



i30/ELANTRA NEOS

Body Repair Manual

FOREWORD

This Body Repair Manual provides detailed repair procedures for repair of commonly damaged structural panels on the 2008 i30 / ELANTRA NEOS(FD). To aid in the information of the damaged vehicle, body construction, body dimensions, Body Panel Repair Procedure, Body Sealing Locations, Corrosion Protection, Body Modification Tools and Plastic Parts are contained herein.

The repair procedures specify locations where body members may be structurally sectioned.

All of the repair procedures have been performed on i30 / ELANTRA NEOS(FD) body shells and that is currently available in most auto body repair shops.

The repair procedures illustrated in this manual were developed to simplify body repair in order to reduce insurance costs, and indirectly, cost of ownership.

The vehicle should not be sectioned in locations other than those illustrated in this repair manual. Furthermore, these repair procedures DO NOT apply to any other vehicle. The individuals performing the work must assume full responsibility for the quality of their workmanship.

We believe this manual to be helpful for Hyundai dealers, and anticipate it to be effectively used for Hyundai vehicle bodies. For the services of other than collision-damaged body parts of the i30 / ELANTRA NEOS(FD), refer to the i30 / ELANTRA NEOS(FD) shop manual.

The illustrations and descriptive text in this manual were corrected at the time of printing.

It is the policy of HYUNDAI MOTOR COMPANY to continuously improve its products.

Specifications and procedures are subject to change at any time without notice.

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IMPORTANT SAFETY NOTICE

Proper service methods and repair procedures are essential for safe, reliable operation of all motor vehicles as well as personal safety of the operator. The service procedures and descriptions in this manual provide general directions for a service and repair.

Procedure, techniques, tools, and parts for service including the skill of the technician vary. It is impossible to provide advice or caution as to each case in this manual.

Accordingly, anyone who intends to use a replacement part, service procedure, or tool, which is not recommended by the vehicle manufacturer, must first assure thoroughly that neither their personal safety nor the safe operation of the vehicle will be first jeopardized by the replacement part, service procedure, or tool they select.

IN THIS MANUAL

-  **WARNING :** Remind you to be especially careful in those areas where carelessness can cause personal injury.
-  **CAUTION :** To prevent you from making errors that could damage the vehicle as well as personal injury.
-  **NOTE :** Gives you added information that will help you complete a particular procedure.

The following list contains some general WARNINGS that you should follow while working on a vehicle.

- Always wear safety glasses for eye protection.
- Use safety stands whenever a procedure requires you to be under the vehicle.
- Make sure that the ignition switch is always in the OFF position, unless otherwise required by the procedure.
- Set the parking brake when working on the vehicle. If you have an automatic transaxle, set in park unless instructed otherwise for a specific operation.
- Place supporters against the front and rear surfaces of the tires to help prevent the vehicle from moving.
- Operate the engine only in a well-ventilated area to avoid the danger of carbon monoxide poisoning.
- Keep yourself and your clothing away from moving parts when the engine is running, especially the drive belts.
- To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe, catalytic converter and muffler.
- Do not smoke while working on a vehicle.
- To avoid injury, always remove rings, watches, loose hanging jewelry, and loose clothing before beginning to work on a vehicle.
- When it is necessary to work under the hood, keep hands and other objects clear of the radiator fan blades! Your vehicle may be equipped with a cooling fan that may turn on, even though the ignition switch is in the OFF position. For this reason care should be taken to ensure that the radiator fan electric motor is completely disconnected when working under the hood and the engine is not running.

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GENERAL GUIDE LINES AND PRECAUTIONS

The i30 / ELANTRA NEOS is a completely new vehicle design. During its development, close attention has been given to safety, stability, weight and corrosion protection. Typical of unit body design, the i30 / ELANTRA NEOS is designed so that the front and rear compartments will absorb much of the collision energy so that the passengers are better protected. During collisions, these front and rear energy absorbing systems may be severely damaged. During repair, these damaged areas must be returned to their original strength and geometry. If this is not properly done, the vehicle will not provide the intended level of protection to its occupants in the event of another collision.

The repairs described in this manual were performed on i30 / ELANTRA NEOS body shells. In some instances special fixtures were welded in place to support the structure. During the repair of an actual vehicle, the interior would be fully disassembled and standard jack screws or portable braces may be used for temporary support.

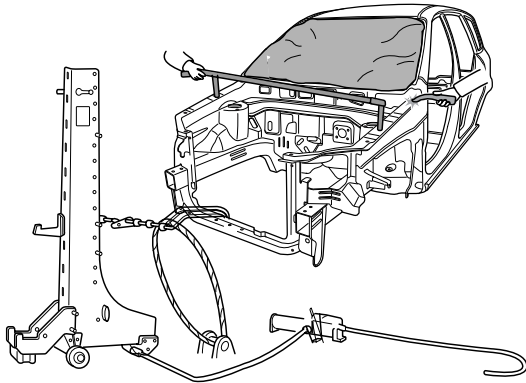
During the repair of an accident involved vehicle, the vehicle must first be returned to pre-impact dimensions prior to beginning the sectioning repair procedures. The extent of damage that must be repaired should then be evaluated to determine the appropriate repair procedures. This manual provides locations and procedures where structural sectioning may be employed. It is the responsibility of the repair technician, based upon the extent of damage, to determine which location and procedure is suitable for the particular damaged vehicle.

During the repair of a collision damaged automobile, it is impossible to fully duplicate the methods used in the factory during the vehicle manufacture. Therefore, auto body repair techniques have been developed to provide a repair that has strength properties equivalent to those of the original design and manufacture.

FUNDAMENTAL PROCEDURES

VEHICLE PROTECTION

1. Cover the seats before performing any procedure to keep them from getting dirty.
2. Cover all glasses, seats and mats with a heat resistant cover when welding.



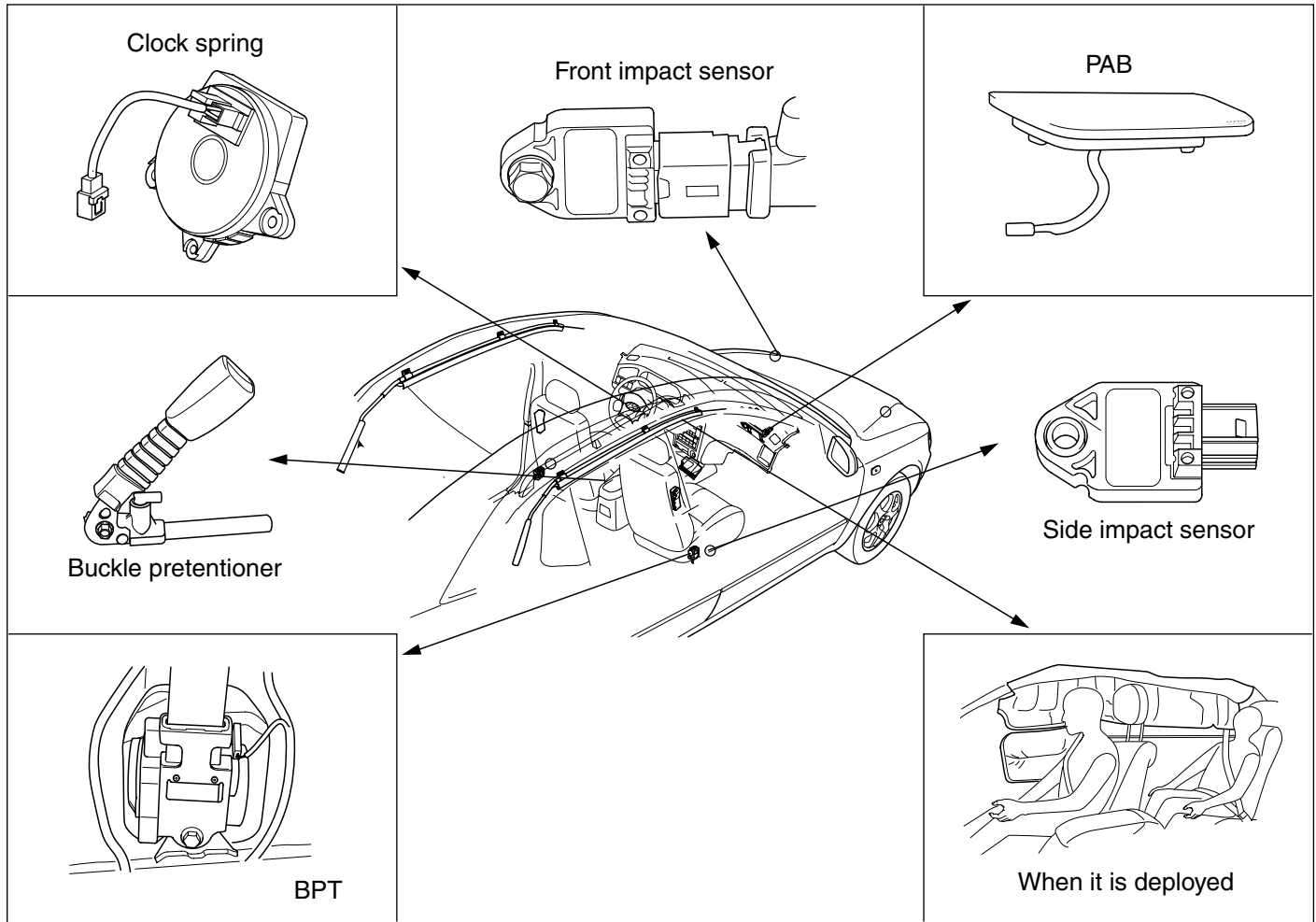
BVQGI6001

3. Protect moldings, garnishes and ornaments.

SAFETY FACTORS

1. Disconnect the negative(-) battery cable before performing any work on the vehicle.
2. Protect yourself by wearing goggles, earplugs, respirators, gloves, safety shoes, caps, etc. when working on a vehicle.
3. Safely support the vehicle before any work is done. Block the front or rear wheels if the vehicle is not lifted off of the ground.
4. When welding or performing other procedures that require the use of an open flame near the fuel tank, disconnect and remove the tank and fuel pipe, and cap the pipe to prevent fuel leakage.
5. Insure proper ventilation of your working area. Some paint and sealant can generate toxic gases when heated. Use an air chisel or saw to remove damaged panels instead of a gas torch.
6. Observe all local and national safety regulations when performing any work.
7. Cover interior with heat-resistant cover to insure safety when welding.
8. Take care when using gas or cutting torches so as not to burn body sealer or interior. Extinguish immediately if they should catch fire.

SRS AIR-BAG



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The i30 / ELANTRA NEOS is equipped with a Supplemental Restraint System AIR-BAG to provide the vehicle's driver and/or the front passenger with additional protection than that offered by the seat-belt system alone, in case of a frontal impact of sufficient severity.

When handling airbag components (removal, installation or inspection, etc.), always follow the directions given in the repair manual for the relevant model to prevent the occurrence of accidents and airbag malfunction.

Also take the following precautions when repairing the body:

1. Work must be started after approximately 30 seconds or longer from the time the ignition switch is turned to the LOCK position and the negative (-) terminal cable is disconnected from the battery. (The airbag system is equipped with a back-up power source so that if work is started within 30 seconds of disconnecting the negative (-) terminal cable of the battery, the airbag may be deployed.)
When the negative(-) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the contents memorized by the audio memory system. Then when work is finished, reset the audio system as before and adjust the clock.
2. When using electric welding, first disconnect the air-bag connectors under the steering column near the MULTI-FUNCTION SWITCH and the passenger's side crash pad before starting work.
3. Store the air-bag modules where the ambient temperature remains below 93 °C (200 °F), without high humidity and away from electrical noise.
4. **WARNING/CAUTION** labels are attached to the periphery of the air-bag components.
Refer to the i30 / ELANTRA NEOS SHOP MANUAL

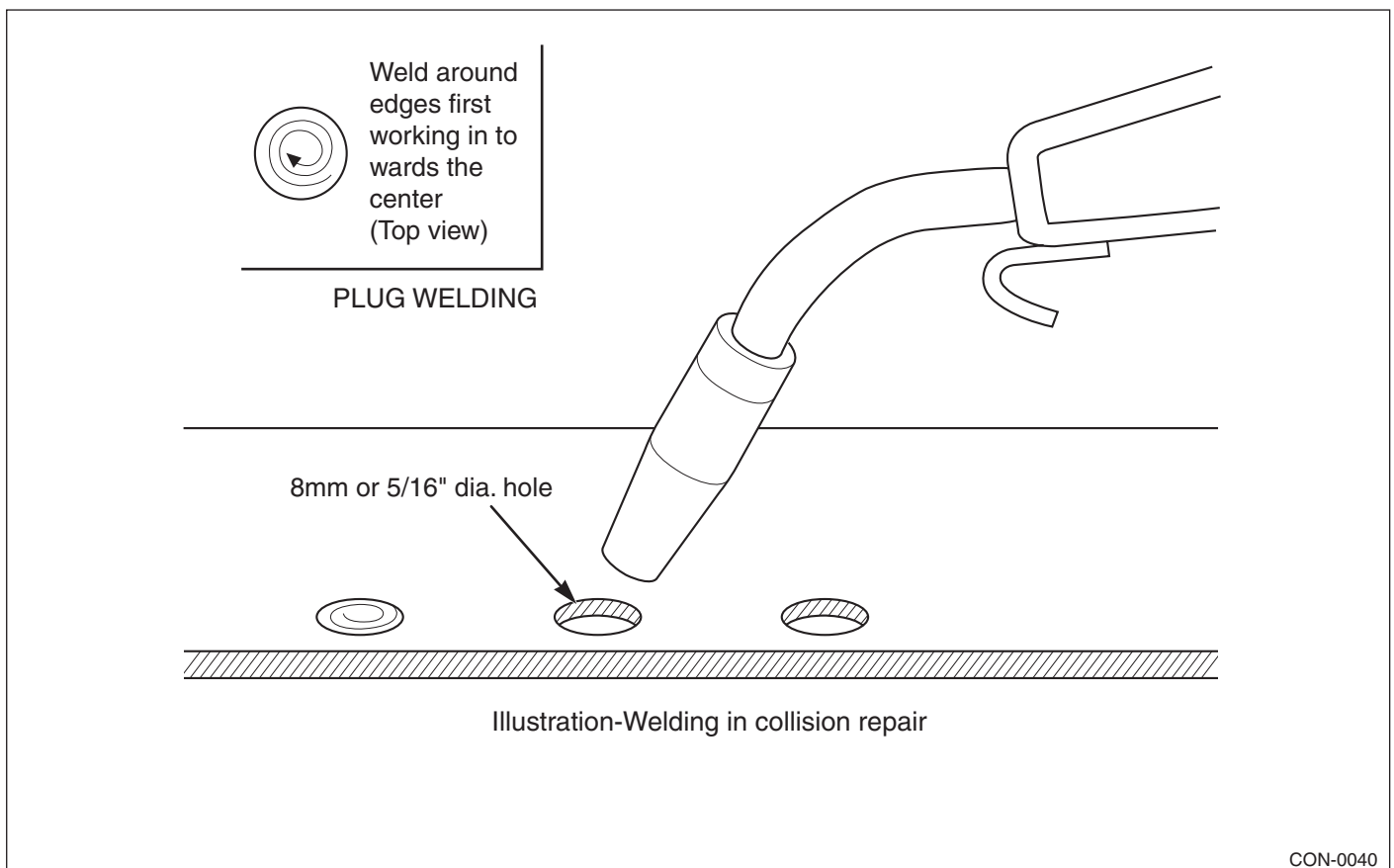
WELDING

All repairs in this manual require the use of a Metal-Inert Gas (MIG) welder, Gas (oxyacetylene) welding must not be used. Both high strength steel and mild steel can be welded using the MIG welder. The I-CAR recommendations for welding should be followed. The shielding gas should be 75% Argon and 25% CO₂.

The recommended welding wire size is 0.23" and the wire should satisfy the American Welding Society standard code AWSER70S-6.

During the repair process, plug welds are used to duplicate original factory spot welds. All plug welds should be done with the MIG welder. An 8 mm (5/16") hole is placed in the top (welding side) sheetmetal.

You then begin welding along the edges and the spiral towards the center (see illustration). This is important so that weld penetration between the two metal pieces takes place along the circumference of the circle.



Observe the following tips when welding.

1. Wear appropriate eye protection.
2. Carefully follow the manufacturers operating instructions for the welding machine you are using.
3. Do not weld, smoke or allow open flames around volatile chemicals, cleaners or solvents or in any area where they have just been used.

BODY FRAME STRAIGHTENER

When using a frame straightener, do not enter the area where the body is being straightened by the chain.

ELECTRONIC PARTS

Vehicles today include a great many electronic parts and components, and these are in general very susceptible to adverse effects caused by overcurrent, reverse current, electromagnetic waves, high temperature, high humidity impacts, etc.

In particular such electronic components can be damaged if there is a large current flow during welding from the body side.

Therefore, take the following precautions during body repair to prevent damage to the CONTROL MODULES (ECM, TCM, ABS CM, SRS CM, etc.)

1. Before removing and inspecting the electrical parts or before starting electric welding operations, disconnect the negative (-) terminal cable from the battery.
2. Do not expose the CONTROL MODULES to ambient temperatures above 80°C (176°F).

 **NOTE**

If it is possible the ambient temperatures may reach 80°C (176°F) or more, remove the CONTROL MODULES from the vehicle before starting work.

3. Be careful not to drop the CONTROL MODULES and not to apply physical shocks to them.

FOR BEST RESULTS**REMOVAL****Measuring dimensions before beginning**

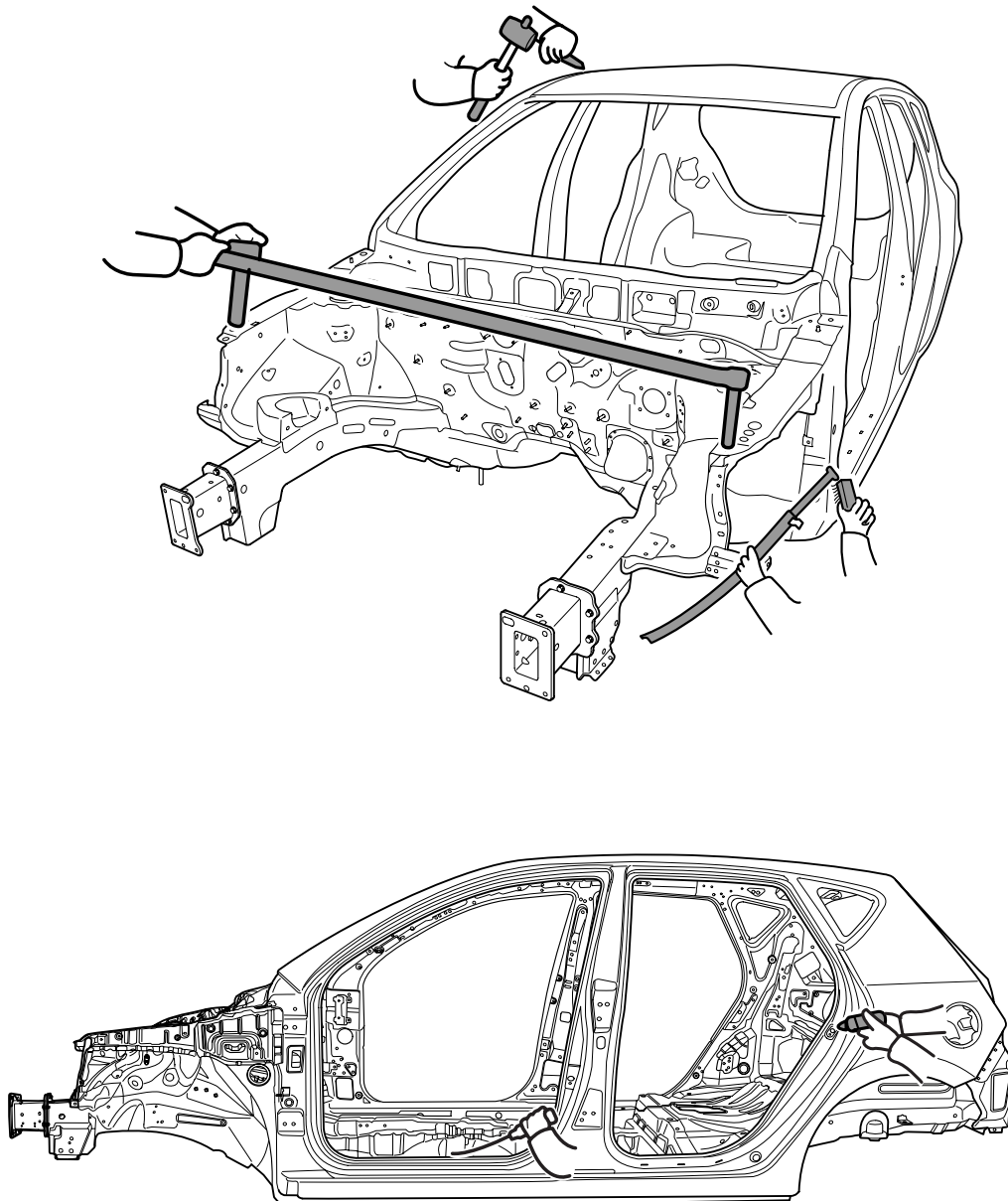
Measure the dimensions of the damaged area according to the body dimension drawings before removing and repairing. Adjust dimensions with body frame adjuster if deformed.

Selecting cutting area

Select a cutting area that is easily accessible and that is prone to the least amount of distortion when welding. Select an area that would allow the new part to overlap repair area by 30~50 mm (1.2~2.0 in) .

Protecting body from damage

Secure the body with clamps and jacks to prevent damage to the body when working on it.

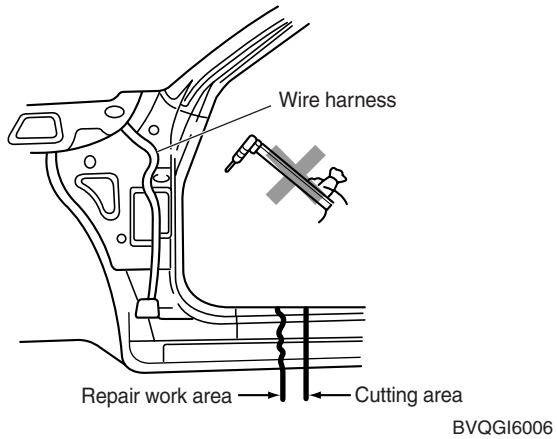


Removing

Use caution when removing body molding and trim from the area to be worked.

Apply masking tape where needed to prevent damage to the part being removed or to the vehicle body.

Before starting repairs, check if pipes, hoses or electrical components are present near damaged area.



PREPARATION OF INSTALLATION

Applying spot sealer

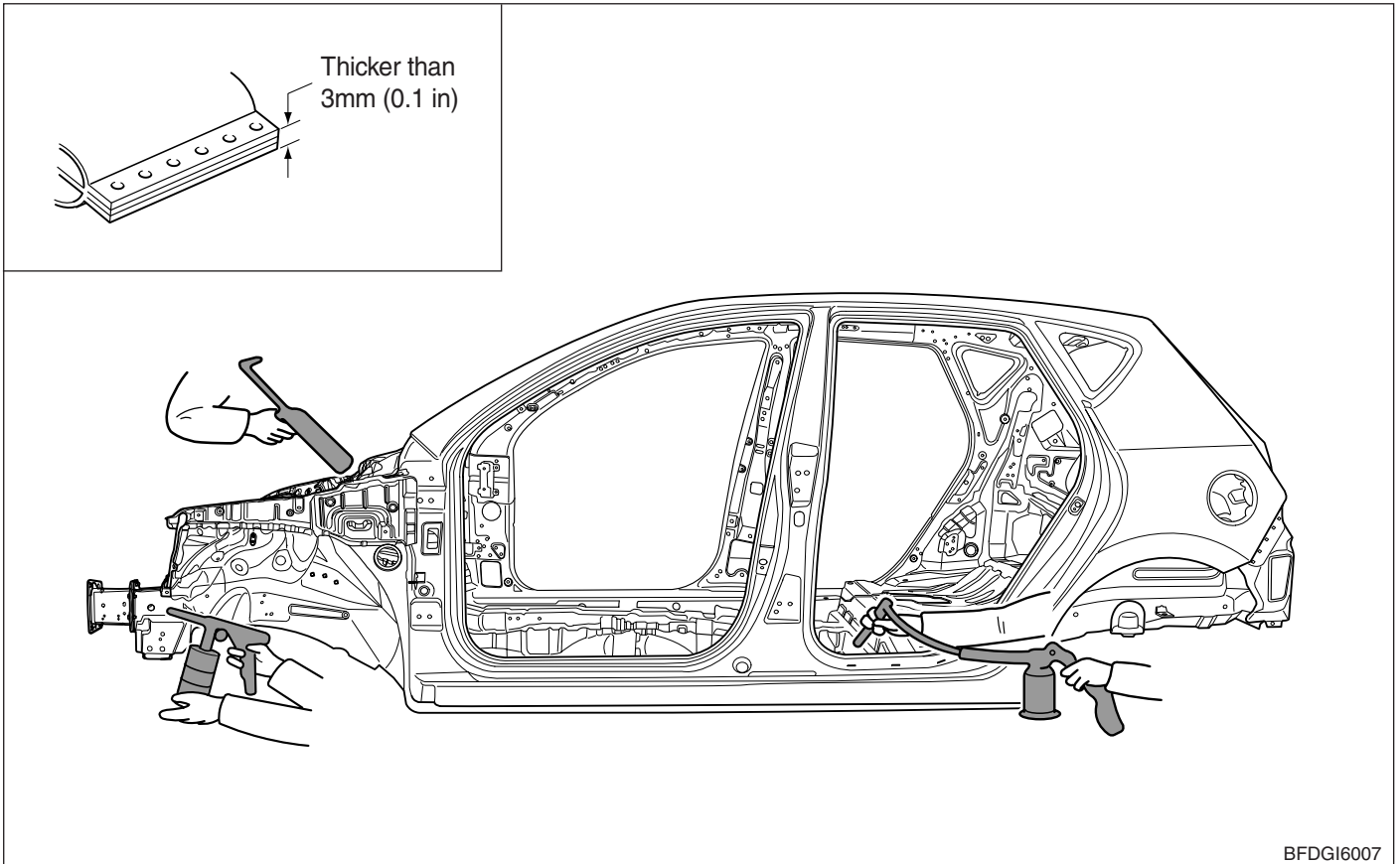
Remove paint from the surface of new parts and body to be spot welded, and apply spot sealer for rustproofing.

Selecting a welding method

If the thickness of the area to be welded with the panels overlapped is greater than 3 mm (0.1 in), do plug welding using a carbon arc welding machine.

Protecting body from damage

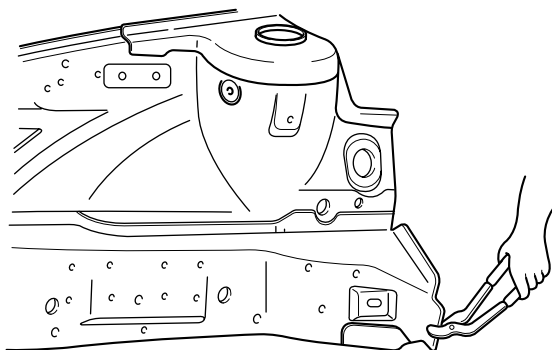
Secure the body with clamps and jacks to prevent damage to the body when working on it.



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Machining holes for plug welding

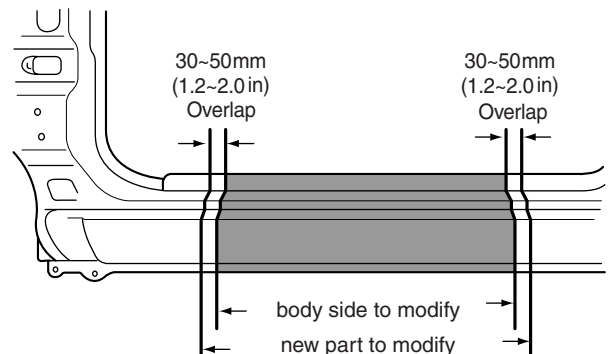
Drill a hole of approximately 5~6 mm (0.2~0.24 in) in diameter in those areas which are not suitable for spot welding.



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Adjusting a new part

The new part should be cut larger than the repair area, overlapping the repair area by 30~50 mm (1.2~2.0 in).



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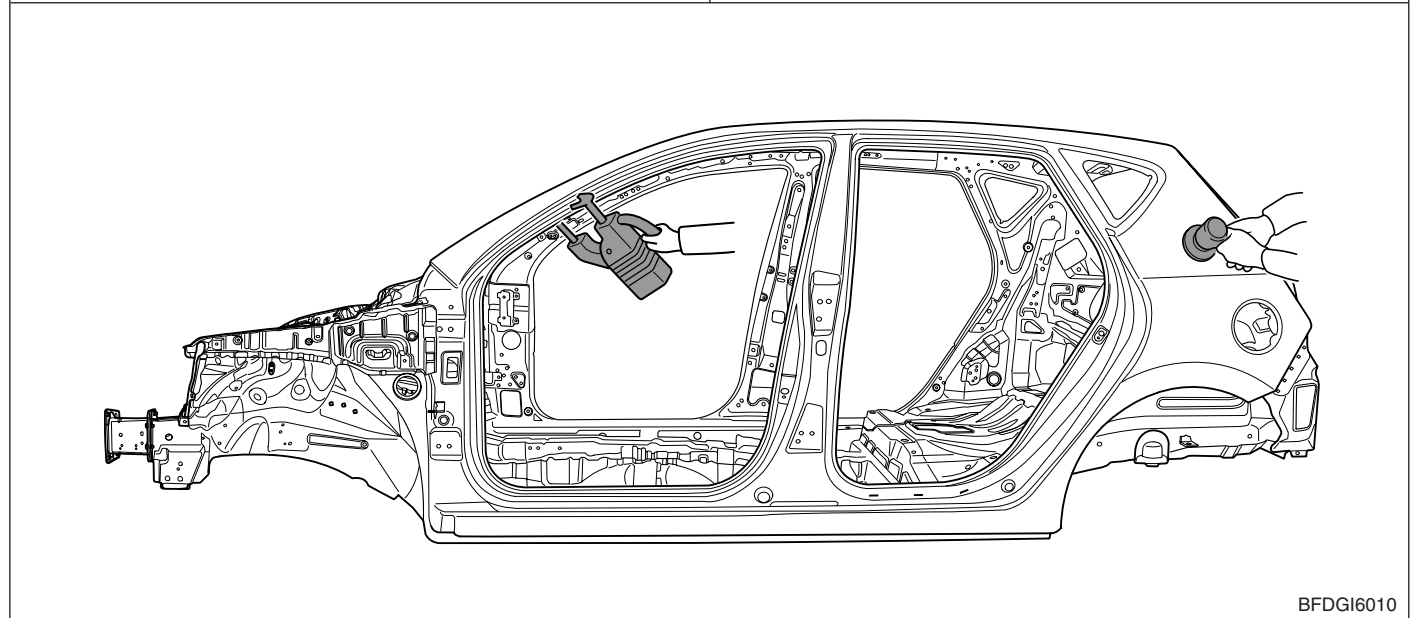
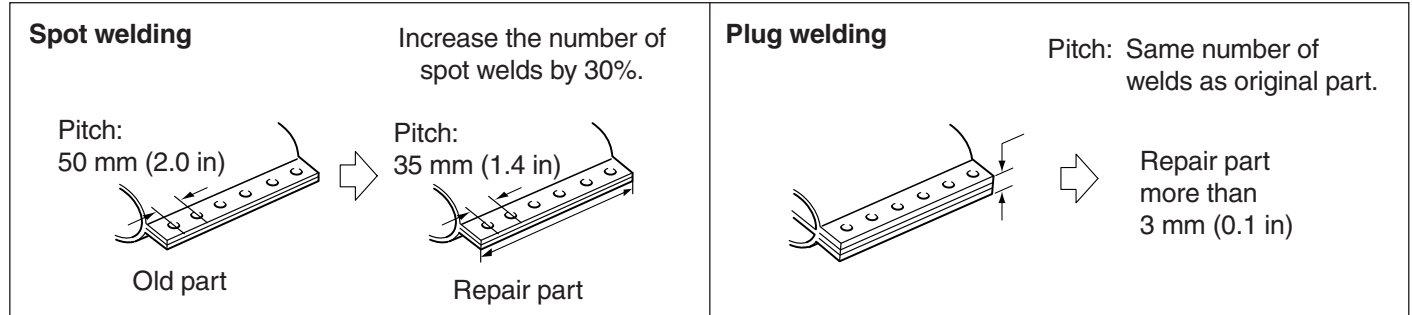
INSTALLATION

Measuring dimensions before welding

When installing a new part, assemble it according to the body dimensions given in Section BD, and start welding after checking the gaps with nearby parts.

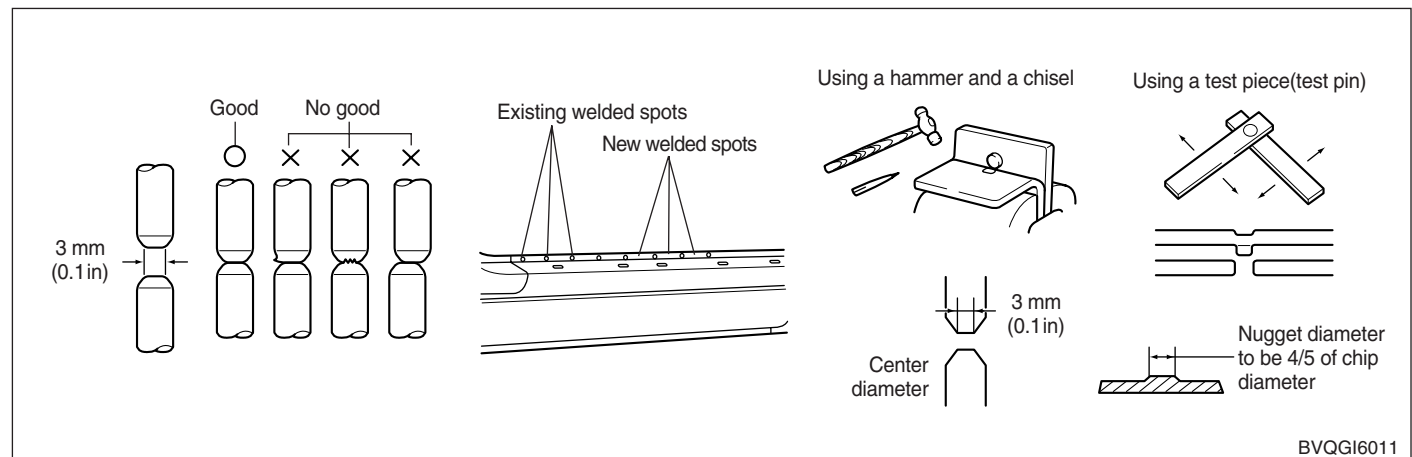
Caution when welding

The number of welding points should be determined based on the criteria below:



Caution when spot welding

The tip of the spot welding machine should be maintained to a minimum of 3 mm (0.1 in) because it greatly affects welding strength. When possible, spot welding should be done between the existing spot welded points. Before and after spot welding, weld a test piece(test pin) of the same material as the body panel, and check the welding strength.



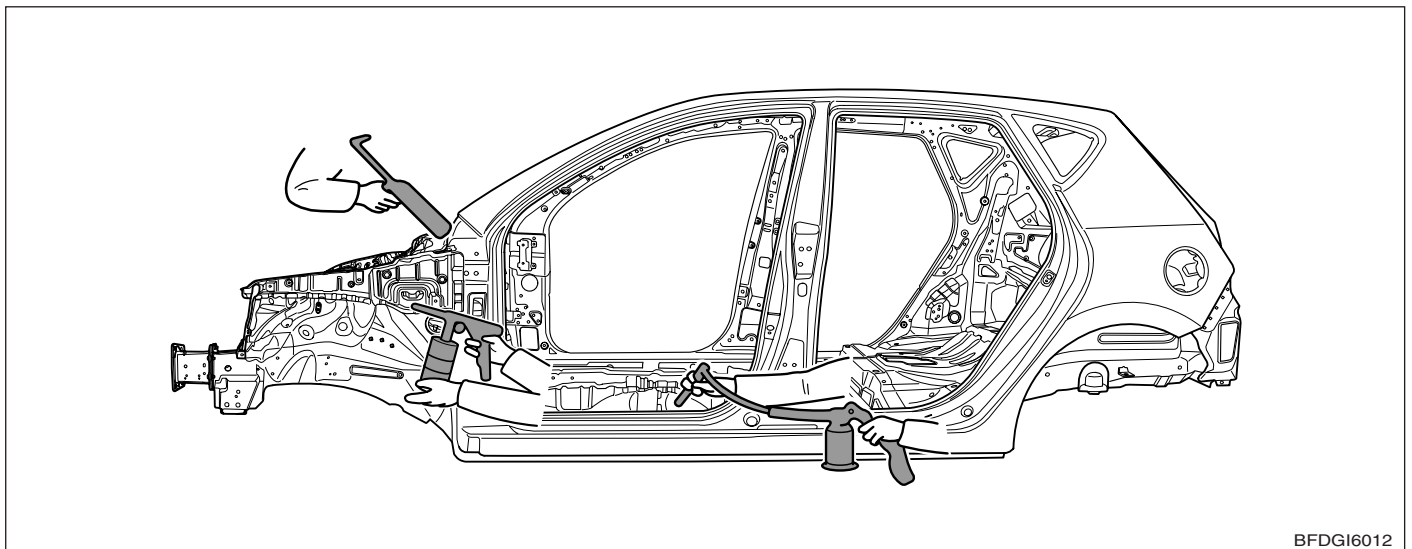
CORROSION PROTECTION AND SEALING

Proper corrosion protection and sealing is an important part of any repair. When reviewing these repair procedures, it is important to recognize the need for corrosion restoration to provide for long term strength of the repaired member.

A two part epoxy primer was applied to the metal surfaces during the latter part of the repair. For closed sections, such as front and rear rails, rocker panels and pillars, the primer is applied without applying the metal conditioner and the conversion coating. These steps are omitted to insure that no rinse water is trapped in the closed sections. The primer application is followed by an application of an oil or wax based rust proofing material.

After the corrosion restoration process for the closed sections are completed, then the process can be applied to all exterior sections. For exterior surfaces, both metal conditioner and conversion coating treatments are applied to the exterior surface prior to application of the epoxy primer. The procedure in applying the corrosion restoration process is important order to insure that moisture, due to the water rinsing of the metal conditioner and conversion coating is not inadvertently trapped inside any closed section before the epoxy primer and rust proofing materials have been applied.

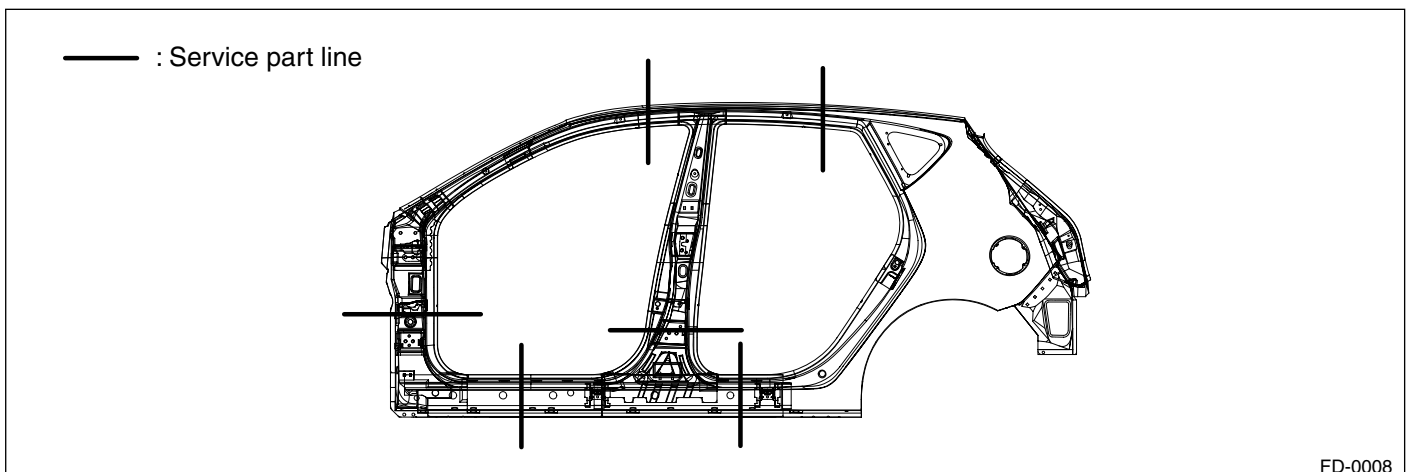
Appropriate seam sealers are then applied to all joints. Follow manufacturer's recommendations for the appropriate type of seam sealer to be used at each seam or joint.



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SIDE BODY PANELS

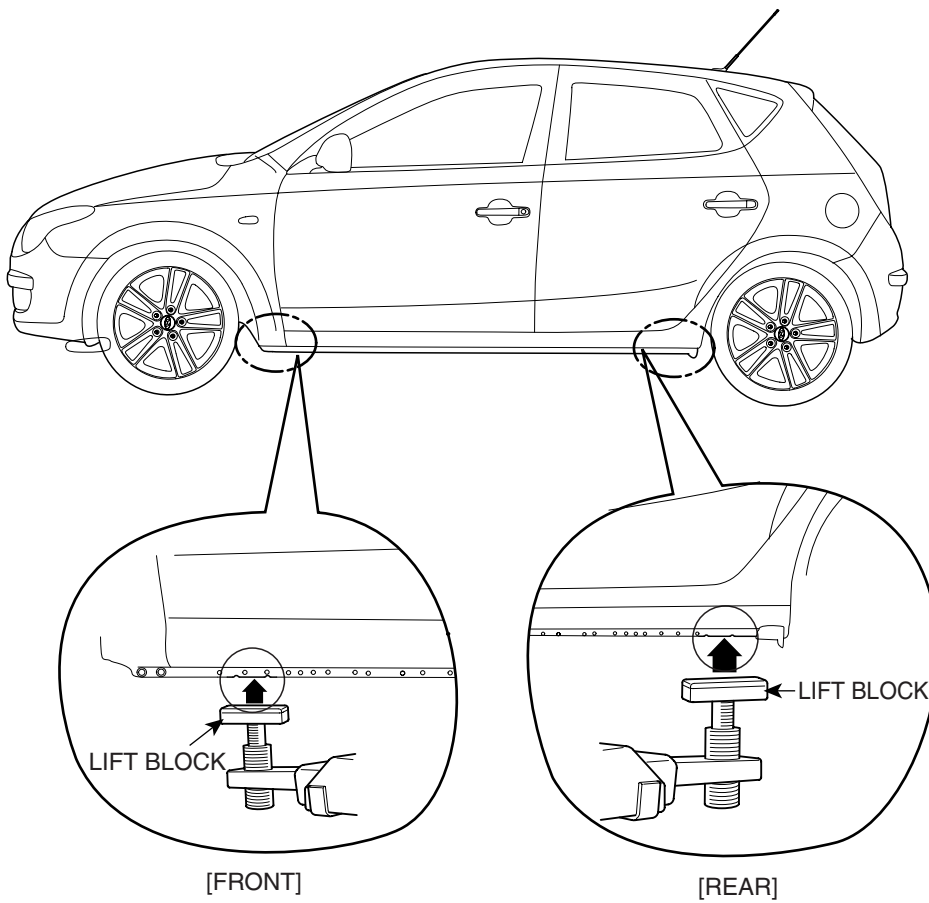
The side body panel for i30 / ELANTRA NEOS is designed and stamped from a single piece of sheet metal in factory as shown in the figure. While the entire side panel is available for service, the partial panels sectioned by several damaged areas are also available. Therefore when repairing side body, refer to "Replacement parts section" of this manual to select and use the appropriate part.



FD-0008

VEHICLE LIFT (2-SUPPORT TYPE) AND SAFETY STAND POSITIONS

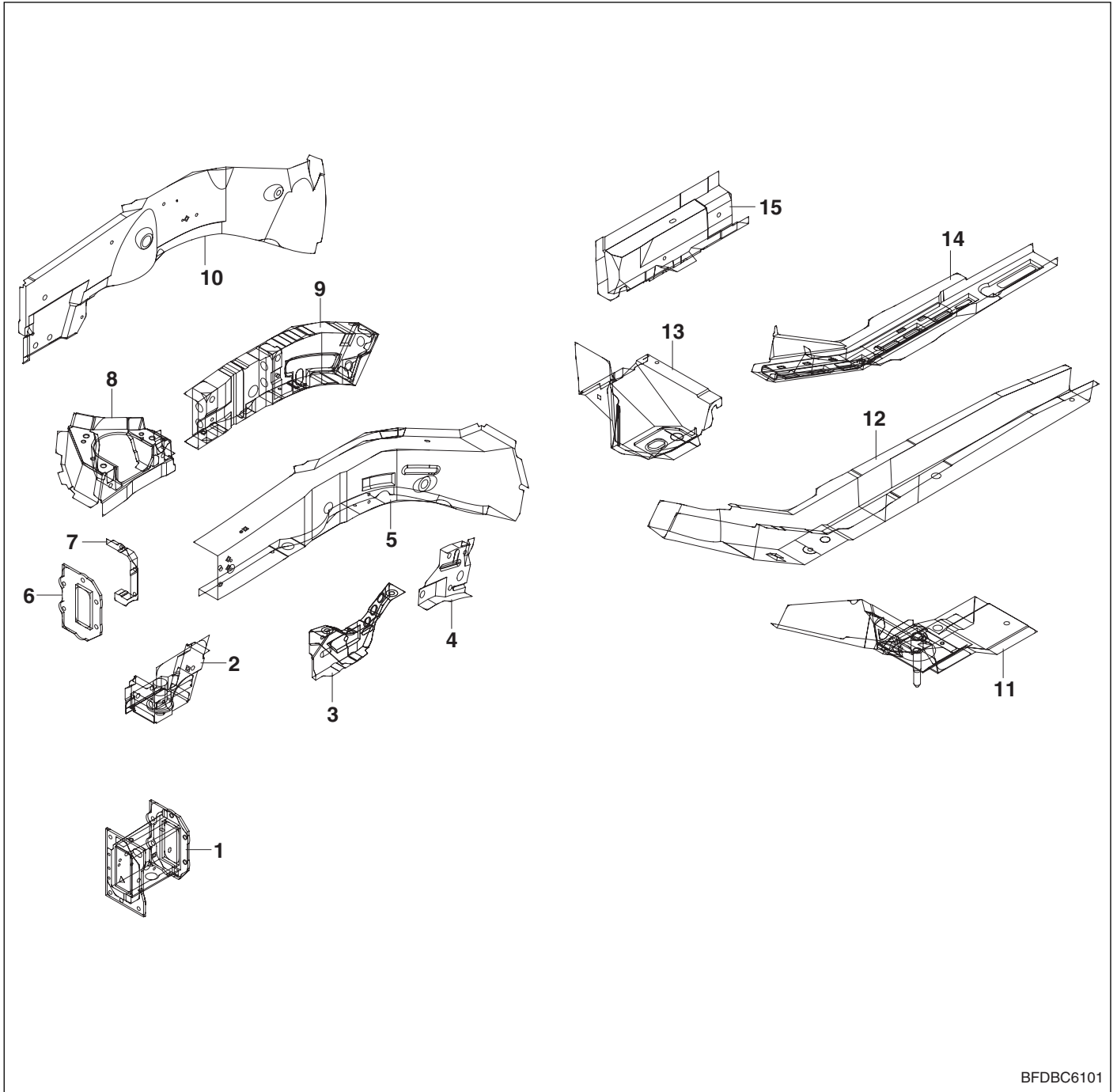
1. Place the lift blocks under the support points as shown in the illustration
2. Raise the hoist a few inches and rock the vehicle to be sure it is firmly supported.
3. Raise the hoist to full height to inspect the lift points for secure support.



Body Construction

FRONT SIDE MEMBER	BC - 2
FENDER APRON PANEL	BC - 6
SIDE BODY PANEL	BC -10
DASH PANEL	BC -13
CENTER FLOOR PANEL	BC -17
REAR FLOOR PANEL	BC -20
BACK COMPLETE PANEL	BC -23
ROOF PANEL	BC -26
HOOD	BC -29
FRONT & REAR DOOR	BC -31
TAIL GATE	BC -33

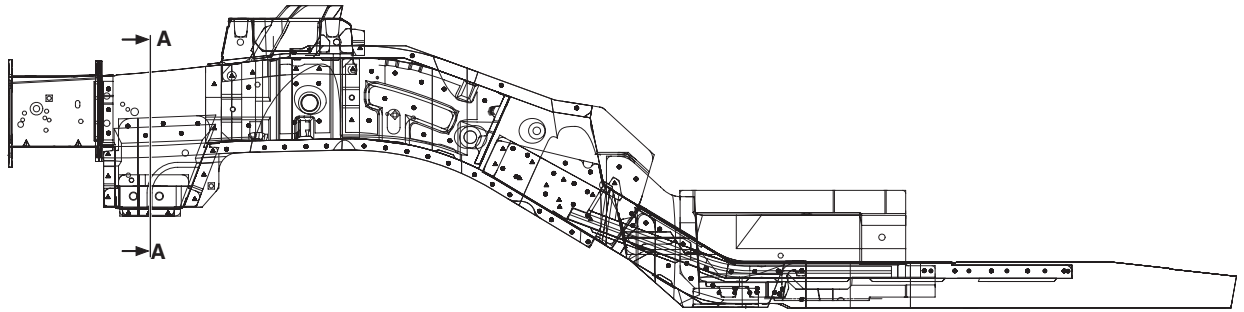
FRONT SIDE MEMBER



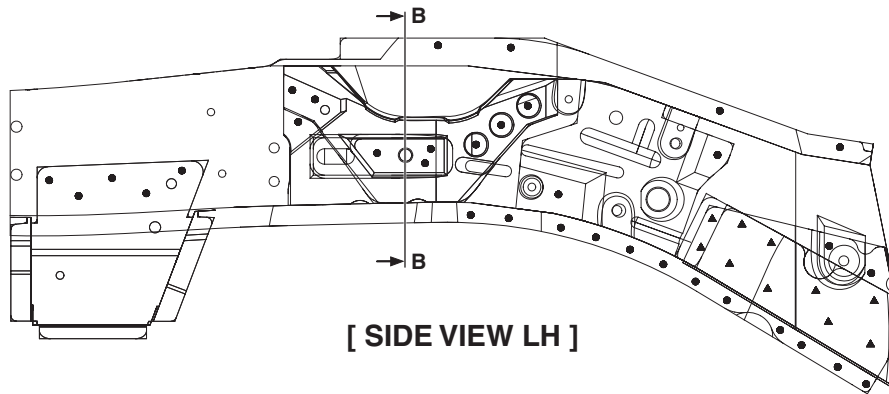
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No.	PART NAME	No.	PART NAME
1	Front crash member assembly	9	Front side member inner reinforcement assembly
2	Front side member outer front extension assembly	10	Front side outer member assembly
3	Transmission mounting reinforcement assembly	11	Subframe rear mounting bracket assembly
4	Front side member inner reinforcement	12	Front side rear lower member assembly
5	Front side inner member assembly	13	Front side member rear lower extension assembly
6	Crash member rear bracket assembly	14	Front side inner rear reinforcement assembly
7	Crash member bracket assembly	15	Side sill inner front extension
8	Engine mounting support assembly		

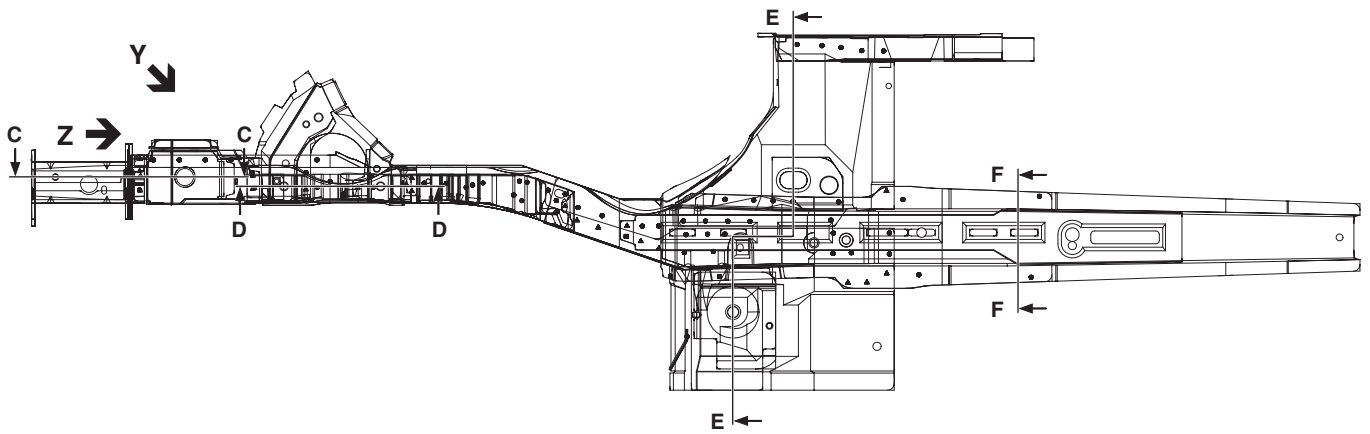
< Cross-Sectional Views >



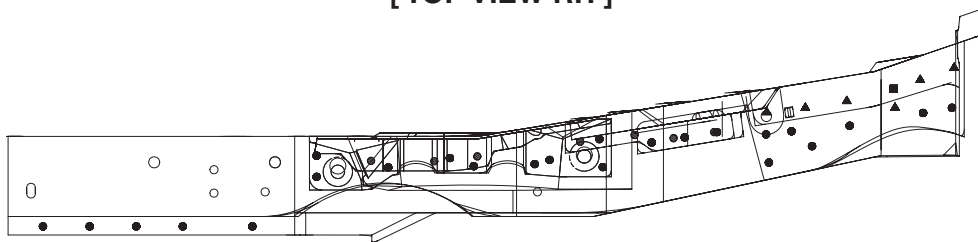
[SIDE VIEW RH]



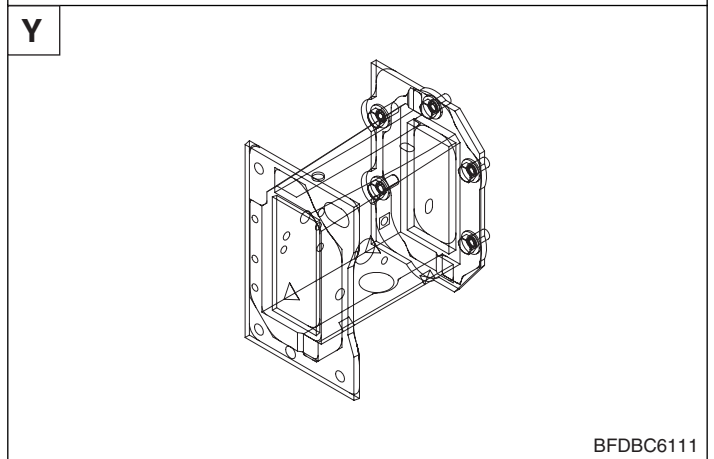
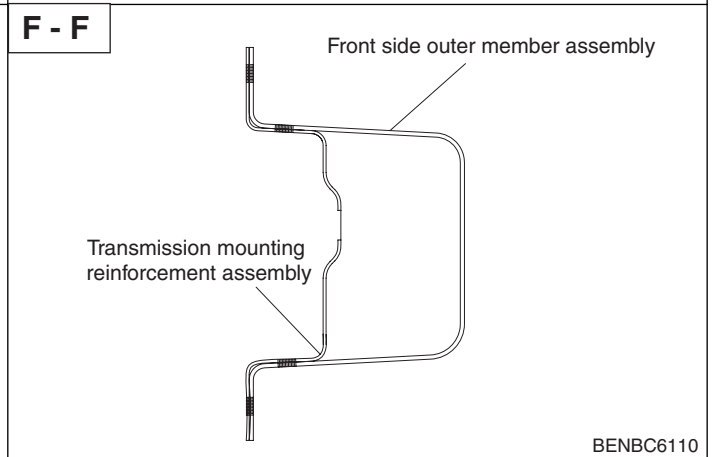
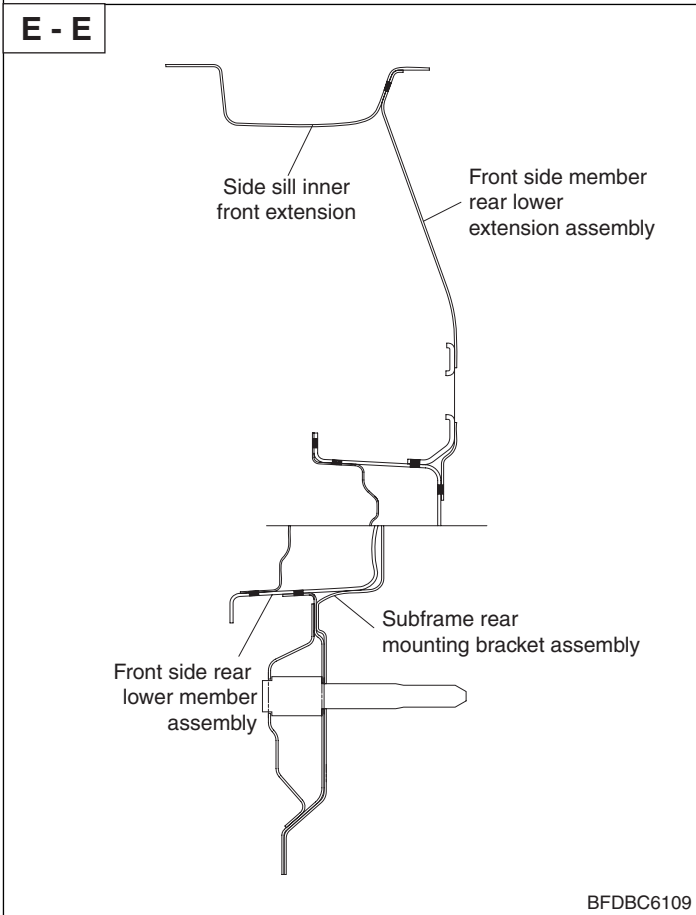
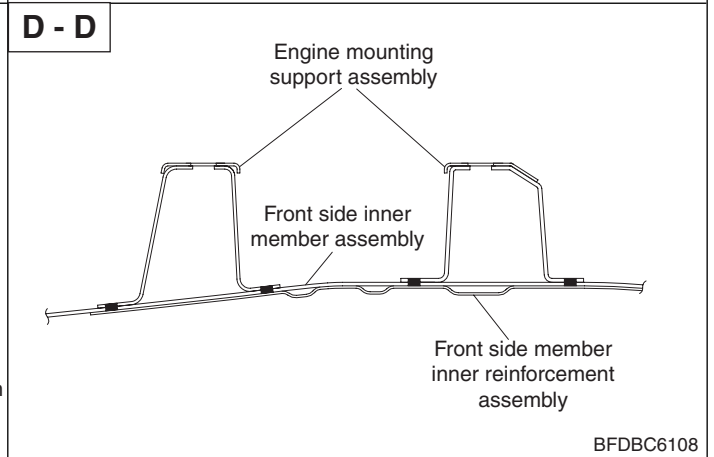
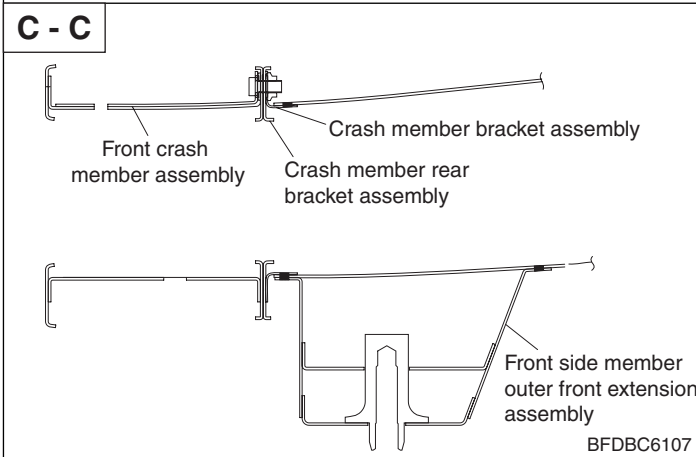
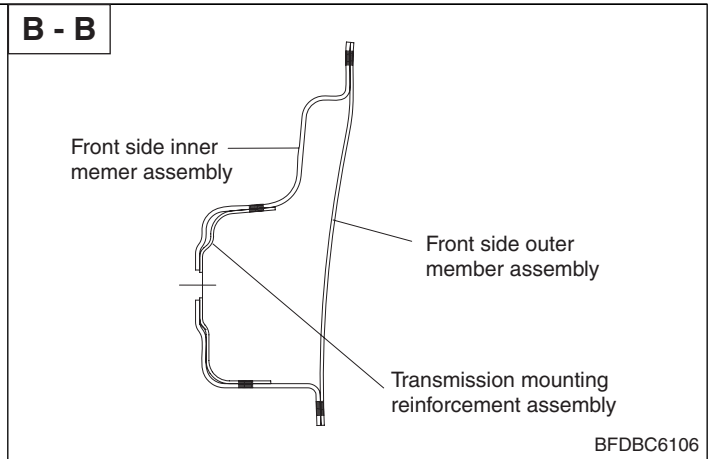
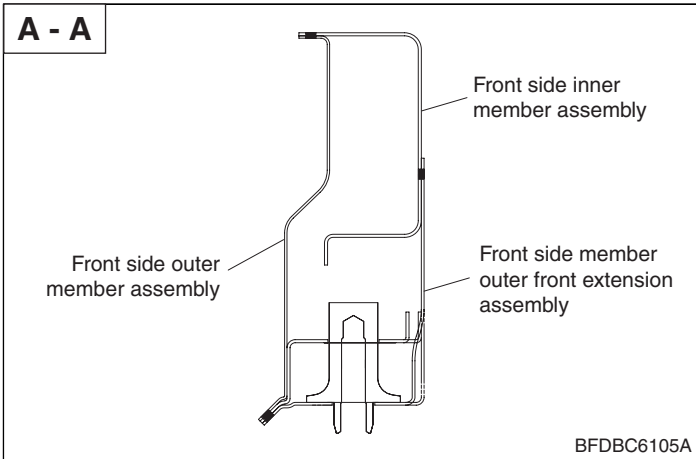
[SIDE VIEW LH]



