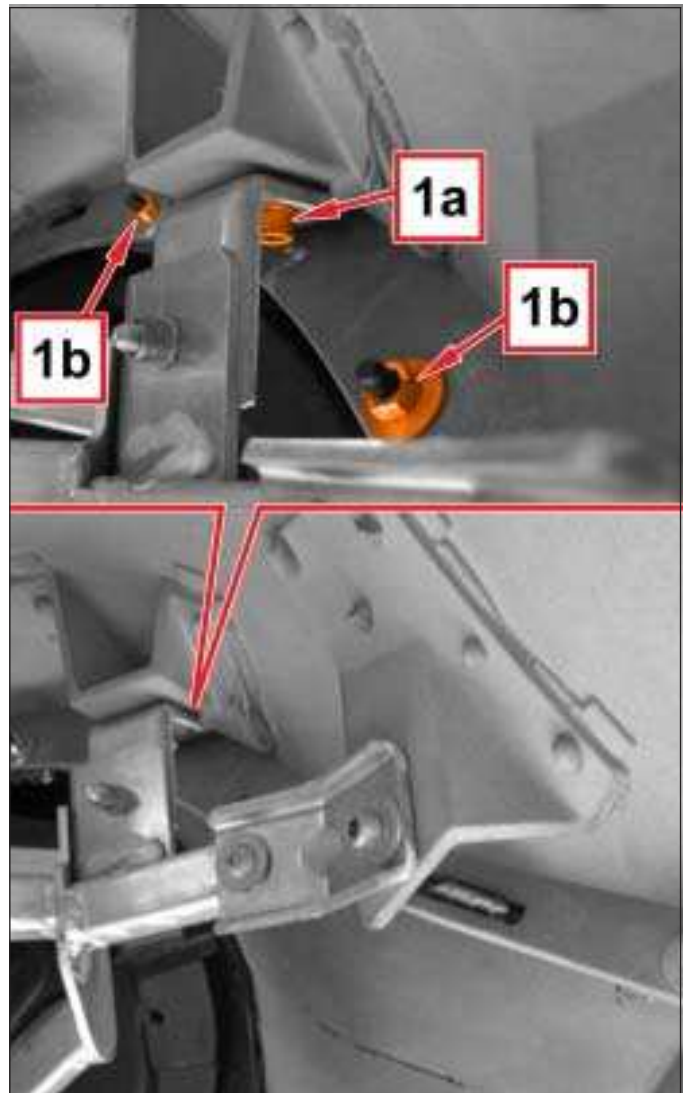
Left Quarter Panel

REMOVAL

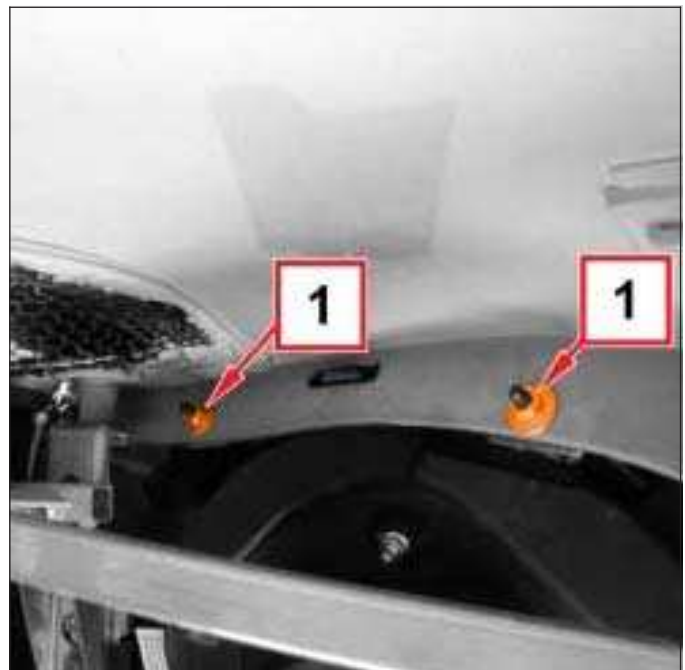
1. Raise and support the vehicle (Refer to 31 - Collision Information/Specifications/Hoisting).
2. Remove the tire and wheel assembly from the left rear of the vehicle in accordance to the service information.
3. Remove the left rear wheelhouse splash shield in accordance to the service information.
4. Undo the screw (1a) securing the quarter panel to the quarter panel mounting bracket.
5. Undo the nut (1b) nut securing the quarter panel to the rear fascia.



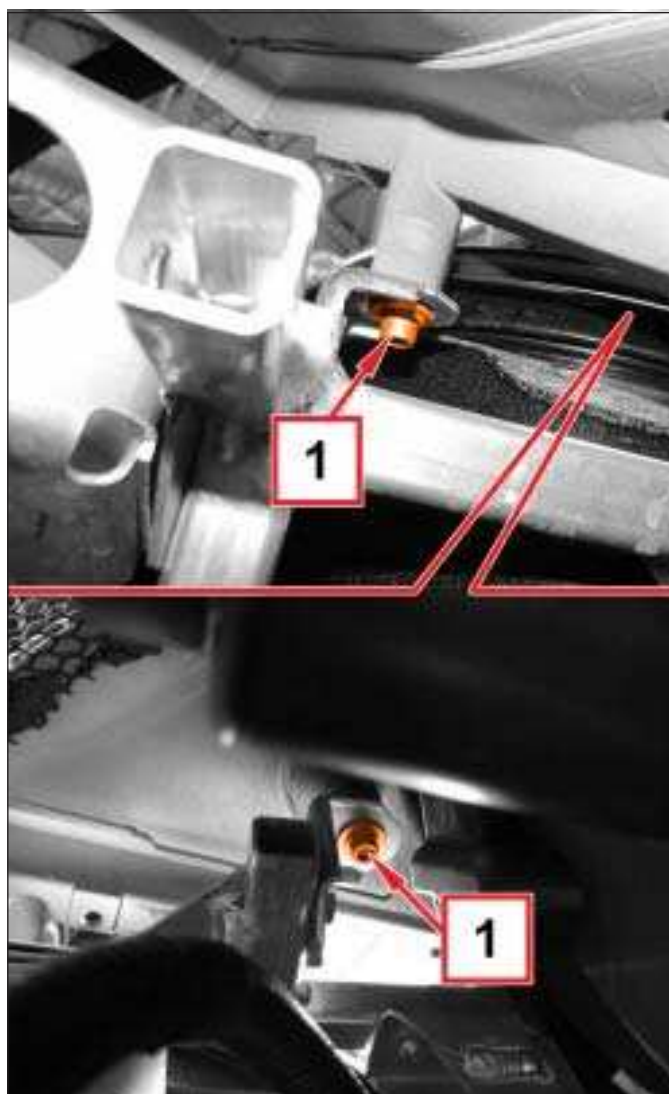
6. Undo the screw (1a) securing the quarter panel to the quarter panel mounting bracket.
7. Undo the nut (1b) nut securing the quarter panel to the rear fascia.



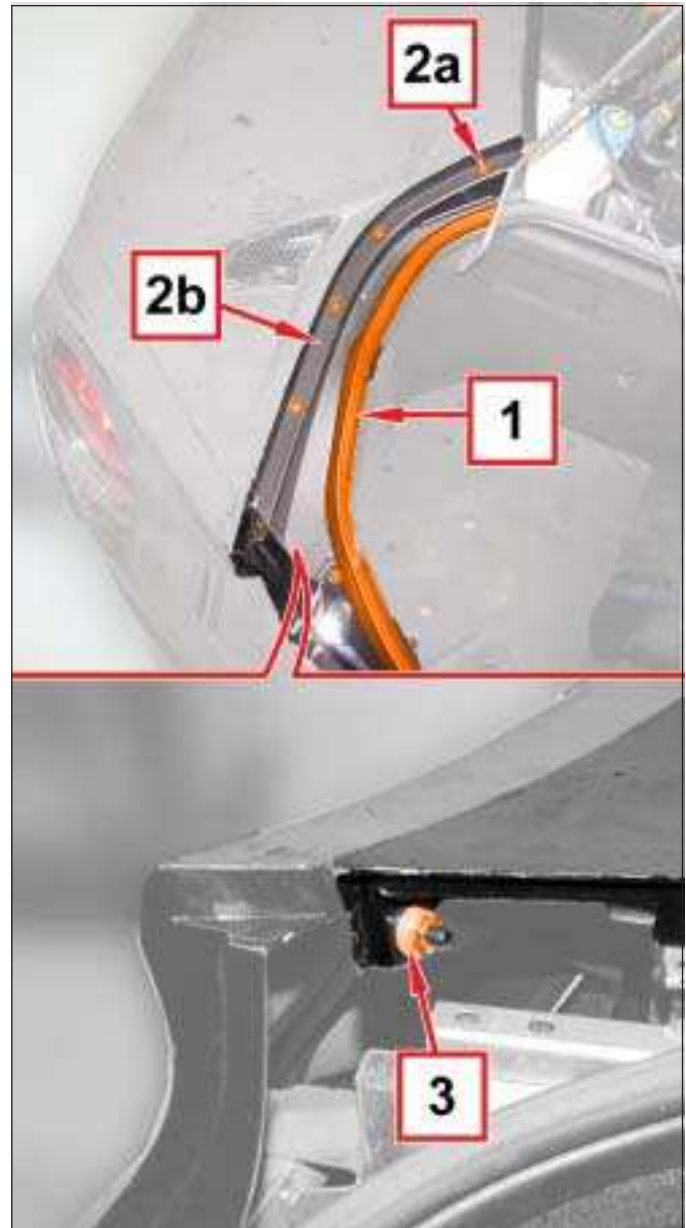
8. Undo the nuts (1) securing the left quarter panel to the rear fascia.



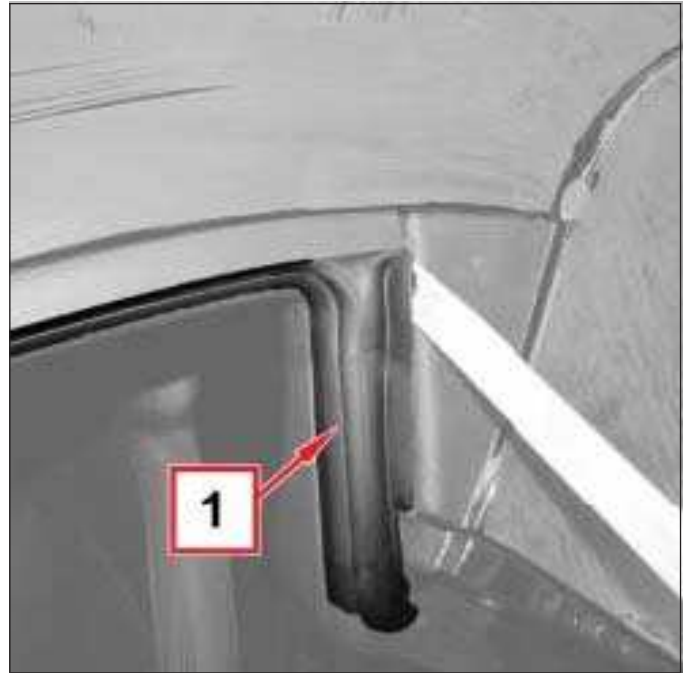
9. Undo the screws (1) securing the left quarter panel to the quarter panel mounting bracket.



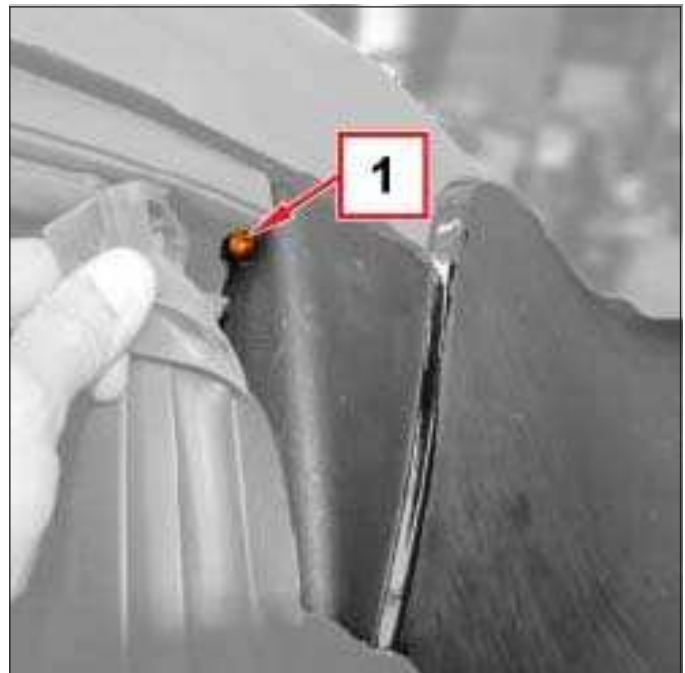
10. Pry up the luggage compartment weatherstrip (1) along the perimeter in contact with the left quarter panel.
11. Undo the mounting screws (2a) and remove the trim (2b).
12. Undo the nut (3) securing the quarter panel to the rear fascia.



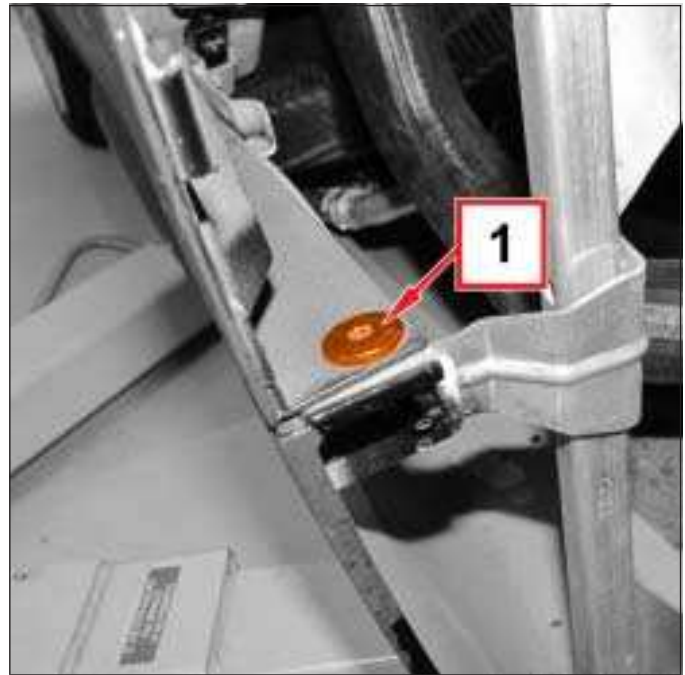
13. Open the driver side door (1).
14. Use a suitable equipment to pry up the driver side door compartment weatherstrip along the perimeter in contact with the left quarter panel.



15. Undo the screw (1) securing the left quarter panel to the front door post.



16. Undo the screw securing the left quarter panel to the lower side member.



17. Undo the remaining mounting screws and remove the left quarter panel.



INSTALLATION

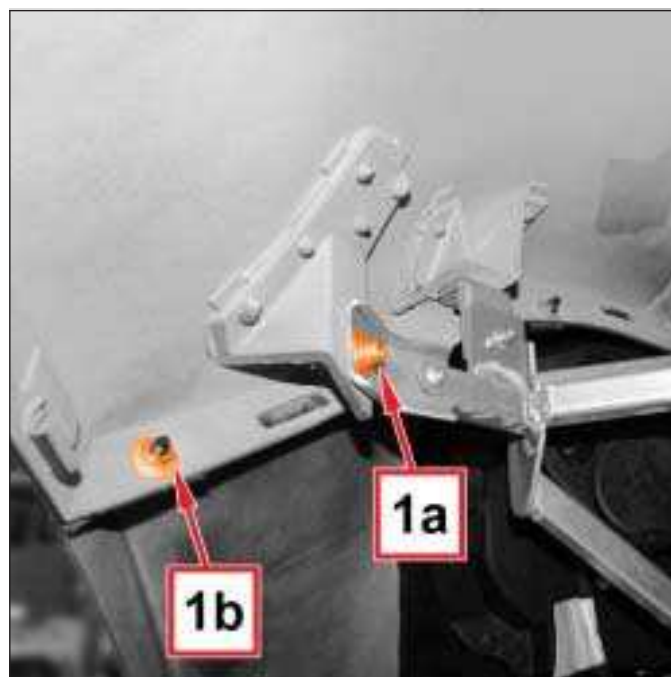
1. Reposition the rear quarter panel in its housing.
2. Tighten the left quarter panel mounting nuts and screws.
3. Install the left rear wheelhouse splash shield in accordance with the service information.
4. Install the tire and wheel assembly on the left rear of the vehicle.
5. Remove the support and lower the vehicle.
6. Check the clearance values between the left quarter panel and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Specifications).

Right Quarter Panel

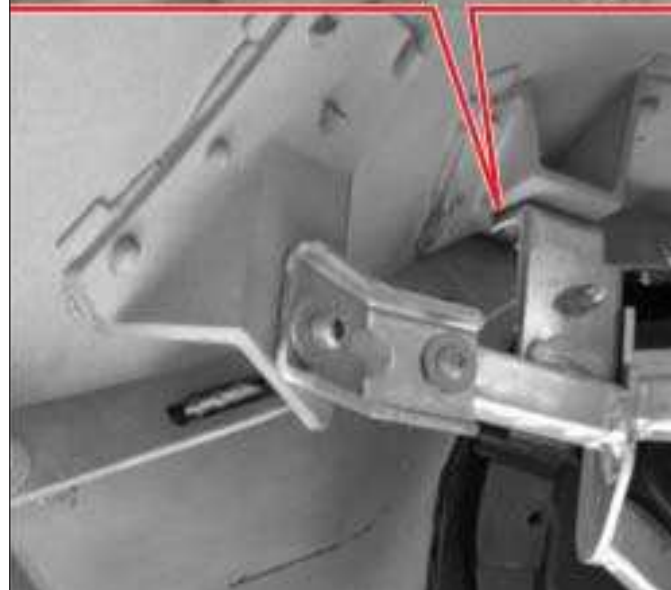
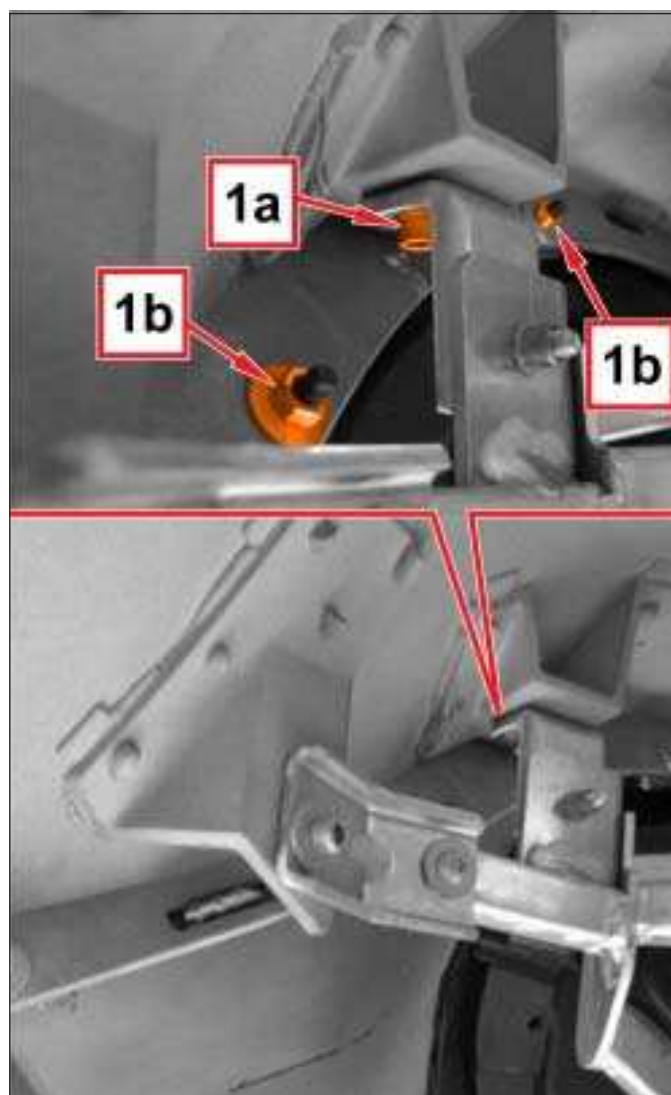
REMOVAL

1. Raise and support the vehicle (Refer to 31 - Collision Information/Specifications/Hoisting).
2. Remove the tire and wheel assembly from the right rear of the vehicle in accordance with the service information.
3. Remove the right rear wheelhouse splash shield in accordance with the service information.

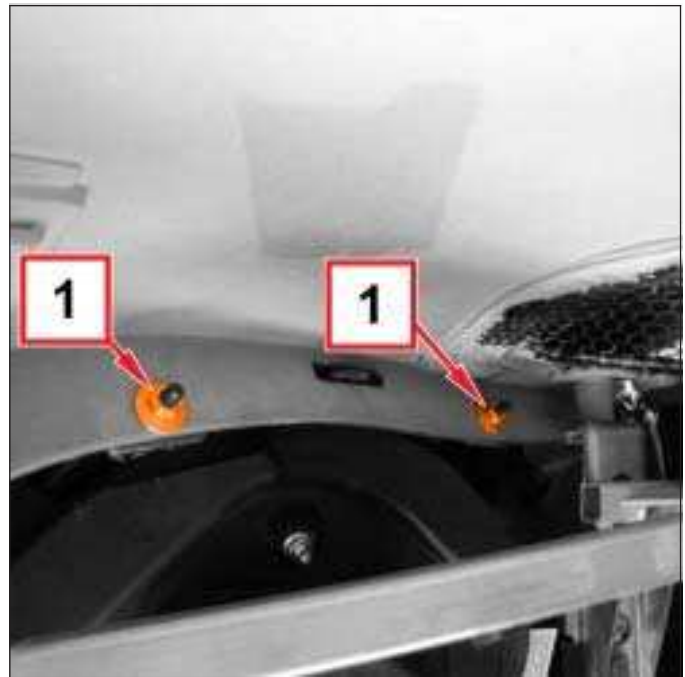
4. Undo the screw (1a) securing the right quarter panel to the quarter panel mounting bracket.
5. Undo the nut (1b) nut securing the right quarter panel to the rear fascia.



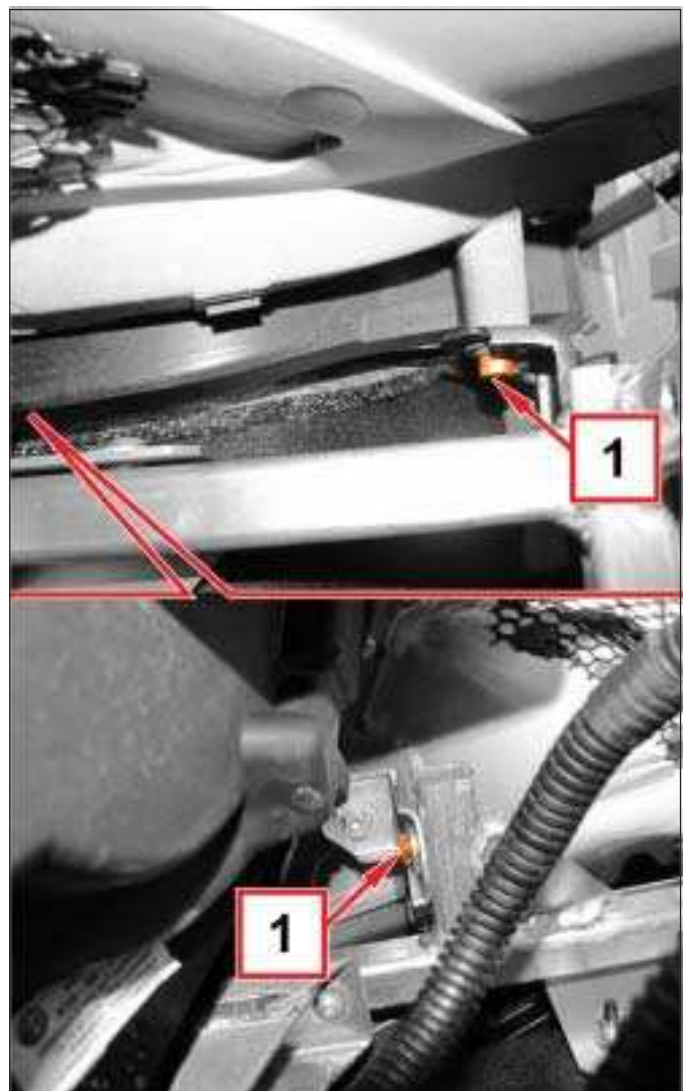
6. Undo the screw (1a) securing the right quarter panel to the quarter panel mounting bracket.
7. Undo the nut (1b) nut securing the right quarter panel to the rear fascia.



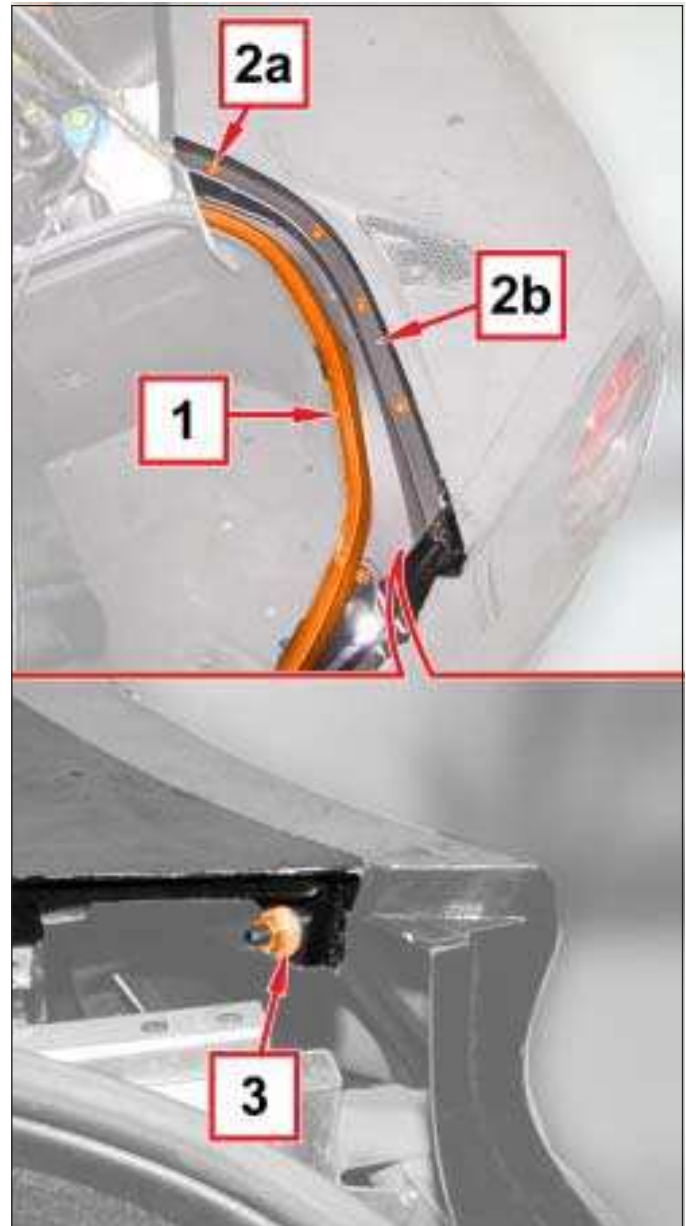
8. Undo the nuts (1) securing the quarter panel to the rear fascia.



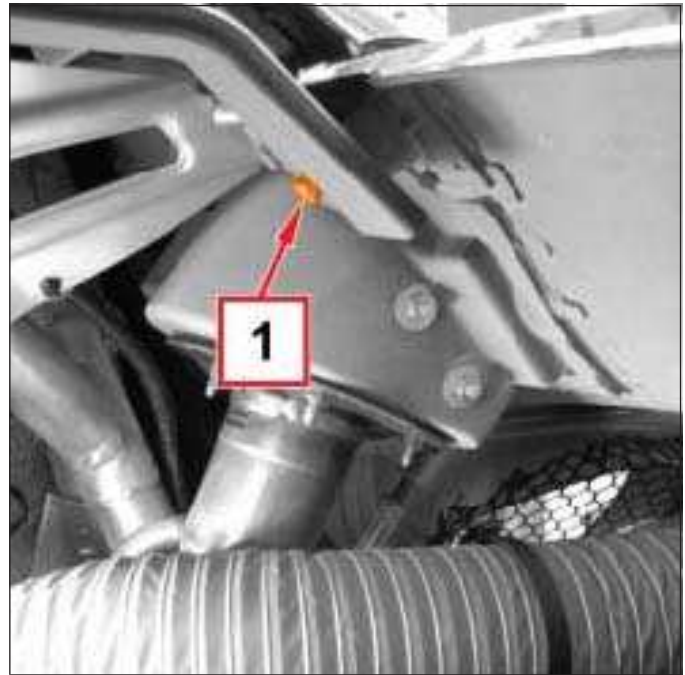
9. Undo the screws securing the right quarter panel to the quarter panel mounting bracket.



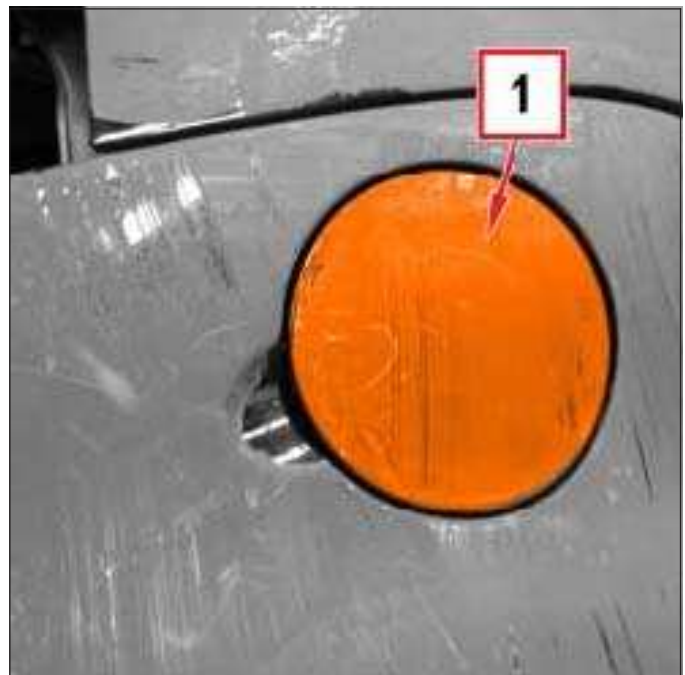
10. Pry up the luggage compartment weatherstrip along the perimeter in contact with the right quarter panel.
11. Undo the mounting screws (2a) and remove the trim (2b).
12. Undo the nut (3) securing the quarter panel to the rear fascia.



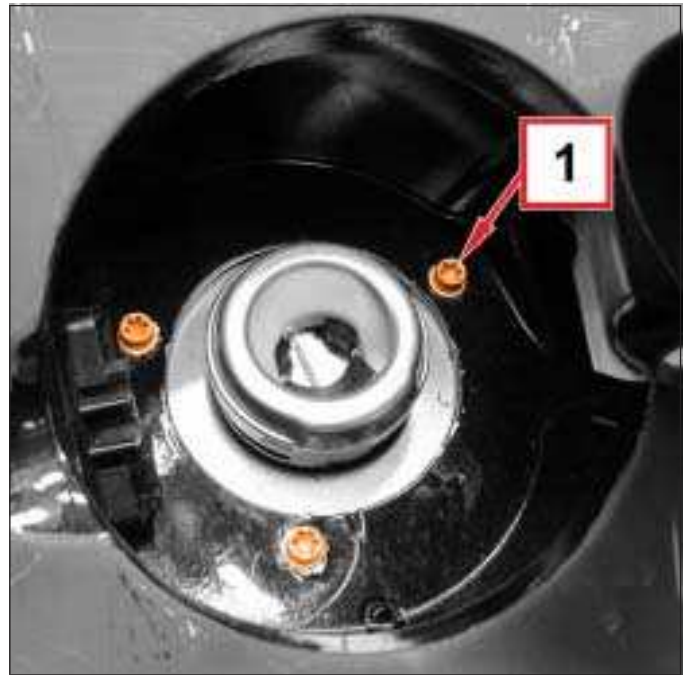
13. Undo the screw (1) securing right quarter panel to the upper quarter panel mounting bracket.



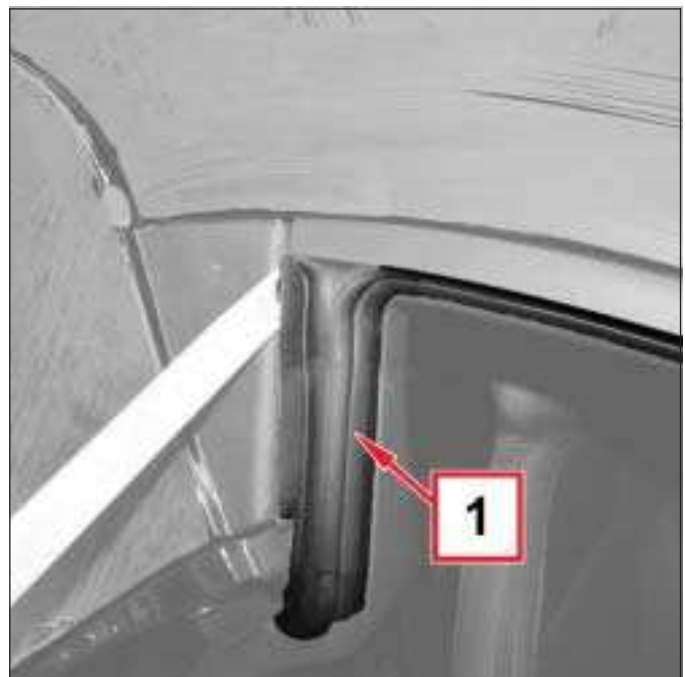
14. Open the fuel fill door (1).



15. Undo the screws (1) securing the fuel tank filler tube to the right quarter panel.



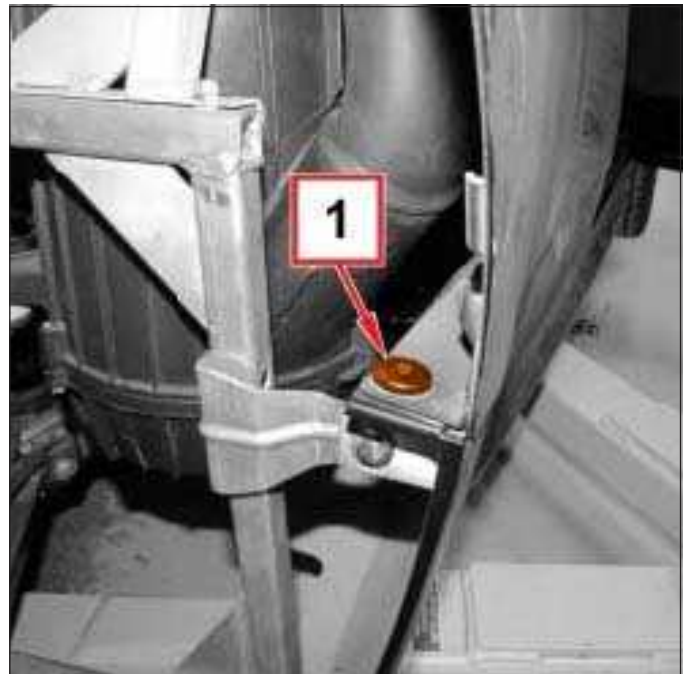
16. Open the passenger side door.
17. Use a suitable equipment to pry up the passenger side door compartment weatherstrip (1) along the perimeter in contact with the right quarter panel.



18. Undo the screw (1) securing the right quarter panel to the front door post.



19. Undo the screw (1) securing the right quarter panel to the lower side member.



20. Undo the remaining mounting screws (1) and remove the right quarter panel.



INSTALLATION

1. Reposition the quarter panel in its housing.
2. Position the fuel tank filler tube in its housing and tighten the mounting screws.
3. Tighten the right quarter panel mounting nuts and screws.
4. Install the right rear wheelhouse splash shield in accordance to the service information.
5. Remove the support and lower the vehicle.
6. Check the clearance values between the rear left wing and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Specifications).