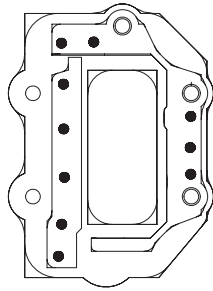
[TOP VIEW RH]



[TOP VIEW LH]

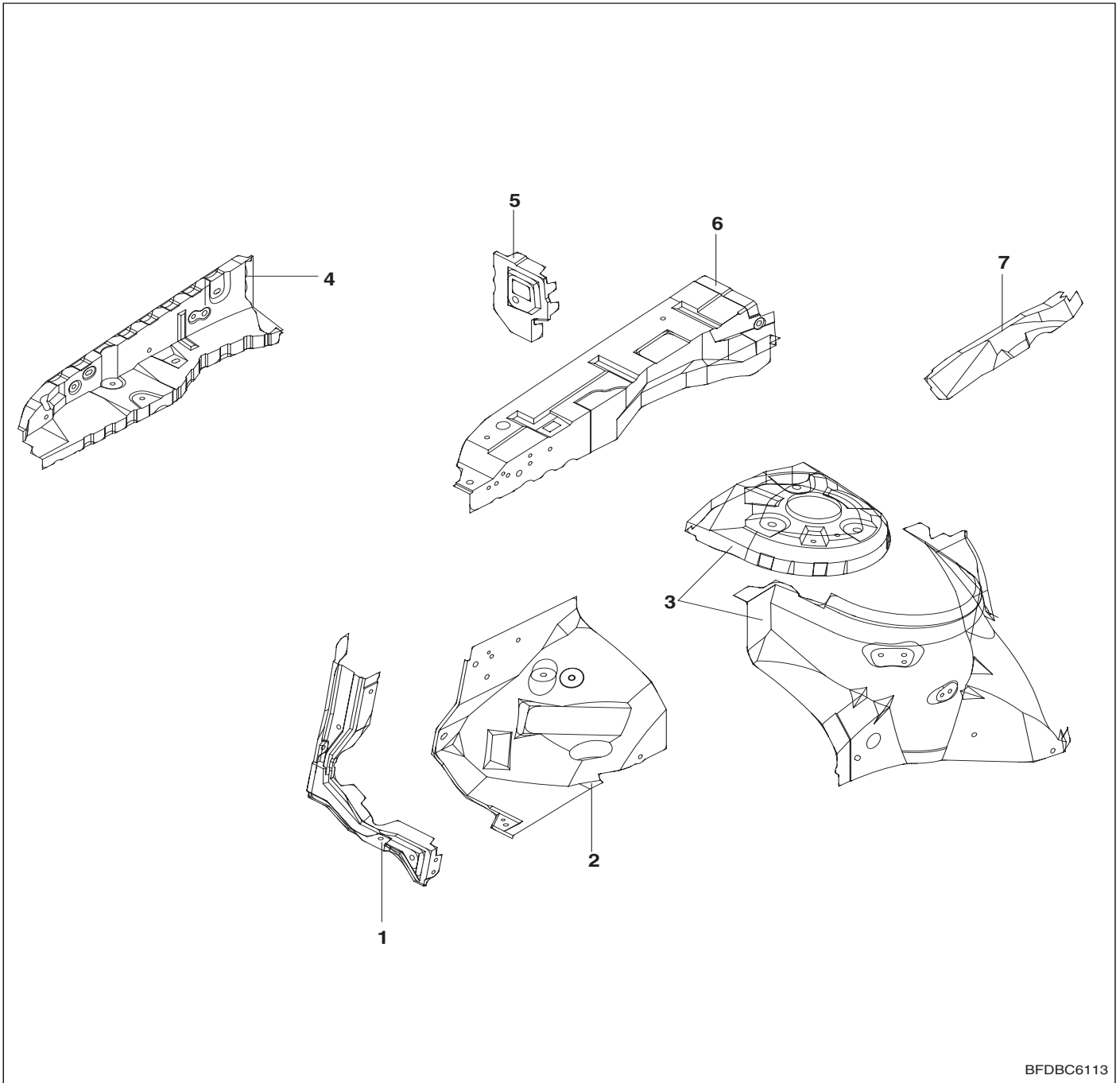


Z



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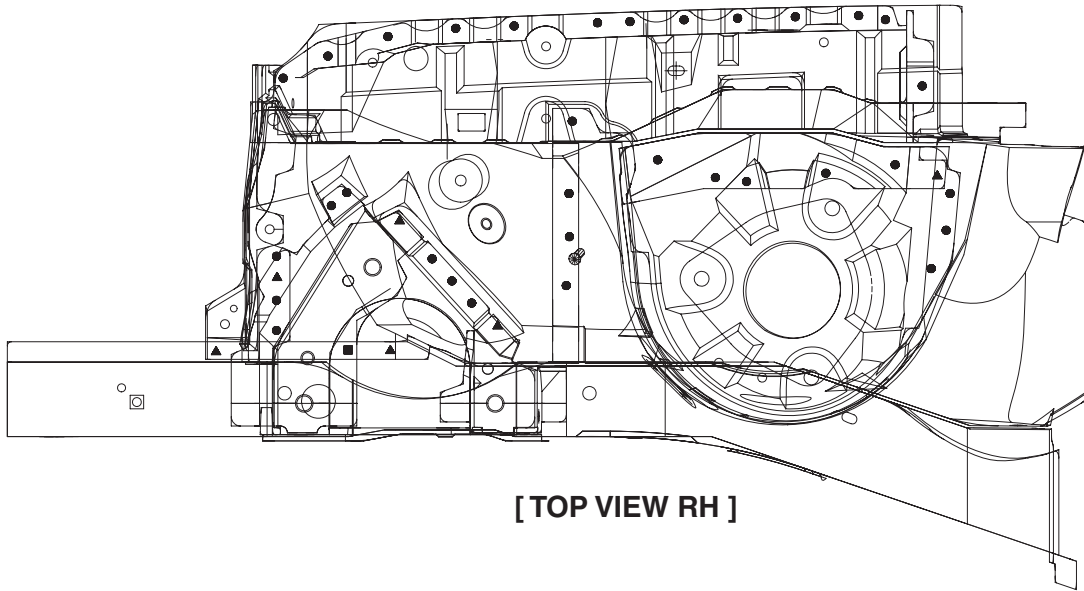
FENDER APRON PANEL



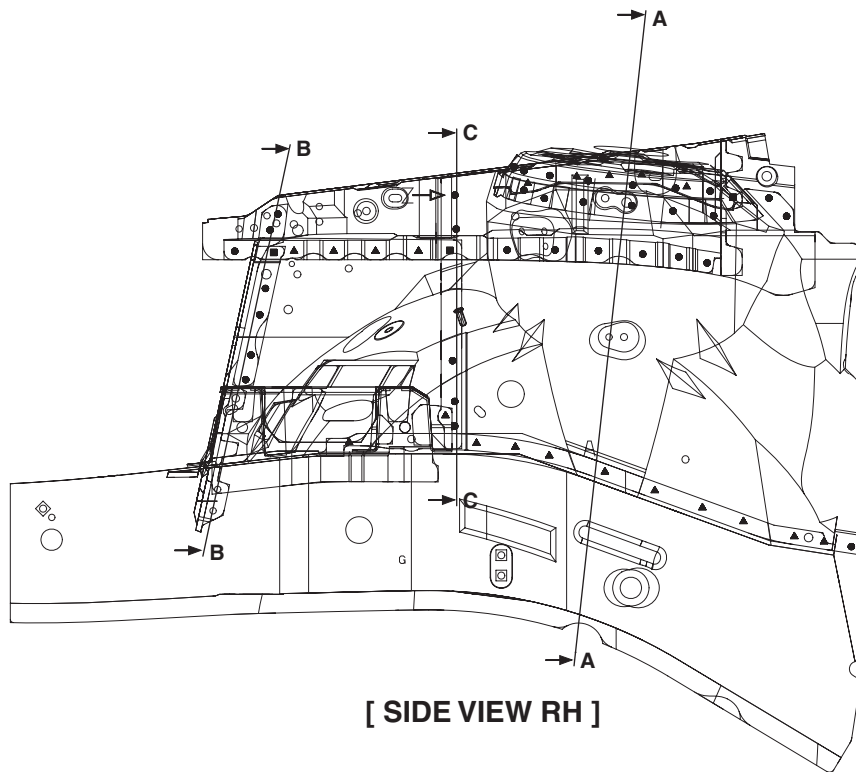
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No.	PART NAME	No.	PART NAME
1	Fender apron inner front reinforcement assembly	5	Fender apron upper rear gusset
2	Fender apron inner panel assembly	6	Fender apron upper inner panel assembly
3	Shock absorber housing complete panel assembly	7	Shock absorber housing reinforcement
4	Fender apron upper outer		

< Cross-Sectional Views >

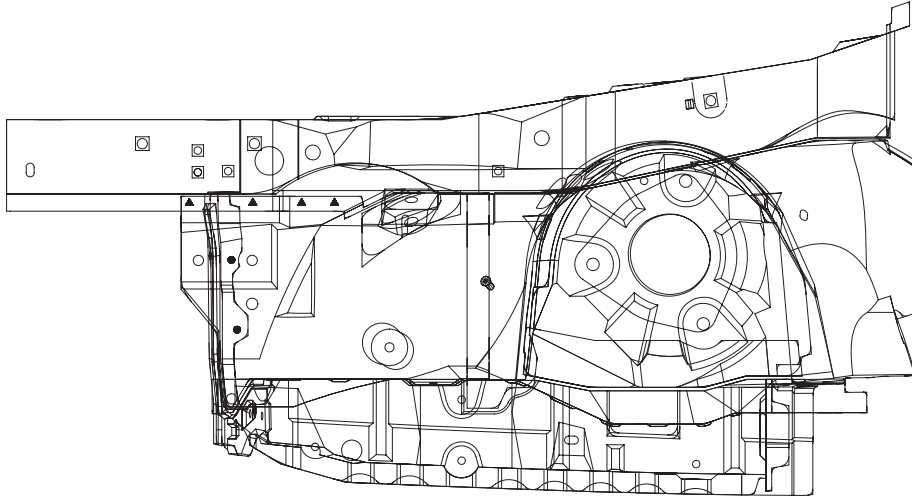


[TOP VIEW RH]

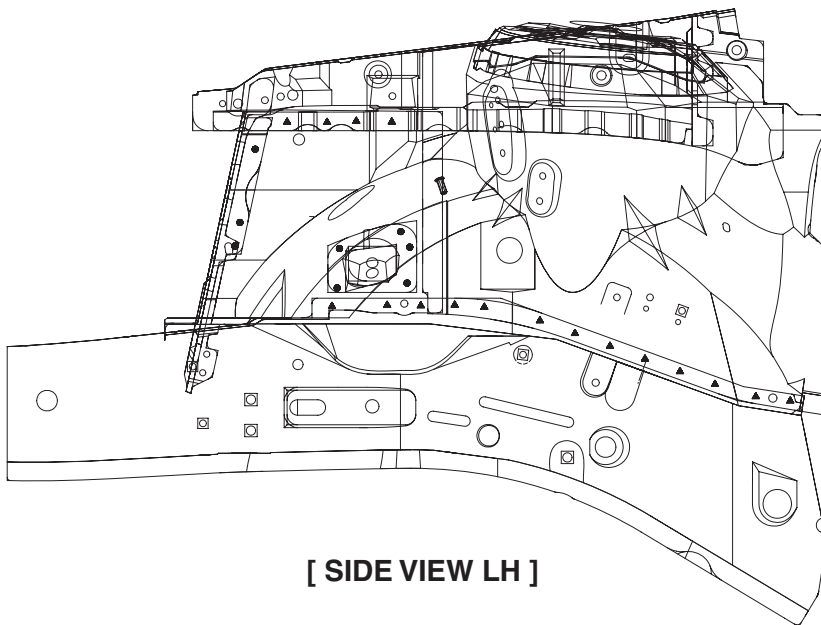


[SIDE VIEW RH]

< Cross-Sectional Views >

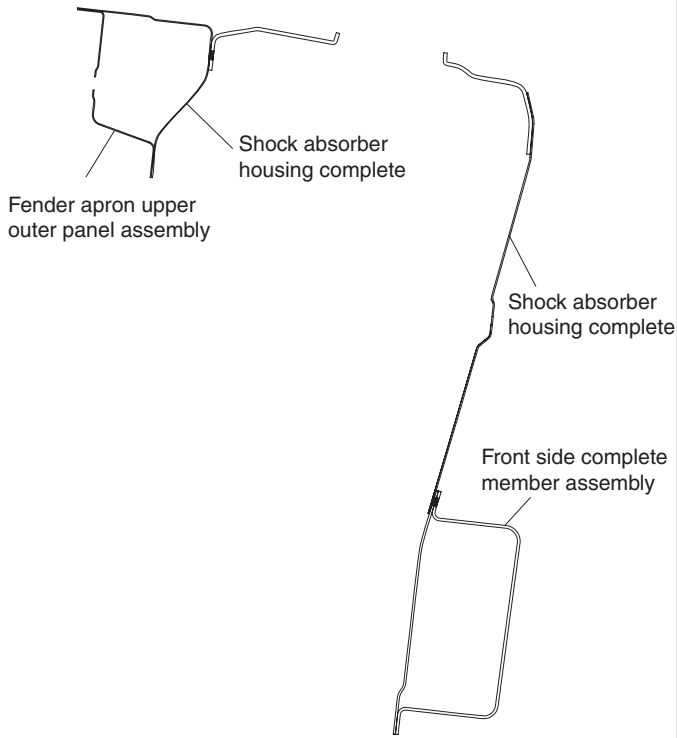


[TOP VIEW LH]



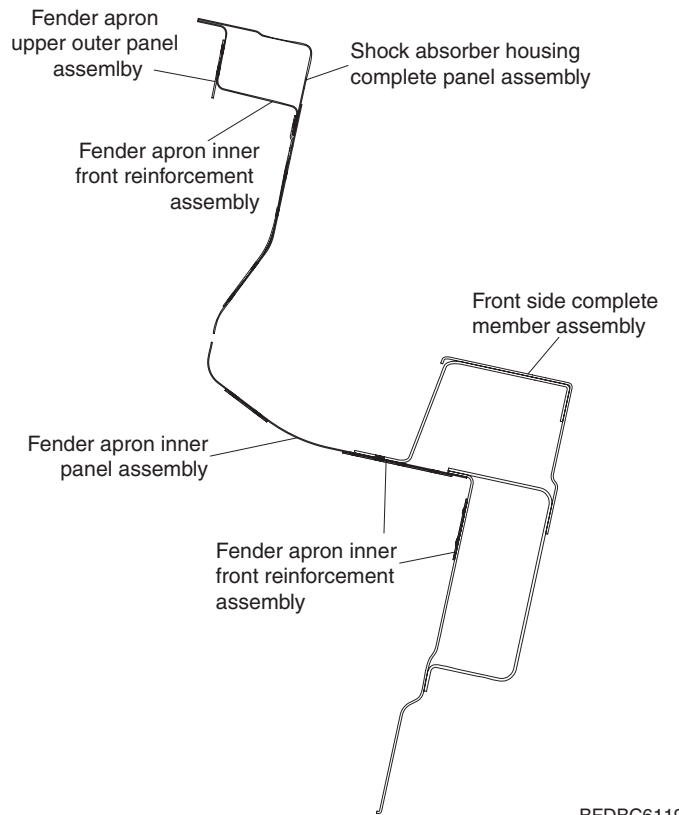
[SIDE VIEW LH]

A - A



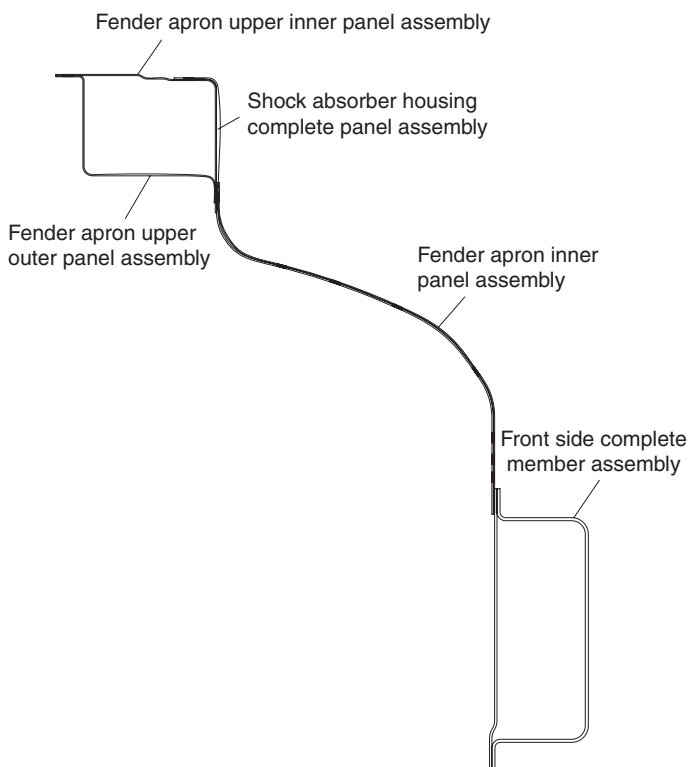
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B - B



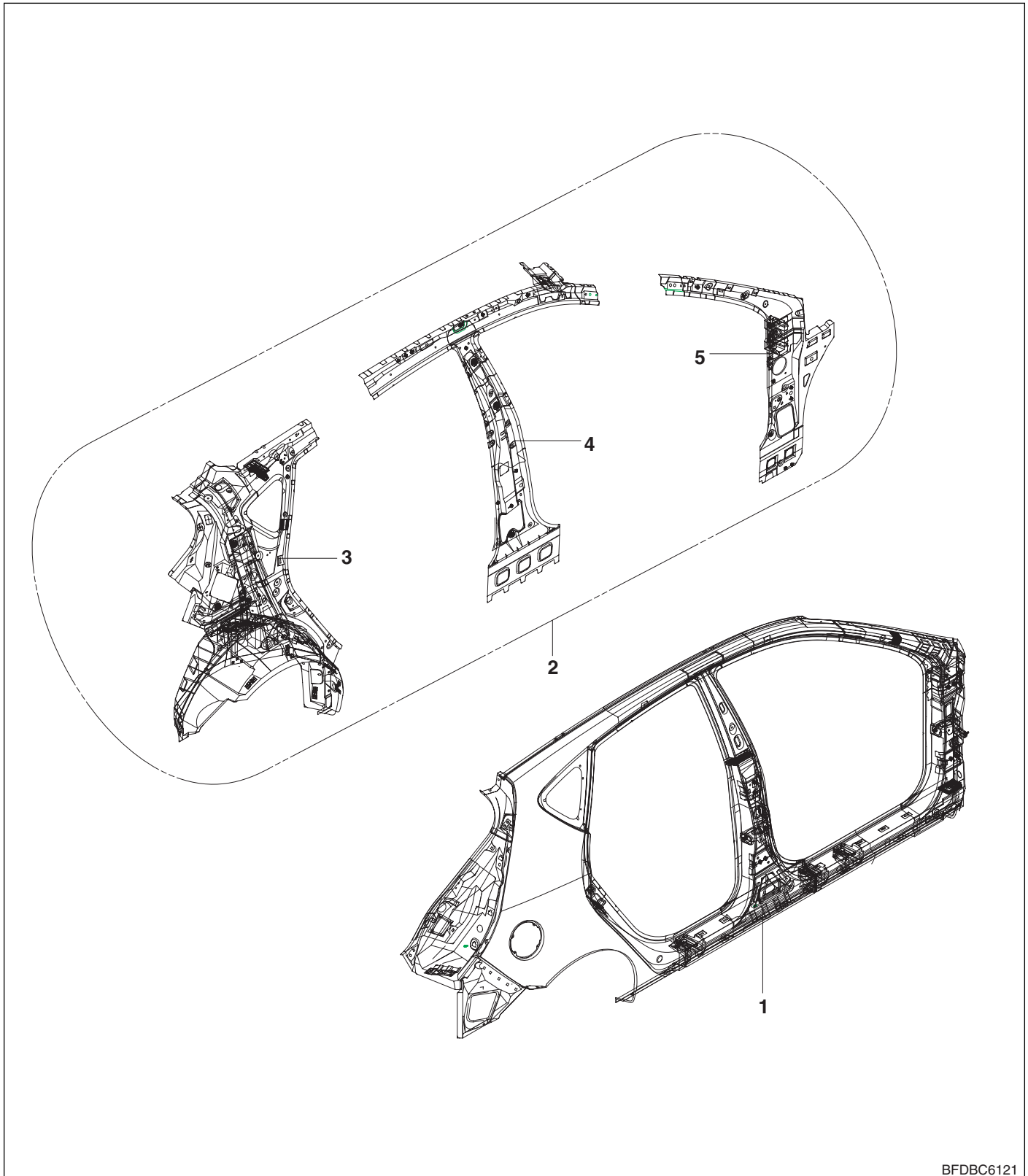
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C - C



BFDBC6120

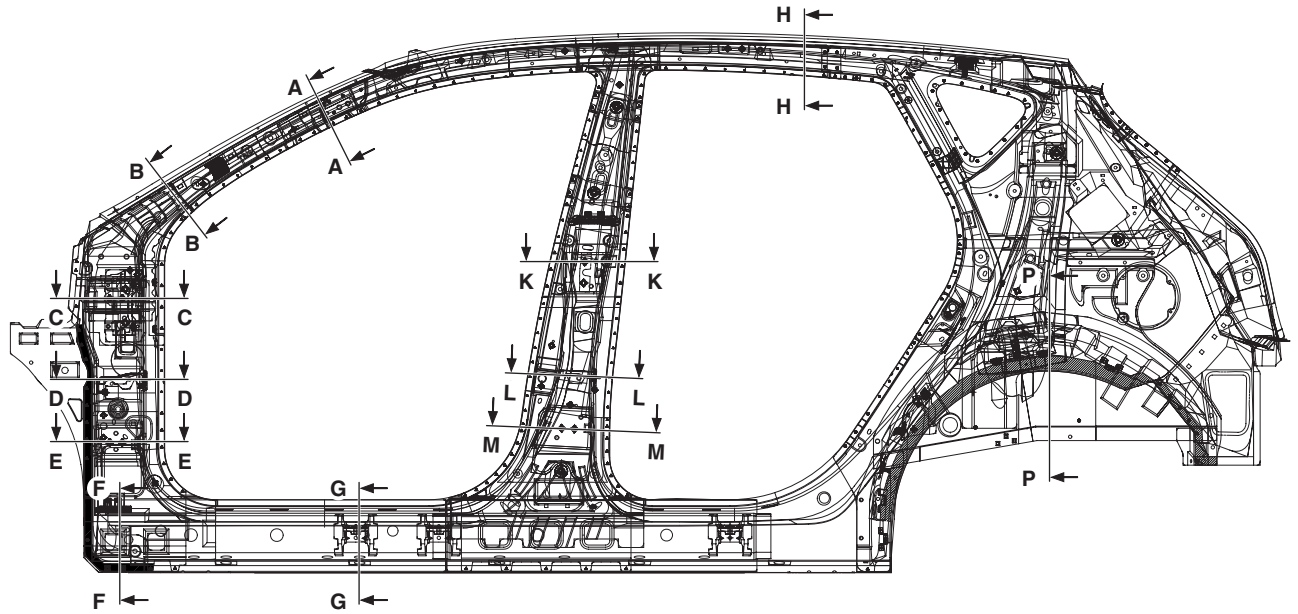
SIDE BODY PANEL



BFDBC6121

No.	PART NAME	No.	PART NAME
1	Side outer complete panel assembly	4	Center inner complete panel assembly
2	Side inner complete panel assembly	5	Front inner complete panel assembly
3	Quarter inner & wheel house complete panel assembly		

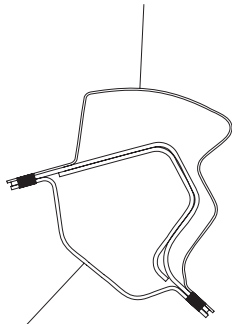
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A - A

Side outer complete panel assembly

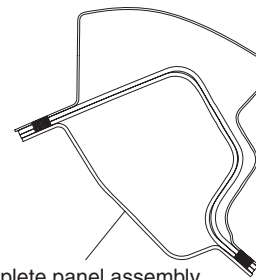


Side inner complete panel assembly

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B - B

Side outer complete panel assembly

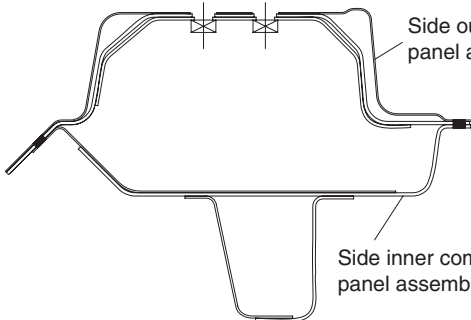


Side inner complete panel assembly

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C - C

Side outer complete panel assembly

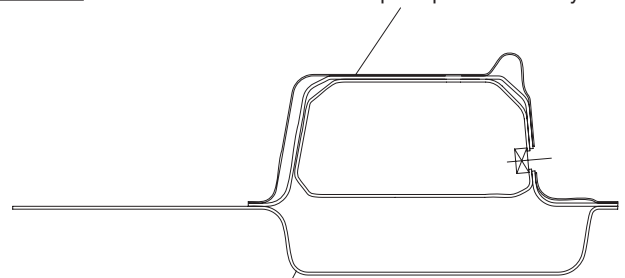


Side inner complete panel assembly

BFDBC6125

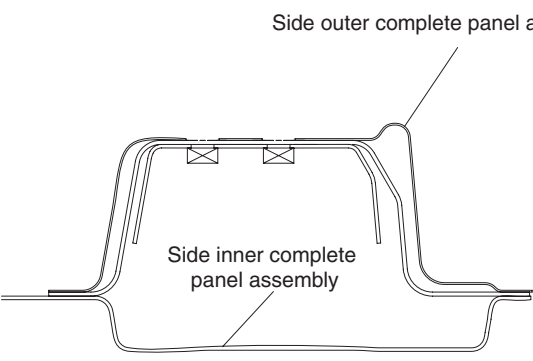
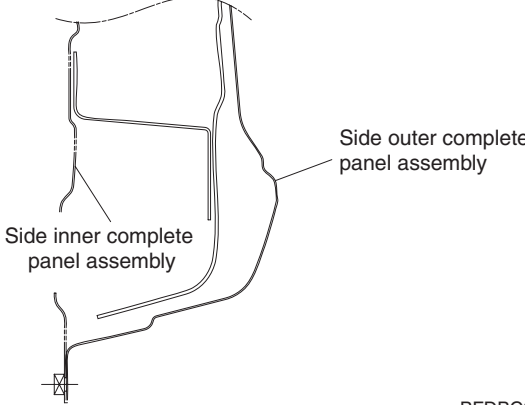
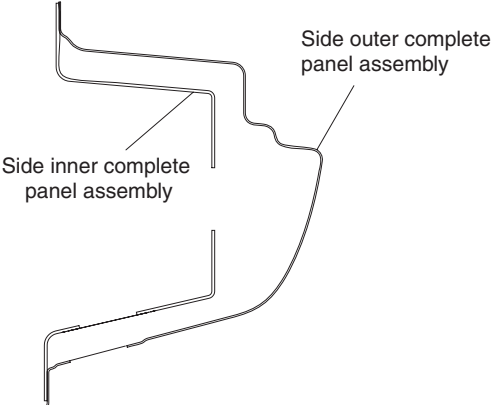
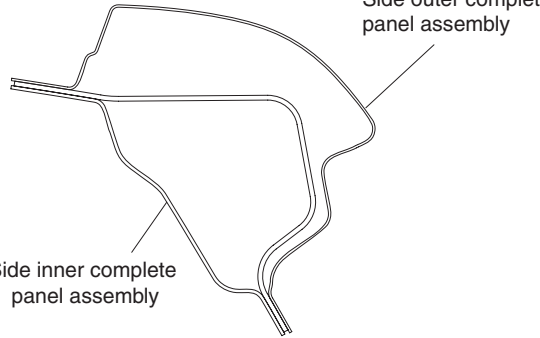
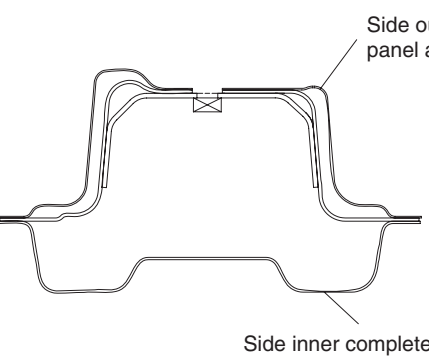
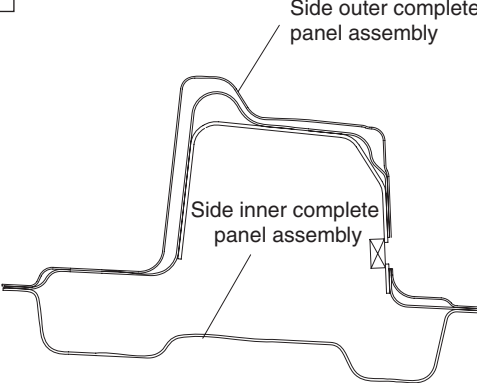
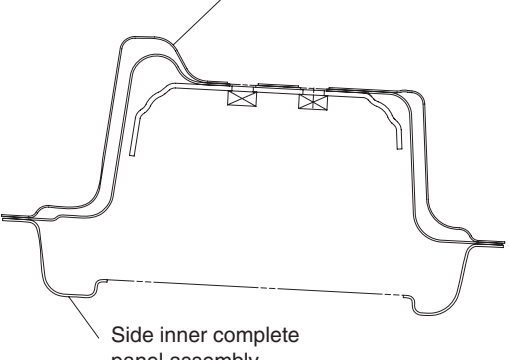
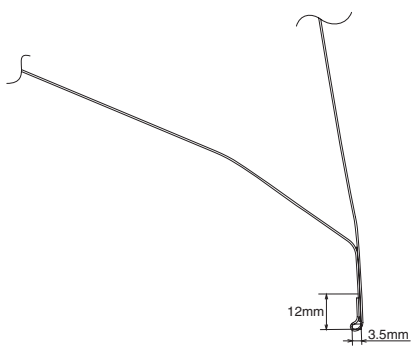
D - D

Side outer complete panel assembly

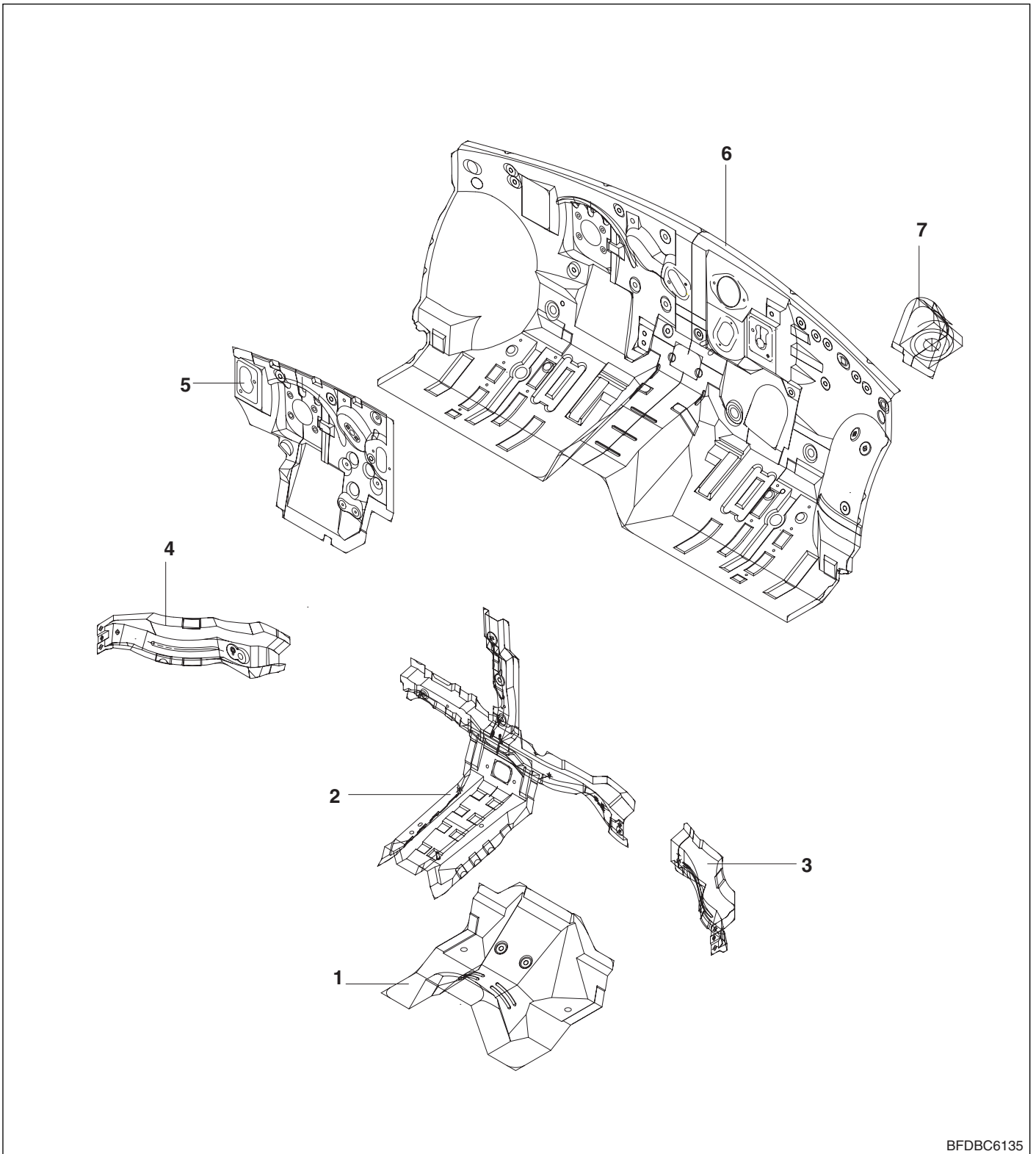


Side inner complete panel assembly

BFDBC6126

<p>E - E</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6127</p>	<p>F - F</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6128</p>
<p>G - G</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6129</p>	<p>H - H</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6130</p>
<p>K - K</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6131</p>	<p>L - L</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6132</p>
<p>M - M</p>  <p>Side outer complete panel assembly</p> <p>Side inner complete panel assembly</p> <p>BFDBC6133</p>	<p>P - P</p>  <p>12mm</p> <p>3.5mm</p> <p>BFDBC6134</p>

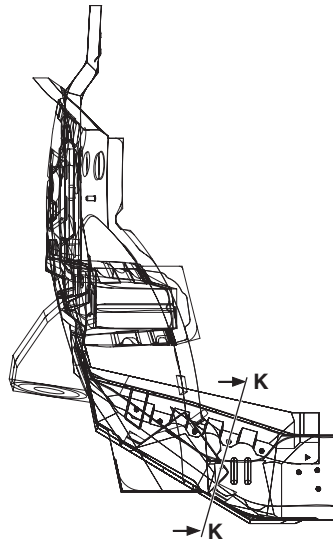
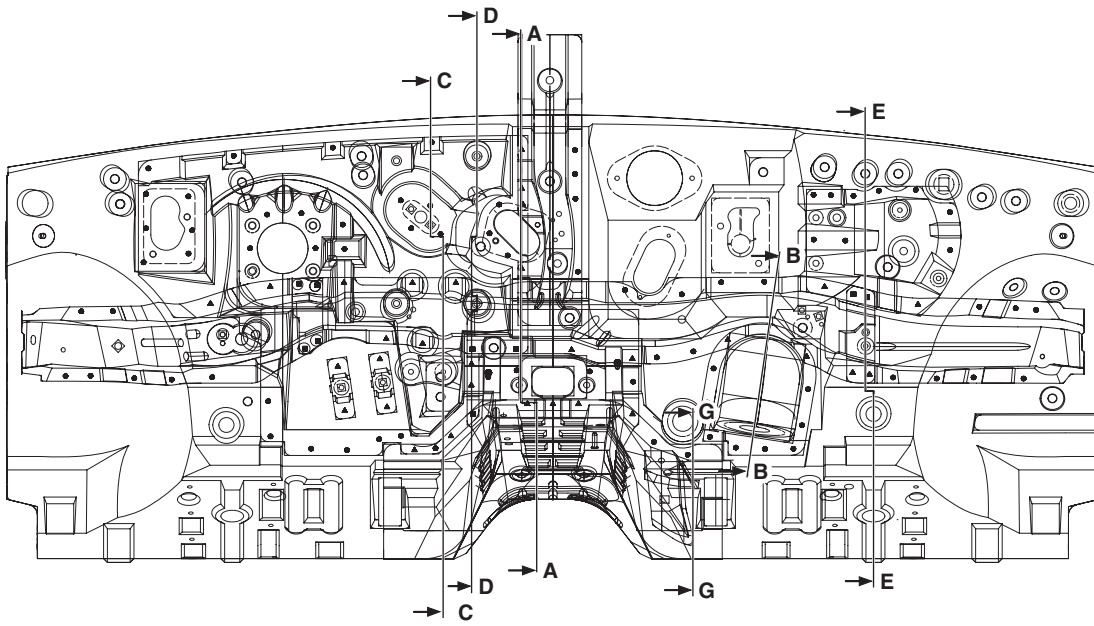
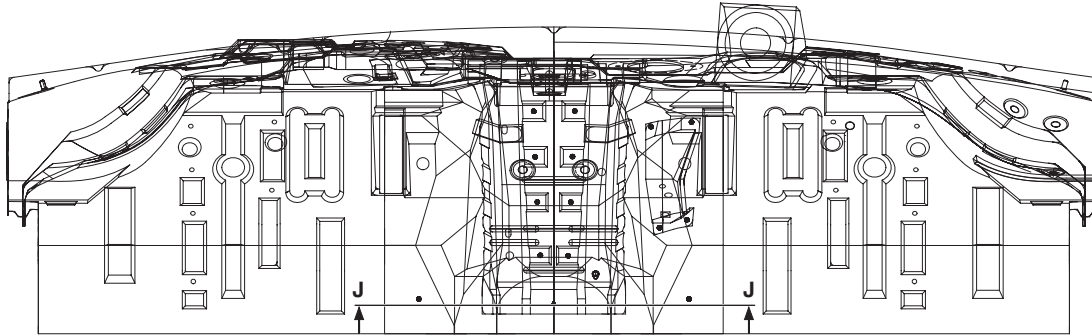
DASH PANEL

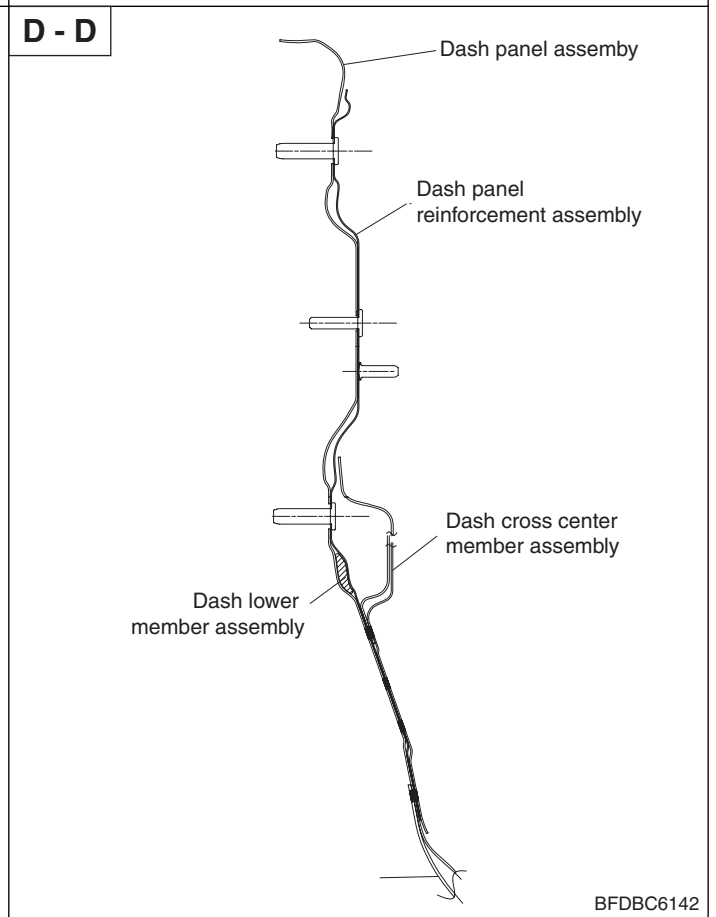
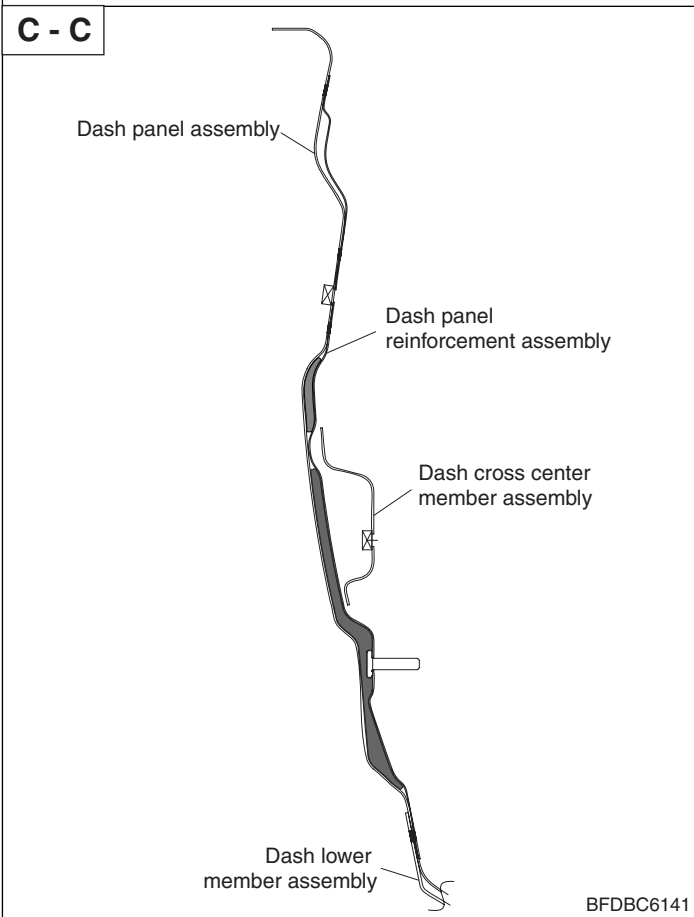
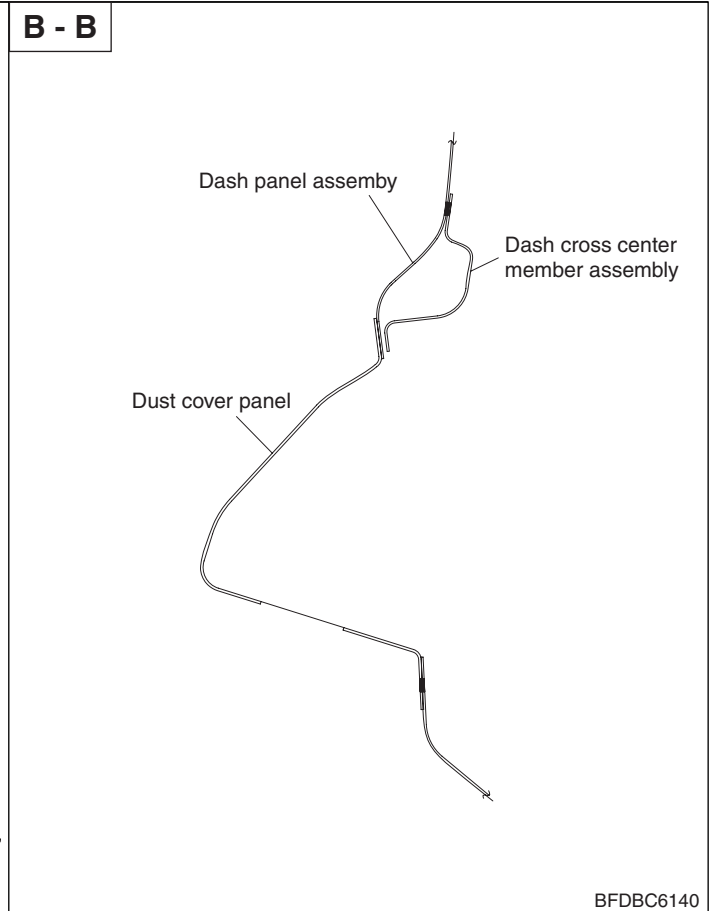
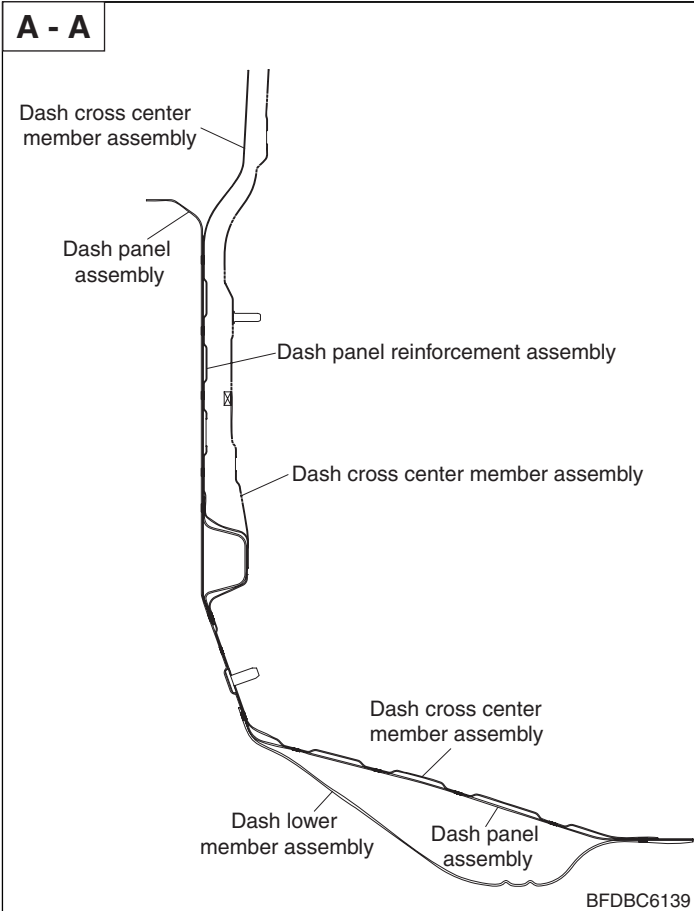


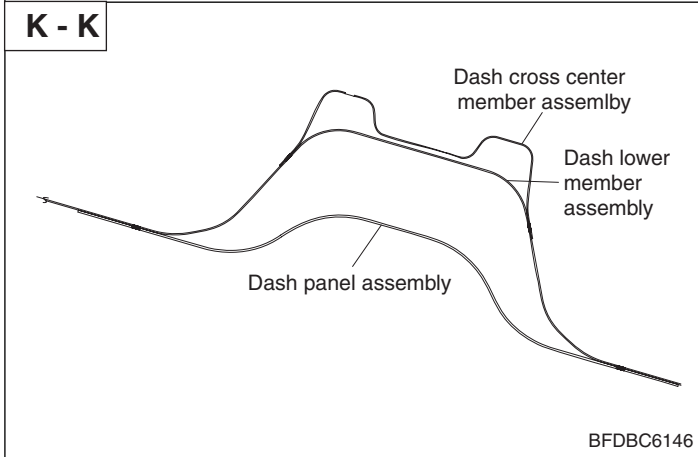
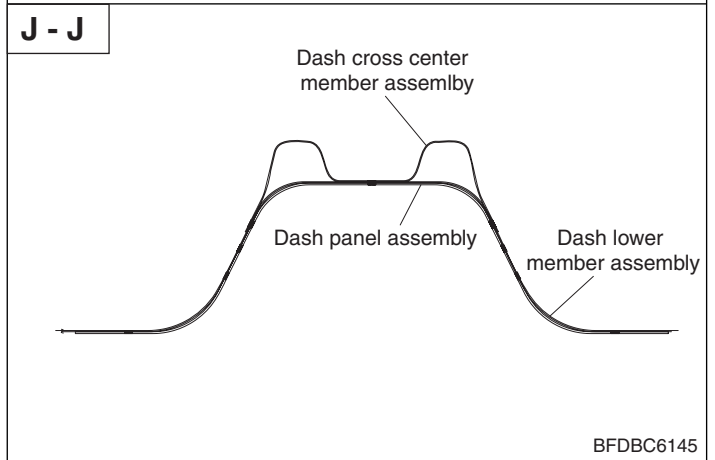
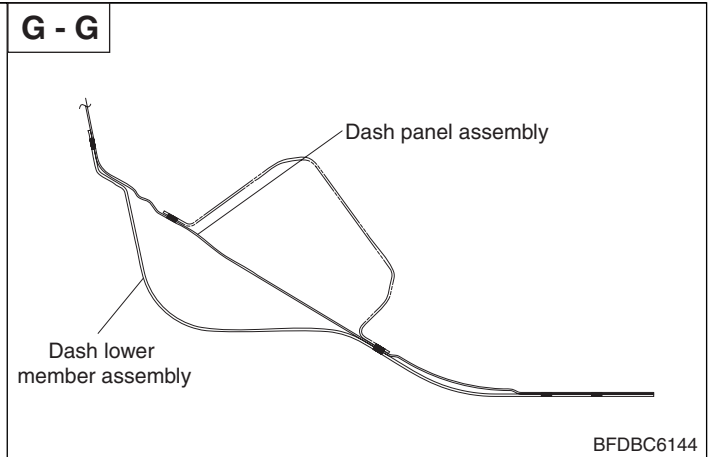
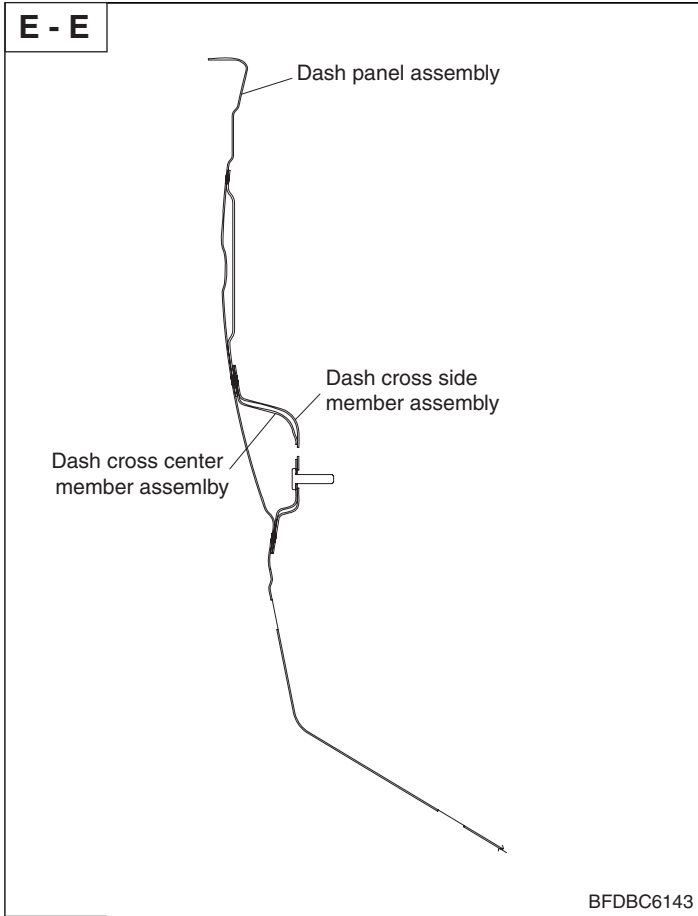
BFD6135

No.	PART NAME	No.	PART NAME
1	Dash lower member assembly	5	Dash panel reinforcement assembly
2	Dash cross center member assembly	6	Dash panel assembly
3	Dash cross side member assembly	7	Dust cover panel
4	Dash cross side member assembly		

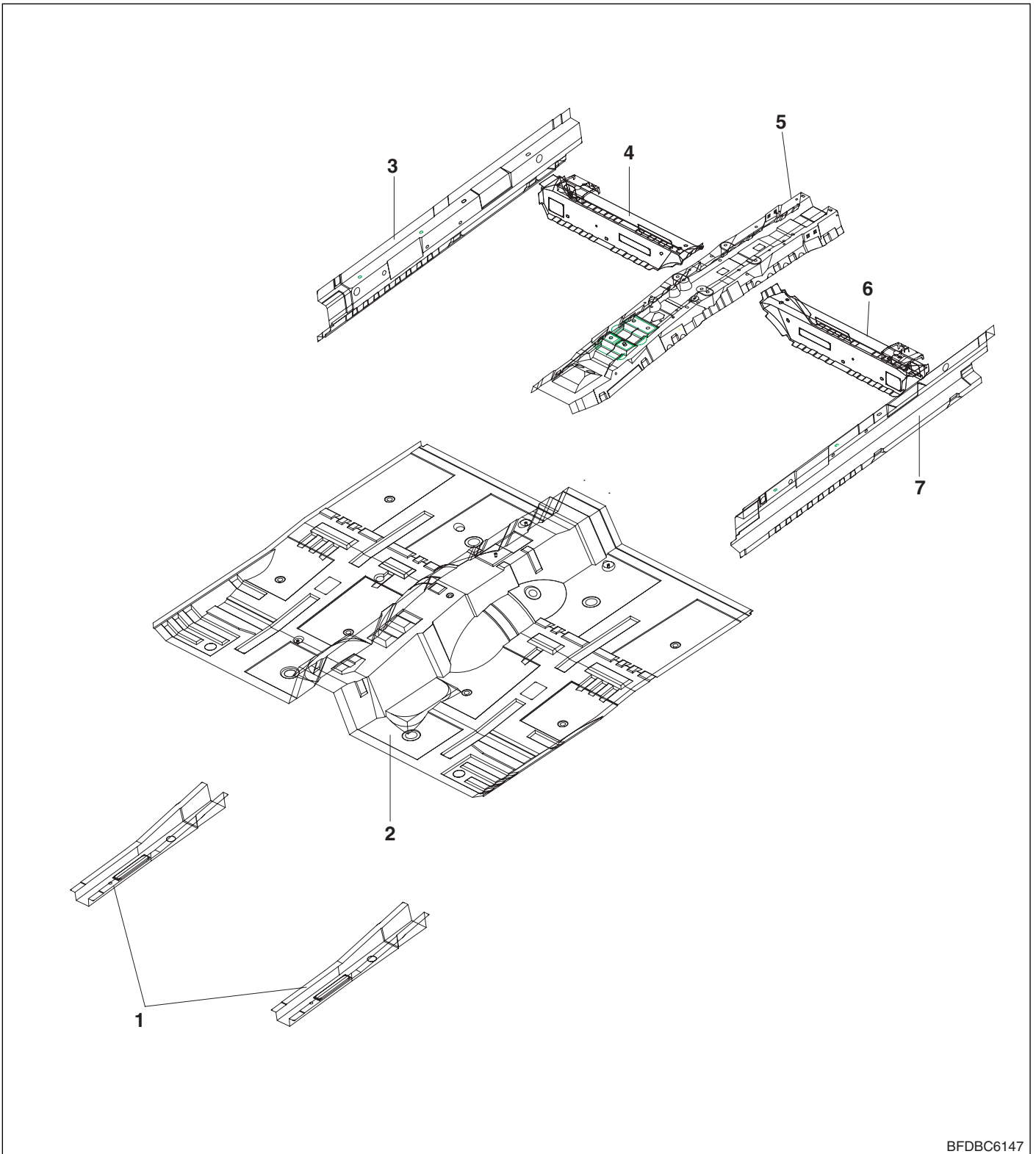
< Cross-Sectional Views >





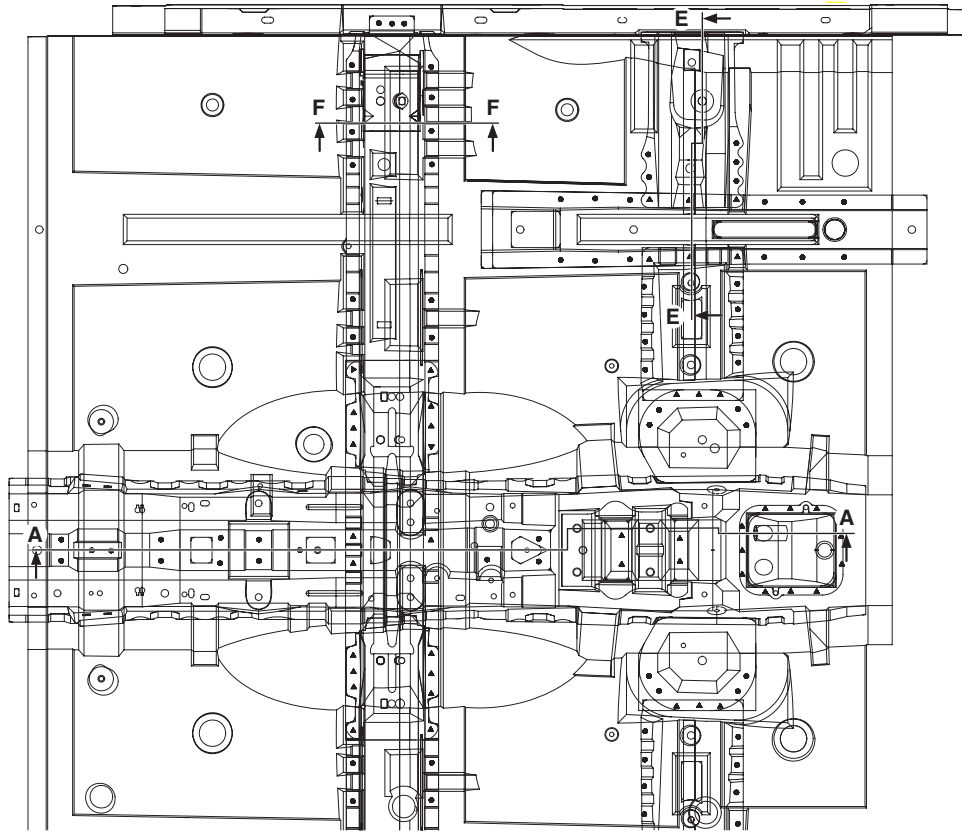


CENTER FLOOR PANEL

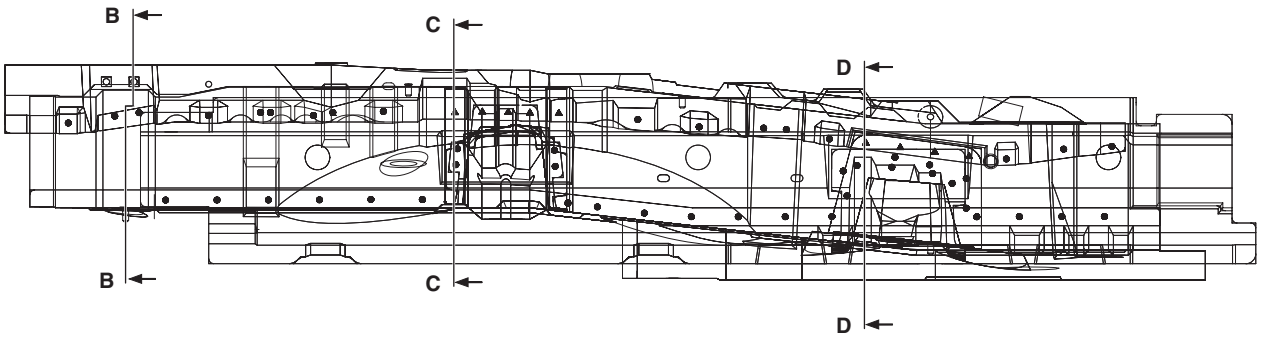


BFDBC6147

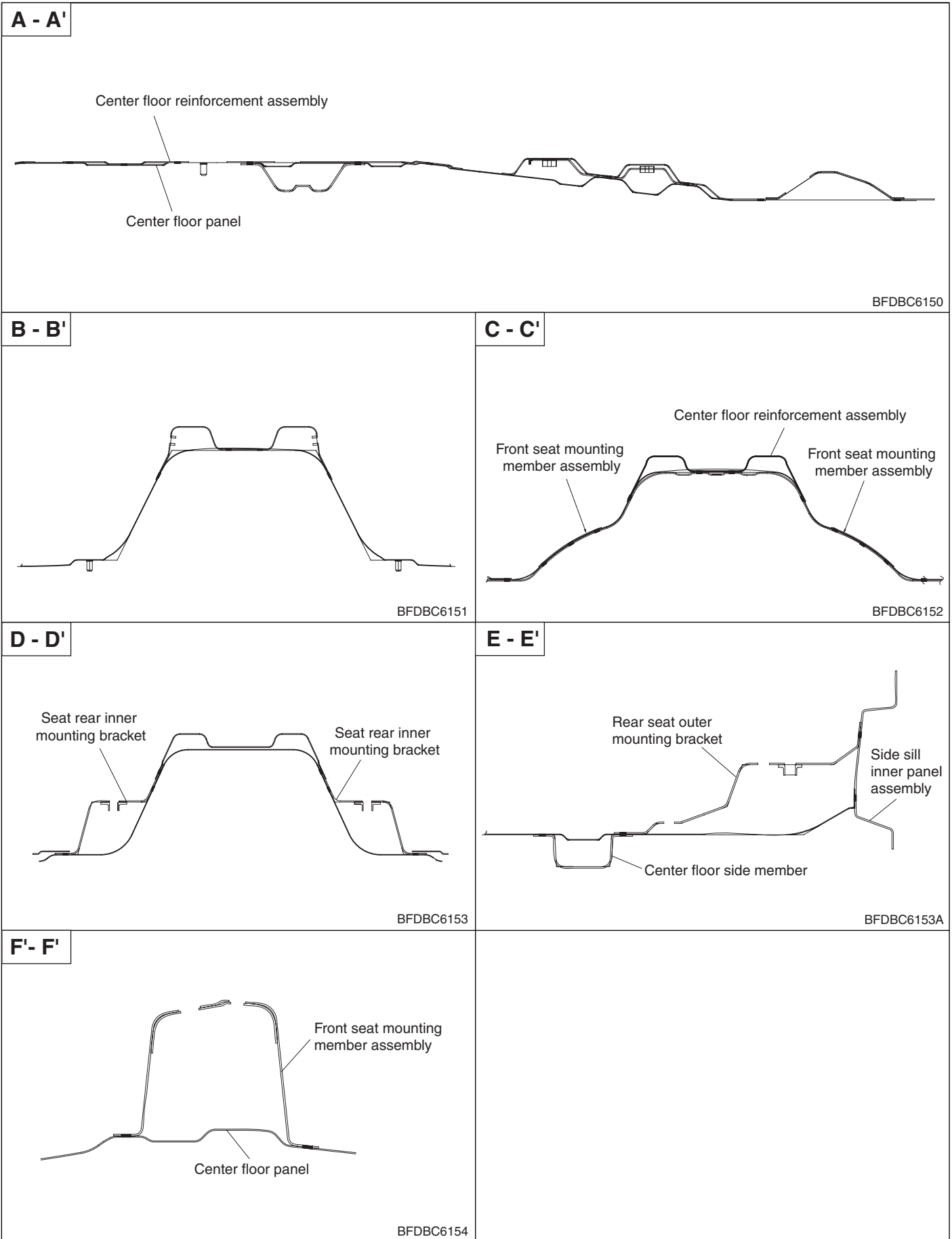
No.	PART NAME	No.	PART NAME
1	Center floor side member	5	Center floor reinforcement assembly
2	Center floor panel	6	Front seat mounting member assembly (RH)
3	Side sill inner panel assembly (LH)	7	Side sil inner panel assembly (RH)
4	Front seat mounting member assembly (LH)		



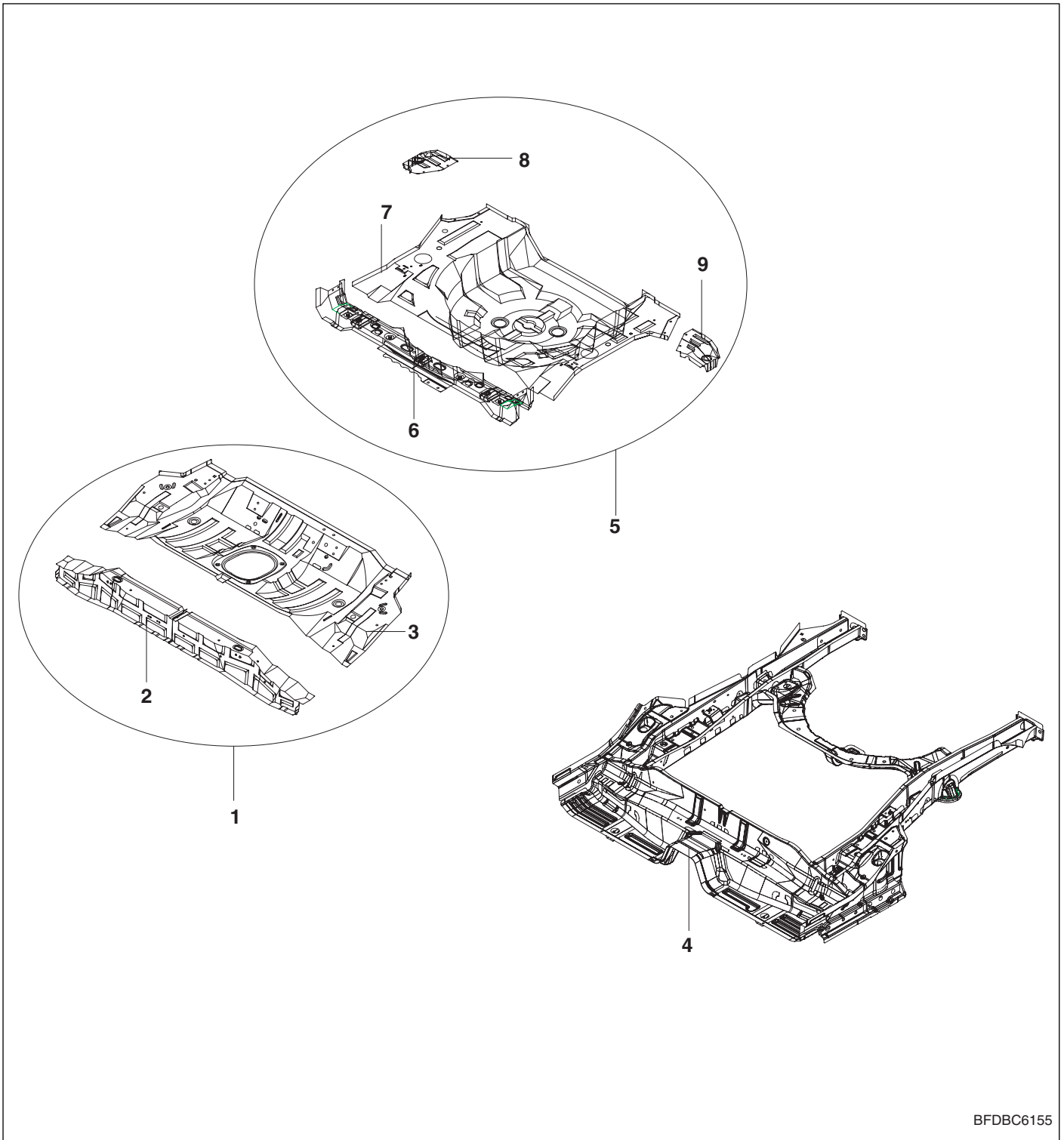
[TOP VIEW]



[SIDE VIEW]



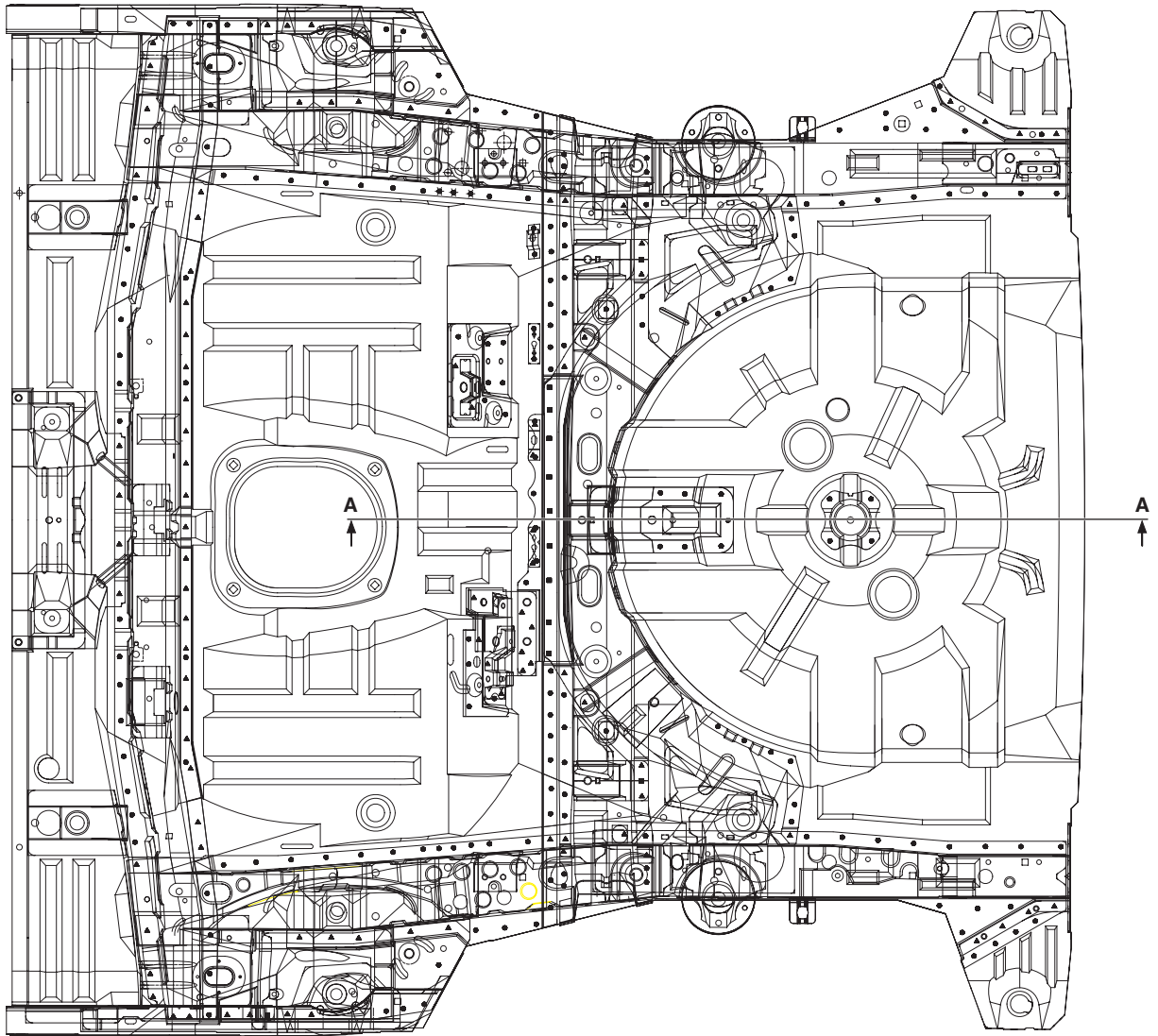
REAR FLOOR PANEL



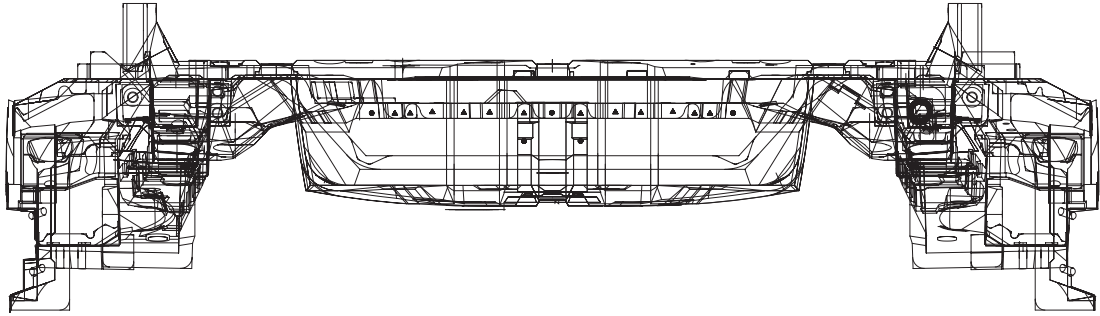
BFDBC6155

No.	PART NAME	No.	PART NAME
1	Rear floor front complete panel assembly	6	Rear floor center cross upper member assembly
2	Rear floor extension assembly	7	Rear floor rear panel assembly
3	Rear floor front panel	8	Rear floor side panel (RH)
4	Rear floor complete member assembly	9	Rear floor side panel (LH)
5	Rear floor rear complete panel assembly		

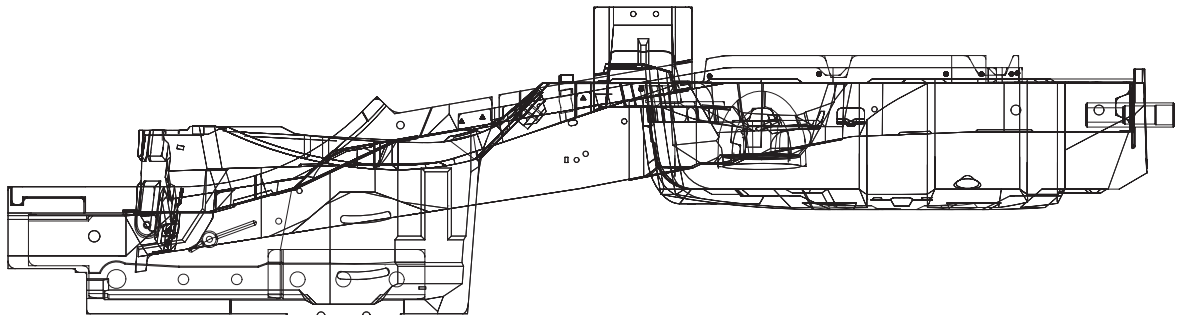
< Cross-Sectional Views >



< Cross-Sectional Views >



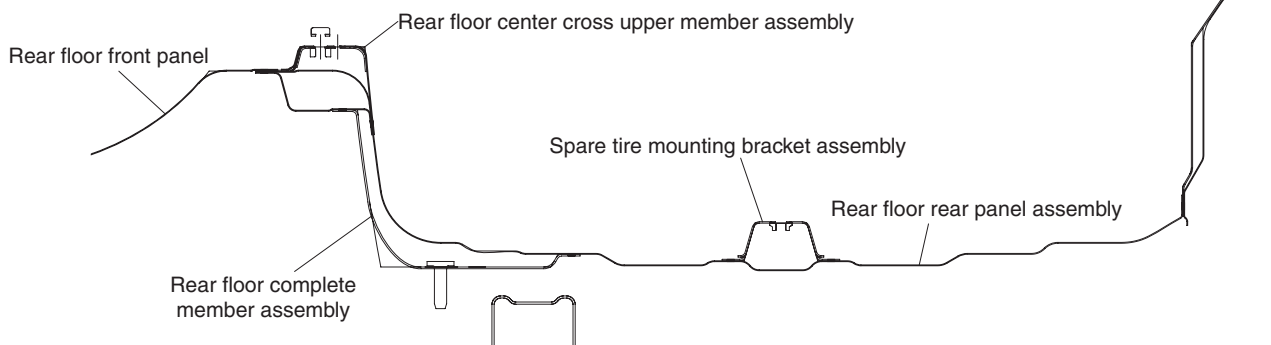
[REAR VIEW]



[SIDE VIEW]

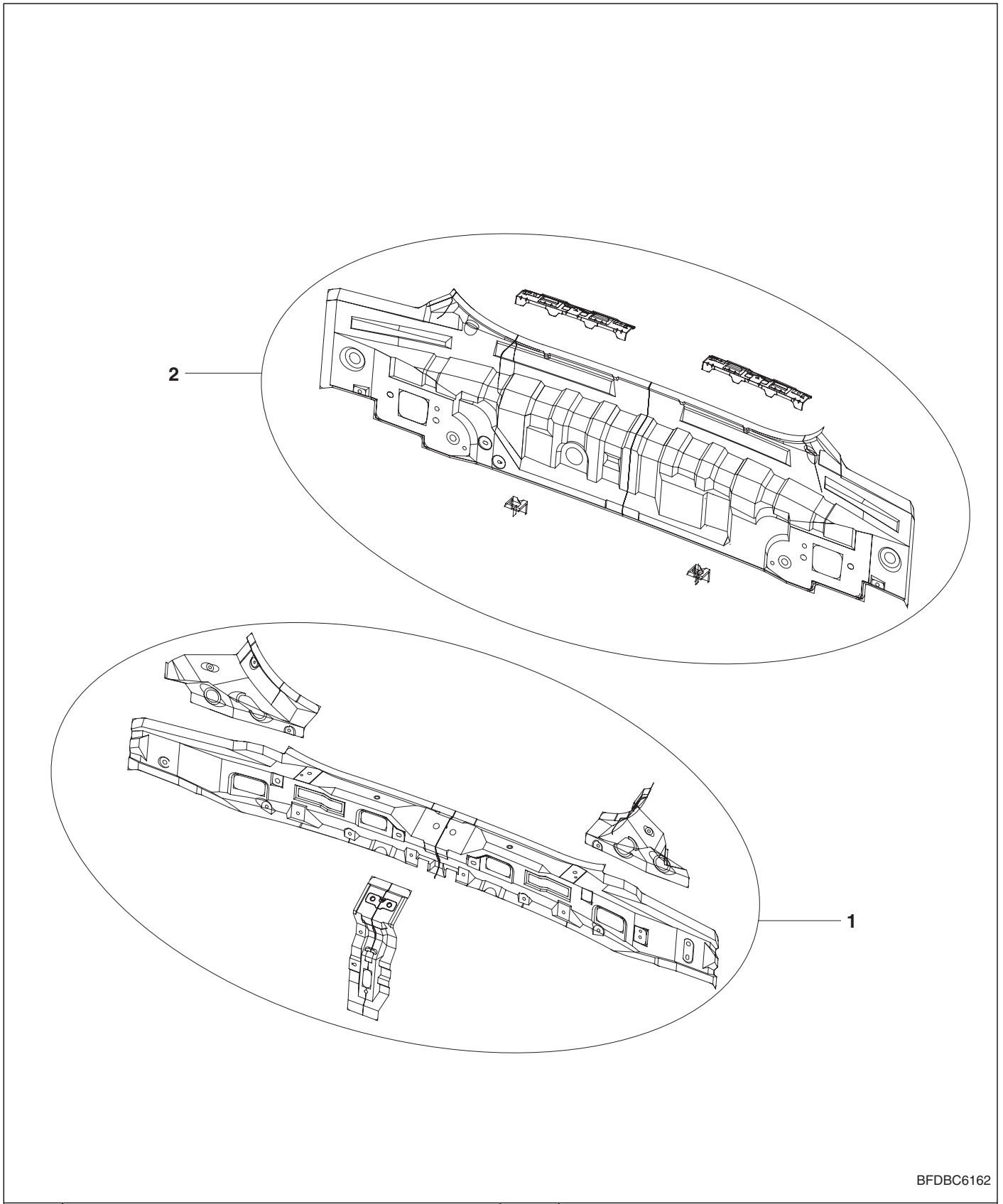
BFDBC6160

A - A



BFDBC6161

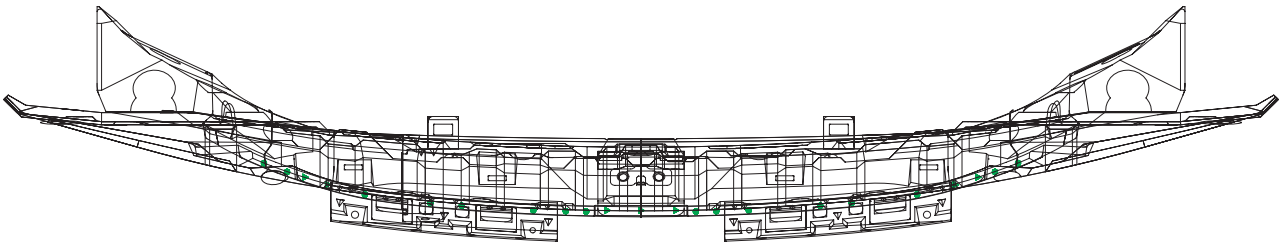
BACK COMPLETE PANEL



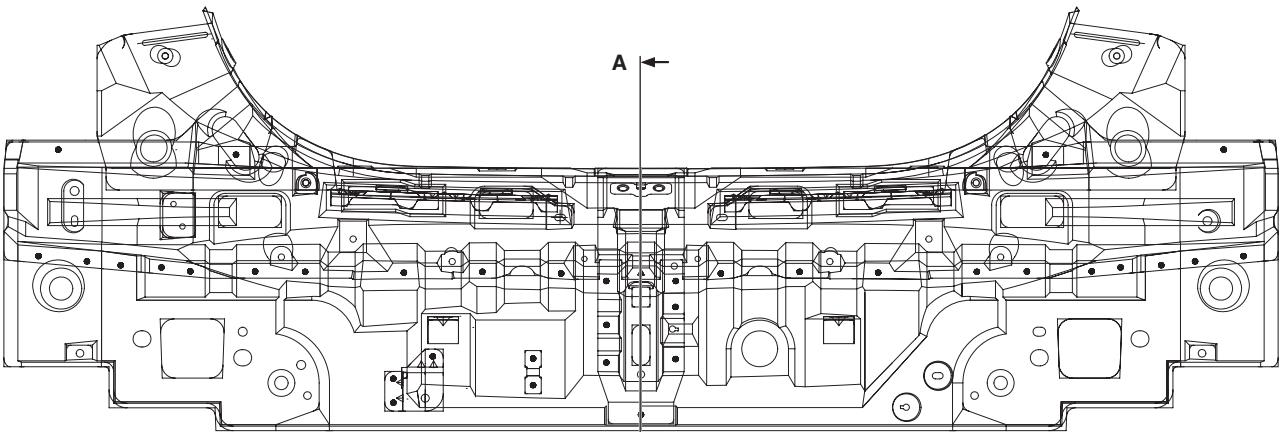
BFDBC6162

No.	PART NAME	No.	PART NAME
1	Back panel assembly	2	Rear transverse member assembly

< Cross-Sectional Views >

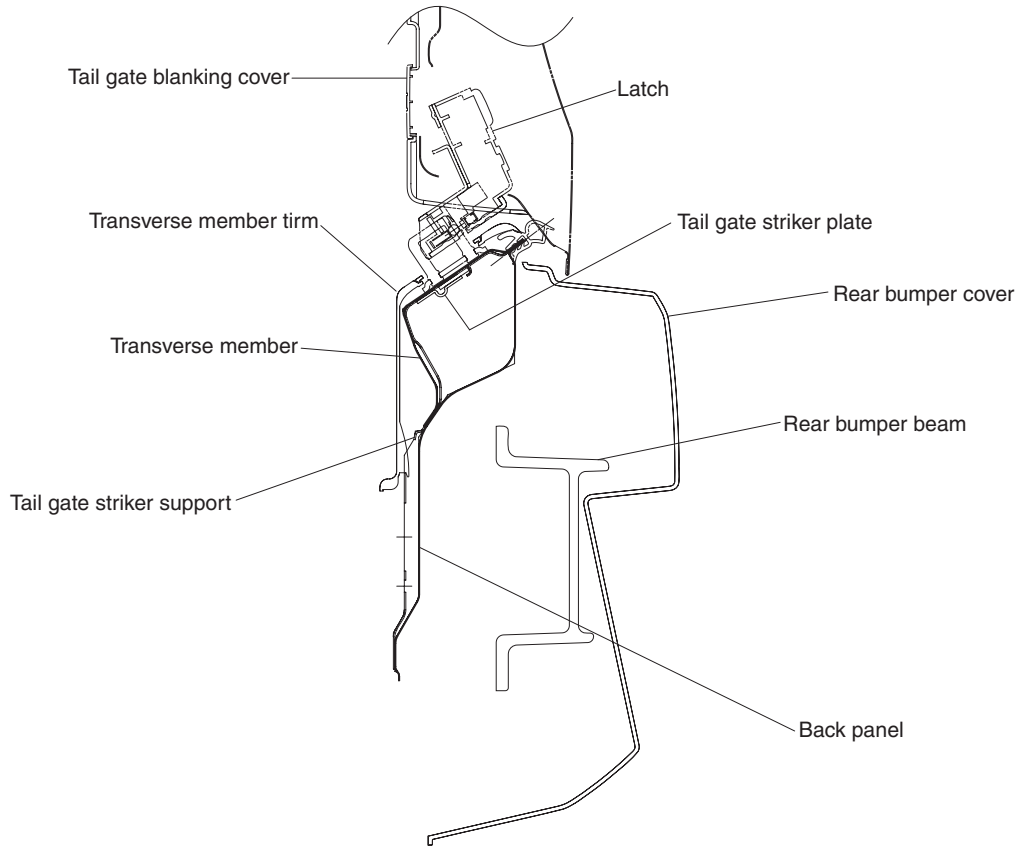


[TOP VIEW]



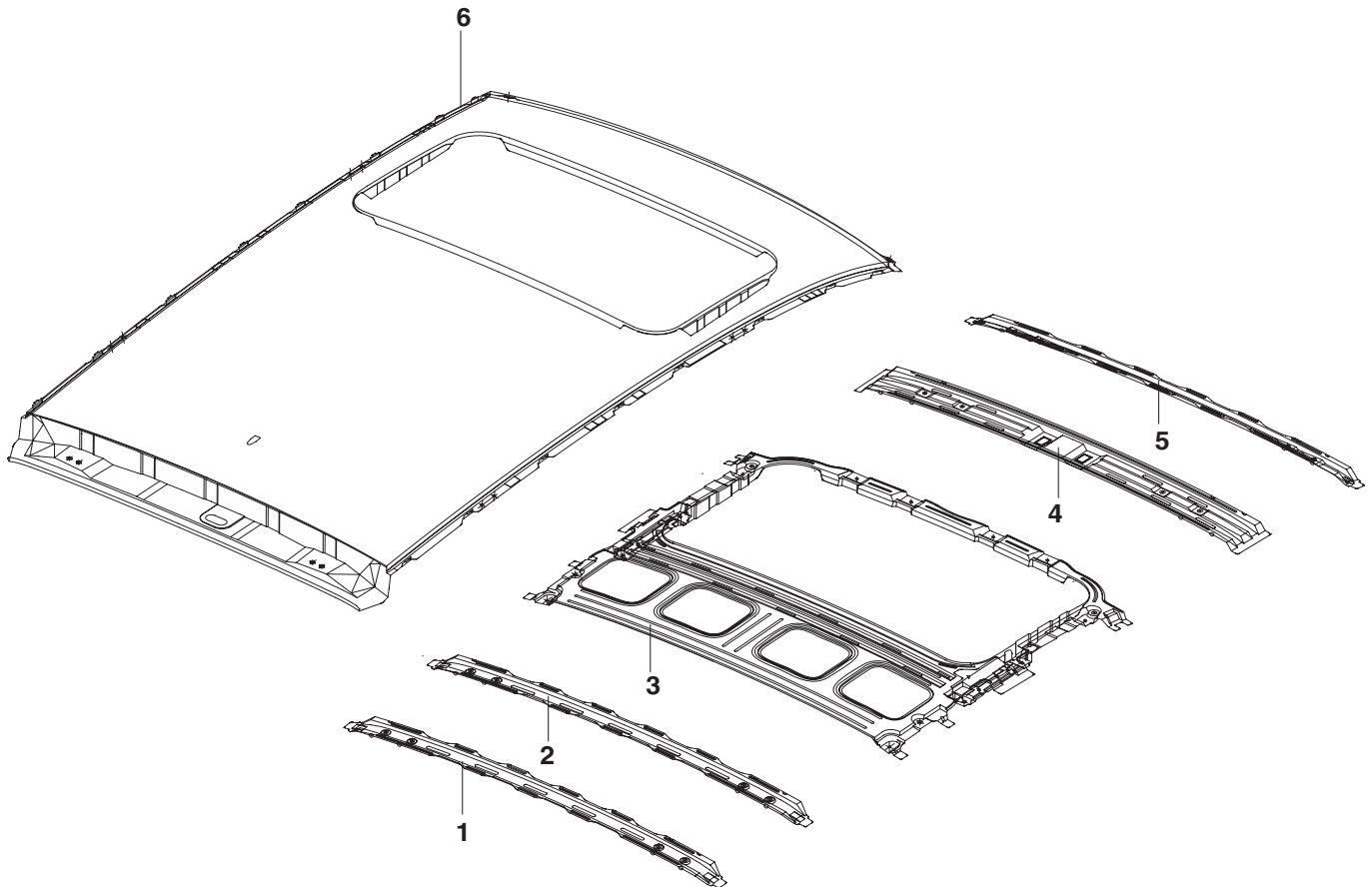
[REAR VIEW]

A - A



BFDBC6165

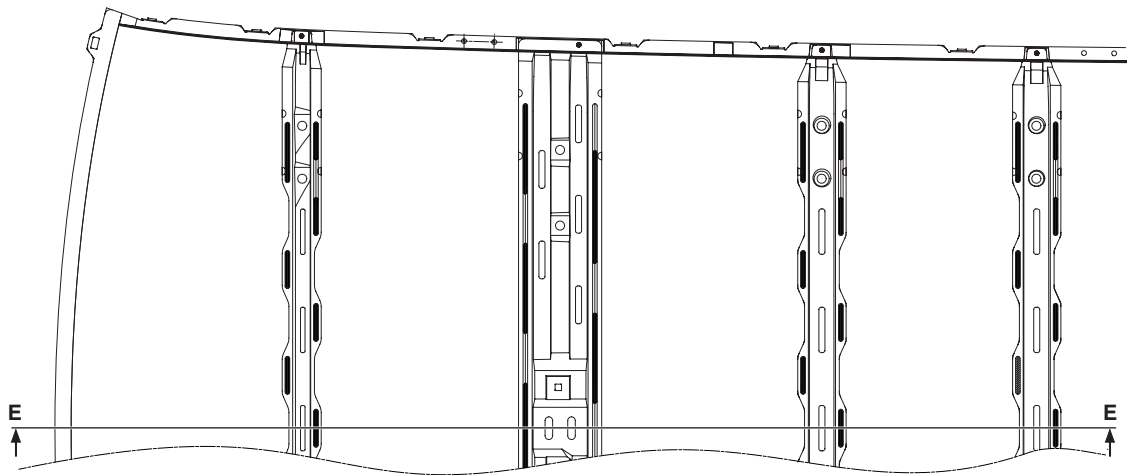
ROOF PANEL



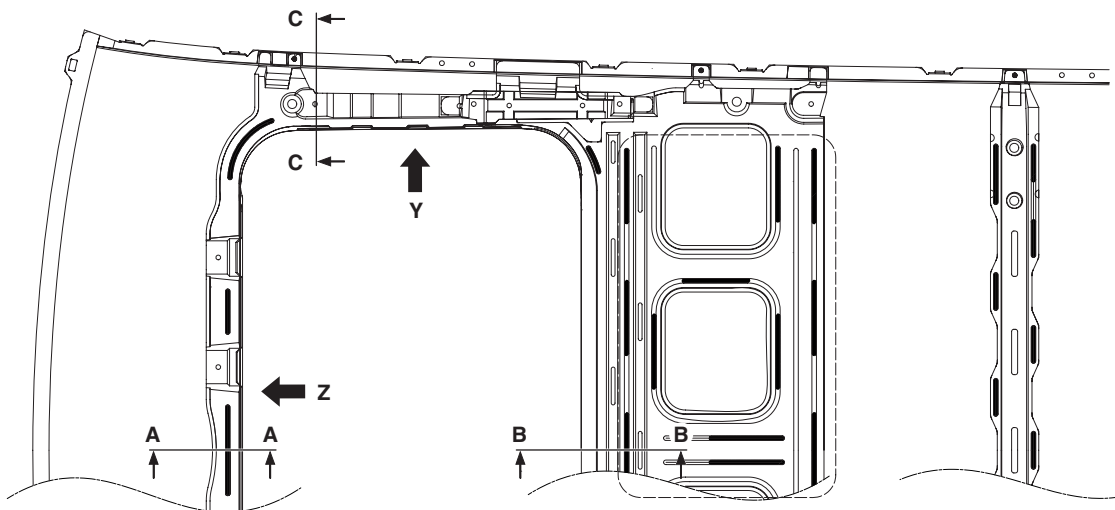
BFDBC6166

No.	PART NAME	No.	PART NAME
1	Roof center No.2 rail	4	Roof center No.3 rail
2	Sun roof reinforcement ring assembly	5	Roof center No.2 rail
3	Roof center No.4 rail	6	Roof panel

< Cross-Sectional Views >

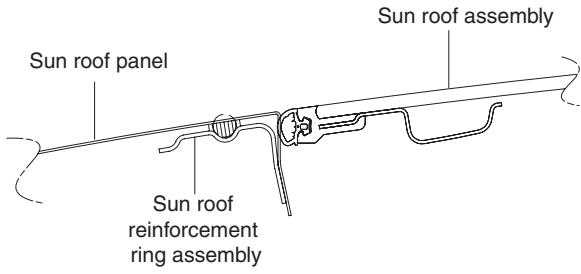


[ROOF]



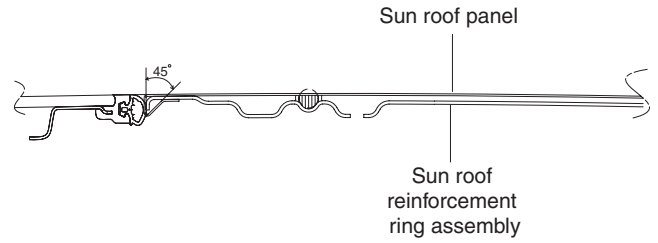
[SUN ROOF]

A - A



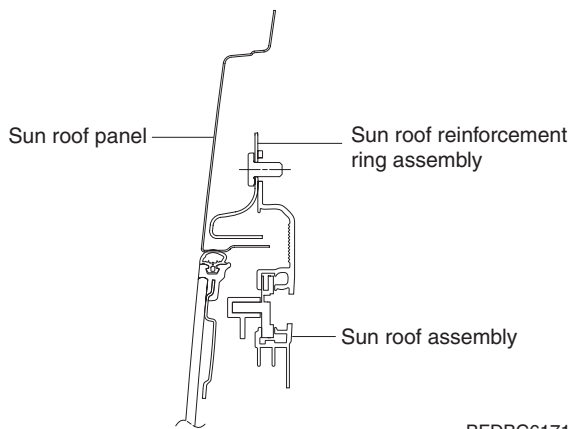
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B - B



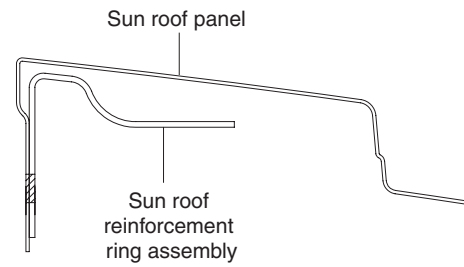
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C - C



BFDBC6171

D - D



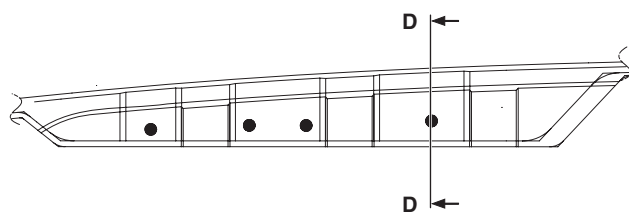
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E - E



BFDBC6173

Y



BFDBC6174

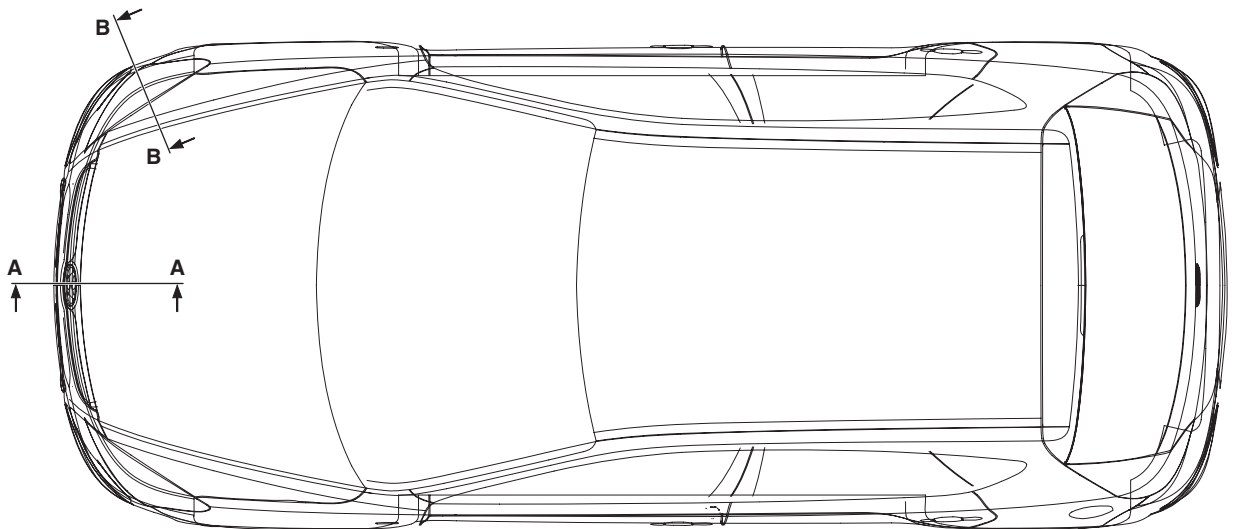
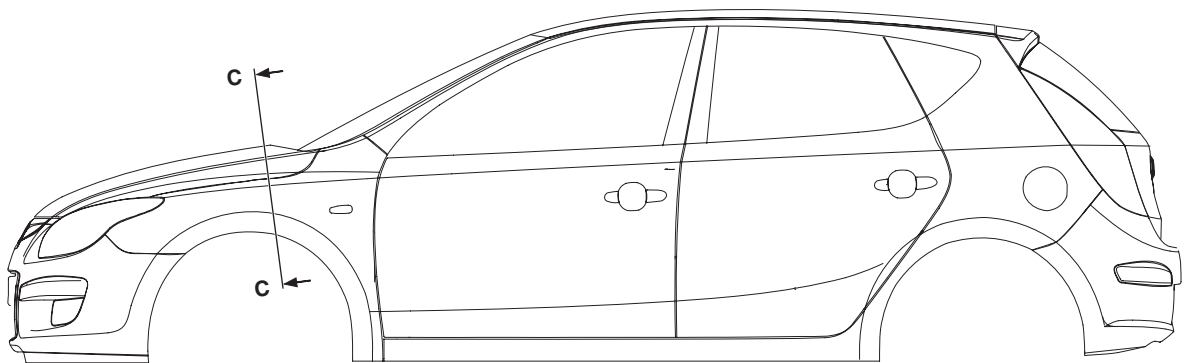
Z

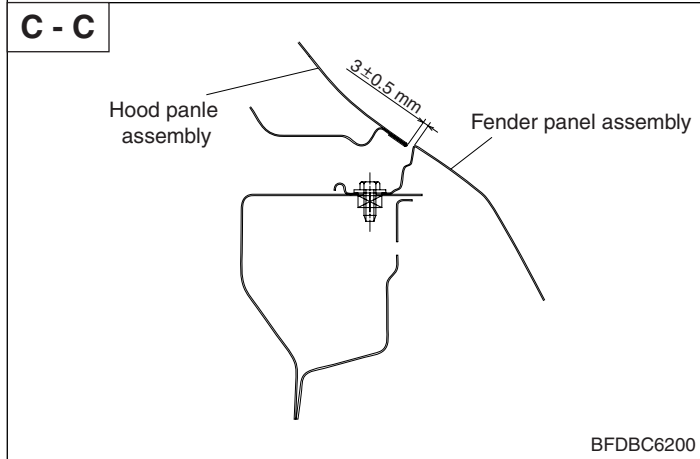
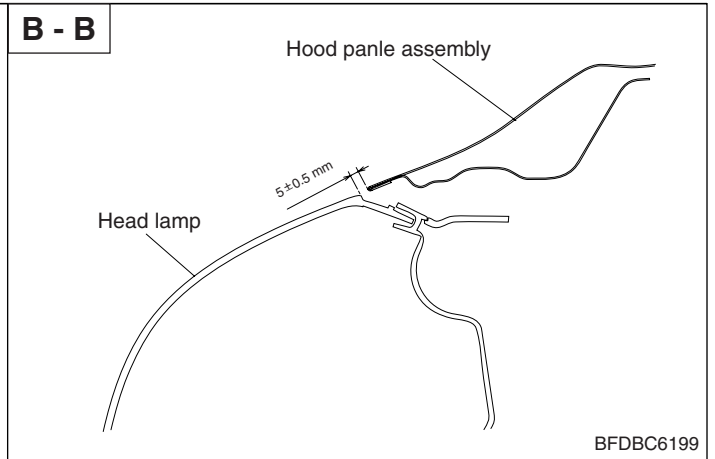
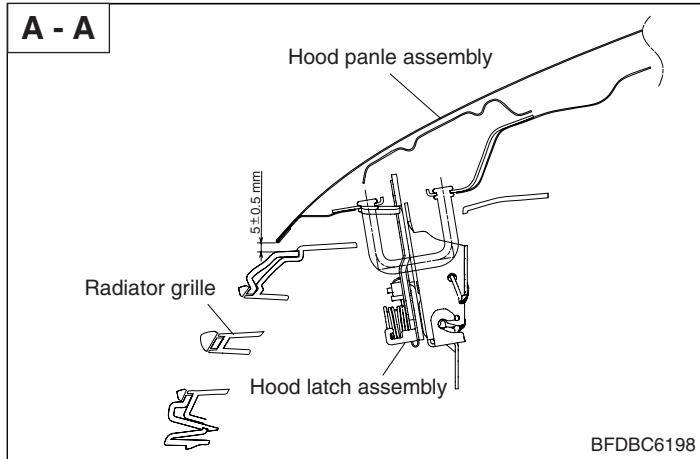


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HOOD

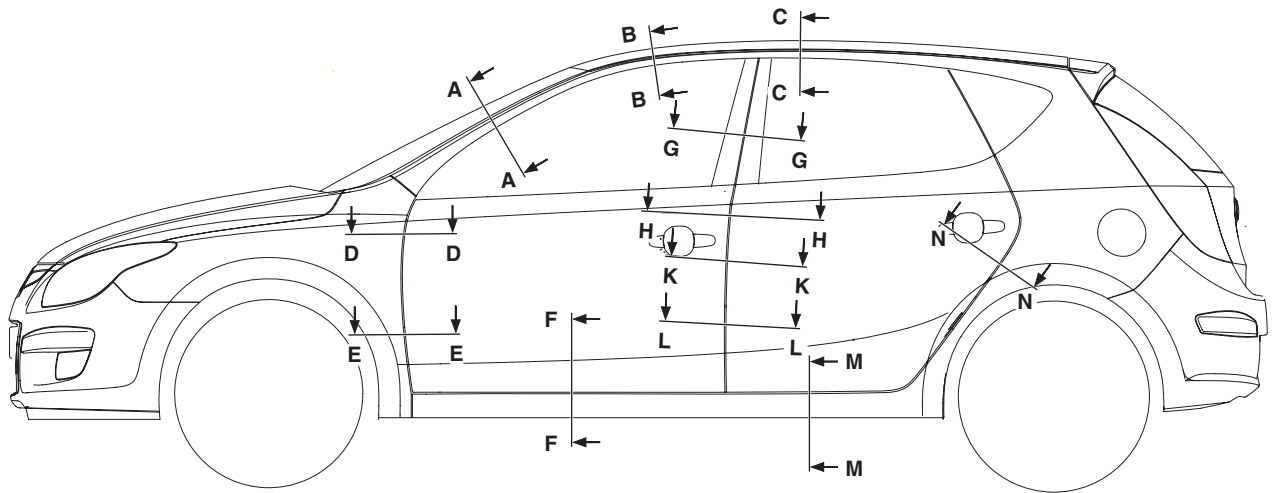
< Cross-Sectional Views >





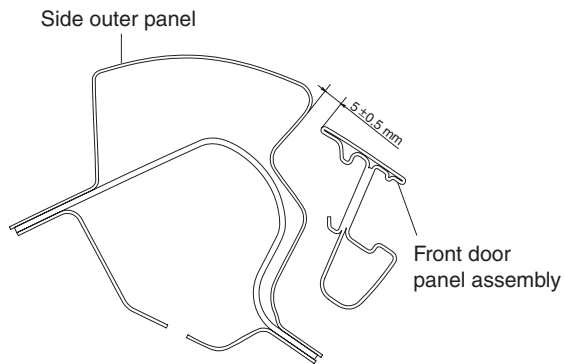
FRONT & REAR DOOR

< Cross-Sectional Views >



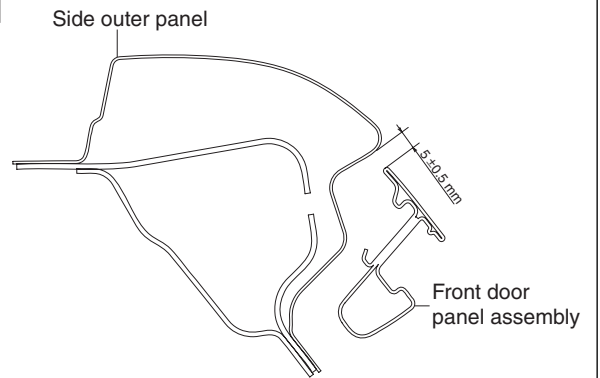
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A - A



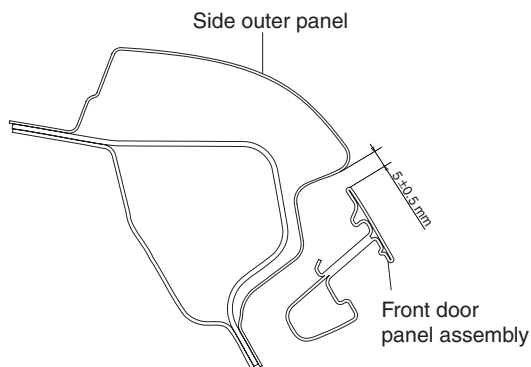
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B - B



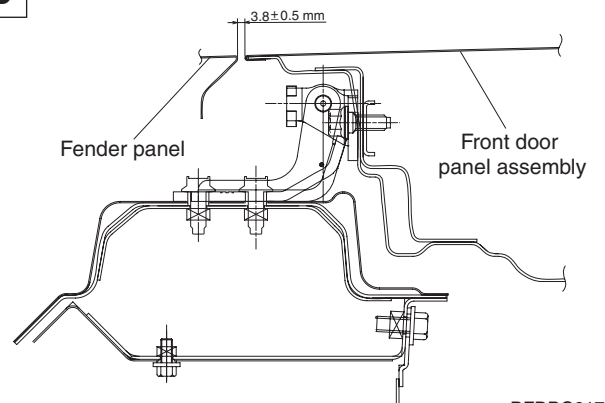
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C - C

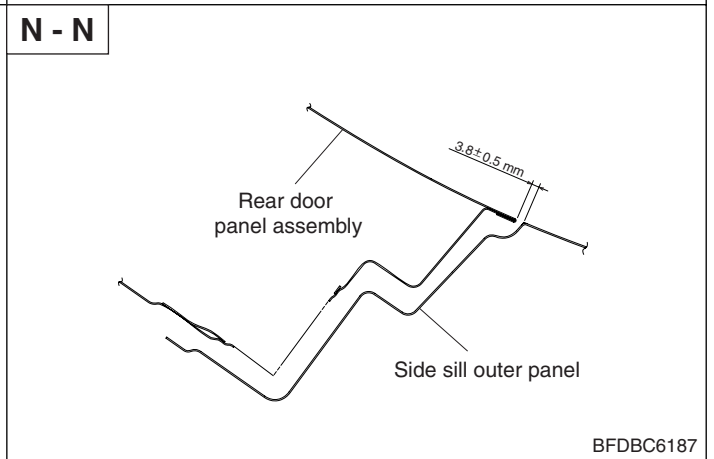
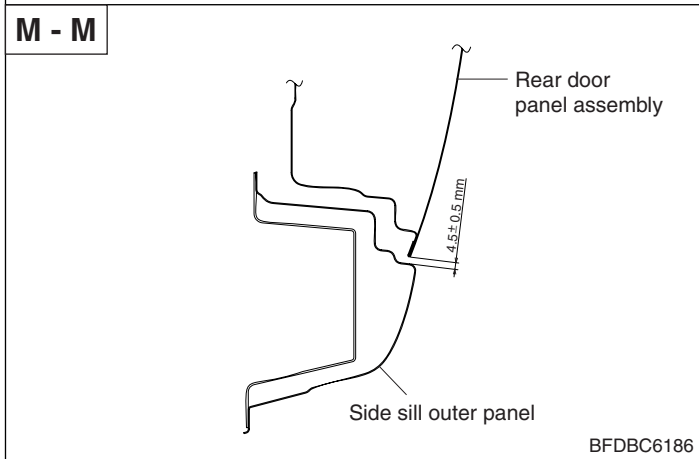
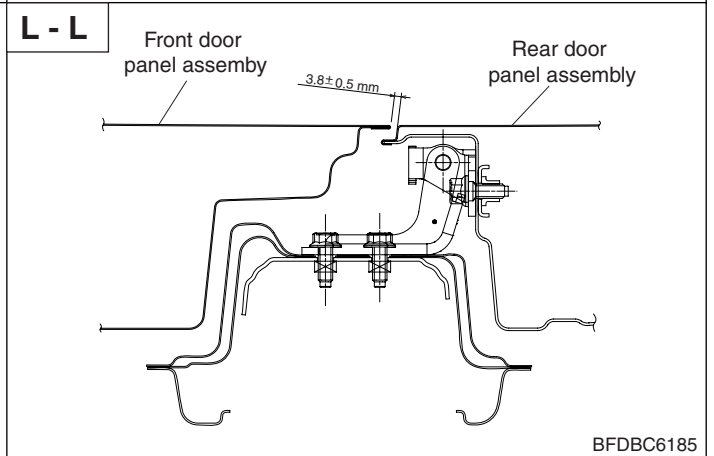
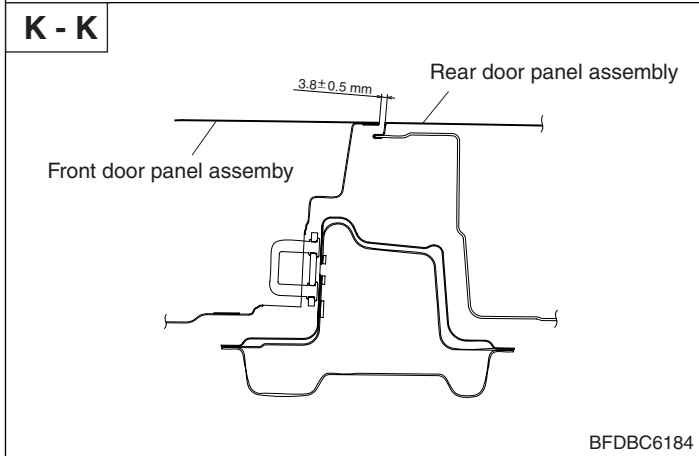
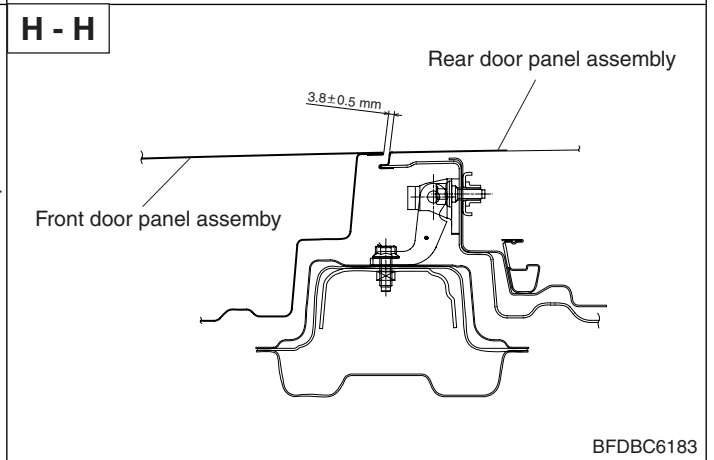
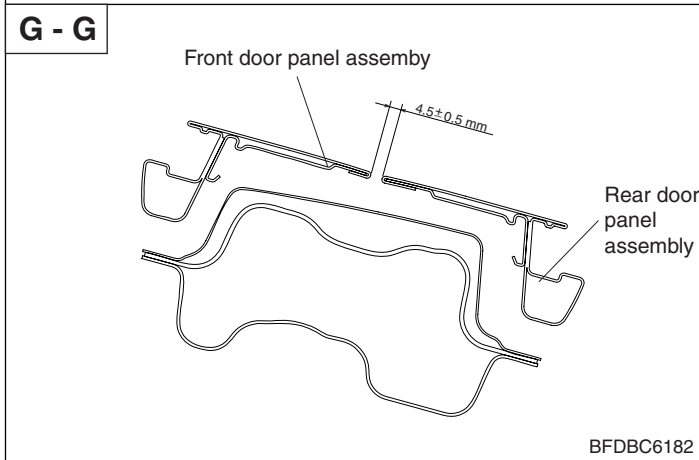
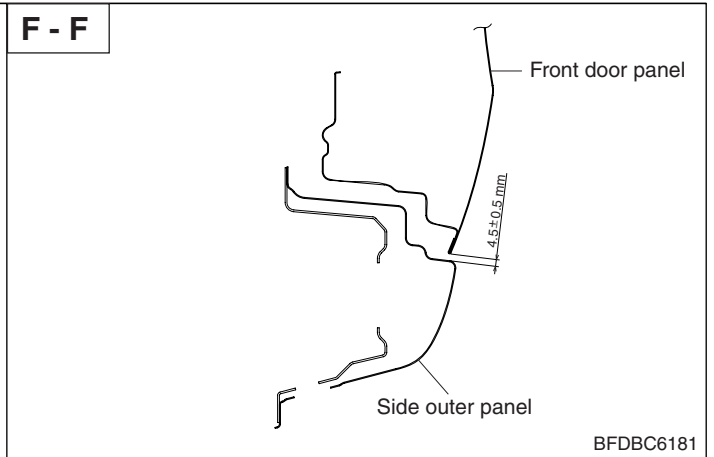
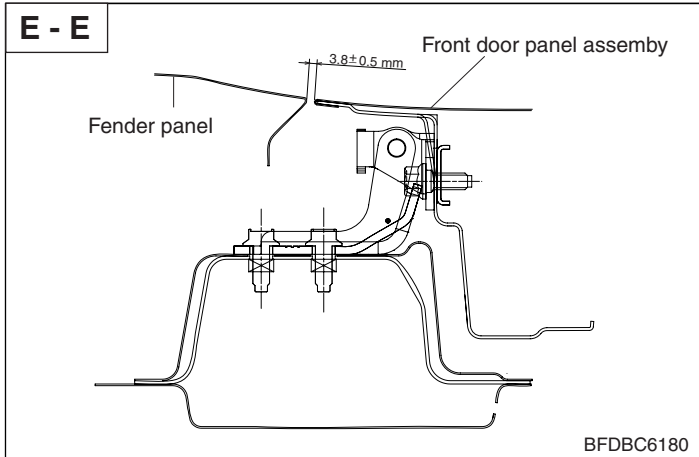