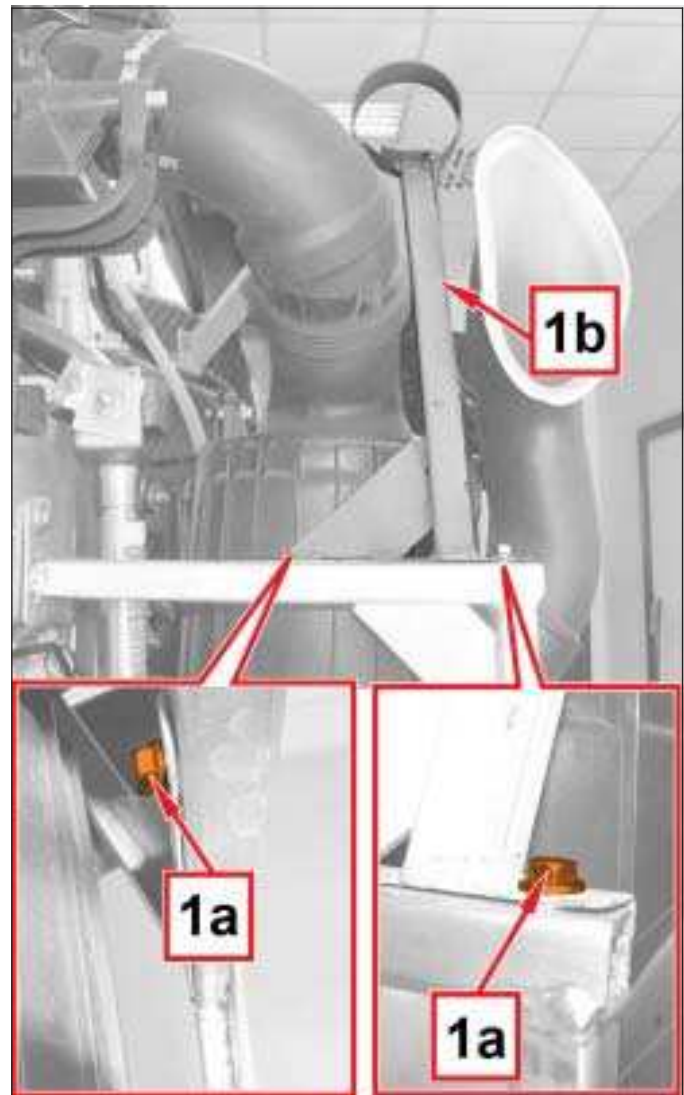
Quarter Panel Front Mounting Bracket

REMOVAL

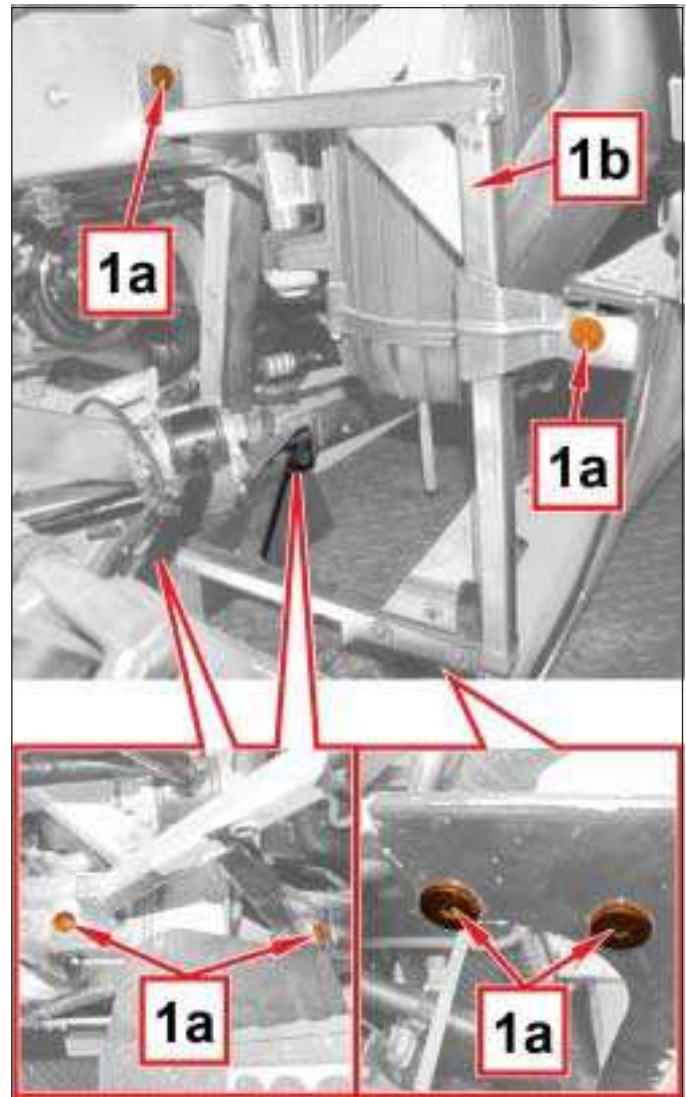
1. Raise and support the vehicle (Refer to 31 - Collision Information/Specifications/Hoisting).
2. Remove the tire and wheel assembly from the rear of the vehicle on the side being serviced in accordance with the service information.
3. Remove the rear wheelhouse splash shield from the side being serviced, in accordance with the service information.

NOTE: The operation described below must only be carried out if intervening on the right side of the vehicle.

4. Unscrew the fastenings (1a) for the trellis (1b).



5. Undo the mounting screws (1a) and remove the quarter panel front mounting bracket (1b).



Installation

1. Position the quarter panel front mounting bracket in its housing and tighten the mounting screws.

NOTE: The operation described below must only be carried out if intervening on the right side of the vehicle.

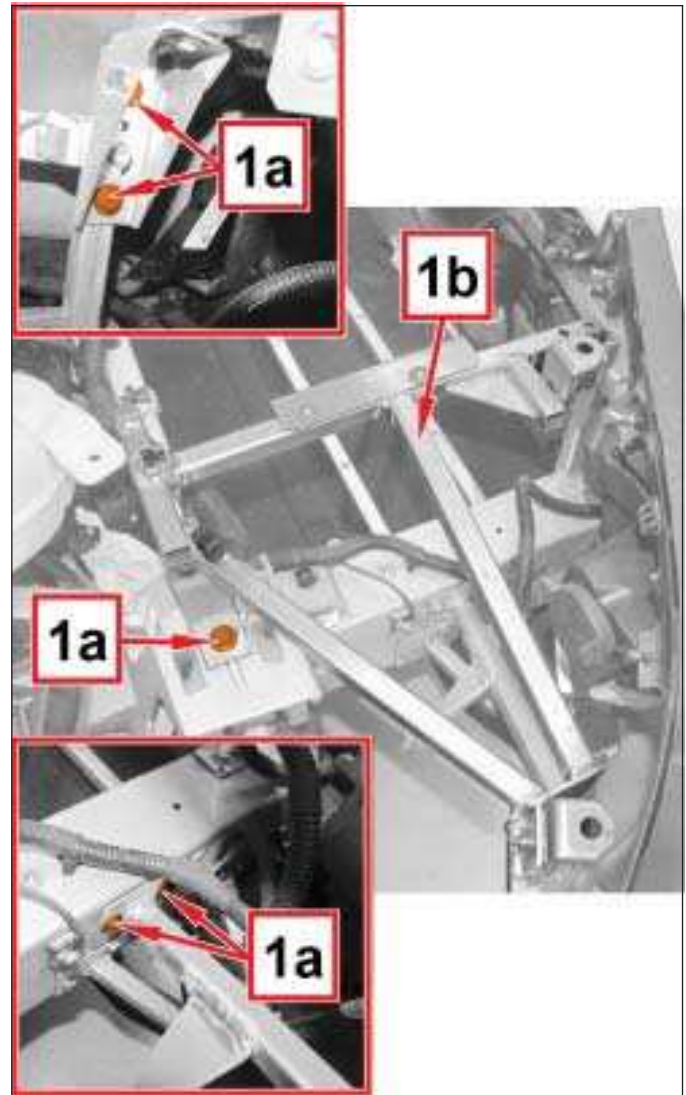
2. Tighten the fastenings for the trellis.
3. Install the rear wheelhouse splash shield to the side being serviced in accordance to the service information.
4. Install the tire and wheel assembly in accordance to the service information.
5. Remove the support and lower the vehicle.

Quarter Panel Rear Mounting Bracket

REMOVAL

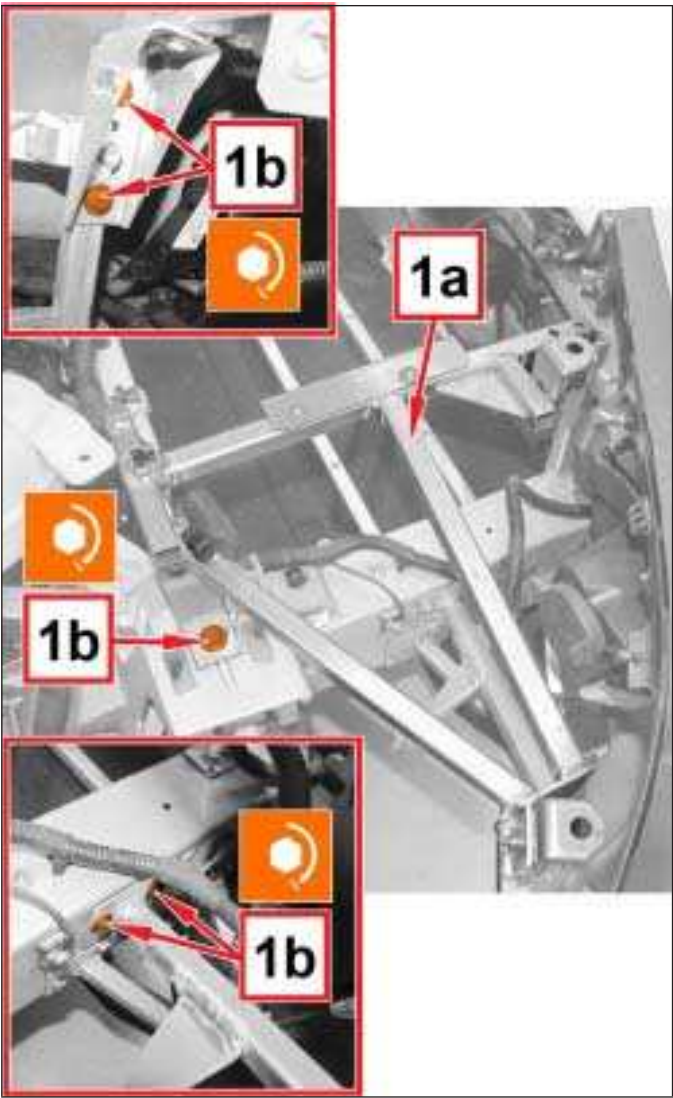
1. Raise and support the vehicle (Refer to 31 - Collision Information/Standard Procedure/Hoisting).
2. Disconnect and isolate the negative battery cable.
3. If working on the left side proceed as described:
 - a. Remove the pressurized coolant bottle bracket in accordance to the service information.
 - b. Remove the luggage compartment housing in accordance to the service information.
 - c. Remove the liftgate latch cable in accordance to the service information.
 - d. Remove the left quarter panel (Refer to 31 - Collision Information/Standard Procedure/ [Left Quarter Panel](#)).
4. If working on the right side proceed as described:
 - a. Remove the luggage compartment housing in accordance to the service information.
 - b. Remove the right quarter panel (Refer to 31 - Collision Information/Standard Procedure/ [Right Quarter Panel](#)).

5. Undo the mounting screws (1a) and remove the quarter panel mounting bracket (1b).



INSTALLATION

1. Position the rear mounting for the quarter panel (1a) in its housing and tighten the mounting screws (1b).



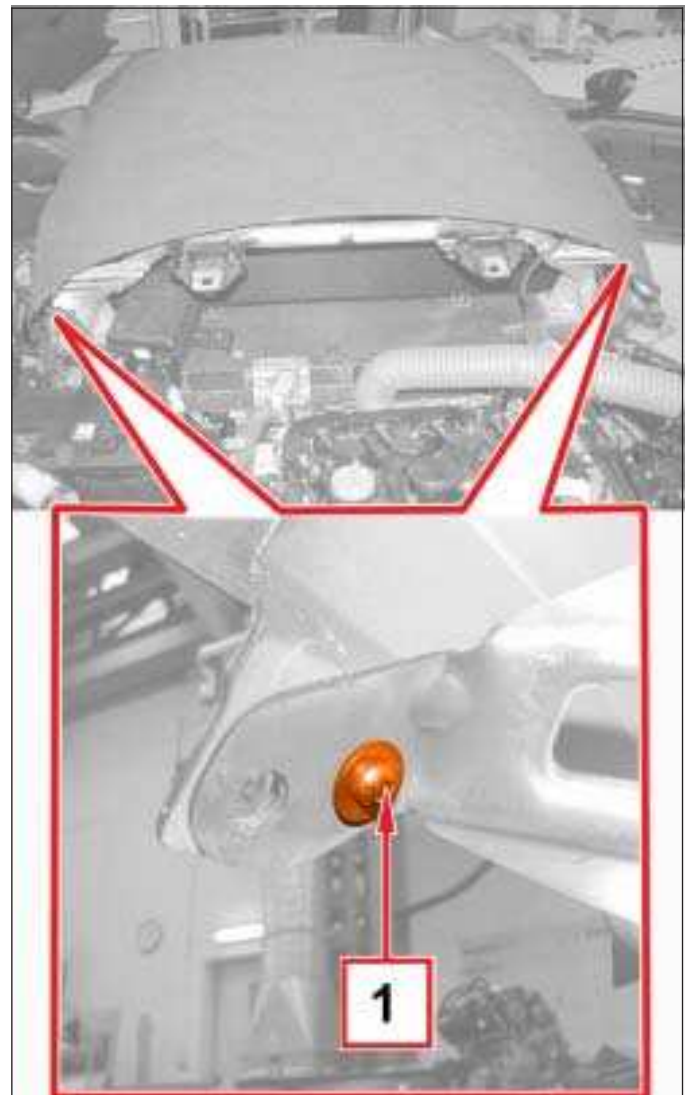
Component	Mounting	Size	Value (Nm)
Rear bumper rear mounting	Screw		

2. If working on the right side proceed as described:
- a. Install the right quarter panel (Refer to 31 - Collision Information/Standard Procedure/ [Right Quarter Panel](#)).
 - b. Install the luggage compartment housing in accordance to the service information.
3. If working on the left side proceed as described:
- a. Install the left quarter panel (Refer to 31 - Collision Information/Standard Procedure/ [Left Quarter Panel](#)).
 - b. Install the liftgate latch cable in accordance to the service information.
 - c. Install the luggage compartment housing in accordance to the service information.
 - d. Install the pressurized coolant bottle bracket in accordance to the service information.

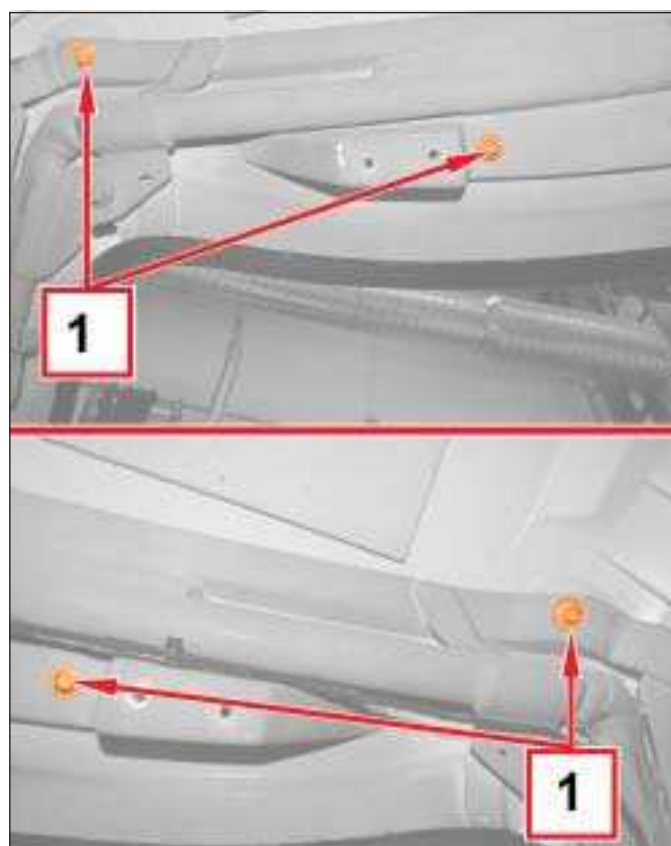
Roof Panel

REMOVAL

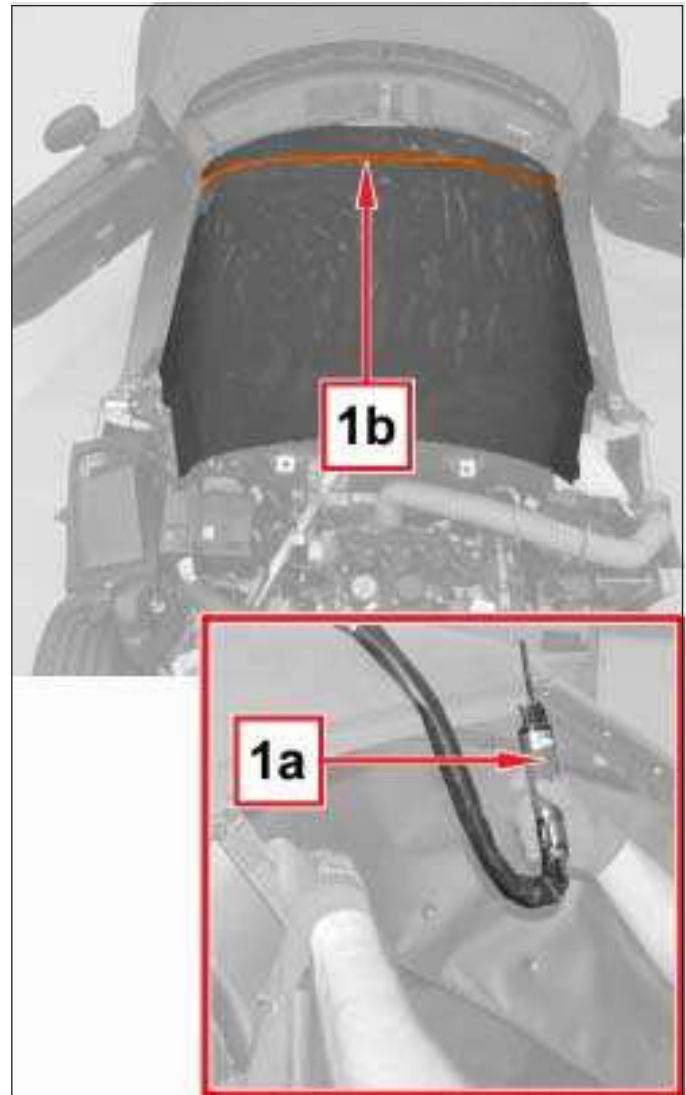
1. Disconnect and isolate the negative battery cable.
2. Remove the center high mounted stop lamp in accordance to the service information (Refer to 08 - Electrical/Lamps/Lighting - Exterior/LAMP, Center High Mounted Stop/Removal and Installation).
3. Remove the liftgate (Refer to 31 - Collision Information/Standard Procedure/Body Panel Replacement/ [Liftgate](#)).
4. Undo the screws (1) mounting the roof to the retaining brackets on the roll bar.



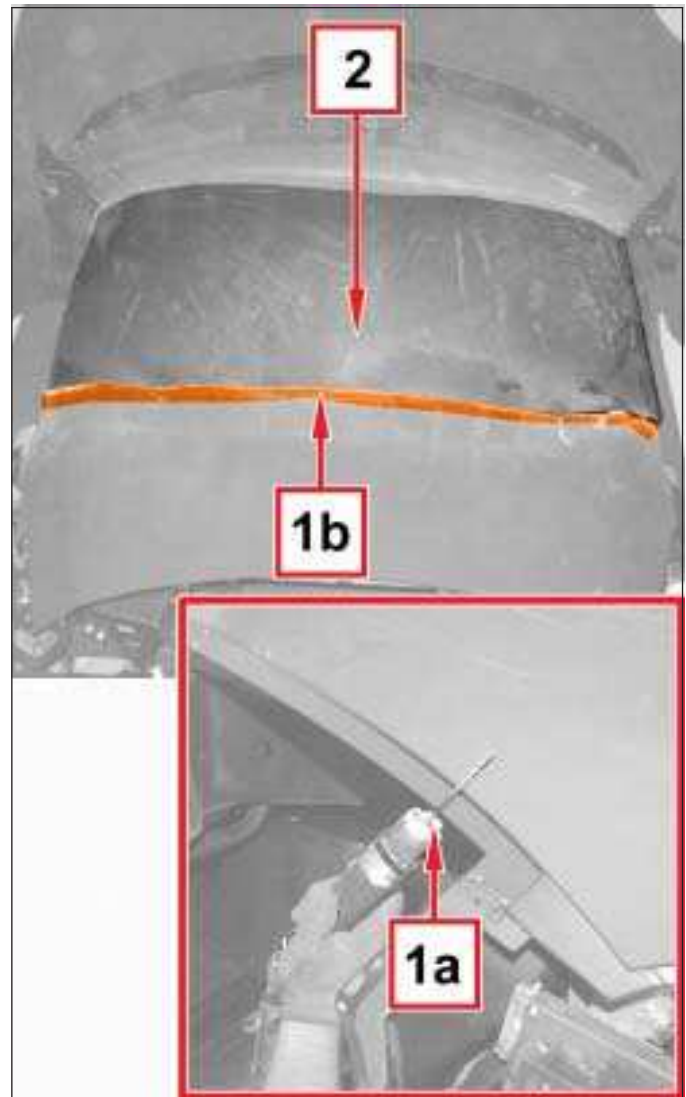
5. Undo the internal roof mounting screws (1).



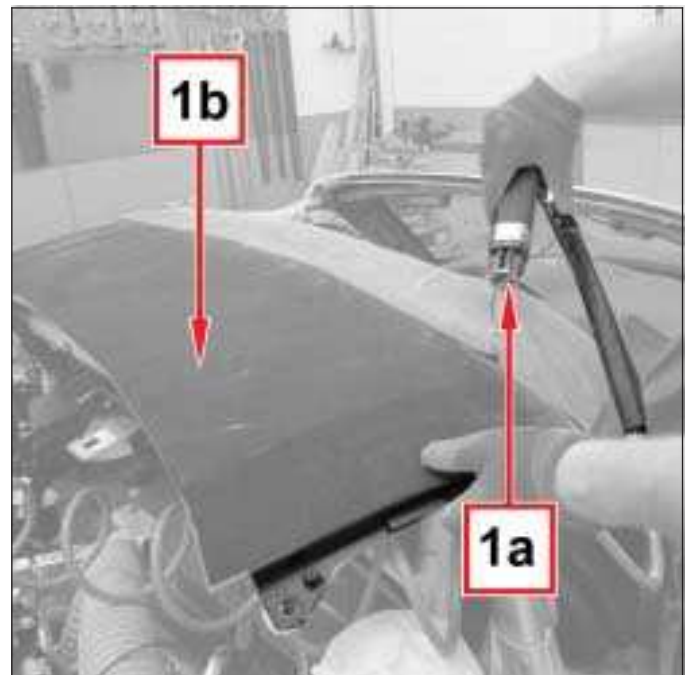
6. Protect the dashboard with suitable covers.
7. Using a pneumatic hacksaw (1a), make a cut in the front of the roof (1b) as shown in the figure.



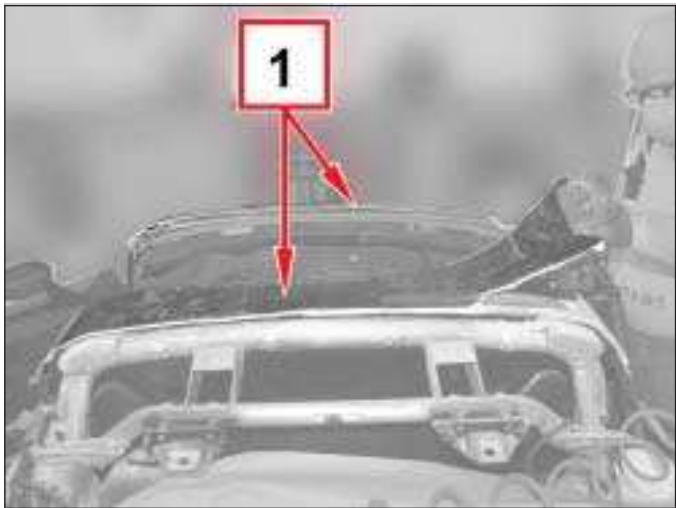
8. Using a pneumatic hacksaw (1a), make the cut in the partition area (1b) as shown in the figure.
9. Remove the cut roof section (2).



10. Using a pneumatic hacksaw (1a), proceed to remove the remaining rear sections (1b) of the roof.



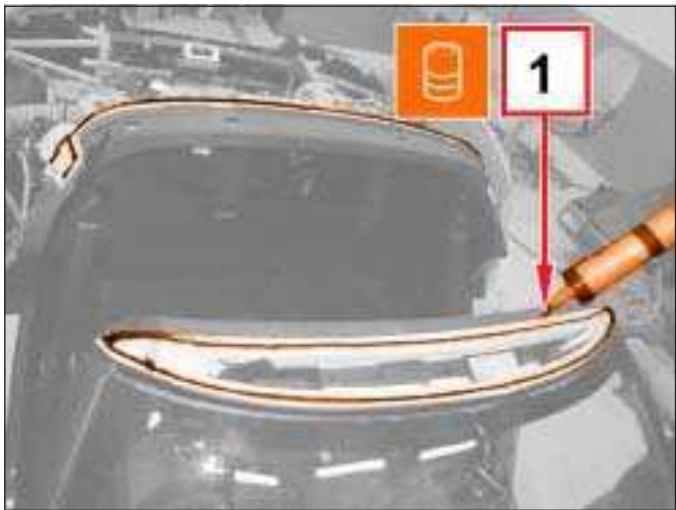
11. Remove the remaining sections of the roof (1) from the partition and the windshield frame.



Installation

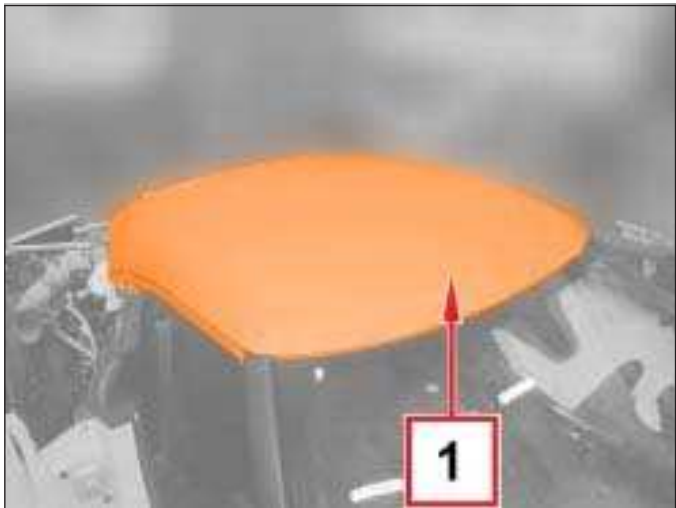
1. Thoroughly clean and degrease the body and new roof bonding area using heptane.
2. Extrude a 6 mm strip of structural adhesive (1) along the entire bonding perimeter on the windscreen frame and on the partition.

NOTE: Use approved structural repair adhesive – Lord Fusor 112 or 3M 08116



Component	Type	Name	Classification	Quantity	Validity
–	Structural Adhesive	Lord Fusor 112 or 3M 08116	–	–	–

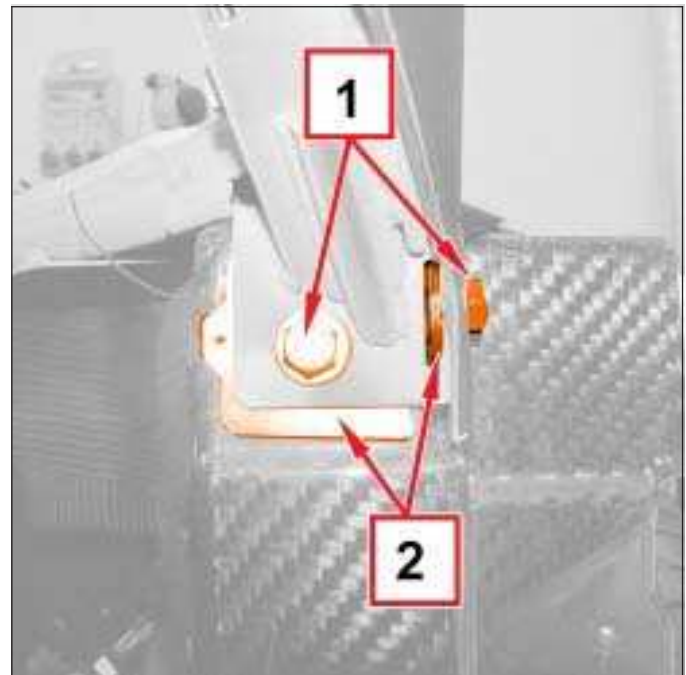
3. Gently position the roof (1).



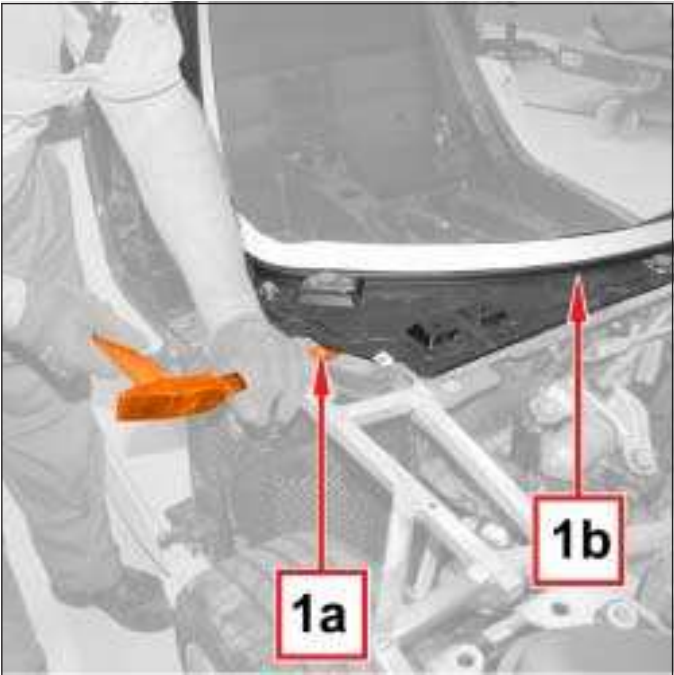
Windshield Frame

REMOVAL

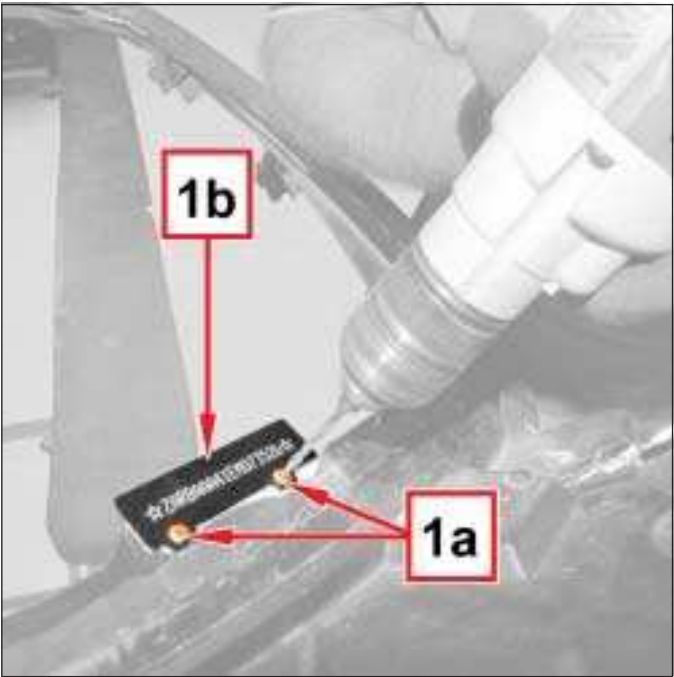
1. Remove the roof panel (Refer to 31 - Collision Information/Standard Procedure/Body Panel Replacement/ [Roof Panel](#)).
2. Unscrew the front fastenings (1) for the windshield frame.
3. On both sides, undo the side mounting screws (1) for the windshield frame.
4. Keep the spacers (2).



- Using a dedicated blade (1a) cut the strip of sealant and remove the windshield frame (1b).

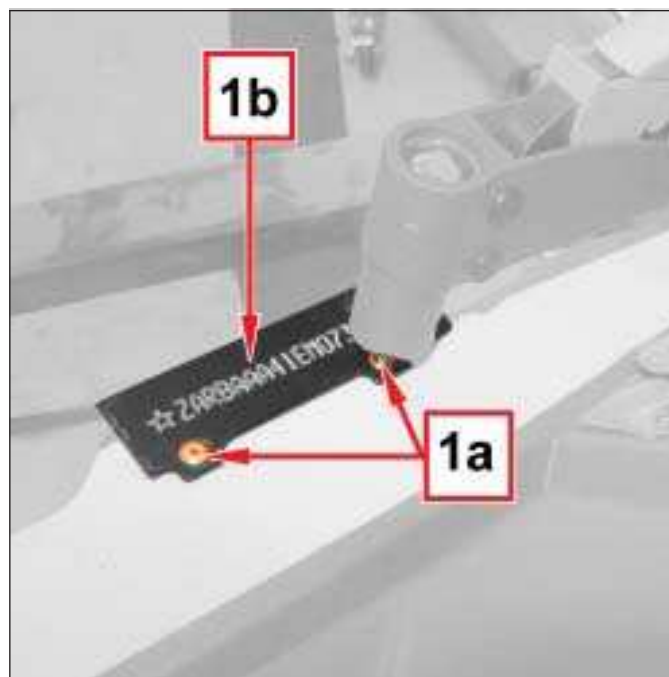


- Working at bench, use a drill to remove the mounting rivets (1a) and separate the VIN code plate (1b).



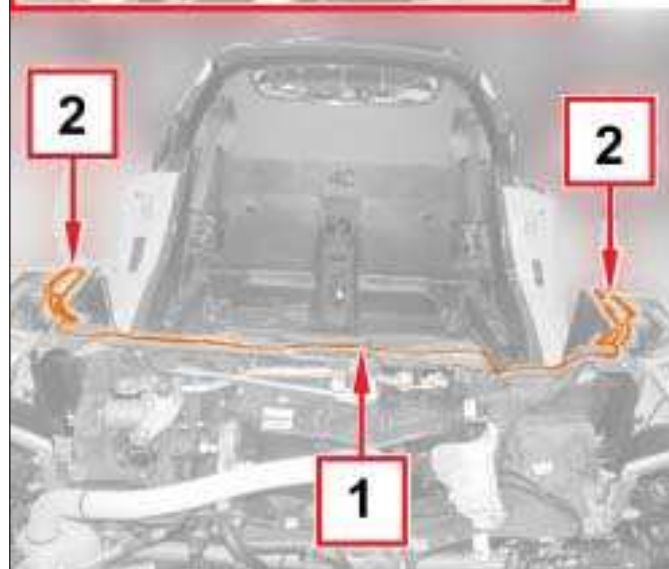
Installation

1. Working at bench, use new rivets (1a) and install the VIN code plate (1b) for the windshield frame.



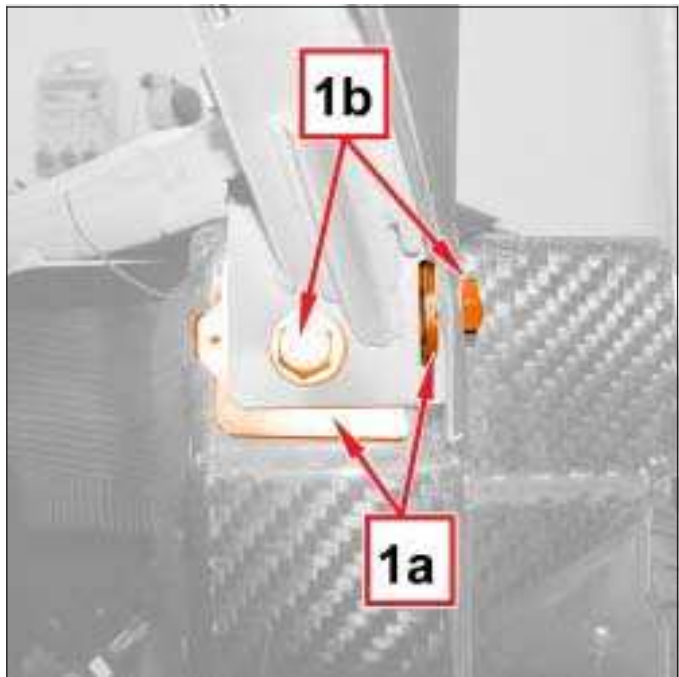
2. Clean the body and windshield frame bonding area thoroughly of residual sealant and degrease using heptane.
3. Extrude a 6 mm strip of sealant (1) along the central bonding area.
4. Extrude a double 6 mm strip of sealant (2) along the side bonding areas.

NOTE: Use approved structural repair adhesive – Lord Fusor 112 or 3M 08116.

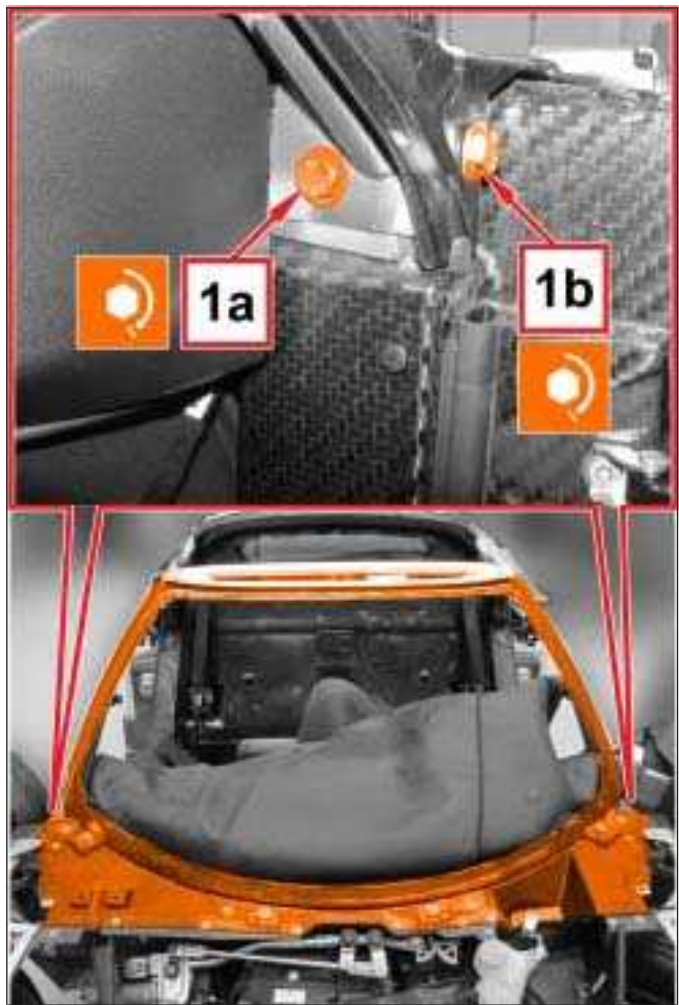


Component	Type	Name	Classification	Quantity	Validity
–	Structural Adhesive	Lord Fusor 112 or 3M 08116	–	–	–

- From both sides, insert the spacers (1a) so that the remaining gap is covered and do up the mounting screws (1b).