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D - D

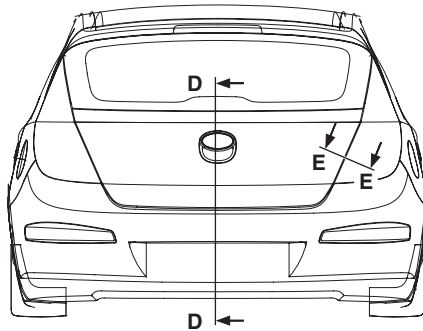
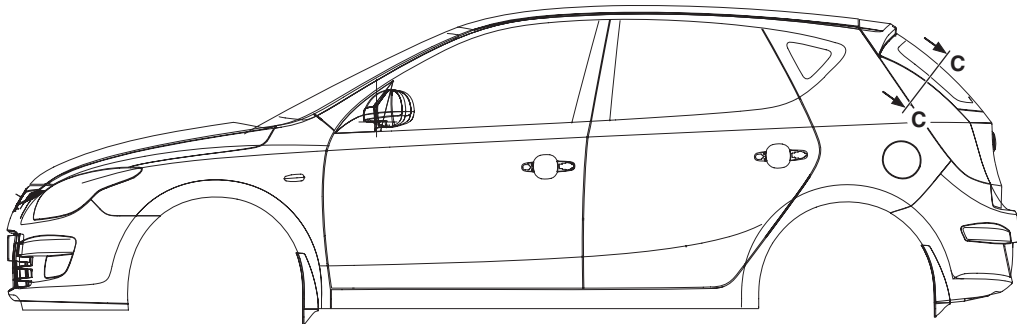
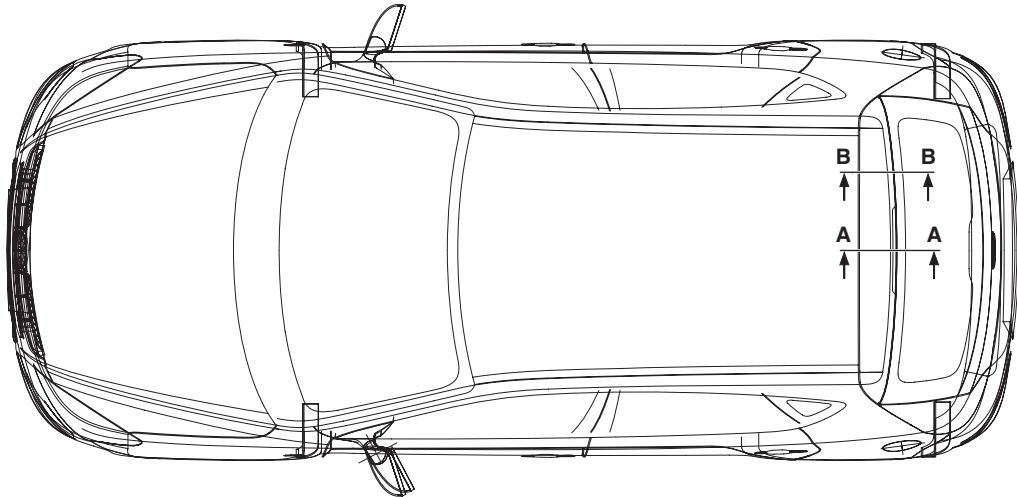


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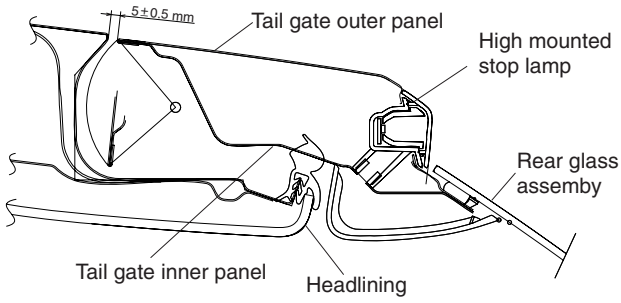


TAIL GATE

< Cross-Sectional Views >

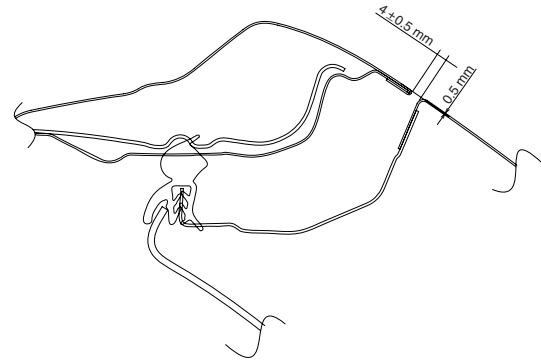


A - A



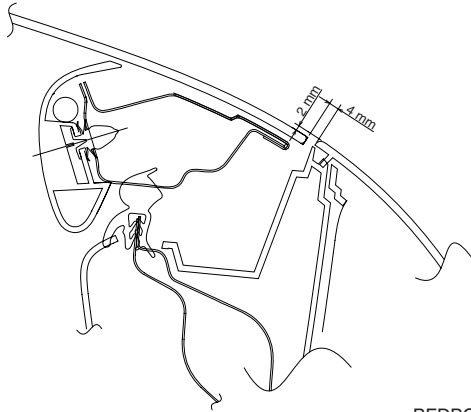
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B - B



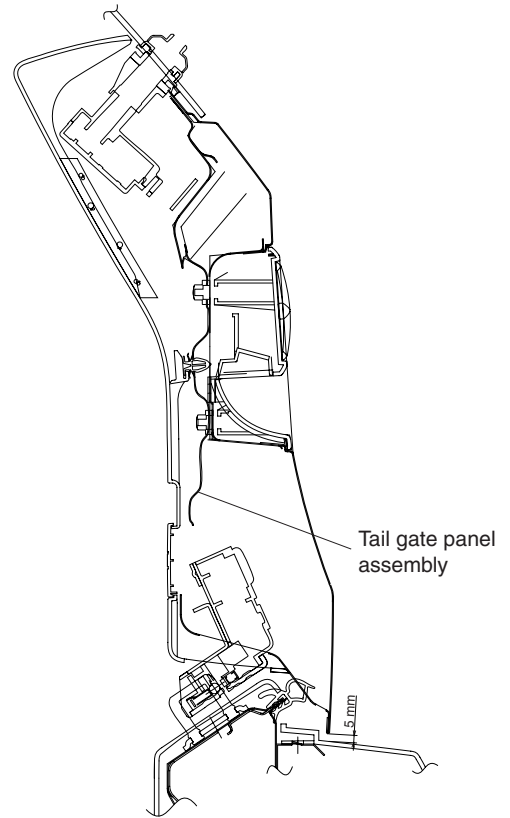
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C - C



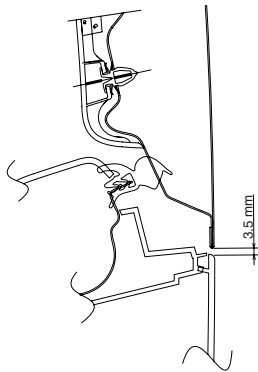
BFDBC6182

D - D



BFDBC6185

E - E



BFDBC6184

Body Dimensions

GENERAL	BD - 2
MEASUREMENT METHOD	BD - 2
PROJECTED DIMENSIONS	BD - 2
ACTUAL-MEASUREMENT DIMENSIONS	BD - 2
MEASUREMENT POINT	BD - 2
FRONT BODY	BD - 3
SIDE BODY	BD - 5
INTERIOR A	BD - 7
INTERIOR B	BD - 10
REAR BODY	BD - 12
UNDER BODY (PROJECTED DIMENSIONS)	BD - 14
UNDER BODY (ACTUAL-MEASUREMENT DIMENSIONS)	BD - 16

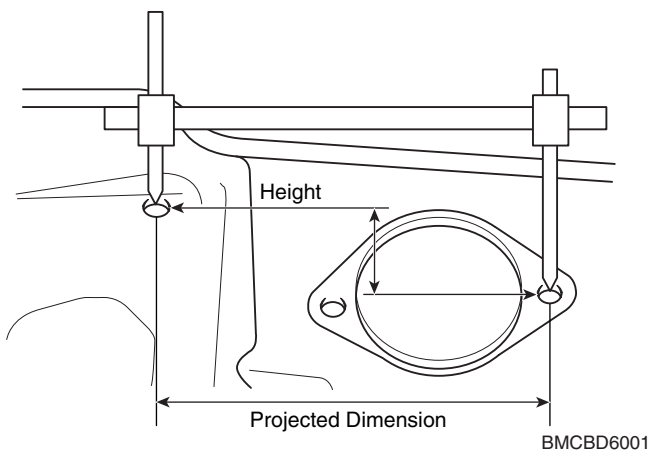
GENERAL

1. Basically, all measurements in this manual are taken with a tracking gauge.
2. When a measuring tape is used, check to be sure there is no elongation, twisting or bending.
3. For measuring dimensions, both projected dimension and actual-measurement dimension are used in this manual.

MEASUREMENT METHOD

PROJECTED DIMENSIONS

1. These are the dimensions measured when the measurement points are projected into the reference plane, and are the reference dimensions used for body alterations.
2. If the length of the tracking gauge probes are adjustable, make the measurement by lengthening one probe by the amount equivalent to the difference in height of the two surfaces.



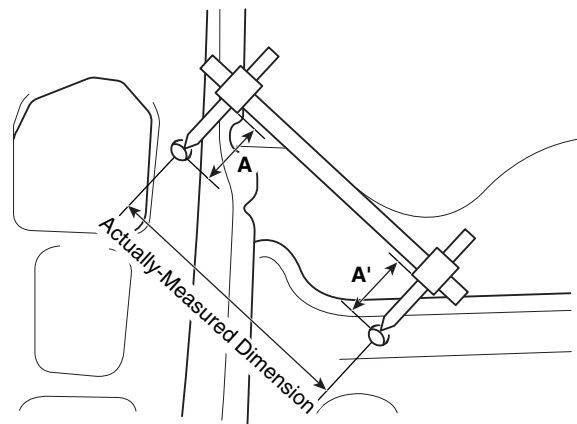
ACTUAL-MEASUREMENT DIMENSIONS

1. These dimensions indicate the actual linear distance between measurement points, and are the reference dimensions for use if a tracking gauge is used for measurement.
2. Measure by first adjusting both probes to the same length ($A=A'$)



CAUTION

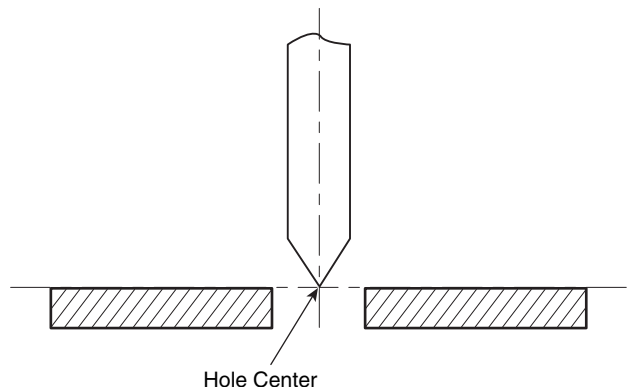
Check the probes and gauge itself to make sure there is no free play.



BMCBD6002

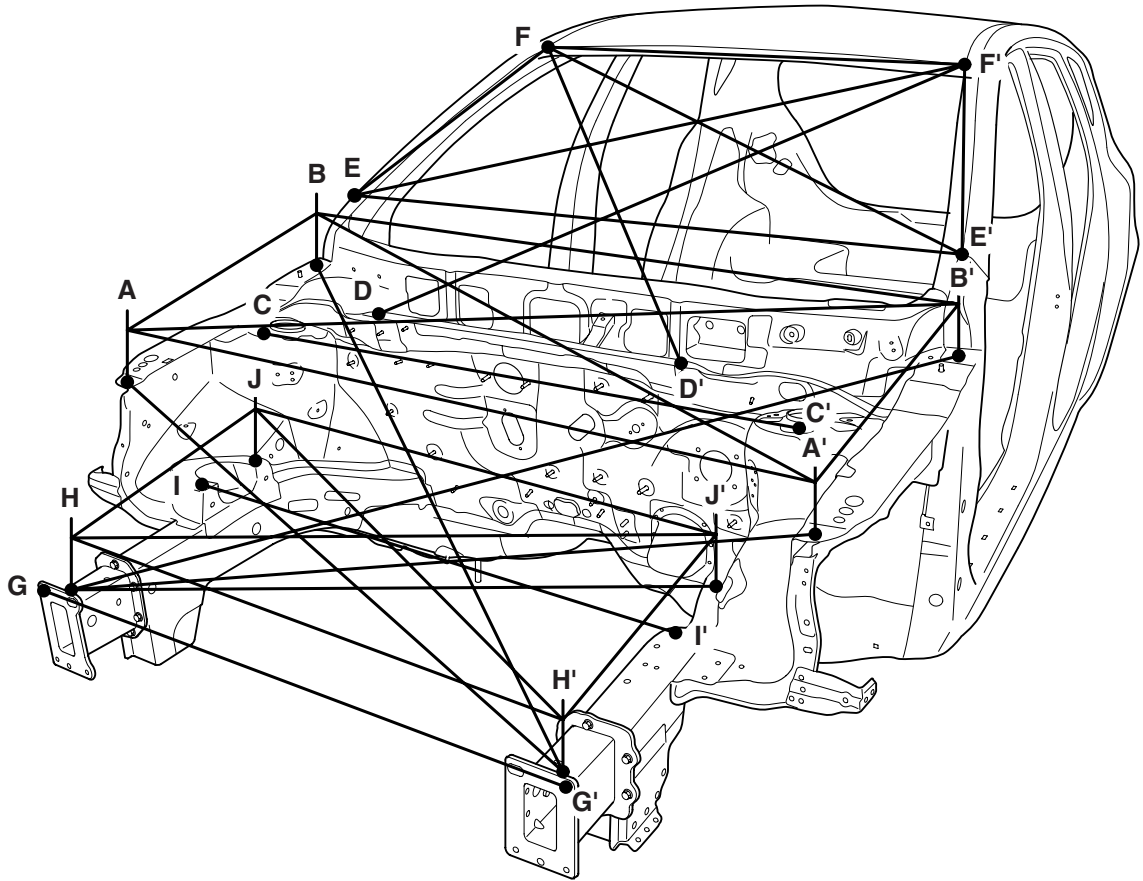
MEASUREMENT POINT

1. Measurements should be taken at the hole center.



BMCBD6003

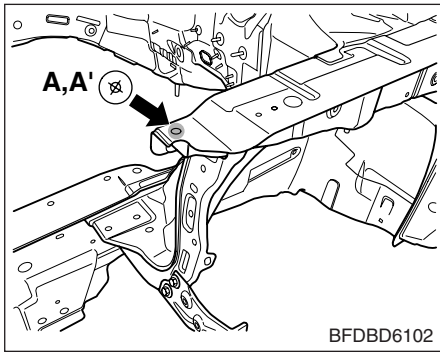
FRONT BODY



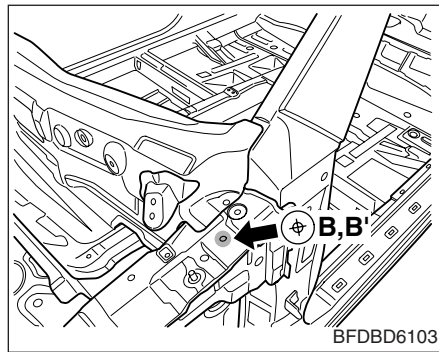
BFDBD6101

* These dimensions indicated in this figure are actual-measurement dimensions.

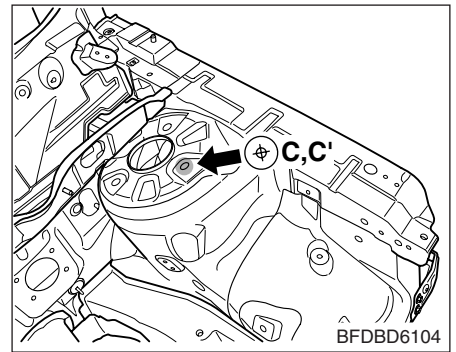
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Length(mm)	1416	650	1605	1283	1520	1628	1181	1414
Point symbol	E-E'	E-F	E-F'	F-F'	G-G'	H-H'	H-J	H-J'
Length(mm)	1479	781	1477	1063	1074	1024	483	1150
Point symbol	H'-J	H'-J'	I-I'	J-J'				
Length(mm)	1120	583	995	988				



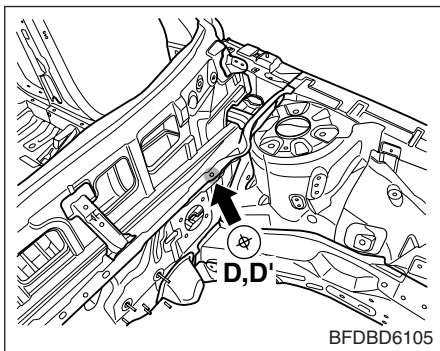
Front end module mounting hole (ø9)



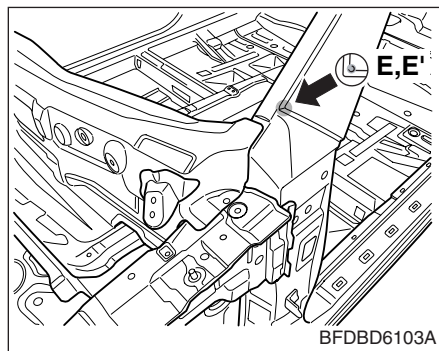
Hood hinge mounting hole (ø9)



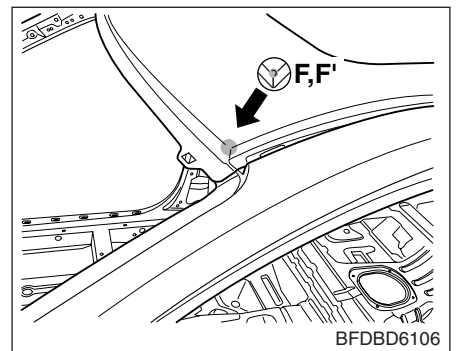
Front suspension mounting hole (ø11)



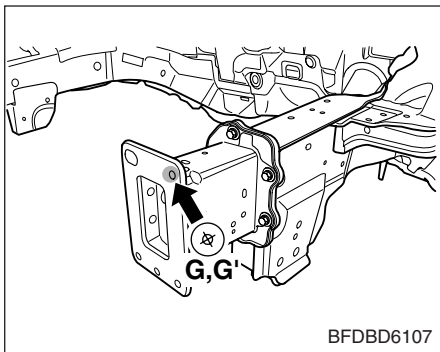
Cowl top cover mounting hole (ø7)



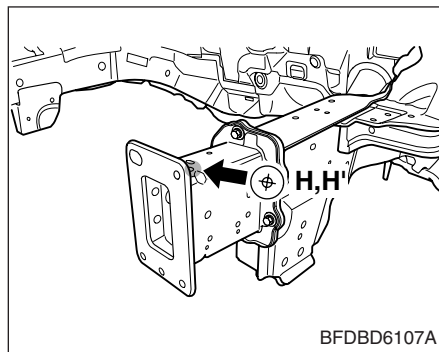
Front pillar corner



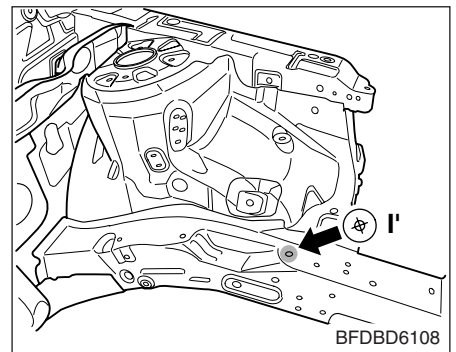
Roof front corner



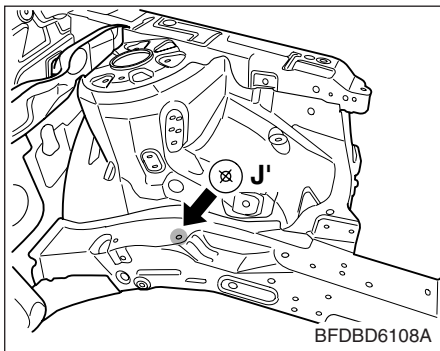
Front end module mounting hole (ø9)



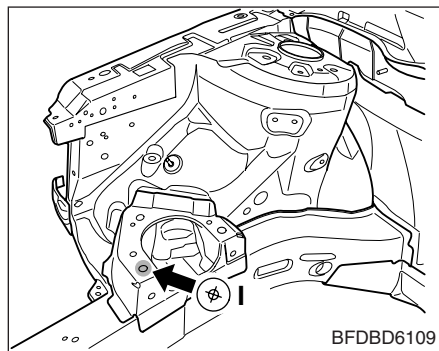
Tooling hole (ø9)



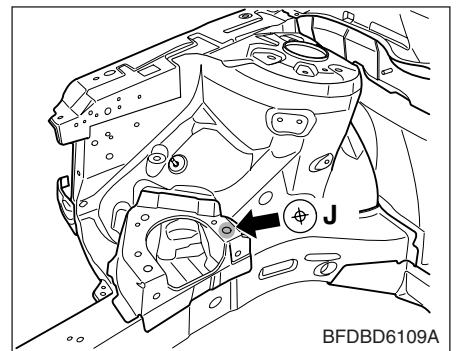
Transmission mounting bracket (ø11)



Transmission mounting bracket (ø11)

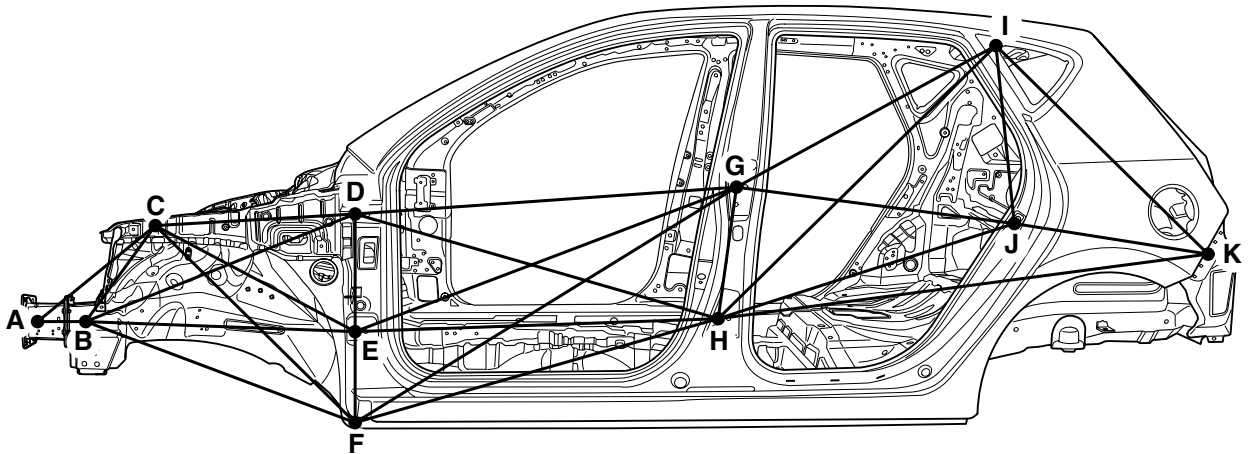


Engine mounting bracket hole (ø13)



Engine mounting bracket hole (ø13)

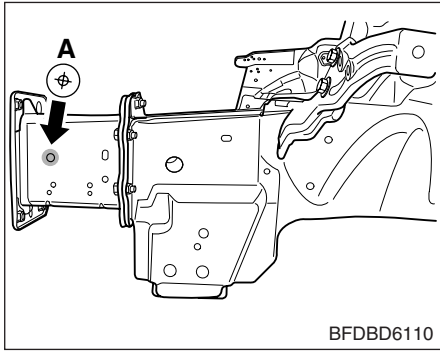
SIDE BODY



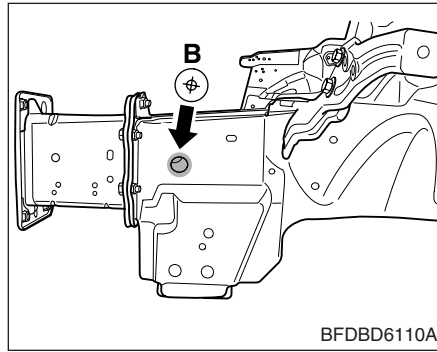
BFDBD6201

* These dimensions indicated in this figure are actual-measurement dimensions.

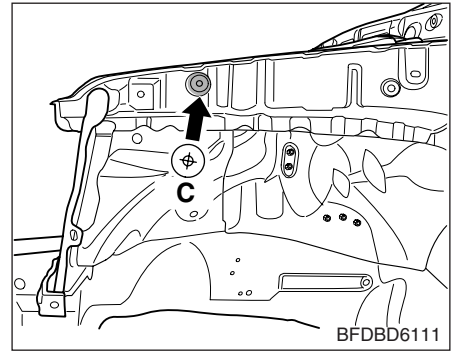
Point symbol	A-B	A-C	B-C	B-D	B-E	B-F	C-D	C-E
Length(mm)	155	609	508	1014	955	977	611	684
Point symbol	C-F	D-E	D-G	D-H	E-F	E-G	E-H	F-G
Length(mm)	858	340	1123	1110	303	1196	1067	1335
Point symbol	F-H	G-H	G-I	G-J	H-I	H-J	H-K	I-J
Length(mm)	1123	389	941	868	1206	954	1521	549
Point symbol	I-K	J-K						
Length(mm)	907	609						



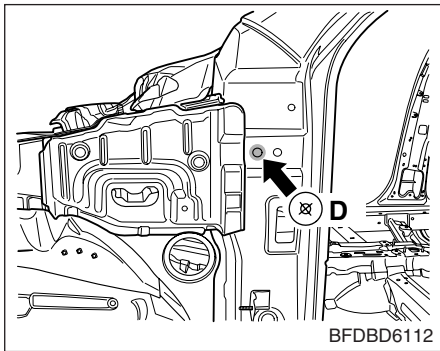
Tooling hole (ø10)



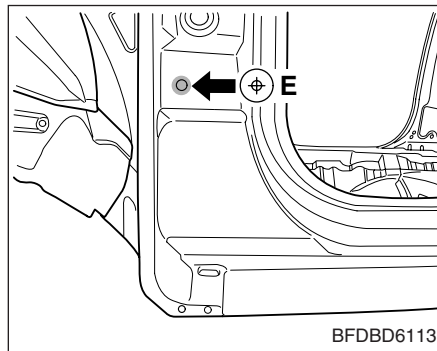
Tooling hole (ø20)



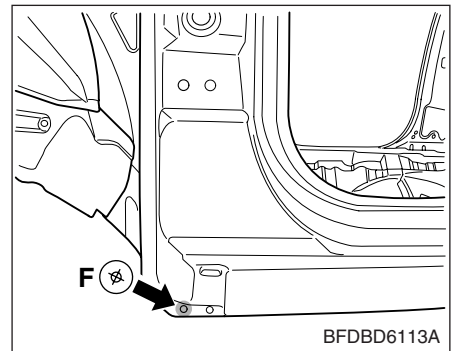
Tooling hole (ø7)



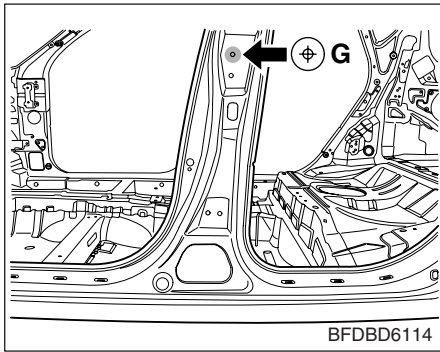
Front door hinge upper mounting hole (ø9)



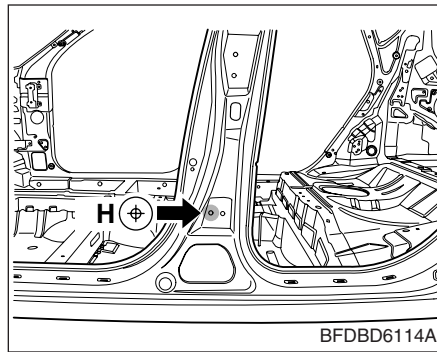
Front door hinge lower mounting hole (ø9)



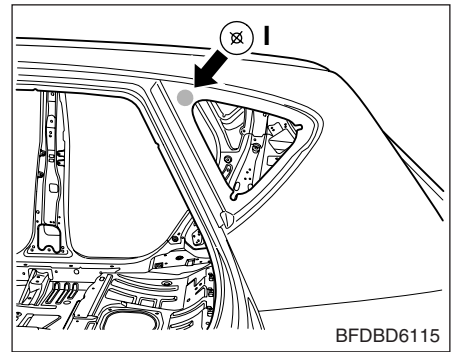
Fender mounting hole (ø6)



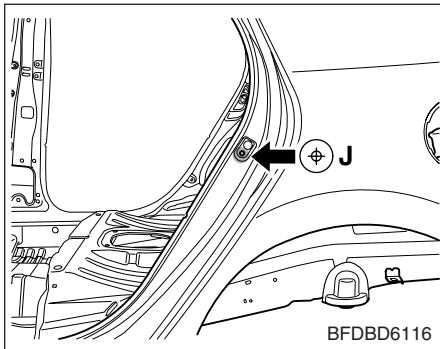
Rear door hinge upper mounting hole (ø13)



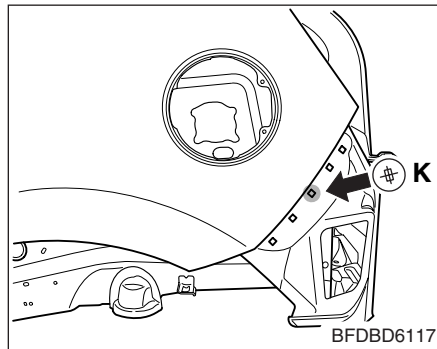
Rear door hinge lower mounting hole (ø13)



Quarter fixed glass mounting hole (ø11)

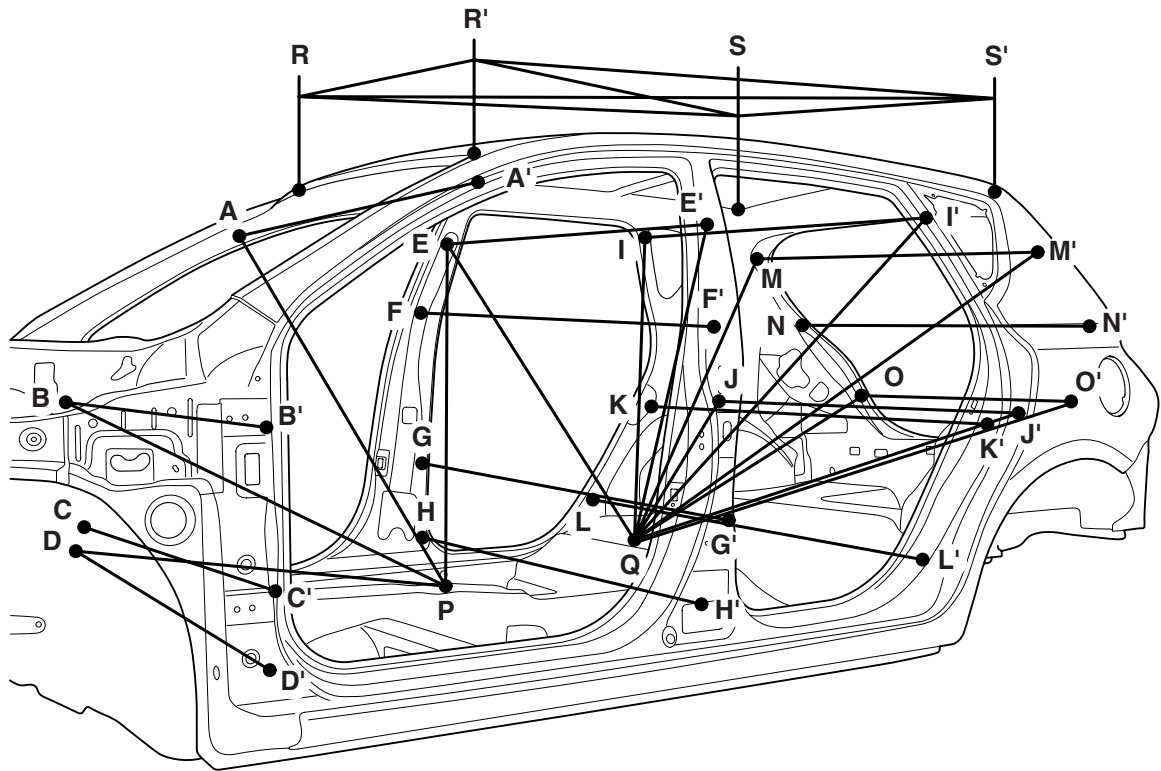


Rear door switch mounting hole (ø6.6)



Rear bumper mounting hole (□ 8.5 X 8.5)

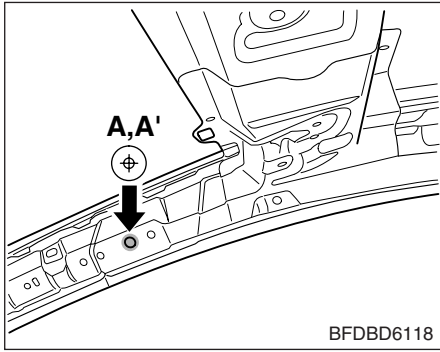
INTERIOR A



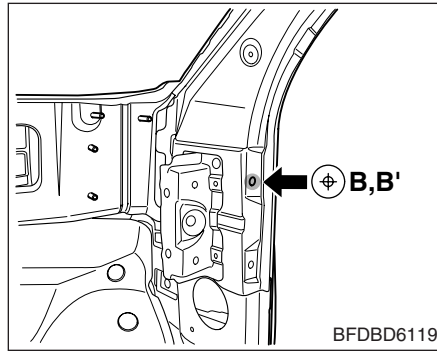
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* These dimensions indicated in this figure are actual-measurement dimensions.

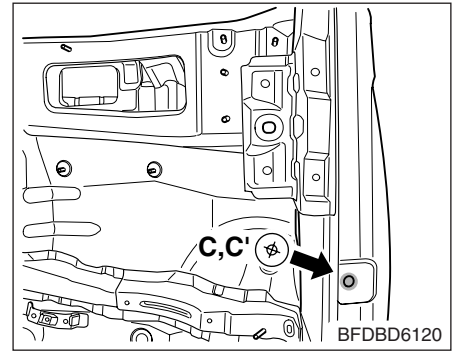
Point symbol	A-A'	B-B'	C-C'	D-D'	E-E'	F-F'	G-G'	H-H'
Length(mm)	1207	1406	1487	1418	1211	1354	1481	1370
Point symbol	I-I'	J-J'	K-K'	L-L'	M-M'	N-N'	O-O'	P-A
Length(mm)	1156	1250	1514	1420	1107	1114	996	1120
Point symbol	P-B	P-D	P-E	Q-E	Q-I	Q-J	Q-M	Q-O
Length(mm)	1116	1003	1134	1083	1158	1073	1349	1421
Point symbol	Q-E'	Q-I'	Q-J'	Q-M'	Q-O'	R-R'	R-S	R-S'
Length(mm)	1072	1148	1061	1341	1414	1063	1618	1907
Point symbol	S-S'							
Length(mm)	961							



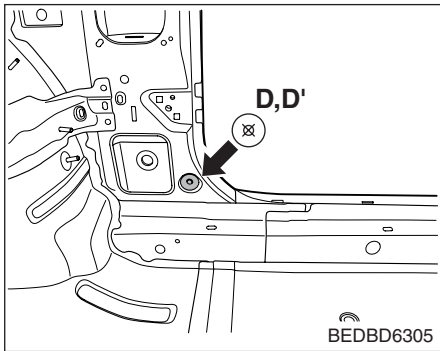
Trim mounting passage hole
($\varnothing 10$)



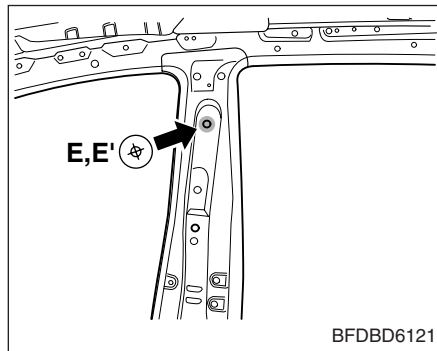
Cowl cross bar mounting hole
($\varnothing 9$)



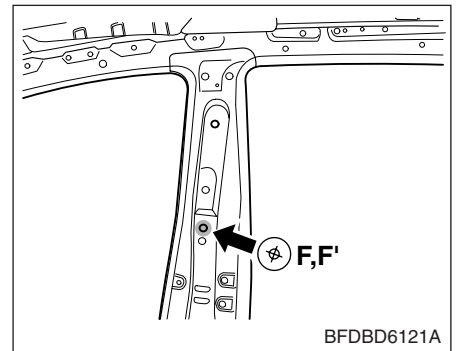
Front door checker mounting hole
($\varnothing 9$)



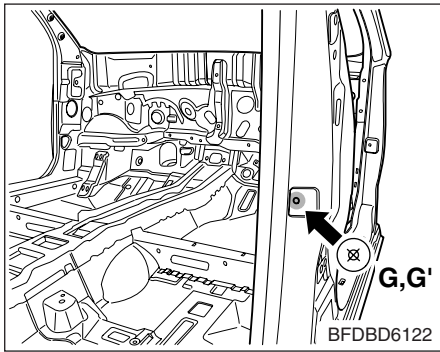
Cowl side trim mounting hole
($\varnothing 6.6$)



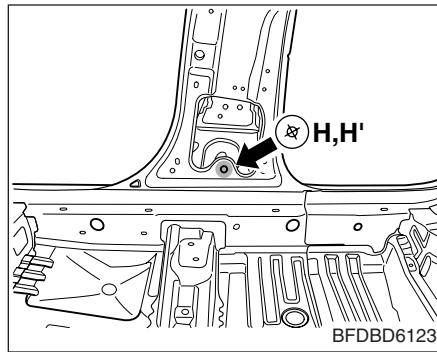
Seat belt height adjust upper mounting hole
($\varnothing 12$)



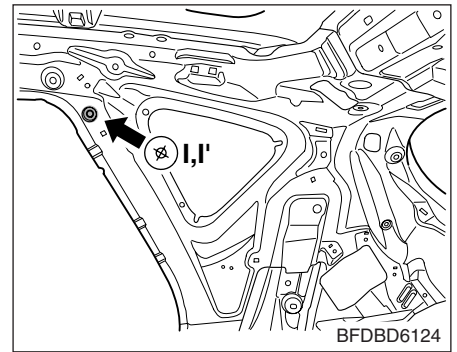
Seat belt height adjust lower mounting hole
($\varnothing 12$)



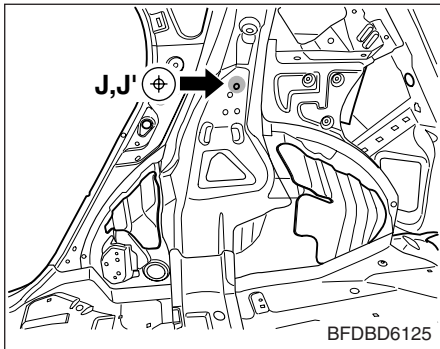
Rear door checker mounting hole
($\varnothing 13$)



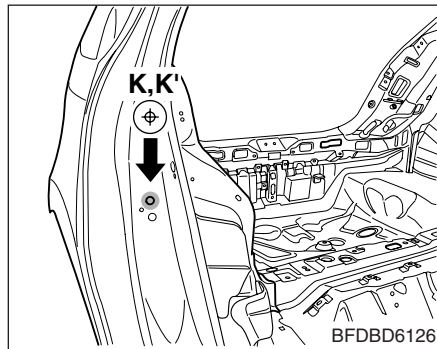
Front seat belt retractor mounting hole
($\varnothing 12$)



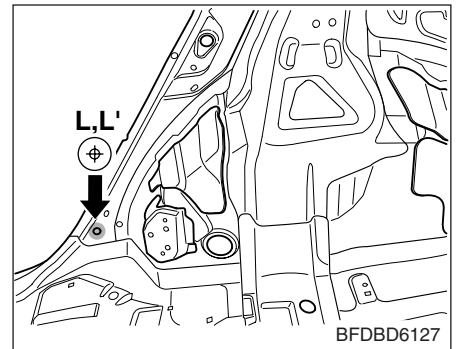
Pillar trim mounting hole
($\varnothing 8.5$)



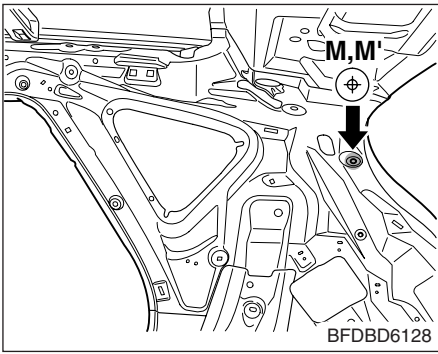
Seat striker passage hole
($\varnothing 9$)



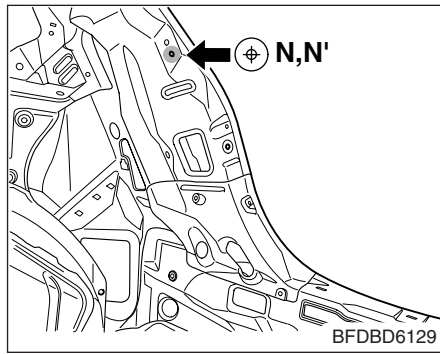
Rear door striker mounting hole
($\varnothing 13$)



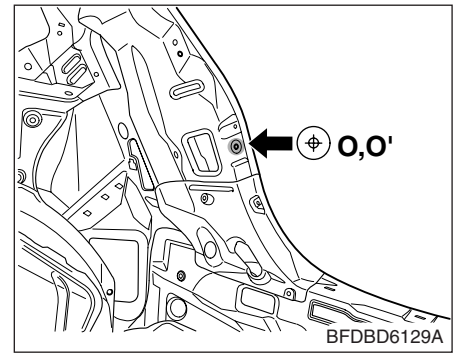
Wheel house trim mounting hole
($\varnothing 8.4$)



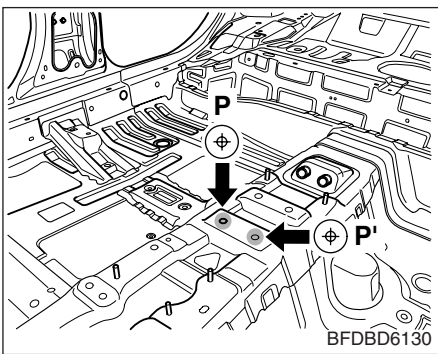
Pillar trim mounting hole (ø8.5)



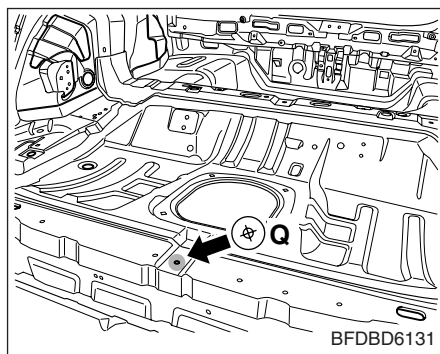
Side trim mounting hole (ø6.6)



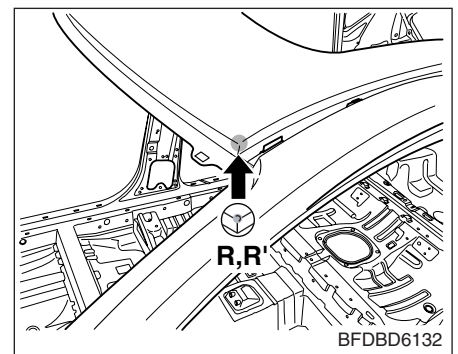
Luggage side trim mounting hole (ø8)



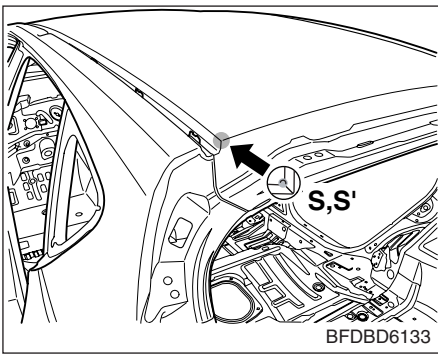
Tooling and drain hole (ø10)



Fuel pump wire mounting hole (ø7)

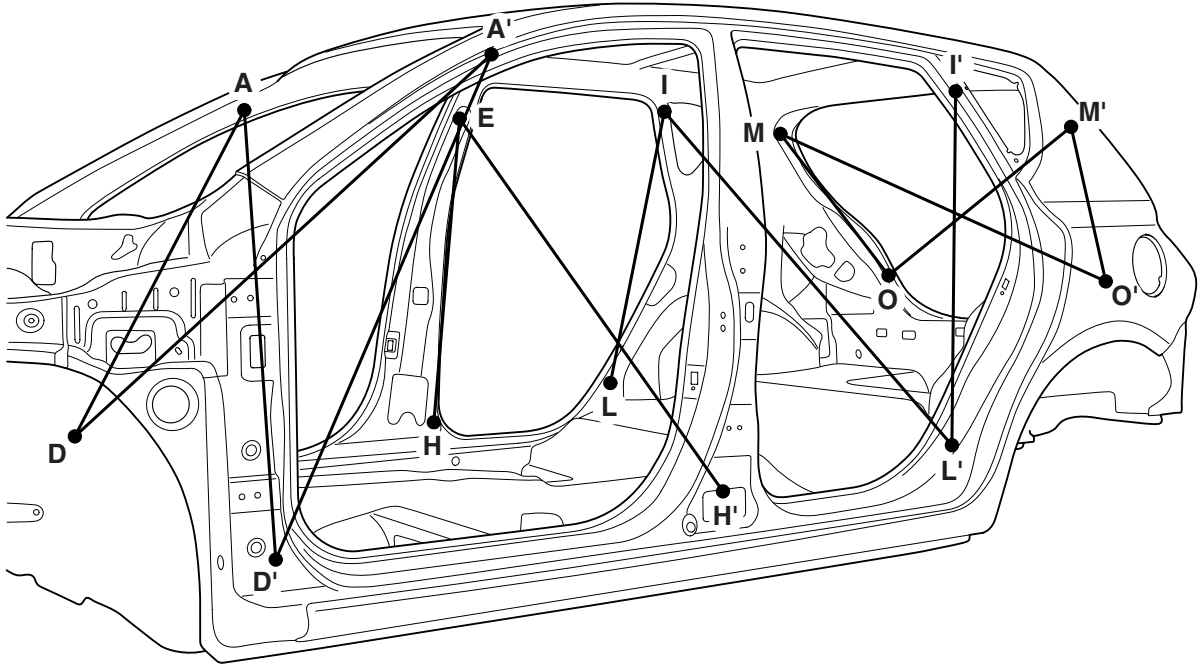


Roof front corner



Roof rear corner

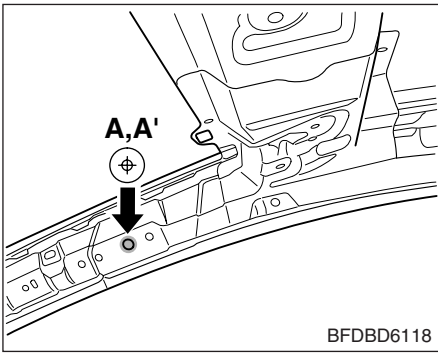
INTERIOR B



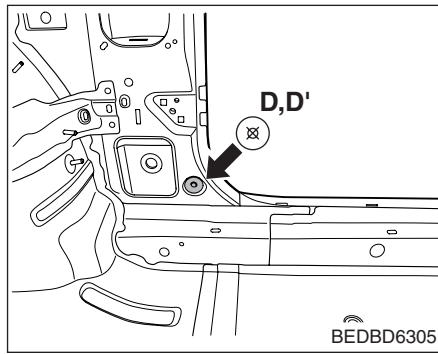
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* These dimensions indicated in this figure are actual-measurement dimensions.

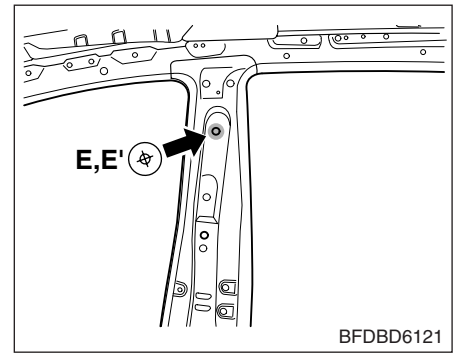
Point symbol	A-D	A-D'	E-H	E-H'	I-L	I-L'	M-O	M-O'
Length(mm)	994	1643	871	1555	857	1541	517	1171



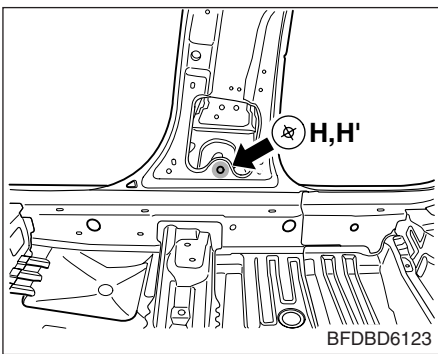
Trim mounting passage hole (ø10)



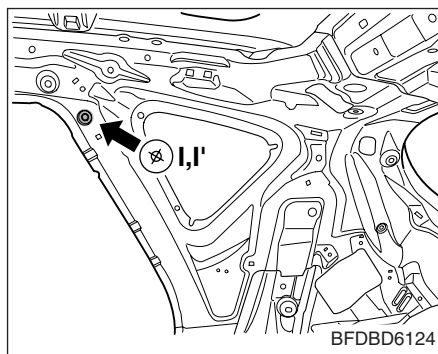
Cowl cross bar mounting hole (ø9)



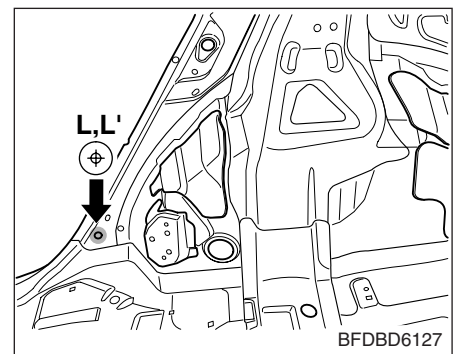
Seat belt height adjust upper mounting hole (ø9)



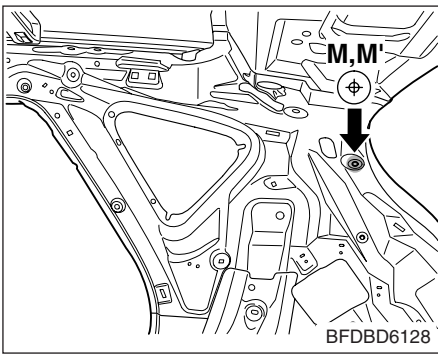
Front seat belt retractor mounting hole (ø12)



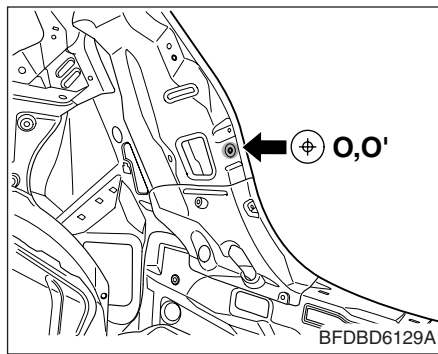
Pillar trim mounting hole (ø8.5)



Wheel house trim mounting hole (ø8.4)

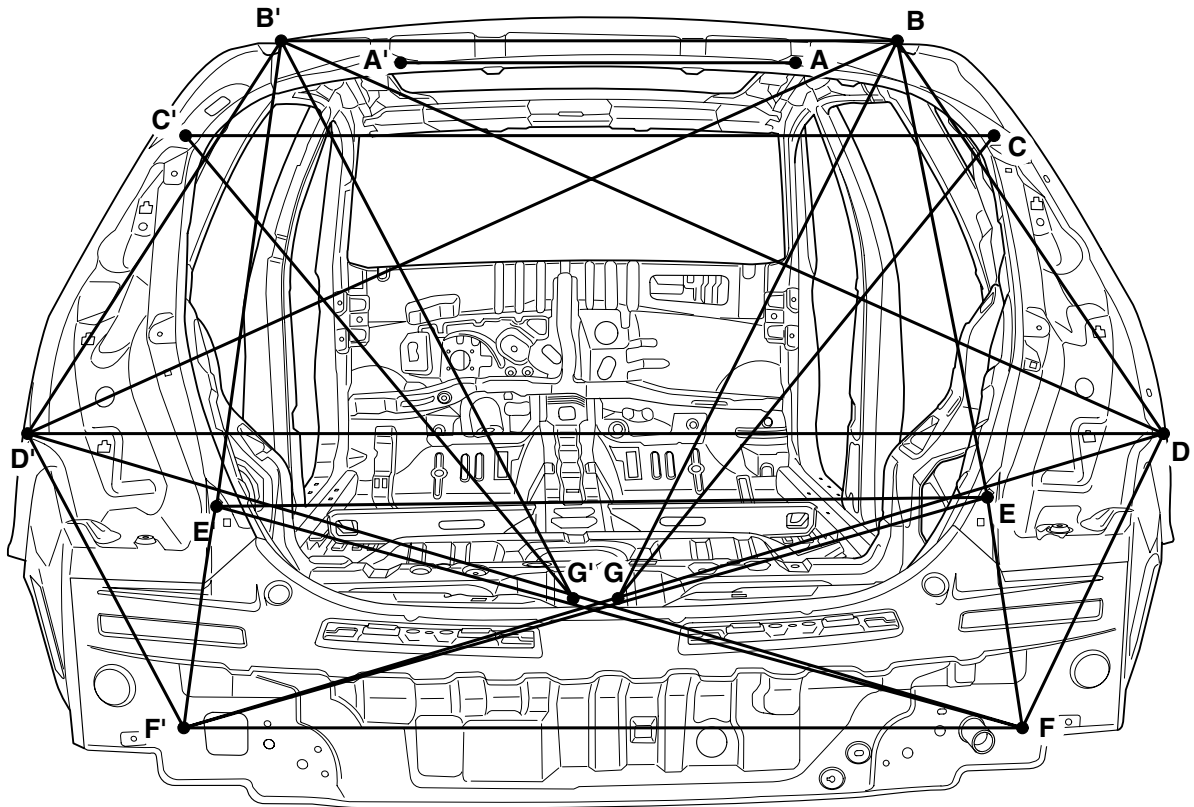


Pillar trim mounting hole (ø8.5)



Side trim mounting hole (ø8)

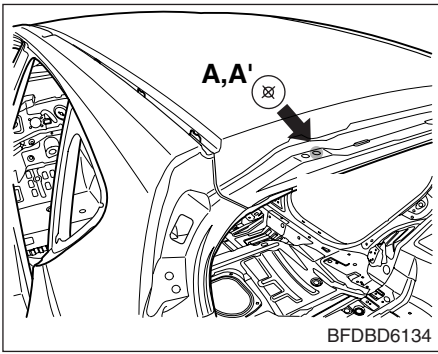
REAR BODY



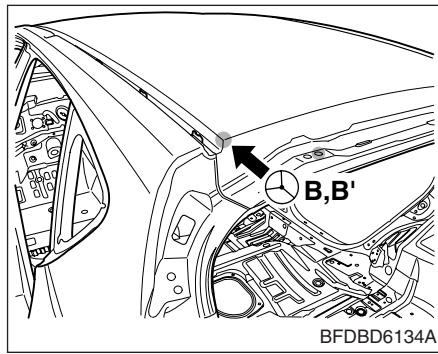
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* These dimensions indicated in this figure are actual-measurement dimensions.