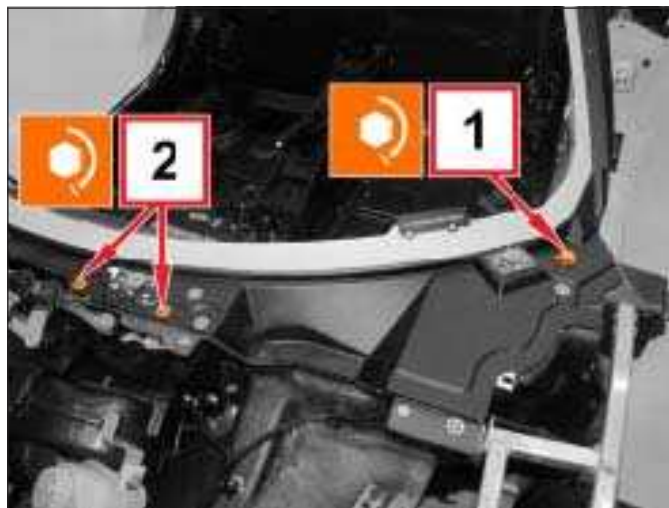


- Gently position the roof and do up the mounting screws.
- Check the clearance values between the roof and adjacent bodywork components, consulting the gap and flush specifications (Refer to 31 - Collision Information/Specifications/Gap and Flush Dimensions).
- Undo the mounting screws and remove the roof fitted previously.
- Tighten the mounting screws on both sides:
 - 1a: internal passenger compartment
 - 1b: external side



Component	Mounting	Size	Value (NM)
Windshield frame	Screw	M10 X 1.25 X 35	51

10. Tighten the external side mounting screws (1) on both sides.



Component	Mounting	Size	Value (NM)
Windshield frame	Screw	M10X1.25X 35	51

11. Tighten the central mounting screws (2).

Component	Mounting	Size	Value (NM)
Windshield frame	Screw	M8X48	24

CAUTION: Follow adhesive manufacturer guidelines and wait the appropriate time before proceeding with any other operations.

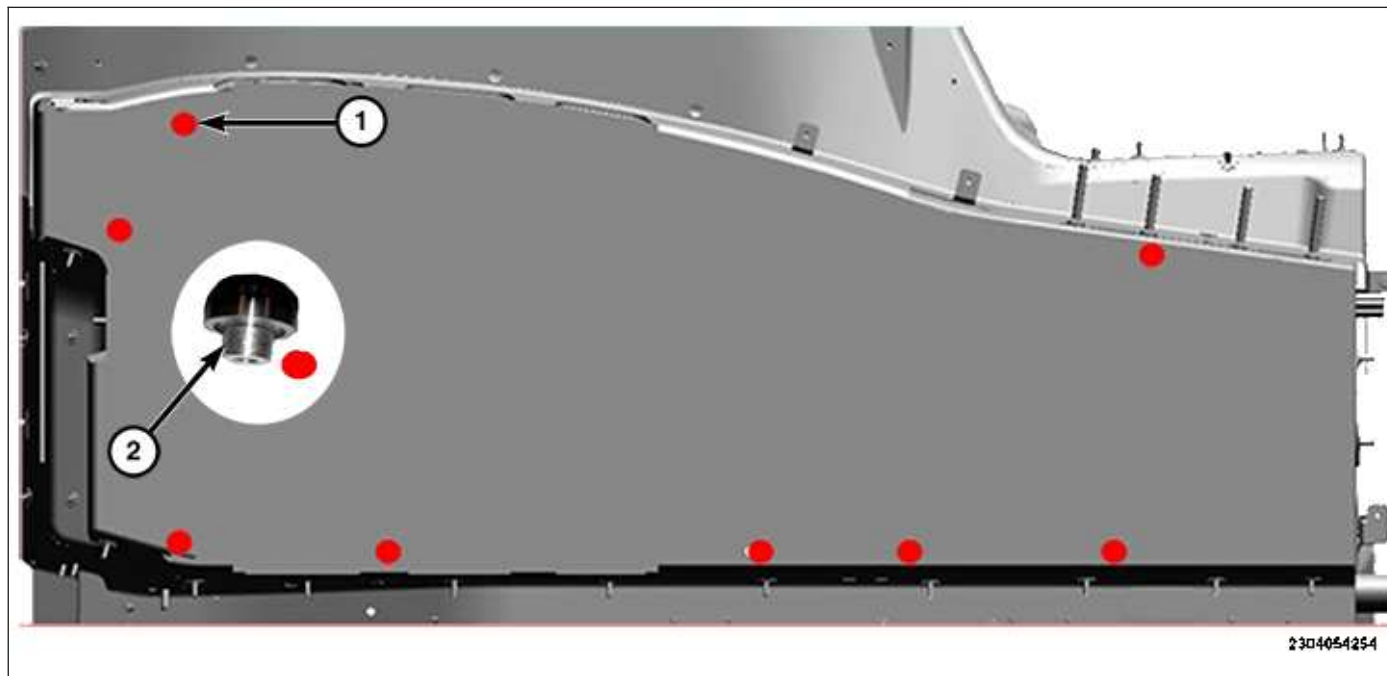
12. Install the roof panel (Refer to 31 - Collision Information/Standard Procedure/Body Panel Replacement/ [Roof Panel](#)).

CARBON FIBER THREADED INSERT REPAIR

In the event a threaded stud or threaded insert becomes loose or stripped, on the carbon fiber monocoque/tub, it will be necessary to resecure it.

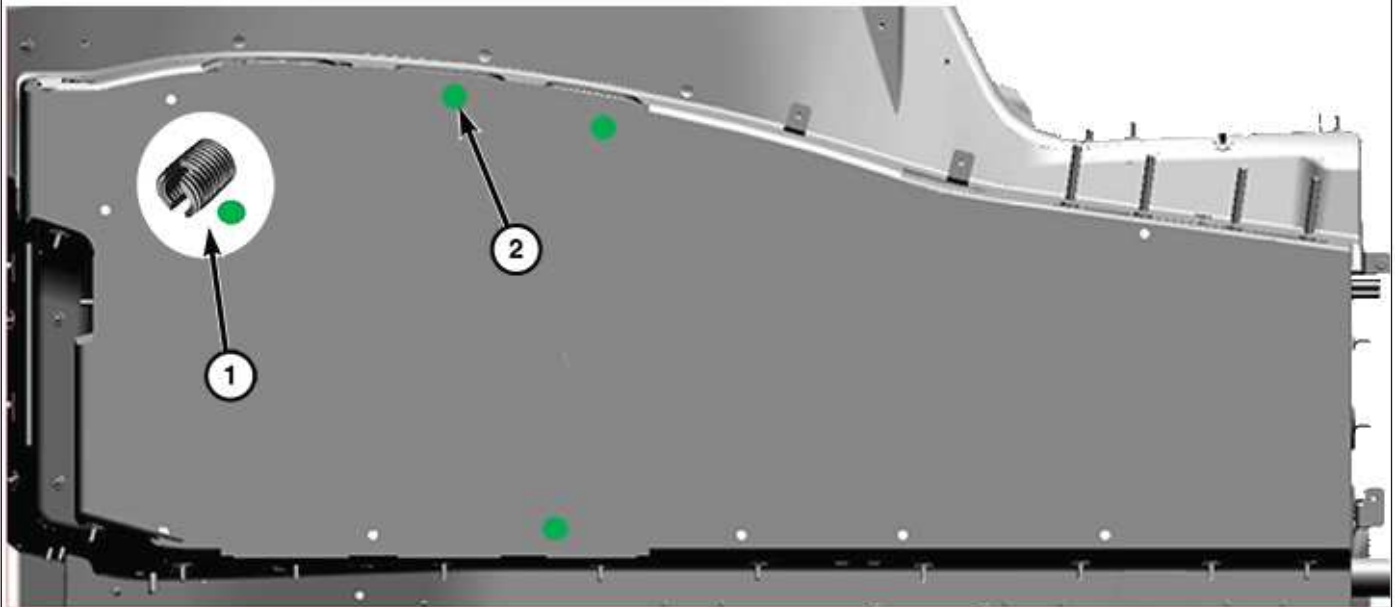
The bottom side of the carbon fiber monocoque uses two types of threaded inserts.

1. Identify the type of threaded insert being utilized-



- Threaded studs (2)

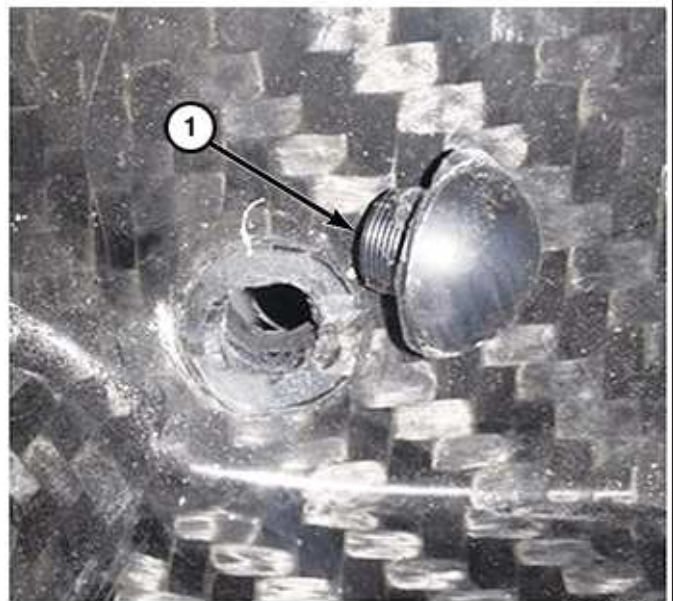
NOTE: Threaded stud locations (1) shown in red.



- Ensaf threaded insert M6x14 (1)

NOTE: Threaded Ensaf insert locations (2) shown in green.

2. Remove the threaded insert-



2304054252

- Threaded studs
 - Remove the stud (1), working from the bottom side of the body tub/carbon fiber monocoque, by using a chisel and hammer



- Ensats M6x14
 - Using a conical extractor/easy out (1), unscrew the Ensats (2) from the monocoque, and verify the external thread (3) on the Ensats
- 3. Install the new threaded insert-
 - Threaded studs-
 - Apply some drops of glue (3M DP460) below the head of the new stud
 - Insert the new threaded stud from the inside of the vehicle.
 - Apply an appropriate amount of weight on the stud until the glue has cured in accordance to the manufacturer recommendations
 - Ensats M6x14
 - Apply some drops of thread locker on the outer threads of the new Ensats
 - Screw in the new Ensats by using the proper tool

COSMETIC CARBON FIBER REPAIR

Symptom/Condition

- Isolated light to moderate surface conditions (scratches, scuffs, staining, hard water spots, etc.) on carbon fiber.

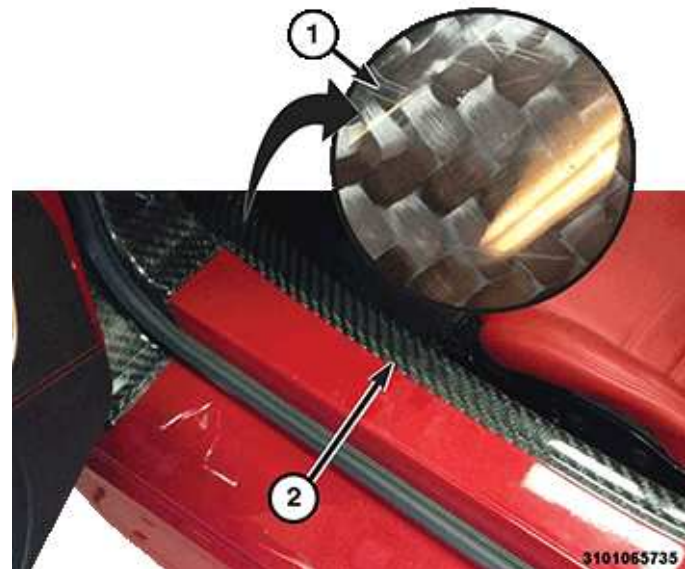
NOTE: Thoroughly wash the suspect area before inspection or repair.

Diagnosis

- If the customer describes the symptom, inspect the carbon fiber to determine the extent of the defect. If the conditions below are found, proceed to the referenced procedure.

Surface Defect	Procedure
Significant Scratches	Carbon Fiber Cosmetic Correction Procedure
Light Scratches and Scuffs	Carbon Fiber Cosmetic Finishing Procedure
Staining and Hard Water spots	Carbon Fiber Cosmetic Clay Bar Procedure

Model -2015 Alpha Romeo 4C (4C)



SURFACE CONDITION

- 1 - Significant Scratches and Scuffs
2 - Left Lower Door Jamb

Parts Required:

Quantity	Description
1	Meguiars M86 Solo™ Cut and Polish Cream, 32oz or equivalent
1	Meguiars M99 Ultimate Wipe Detailing Cloth or equivalent
1	Meguiars WWLC7 Solo™ Wool Light Cutting Pad 7" or equivalent.
1	Meguiars W8207 High-Tech Backing Pad or equivalent
1	Meguiars W8207 Soft Buff® 2.0 Polishing Pad or equivalent.
1	Meguiars M34 Final Inspection, 16oz or equivalent.
1	Meguiars Mild Detailing Clay C2000 or equivalent.

Quantity	Description
1	Meguiars S1525 Mirror Glaze® Unigrit Finishing Paper 1500 Grit or equivalent.
1	Meguiars S2015 Unigrit Finishing Paper 2000 Grit or equivalent.
1	Meguiars S2525 Unigrit Finishing Paper 2500 Grit or equivalent.
1	Meguiars W68 Rotary Backing Plate For Soft Buff 2.0 Foam Pads or equivalent.

Equipment Required:

Description
Rotary Buffer
Safety Glasses
Extension Cord

NOTE: Measure and document clear resin film thickness before, during and after repair. Only .5 mil of clear resin removal is permissible for condition repair.

NOTE: Work in a 305mm (12in) x 305mm (12in) at a time. Always work on a cool paint surface, free of environmental contaminates.

NOTE: Always begin using the least aggressive method based on the condition.

RECOMMENDED CARBON FIBER COSMETIC CLAY BAR PROCEDURE:

- Before removing any defects, wash the effected area with soap and water.
- Work in a 305 mm (12in) x 305mm (12in) area at a time and apply Meguiars Final Inspection or a detail spray equivalent to the effected area.
- Using Mequiars Mild Detailing Clay C2000 or equivalent, work in a unidirectional pattern while the detail spray applied in [Step #2](#) is still wet.

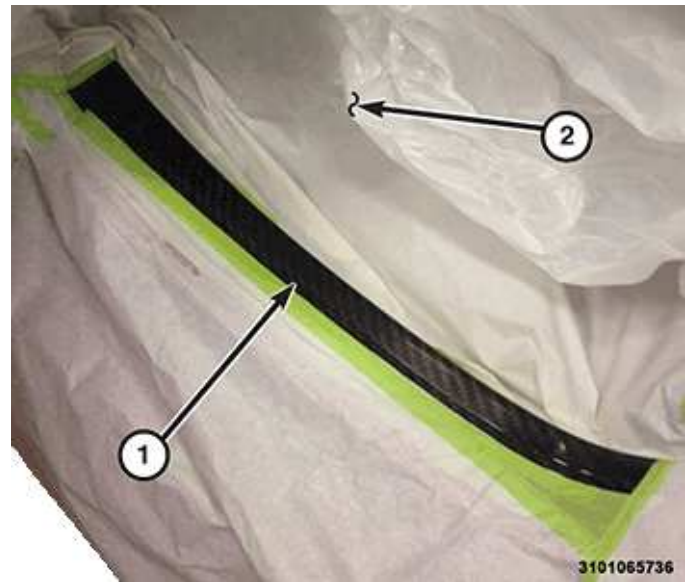
NOTE: Do not move the clay bar in a circular direction on the panel surface, it will create scratches.

- If the defect cannot be removed using a clay bar, proceed to the carbon fiber cosmetic finishing procedure.

RECOMMENDED CARBON FIBER COSMETIC CORRECTION PROCEDURE:

NOTE: Always wear appropriate eye, skin and ear protection.

1. Mask and protect adjacent areas of the repair area prior to beginning the correction procedure.

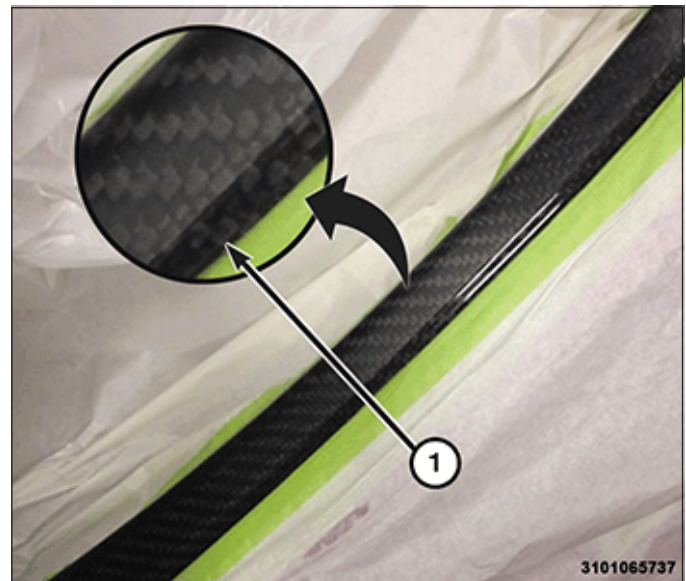


Protect Adjacent Areas

- 1 - Left Lower Door Opening
2 - Protection Material

2. Using Meguiars W8207 backing pad or equivalent, wrap Meguiars unigrit wet sandpaper or equivalent around it and block sand after wetting the defect area with soap and water. The defect should be sanded in three steps beginning with Meguiars unigrit 1500, followed by Meguiars unigrit 2000 and finish sanded with Meguiars 2500 grit or equivalent.

NOTE: Always finish sand with Meguiars unigrit 2500 wet sandpaper or equivalent.



1 - Wet Sanded Carbon Fiber

3. Set rotary buffer to a desired RPM, less than 1800 RPM.

NOTE: A rotary buffer must be used by a trained technician as it can permanently damage adjacent painted surfaces if not used correctly. Damaged painted surfaces can only be repaired by refinishing the affected vehicle panel.

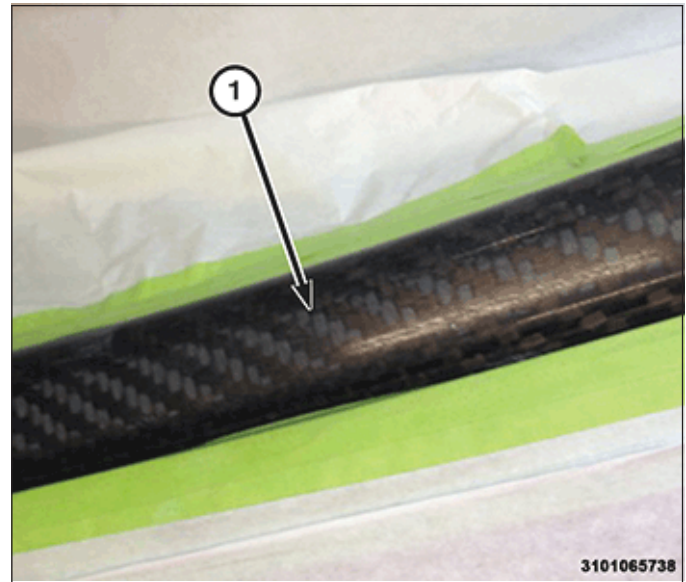
4. Place a Meguiars WWLC7 Wool Light Cutting Pad or equivalent on the backing plate.

NOTE: Prime all new and dry pads with the desired wax or compound to prevent additional scratches on the carbon fiber finish.

5. Apply Meguiars M86 Solo™ Cut & Polish Cream or equivalent directly to rotary Meguiars WWLC7 wool light cutting pad or equivalent and begin using moderate pressure and overlapping passes followed by 2-3 light pressure passes .
6. Remove residue with Meguiars M99 Mirror Glaze® Ultimate Wipe Detailing Cloth or equivalent

NOTE: For best results, wipe residue off using Meguiar's Ultimate Wipe Detailing Cloth (M99) or equivalent.

7. Continue working until the 2500 grit sand scratches have been removed.
8. Proceed to the carbon fiber cosmetic finishing procedure.



1 - Polish Residue

RECOMMENDED CARBON FIBER COSMETIC FINISHING PROCEDURE:

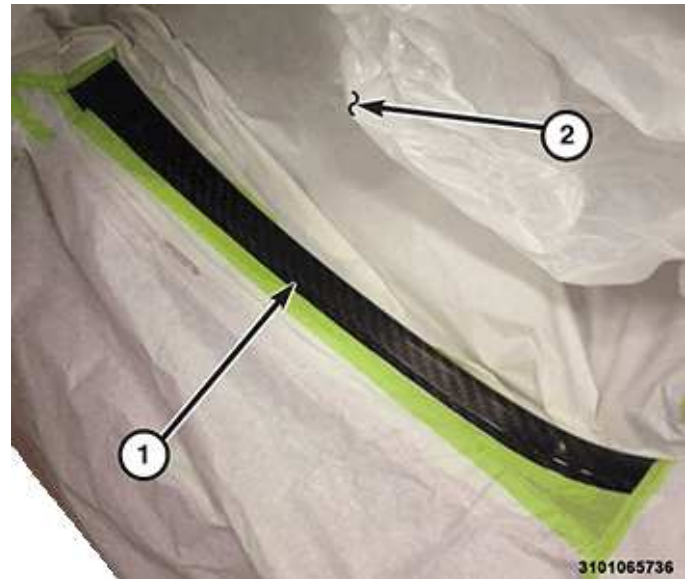
NOTE: Always wear appropriate eye, skin and ear protection.

1. Mask and protect adjacent areas of the repair area prior to beginning the finishing procedure.
2. Set rotary buffer to an RPM setting less than 1200RPM.

NOTE: A rotary buffer must be used by a trained technician as it can permanently damage the adjacent painted surfaces if not used correctly. Damaged painted surfaces can only be repaired by refinishing the affected vehicle panel.

3. Place Meguiars W8207 Soft Buff® 2.0 polishing pad or equivalent on rotary backing plate.

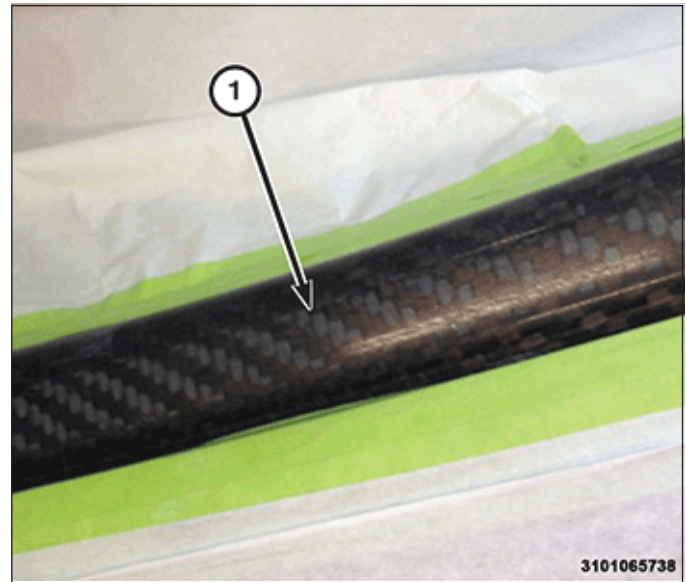
NOTE: Prime all new and dry pads with the desired wax or compound to prevent additional scratches on the carbon fiber finish.



Protect Adjacent Areas

- 1 - Left Lower Door Opening
2 - Protection Material

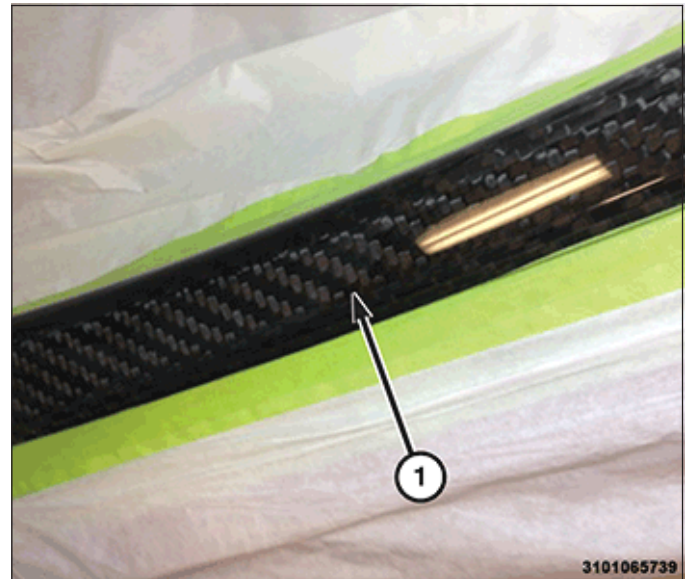
4. Apply Meguiars M86 Solo™ Cut & Polish Cream or equivalent directly to rotary Meguiars W8207 Soft Buff® 2.0 polishing pad or equivalent and begin using moderate pressure and overlapping passes followed by 2-3 light pressure passes.



1 - Polish Residue

5. After the defects have been removed and the finish is polished, wipe the polished areas with Meguiars M34 Mirror Glaze® Final Inspection or equivalent using Meguiars M99 Ultimate Wipe Detailing Cloth or equivalent. This will yield added depth, shine and protection.

NOTE: If the defect has not been removed, repeat the carbon fiber cosmetic correction and finishing procedure.



1 - Polished Finish Defects Removed

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.

HOISTING

CAUTION: When positioning the vehicle on an arm lift, take into account that the power unit is located in the rear area.

CAUTION: Failure to follow the Hoisting Procedure will result in body damage.

The ground clearance from the body side skirt to level ground is 110 mm (3.5 inches). Most standard vehicle lift arms will not fit under the vehicle. In order to lift the vehicle and avoid vehicle damage, the vehicle must be lifted prior to attempting to lift the vehicle using a standard lift.

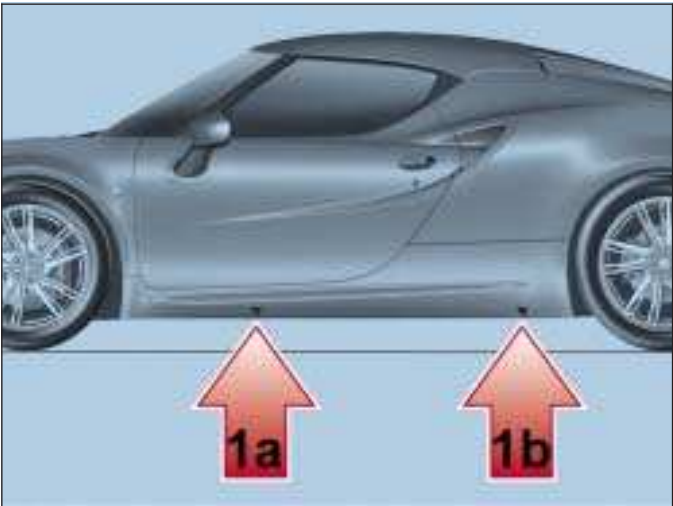
Use the recommended GOJAKS Jack dolly (model 4500) or equivalent to lift the vehicle at all four tires, then roll the vehicle into place to begin the lifting procedure.

1. Position the lifts as shown in the figure.



Tool	Name	Function
2014100000	Right lifting trolley	Vehicle positioning on a lift
2014101000	Left lifting trolley	Vehicle positioning on a lift

2. Operate the valve to adapt it to the dimension of the front wheel.
- Close the valve to lock the lift.
3. Press the pedal to lift the vehicle and correctly position the lift arms.
4. The vehicle lifting points are marked on the side skirts in the points indicated in the figure (1a), (1b).



- The support points for lifting the front part of the vehicle are shown in the figure.



- The support points for lifting the rear part of the vehicle are shown in the figure.



MONOCOQUE DAMAGE DIAGNOSTICS

CARBON FIBER MONOCOQUE REPAIRS:

Due to the technologically advanced design of the carbon fiber monocoque, it is recommended that all repairs be performed by a qualified technician that specializes in performing carbon fiber structural repairs.

NOTE: Abaris Training is a company that has qualified carbon fiber repair technicians available to perform on-site monocoque repairs. Abaris can be reached at (775) 827-6568 if this service is required. They will ask many questions and request photographs to assess the damage and repair cost for Flying Doctor services.

Background info on Carbon Fiber (Monocoque Construction)

The monocoque for the Alpha 4C is a composite construction which really means a combination of “plastic” and reinforcing fibers. In this case the reinforcing fibers come in the form of a woven cloth made from carbon fiber. The cloth is impregnated with a heat curing adhesive before manufacturing, called pre-preg. The carbon fiber cloth is cut into pieces which are then laid into molds in a very specific order and fashion ensuring that the orientation of the cloth weave is precise. This is referred to as the “lay up” process. When the “lay up” is complete, the various components are subjected to vacuum (negative pressure) and heated in a device called an autoclave which cures the adhesives and draws out any air from within the plies. The end result is an extremely strong structure which is light in weight.

Compared with traditional unibody construction, and the metals utilized, damage analysis is quite different. Instead of dents, kinks, or buckles, the damage will be either a compromise of the layered construction, or in an extreme case complete tearing of the structure. Determining whether damage exists, and to what extent, requires several different types of equipment including ultrasound imaging (ultrasonic testing) and infra-red cameras (Thermographic imagery) – tools which are not commonly found in the collision repair environment. For composite based structures there are two levels of damage analysis –

- The first is for determining if any repairs may be necessary.
- Then secondarily in the repair process is to make a repair plan for the structure.

In the basic level of damage analysis knowing the key areas which would be most likely damaged in a collision event and having a couple of very basic “tools” is adequate.

Crash testing data

There are four primary impact damage modes expected to the monocoque:

- Frontal impact
- Rear impact
- Side impact
- Underbody impact (such as from an off-road excursion)

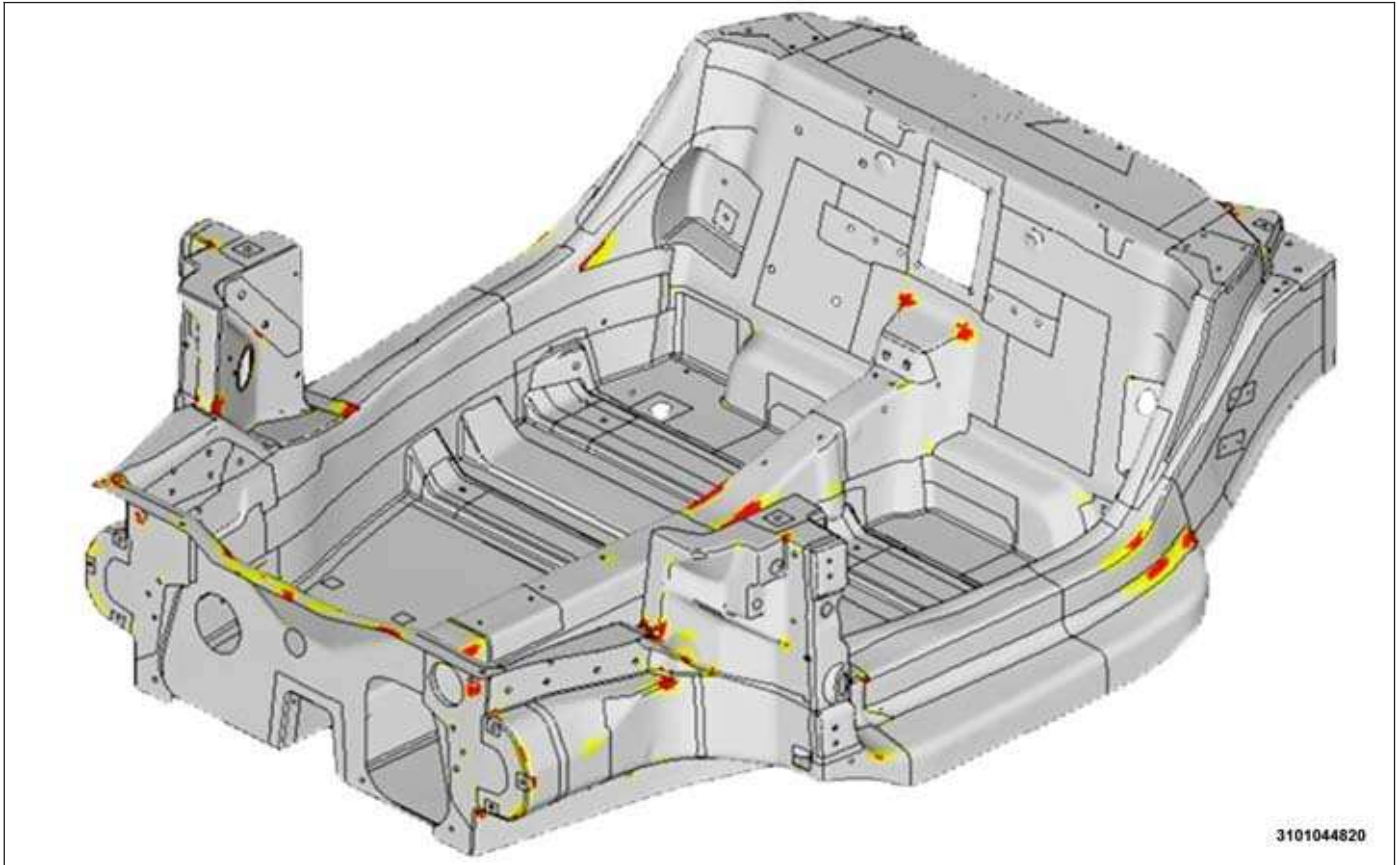
In the real world it is usually not always so cut and dry and damage may be caused by a combination of these four primary impact damage modes. Crash modeling software has been utilized to predict the most likely locations of possible monocoque damage in both front and rear impact events. These locations are referred to as “hot-spots” and the most likely locations where the structure may be damaged but a thorough visual inspection is always necessary.

The front and rear crash modeling of the Alfa 4C was performed at 48 km/h (30 mph) and is based upon impact with a flat rigid barrier. Real world impacts typically involve other vehicles which are “softer” than the barrier and the impacts are also generally not perfectly “square”. While the modeled impacts may be different from a real world occurrence, they provide robust information which should be used during damage analysis. One key point about these modeled events is that they are severe enough to completely crush the front and rear subframes – the crushing of the subframes absorbs energy and protects the occupants and monocoque.

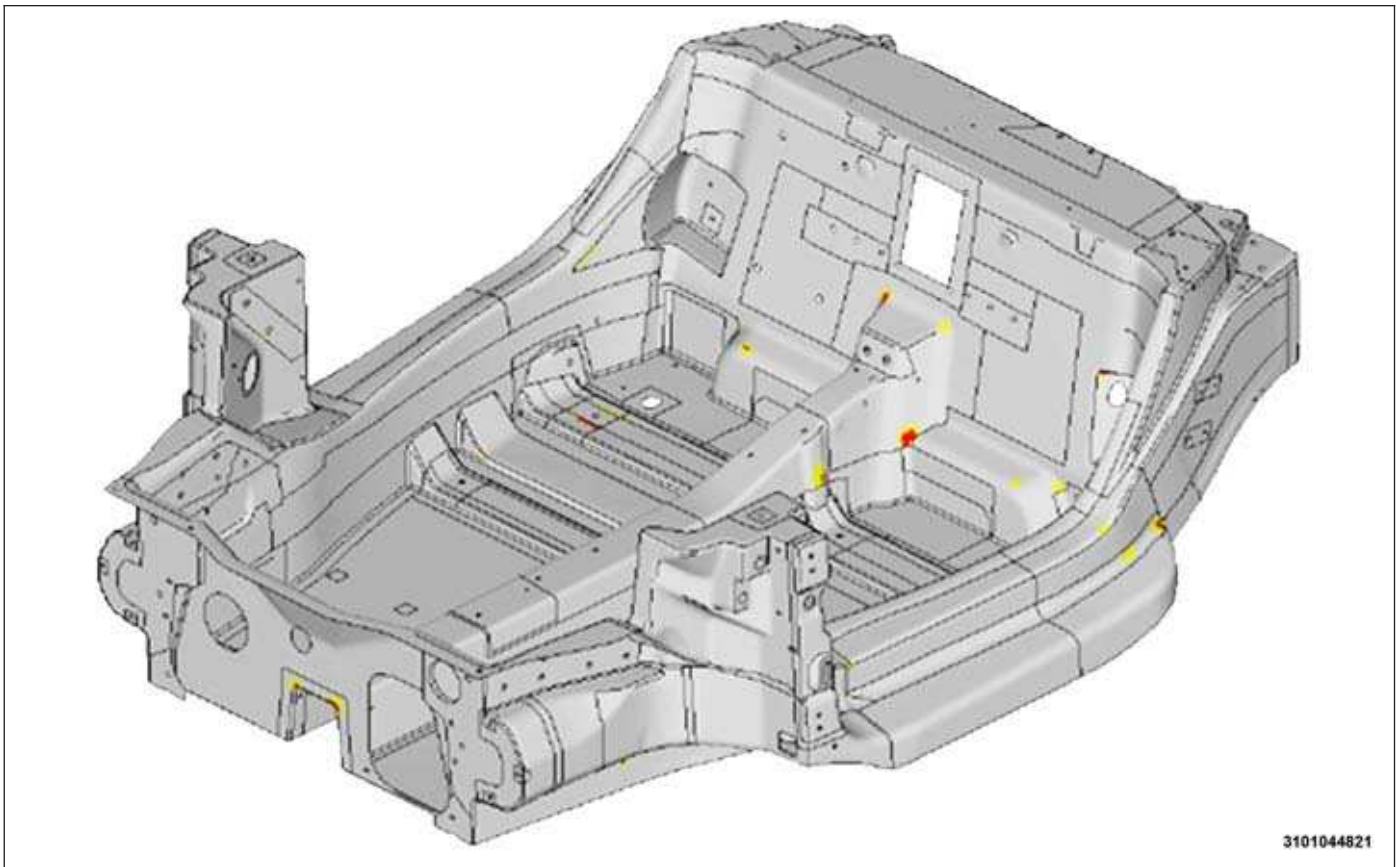
Inspection process-

During the initial damage analysis visual damage should be examined for and noted first. If no visible damage then a “coin” or “hammer” can be used to tap on the composite structure and listen for audible differences which could indicate damage. Damaged composite construction will cause a change in the sound in the tapping inspection – from a crisp “click” to a “thud”. It must be noted that since composite construction also utilizes “inserts”, such as threaded tapping plates and foam cored structural panels, within the plies of the cloth and these components

will also cause an audible difference but not the “thud” of damaged composite layers.