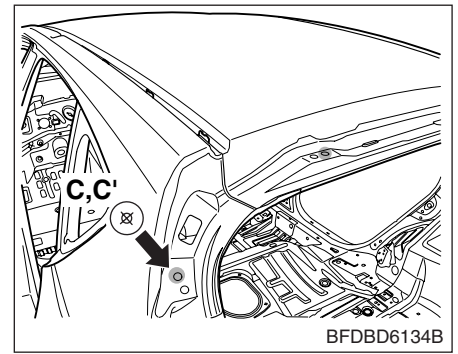
Point symbol	A-A'	B-B'	B-D	B-D'	B-E	B-G	C-C'	C-G
Length(mm)	625	961	742	1421	790	1034	1219	964
Point symbol	D-D'	D-F	D-F'	E-E'	E-F	E-F'	F-F'	
Length(mm)	1529	428	1371	972	314	1085	1110	



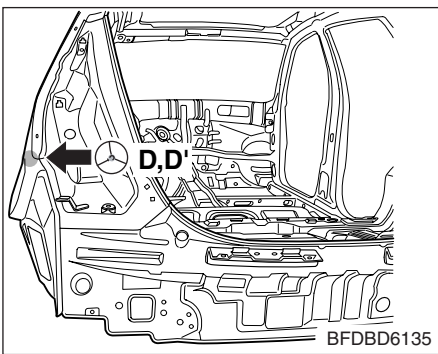
Tail gate hinge mounting hole
($\varnothing 12$)



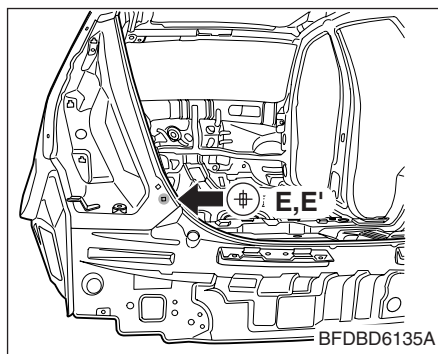
Roof rear corner



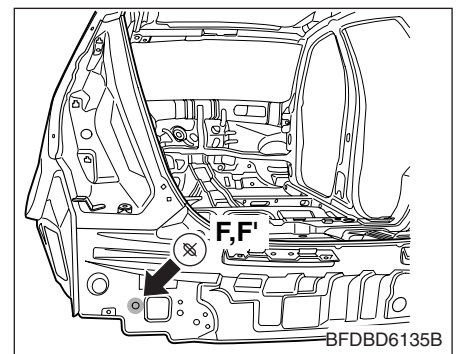
Gas lifter mounting passage hole
($\varnothing 11$)



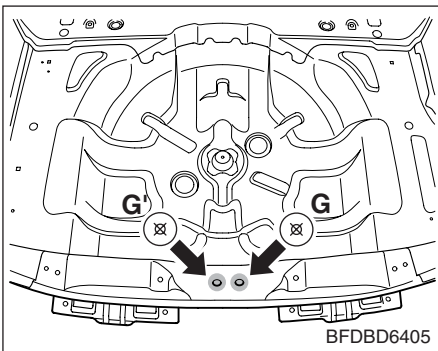
Side outer rear corner



Rear bumper mounting hole
($\square 7.5 \times 7.5$)

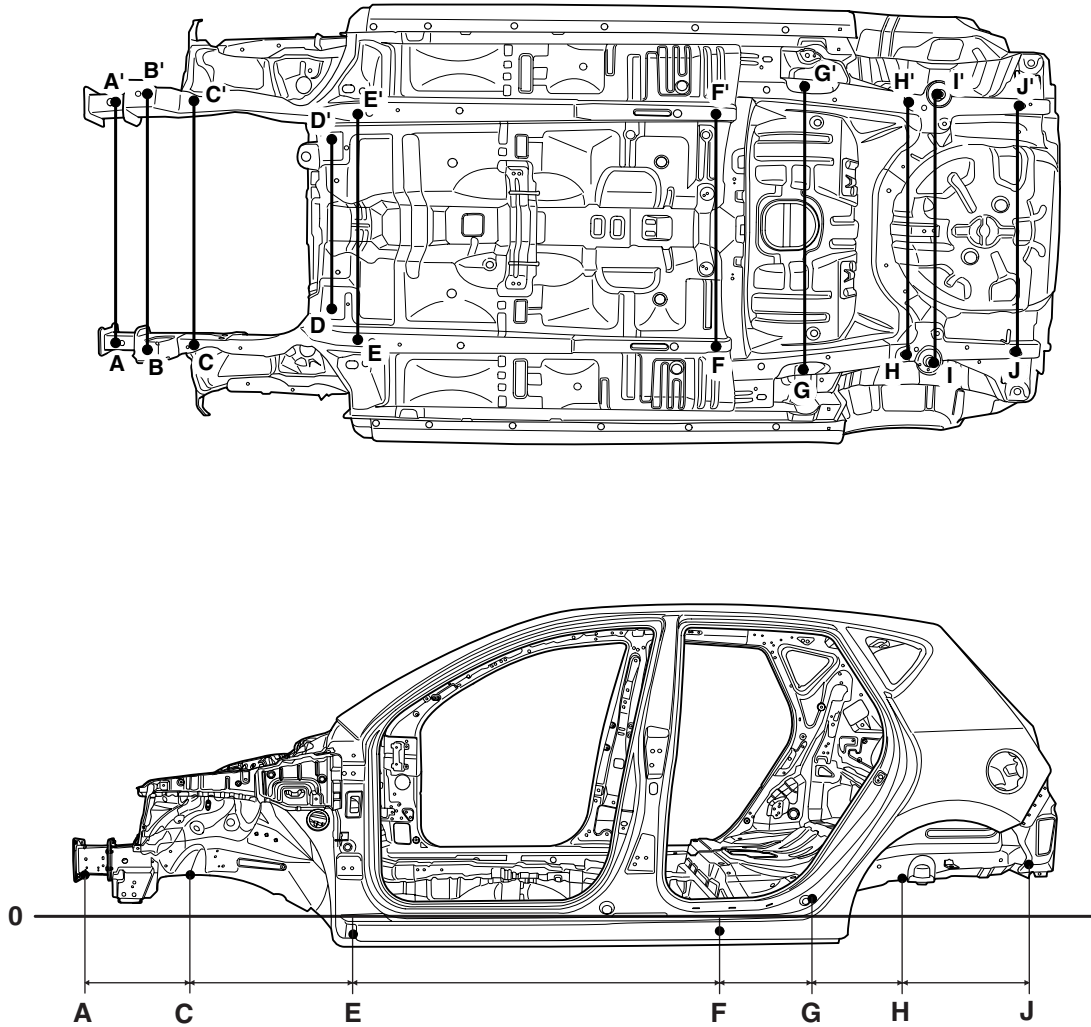


Rear bumper mounting hole
($\varnothing 18 \times 20$)



Tail gate striker mounting hole
($\varnothing 11$)

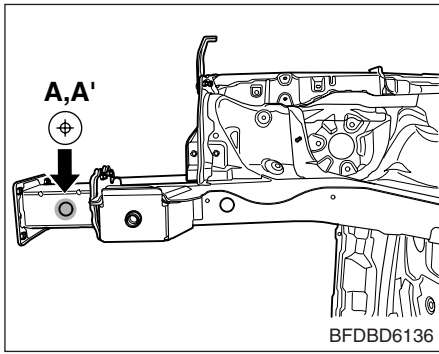
UNDER BODY (PROJECTED DIMENSIONS)



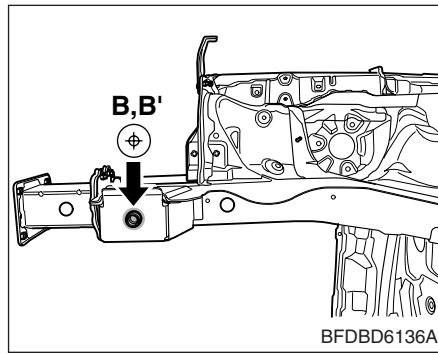
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* These dimensions indicated in this figure are projected dimensions.

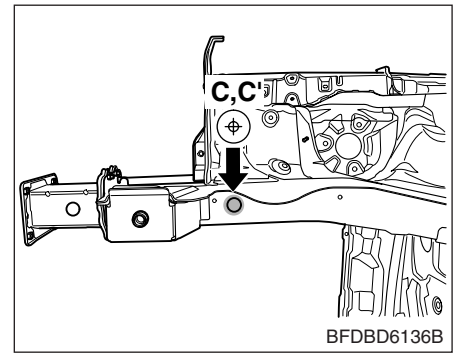
Point symbol	A-A'	B-B'	C-C'	D-D'	E-E'	F-F'	G-G'	H-H'
Length(mm)	1004	1000	1000	630	832	848	1100	993
Point symbol	I-I'	J-J'	O-A	O-C	O-E	O-F	O-G	O-H
Length(mm)	1061	998	174	184	-73	-81	98	131
Point symbol	O-J	A-C	C-E	E-F	F-G	G-H	H-J	
Length(mm)	178	295	763	1312	363	420	489	



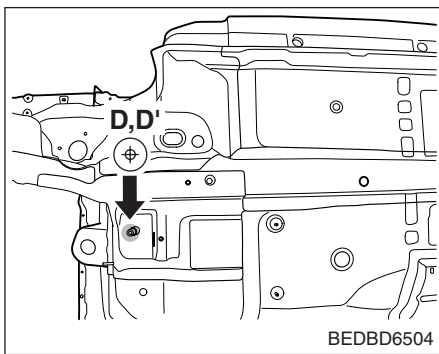
Tooling hole (ø25)



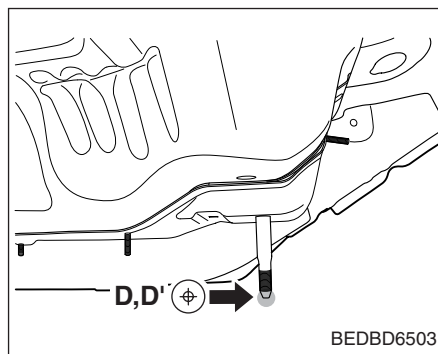
Subframe mounting pipe (ø25)



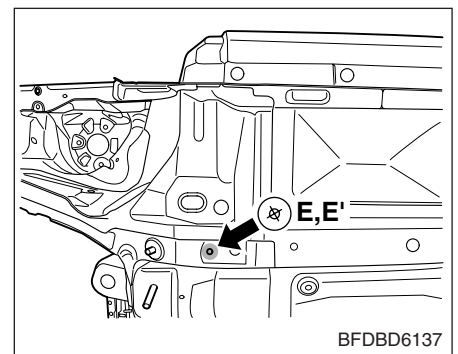
Tooling hole (ø25)



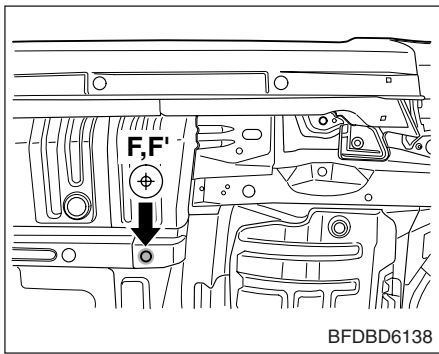
Subframe mounting bolt



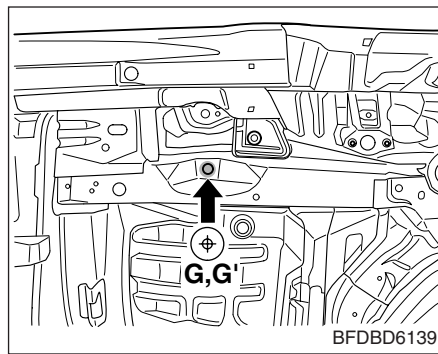
Subframe mounting bolt



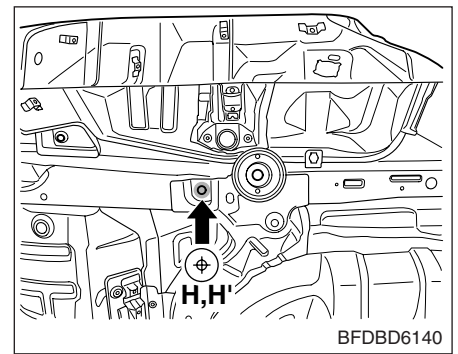
Tooling hole (ø11)



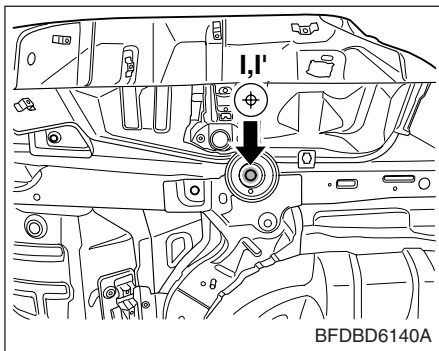
Tooling and paint drain hole (ø20)



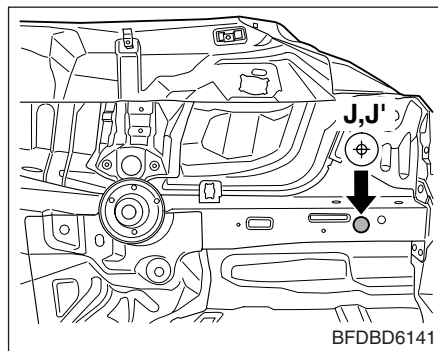
Rear suspension mounting hole (ø21)



Cross member mounting hole (ø19)

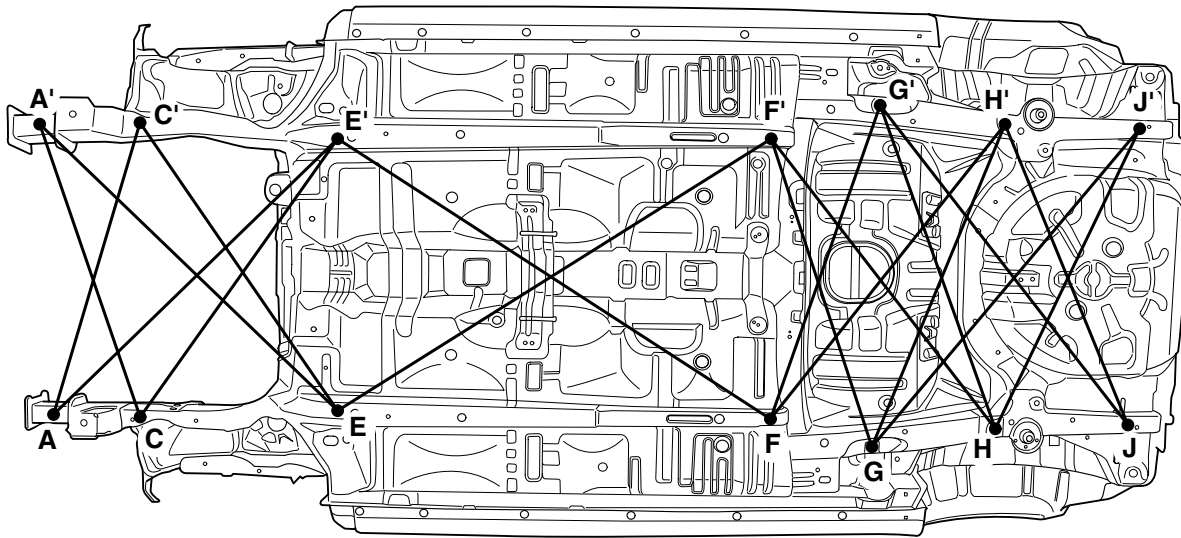


Spring mounting hole (ø20)



Tooling hole (ø25)

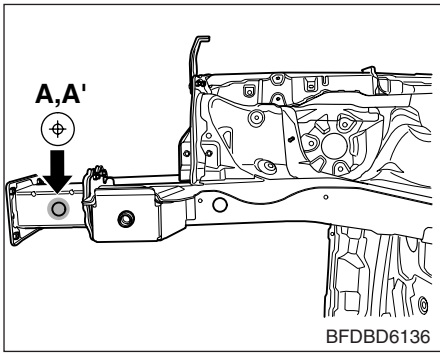
UNDER BODY (ACTUAL-MEASUREMENT DIMENSIONS)



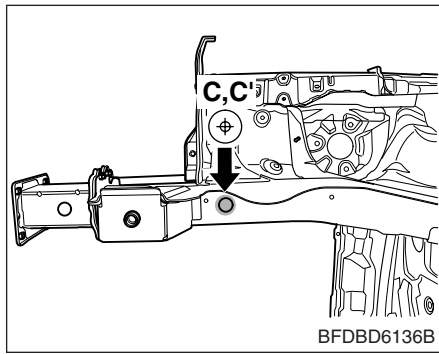
BFDBD6501A

* These dimensions indicated in this figure are actual-measurement dimensions.

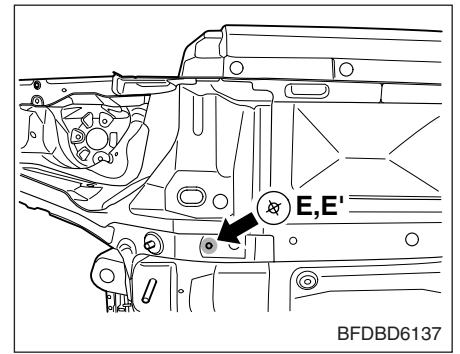
Point symbol	A-C	A-E'	C-E'	E-F'	F-G'	F-H'	G-H'	G-J'
Length(mm)	1045	1422	1219	1558	1055	1227	1128	1390
Point symbol	H-J'							
Length(mm)	1110							



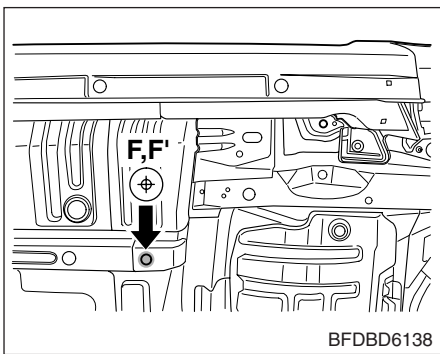
Tooling hole (ø25)



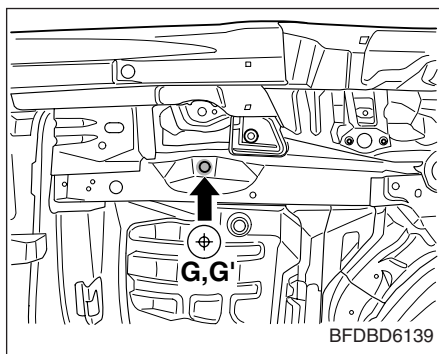
Tooling hole (ø25)



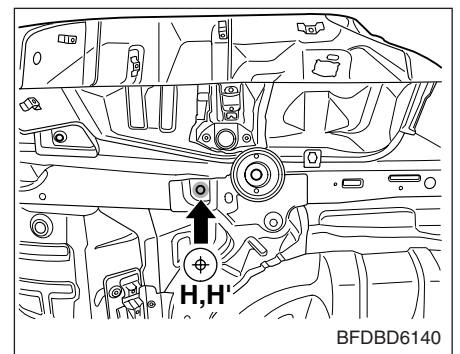
Tooling hole (ø11)



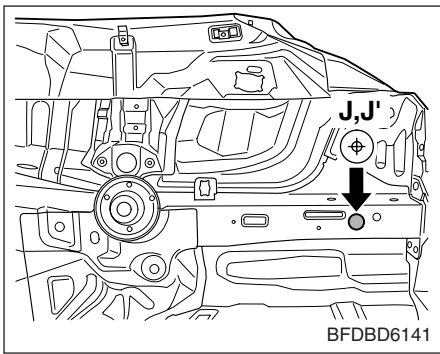
Tooling and paint drain hole (ø20)



Rear suspension mounting hole (ø21)



Cross member mounting hole (ø19)



Tooling hole (ø25)

Body Panel Repair Procedure

REPLACING BODY PANELS

CODES FOR REMOVING AND INSTALLING BODY PANELS	BP - 2
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NOTES WHEN WELDING BODY

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INSTALLING A NEW BODY FRAME	BP - 5
DETERMINING A WELDING METHOD	BP - 5
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INSTALLATION	BP - 48

LOWER QUARTER PANEL	BP - 51
REMOVAL	BP - 52
INSTALLATION	BP - 53

BACK COMPLETE PANEL AND REAR FLOOR SIDE MEMBER

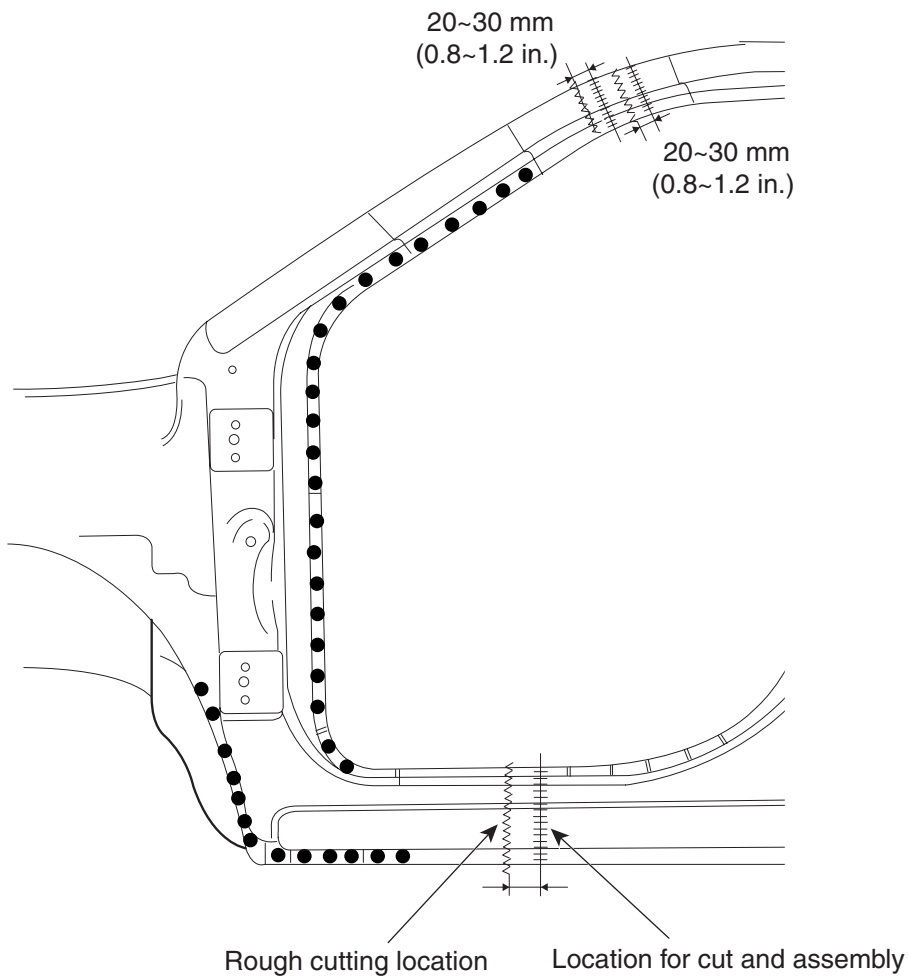
BP - 55	
REMOVAL	BP - 56
INSTALLATION	BP - 58

FRONT AND REAR DOOR OUTER PANELS

BP - 62	
REMOVAL	BP - 63
INSTALLATION	BP - 63

REPLACING BODY PANELS

CODES FOR REMOVING AND INSTALLING BODY PANELS

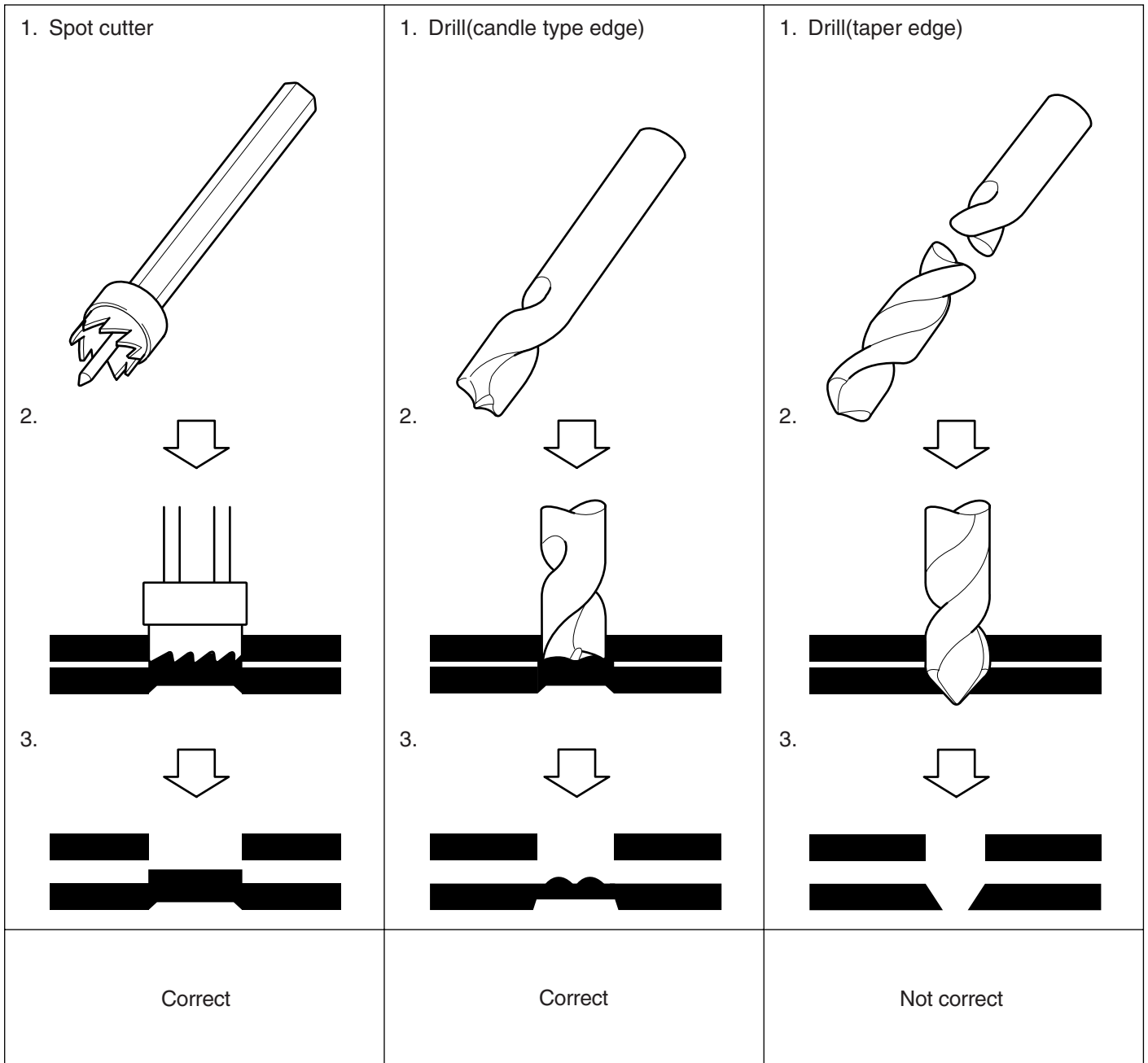


NOTES WHEN WELDING BODY

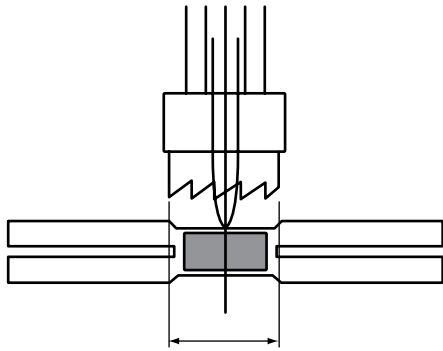
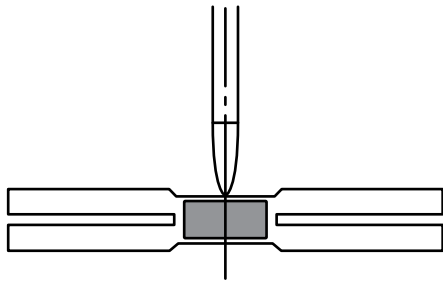
REMOVING SPOT WELDED AREA

Most body parts are spot welded. In order to remove the damaged area, it is best to remove the spot welded area from the body frame using a spot cutter or candle type edge drill bit.

Do not use a drill bit with a tapered edge. Center punch middle of spot weld to insure the entire spot weld will be removed.

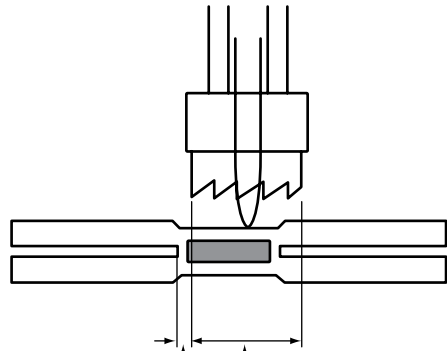
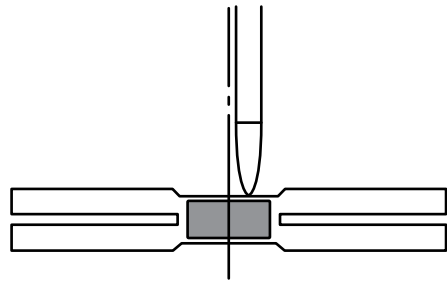


Center punch the middle(nugget) of the spot weld.



Spot welded area can be removed from the body frame.

Otherwise,



This part will not be cut.

This part will be cut.



Spot welded area cannot be removed from the body frame.

INSTALLING A NEW BODY FRAME

The efficiency of the transmission and load distribution are determined by many complicated factors such as thickness of plate, shape and size of a cross section, damage of parts, variance of joints, welding method, and/or welding locations. Therefore, a new part should be fitted to the body frame using the proper procedures to avoid reducing the strength of the body.

DETERMINING A WELDING METHOD

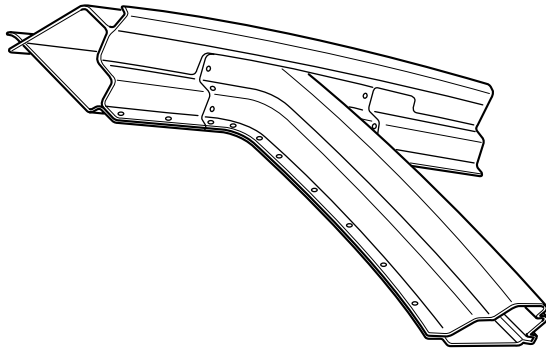
It is extremely important that appropriate welding methods, which don't reduce the original strength and durability of the body be used when making repairs, Try to use either spot welding or carbon arc(plug) welding, Do not braze any body components other than the ones brazed at the factory. Do not use an oxy-acetylene torch for welding.

Welding	Symbol	Details
Spot welding	●	The most reliable welding method (provides high efficiency and quality of assembled part.)
Carbon arc welding (Plug welding)	■	Use when spot welding cannot be done or spot welding is not necessary.
Oxygen-acetylene welding	✕	Not used

BVQBP6004

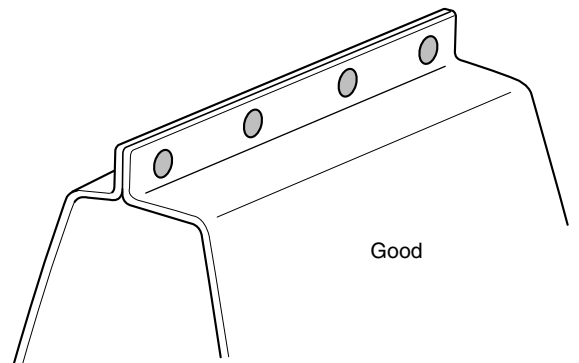
SPOT WELDING

- Commercial spot welding machines do not perform as well as the machines used in the manufacturing process. When spot welding, increase the number of spot welds by 30% (1.3 times the original number of welds).



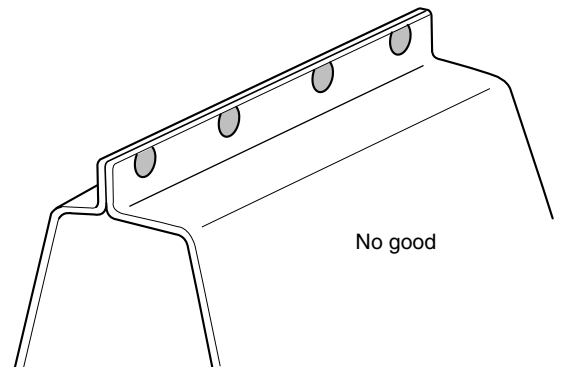
BVQBP6005

- When spot welding, weld in the middle of the joint.



BVQBP6006

- Spot welding on the edge of the joint will reduce welding strength.

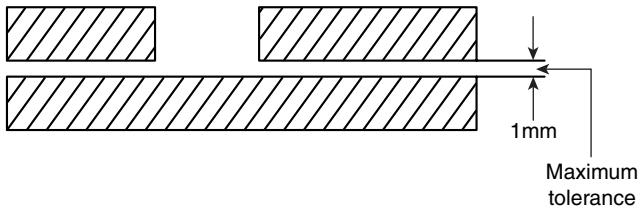


BVQBP6007

CARBON ARC WELDING

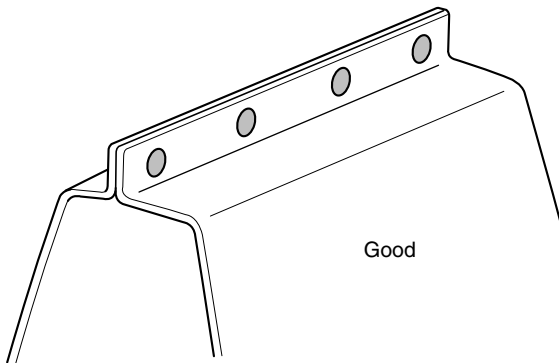
In areas where spot welding is not suitable, do plug welding using a carbon arc welding machine.

1. Clamp the parts to be welded together tightly. Do not exceed 1 mm of space between parts. A tolerance greater than 1 mm will reduce the strength of the welded area.



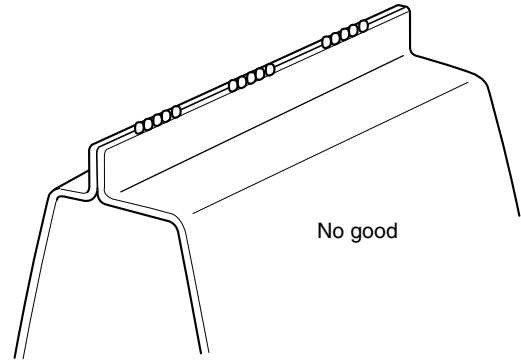
BVQBP6008

2. Weld in the middle of the flange joint.
 - a) Drill a hole 5~6 mm on one side of the flange only, and weld within the hole.



BVQBP6006

- b) Do not weld on the edge of the flange joint.



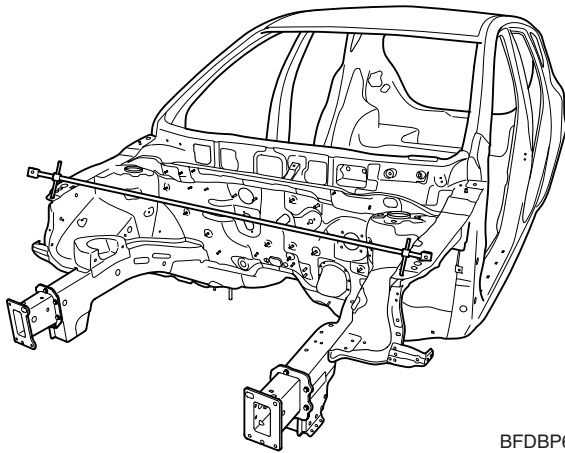
BVQBP6009

REPLACING BODY PANEL

REMOVAL

1. Body measurement

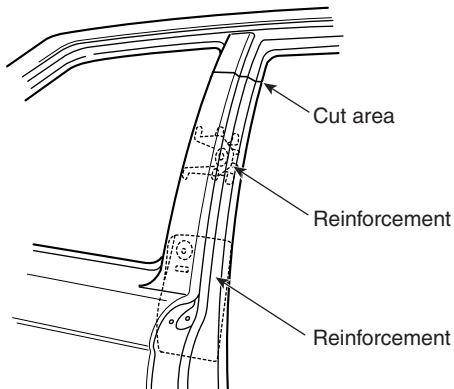
- a) Before removing, measure the damaged area according to the dimensions supplied in Body Dimension, section BD. If deformation is present, use a frame straightener to adjust.
- b) When removing a panel, apply clamps to prevent damage of each part, and support the lower end of the frame to prevent deformation during the procedure.



BFDBP6601K

2. Cut and welding point selection

Cutting, if necessary, should not be done in a reinforcement area. Select an area which will result in the least amount of deformation after welding.

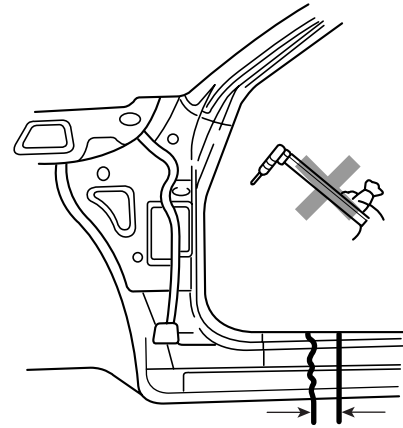


BVQBP6011

3. Cutting rough area for replacement part

Cutting should be done according to the following steps to make removal easy:

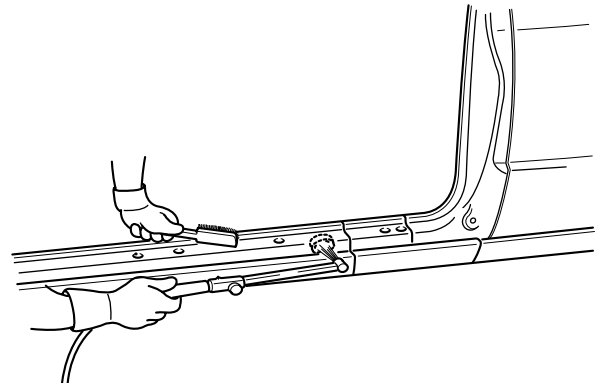
- a) Use care when cutting an area close to a pipe or wiring harness.
- b) Cut an area leaving 30~50 mm of tolerance.



BVQBP6012

4. Removing paint from an area to be spot welded

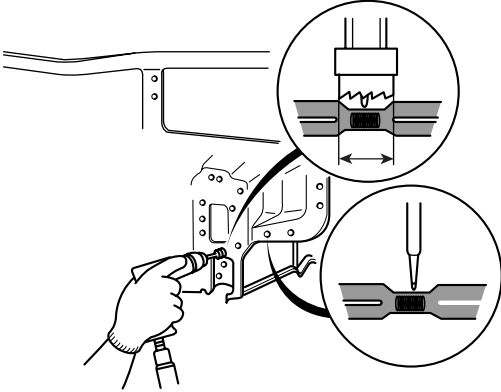
Using a torch and wire brush, remove paint completely before beginning welding.



BVQBP6013

5. Determine a cutting method**a) Cutting a spot welded area**

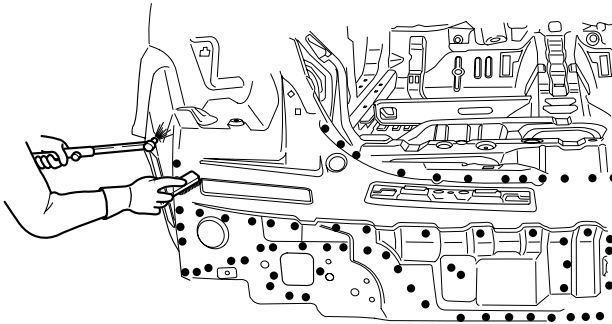
Make a hole in the middle of spot welded area with a punch, remove welded area using a spot cutter and remove using a chisel.



BVQBP6014

b) Removing brazed area

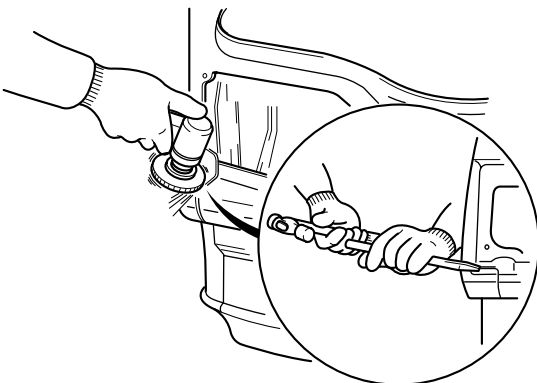
Remove using a torch and wire brush, and chisel.



BFDBP6015

c) Removing arc welded area

Remove plug welded area using a disk grinder and chisel.

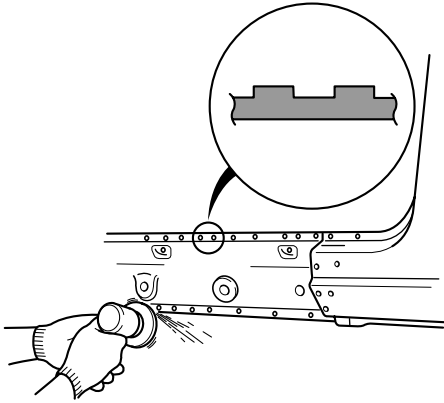


BVQBP6016

PREPARATION FOR INSTALLATION

1. Spot weld finish

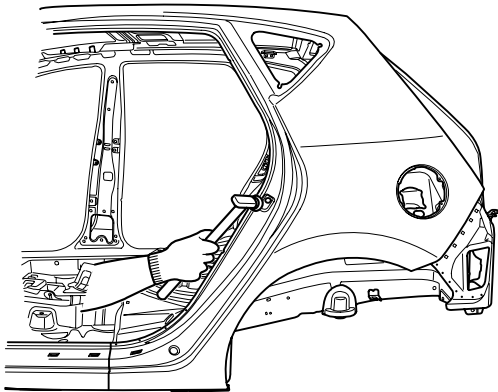
Use a disk grinder or similar tool to finish spot weld mark, Do not grind more than is necessary to smooth surface.



BVQBP6017

2. Panel preparation

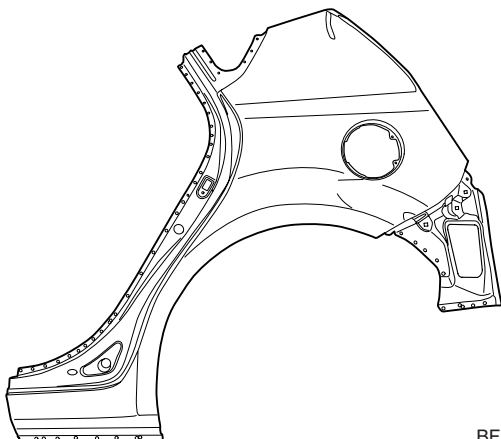
Repair any bent or uneven areas with a hammer to improve the installation process.



BFDBP6018

3. Cutting a rough area for a new part

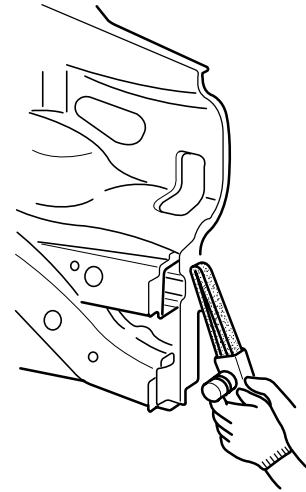
When rough cutting an area for a new part, leave a tolerance of 30~50 mm.



BFDBP6608

4. Preparation for spot welding

Remove paint on spot welded area and on the area overlapped by the new part using a belt sander or similar tool.



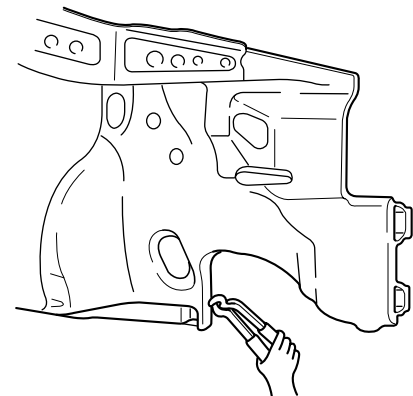
BVQBP6020

5. Drilling a hole for plug welding

If the thickness of the part to be welded is less than 3 mm, drill a 5~6 mm diameter hole. If the thickness of the part to be welded is greater than 3 mm, drill a hole using a 7 mm diameter drill.

NOTE

Do not spot weld where thickness is greater than 3 mm.

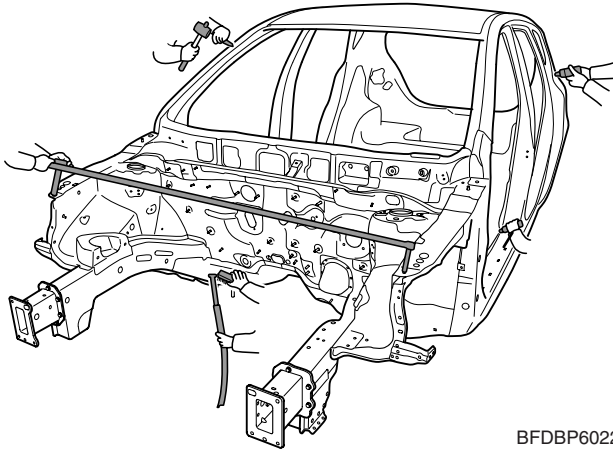


BVQBP6021

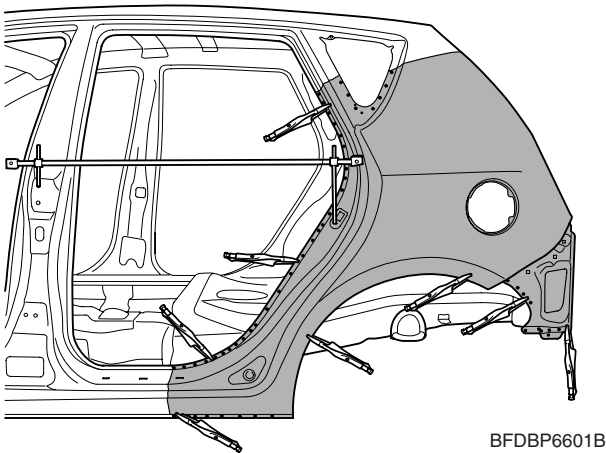
INSTALLATION

1. Checking welding and fitting in advance

- a) When installing a new part, measure the dimensions of each part according to the body dimensions given in Section BD, and set part to the reference dimensions.



- b) Prior to final welding, check the fit of all related parts.



2. Selecting number of welding points

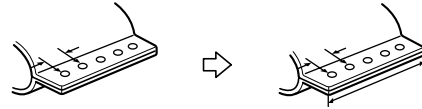
Spot welding : Multiply the original number of factory welds by 1.3 times

Plug welding : Same number as original number of factory welds

NOTE

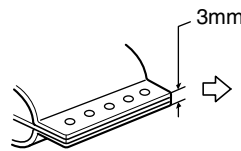
- Plug welding should be done using a carbon arc welding machine.
- Brazing should be done only on areas that were originally brazed at the factory.

Initial welding pitch:50 mm Welding after repair pitch:35 mm



Spot welding: initial number of welds x 1.3

Welding points-same number as original number of factory welds.

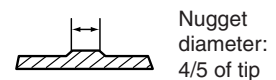
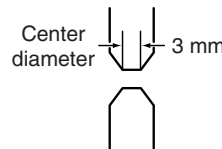
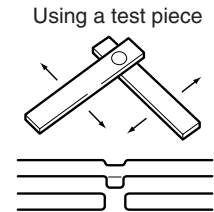
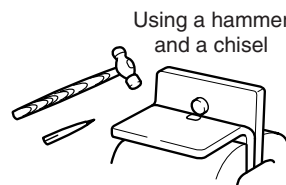


Plug welding-used when spot welding is not feasible or material is thicker than 3 mm

BVQBP6024

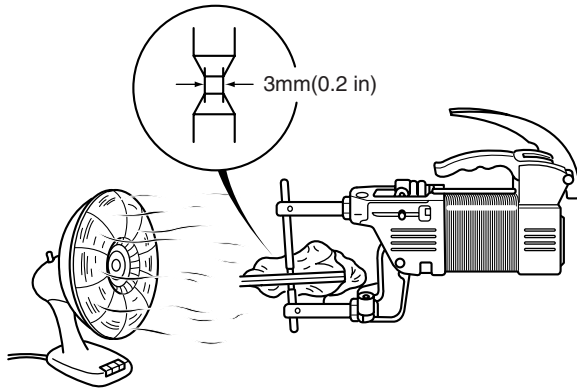
3. Caution when spot welding

- a) Do a test welding on a piece of material of the same type and thickness as the part to be welded and proceed if test weld is good.
- b) Before spot welding, check if welding debris, oil or paint is present on the area where surfaces meet.
Clean or sand as necessary.



BVQBP6025

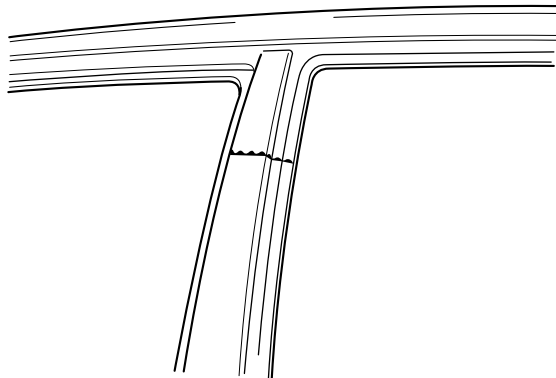
- c) The tip of the spot welding machine should be maintained to a minimum tolerance of 3 mm. Also let area cool after 5 or 6 welds to minimize problems caused by excessive heat.



BVQBP6026

4. Cutting and welding an removed area

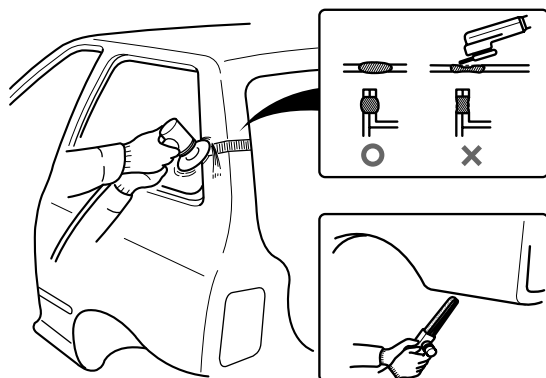
To align a roof panel and a center pillar together for butt welding, temporarily fasten a steel flange to the roof panel and then apply the new center pillar panel. Remove the flange when final welding is done.



BVQBP6027

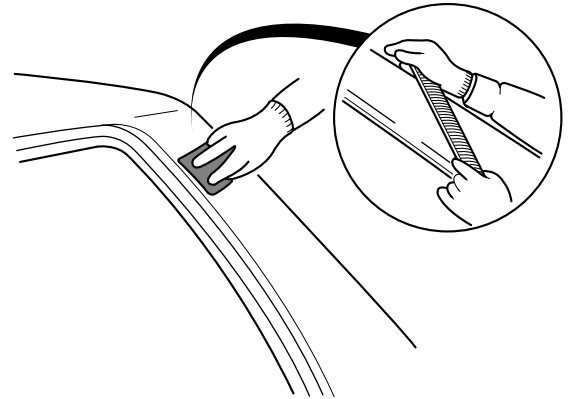
5. Finishing after welding

- a) Grind any areas that were plug welded or butt welded using a disk grinder. Grind carefully to avoid removing too much material. This degrades the strength of the weld.



BVQBP6028

- b) Finish areas that have been brazed by applying body filler then smooth the area with a flexible file and sander.



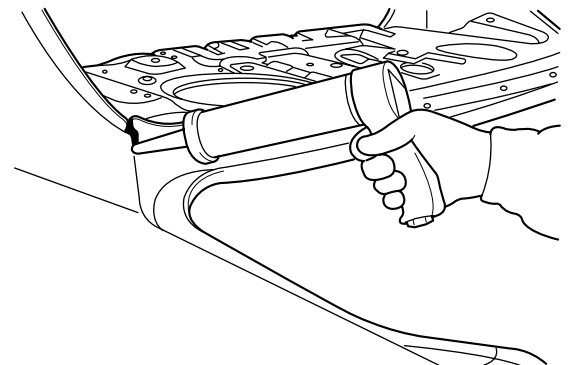
BVQBP6029

6. Applying anti-rust agent and body sealer

After coating the surface with anti-rust agent, apply body sealer where necessary.

NOTE

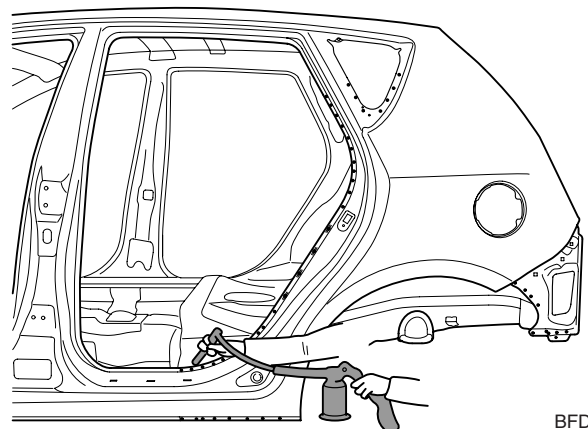
Apply body sealer before assembly.



BVQBP6030

7. Anti-rust treatment

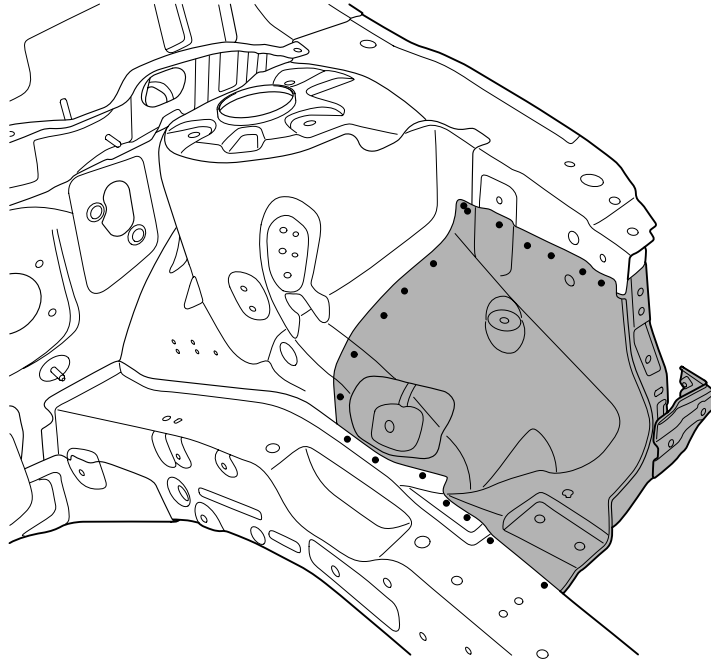
Apply anti-rust agent to inside of doors and sills by spraying through access holes provided.



BFDBP6031

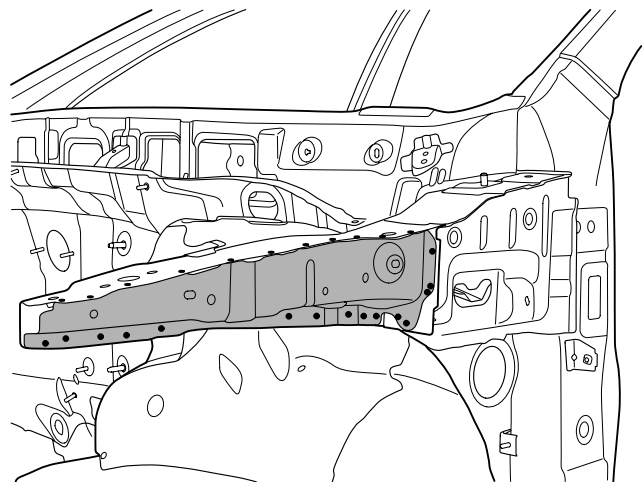
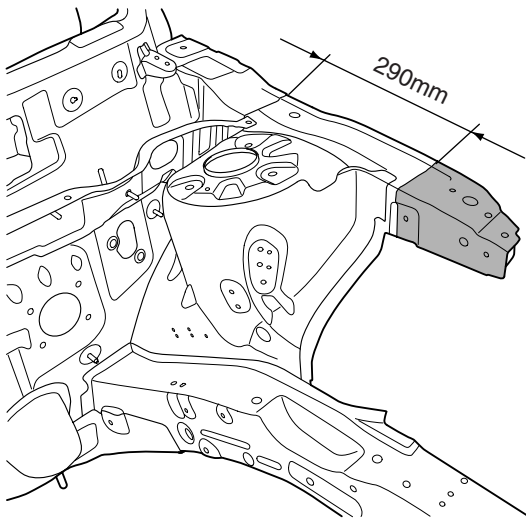
FENDER APRON PANEL

WELDING POINTS



- MIG plug welding
- +++ MIG butt welding
- ✕✕ MIG lap welding

BFDBP6102



- MIG plug welding
- +++ MIG butt welding
- ✕✕ MIG lap welding

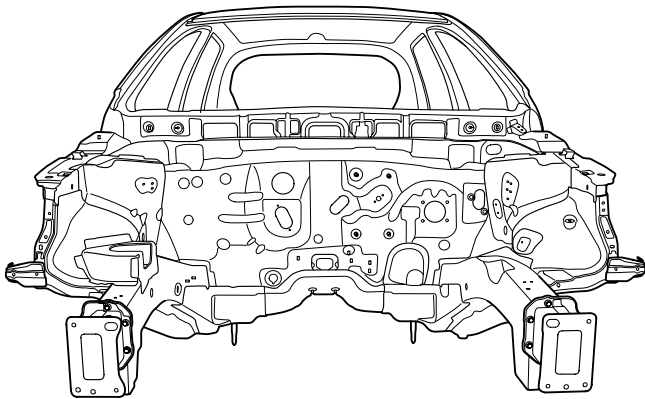
BFDBP6104

REMOVAL

NOTE

Before repairing, remove Engine and Suspension Components.