Frontal crash at 48 km/h (30 mph). The “red” areas would be the first areas to inspect for any kind of damage from a frontal crash event.



Rear crash at 48 km/h (30 mph). The “red” areas would be the first areas to inspect for any kind of damage from a rear crash event.

Side impact events will typically involve three key areas:

- Door hinge pillar
- Sill (rocker panel)
- B-pillar

Underbody impact from something like an off-road event, require a complete visual inspection with emphasis on the front suspension mounting locations and the monocoque floor. While the suspension is designed to crush before translating impact loads into the suspension mounting area, component stack-up during crush could circumvent this and transfer load. The underbody floor is thinner and may be damaged by sharp or pointed objects such as from rocks and other road debris.

Post inspection/Flying doctors/Advanced testing equipment-

Once the inspection of the monocoque is complete the damage analysis process should continue with an estimation of overall vehicle damage. If monocoque damage exists then Abaris Training should be contacted. They will ask many questions and request photographs of the damage for estimation of the likely repair cost by a Flying Doctor. With the estimation of monocoque repair costs the damage estimate can be completed. It should be noted due to the very high strength of the carbon-fiber monocoque finding “no damage” is not unexpected in vehicles that appear normally repairable based on the estimator’s experience and judgment. If there are any questions or concerns then Abaris Training should be contacted to discuss.

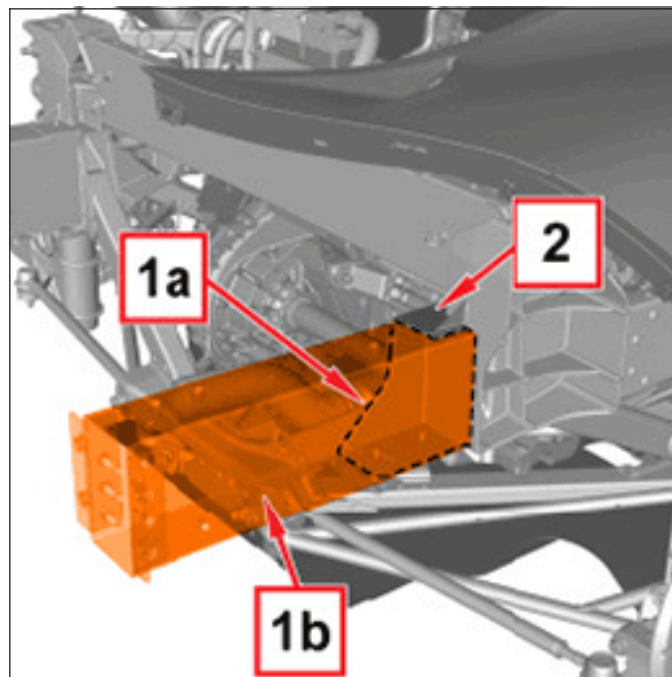
The more exotic tools used in damage analysis such as ultrasound and thermal imaging cameras, which come primarily from the aerospace industry, allow “visualization” of the compromised structure but are not required in the initial damage analysis phase. These tools are however very helpful for the Flying Doctor to confirm both the total repair necessary and to illustrate that a repair has been completed.

REAR RAIL EXTENSION

NOTE: After fitting the NEW side member, carry out the assembly measurements and possible correction interventions) within 60 minutes after applying the adhesive product (Refer to 31 - Collision Information/Specifications/Frame Dimensions).

NOTE: The operations below must be carried out on the vehicle, after removing all electrical and/or mechanical parts that may interfere with the removal and refitting operations from the area surrounding the component.

Removal

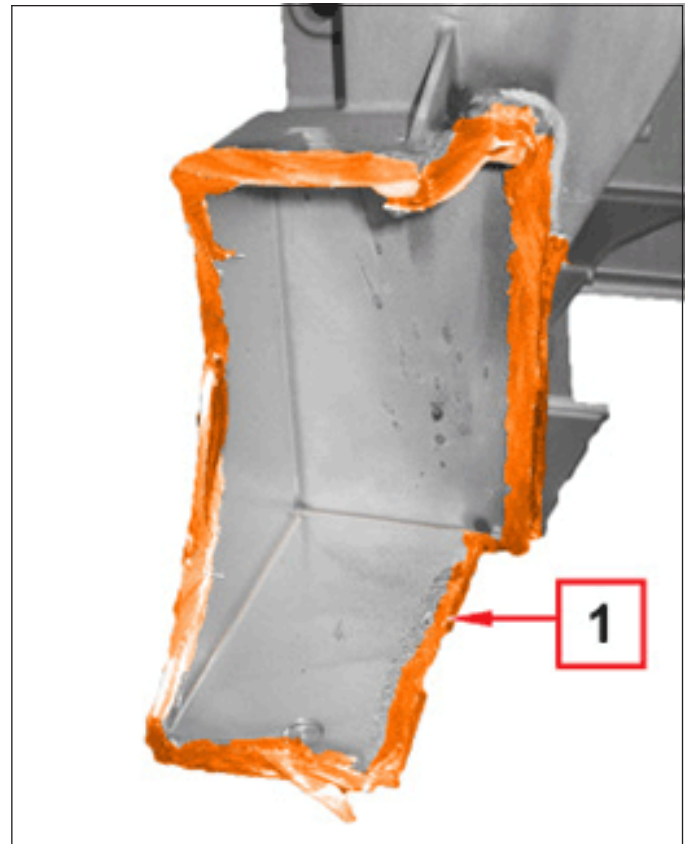


1. Use suitable equipment to cut the welding bead along the section (1a), shown in figure, and remove the side member (1b).
2. During the cutting operations, pay special attention not to damage the rear part of the frame to which the side member is welded.

NOTE: The cutting line must follow the rear side member; therefore, move the cutting line away a few millimeters from the original welding line between the two elements.

NOTE: If necessary, use a hammer to slightly hit the side member in order to weaken the area still attached to the rear frame.

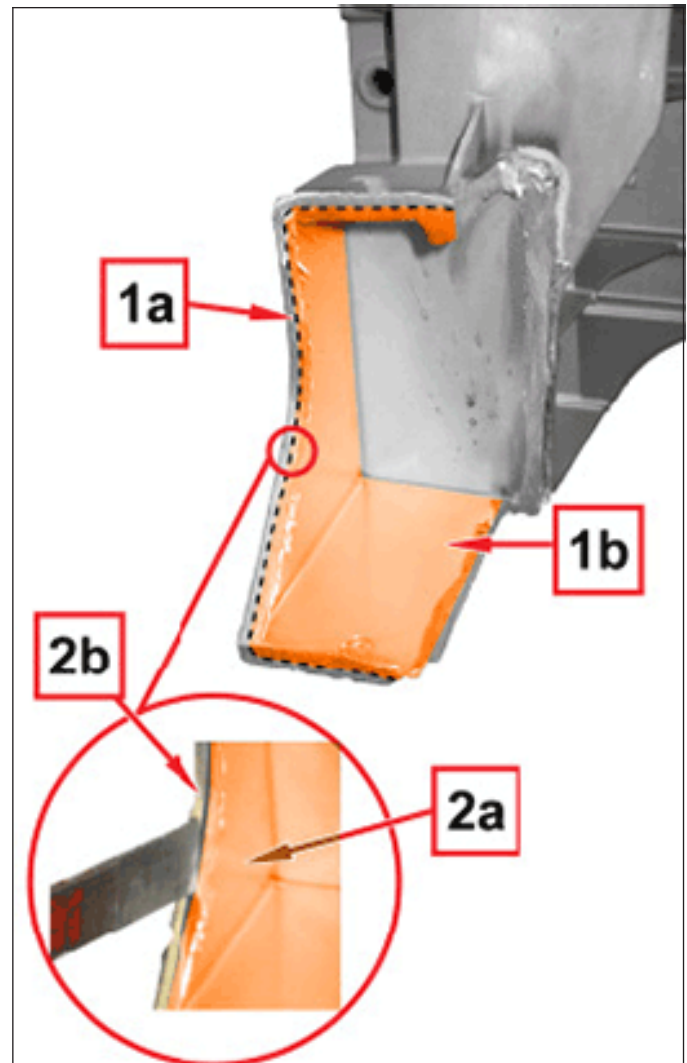
3. Use a rotary brush to clean the internal and external perimeter of the side member section still welded to the rear frame, removing any residual matter left from the previous removal of the side member exposed part.



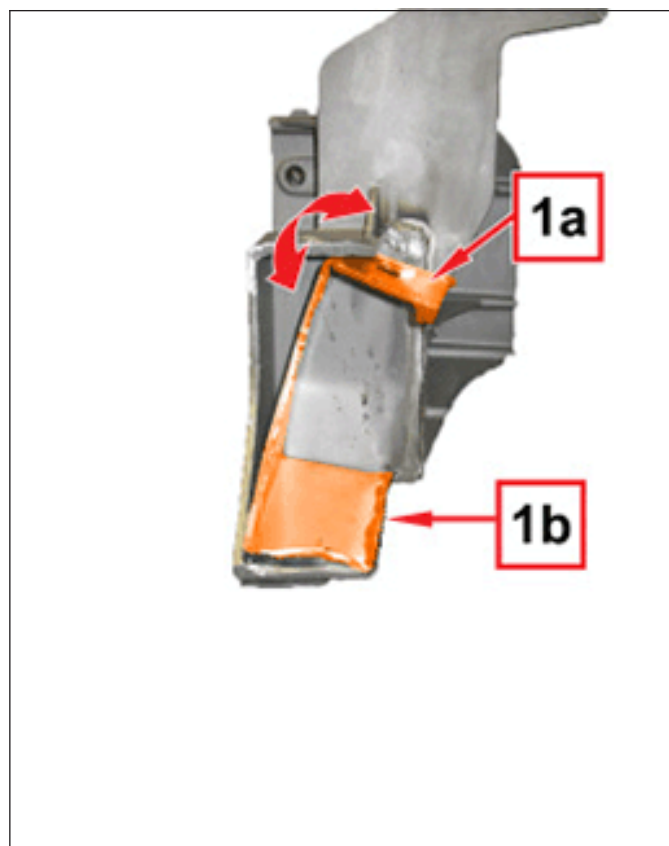
4. Using a hammer and chisel, hit along the hatched line (1a) so as to separate the side member boxed section (1b) previously removed.

NOTE:

5. The operation area for the separation of the two elements must be the boxed section (2a), in order not to damage the rear frame (2b).



6. Slightly swing the boxed section (1a), in the direction indicated by the arrows, to weaken the last section (1b) still welded to the rear frame.
7. Remove the boxed section of the side member.

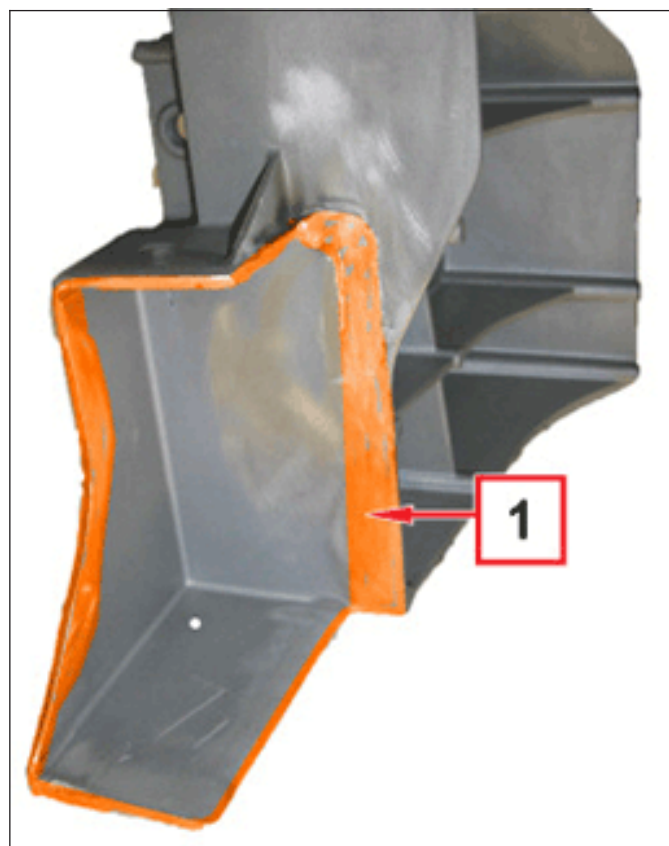


8. Use a smooth file to remove any residues of welding along the internal and external perimeter of the side member seat on the rear frame.

Installation

1. Use heptane to clean the contact areas between the NEW side member and the seat on the rear frame.
2. Position the two-component adhesive cartridge, provided with the spare part kit, inside a suitable extruder gun.

NOTE: Before applying the product, make it come out in a quantity that is sufficient to guarantee a complete mixing of the two components of the adhesive



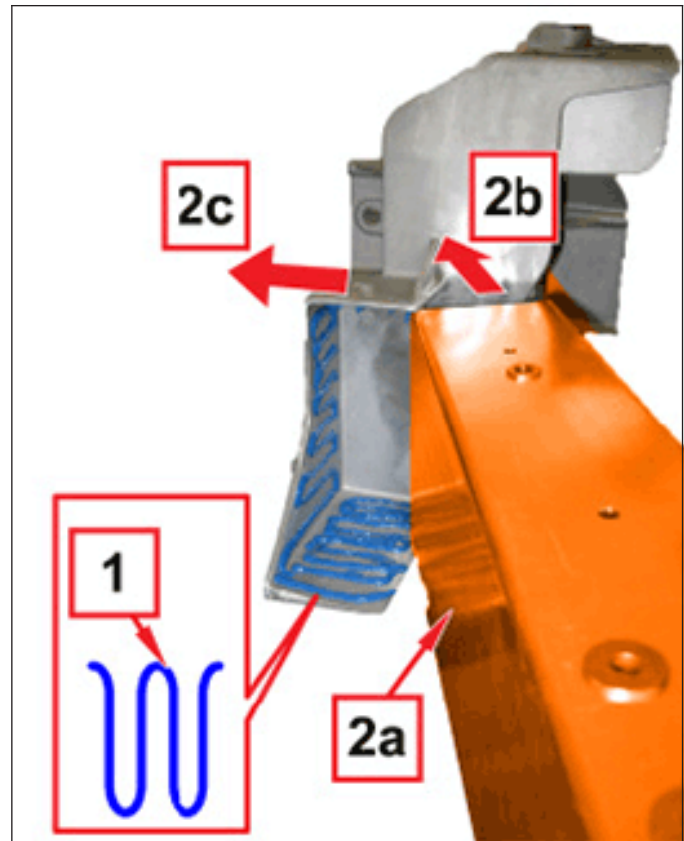
3. Apply the adhesive product on the internal sides of the side member seat on the rear frame.

NOTE: Apply the product following a wave line, as shown in figure.

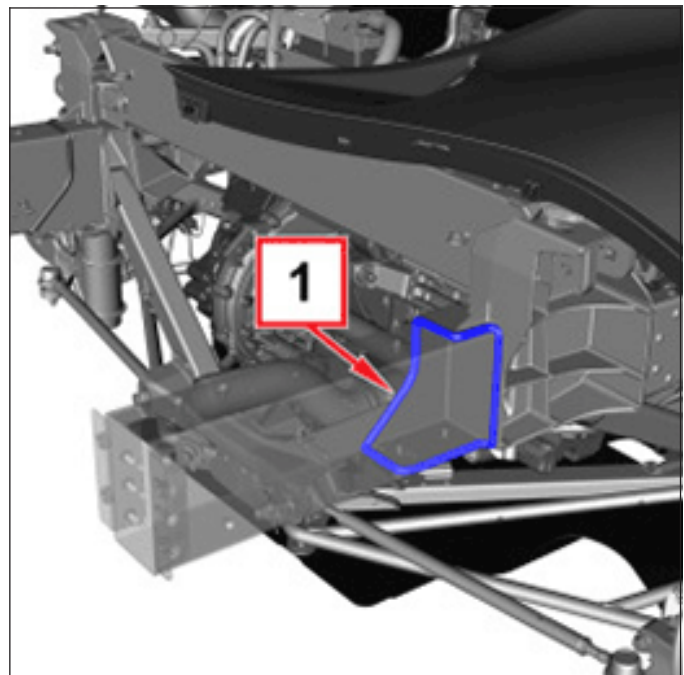
4. Position the NEW side member (2a) in its seat, inserting it first in lengthwise direction (2b) and then turning it in transverse direction (2c).

NOTE: This inserting procedure for the side member avoids dispersion of the adhesive product, thus guaranteeing a better internal distribution between the contact surfaces.

5. Check for the correct positioning of the side member in accordance with the frame dimensions and adjust as necessary (Refer to 31 - Collision Information/ Specifications/Frame Dimensions).



6. Apply the adhesive product on the external contact area of the side member with the seat on the rear frame; it will have the function of sealing bead and finishing.
7. Wait 48 hours before refitting the electrical and/or mechanical components removed previously. Failure to comply with this precaution may cause accidental movements of the side member bonded.



SHEET MOULDING COMPOUND/CARBON REPAIR AND PAINTING

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This document contains all technical and practical instructions to perform painting and repair cycles of a vehicle or vehicle components in Sheet Moulding Compound (SMC).

The operating instructions described in the chapters of this document achieve results like those on factory-produced components; they have the same quality standard if they are implemented by the operator in the right way. Repair cycle, operating techniques, tools and work means are the standard equipment that a workshop should have and know for its standard repair operations

FIAT GROUP AUTOMOBILES S.p.A Parts & Service – Technical Services Service Regulation and workshop Edition 2014

Published by: F.G.A. P&S – Technical Services Service Regulation and Workshop P.zza Cattaneo 9 – 10137 Turin – Italy

SMC repair and painting manual – in cooperation with: BASF, Glasurit and R-M

FIBERGLASS- Sheet Moulding Compound (SMC)

Sheet Moulding Compound (SMC), commonly defined fiberglass, is a thermosetting material made of fiberglass sheets, minerals, pigments and unsaturated polyester resins, recently widespread thanks to its excellent chemical-physical and mechanical characteristics.

The production technology consists of hot-shaping in coupled (male-female) steel dies. SMC is pressed at a temperature of about 150°C (302°F) and a pressure of 50-120 kg/cm² (711-1707 psi). Hot-polymerization allows a perfectly homogeneous product to be obtained at the end of the treatment.

A particular property of SMC is the possibility of changing its components as necessary, in order to obtain specific characteristics according to the application requirements. In particular, by changing orientation and the type of fiberglass it is possible to obtain significant differences in the chemical-physical characteristics of the finished product, and therefore to improve the performance required according to the various applications.

The main advantages obtained by using this material are:

- significant weight/performance ratio with respect to other materials
- high thermal and mechanical resistance
- high dielectric rigidity
- low specific weight
- optimal dimensional stability
- excellent resistance to corrosion of chemicals and atmospheric agents

In addition, the finished product has the following characteristics:

- homogeneous and smooth surface
- pleasant design
- low weight and easy transport
- easy assembly and processing
- low fitting cost
- high safety for personnel during handling of parts
- unlimited life and absolute lack of maintenance.



On Alpha Romeo the external “skin” is almost completely in fiberglass.

OPERATING CYCLES FOR NEW COMPONENT

PAINTING FROM THE PRIMER OF A NEW COMPONENT REPLACED IN SMC, TWO STAGE PAINT-

Operating cycle:

1. Washing the surface with degreasing and cleansing agent (Glasurit 700-10 or R-M 909) (*).
2. Sanding of the surface with P320.
3. Blowing and then washing with degreasing and cleansing agent (Glasurit 700-10 or R-M 909) (*).
4. Applying the 2K primer according to the methods below (type Glasurit 285-21/-50 or R-M DP200/DP20) (*).
5. Drying the 2K primer and then dry sanding with P400-P600, avoiding any excessive or total removal. Washing with a low VOC cleaner (Glasurit 700-1 or R-M 909) (*).
6. Applying a dull base coat, water/clear HS (Glasurit series 90 or R-M ONYX HD / CLEAR HS 923-209/-255 or R-M DC98/DC5335. For vehicles with dull finish, use the Glasurit Clear 923-52 (low VOC)/ 923-55 (NR) or R-M appropriate clear with SM10 matte additive. For vehicles painted with ceramic clear, use the Glasurit Clear 923-345 (*).
7. Drying in the oven at 60°C for 30-40 minutes or by IR lamps for 10-15 minutes.

NOTE: This process must not be applied to dull finish paints.


























(*) or similar products.






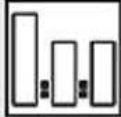





TECHNICAL INFORMATION – Cycle for new SMC parts

Specifications: Painting system for fiberglass/SMC substrates, in compliance with the VOC international laws.

Substrates: Fiberglass/SMC (painting of new components)

Washing	Glasurit® Degreasing and cleansing agent 700-10	 1x	 dry								
Sanding	 P320	Glasurit® Degreasing and cleansing agent 700-10	 1x	 dry							
Primer filler	Glasurit® Primer filler 285-21	Glasurit® Hardener HS 929 -	Glasurit® Thinner 352-	 4:1:1 Graduated rod	 HVLP 1.5-1.7 MM 10 PSI	 2-3 2-6 MILS MAX	 60°C (70°F)	 5-6 MIN 30 MIN	 P400 P600	 700-1 1x	 dry
Alternative: Glasurit® Primer filler Pro 285-50											
Dual stage basecoat	Glasurit® Enamel DS Series 90	Glasurit® Adjusting base 93-E3	 2:1 Graduated rod	 HVLP 1.2-1.5 mm 10 psi	 2 + ½	 Flashing between coats and before applying the clear until completely dull					
Clear	Glasurit® Clear HS VOC 923-209	Glasurit® Hardener VOC 929-	Glasurit® Reducer 352-	 2.1 + 10% Graduated rod	 HVLP 1.3-1.5 mm 10 psi	 2	 60°C (70°C) 30 min				
Alternative: Glasurit® Clear 923-255 Or											
Single stage topcoat	Glasurit® Urethane 2K Series 22 VOC	Glasurit® Hardener VOC 929-	Glasurit® Reducer 352-	 2.1 + 10% Graduated rod	 HVLP 1.3 mm 10 psi	 2	 60°C (70°F) 30 min				

Glasurit® Products

Preparation of the support			
	De-greasing R-M 909		Sanding P80 / P400
			De-greasing R-M 909
Primer			
	Mixing ratio	DP200 PH10 or PH20 VR Reducer	100 (vol.) 25 (vol.) 25 (vol.)
	Application	Coats: Thickness:	2-3 2 mils (6 mils max)
	Drying	At 60° C (140° F)	30 min
	IR drying	(short waves)	5-7 min
	Sanding	P400, dry, then degrease with R-M 909	
Alternative: R-M Primer DP20			
Paint			
	ONYX HD UNO HD 420	Applied according to the technical data sheets.	

R-M Products

Cycle description

PREP'ART is a system of painting cycles to repair the substrates commonly used in the automotive production.

These cycles have been developed for professional repairs demanding a high quality standard as for finish, working life and efficiency in compliance with the VOC emissions and norms.

For more details on the used products, see the relevant Technical Data Sheet.

Substrates

- Fibreglass/ SMC, new spare parts.

Required products

- R-M 909
- R-M DP200 or alternatively DP20
- R-M Paint

Damaged Area With Passing Cracks

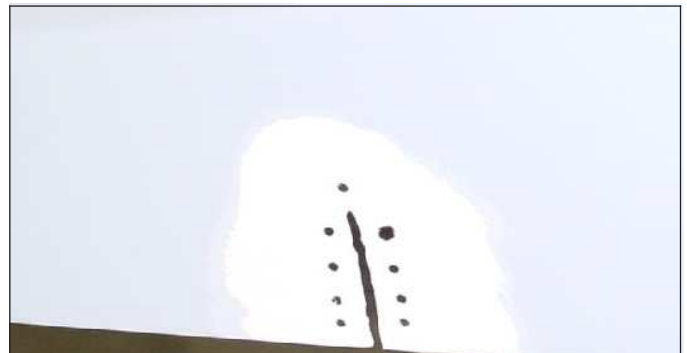
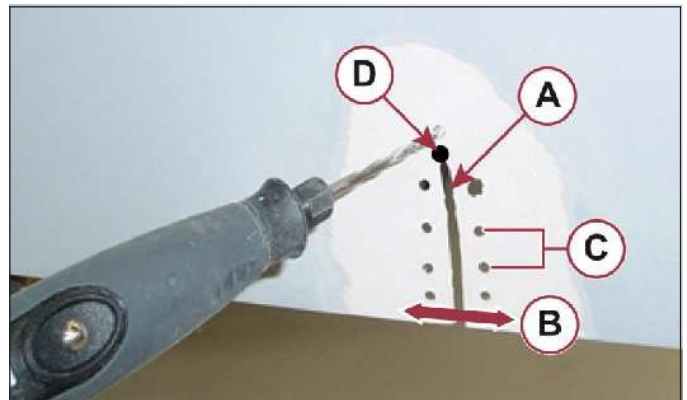
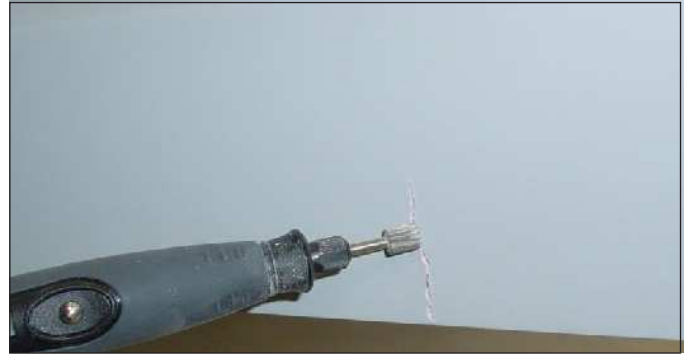
NOTE: Before proceeding the entire area of the repair must be cleaned with a thinner for plastic (Basf 541-30 or R-M 902 or RM 909 type or equivalent products). When chemicals are used it is compulsory to comply with specific safety instructions.

NOTE: All the information provided by the producer and reported in the safety sheet must be compulsorily

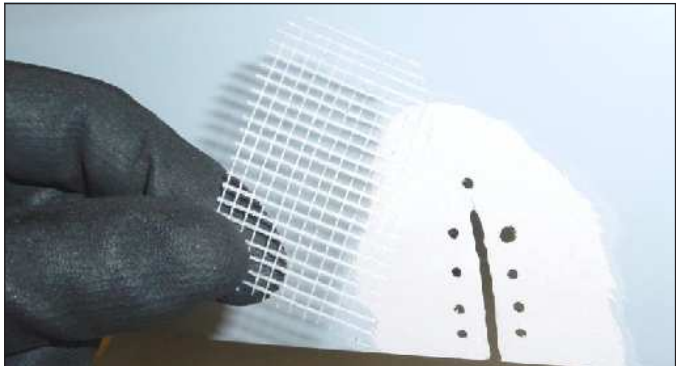
read and observed. The specified personal protective equipment must also be used.

NOTE: The crack shown in the picture is about 9 mm (0.34 in).
In addition, always check that there is the possibility to access also from the inner part, in order to assess the possibility to apply a reinforcement on both sides.

1. Use a milling wheel to produce a beveled edge along the crack area for about 1-2 mm (0.04-0.08 in), creating a "V" section.
2. Sand using a polishing machine, or by hand in the non-accessible areas, using a dry P150-grain support. Smooth for about 4-5 cm (1.6-2.0 in) from the crack, creating the seat to correctly apply the reinforcing mesh.
3. Make a series of holes using a drill bit with a maximum diameter 3.5 mm (0.14 in), at a parallel distance of 15 mm (0.6 in) from the center of the crack (A) horizontally, and about 15 mm (0.6 in) vertically (C).
4. To stop the crack a hole must be made at the end of the crack as shown in point (D). If the crack is in the central area a closing hole must be made at the two sides, in order to prevent the damage from expanding.
5. Clean the entire area of the repair with a thinner for plastic (BASF 541-30, R-M 902 or RM 909 type or equivalent products).



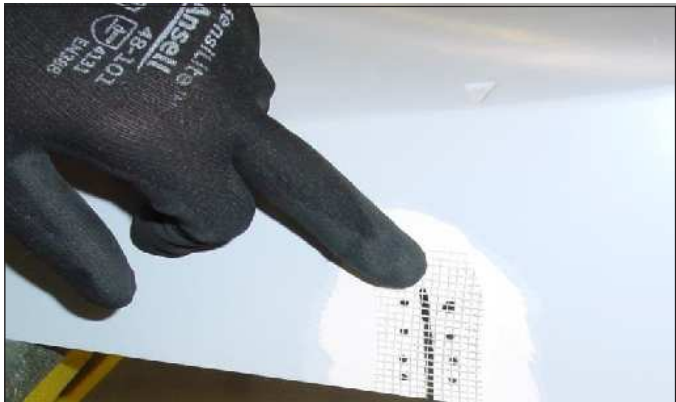
6. Prepare the plastic reinforcement patch 3M 04904 or equivalent product, suitable for the intervention area.



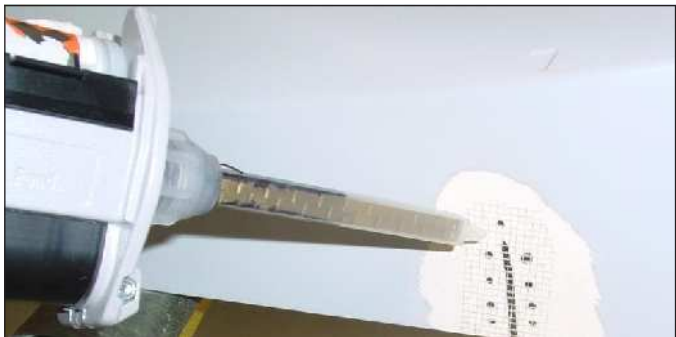
7. Apply the adhesion promoter 3M 05907 or equivalent product.



8. Position the plastic reinforcement patch cut previously.



9. Apply the double-component adhesive 3M 08115 or equivalent product.



10. When application is complete, use a squeegee to level the resin, completely filling the holes and covering the entire patch.



11. Dry the adhesive with an infrared lamp for about 10 minutes at a distance of around 70-80 cm (28-31 in) from the surface.



NOTE: Always use suitable suction devices while sanding.

12. Complete the repair by sanding with a polishing machine, or by hand in the non-accessible areas, using a dry P180-grain and P220-grain support, restoring the component profile and geometry.



OPERATING CYCLES FOR REPAIRED COMPONENT

PAINTING FROM FILLER OF A REPAIRED COMPONENT, TWO STAGE PAINTS-

Operating cycle:

1.

Washing the surface with degreasing and cleansing agent (Glasurit 700-10 or R-M 909) (*).
2.

Sanding of the damaged surface with P80-P150.
3.

Blowing and then washing with degreasing and cleansing agent (Glasurit 700-10 or R-M 909) (*).
4.

Applying the filler according to the attached systems (Glasurit 839-20) (*).
5.

Drying of the filler and then sanding with P80-P150-P240.
6.

Applying the 2K primer according to the attached methods (type Glasurit 285-21/-50 or RM DP200/DP20) (*).
7.

Drying the 2K primer and then dry sanding with P400-P600, avoiding any excessive or total removal. The, washing with a low VOC cleaner (Glasurit 700-1 or R-M 909) (*).
8.

Applying a dull base coat, water/clear HS (Glasurit series 90 or R-M ONYX HD / CLEAR HS 923-209/-255 or R-M DC98/DC5335). For vehicles with dull finish, use the Glasurit Clear 923-52/-55 or R-M appropriate clear with SM10 matte additive. For vehicles painted with ceramic clear, use the Glasurit Clear 923-345 (*).
9.

Drying in the oven at 60° C (140° F) for 30-40 minutes or by IR lamps for 10-15 minutes.

NOTE: This process must not be applied to dull finish paints.






























(*) or similar products.



TECHNICAL INFORMATION - Repair of a damaged SMC substrate


Specifications: Painting system for fiberglass/SMC substrates, in compliance with the VOC international laws.

Substrates: Fiberglass/SMC (painting to restore surface)


Washing	Glasurit® Degreasing and cleansing agent 700-10	 1x	 dry								
Filler (With fine thickness)	Glasurit® Filler Ratio 839-20	Glasurit® Red Hardener 948-36	 +2-3%	 20°C 20-30 min	 3-5 min	 P80 roughing	 P150/P240 Fine sanding	Glasurit® Cleaner 700-1	 1x	 dry	
Primer filler	Glasurit® Primer filler 285-21	Glasurit® Hardener HS 929-	Glasurit® Thinner 352-	 4:1:1 Graduated rod	 HVLP 1.5-1.7mm 10 psi	 2-3 2-6 mils max	 60°C (70°F)	 5-6 min 30 min	 P400 P600	 700-1 1x	 dry
Alternative: Glasurit® Primer filler Pro 285-270											
Dual stage basecoat	Glasurit® Enamel DS Series 90	Glasurit® Adjusting base 93-E3	 2:1 Graduated rod	 HVLP 1.2-1.5mm 10 psi	 2 + ½	 Flashing between coats and before applying the clear until completely dull					
Clear	Glasurit® Clear HS VOC 923-209	Glasurit® Hardener VOC 929-	Glasurit® Reducer 352-	 2:1 + 10% Graduated rod	 HVLP 1.3-1.5mm 10 psi	 2	 60°C (70°F) 30 min				
Alternative: Glasurit® Clear 923-255											
Single stage basecoat	Glasurit® Urethane 2K Series 22 VOC	Glasurit® Hardener VOC 929-	Glasurit® Reducer 352-	 2:1 + 10% Graduated rod	 HVLP 1.3mm 20 psi	 2	 60°C (70°F) 30 min				

Glasurit® Products


Preparation of the support



De-greasing
R-M 909




Sanding
P80 / P400



De-greasing
R-M 909


Filler



Filler

Use an appropriate filler applied according to the technical data sheets.

Primer



Mixing ratio

DP200


PH10 or PH20

VR Reducer

100 (vol.)

25 (vol.)

25 (vol.)




Application

Coats:

2-3

Thickness:


2 mils (6 mils max)



Drying

At 60° C (140°F)


30 min



IR drying

(short waves)

5-7 min




Sanding

P400, dry, then degrease with R-M 909

Alternative: R-M Primer DP20

Paint



ONYX HD

UNO HD 420

Applied according to the technical data sheets.

R-M Products

Cycle description

PREP'ART is a system of painting cycles to repair the substrates commonly used in the automotive production. These cycles have been developed for professional repairs demanding a high quality standard as for finish, working life and efficiency in compliance with the VOC emissions and norms.

For more details on the used products, see the relevant Technical Data Sheet.

Substrates

- Fibreglass and SMC of vehicles with surface damage.
- Genuine OEM finish resistant to thinners
- Automotive repair finish, well dried and resistant to thinners

Required products

- R-M 909

- R-M DP200 or alternatively DP20
- R-M Paints

CARBON Repair Procedure- Scoring of the transparent layer of paint

1. Before the intervention, thoroughly clean the area of the repair using disposable towel and a detergent with low VOC (such as BASF 700-10 or a similar product)



2. Mask the area of the intervention in order not to damage/stain the components nearby.



NOTE: It is important that during the sanding operations care is taken to not remove the transparent layer of paint completely, in order not to damage the carbon fibre.

3. Dry sand the area concerned using P800 abrasive paper
 4. Sanding must be carried out gradually, alternating it with cleaning operations to remove the residues of transparent paint and then checking that the scoring has disappeared.
 5. Complete dry sanding using P1500 abrasive paper, in order to remove any scratching caused by the previous use of P800 abrasive paper.
-
6. When sanding is complete, remove the masking and clean the area with compressed air.
 7. Clean the area of the repair using disposable paper and a detergent with low VOC (such as BASF 700-10 or an equivalent product).



8. Mask again the area of the intervention in order not to stain the components nearby during the painting operations.



9. Apply the dual component transparent layer of clear coat with an initial lighter coat, let it dry and then apply a second coat to finish.

The following AkzoNobel components are recommended for the intervention-

- Clearcoat AT373 (order code 484362, lot code- 49314)
- Activator 49313 (order code- 484300)

It is recommended to use the above mentioned or equivalent products.

When chemicals are used it is compulsory to comply with specific safety instructions.

It is mandatory to carefully follow all the safety instructions given by the manufacturer.