Refer to the body dimension charts and measure the vehicle to determine straightening and alignment requirements. The body must be returned to its original dimension before beginning the repair procedure.

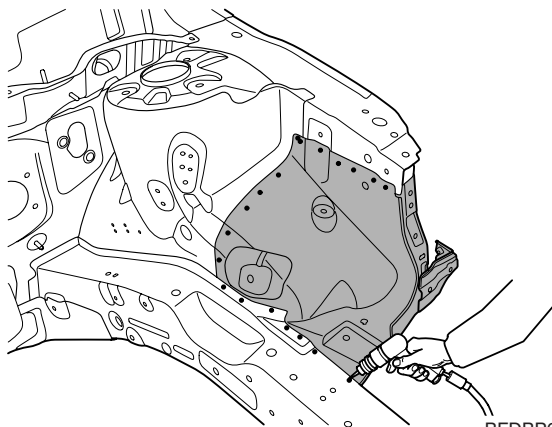


BEDBP6101

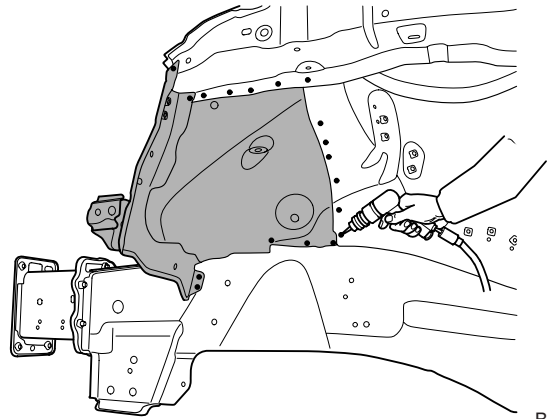
1. Drill out all the spotwelds to separate fender apron inner panel assembly from fender apron upper panel assembly and front side member assembly.

NOTE

When spotwelded portions are not apparent, remove paint with a rotary wire brush.



BFDBP6102

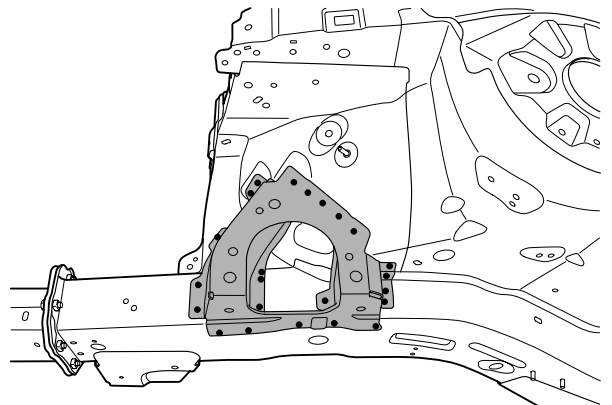


BFDBP6103

2. Remove the fender apron inner panel assembly.

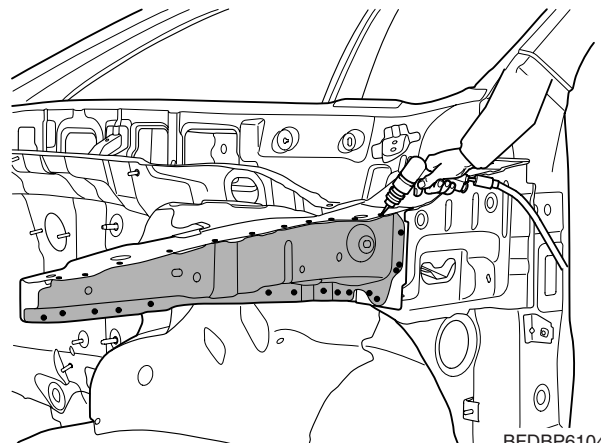
NOTE

On the right side, remove engine mounting support assembly before removing the fender apron inner panel assembly.



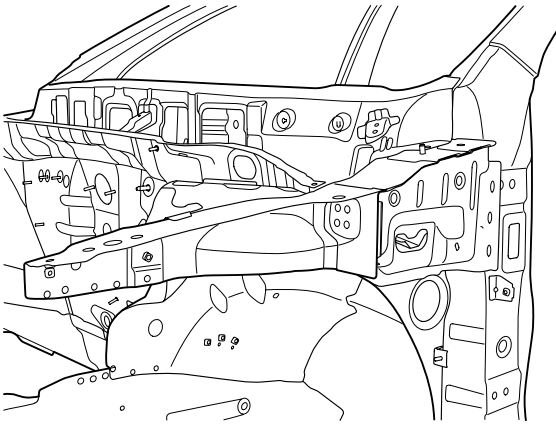
BFDBP6109

3. Drill out all the spotwelds to separate fender apron upper outer panel from fender apron upper inner panel assembly.



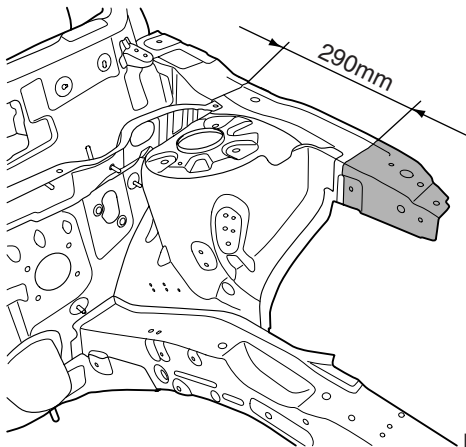
BFDBP6104A

4. Remove the fender apron upper outer panel.



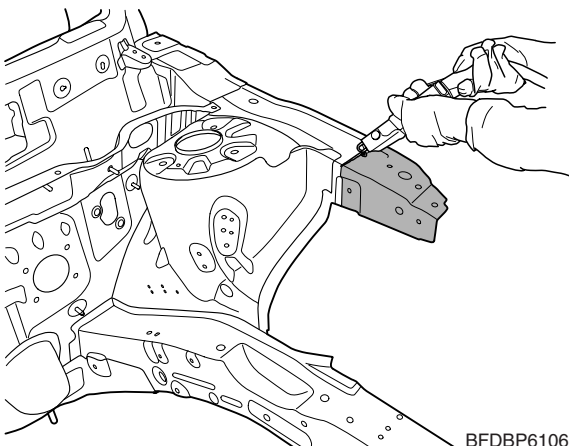
BFDBP6105

5. Measure and mark the cutline on the fender apron upper inner panel 290mm from front fender apron upper inner panel end on the fender apron upper panel assembly as shown in the illustration.



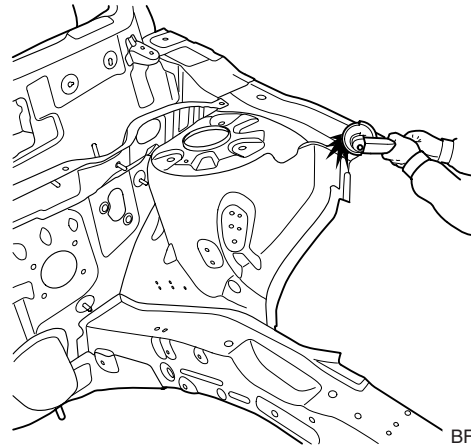
BFDBP6106

6. Cut the fender apron upper inner panel along the cutline.



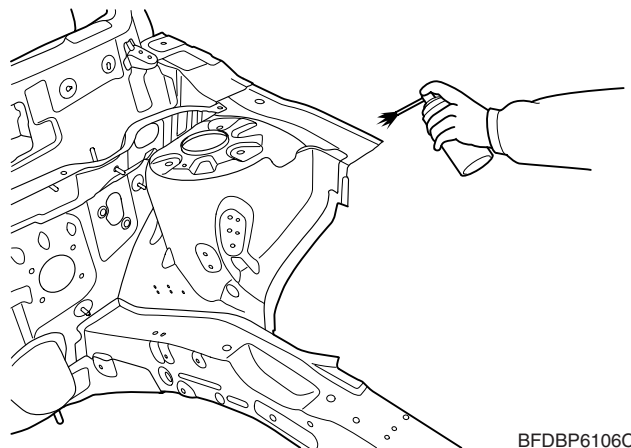
BFDBP6106A

7. Remove the fender apron upper inner panel.
8. Prepare all surfaces to be welded.



BFDBP6106B

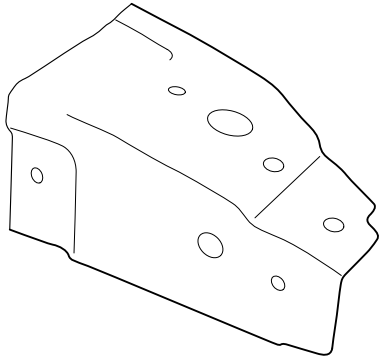
9. After removing, apply the welding primer.



BFDBP6106C

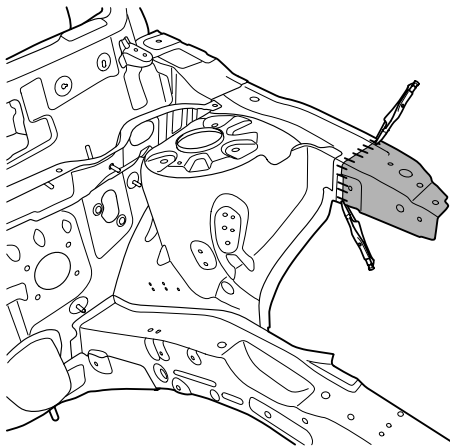
INSTALLATION

1. Transcribe the fender apron upper inner panel cutline to the new fender apron upper inner panel, cut to length and chamfer butt end to improve weld surface.



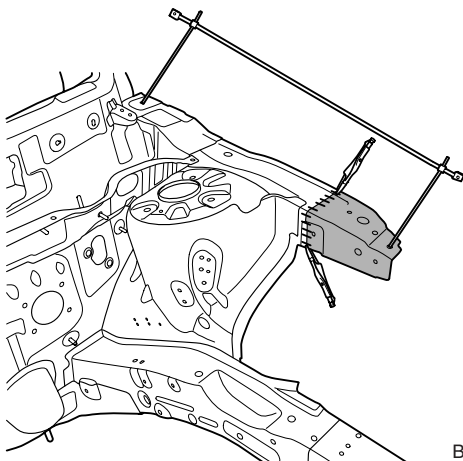
BFDBP6106D

2. Fit and clamp the fender apron upper inner panel in place.



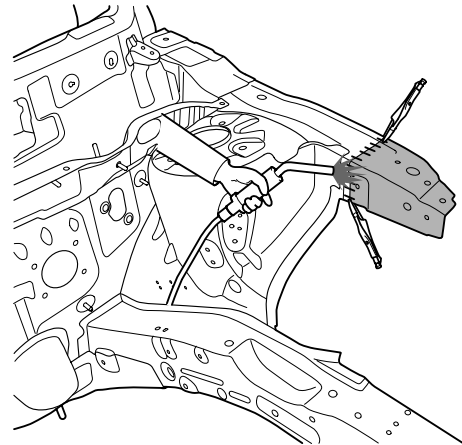
BFDBP6106E

3. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



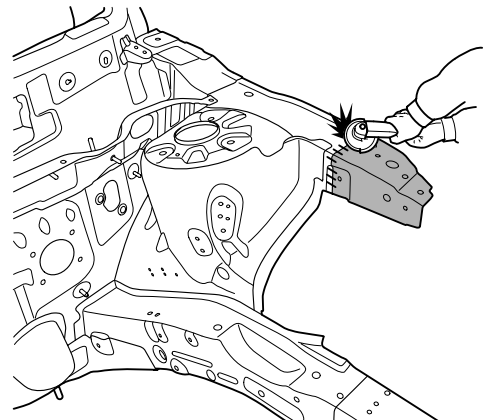
BFDBP6106F

4. MIG butt weld all seams.



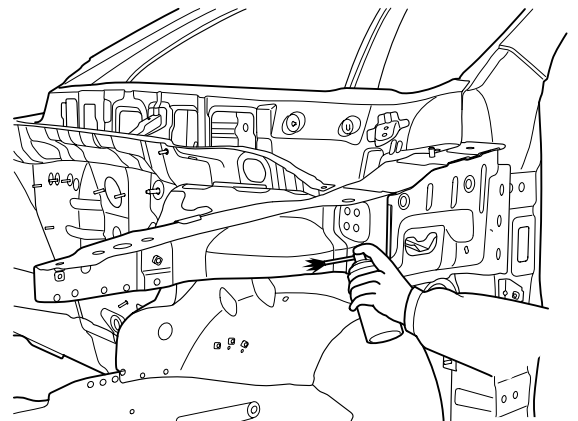
BFDBP6106G

5. Clean and prepare all welds, and remove all residue.



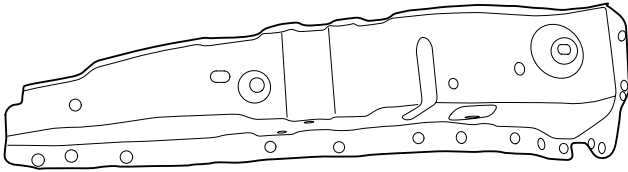
BFDBP6106H

6. After removing, apply the welding primer.



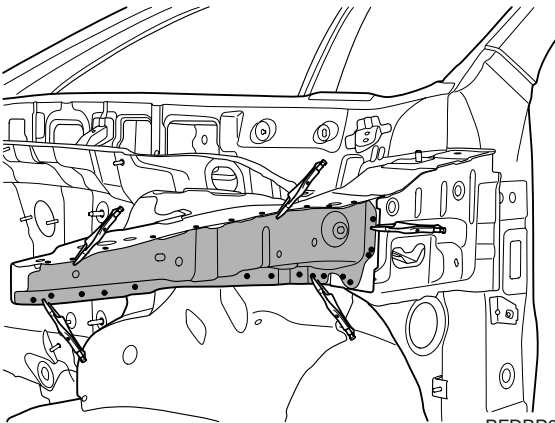
BFDBP6105A

7. Drill 8mm holes in the new fender apron upper outer panel for MIG plug welding.



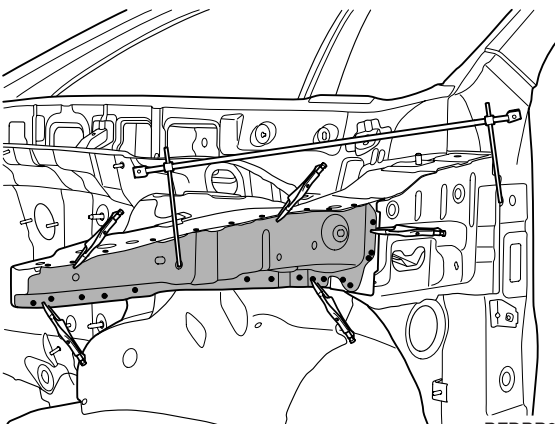
BEDBP6107

8. Fit and clamp the fender apron upper outer panel in place.



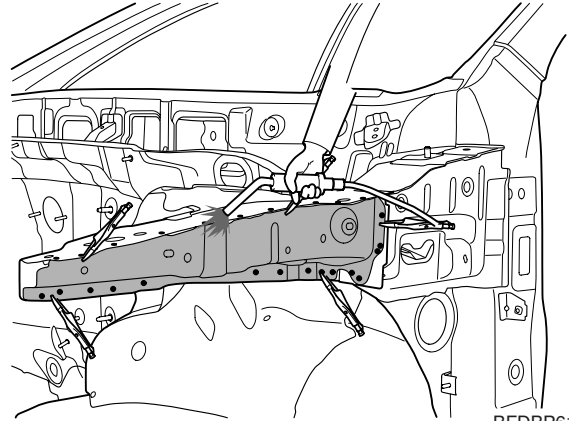
BFDBP6104B

9. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



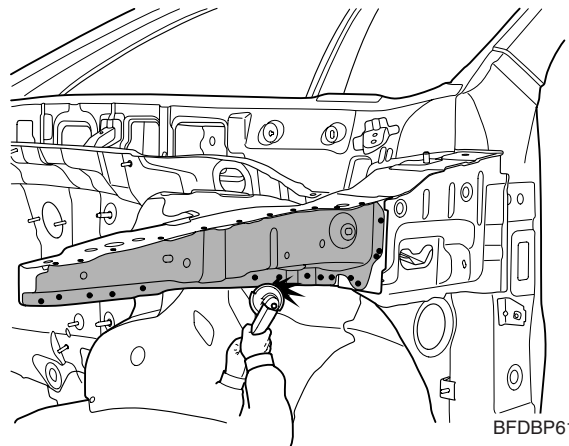
BFDBP6104C

10. MIG plug weld all holes.



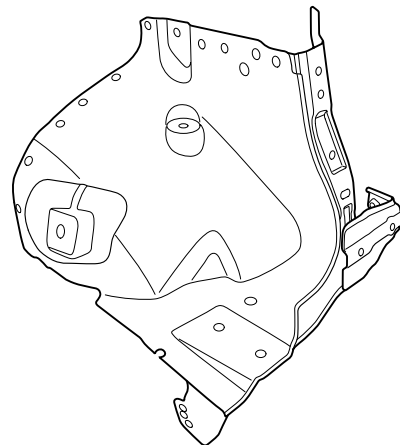
BFDBP6104D

11. Clean and prepare all welds, and remove all residue.



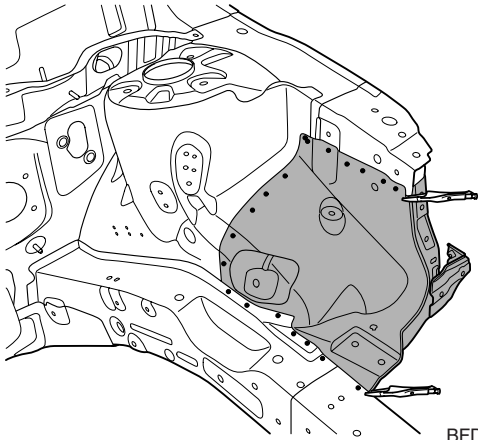
BFDBP6104E

12. Drill 8mm holes in the new fender apron inner panel assembly for MIG plug welding.



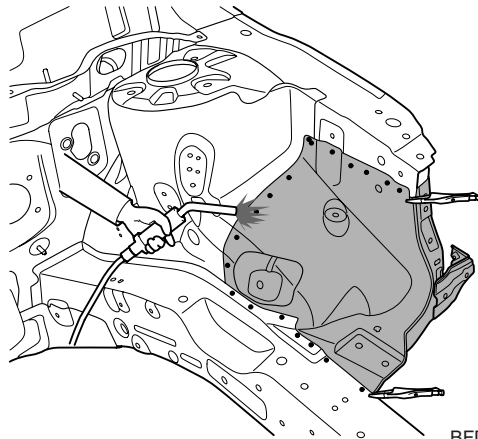
BEDBP6108

13. Fit and clamp the fender apron inner panel assembly in place.



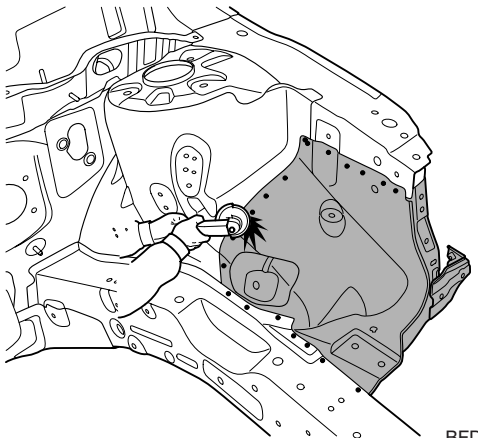
BFDBP6102A

14. MIG plug weld all holes.



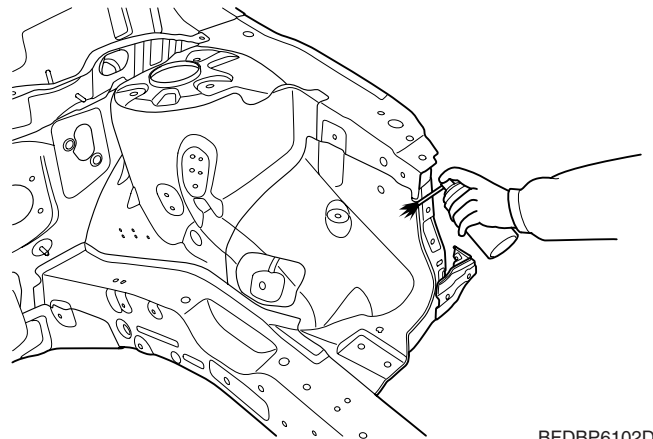
BFDBP6102B

15. Clean and prepare all welds, and remove all residue.



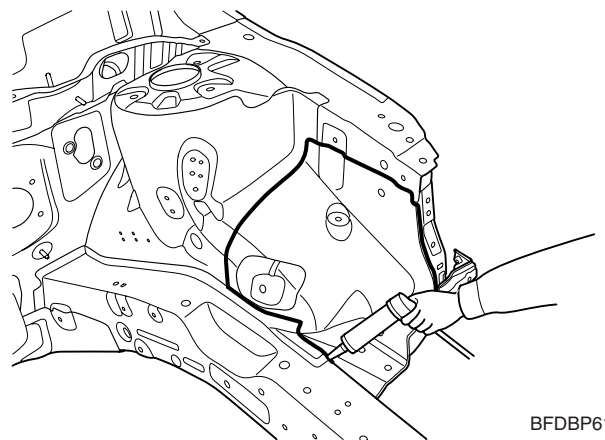
BFDBP6102C

16. Apply the two part epoxy primer to the interior of the each panel.
17. Apply an anti-corrosion agent as required. (Refer to the BODY CORROSION PROTECTION)
18. Prepare the exterior surfaces for priming using wax and grease remover.
19. Apply metal conditioner and water rinse.
20. Apply conversion coating and water rinse.
21. Apply the two-part epoxy primer.



BFDBP6102D

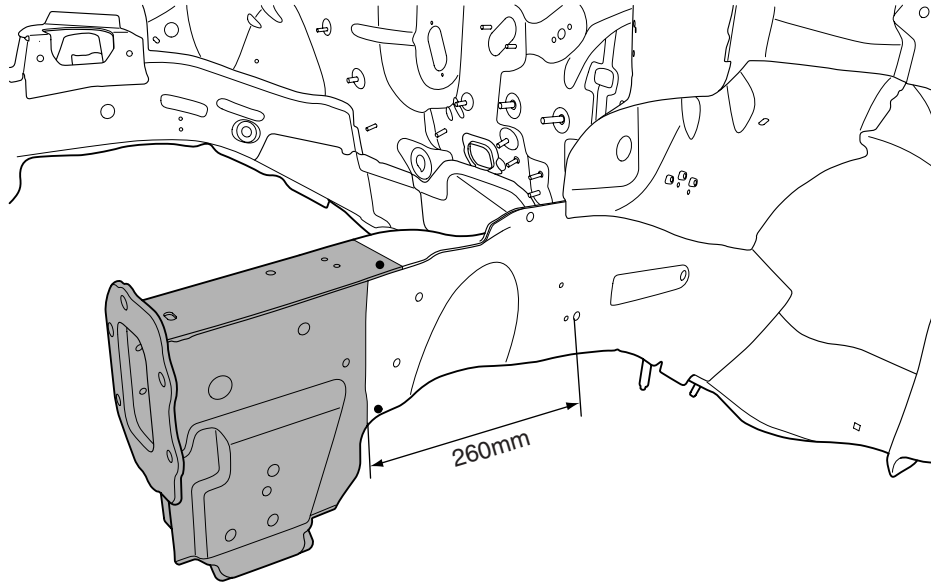
22. Apply the correct seam sealer to all joints carefully. (Refer to the BODY SEALING LOCATIONS)



BFDBP6102E

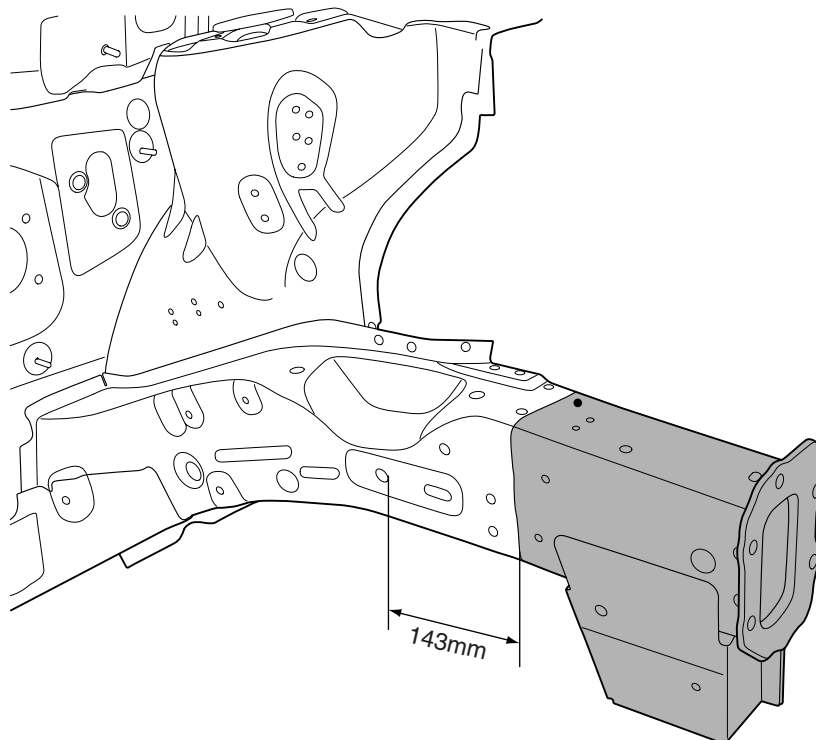
FRONT SIDE MEMBER

WELDING POINTS



- MIG plug welding
- ≡≡≡ MIG butt welding
- ✖✖✖ MIG lap welding

BFDBP6203

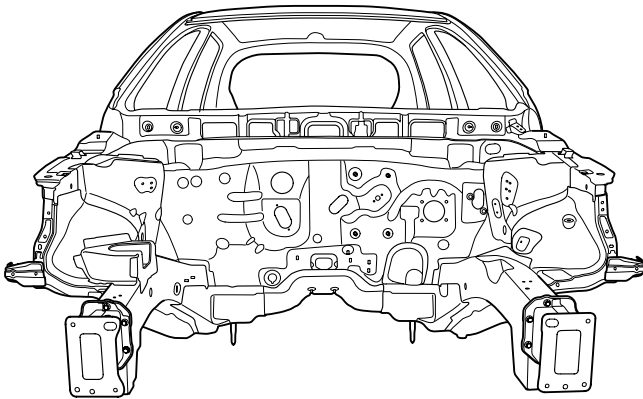


- MIG plug welding
- ≡≡≡ MIG butt welding
- ✖✖✖ MIG lap welding

BFDBP6202F

NOTE

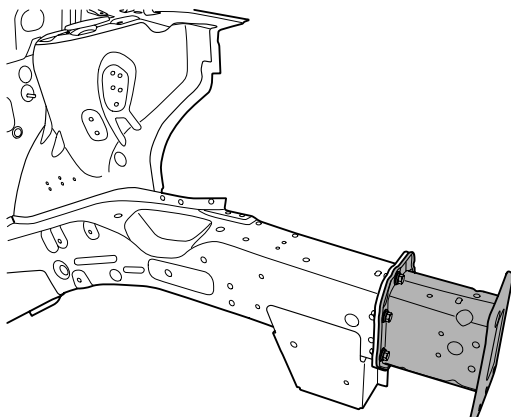
This procedure is to be used only for repair of minor damage to the front side member and when it is impossible to straighten the damaged front side member. The following procedure illustrates a repair for the front left side member. The procedure may also be applied to the front right side member.



BEDBP6101

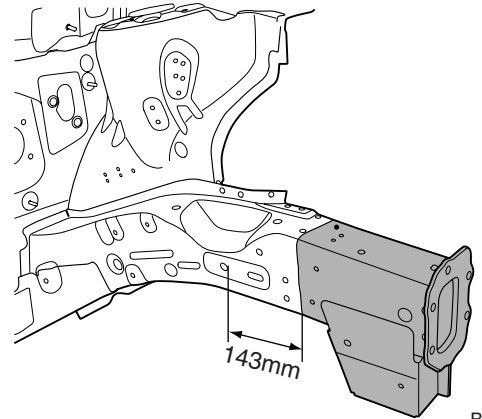
REMOVAL

1. Before cutting the front side member, remove the front crash member assembly.

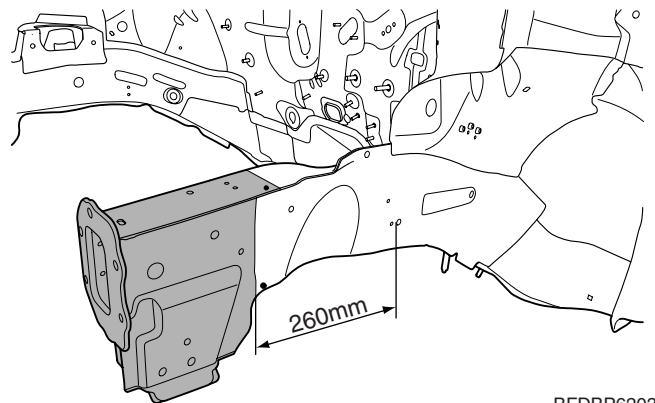


BEDBP6201

2. Measure and mark the vertical cutlines on front side member from tooling hole edge as shown in the illustration.

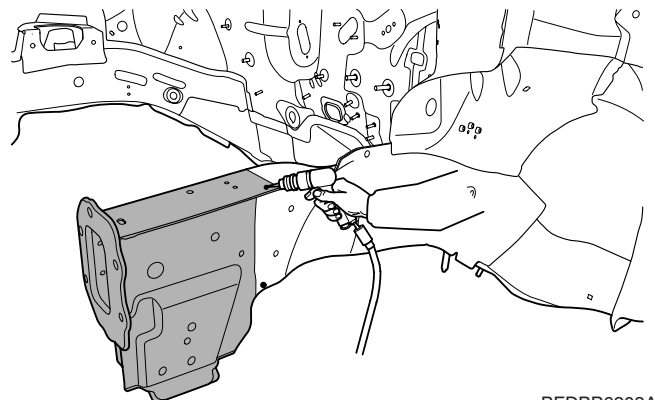


BEDBP6202



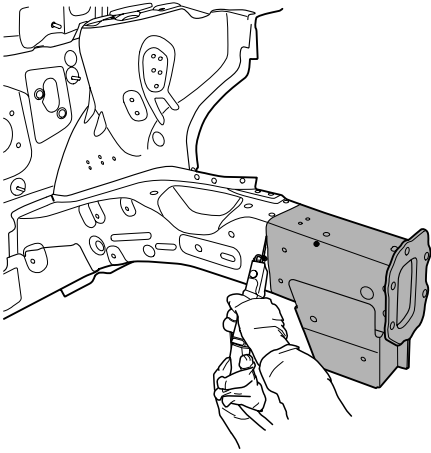
BFDBP6203

3. Drill out all the spotwelds to separate front side member.

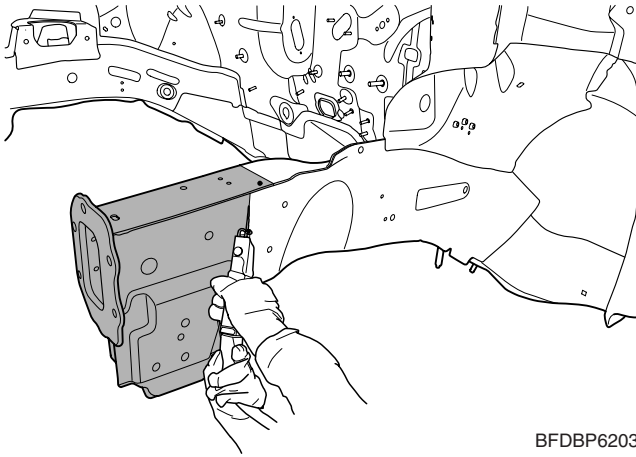


BFDBP6203A

4. Cut the front side member inner and outer panel along the cutlines.

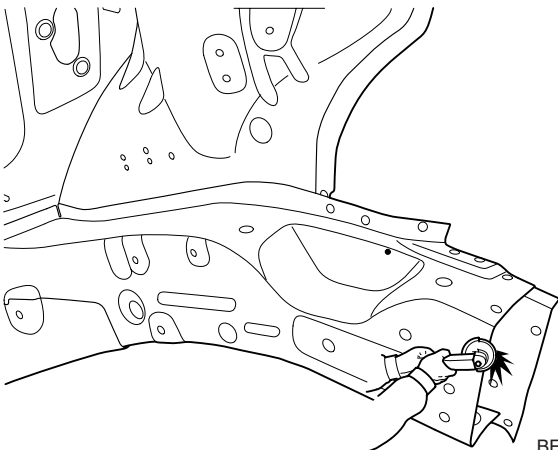


BEDBP6202A



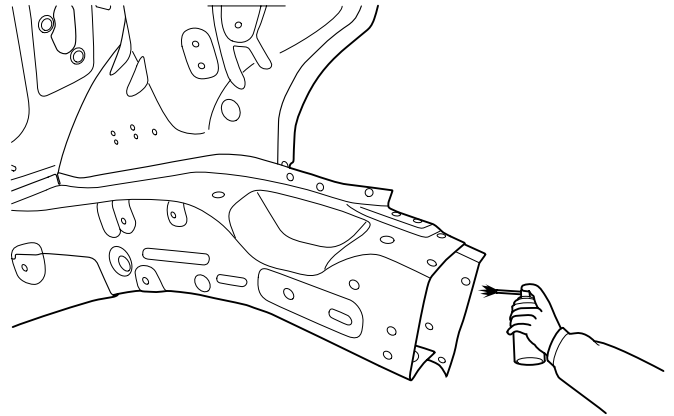
BFDBP6203B

5. Remove the front side member.
6. Prepare all surfaces to be welded.



BEDBP6204

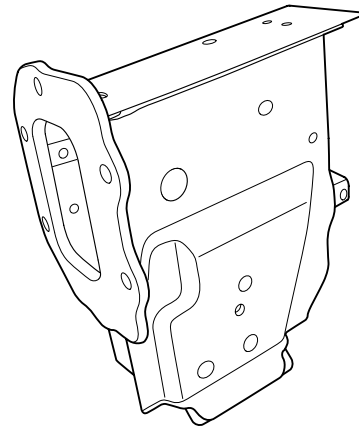
7. After removing, apply the welding primer.



BEDBP6204A

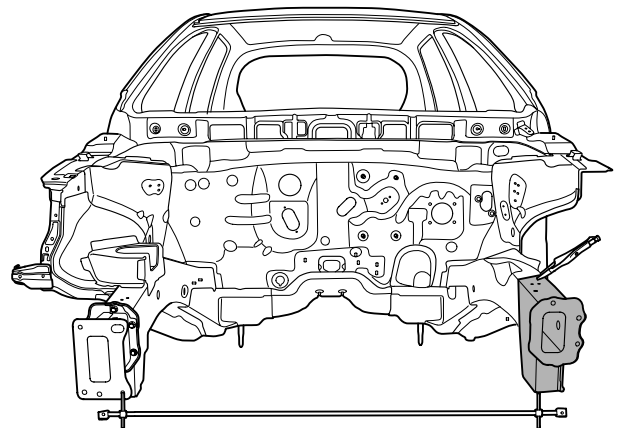
INSTALLATION

1. Transcribe the front side member inner and outer cutlines to the new front side member, cut to length and chamfer butt end to improve weld surface.



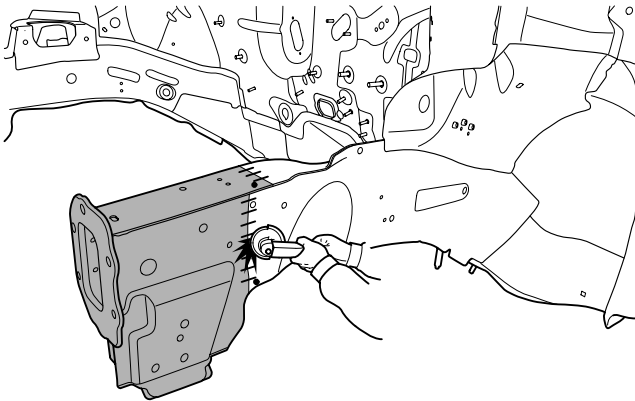
BFDBP6205

2. Fit and clamp the front side member in place.
3. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



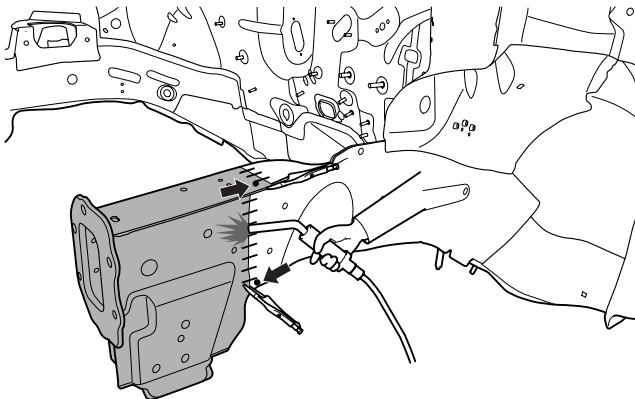
BEDBP6206

4. MIG plug weld all holes and MIG butt weld seams.



BEDBP6203D

5. Clean and prepare all welds, and remove all residue.

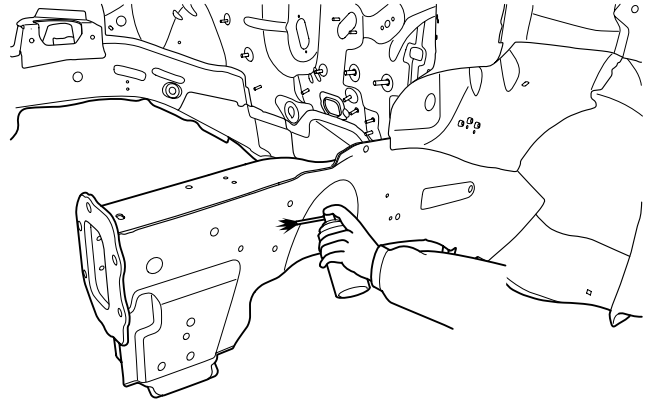


BFDBP6203C

6. Apply the two part epoxy primer to the interior of the each panel.
7. Apply an anti-corrosion agent as required.
(Refer to the BODY CORROSION PROTECTION)
8. Prepare the exterior surfaces for priming using wax and grease remover.
9. Apply metal conditioner and water rinse.

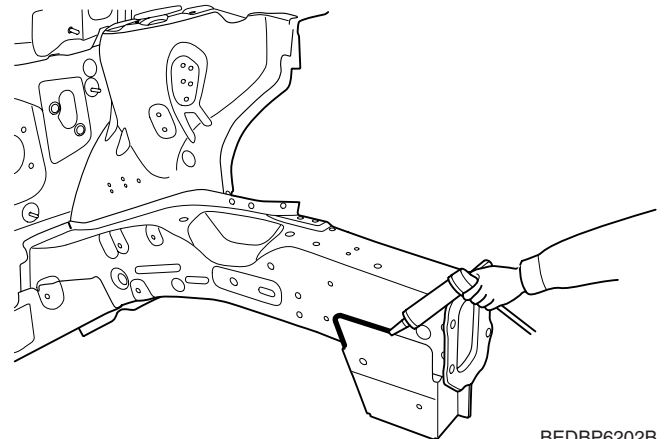
10. Apply conversion coating and water rinse.

11. Apply the two-part epoxy primer.



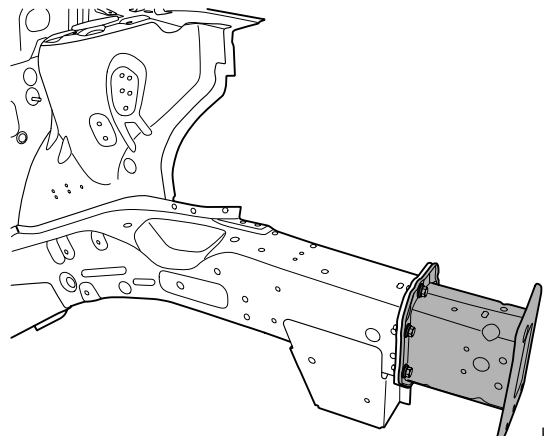
BFDBP6203E

12. Apply the correct seam sealer to all joints carefully.
(Refer to the BODY SEALING LOCATIONS)



BEDBP6202B

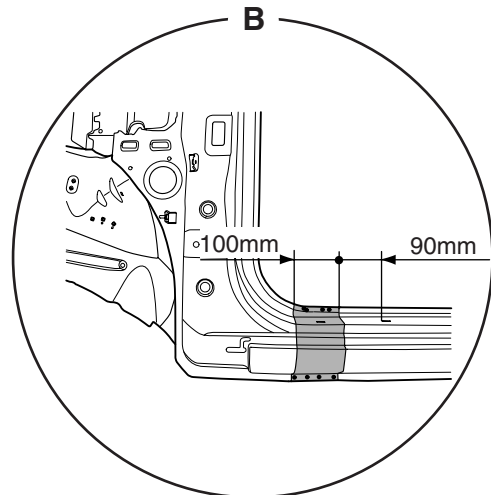
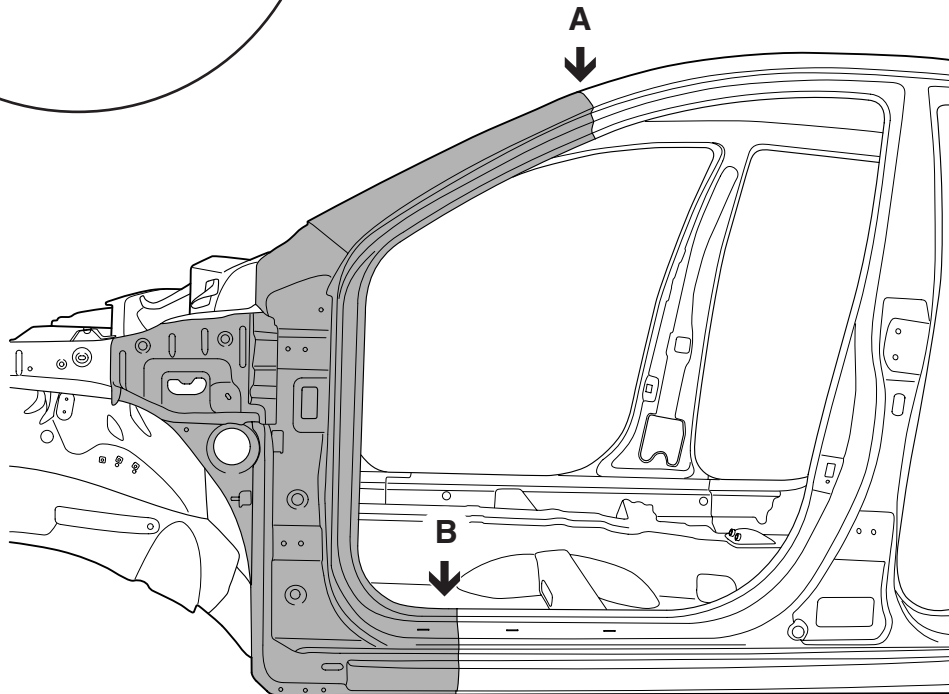
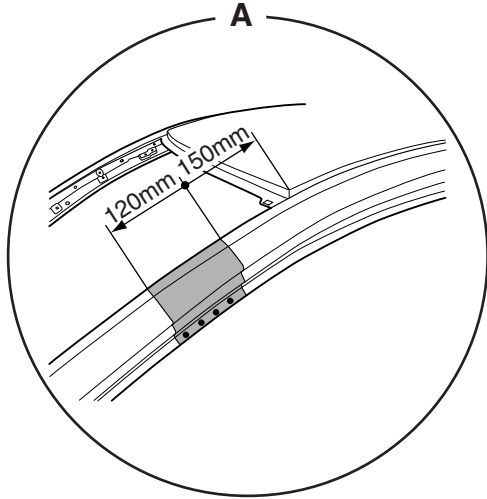
13. Install the front crash member assembly.







BEDBP6201A

FRONT PILLAR

WELDING POINTS



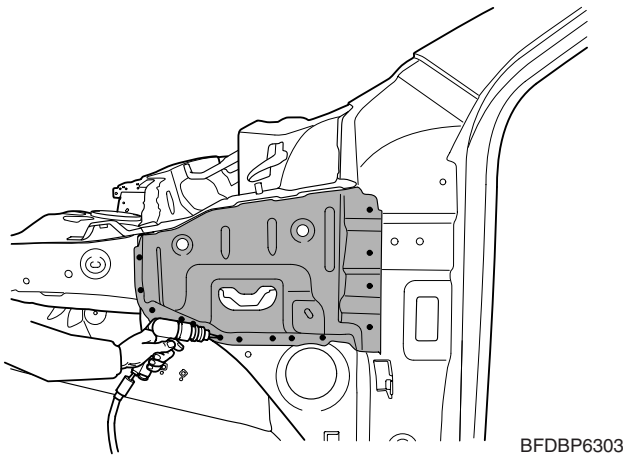
-  Laser welding
-  MIG plug welding
-  MIG butt welding
-  MIG lap welding

REMOVAL

1. To remove the front pillar, drill out and grind away all spotwelds and plug welds attaching the cowl side upper outer panel.

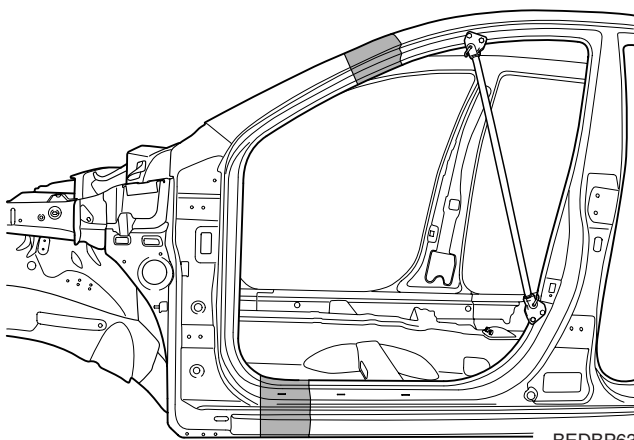
 **NOTE**

If the cowl side upper outer panel is reusable, be careful not to damage it while removing.



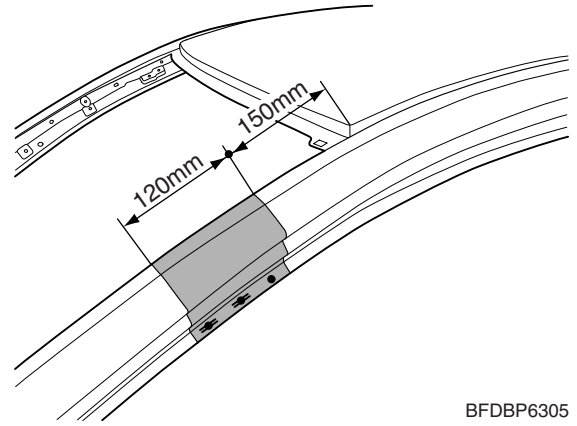
BFDBP6303

2. Remove the cowl side upper outer panel.
3. Before cutting the front pillar, be sure to support roof panel.



BEDBP6321

4. Measure and mark the each cutline on the front pillar outer panel 150mm and 270mm from the roof panel corner as indicated in the illustration.

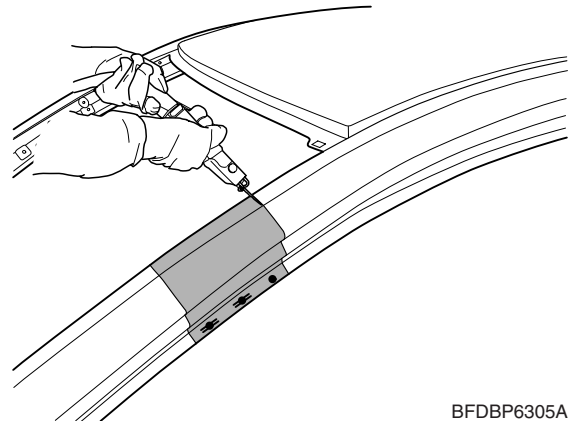


BFDBP6305

5. Cut the front pillar outer panel along the cutlines.

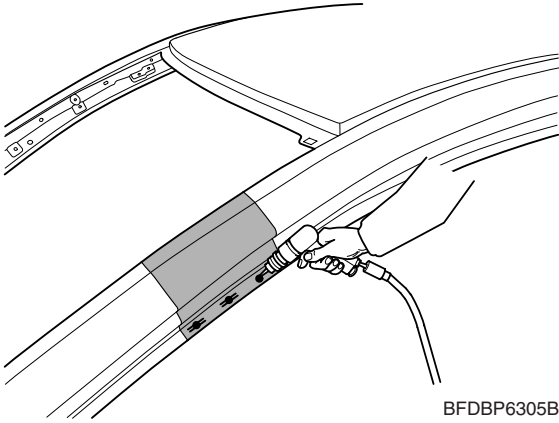
 **NOTE**

When cutting the front pillar outer panel, take care not to cut through mating flanges or front pillar outer reinforcement.

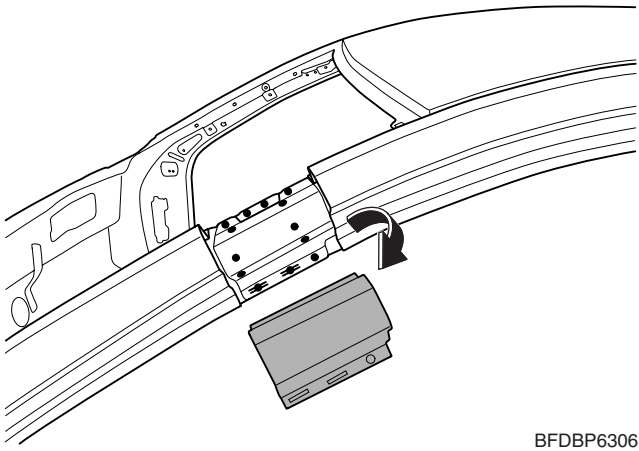


BFDBP6305A

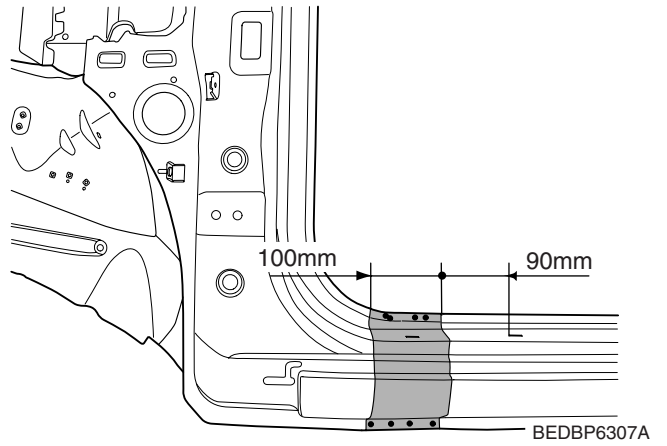
6. Drill out all the spotwelds and laser welds attaching the front pillar outer panel section.



7. Remove the front pillar outer panel section.



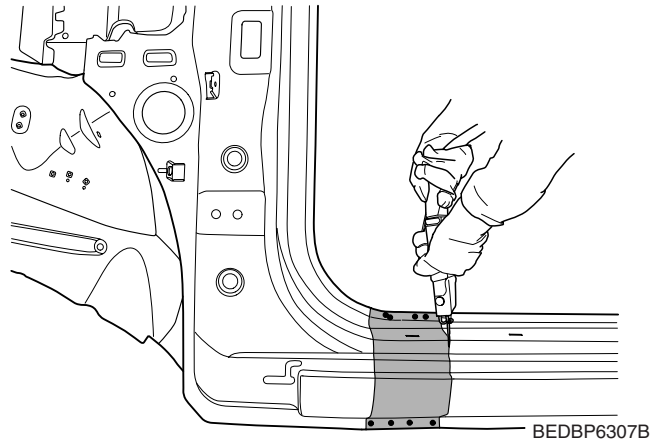
8. Measure and mark the cutlines on front side sill outer panel as indicated in the illustration.



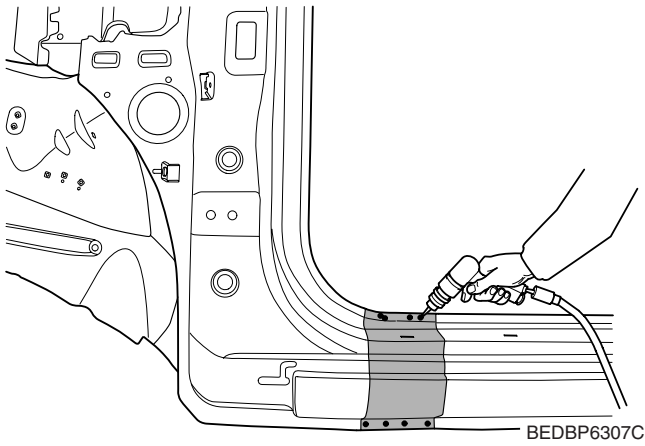
9. Cut the front side sill outer panel along the cutlines.

NOTE

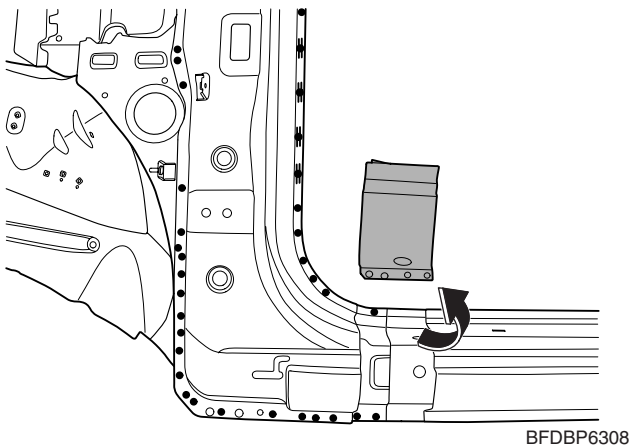
When cutting the front side sill outer panel, take care not to cut through mating flanges or the side sill outer reinforcement.



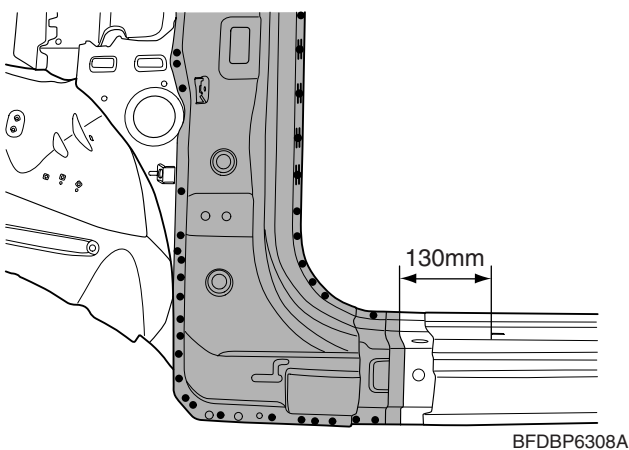
10. Drill out all the spotwelds attaching the front side sill outer panel section.



11. Remove the front side sill outer panel section.



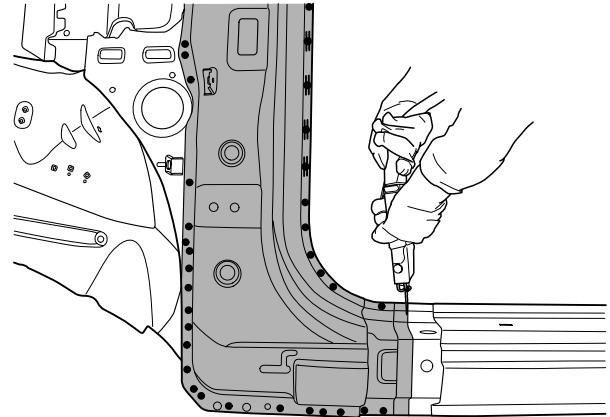
12. Measure and mark the cutline on side sill outer reinforcement as indicated in the illustration.



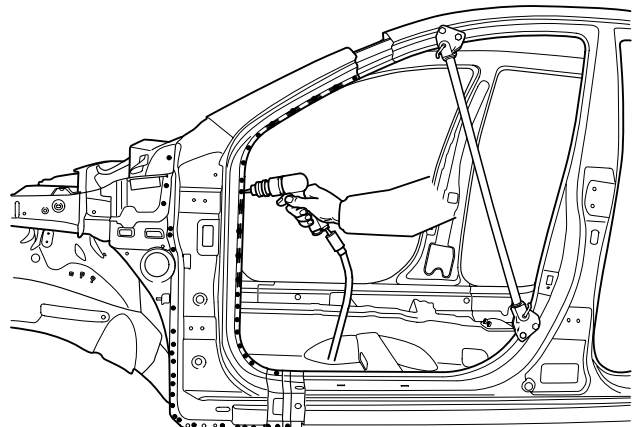
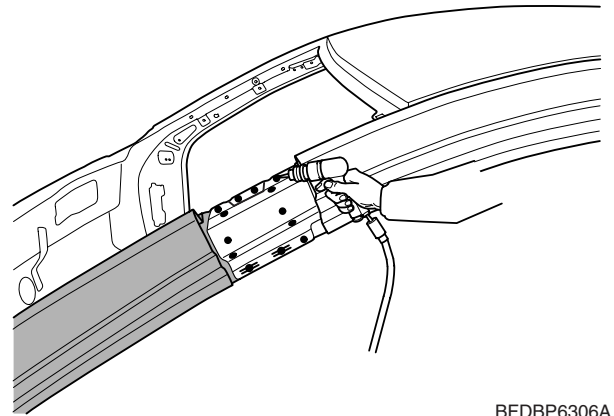
13. Cut the side sill outer reinforcement along the cutline.