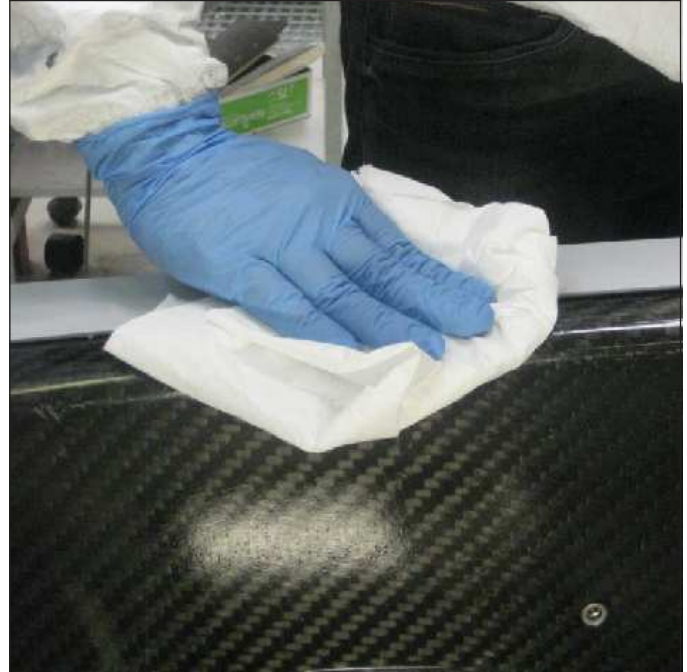


Cissing/Dirt Carbon Fiber Repair

NOTE: The repair operation regarding cissing (holes on the transparent layer of paint) and/or dirt (excess

of foreign bodies on the transparent layer of paint) is the same.

1. Before the intervention, thoroughly clean the area of the repair using disposable paper and a detergent with low VOC (such as BASF 700-10 or a similar product).



2. Mask the area of the intervention in order not to damage/stain the components nearby.



NOTE: It is important that during the sanding operations care is taken not to remove the transparent layer of paint completely, in order not to damage the carbon fiber.

3. Dry sand with abrasive paper, complying with the granulometric sequence listed below:
 - a. P1500 dry sanding abrasive paper
 - b. P2000 dry sanding abrasive paperSanding is made by passing a rubber pad on the damaged area with oval movements. Sanding must be carried out gradually, alternating it with cleaning operations to remove the residues of clear coat and then checking that the damage has disappeared.
4. When dry sanding is complete, carry out a water sanding/polishing, using the 3M TRIZAC system, complying with the granulometric sequence listed below:
 - a. P3000
 - b. P6000



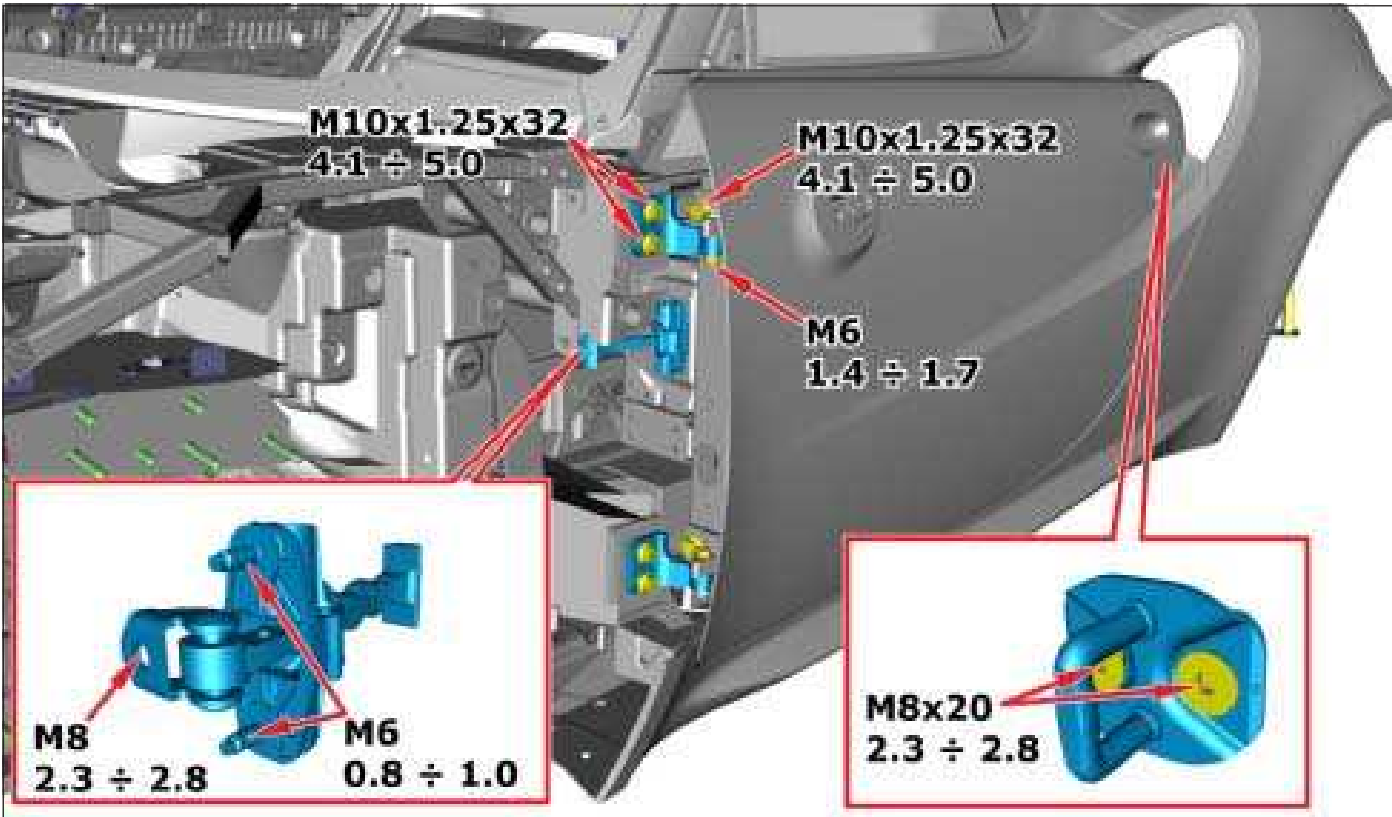
NOTE: It is important during the polishing operations to let the treated area dry up, in order not to opacify the transparent layer of paint.

5. Complete the operations by polishing with polishing paste, using a microfiber cloth.

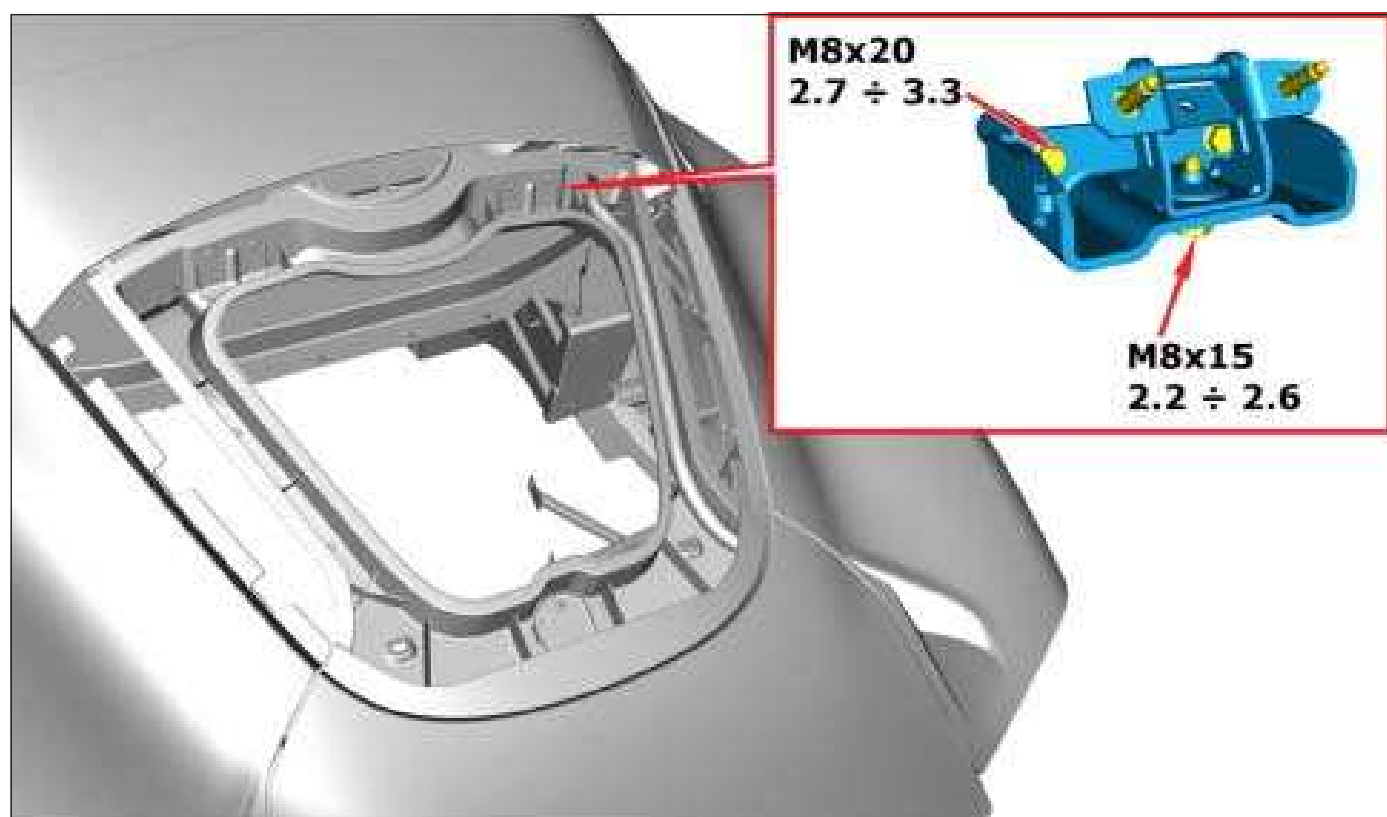


Specifications

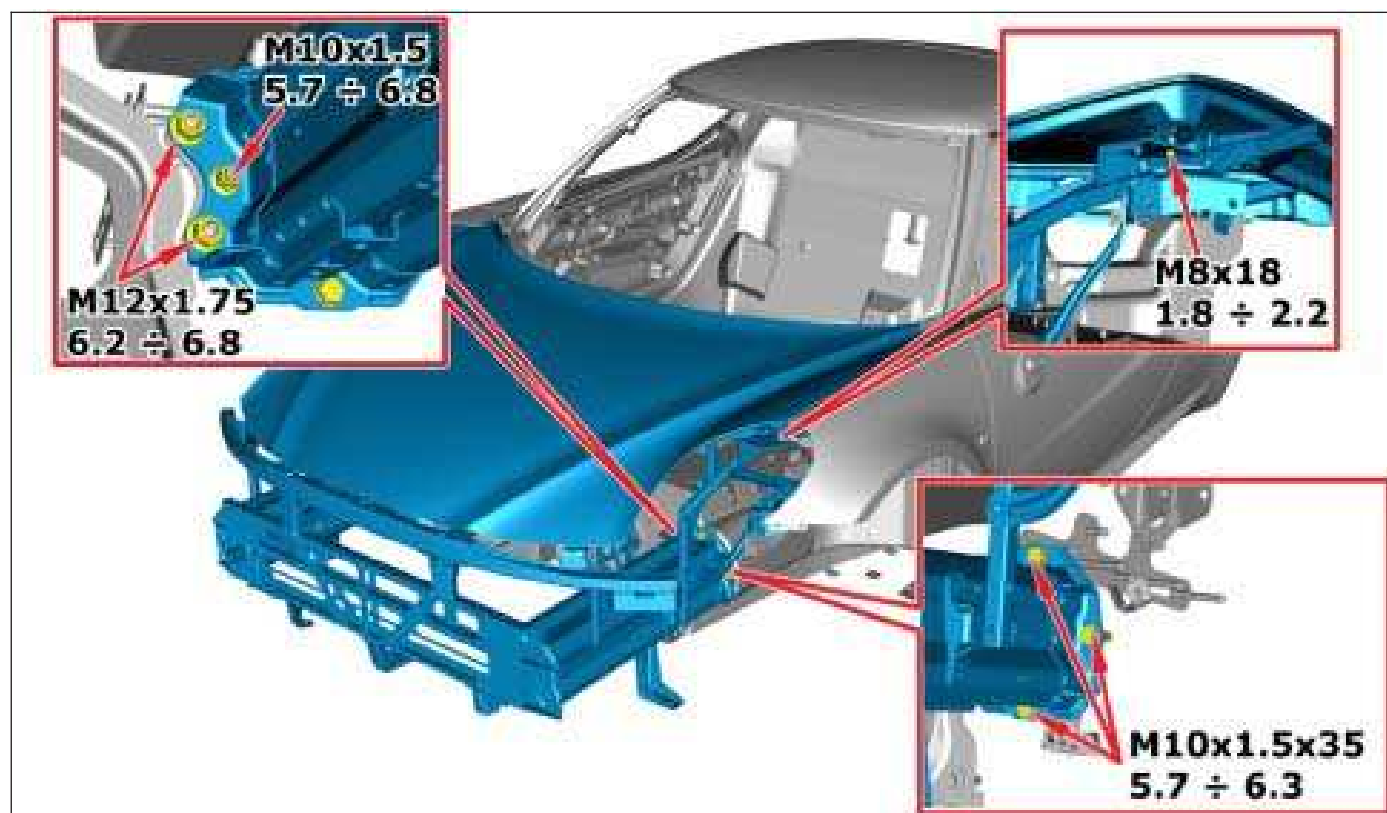
FASTENER TORQUE

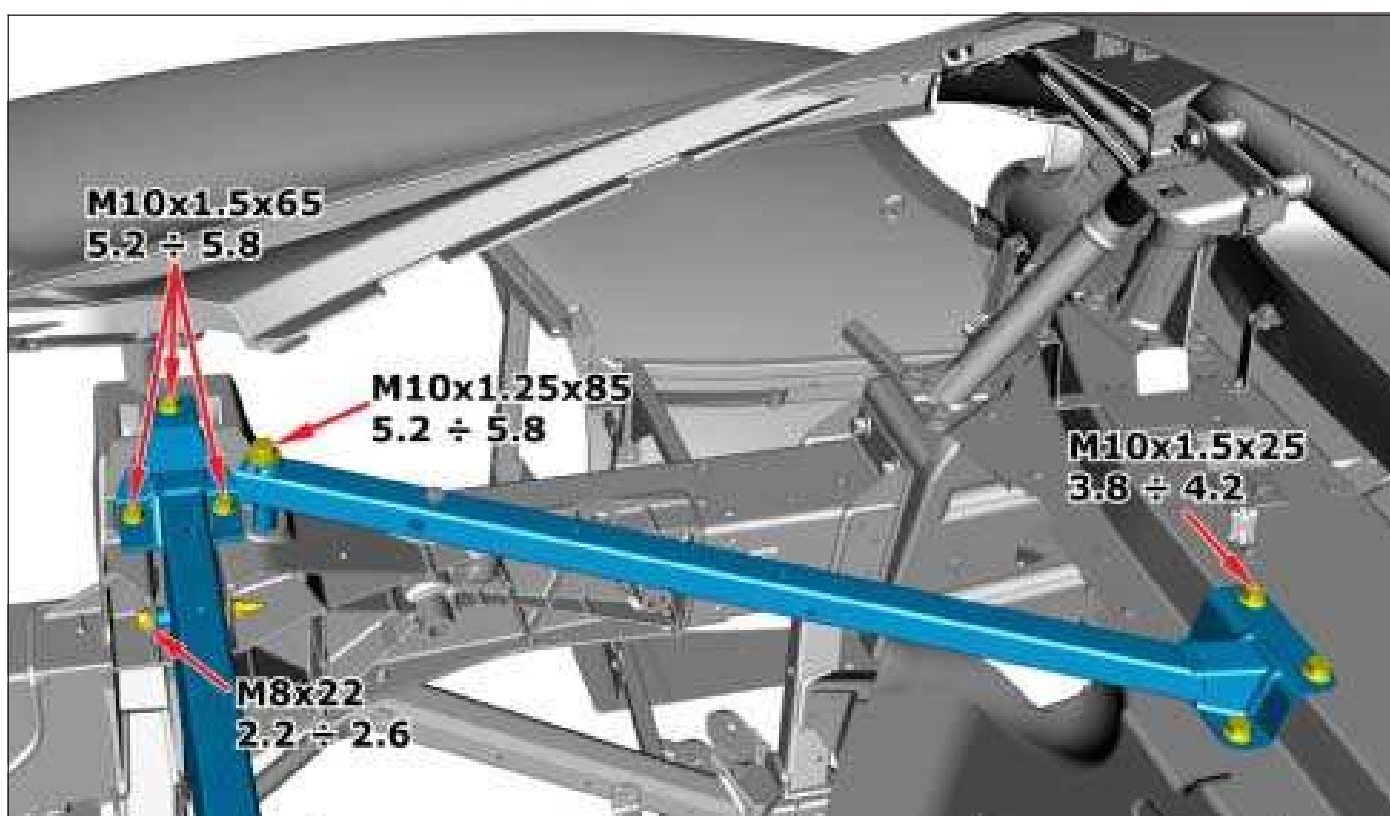
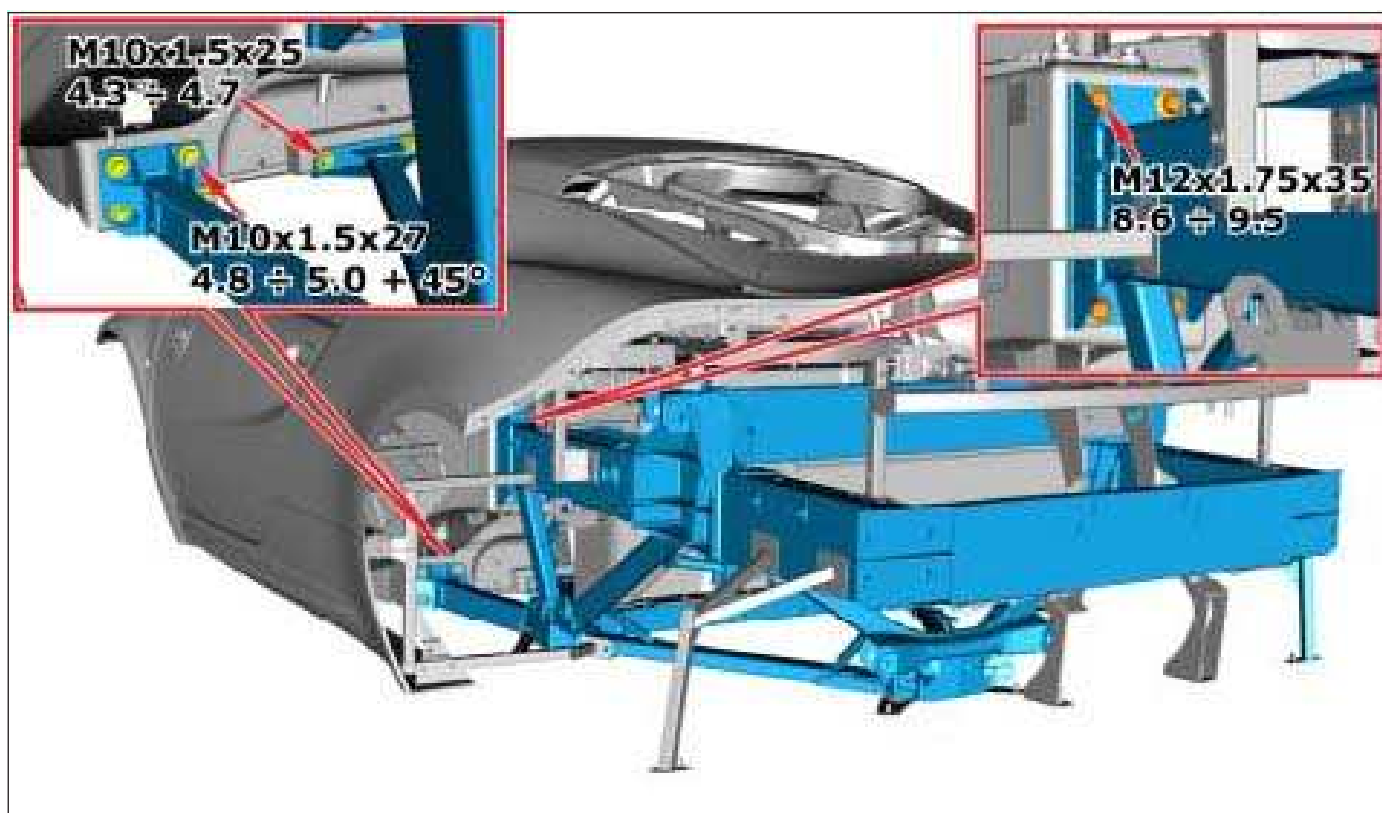


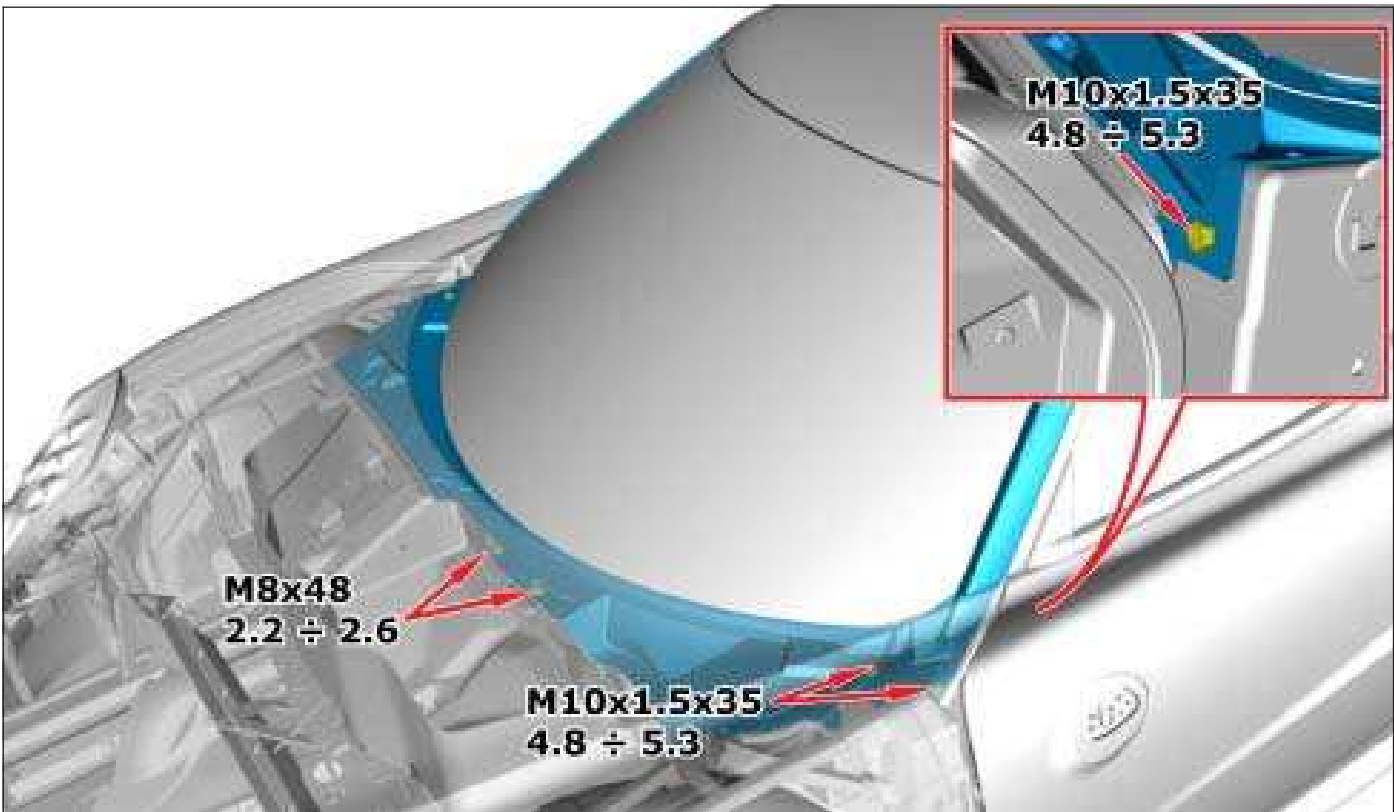
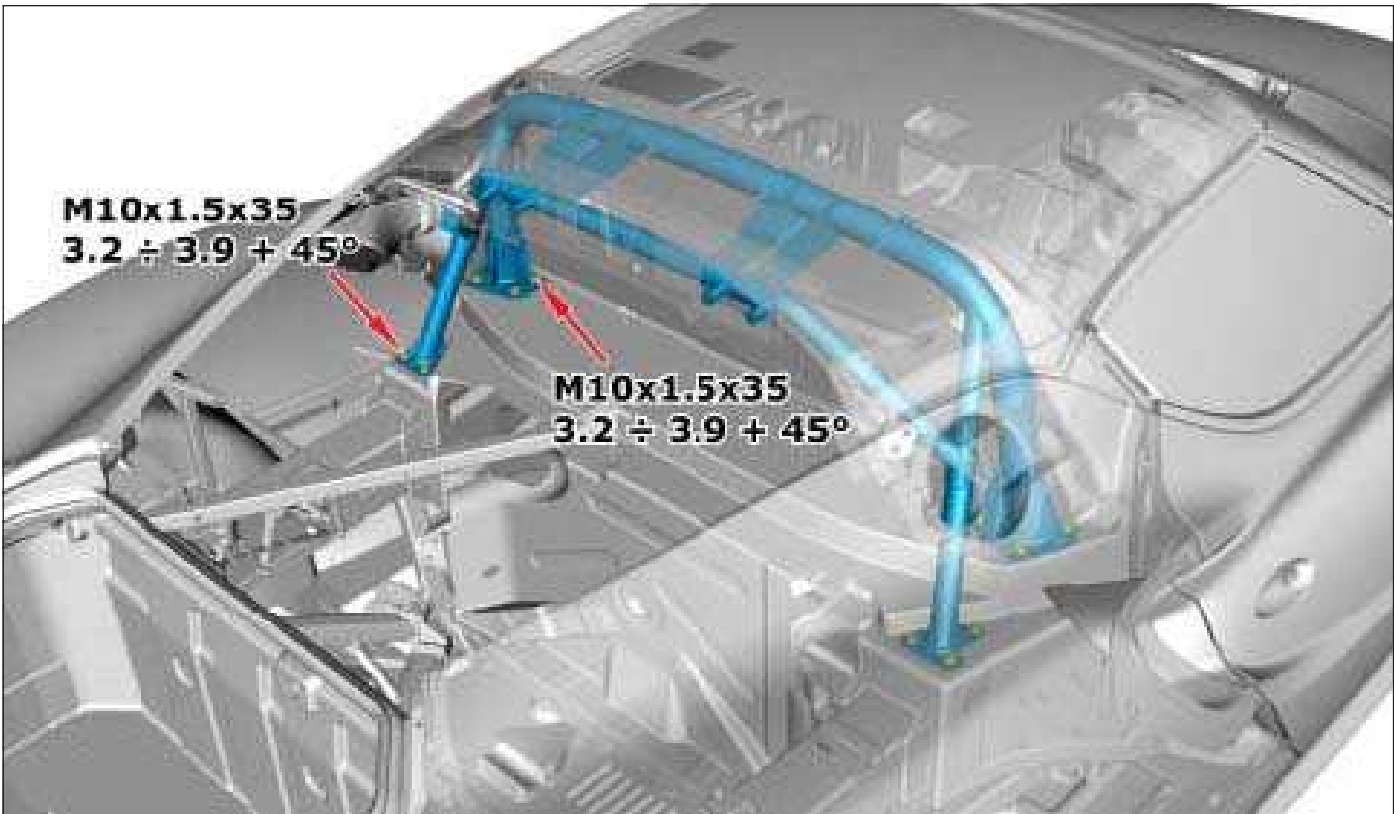
Component	Mounting	Size	Value (N·m)
Door check strap (body side)	Screw	M8	23 ÷ 28
Door check strap (door side)	Nut	M6	08 ÷ 10
Door hinge (door side)	Screw	M10x1.25x32	41 ÷ 50
Door hinge (body side)	Screw	M10x1.25x32	41 ÷ 50
Connection between front door fixed/moving hinges	Screw	M6	14 ÷ 17
Door lock striker	Screw	M8x20	23 ÷ 28



Component	Mounting	Size	Value (N·m)
Fixed liftgate hinge	Screw	M8x20	27 ÷ 33
Connection between liftgate fixed/moving hinges	Screw	M8x15	22 ÷ 26



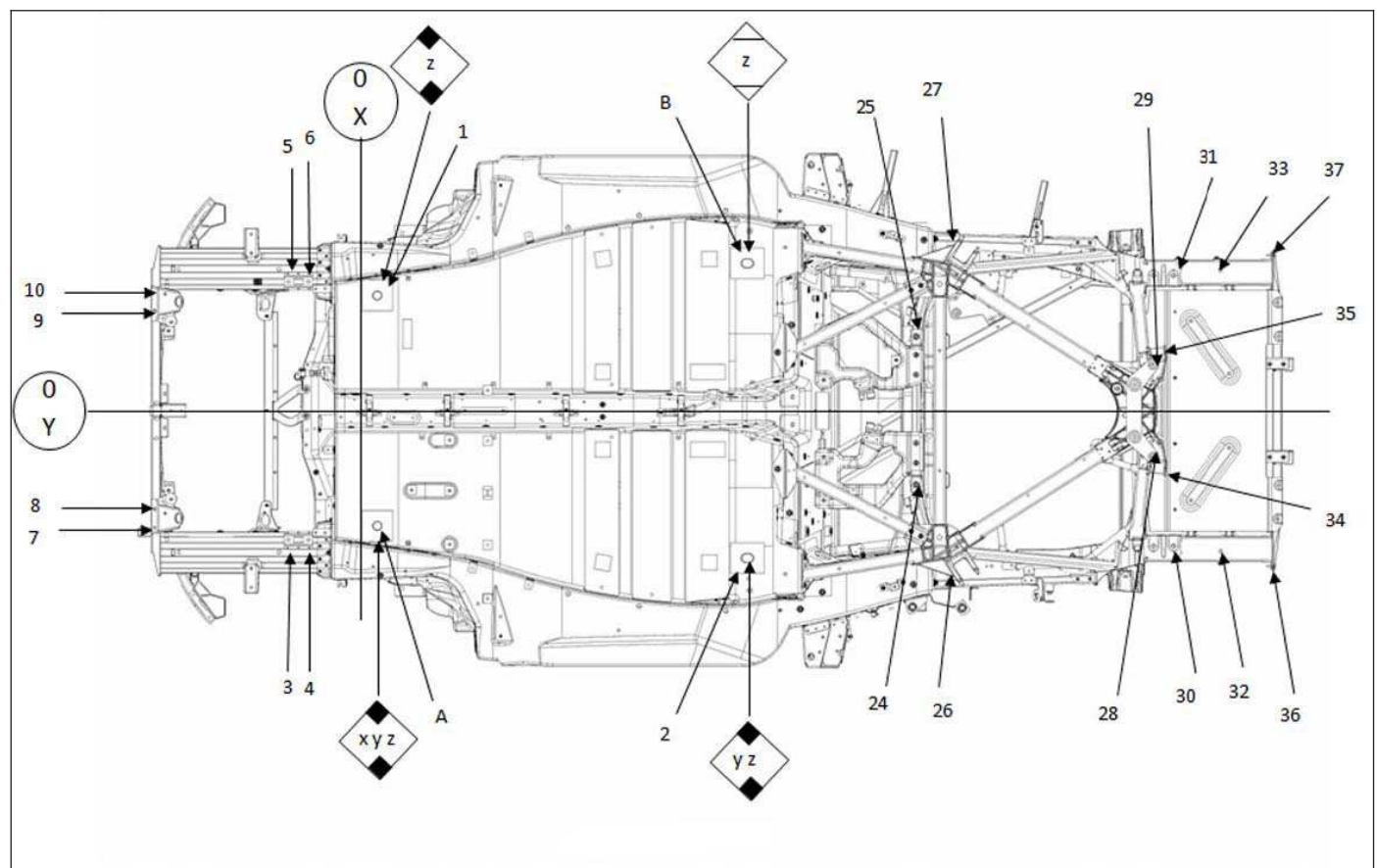




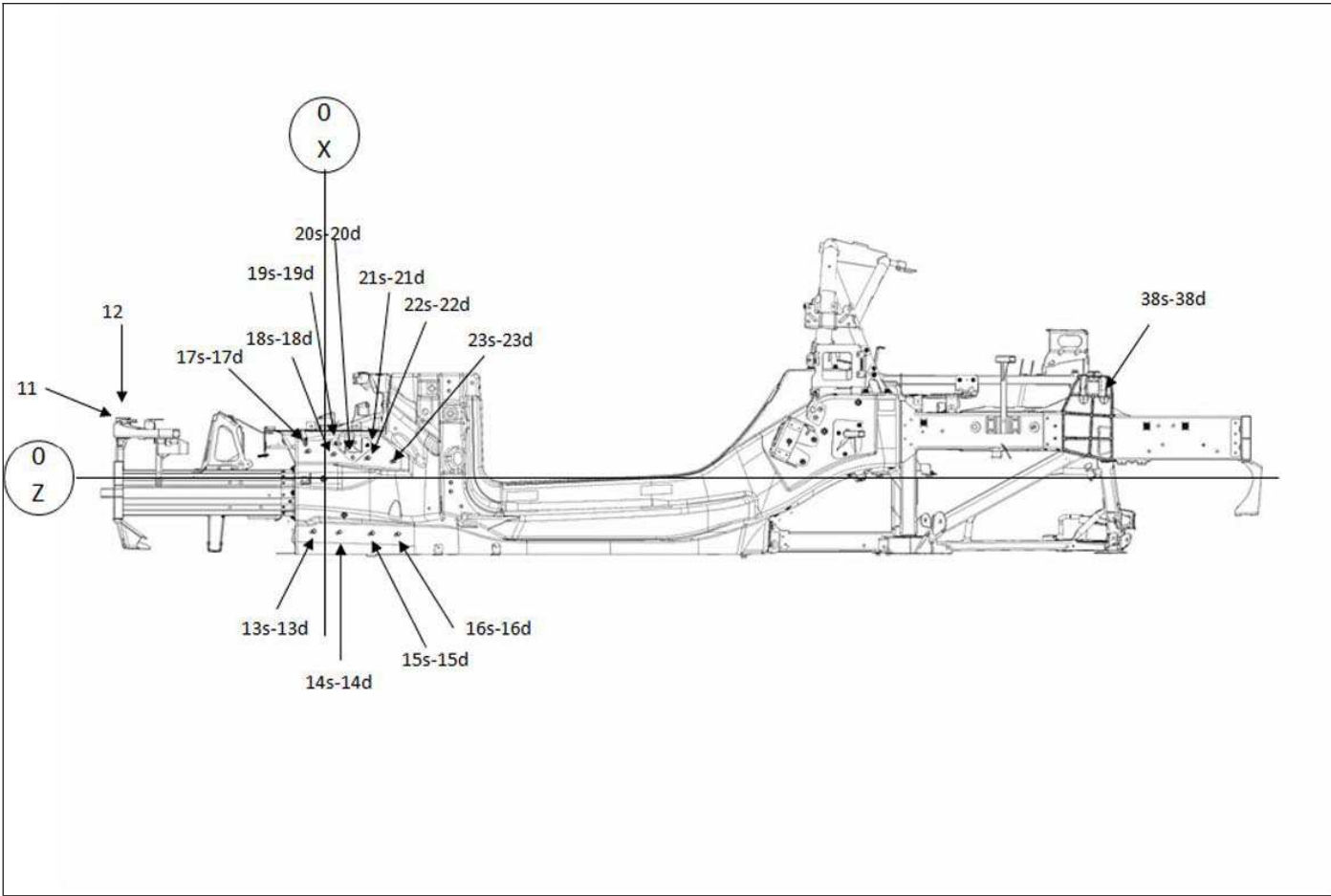
Component	Mounting	Size	Value (N.m)
ABS control unit bracket	Screw	M8x14	23 ÷ 28
Anti-roll bar	Screw	M8x1.25x35	23 ÷ 28

Component	Mounting	Size	Value (N·m)
Front and rear left side hydraulic brake system pipes (on ABS control unit)	Connector	M10x1	14 ÷ 18
Front chassis assembly	Screw	M10x1.5x35	57 ÷ 63
Front chassis assembly	Nut	M10x1.5x35	57 ÷ 68
Front chassis assembly	Nut	M12x1.75	62 ÷ 68
Front chassis assembly	Screw	M10x1.5x35	57 ÷ 63
Rear bumper rear mounting	Screw		
Rear chassis (lower fastening)	Screw	M10x1.5x27	48 ÷ 50 + 45°
Rear chassis (upper fastening)	Screw	M12x1.75x35	86 ÷ 95
Rear exhaust silencer mounting bracket	Screw	M8x25	23 ÷ 29
Rear exhaust silencer mounting bracket	Screw	M8x25	23 ÷ 29
Rear frame	Screw	M10	52 ÷ 58
Rear turret crossmember	Screw	M8X22	2.2 ÷ 26
Rear turret crossmember	Screw	M10x1.5x65	52 ÷ 58
Roll-bar (on carbon monocoque)	Screw	M10x1.5x35	3.2 ÷ 3.9 + 45°
Shock absorber (upper fastening)	Nut	M14x2	171 ÷ 189
Side brace to carbon monocoque	Screw	M10x1.5x25	38 ÷ 42
Side brace to engine attachment casting	Screw	M10x1.25x85	52 ÷ 58
Steering box	Nut	M12x1.75x105	67 ÷ 74
Track control arm (on steering knuckle)	Nut (to be replaced)	M14x1.5	61 ÷ 75
Track control arm (on steering knuckle)	Nut (to be replaced)	M14x1.5	61 ÷ 75
Windscreen frame	Screw	M8x48	22 ÷ 26
Windscreen frame	Screw	M10x1.25x35	48 ÷ 53
Wishbone (front fastening)	Nut	M14x2	152 ÷ 168
Wishbone (rear fastening)	Nut	M12x1.75	86 ÷ 95