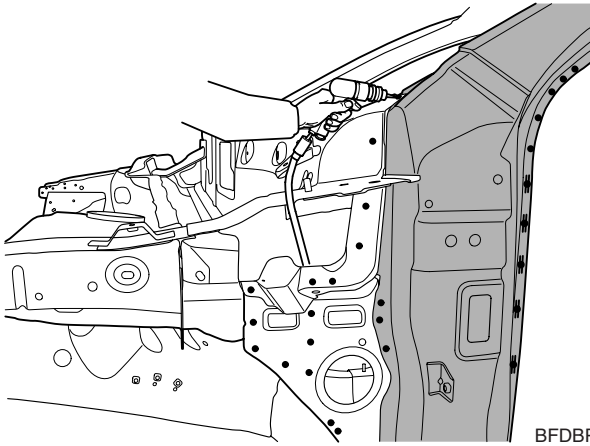
NOTE

When cutting side sill outer reinforcement, take care not to cut through mating flanges.



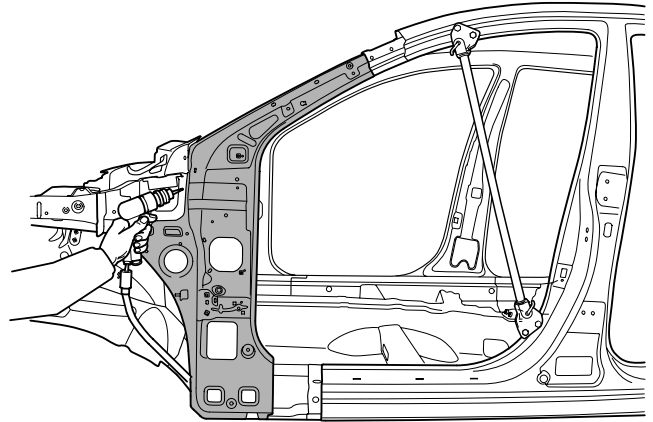
14. To remove the front pillar outer panel, drill out all spotwelds and laser welds.



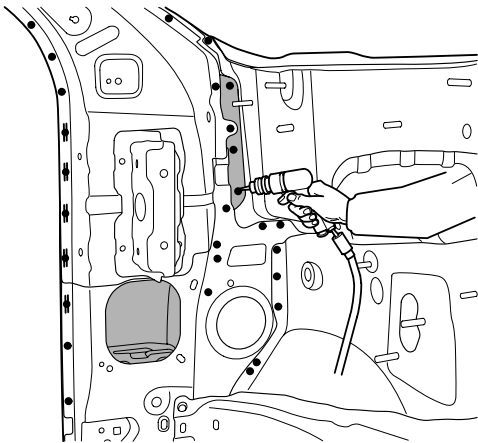


BFDBP6304

16. To remove the front pillar inner panel, drill out and grind away all spotwelds and lap welds.

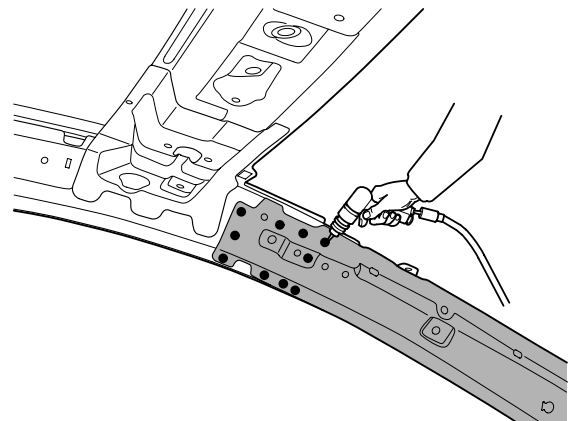


BEDBP6313A

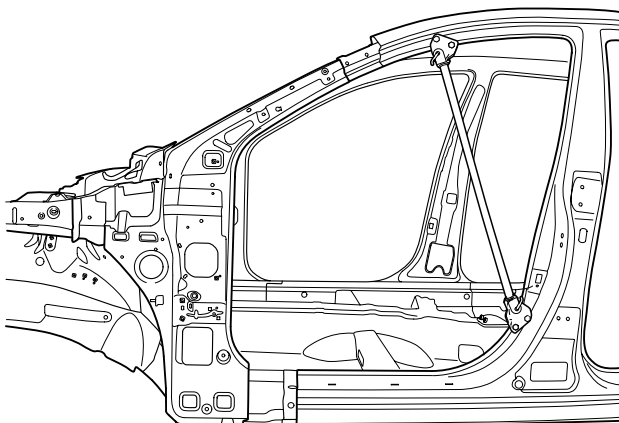


BFDBP6311

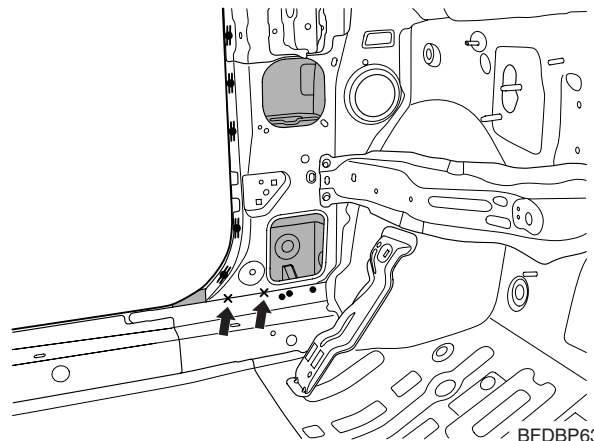
15. Remove the front pillar outer panel.



BEDBP6314

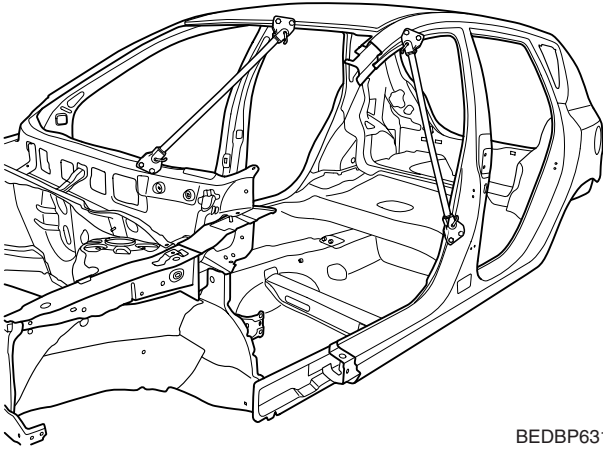


BEDBP6313



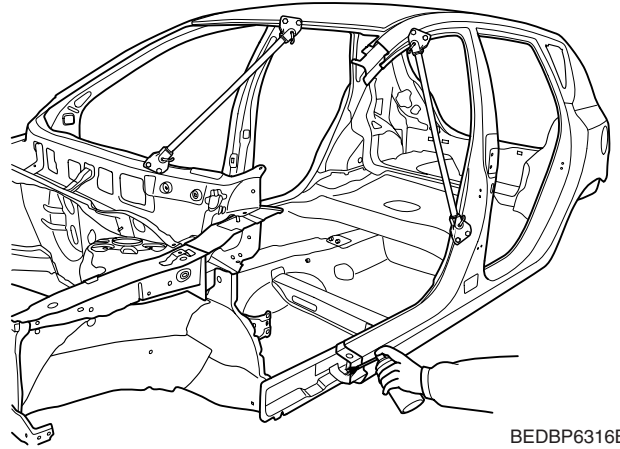
BFDBP6312B

17. Remove the front pillar inner panel.

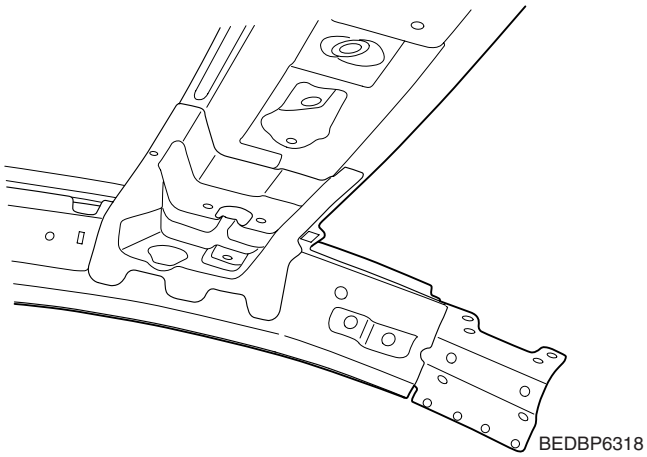


BEDBP6316

19. After removing, apply the welding primer.

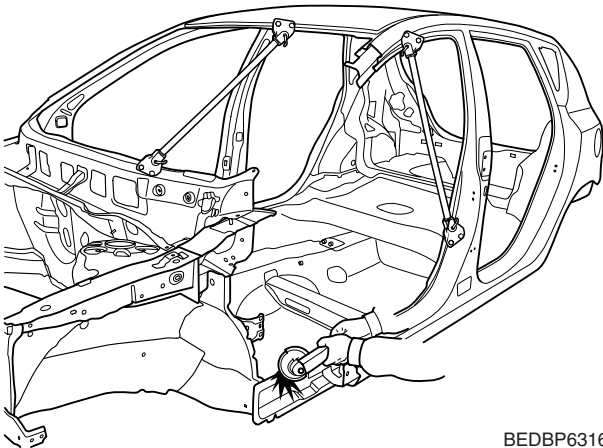


BEDBP6316B



BEDBP6318

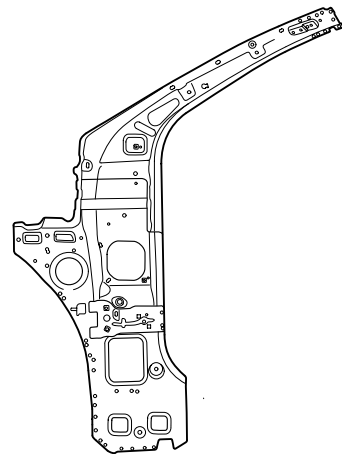
18. Clean cut portions with a disc grinder.



BEDBP6316A

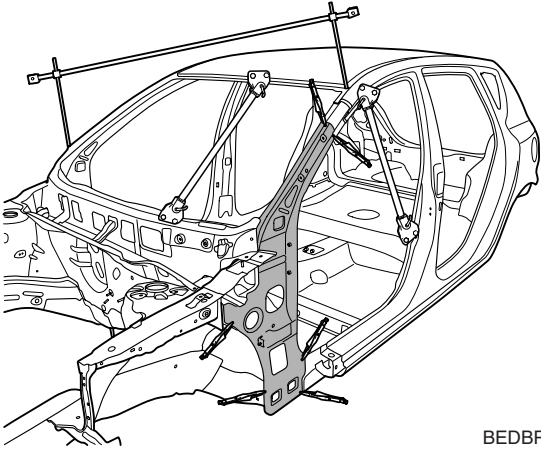
INSTALLATION

1. Drill 8mm holes in the front pillar inner panel for MIG plug welding.



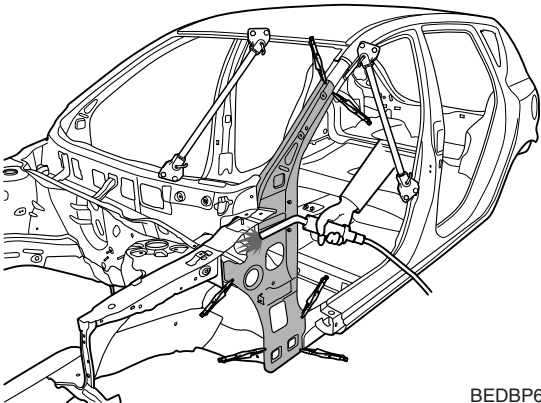
BEDBP6319

2. Fit and clamp the new front pillar inner panel in place for welding.
3. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



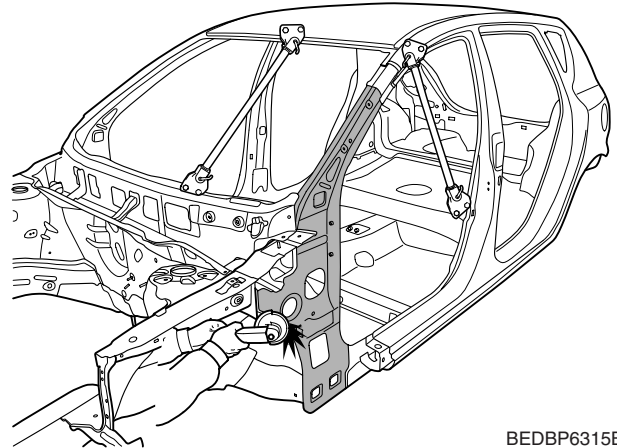
BEDBP6315

4. MIG plug weld all holes and MIG lap weld seams.



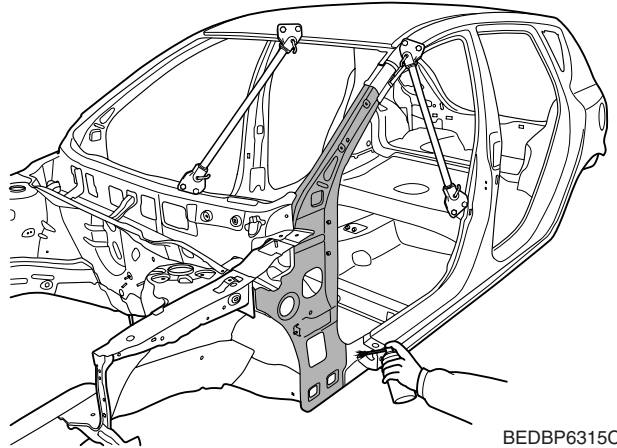
BEDBP6315A

5. Clean and prepare all welds, and remove all residue.



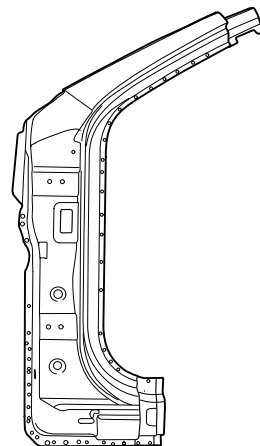
BEDBP6315B

6. After removing, apply the welding primer.



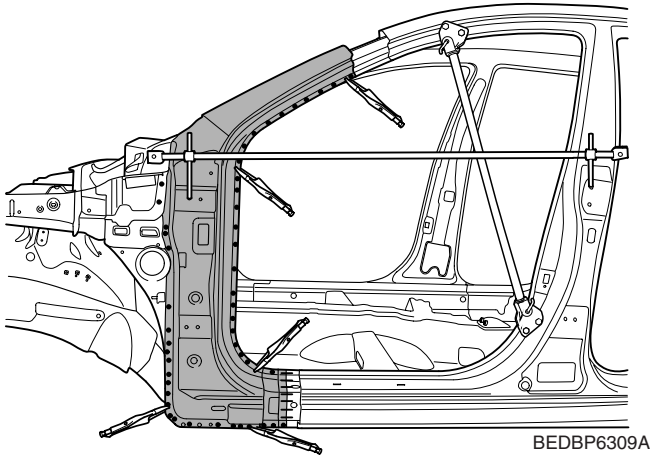
BEDBP6315C

7. Transcribe the cutlines to the new front pillar outer panel, adding 30mm overlap to each end and cut to length.
8. Drill 8mm holes along front pillar outer panel flanges for attachment to other panels.

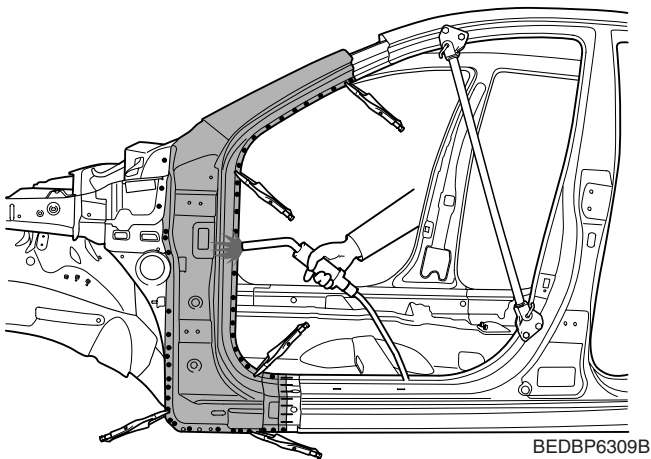


BEDBP6320

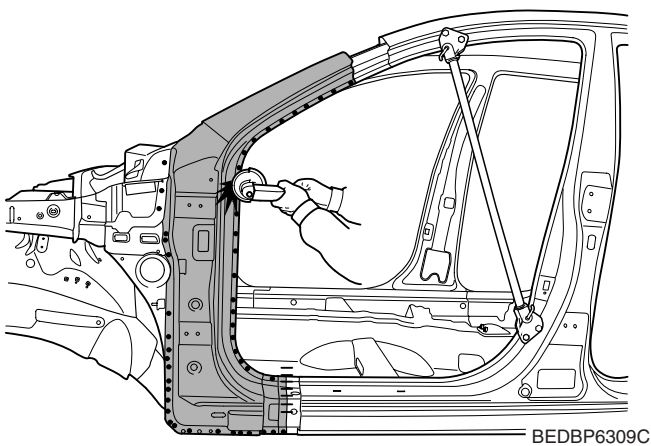
- 9. Install the front pillar outer panel in place.
- 10. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



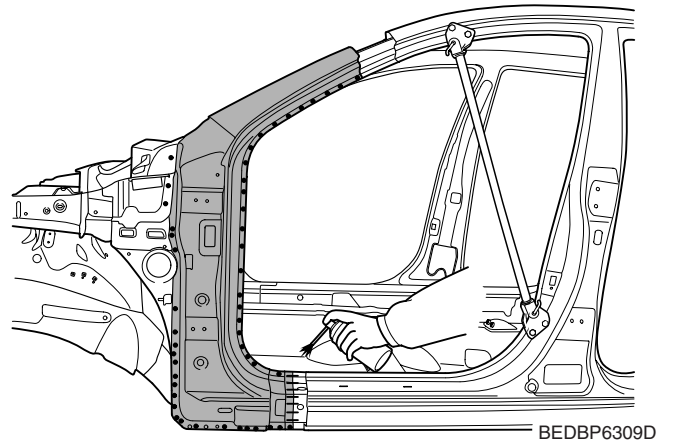
- 11. MIG plug weld all holes.



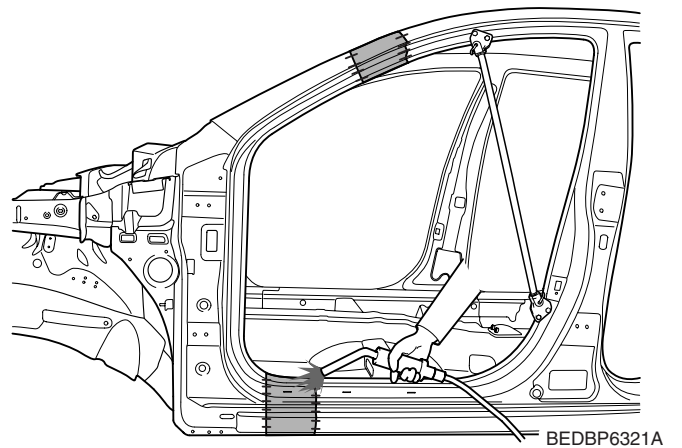
- 12. Clean and prepare all welds, and remove all residue.



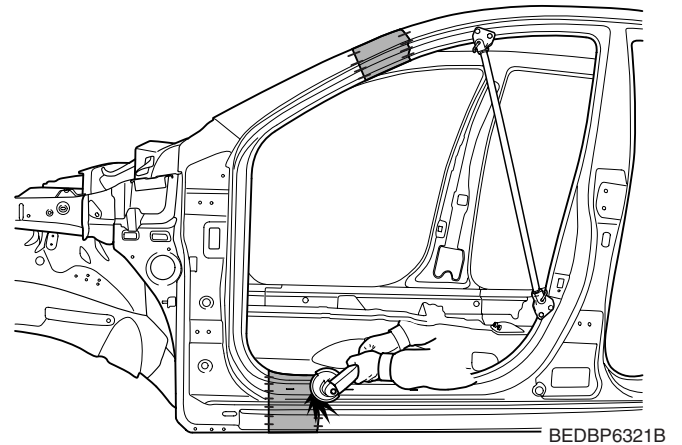
- 13. After removing, apply the welding primer.



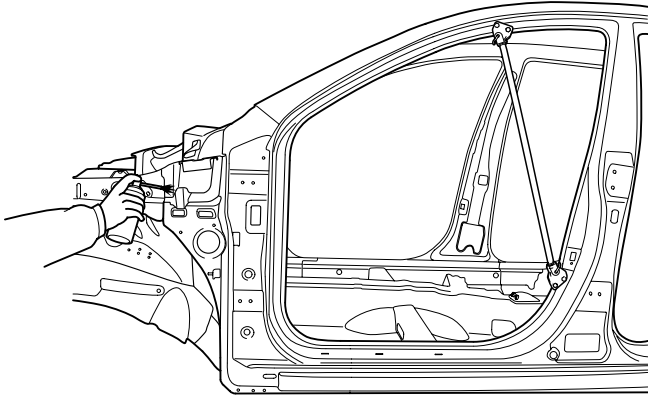
- 14. Reattach the cut away front pillar outer panel section, then MIG plug weld all holes and MIG butt weld seams.



- 15. Clean all welds with a disc grinder.



16. After removing, apply the welding primer.
17. Apply the two-part epoxy primer to the interior of the front pillar.

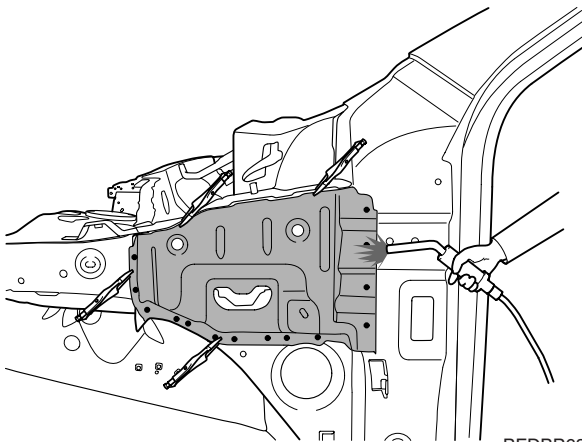


BEDBP6321C

18. Before welding the cowl side upper outer panel, apply the two part epoxy primer and anti-corrosion agent to the interior of the fender apron panel.

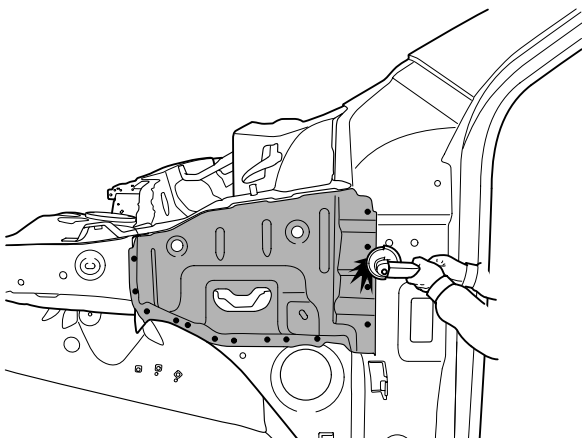
19. Install the cowl side upper outer panel in place.

20. MIG plug weld all holes.



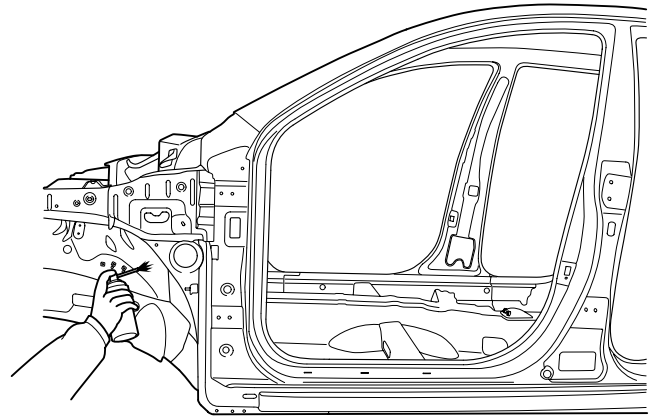
BFDBP6303A

21. Clean and prepare all welds, remove all residue.



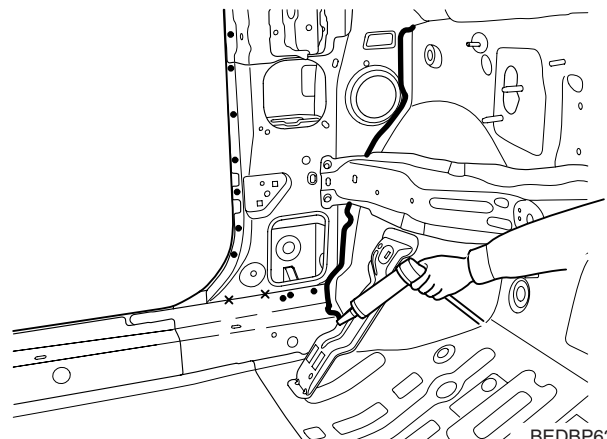
BFDBP6303B

22. Apply an anti-corrosion agent to the welded parts and inside of front pillar (Refer to the CORROSION PROTECTION).
23. Prepare exterior surfaces for priming, using wax and grease remover.
24. Apply metal conditioner and water rinse.
25. Apply conversion coating and water rinse.
26. Apply the two-part epoxy primer.



BEDBP6302

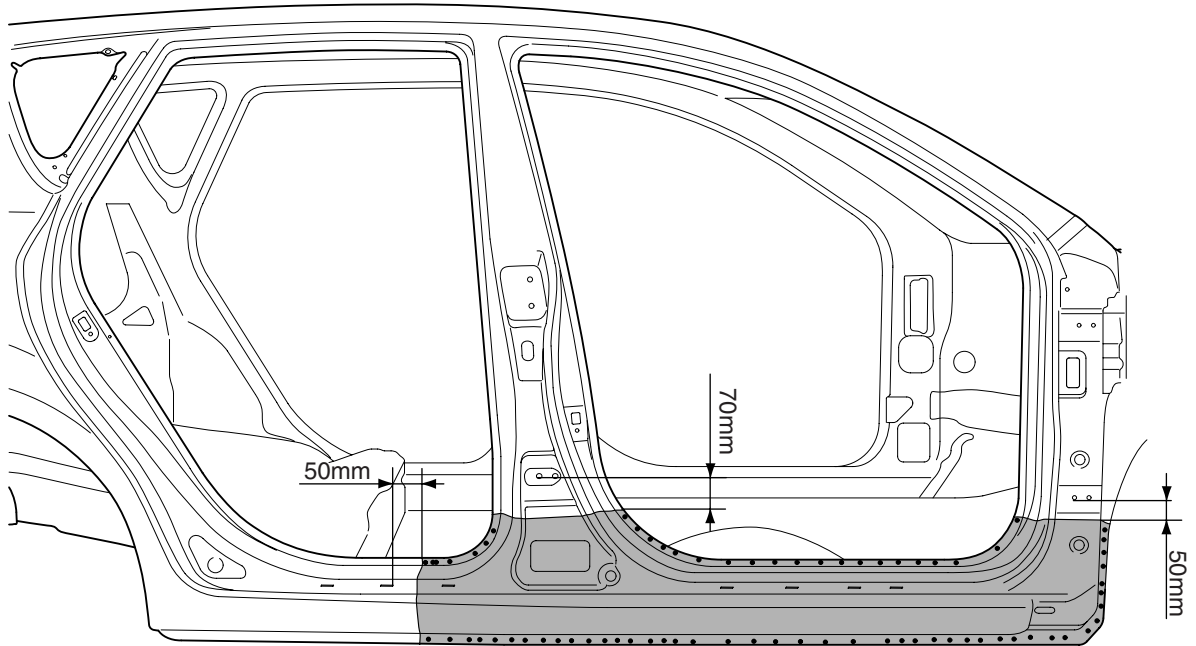
27. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATIONS).
28. Reprime over the seam sealer to complete the repair.



BEDBP6312

SIDE SILL PANEL

WELDING POINTS

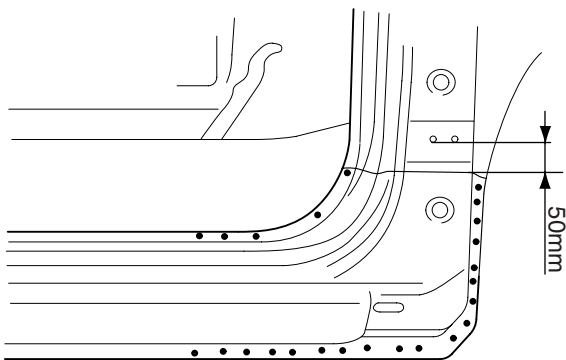


- MIG plug welding
- ≡≡≡ MIG butt welding
- ××× MIG lap welding

BEDBP6401

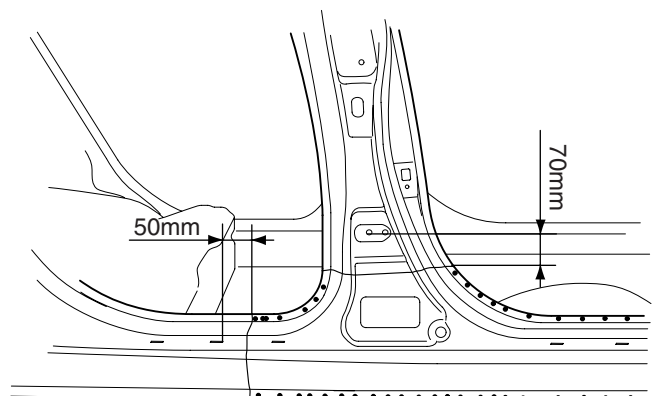
REMOVAL

1. Measure and mark the horizontal cutline on front pillar outer panel 50mm from the door hinge mounting hole as indicated in the illustration.



BEDBP6401A

2. Measure and mark the horizontal cutline on center pillar outer panel 70mm from the door hinge mounting hole.
3. Measure and mark the vertical cutline on rear side sill outer panel 50mm from the rear door step trim mounting hole as indicated in the illustration.

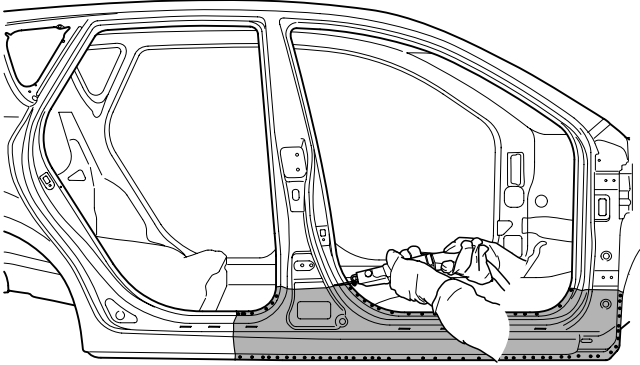


BEDBP6401B

4. Cut the side sill outer panel along the cutlines.

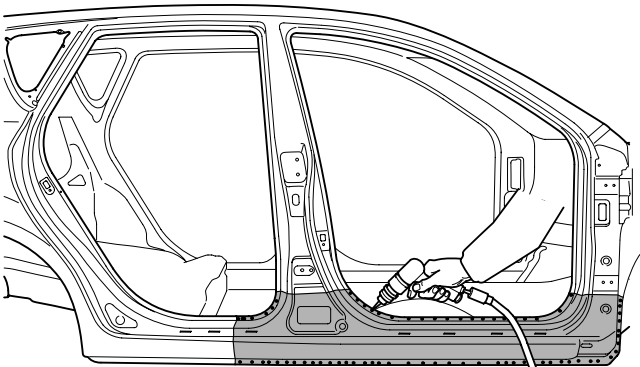
 **NOTE**

When cutting the side sill outer panel, be careful not to cut mating flanges.



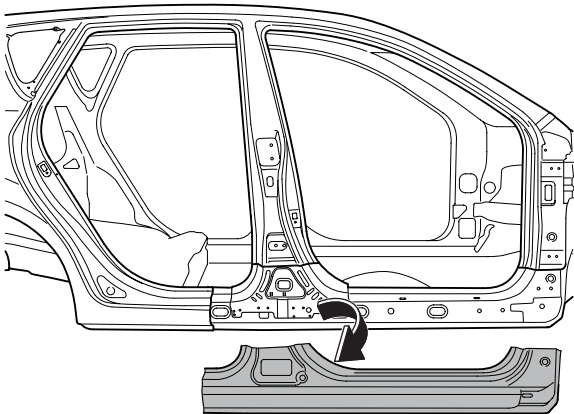
BEDBP6401C

5. Drill out all spotwelds, attaching the side sill outer panel.



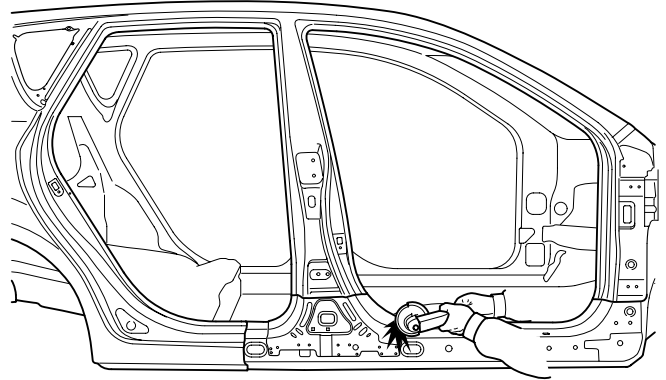
BEDBP6401D

6. Remove the side sill outer panel.



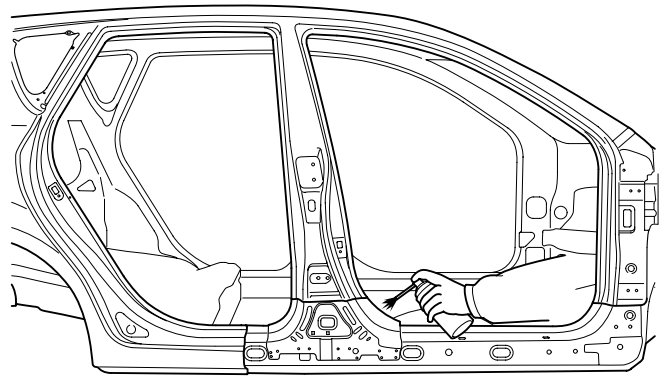
BEDBP6402C

7. Clean cut portions with a disc grinder.



BEDBP6402A

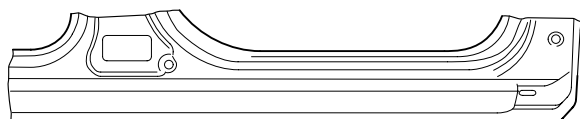
8. After removing, apply the welding primer.



BEDBP6402B

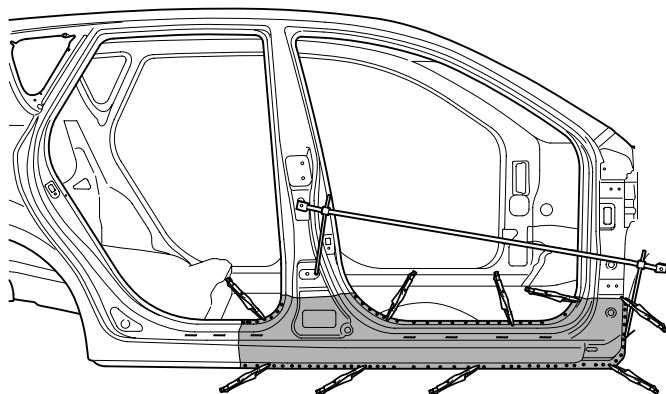
INSTALLATION

1. Transcribe the cutlines to the new side sill outer panel, adding 30mm overlap to each end and cut to length.
2. Using service panel for replacement of side sill outer panel, drill 8mm holes in overlap areas and along upper and lower flanges.



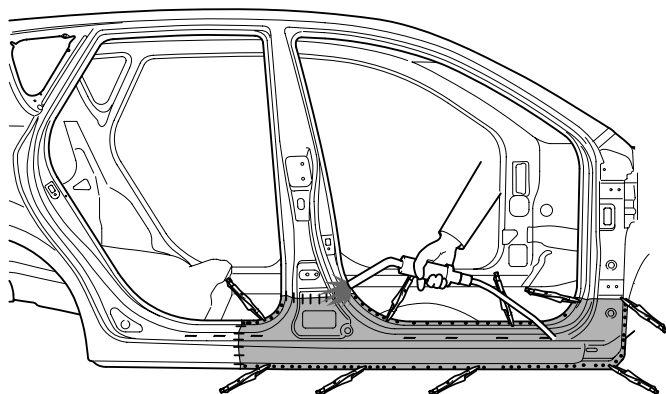
BEDBP6401E

3. Fit and clamp the side sill outer panel in place.
4. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



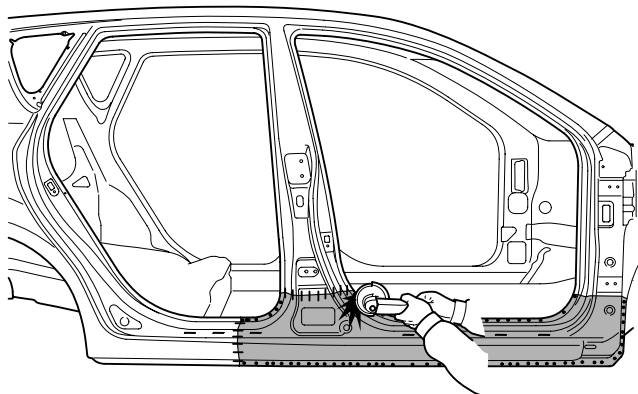
BEDBP6401F

5. MIG plug weld all holes and MIG butt weld seams.



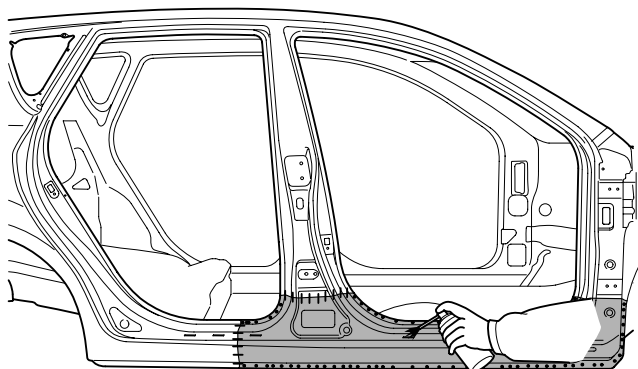
BEDBP6401G

6. Clean and prepare all welds and remove all residue.



BEDBP6401H

7. Apply body filler to the side sill outer seams.
8. Apply the two-part epoxy primer to the interior of the side sill.
9. Apply an anti-corrosion agent to welded parts and interior of the side sill (Refer to the CORROSION PROTECTION).

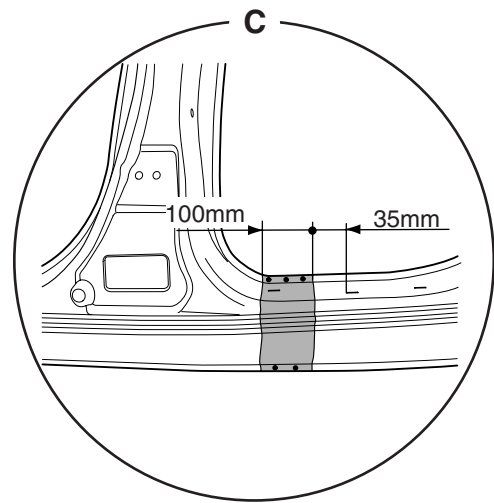
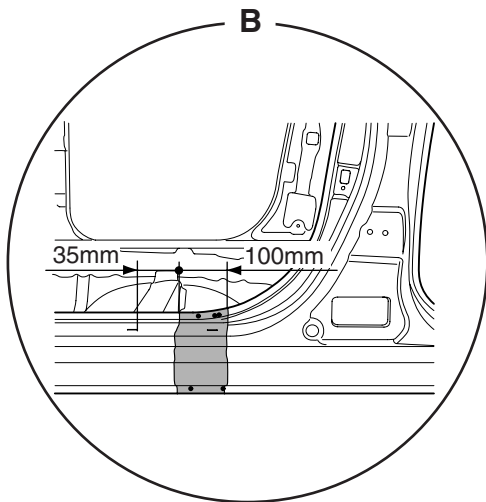
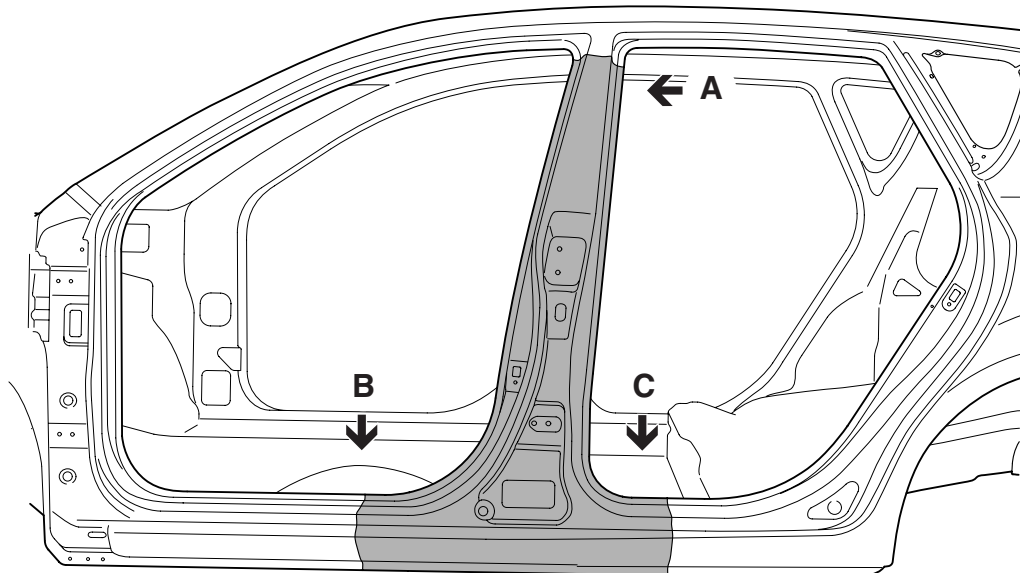
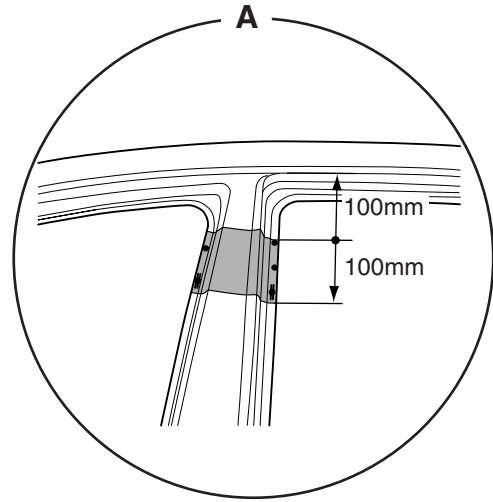


BEDBP6401I

10. Prepare the exterior surfaces for priming, using wax and grease remover.
11. Apply metal conditioner and water rinse.
12. Apply conversion coating and water rinse.
13. Apply the two-part epoxy primer.
14. Apply the correct seam sealer to all joints (Refer to the BODY SEALING LOCATIONS).
15. Reprime over the seam sealer.

CENTER PILLAR

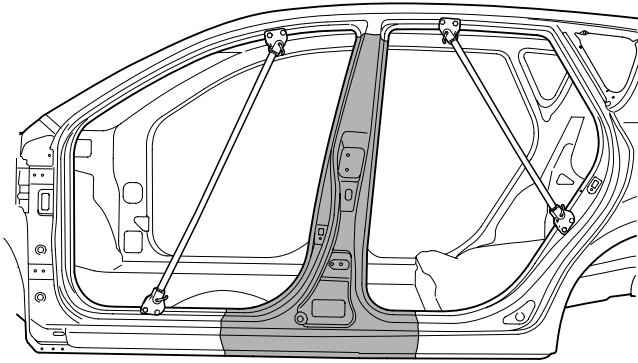
WELDING POINTS



- ⊕ Laser welding
- MIG plug welding
- ≡≡≡ MIG butt welding
- ××× MIG lap welding

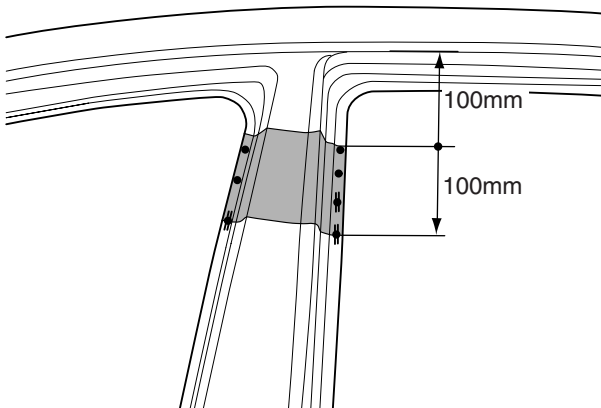
REMOVAL

1. Before cutting center pillar, be sure to support roof panel.



BEDBP6501

2. Measure and mark the horizontal cutlines on center pillar outer panel as indicated in the illustration.

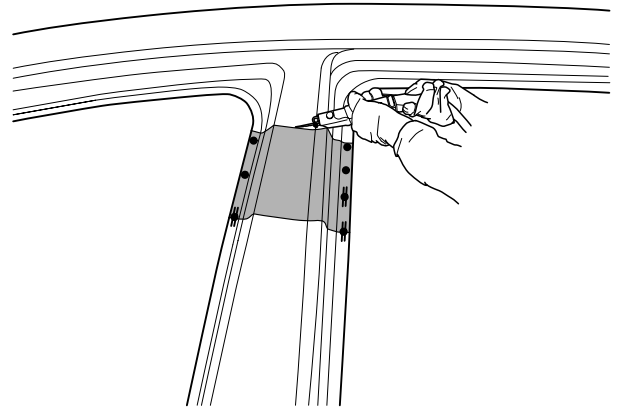


BFDBP6502

3. Cut center pillar outer panel along the cutlines.

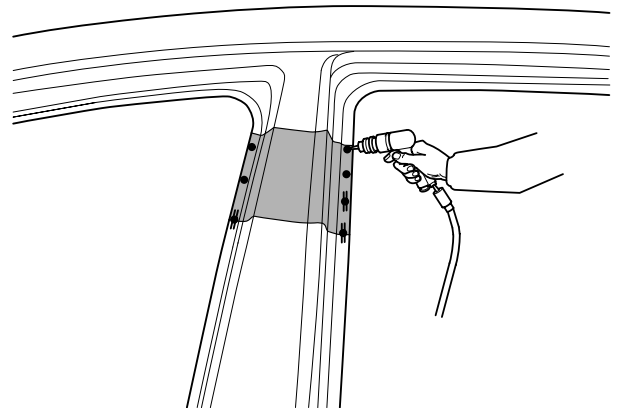
 **NOTE**

When cutting center pillar outer panel, take care not to cut through mating flanges or center pillar outer reinforcement.



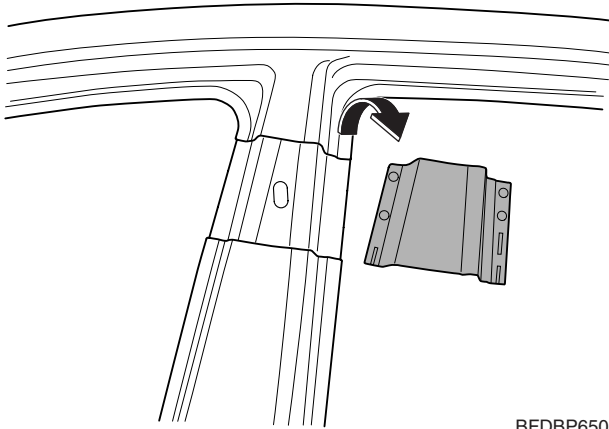
BFDBP6502A

4. Drill out all spotwelds and laser welds, attaching the center pillar outer panel.



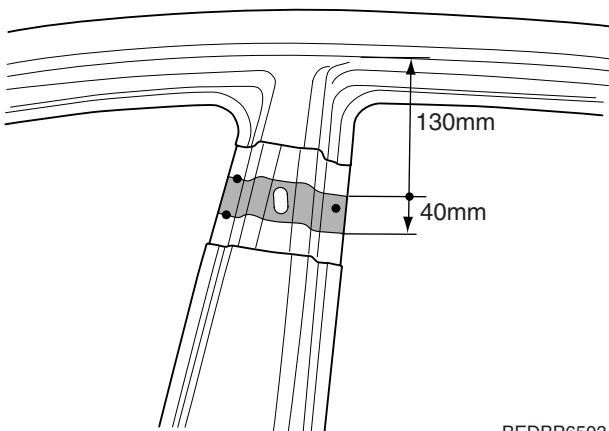
BFDBP6502B

5. Remove the center pillar outer panel.



BFDBP6503

6. Measure and mark the horizontal cutlines on center pillar outer reinforcement as indicated in the illustration.

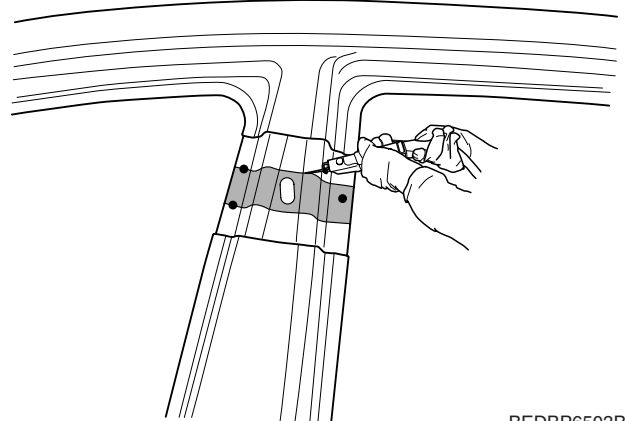


BEDBP6503A

7. Cut the center pillar outer reinforcement along the cutlines.

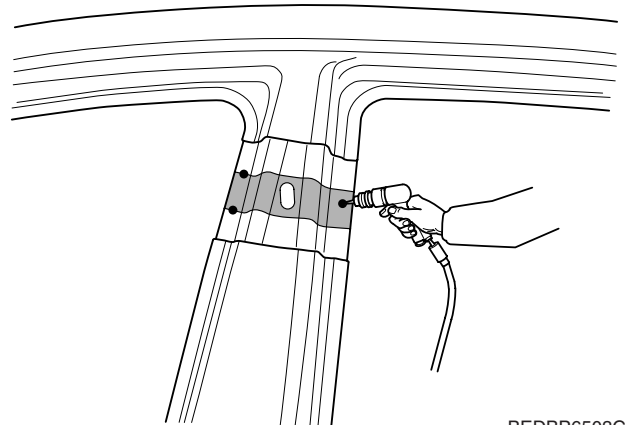
 **NOTE**

When cutting center pillar outer reinforcement, take care not to cut through mating flanges or rear door hinge mounting upper reinforcement.



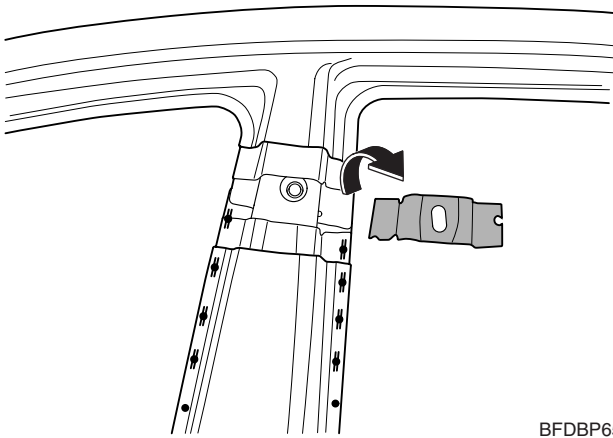
BEDBP6503B

8. Drill out all spotwelds, attaching the center pillar outer reinforcement.



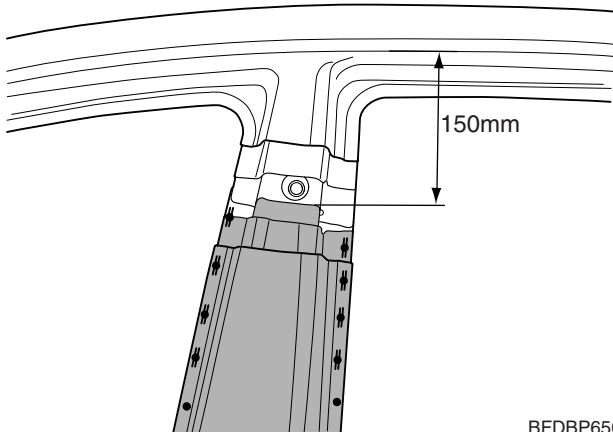
BEDBP6503C

9. Remove the center pillar outer reinforcement section.



BFDBP6504

10. Measure and mark the horizontal cutline on rear door hinge mounting upper reinforcement as indicated in the illustration.

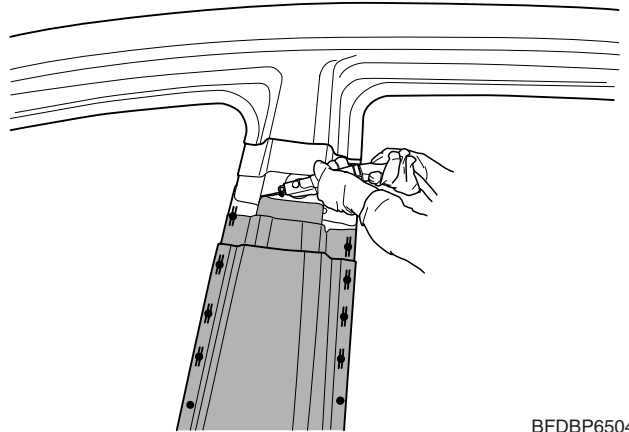


BFDBP6504A

11. Cut the rear door hinge mounting upper reinforcement along the cutline.

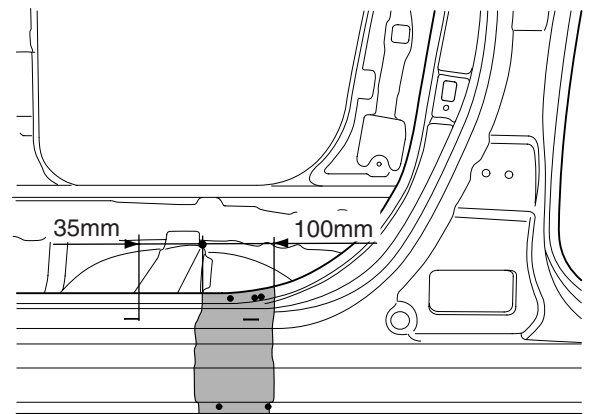
 **NOTE**

When cutting rear door hinge mounting upper reinforcement, take care not to cut through mating flanges.



BFDBP6504B

12. Measure and mark the vertical cutlines on front side sill outer panel 35mm and 135mm from the front door step trim mounting hole.

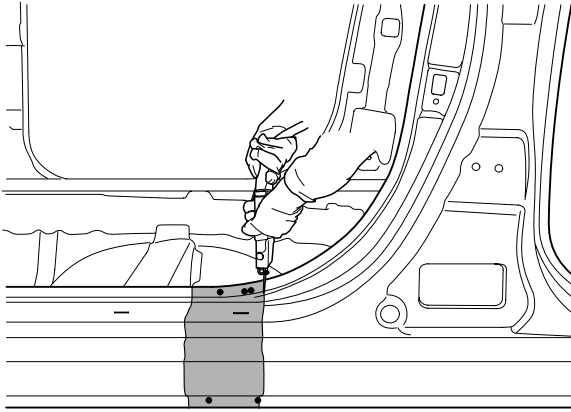


BFDBP6505

13. Cut the front side sill outer panel along the cutlines.

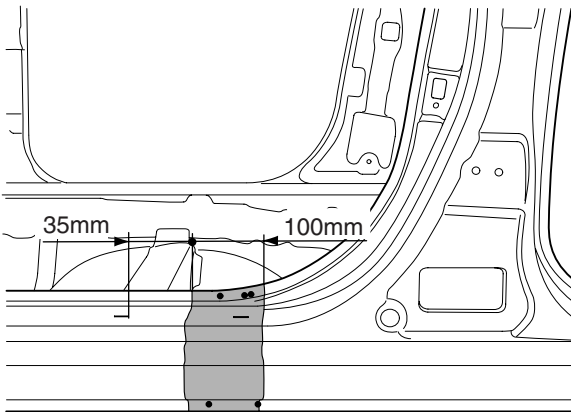
 **NOTE**

When cutting the front side sill outer panel, take care not to cut through mating flanges or side sill outer reinforcement.