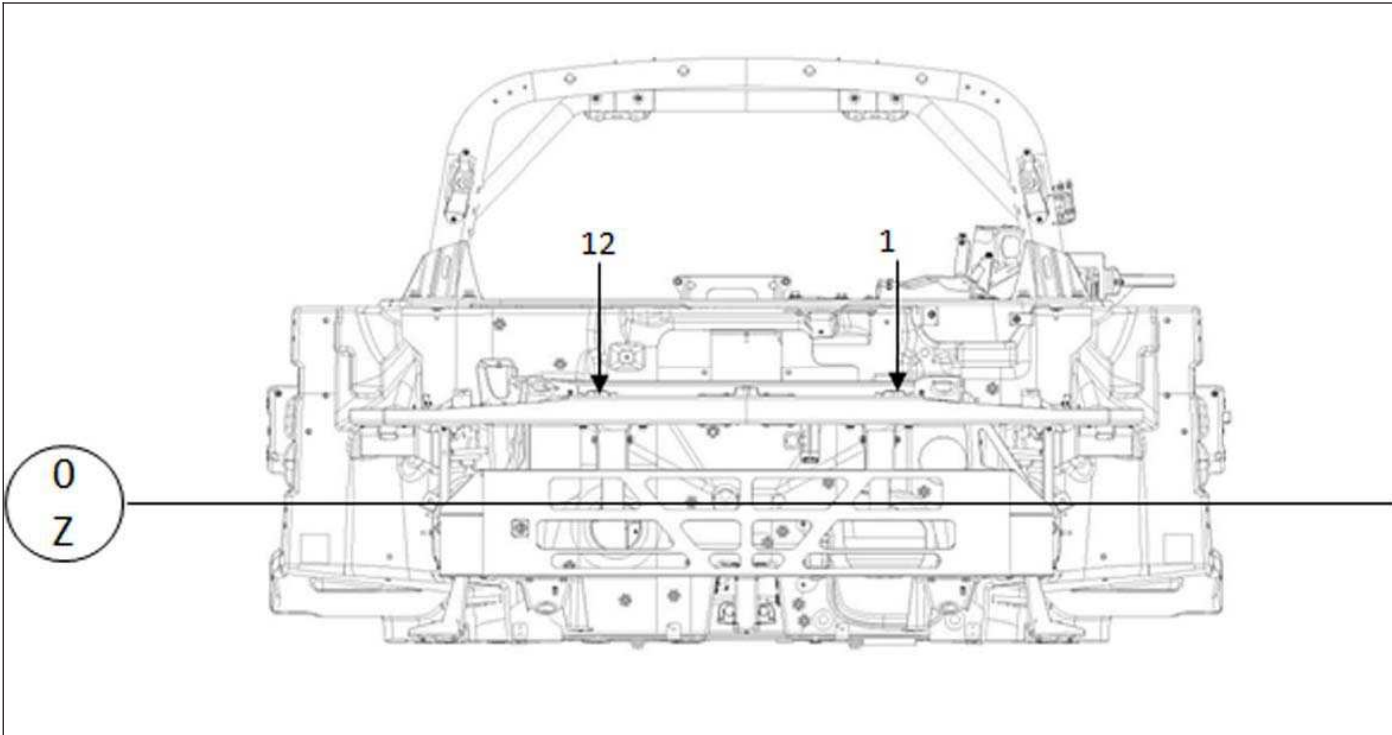
FRAME DIMENSIONS



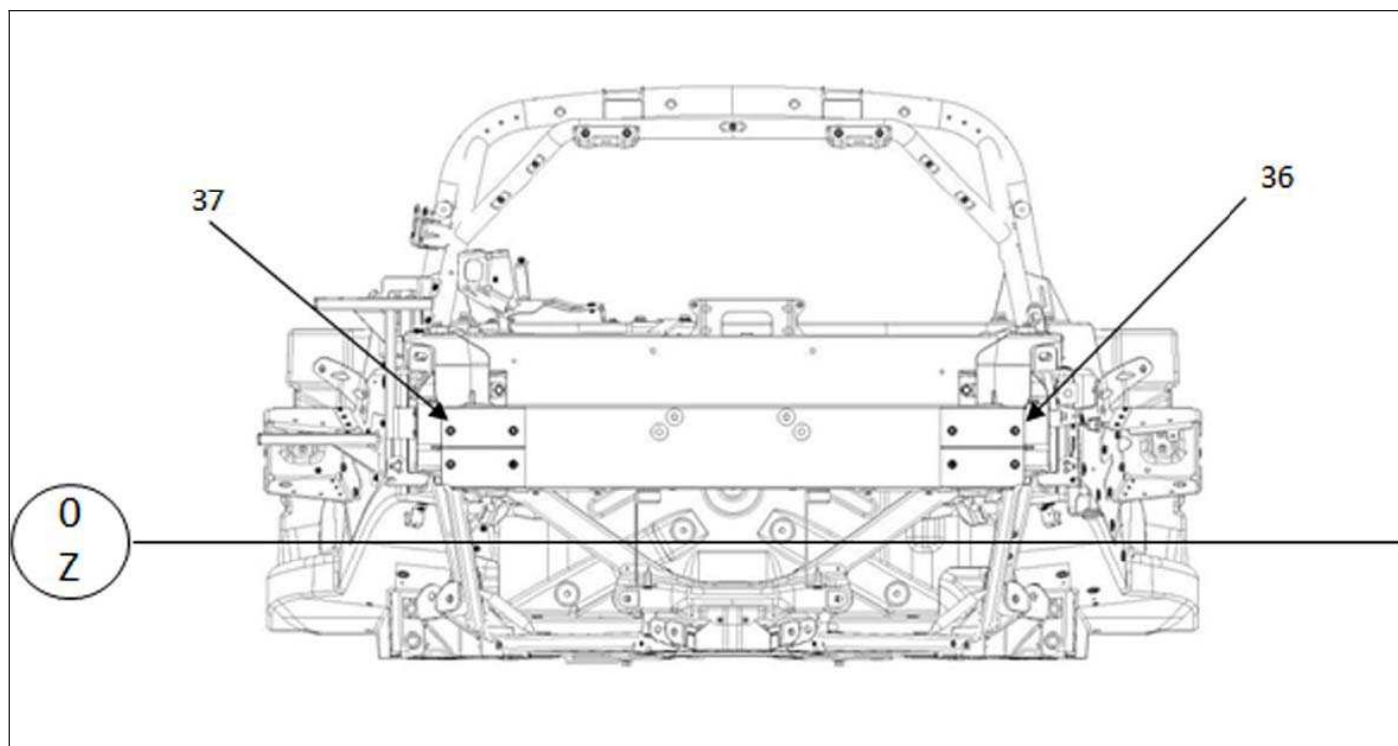
Underbody view



Side view



Front view



Rear view

Typical Bodywork Measurements

DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
A	Main point	50	375	-231.5	0	0	0	-1210	855	0
B	Auxiliary point	1260	-480	-221.5	1210	-855	0	0	0	0
1	Main point	50	-375	-231.5	0	-745	0	1210	105	0
2	Main point	1260	480	-221.5	1210	105	0	0	960	0
3	RH anti-roll bar fastening	-239.5	420	-117	-290	45	104.5	-1499.5	900	104.5
4	RH anti-roll bar fastening	-174.4	420	-117	-224.5	45	104.5	-1434.5	900	104.5
5	LH anti-roll bar fastening	-239.5	-420	-116.3	-290	-795	104.5	-1499.5	60	104.5

DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
6	LH anti-roll bar fastening	-174.4	-420	-116.3	-224.5	-795	104.5	-1434.5	60	104.5
7	RH radiator bracket fastening	-679.5	380	-118.4	-729.5	5	103	-1939.5	860	103
8	RH radiator bracket fastening	-679.5	320	-118.4	-729.5	-55	103	-1939.5	800	103
9	LH radiator bracket fastening	-679.5	-325	-118.4	-729.5	-700	103	-1939.5	155	103
10	LH radiator bracket fastening	-679.5	-385	-118.4	-729.5	-760	103	-1939.5	95	103
11	LH bumper bracket fastening	-634.1	-260	209.1	-684	-635	430.5	-1894	220	430.5
12	RH bumper bracket fastening	-634.1	260	209.1	-684	-115	430.5	-1894	734	430.5
13s	LH lower arm mounting stud	-47.6	-496.5	-160.4	-96.8	-871	54.5	-1306.8	16	54.5
13d	RH lower arm mounting stud	-47.6	496.5	-160.4	-96.8	121.4	54.5	-1306.8	976.4	54.5
14s	LH lower arm mounting stud	36.6	-508.2	-163.1	-15.5	-883	53.8	-1222.5	-28	53.8

DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
14d	RH lower arm mounting stud	36.6	508.2	-163.1	-15.5	133.2	53.8	-1222.5	988.2	53.8
15s	LH lower arm mounting stud	141.7	-522.9	-166.5	92.5	-898	53	-1117.5	-43	53
15d	RH lower arm mounting stud	141.7	522.9	-166.5	92.5	148	53	-1117.5	1003	53
16s	LH lower arm mounting stud	225.9	-534.6	-169.3	176.7	-909.7	52.1	-1033.3	-54.7	52.1
16d	RH lower arm mounting stud	225.9	534.6	-169.3	176.7	160	52.1	1033.3	1015	52.1
17s	LH upper arm mounting stud	-64.2	-516.1	99.5	-114.2	-891.2	321	-1324.2	-36.3	321
17d	RH upper arm mounting stud	-64.2	516.1	99.5	-114.2	141.2	321	-1324.2	996.3	321
18s	LH upper arm mounting stud	19.5	-527.3	89.8	-30.5	-902.5	311.2	-1240.5	-47.5	311.2
18d	RH upper arm mounting stud	19.5	527.3	89.8	-30.5	152.5	311.2	-1240.5	-1007.5	311.2
19s	LH shock absorber bracket mounting stud	30.6	-496	130.3	-19.4	-871.1	352	-1229.4	-16.1	351.7

DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
19d	RH shock absorber bracket mounting stud	30.6	496	130.3	-19.4	-121.1	352	-1229.4	976.1	351.7
20s	LH shock absorber bracket mounting stud	86.3	-500.8	81.5	36.3	-876	303	-1173.7	-21	303
20d	RH shock absorber bracket mounting stud	86.3	500.8	81.5	36.3	126	303	-1173.7	981	303
21s	LH shock absorber bracket mounting stud	133	-510	123.3	83	-887	345	-1127	-30.2	344.8
21d	RH shock absorber bracket mounting stud	133	510	123.3	83	135.2	345	-1127	990.2	344.8
22s	LH upper arm mounting stud	128.8	-524	77	78.8	-917.2	298.5	-1131.2	-62.2	298.5
22d	RH upper arm mounting stud	128.8	524	77	78.8	167.2	298.5	-1131.2	1022.2	298.5
23s	upper arm mounting stud	212.5	-553.2	67.3	162.5	-928.5	289	-1047.5	-73.4	288.7
23d	upper arm mounting stud	212.5	553.2	67.3	162.5	178.5	289	-1047.5	1033.4	288.7
24	RH tank strap fastening	1813.5	240.5	45.3	1763.5	-134.5	266.8	553.6	720.5	266.8

DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
25	RH tank strap fastening	1813.5	-240.5	45.3	1763.5	-616.2	266.8	553.6	238.7	266.8
26	RH arm fastening	1954	539.1	-120.5	1904	164.1	101	694	1019.1	101
27	LH arm fastening	1954	-539.1	-120.5	1904	-914.1	101	694	-59.1	101
28	RH arm fastening	2602.4	107.4	-183.8	2514	-242	41.4	1342.4	587.4	37.5
29	LH arm fastening	2602.4	-107.4	-183.8	2514	-508	41.4	1342.4	372.6	37.5
30	Rear RH bar fastening (opt)	2652.7	440	60	2575	-186.5	96.5	1392.7	920	281.5
31	Rear RH bar fastening (opt)	2652.7	-440	60	2575	-563.5	96.5	1392.7	34	281.5
32	Rear LH bar fastening (opt)	2811	458	74.3	2761	83	297.4	1551	938	297.3
33	RH exhaust mounting fastening	2811	-458	74.3	2761	-833	297.4	1551	22	297.3
34	RH rod fastening	2623.5	188.3	-125	2603	65	281.5	1365	668.5	96.5
35	LH rod fastening	2623.5	-188.3	-125	2603	-815	281.5	1365	291.5	96.5
36	Rear RH cross member mounting	2979	506	117	2929	-881	398.5	1719	986	398.5
37	Rear LH cross member mounting	2979	-506	117	2929	131	398.5	1719	-26	398.5

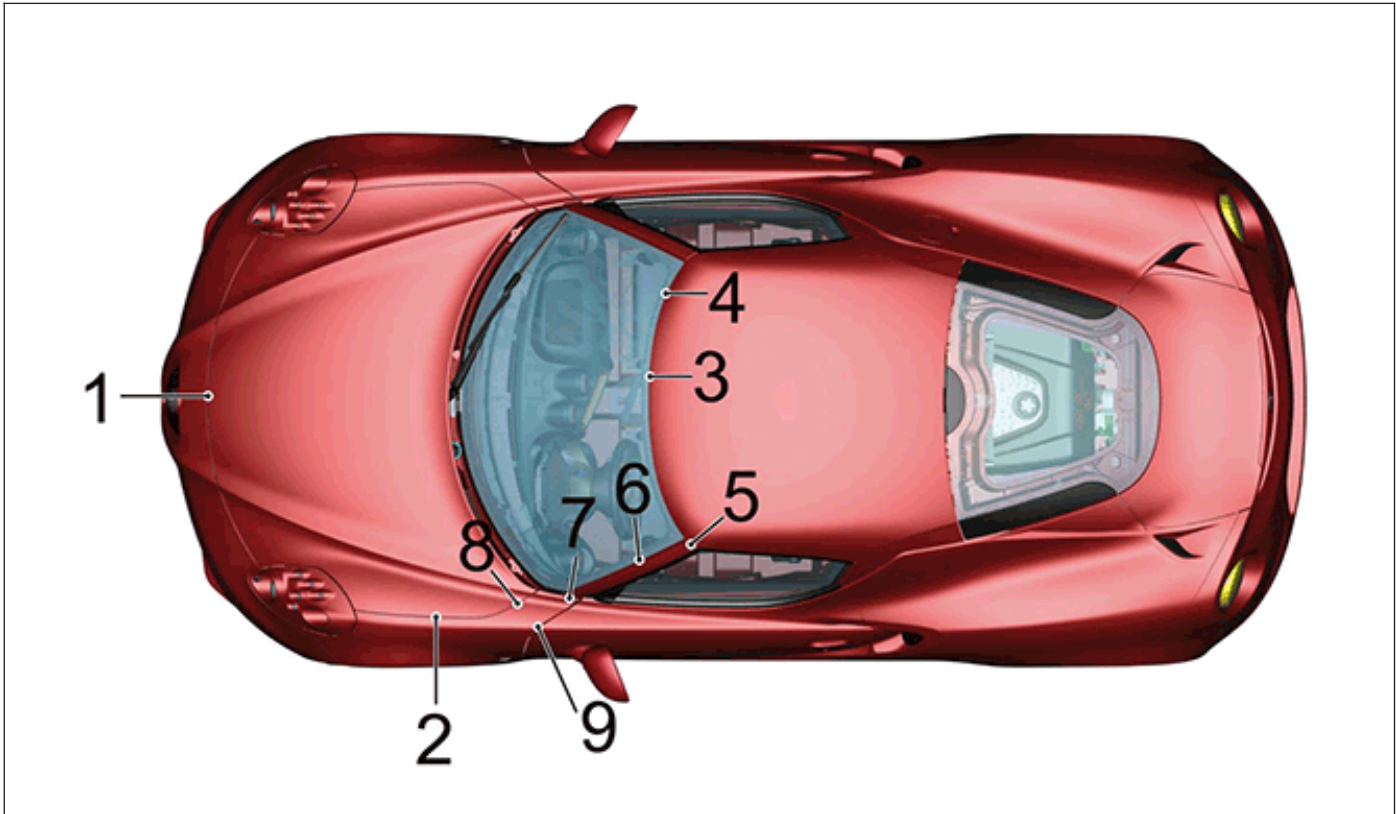
DESCRIPTION		GRID			PRIMARY (A)			AUXILIARY		
		AXIS			AXIS			AXIS		
		X	Y	Z	X	Y	Z	X	Y	Z
38s	LH shock absorber mounting	2522.5	-559.3	310	2472.5	-934.3	531.2	1262.5	-79.3	531.2
38d	RH shock absorber mounting	2522.5	559.3	310	2472.5	-184.3	531.2	1262.5	1039.3	531.2

GAP AND FLUSH DIMENSIONS

Measurements for the adjustments of the moving parts.

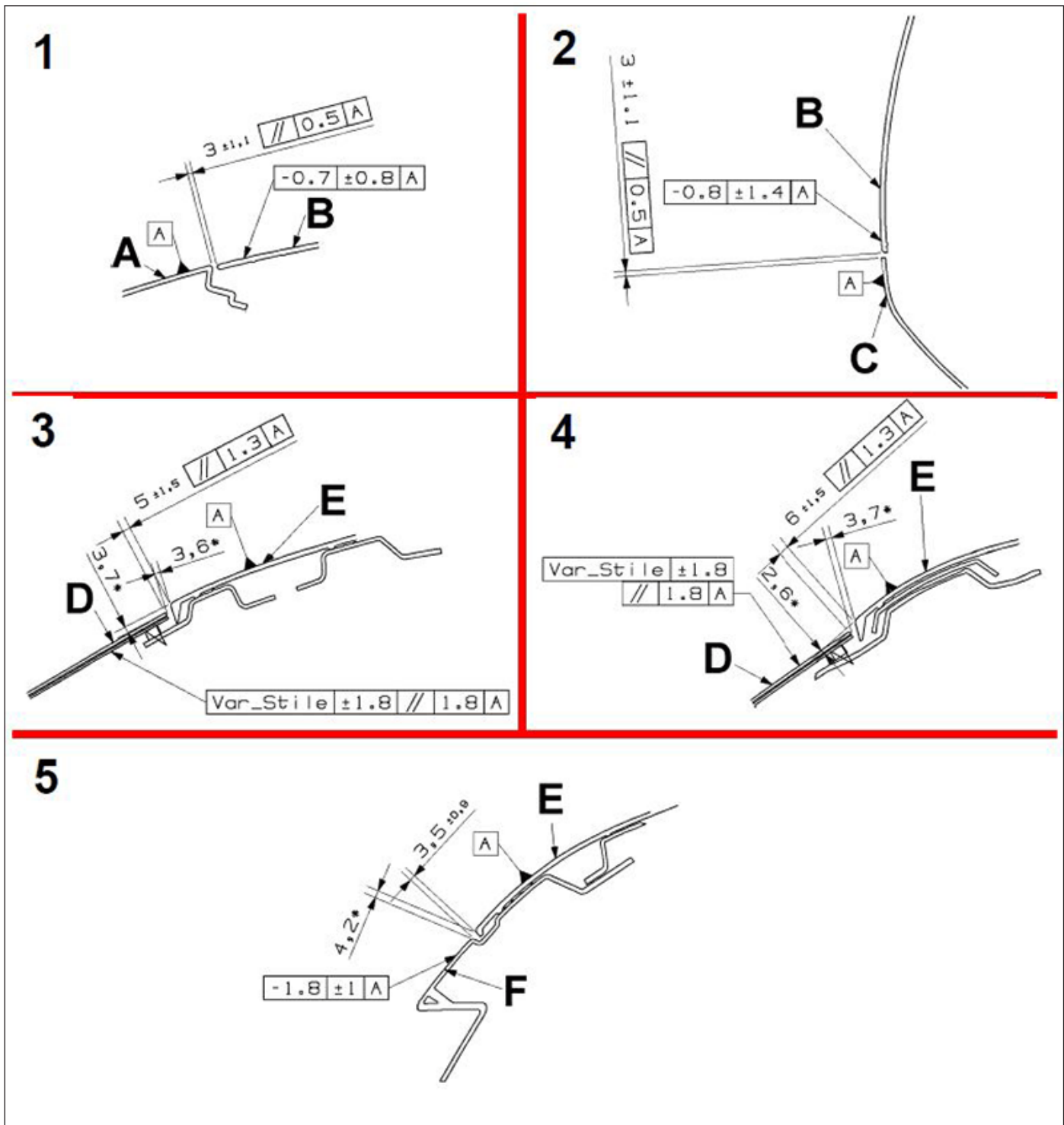
To facilitate and verify moving parts disassembly operations, the existing gaps are shown (in millimeters) to allow appropriate adjustment.

The adjustment procedure is explained in the sections describing moving part removal and installation procedures.



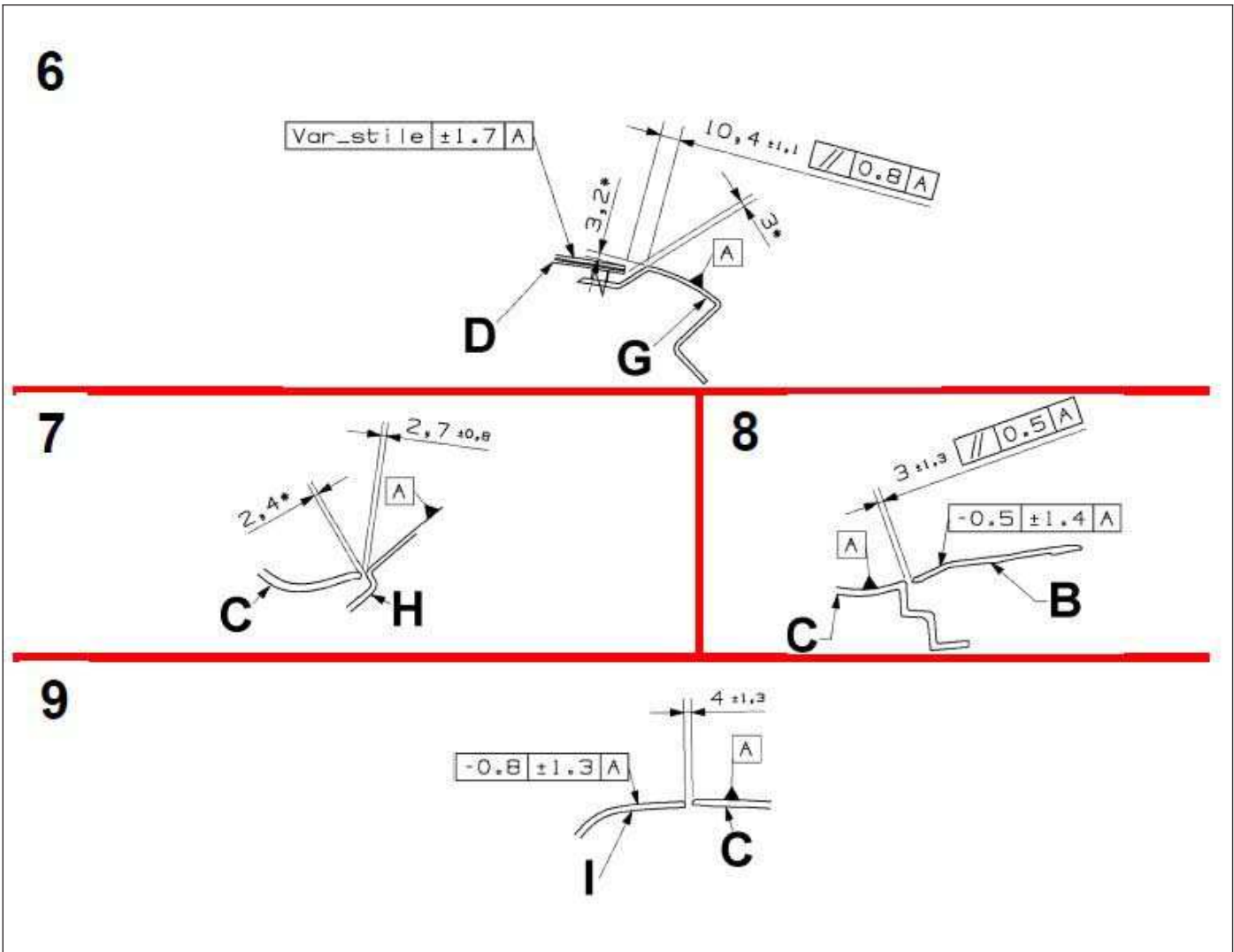
Plan view (front area)

- 1: Front fascia – Hood
- 2: Hood – Front fender
- 3–4: Windshield – Roof
- 5: A-pillar – Roof
- 6: Windshield – Windshield housing outer edge
- 7: Front fender – A-pillar
- 8: Front fender – Hood
- 9: Door outer edge – Front fender



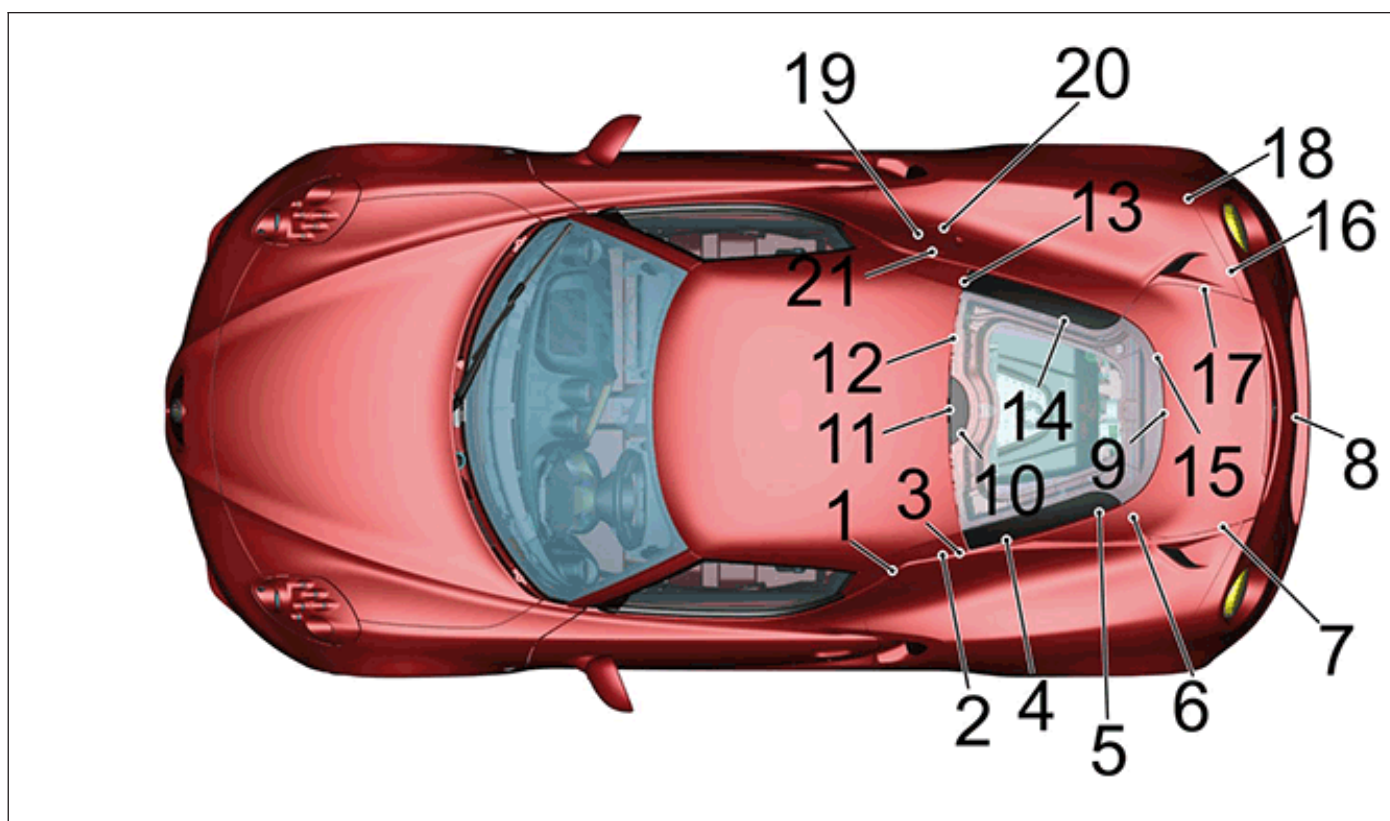
NOTE: Stile = Style

A: Front bumper	D: Windshield	G: Windshield housing outer edge
B: Hood	E: Roof	H: A-pillar
C: Front fender	F: A-pillar	I: Door outer edge



NOTE: Stile = Style

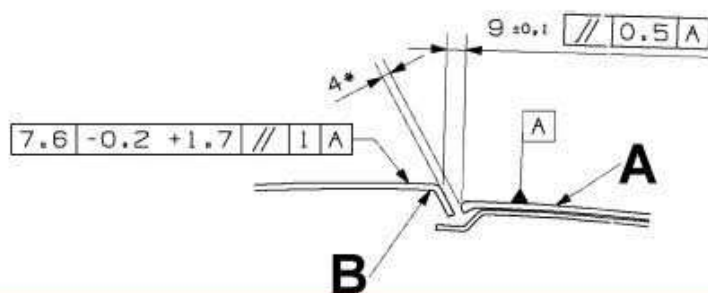
A: Front bumper	D: Windshield	G: Windshield housing outer edge
B: Hood	E: Roof	H: A-pillar
C: Front fender	F: A-pillar	I: Door outer edge



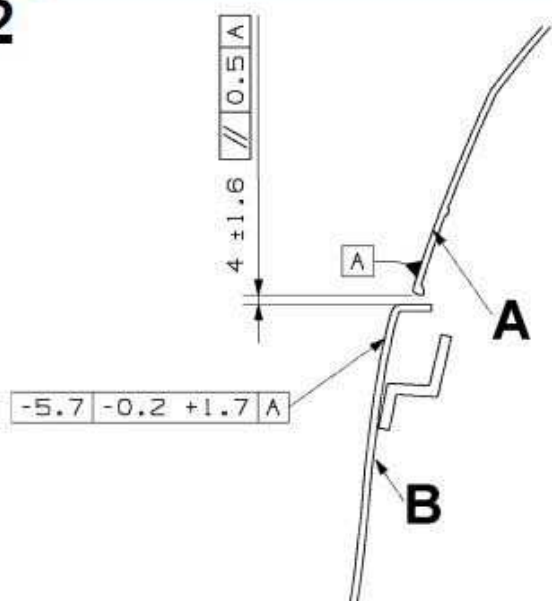
Plan view (rear view)

- 1–2–3: Roof – Quarter panel
- 4–5: Quarter panel – Liftgate grille trim
- 6–7: Quarter panel – Liftgate outer edge
- 8: Rear fascia – Liftgate
- 9–15: Liftgate glass – Liftgate
- 10: Liftgate trim panel – Liftgate glass
- 11: Roof – Liftgate trim panel
- 12: Roof – Liftgate glass
- 13: Roof – Rear grille
- 14: Liftgate glass – Liftgate grille trim
- 16– 18: Quarter panel – Rear fascia
- 17: Quarter panel – Liftgate
- 19–20–21: Quarter panel – Fuel door

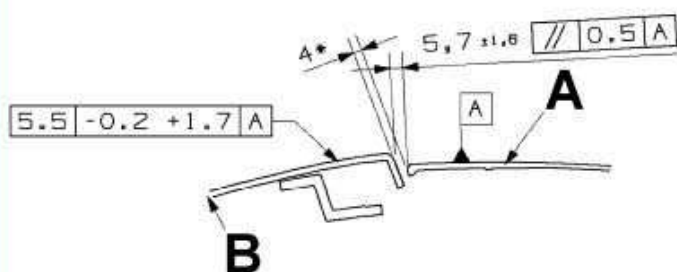
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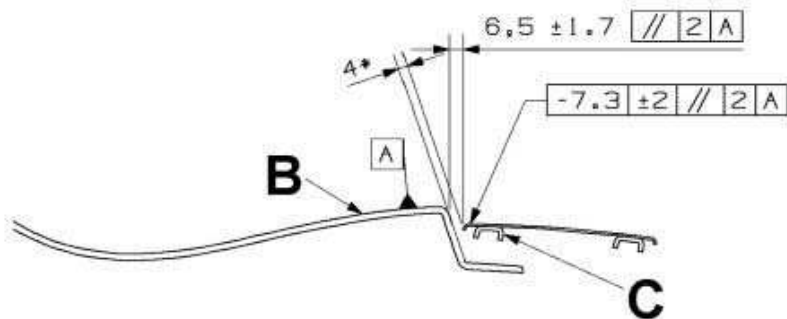
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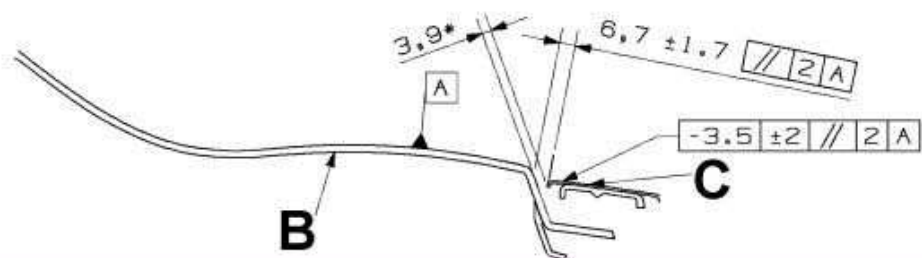


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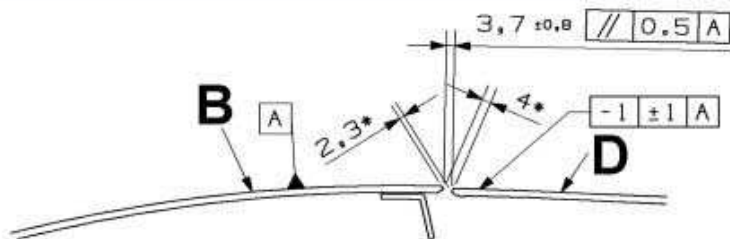


A: Roof	C: Liftgate grille trim panel	E: Rear fascia	G: Liftgate glass
B: Quarter Panel	D: Liftgate outer edge	F: Liftgate	H: Liftgate glass grille trim

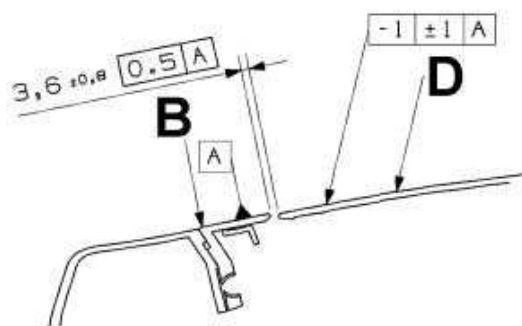
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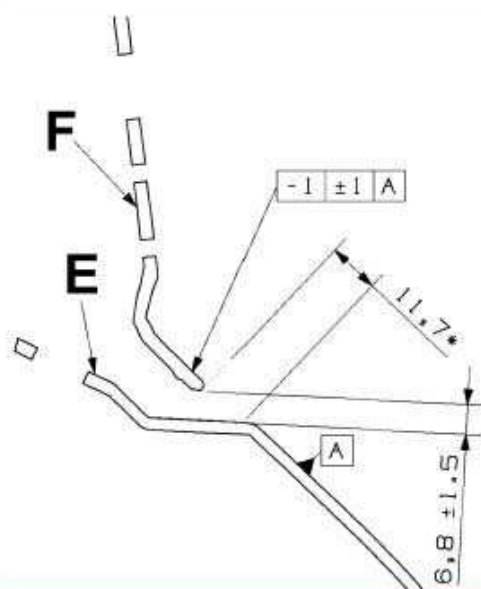
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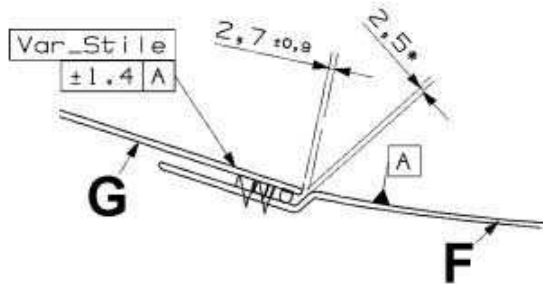


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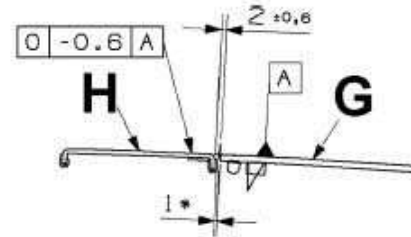


A: Roof	C: Liftgate grille trim panel	E: Rear fascia	G: Liftgate glass
B: Quarter Panel	D: Liftgate outer edge	F: Liftgate	H: Liftgate glass grille trim

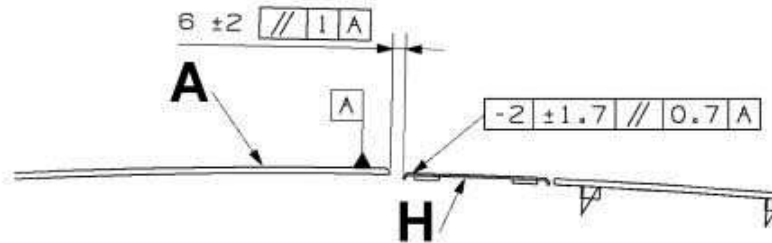
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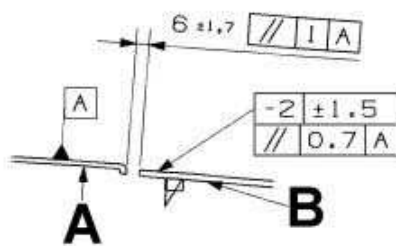
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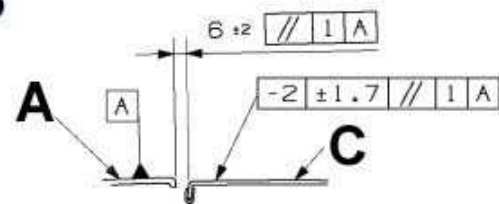
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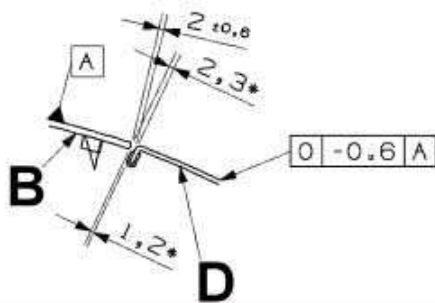
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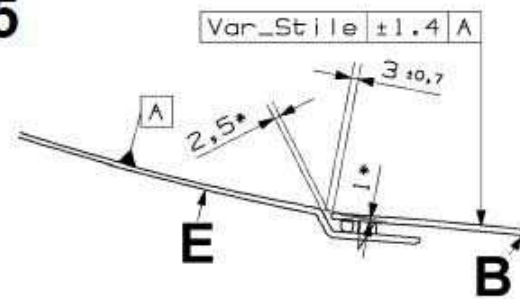
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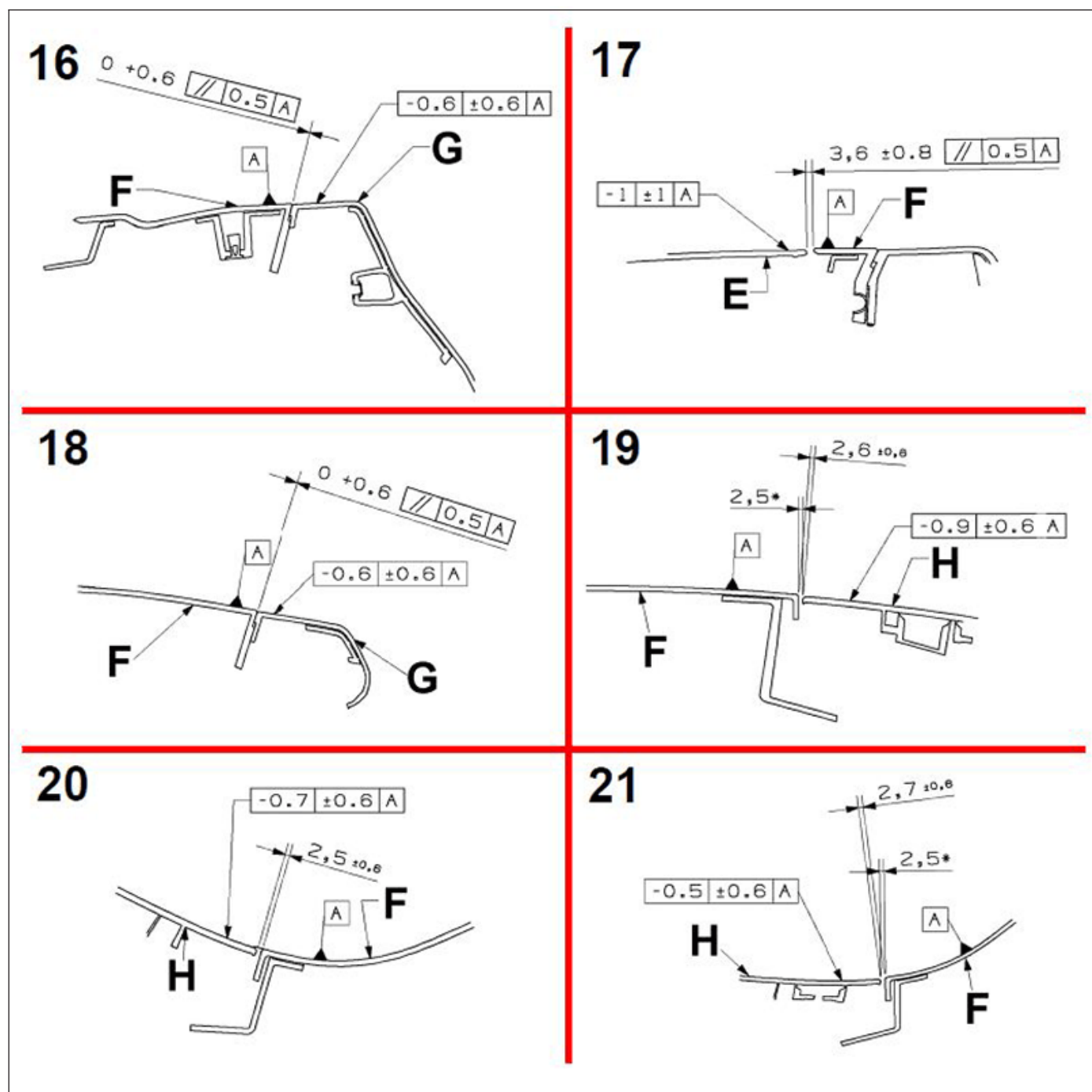


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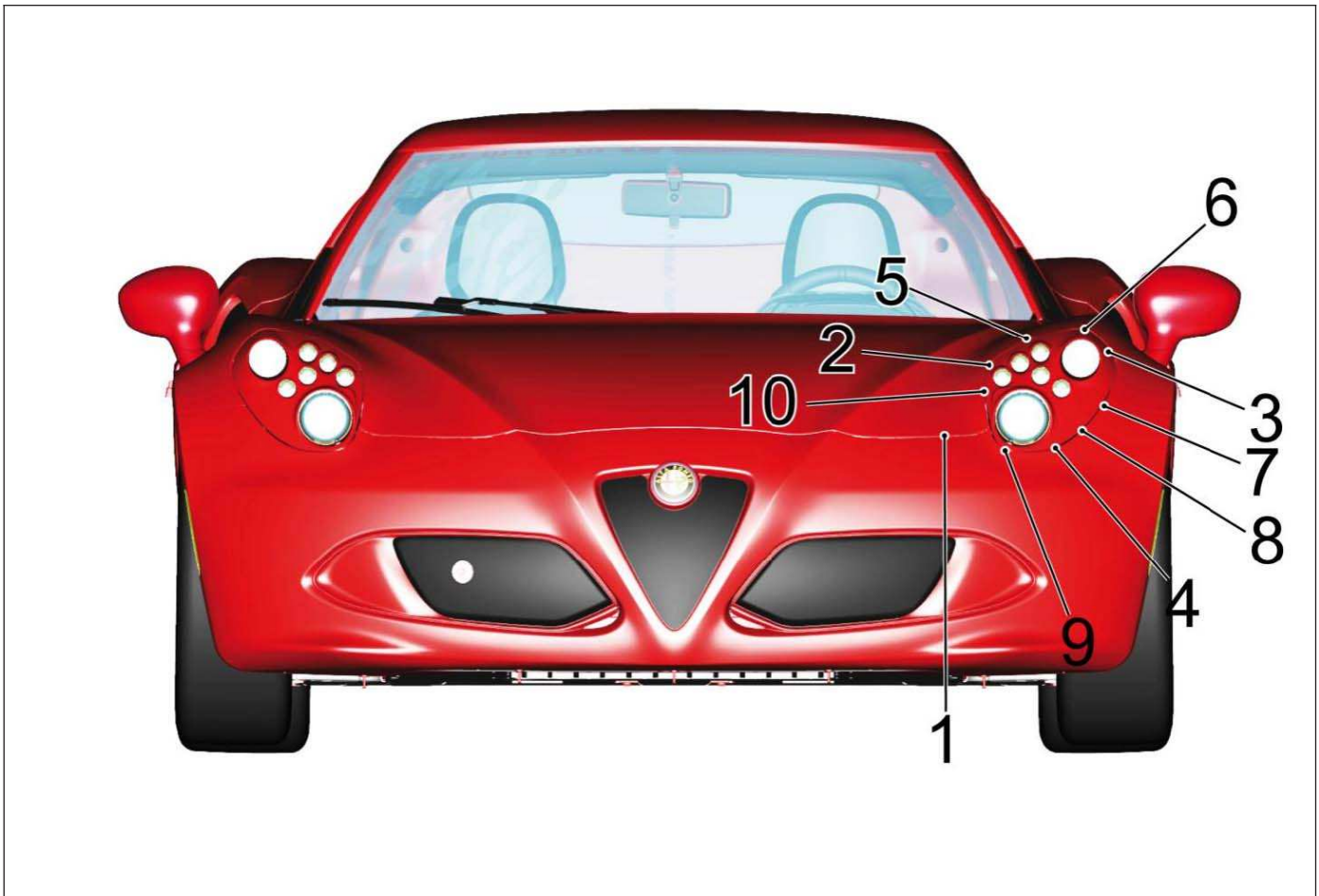


NOTE: Stile = Style

A: Roof	C: Liftgate grille trim panel	E: Rear fascia	G: Liftgate glass
B: Quarter Panel	D: Liftgate outer edge	F: Liftgate	H: Liftgate glass grille trim

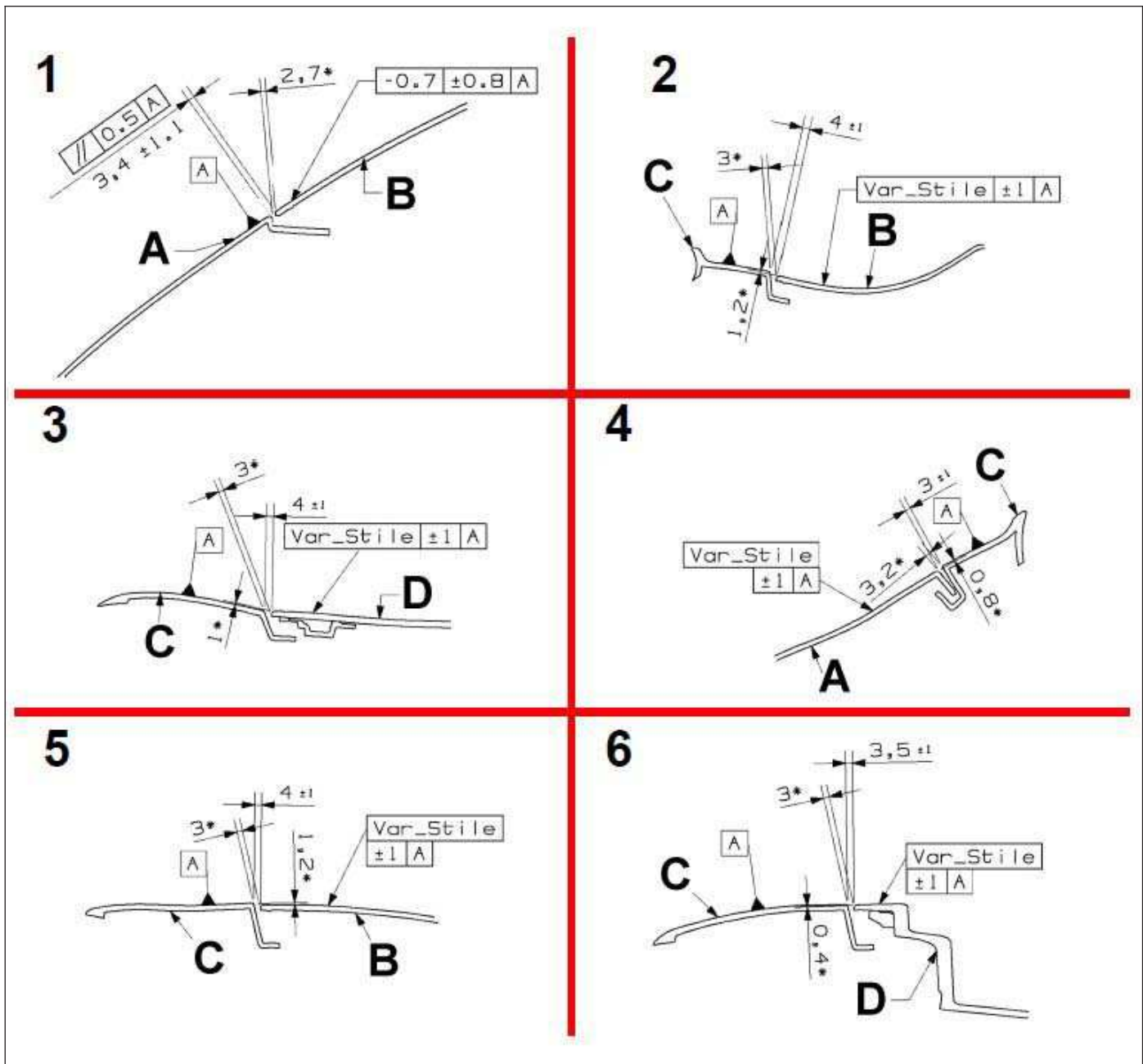


A: Roof	C: Liftgate grille trim panel	E: Rear fascia	G: Liftgate glass
B: Quarter Panel	D: Liftgate outer edge	F: Liftgate	H: Liftgate glass grille trim



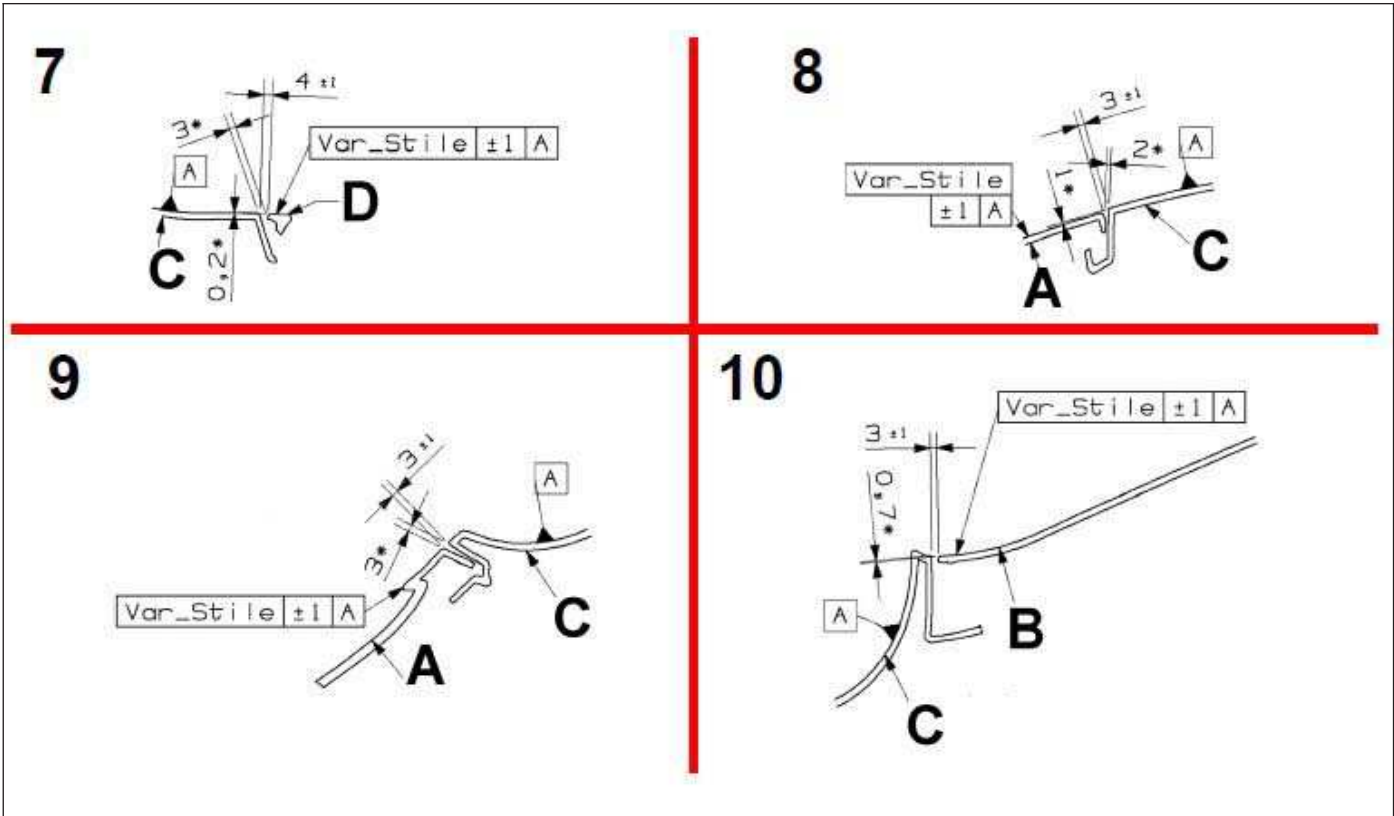
Front view

- 1: Front fascia – Hood
- 2–5–10: Hood – Headlight trim
- 3–6–7: Headlight trim– Front fender
- 4–8–9: Headlight trim – Front fascia



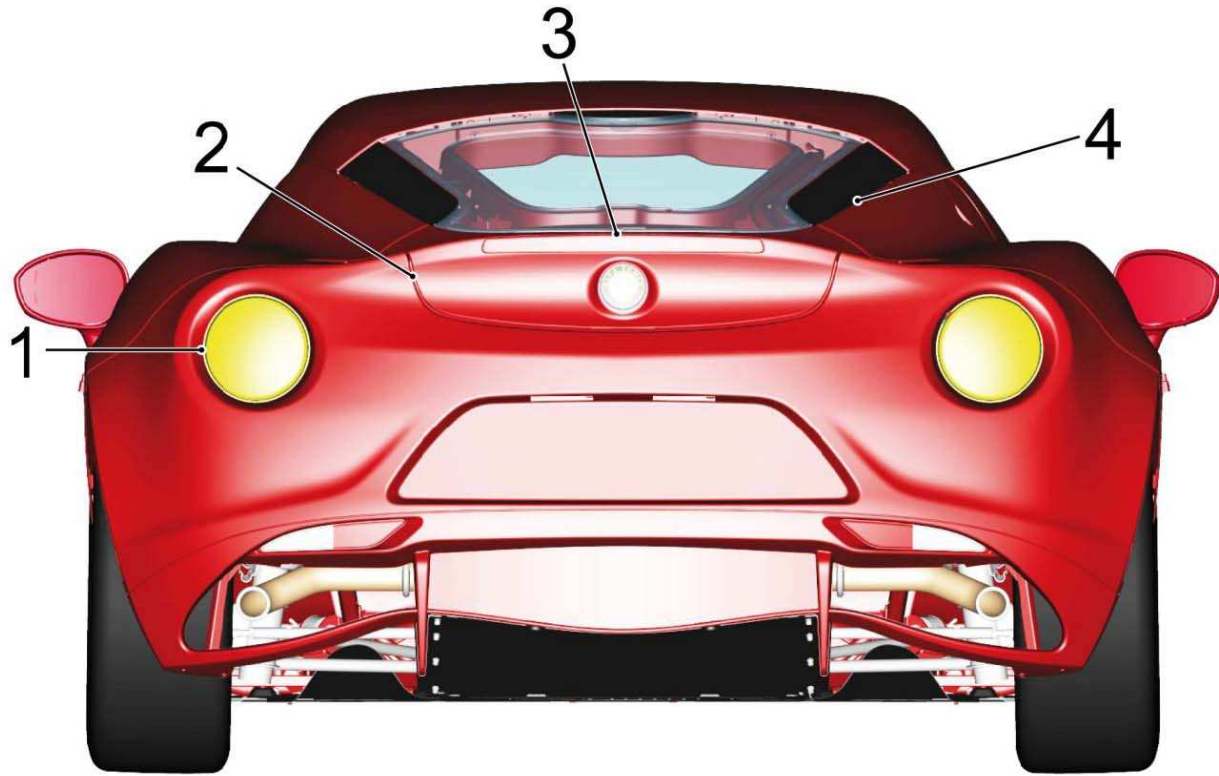
NOTE: Stile = Style

A: Front fascia	C: Headlamp trim
B: Hood	D: Front fender



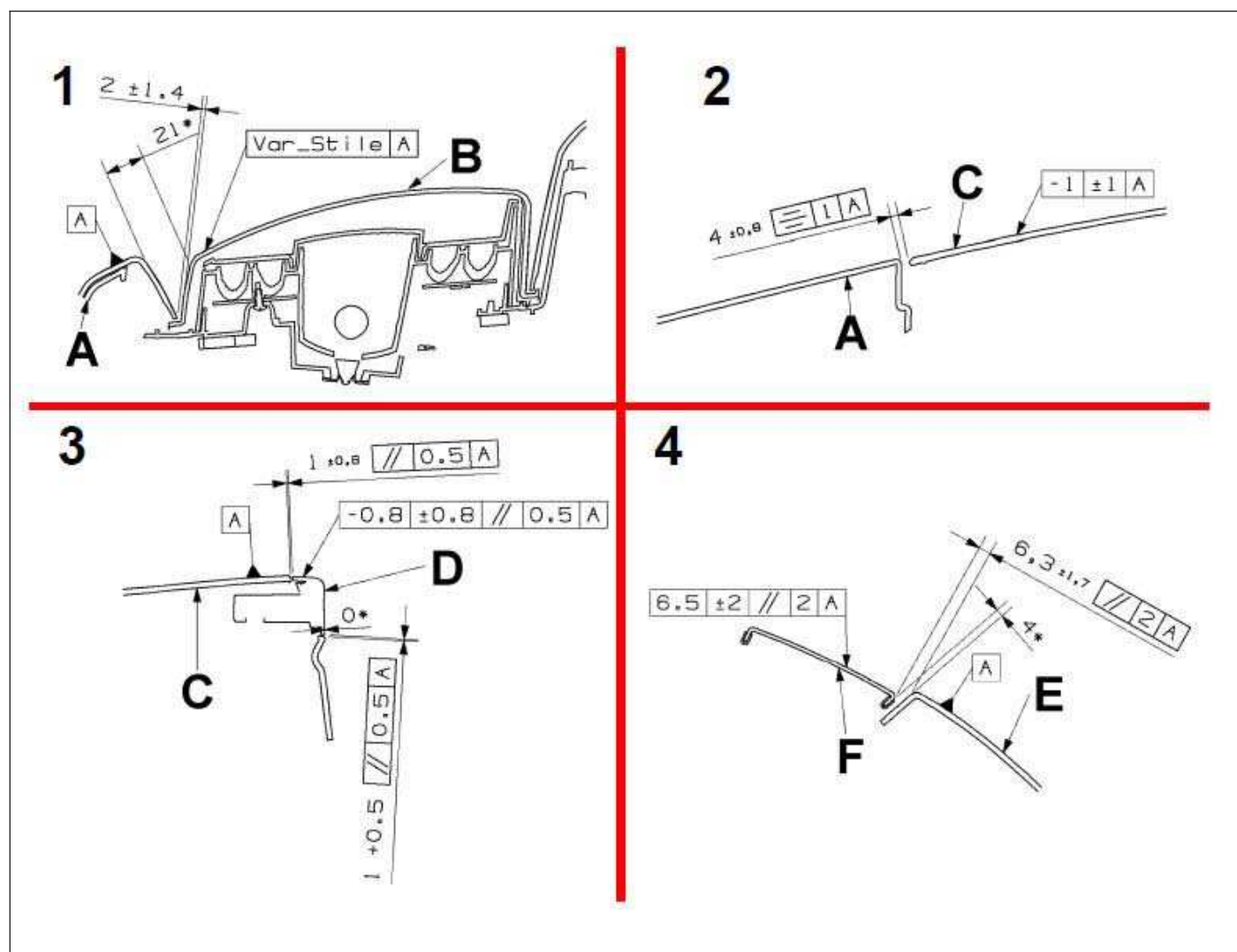
NOTE: Stile = Style

A: Front fascia	C: Headlamp trim
B: Hood	D: Front fender



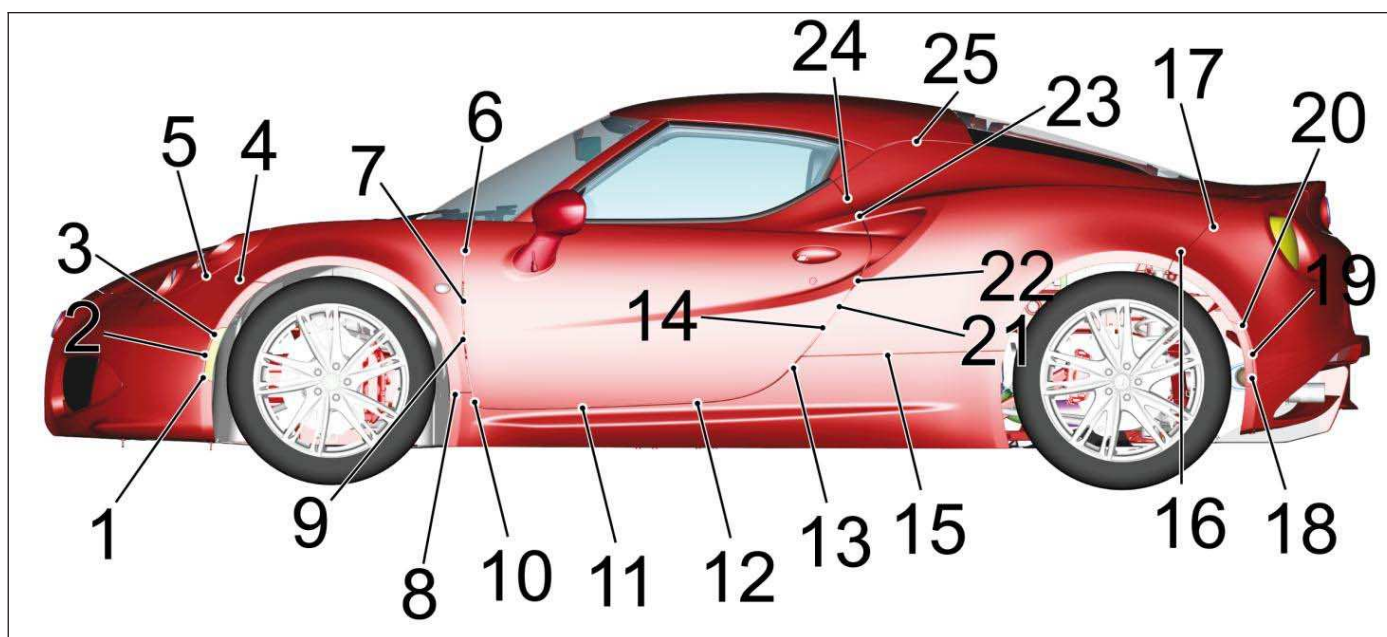
Rear view

- 1: Rear fascia – Taillamp
- 2: Rear fascia – Liftgate
- 3: Liftgate – Center high mounted stop lamp
- 4: Quarter panel – Liftgate grille



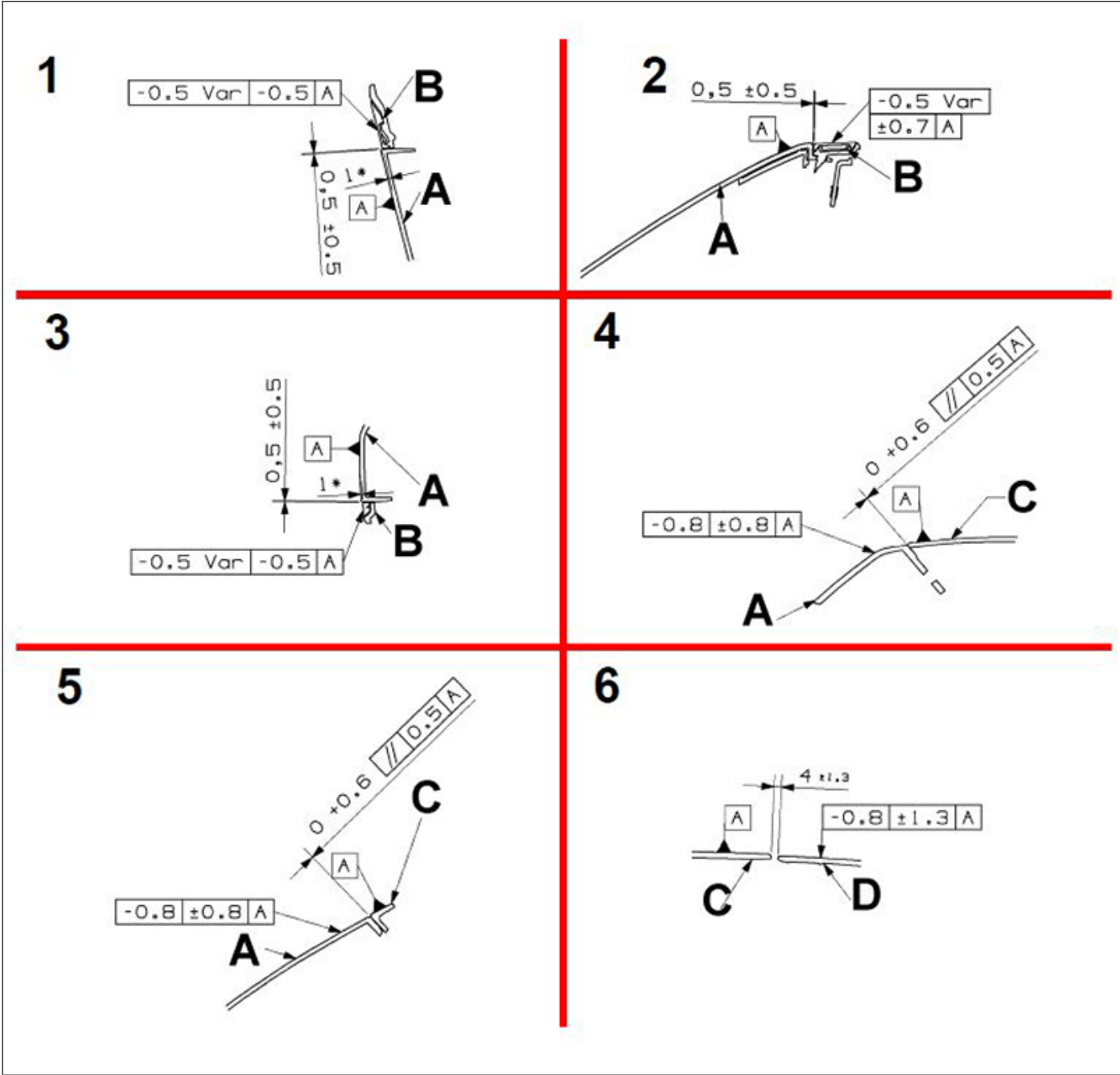
NOTE: Stile = Style

A: Rear fascia	D: Center high mounted stop lamp
B: Taillamp	E: Quarter panel
C: Liftgate	F: Liftgate grille



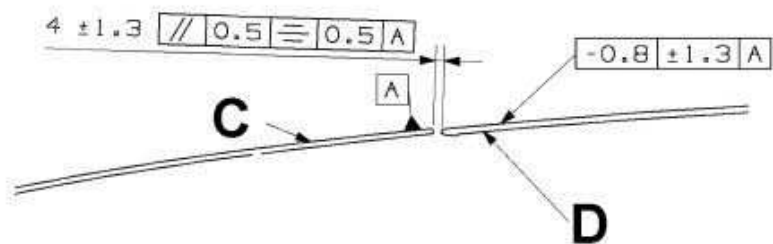
Side view

- 1–2–3: Front fascia – Front side marker lamp
- 4–5: Front fascia – Front fender
- 6–7–9: Front fender – Door
- 8: Front fender – Sill cladding
- 10–11–12–13: Door – Sill cladding
- 14–21–22–23–24: Quarter panel – Door
- 15: Quarter panel – Sill cladding
- 16–17: Quarter panel – Rear fascia
- 18–19–20: Rear fascia – Rear side marker lamp
- 25: Quarter panel – Roof

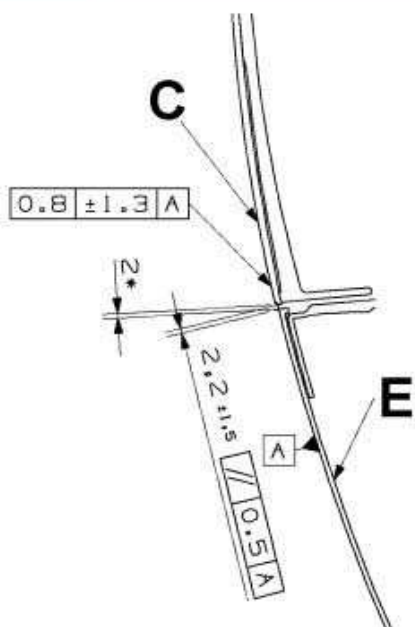


A: Front fascia	D: Door
B: Front side marker lamp	E: Sill cladding
C: Front fender	

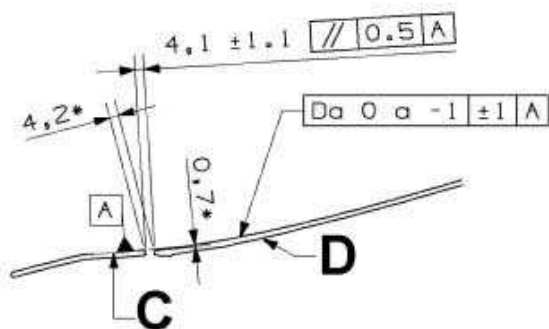
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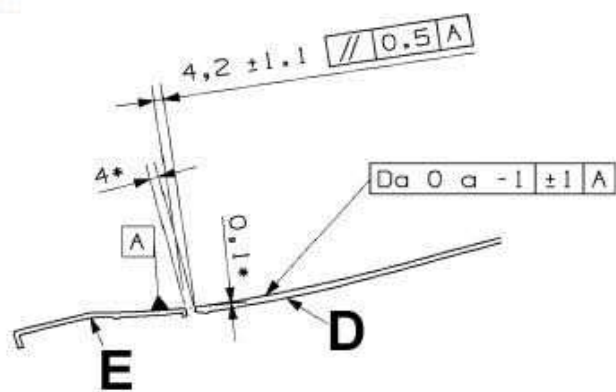
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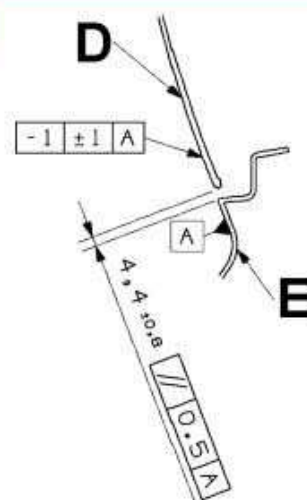
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10



11



A: Front fascia

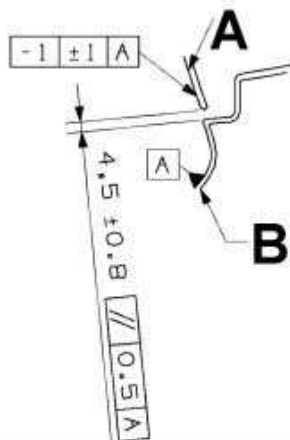
D: Door

B: Front side marker lamp

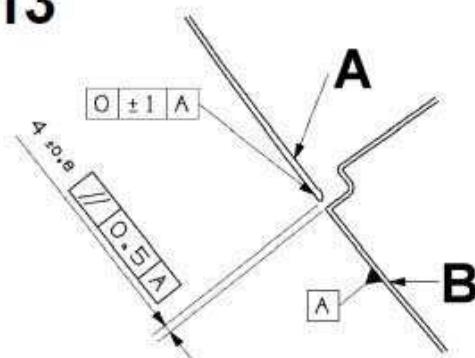
E: Sill cladding

C: Front fender

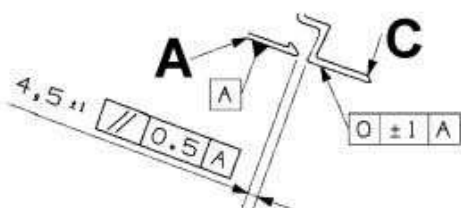
12



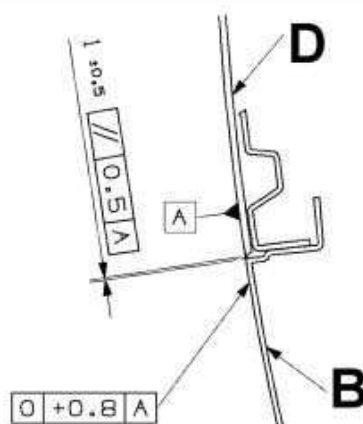
13



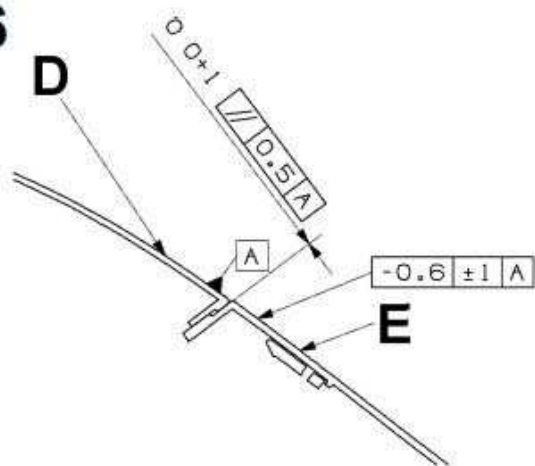
14



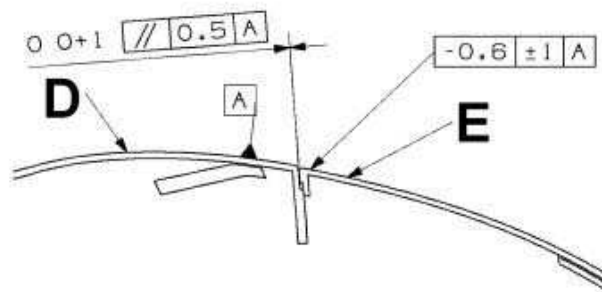
15



16



17



A: Door

B: Sill cladding

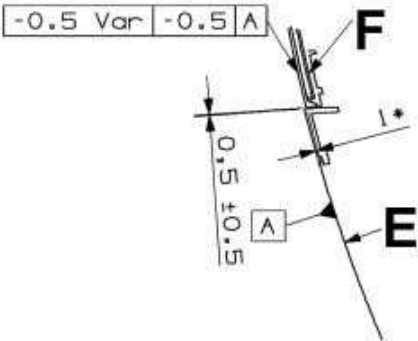
C: Front fender

D: Quarter panel

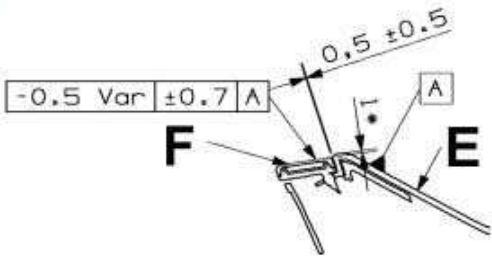
E: Rear fascia

F: Rear side marker lamp

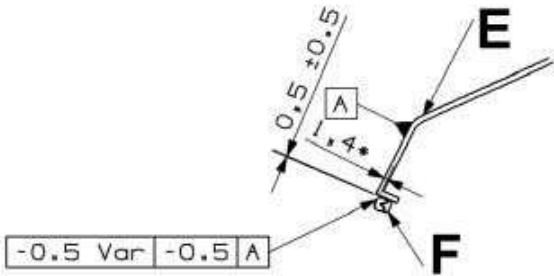
18



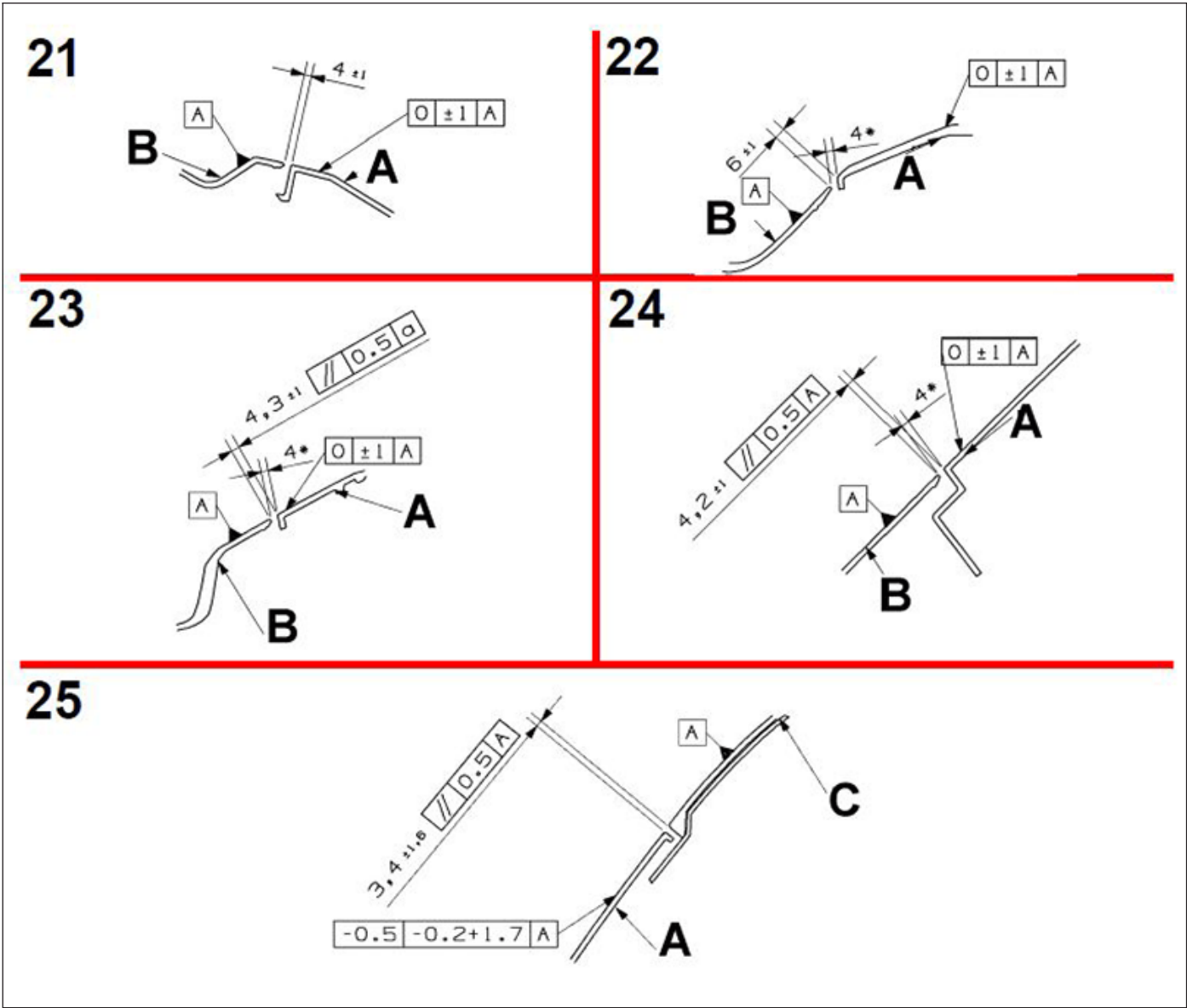
19



20



A: Door	D: Quarter panel
B: Sill cladding	E: Rear fascia
C: Front fender	F: Rear side marker lamp



A: Quarter panel

B: Door

C: Roof

LOADS AND REINFORCEMENTS

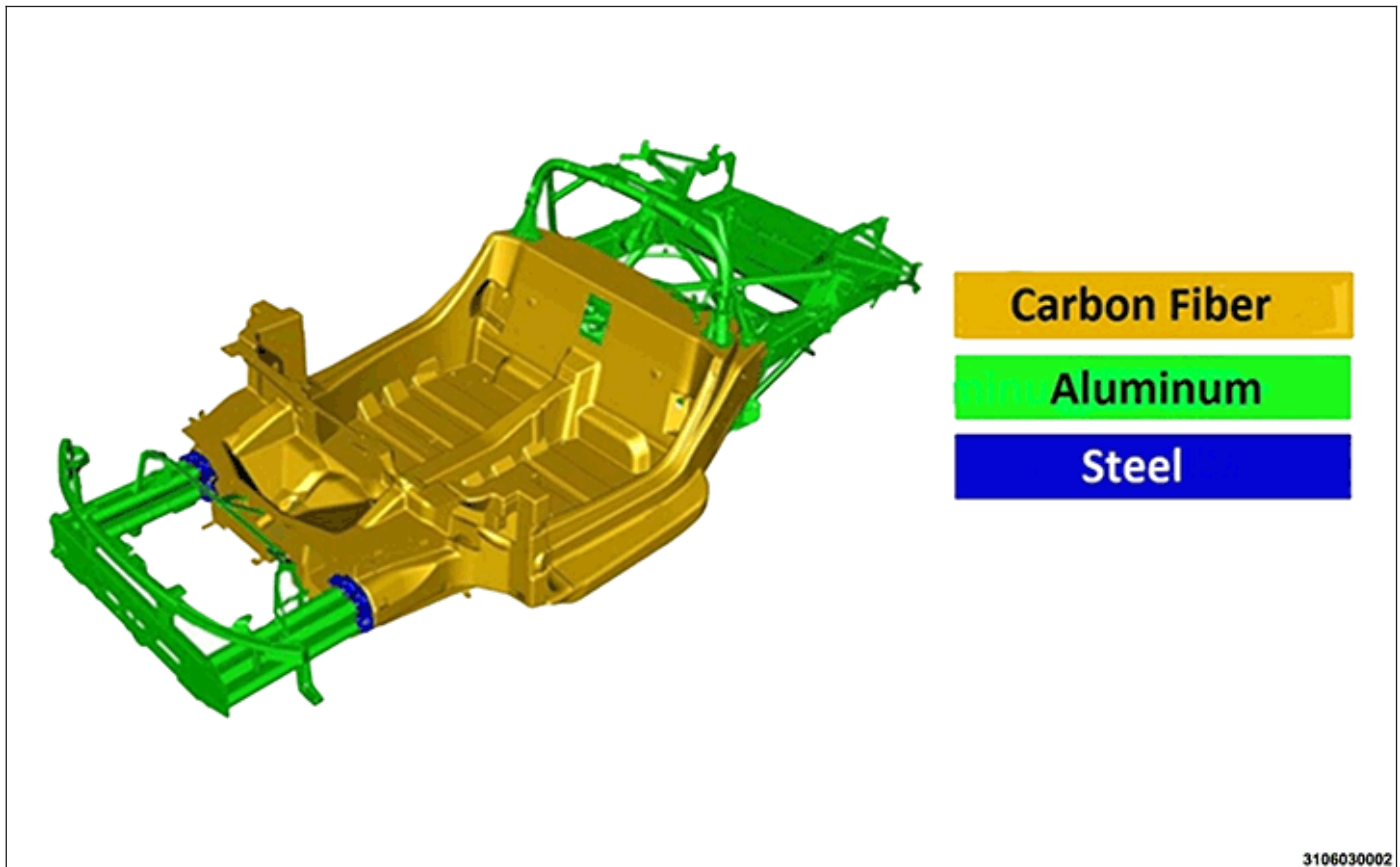
The table contains the names and symbols for the fillers and reinforcements in the recyclable materials used on the vehicle.

NAME	ISO SYMBOL
GLASS BALLS	GB
GLASS FIBRE	GF
GLASS MATTING	GM
MINERAL DUST FILLERS	MD
TALC DUST	TD
WOOD CHIPPINGS (SAWDUST)	WD
TEXTILE FIBRES (SYNTHETIC OR NATURAL)	SF
CALCIUM CARBONATE	KD

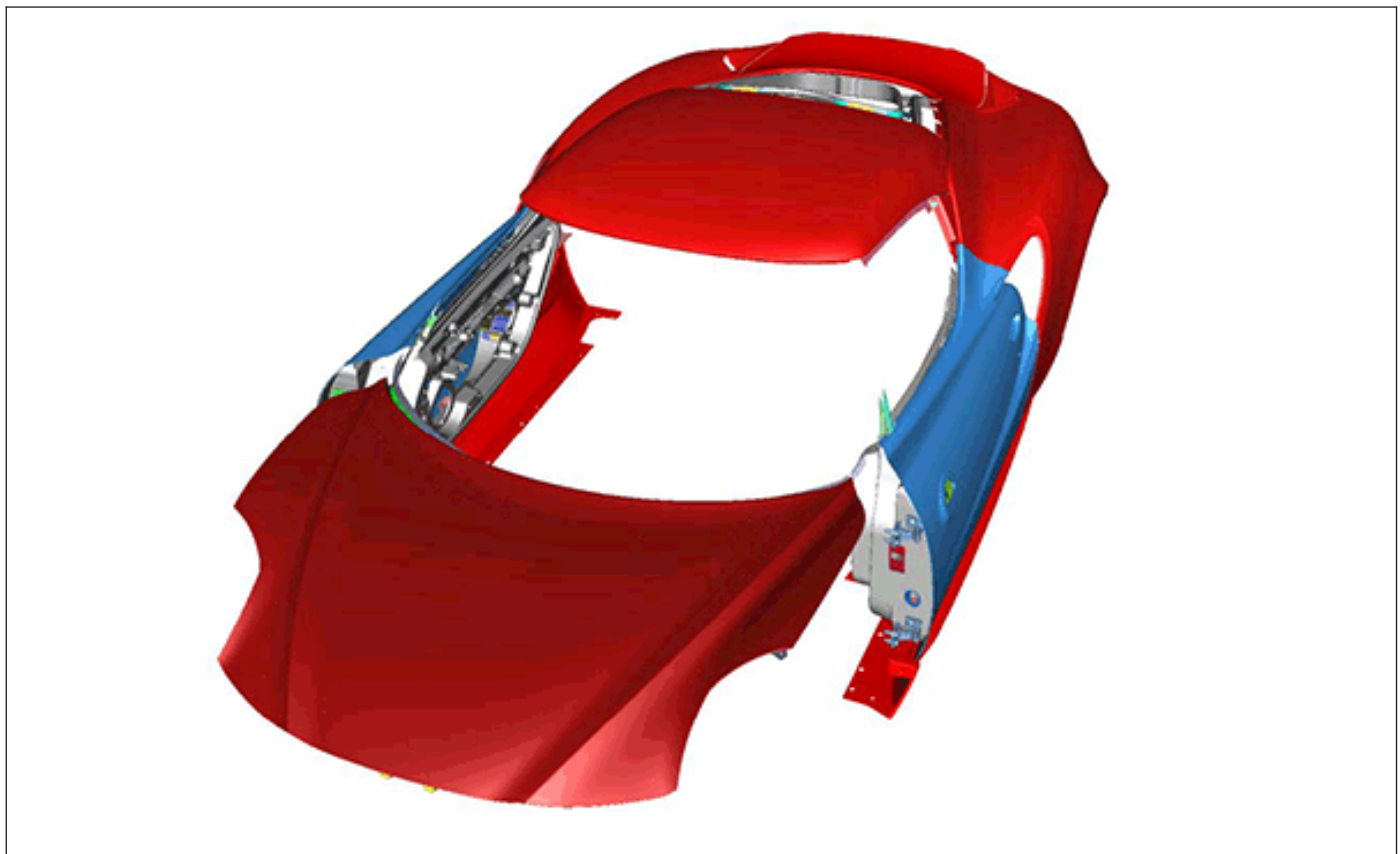
The table contains the names and symbols for the thermoplastic elastomers with heat ratings used on the vehicle.

NAME	ISO SYMBOL
POLYOLEFIN	PP + EPDM
POLYOLEFIN	PP + NBR
POLYOLEFIN	PP + NR
OLEFIN	TECEA
POLYESTER - POLYETHER	TEEE
BLOCK STYRENE COPOLYMERS	S / B / S
BLOCK STYRENE COPOLYMERS	S / E / S
BLOCK STYRENE COPOLYMERS	S / EB / S

MATERIAL IDENTIFICATION



On Alpha Romeo 4C the external “skin” is almost completely in fiberglass.



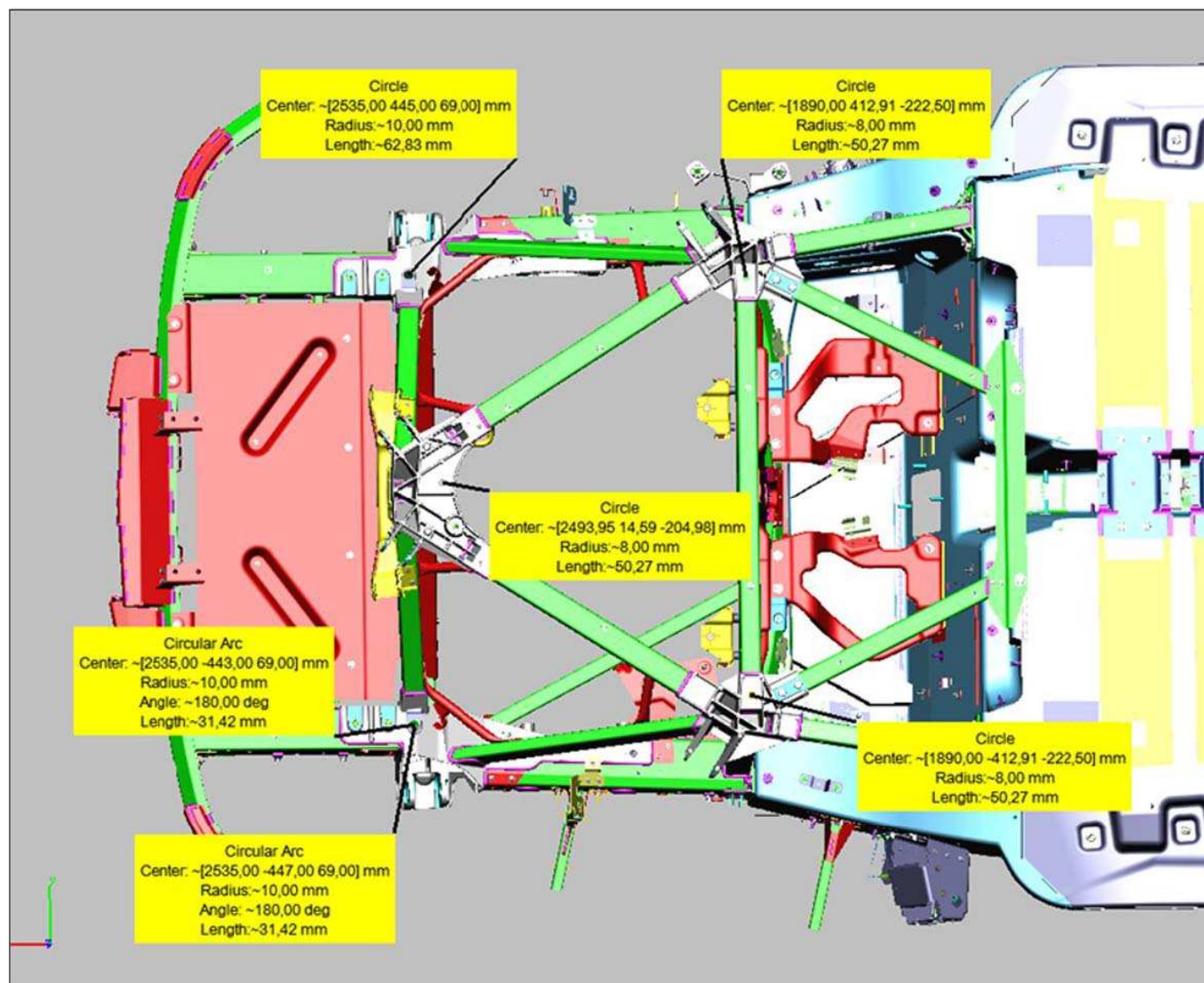
PAINT CODES

NOTE: Because of late model changes to the available paint colors for each vehicle the current color codes can be found on the body paintwork identification plate found within the internal part of the liftgate.

EXTERIOR COLORS

EXTERIOR COLOR	SALES CODE
	P=Primary Q=Secondary
Metallic Grey / Basalto Grey Metallic	PDX
Red / Rosso Alpha	PRW
Tri-coat Metallic Red / Rosso Competizione Tri-Coat	PRZ
White	PWC
Tri-Coat Metallic White / Madreperla White Tri-Coat	PWZ
Black	PX8

REAR CHASSIS FRAME REFERENCE HOLES



THERMOHARDENING RECYCLABLE MATERIALS

The table contains the names and symbols of the main thermohardening materials used on the vehicle.

NAME	ISO SYMBOL
PHENOLS	PF
POLYURETHANES	PUR
THERMOSETTING UNSATURATED POLYESTERS	–
- For compression moulding (SMC)	UP
- For injection moulding (BMC)	UP

THERMOPLASTIC RECYCLABLE MATERIALS

The table contains the names and symbols for the main thermoplastic materials used on the vehicle.

NAME	ISO SYMBOL
ACRYLONITRILE BUTADIENE STYRENE, ABS	ABS
CELLULOSE	CA
AROMATIC POLYAMIDES	PA
- with 6 C atoms in a monomer structure	PA 6
- with 2 monomer structures each with 6 C atoms	PA66
- with 11 C atoms in a monomer structure	PA11
- with 12 C atoms in a monomer structure	PA 12
AROMATIC POLYAMIDES + ABS	PA + ABS
POLYCARBONATES	PC
POLYCARBONATE ALLOYS / ABS	PC + ABS
POLYETHYLENES	PE
METACRYLICS	PMMA
ACETALS	POM
POLYPROPYLENES	PP
MODIFIED POLYPHENYL OXIDES	PPE
THERMOPLASTIC ALLOYS (POLYPHENYLOXIDES/ POLYAMIDES)	PPE + PA
FLEXIBLE VINYL	PVC - P
RIGID VINYL	PVC

THERMOSETTING ELASTOMERS

The table contains the names and symbols for the thermosetting elastomer materials with heat ratings used on the vehicle.

NAME	ISO SYMBOL
CHLOROETHYL VINYL ETHER ACRYLATE	ACM
CHLORINATED POLYETHYLENE	CM
CHLOROSULPHANATED POLYETHYLENE	CSM
ETHYLENE PROPYLENE DIENE MONOMER	EPDM
ETHYLENE PROPYLENE COPOLYMER	EPM
FLUORO ELASTOMER	FPM
POLYISOBUTENE	IM
ETHYLENE ACRYLATE	AEM
EPICHLOROHYDRIN HOMOPOLYMER	CO
EPICHLOROHYDRIN COPOLYMER	ECO
PROPYLENE OXIDE	GPO
BUTADIENE	BR
CHLOROPRENE	CR
ISOBUTENE- ISOPRENE (BUTYL)	IIR
BROMOBUTYL	BIIR
CHLORO BUTYL	CIIR
SYNTHETIC ISOPRENE	IR
NITRILE BUTADIENE	NBR
HYDROGENATED NITRILE	HNBR
CARBOXYLASED NITRILE	XNBR
ISOPRENE	NR
STYRENE BUTADIENE	SBR
FLUORO SILICON	MFQ
METHYL PHENYL SILICON	MPQ
METHYL PHENYL VINYL SILICON	MPVQ
METHYL SILICON	MQ
METHYL VINYL SILICON	MVQ
POLYURETHANE	AU
POLYURETHANE POLYETHER	EU
MICROCELLULAR POLYURETHANE	PUM

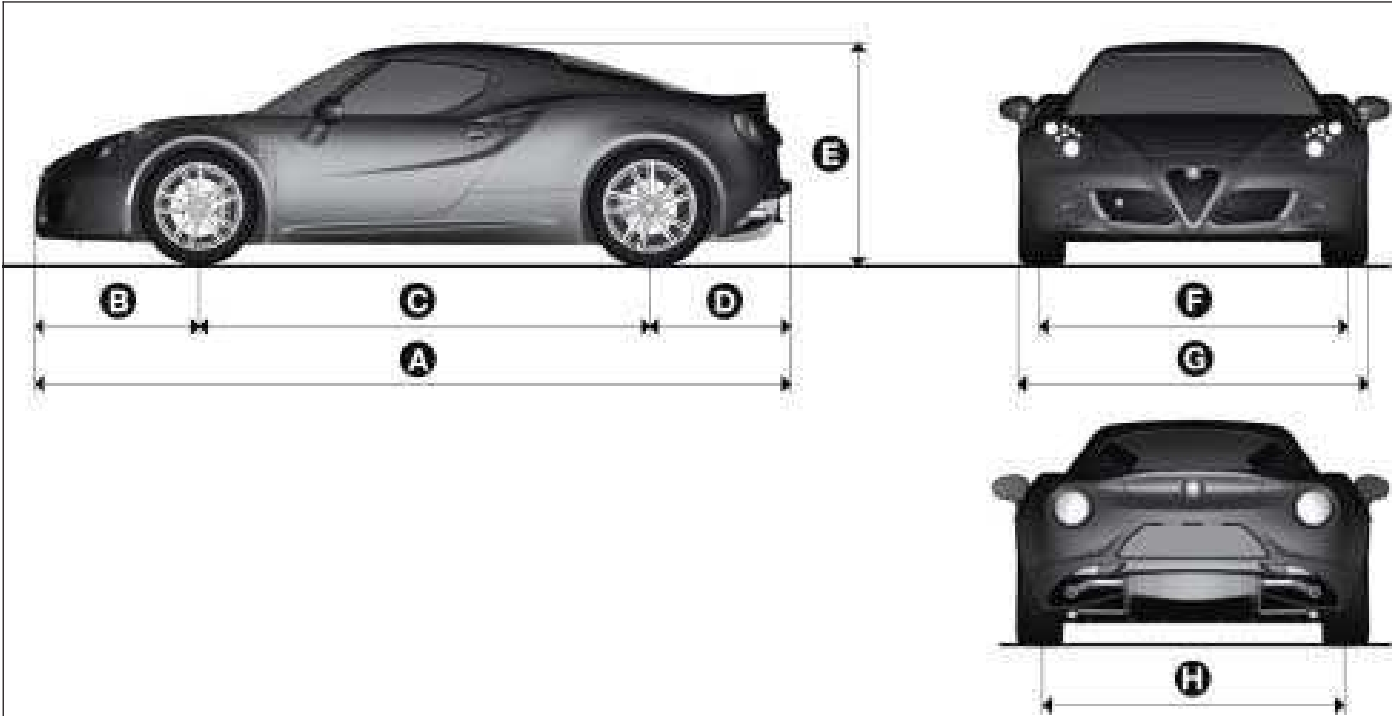
The table contains the names and symbols of the special fibres with heat ratings used on the vehicle.

NAME	ISO SYMBOL
LIGNOTOCK - CEKAZELL	>PF - WD 85<
FIBRIT MASONITE	>PF - WD 99<
EVERSTIFF	> PP + S/B - SF50 <
WOODSTOCK	>PP - WD 50<
Resined textile fibres for roof linings	> PF - SF60 <

NAME	ISO SYMBOL
Resined textile fibres for sound insulation	> PF - SF70 <
Glass fibre matting + resined textile fibres for roof lining	> GM, PF - SF60 <
GLASUTEC	>GM, PUR, GM
GLASUTHERM	> GM, PUR, GM <
GLASS - FOAM	> PUR - GF30 <

VEHICLE DIMENSIONS

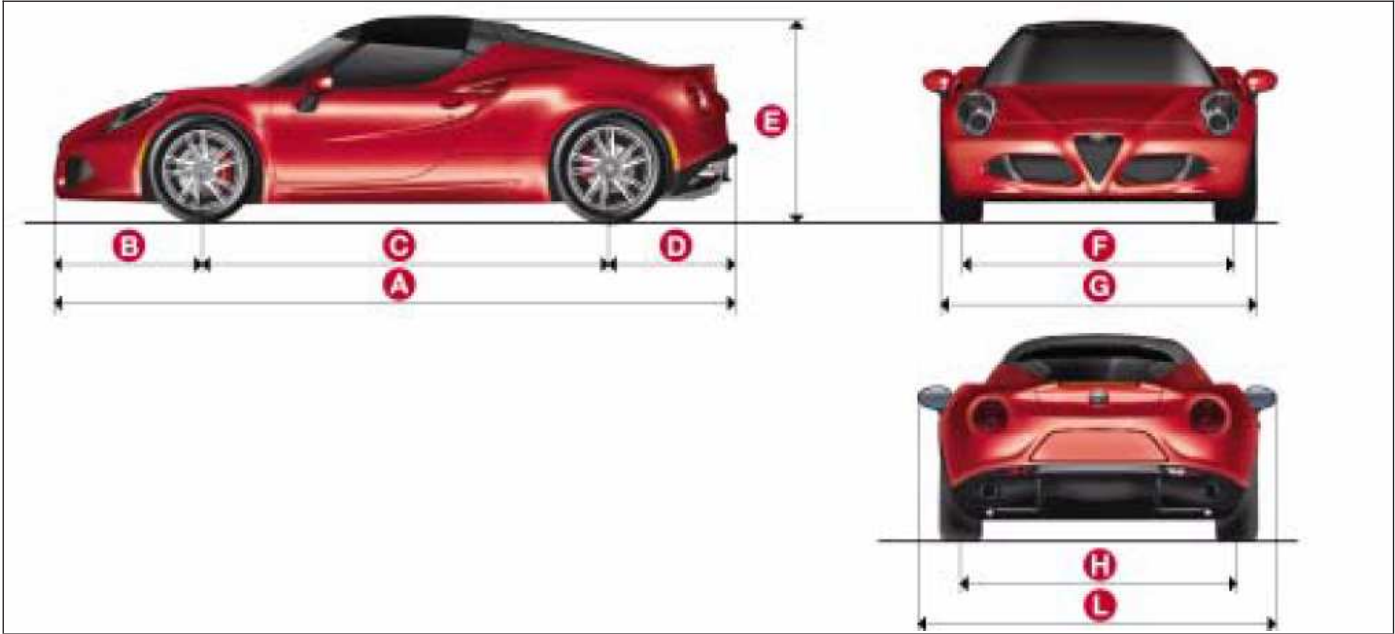
Dimensions are expressed in mm and refer to the car equipped with its standard-supplied tires. Height is measured with car unladen.



COUPE VERSION

1750 Turbo Petrol

A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
3990	864	2380	746	1184	1639	1868	1606



SPIDER VERSION

1750 Turbo Petrol

A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	L (mm)
3990	864	2380	746	1189	1639	1868	1606	2090

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (VIN) can be viewed through the windshield at the upper left corner 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 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.



POSITIONS 1 - 3: WORLD MANUFACTURER IDENTIFIER

1	2	3	MANUFACTURER	VEHICLE TYPE
Z	A	R	Fiat Group Automobiles S.p.A.	Passenger Car

POSITION 4: RESTRAINT SYSTEM

NOTE:

- (ASP) = All Seating Positions
- (OSP) = Outboard Seating Position

CODE	DESCRIPTION
A	Active Belts (ASP), Front Air Bags (OSP), Without Side Inflatable Restraints
B	Active Belts (ASP), Front Air Bags (OSP), With Side Inflatable Restraints Front Row
C	Active Belts (ASP), Front Air Bags (OSP),With Side Inflatable Restraints All Rows
D	Active Belts (ASP),Without Air Bags,Without Side Inflatable Restraints

POSITIONS 5 - 7

5	6	7	SERIES	DRIVE POSITION	DRIVE TYPE	BODY TYPE
A	A	A	4C Coupe	Left Hand Drive	Rear Wheel Drive	2 door Coupè
A	A	B	4C SPIDER			2 door Convertible
A	A	C	4C Coupe LAUNCH EDI-TION			2 door Coupè
A	A	D	4C SPIDER LAUNCH EDI-TION			2 door Convertible

POSITION 8: ENGINE

CODE	DISPLACEMENT	CYLINDERS	FUEL	TURBO	SALES CODES
4	1750	4	Gasoline	Yes	EBC

POSITION 9: CHECK DIGIT

0 through 9 or X

POSITION 10: MODEL YEAR

F = 2015

POSITION 11: ASSEMBLY PLANT

CODE	PLANT
M	MASERATI PLANT MODENA (ITALY)

POSITION 12 - 17: PLANT SEQUENCE NUMBER

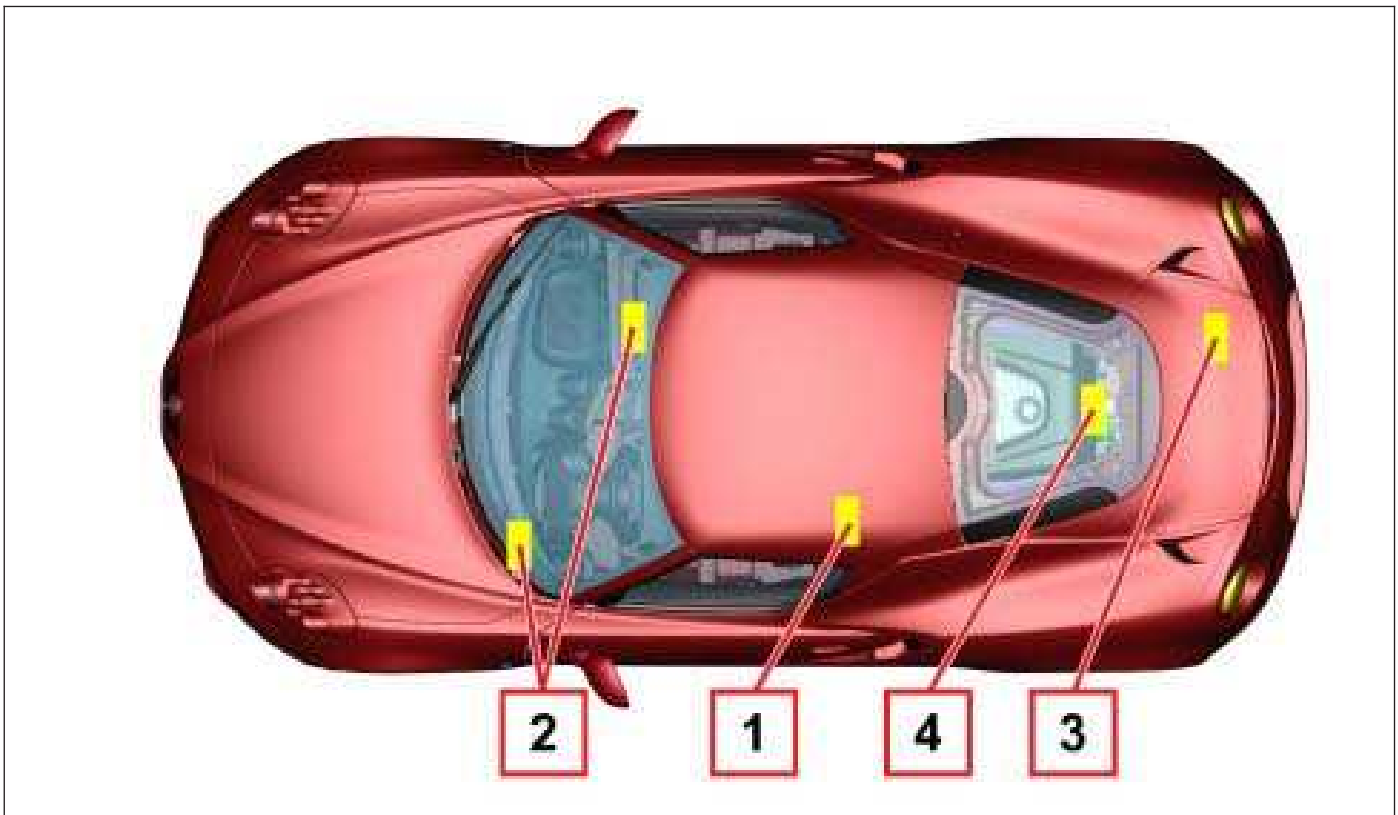
A six digit number assigned by assembly plant.

Locations

BODY MARKING

The marking is printed on the passenger compartment floor panel, near the passenger side seat.

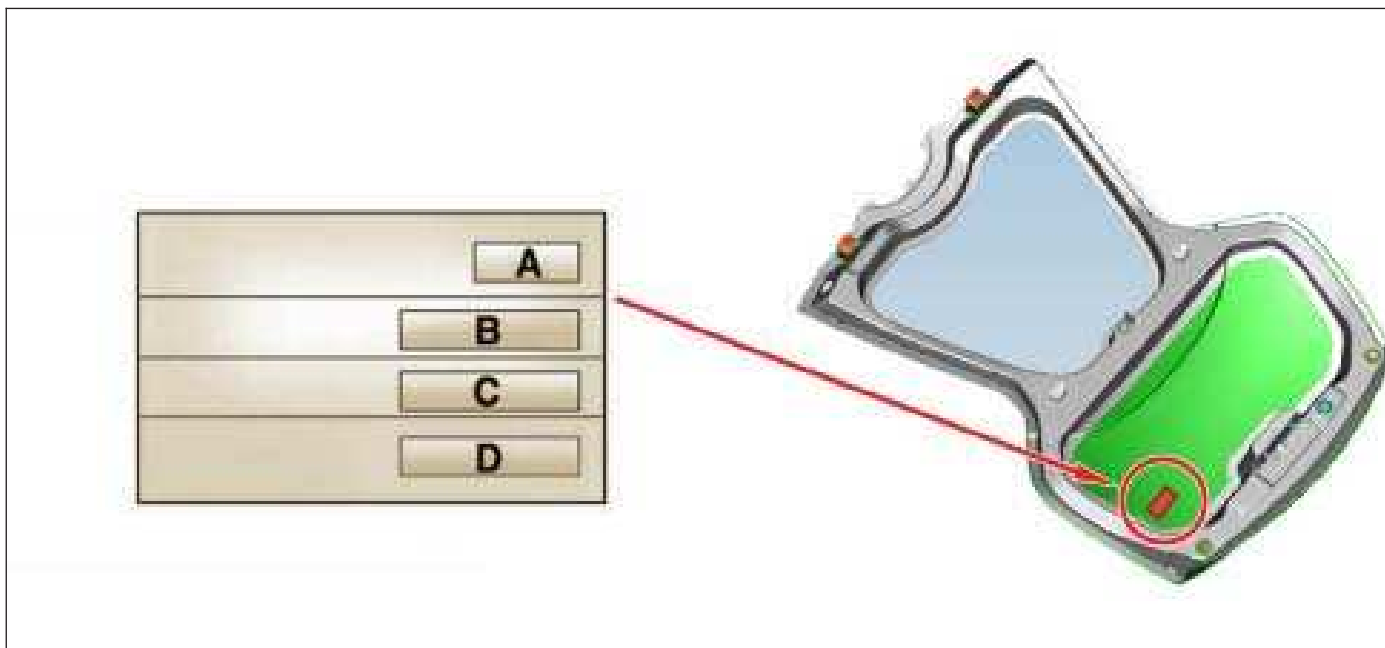
- Vehicle type
- Vehicle manufacture serial number (chassis number)

LOCATION OF IDENTIFICATION PLATES AND BODY MARKING

1. V.I.N. plate.
2. Body marking.
3. Body paintwork identification plate.
4. Engine marking.

BODY PAINTWORK IDENTIFICATION PLATE

It is attached to the internal part of the liftgate.



It contains the following information:

1. Paint manufacturer.
2. Color name.
3. Color code.
4. Color code for touch-up or repainting.

INDEX