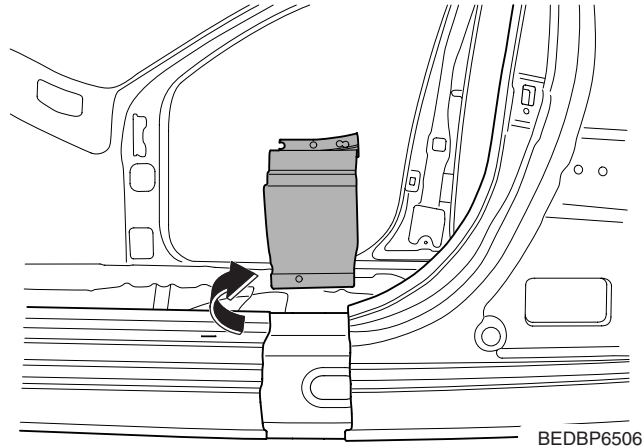
BEDBP6505A

14. Drill out all spotwelds attaching the front side sill outer panel section.



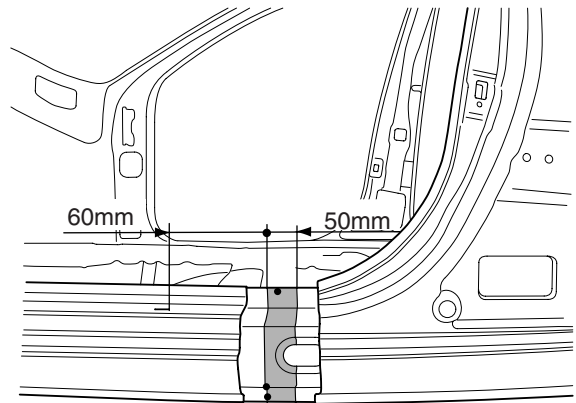
BFDBP6505

15. Remove the front side sill outer panel section.



BEDBP6506

16. Measure and mark the vertical cutlines on front side sill outer reinforcement as indicated in the illustration.

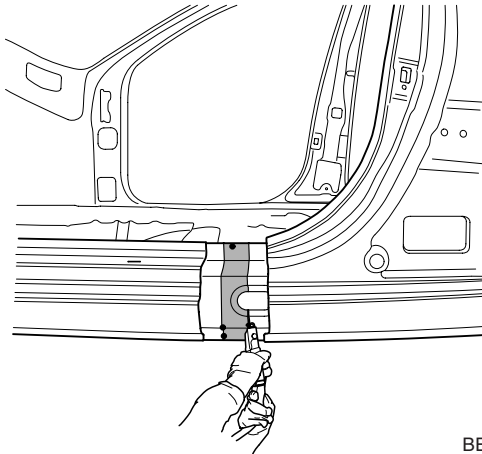


BFDBP6506A

17. Cut the front side sill outer reinforcement cutlines.

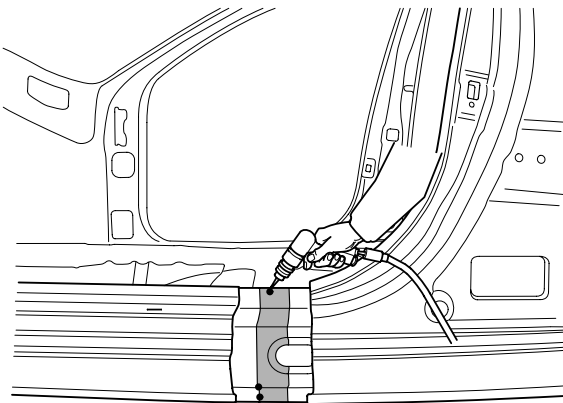
 **NOTE**

When cutting front side sill outer reinforcement, take care not to cut through mating flanges.



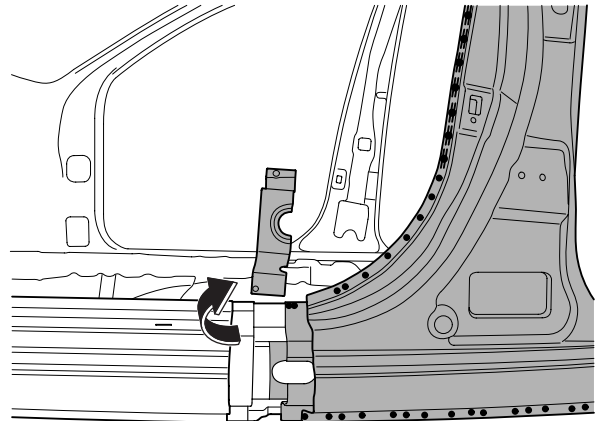
BEDBP6506B

18. Drill out all spotwelds, attaching the front side sill outer reinforcement section.



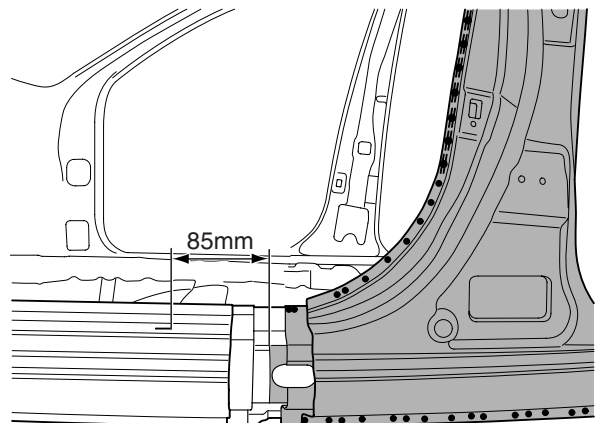
BEDBP6506C

19. Remove the front side sill outer reinforcement section.



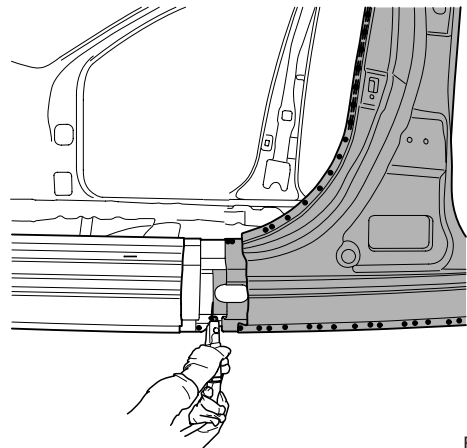
BFDBP6507

20. Measure and mark the vertical cutline on side sill inner reinforcement as indicated in the illustration.



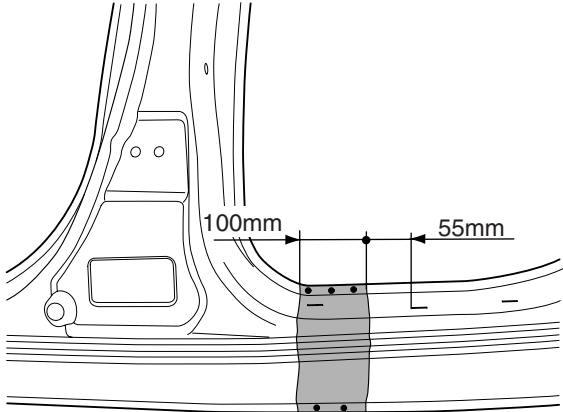
BFDBP6507A

21. Cut the front side sill inner reinforcement along the cutline.



BFDBP6507B

22. Measure and mark the vertical cutlines on rear side sill outer panel 55mm and 155mm from the rear door step trim mounting hole.



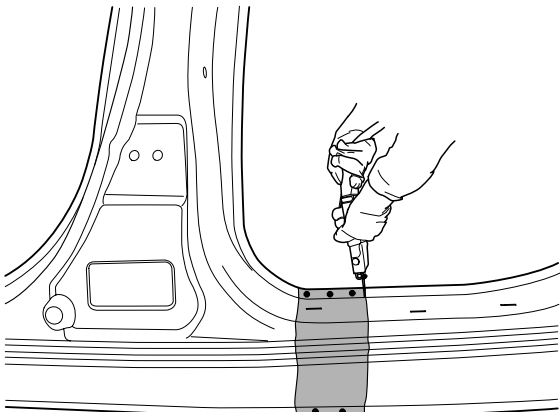
BFDBP6508A

23. Cut the rear side sill outer panel along the cutlines.



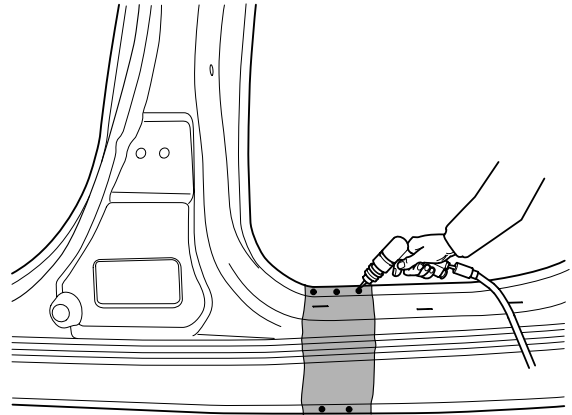
NOTE

When cutting rear side sill outer panel, take care not to cut through mating flanges or side sill outer reinforcement.



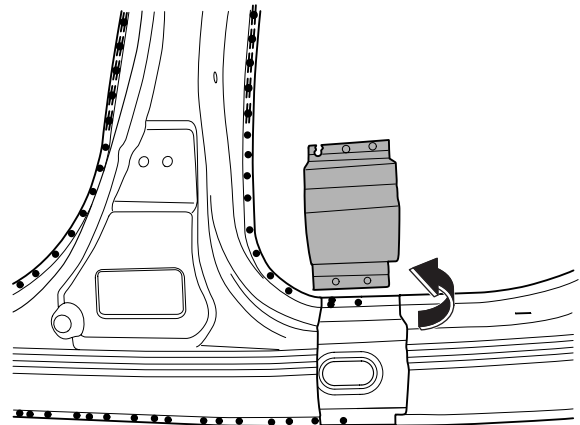
BEDBP6508B

24. Drill out all spotwelds attaching the rear side sill outer panel section.



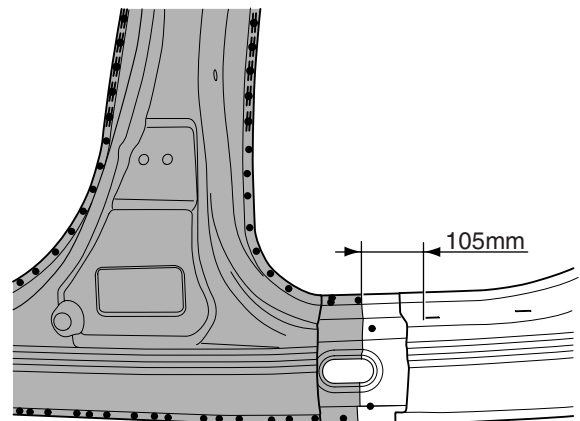
BEDBP6508C

25. Remove the rear side sill outer panel.



BFDBP6509

26. Measure and mark the cutline on side sill outer reinforcement as indicated in the illustration.

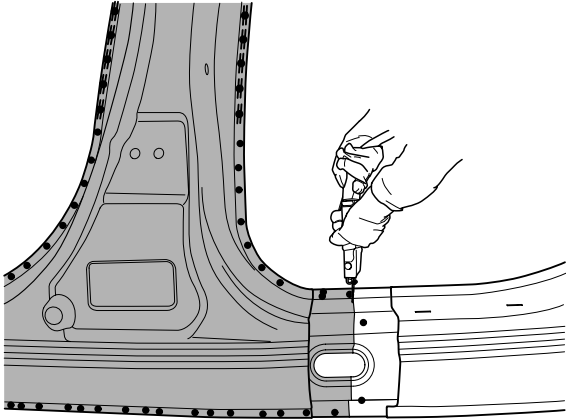


BFDBP6509A

27. Cut the rear side sill outer reinforcement along the outline.

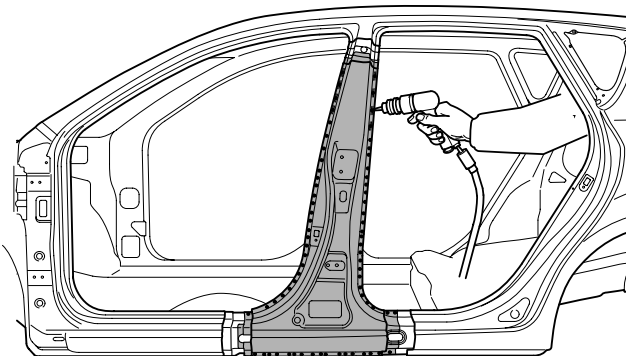
 **NOTE**

When cutting rear side sill outer reinforcement, take care not to cut through mating flanges.

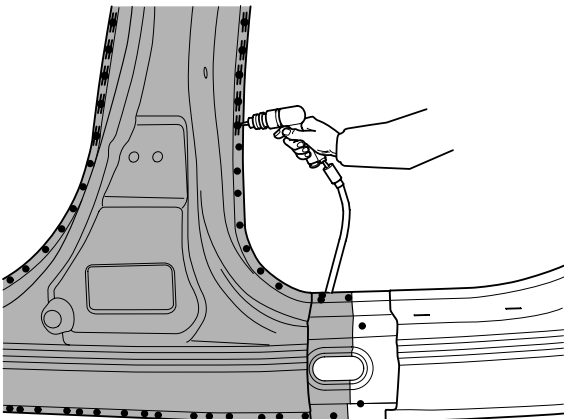


BFDBP6509B

28. Drill out all spotwelds attaching the center pillar outer panel.

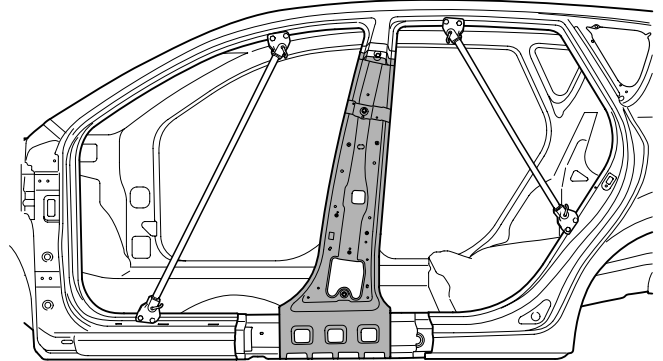


BFDBP6510



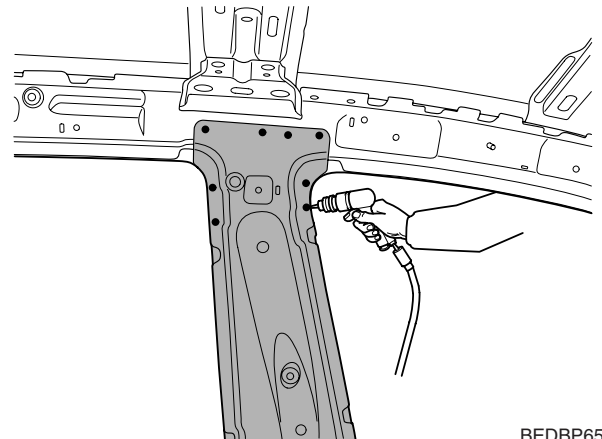
BFDBP6509C

29. Remove the center pillar outer panel.

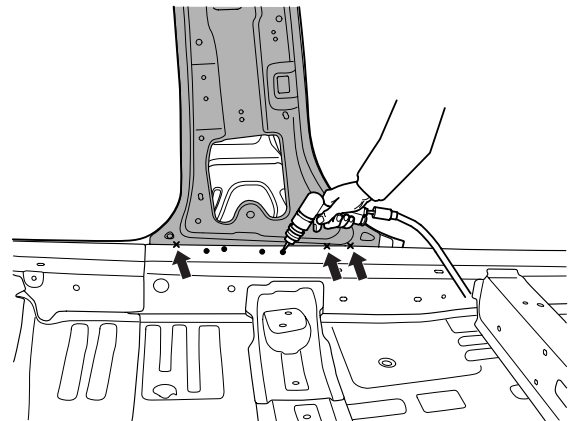


BEDBP6511

30. To remove the center pillar inner panel, drill out and grind away all spotwelds and lap welds.

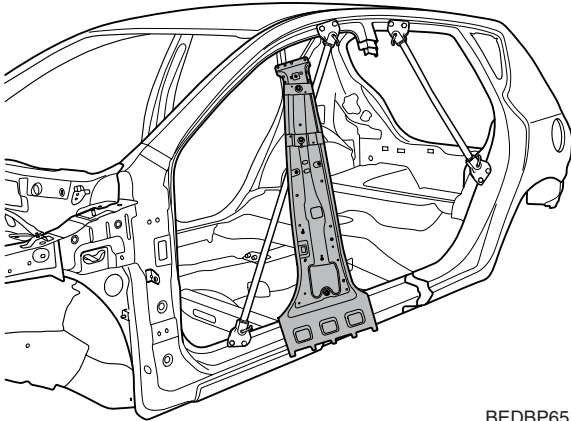


BEDBP6512



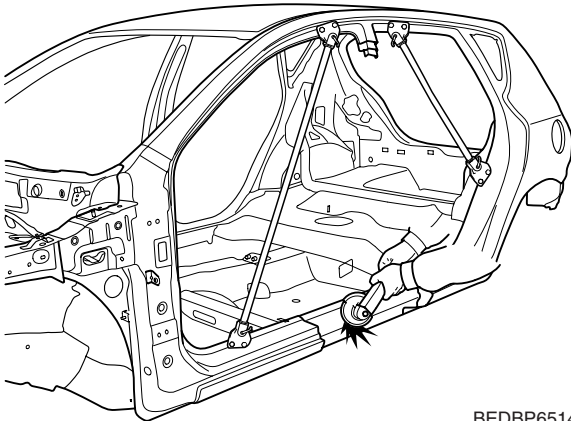
BEDBP6513

31. Remove the center pillar inner panel.



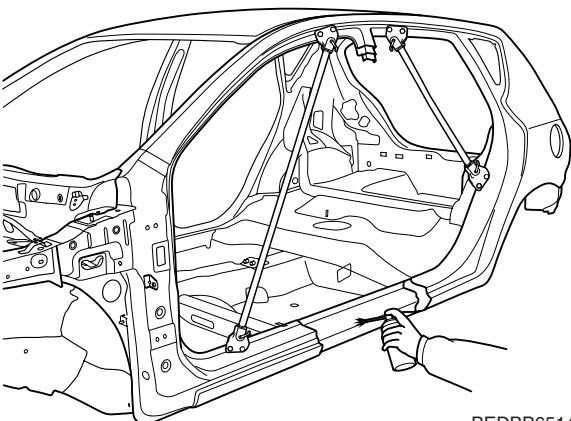
BEDBP6514

32. Prepare all surfaces to be welded.



BEDBP6514A

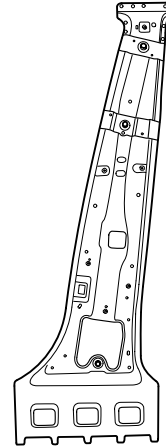
33. After removing, apply the welding primer.



BEDBP6514B

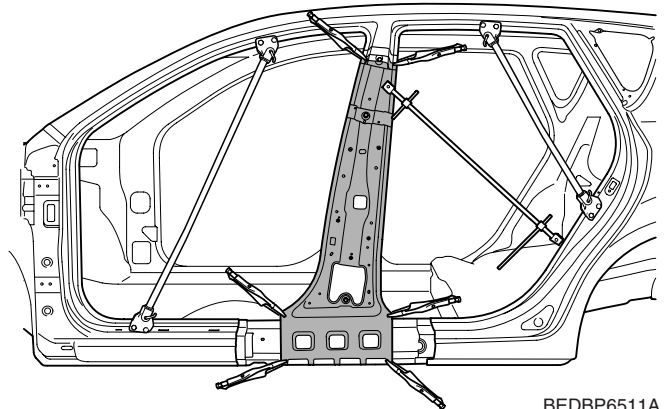
INSTALLATION

1. Fit and clamp the new center pillar inner panel in place for welding.



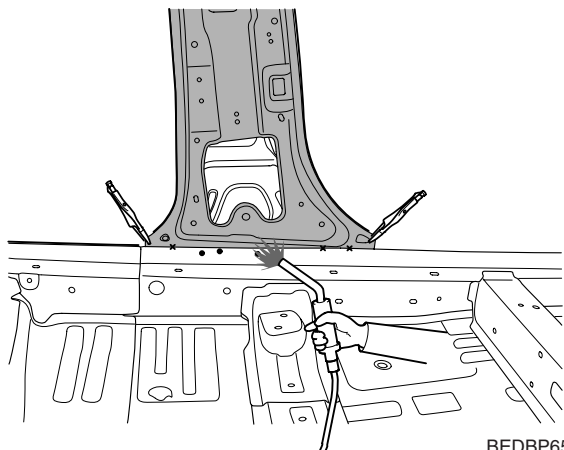
BEDBP6516

2. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



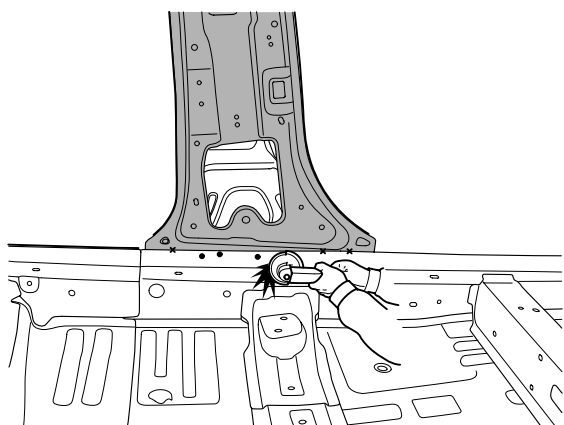
BEDBP6511A

3. MIG plug weld all holes and MIG lap weld seams.



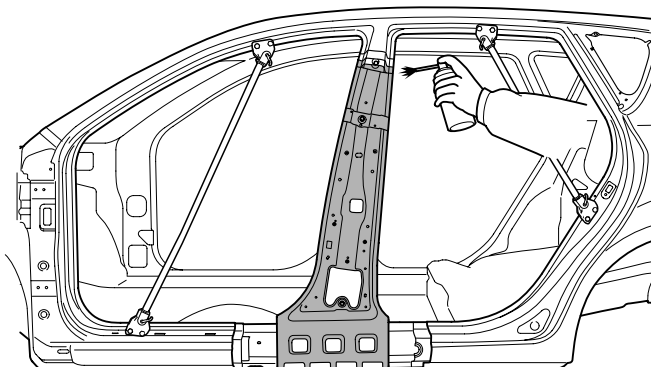
BEDBP6513A

4. Clean and prepare all welds, and remove all residue.



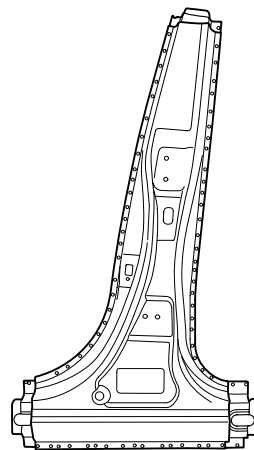
BEDBP6513B

5. After removing, apply the welding primer.



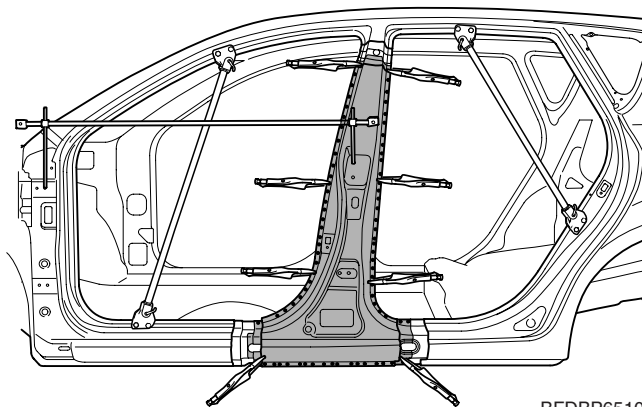
BEDBP6511B

6. Transcribe the cutlines to the new side outer panel, adding 30mm overlap to each end and cut to length.
7. Drill 8mm holes in overlap areas and along center pillar outer panel flanges.



BEDBP6517

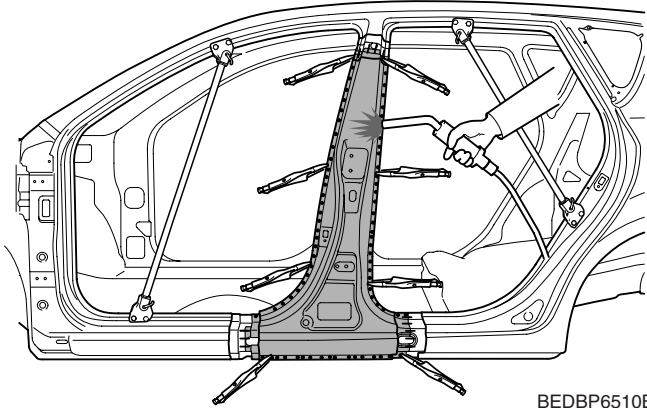
8. Fit and clamp the new center pillar outer panel in place for welding.
9. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



BFDBP6510A

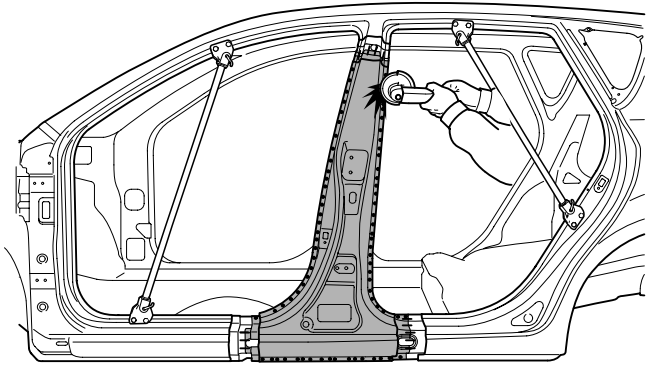
10. Check the fit of the front and rear doors.
11. Reinstall center pillar outer panel.
12. Apply body filler to the outer center pillar seam. Sand and finish.

13. MIG plug weld all holes and MIG butt weld seams.



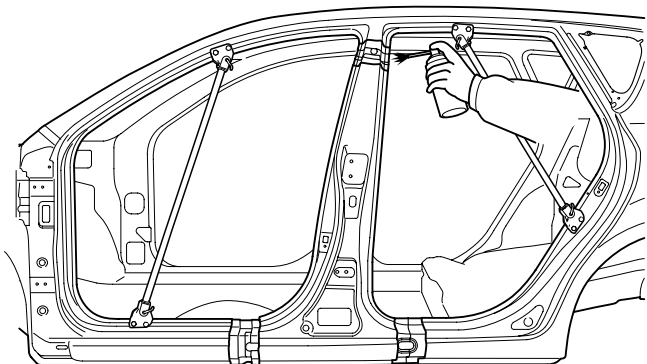
BEDBP6510B

14. Clean and prepare all welds, and remove all residue.



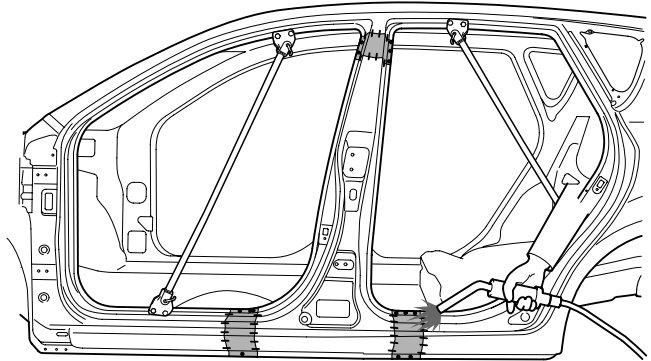
BEDBP6510C

15. After removing, apply the welding primer.



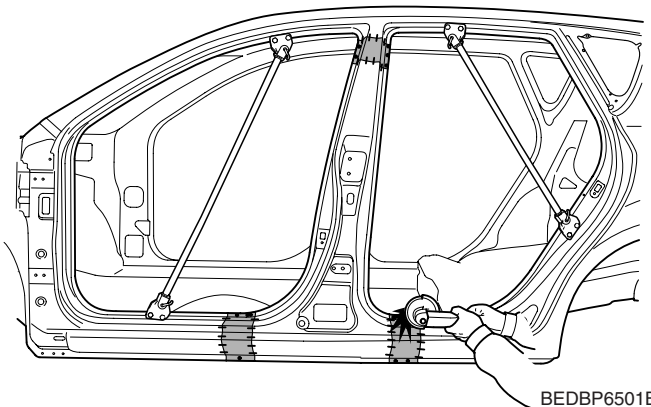
BEDBP6510D

16. Reattach the cut away center pillar outer panel section, then MIG plug weld all holes and MIG butt weld seams.



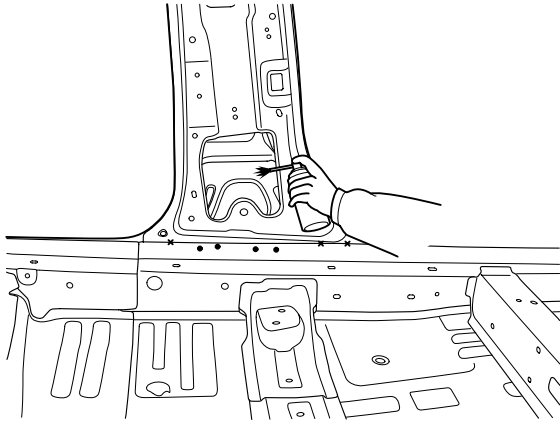
BEDBP6501A

17. Clean all welds with a disc grinder.



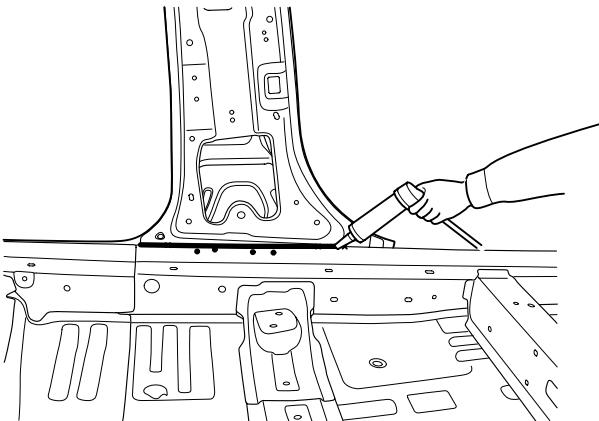
BEDBP6501B

18. Apply the two-part epoxy primer to the interior of the center pillar.
19. Apply an anti-corrosion agent to the welded parts and interior of the center pillar (Refer to the CORROSION PROTECTION).



BEDBP6513C

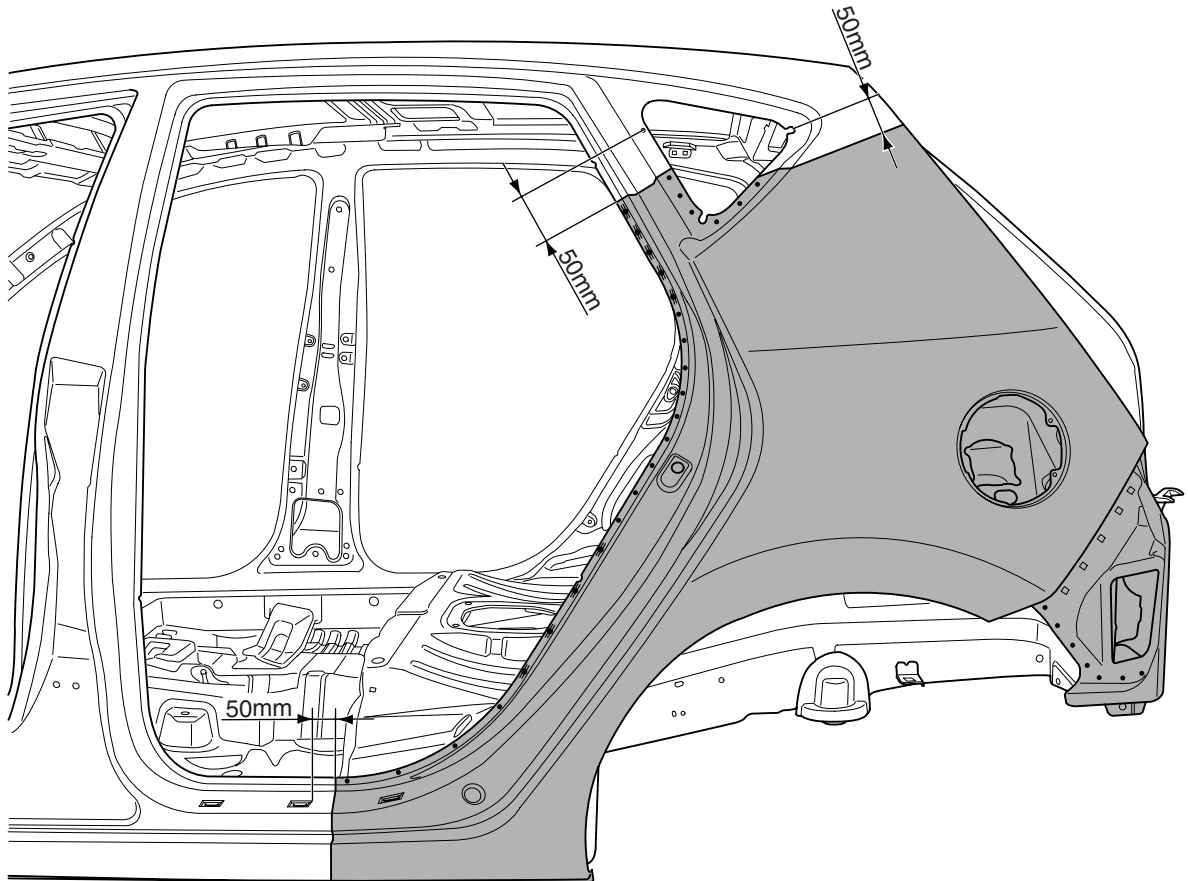
20. Prepare exterior surfaces for priming, using wax and grease remover.
21. Apply metal conditioner and water rinse.
22. Apply conversion coating and water rinse.
23. Apply the two-part epoxy primer.
24. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATIONS).



BEDBP6513D

QUARTER PANEL

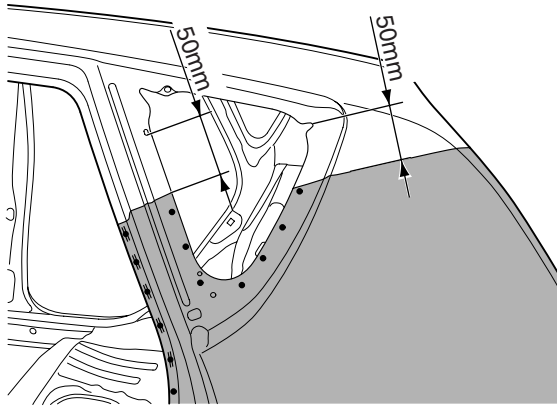
WELDING POINTS



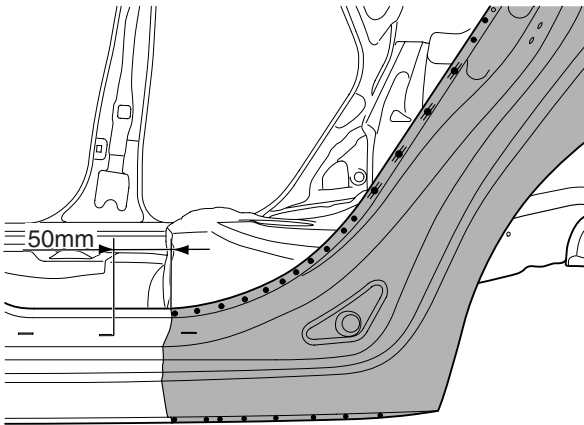
- ⊕ Laser welding
- MIG plug welding
- ≡≡≡ MIG butt welding
- ✕✕ MIG lap welding

REMOVAL

1. Depending on the extent of damage, measure and mark cutlines on the quarter outer panel as indicated in the illustration.



BFDBP6603

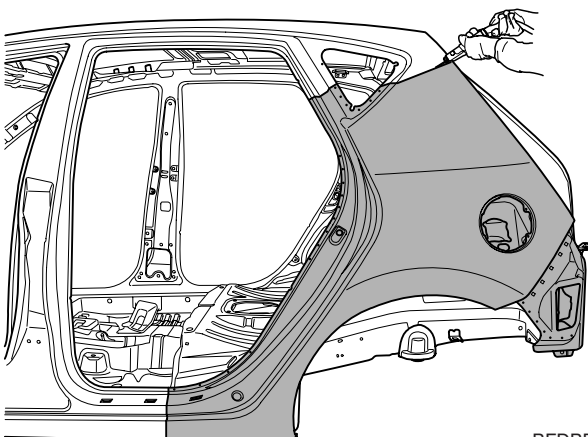


BFDBP6602

2. Cut the quarter outer panel along the cutlines and remove the quarter outer panel as illustration.

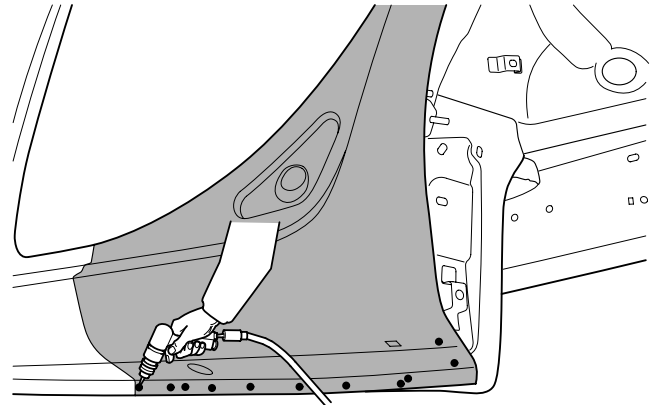
NOTE

When cutting the quarter outer panel, be careful not to cut quarter inner panel.

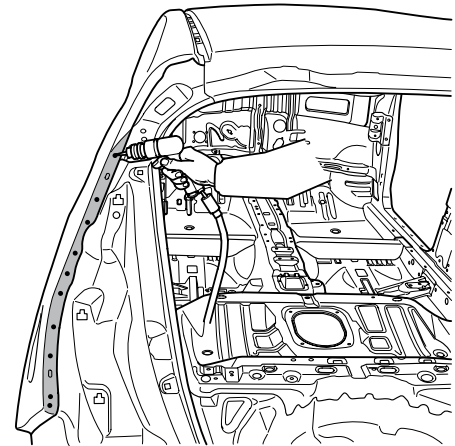


BFDBP6601A

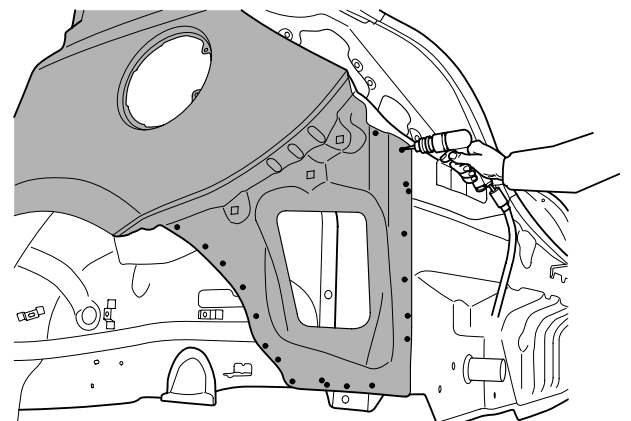
3. Drill out all attaching spotwelds and laser welds on the quarter outer panel, including the seam around the door lip opening.



BEDBP6606

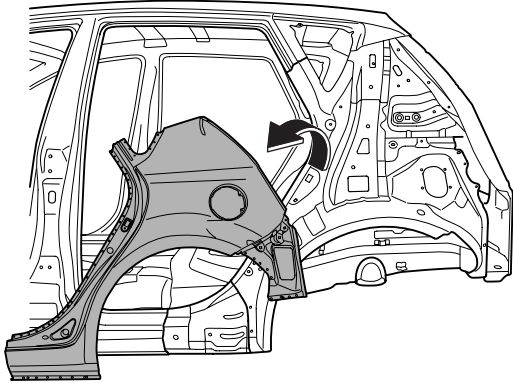


BFDBP6604



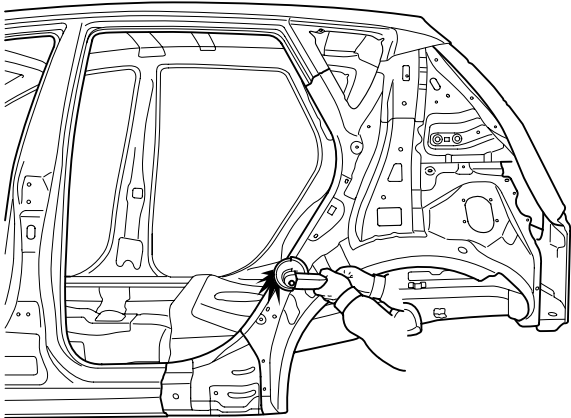
BEDBP6605

4. Remove the quarter outer panel.



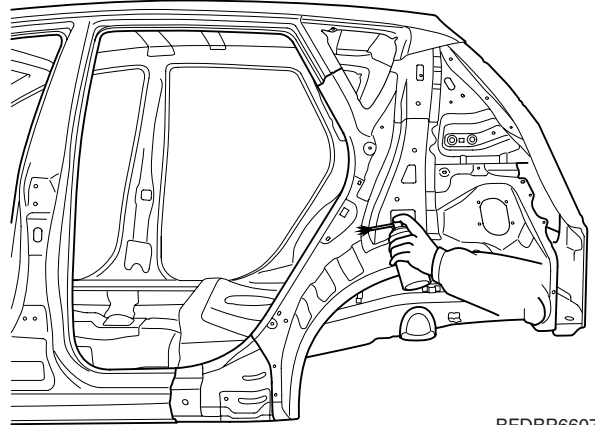
BFDBP6607

5. Clean cut portions with a disc grinder.



BFDBP6607A

6. After removing, apply the welding primer.

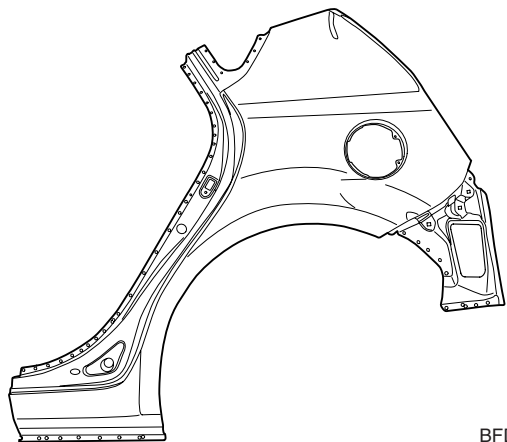


BFDBP6607B

7. Prepare all surfaces to be welded.

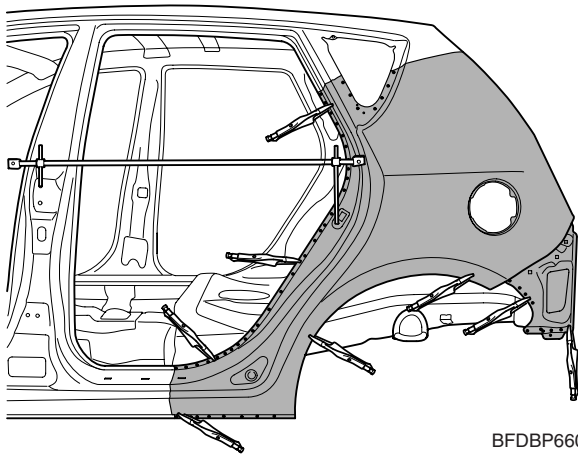
INSTALLATION

1. Transcribe the cutlines to the new quarter outer panel, adding 30 mm overlap each end.
2. Drill 8 mm holes in overlap areas and along upper and lower flanges of the new quarter outer panel for MIG plug welding.



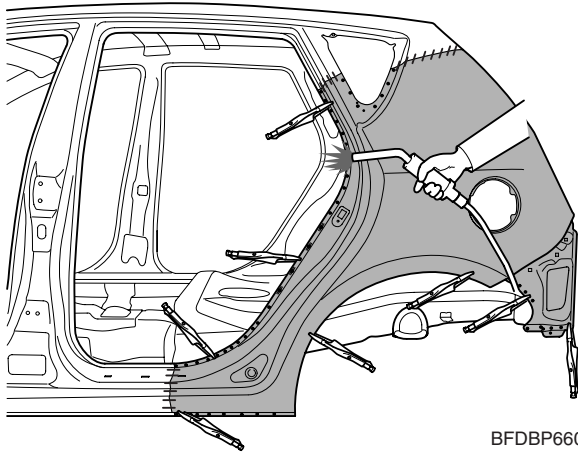
BFDBP6608

3. Apply body filler to the welded seam. Sand and finish. Apply the two-part epoxy primer to the interior of the quarter outer panel.
4. Fit and clamp the quarter outer panel in place.
5. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



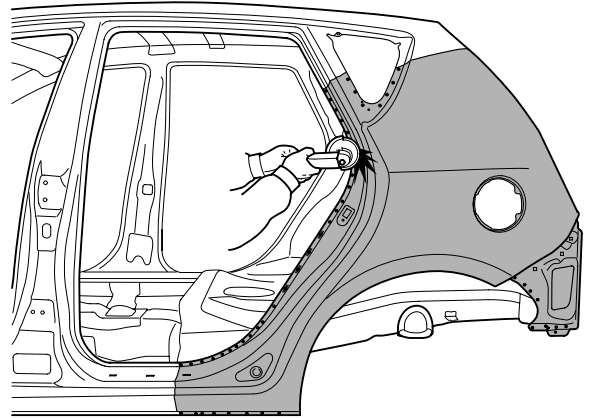
BFDBP6601B

6. MIG plug weld all holes and MIG butt weld seams.



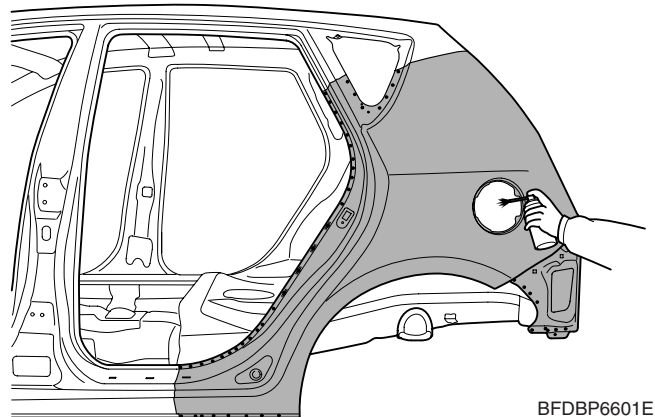
BFDBP6601C

7. Clean and prepare all welds, remove all residue.



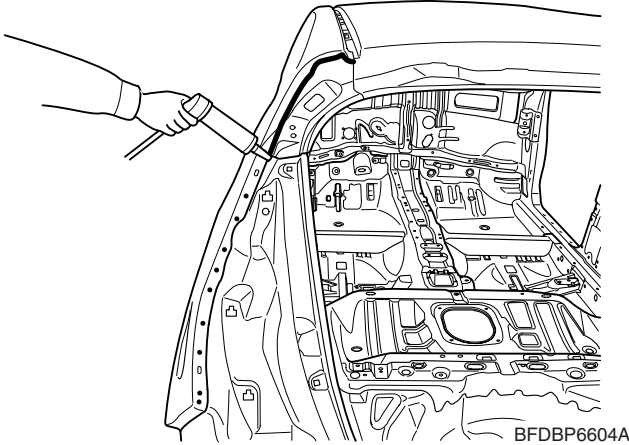
BFDBP6601D

8. Apply an anti-corrosion agent to the welded parts and interior of the quarter outer panel (Refer to the CORROSION PROTECTION).
9. Prepare exterior surfaces for priming, using wax and grease remover.
10. Apply metal conditioner and water rinse.
11. Apply conversion coating and water rinse.
12. Apply the two-part epoxy primer.



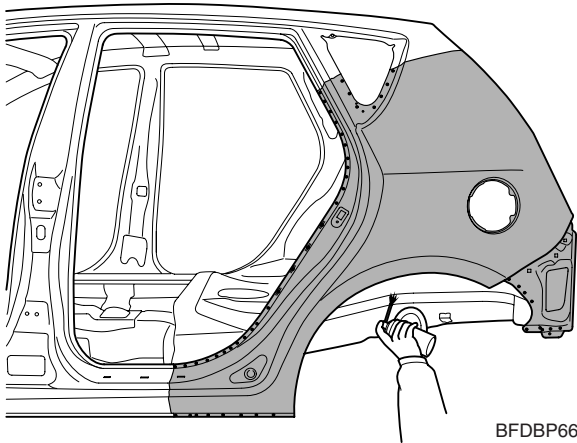
BFDBP6601E

13. Apply the correct seam sealers to all joints.
14. Reprime over the seam sealer to complete the repair.



BFDBP6604A

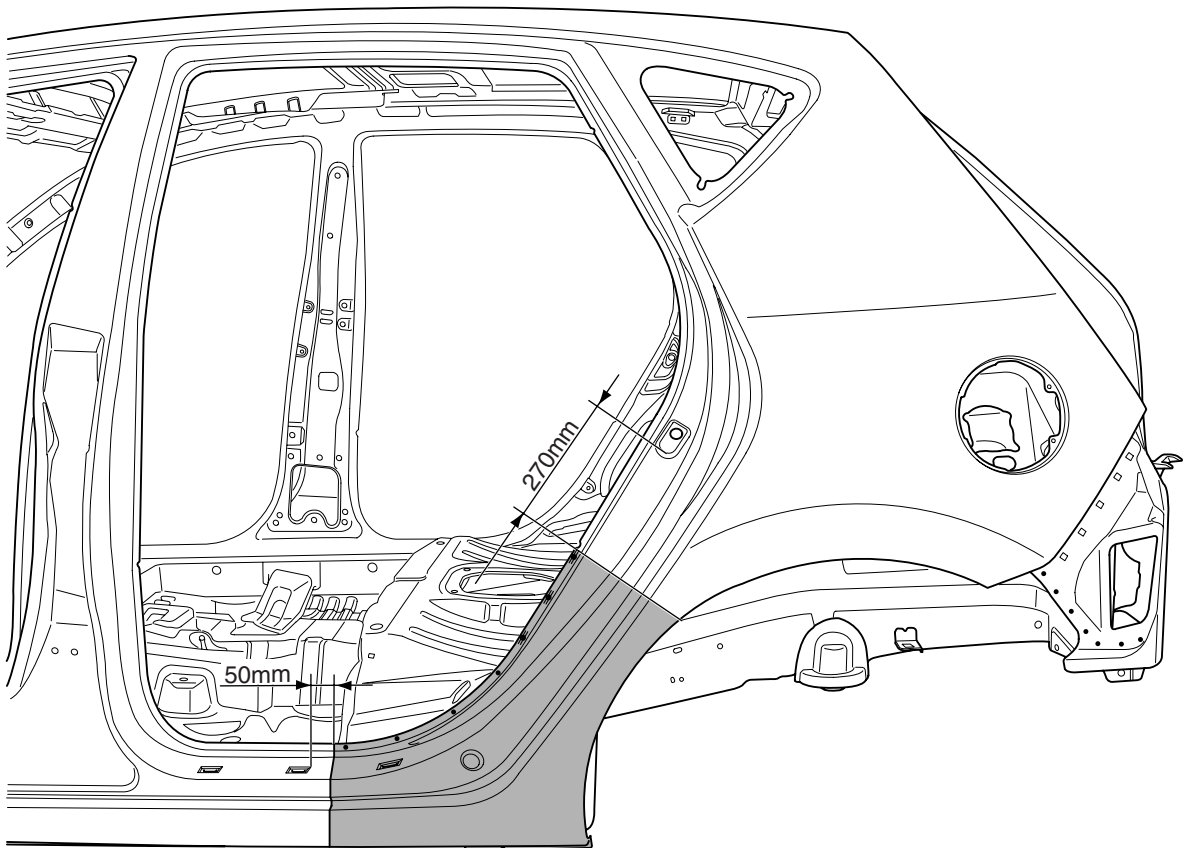
15. In order to improve corrosion resistance, if necessary, apply an under body anti-corrosion agent to the wheel well (Refer to the CORROSION PROTECTION).



BFDBP6601F

LOWER QUARTER PANEL

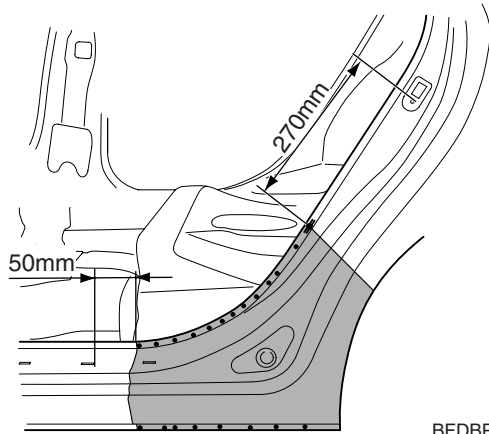
WELDING POINTS



- ⊕ Laser welding
- MIG plug welding
- ≡≡≡ MIG butt welding
- ×× MIG lap welding

REMOVAL

1. Depending on the extent of damage, measure and mark cutlines on the quarter outer panel as indicated in the illustration.

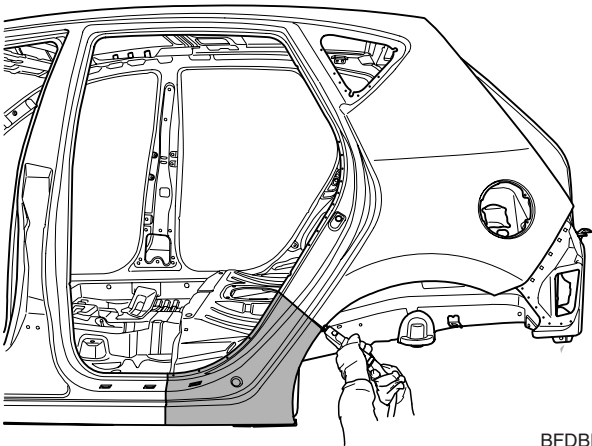


BFDBP6718

2. Cut the quarter outer panel along the cutlines and remove the quarter outer panel as illustration.

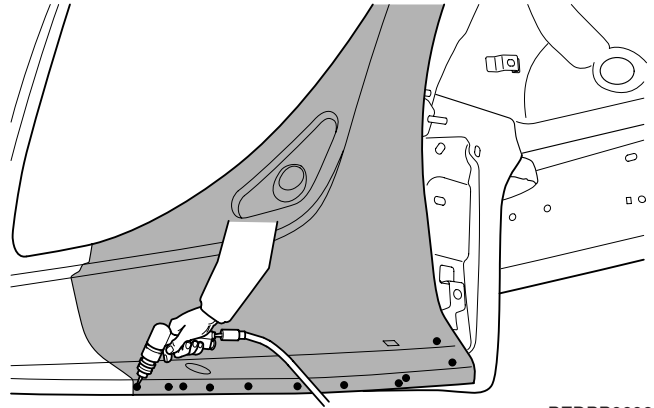
 **NOTE**

When cutting the quarter outer panel, be careful not to cut quarter inner panel.



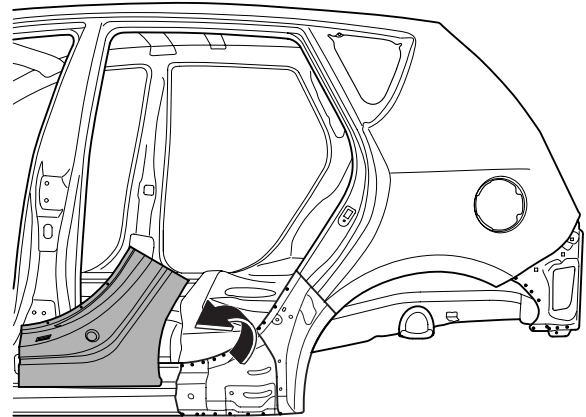
BFDBP6601J

3. Drill out all attaching spotwelds and laser weld on the quarter outer panel, including the seam around the door lip opening.



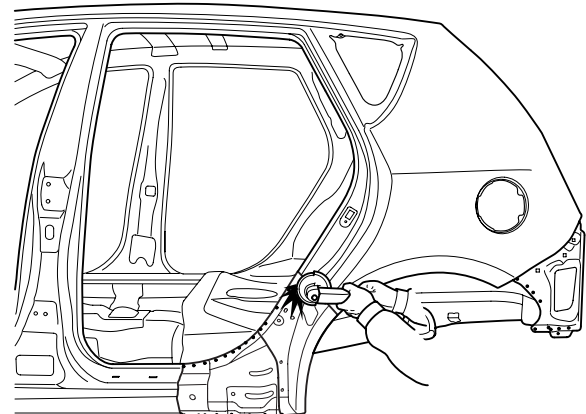
BEDBP6606

4. Remove the quarter outer panel.



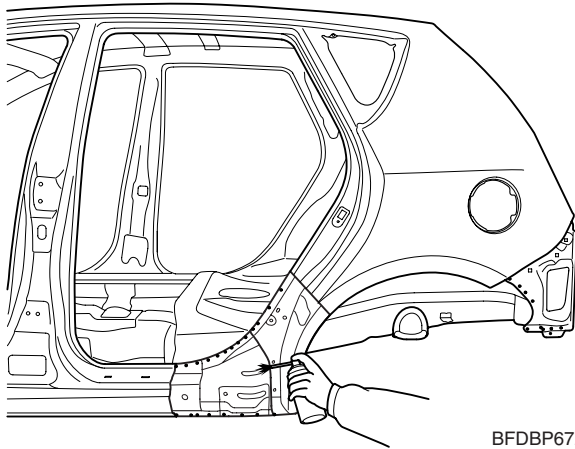
BFDBP6601H

5. Clean cut portions with a disc grinder.



BFDBP6601I

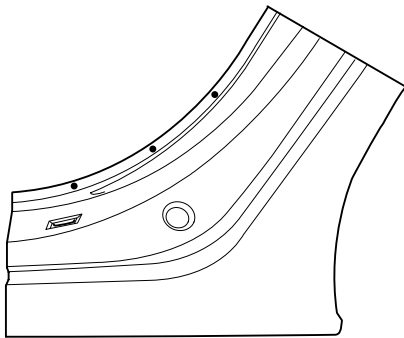
6. After removing, apply the welding primer.



BFDBP6720B

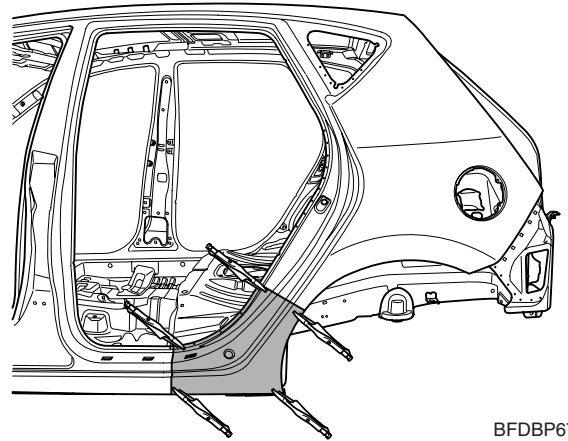
INSTALLATION

1. Transcribe the cutlines to the new quarter outer panel, adding 30 mm overlap each end.
2. Drill 8 mm holes in overlap areas and along upper and lower flanges of the new quarter outer panel for MIG plug welding.



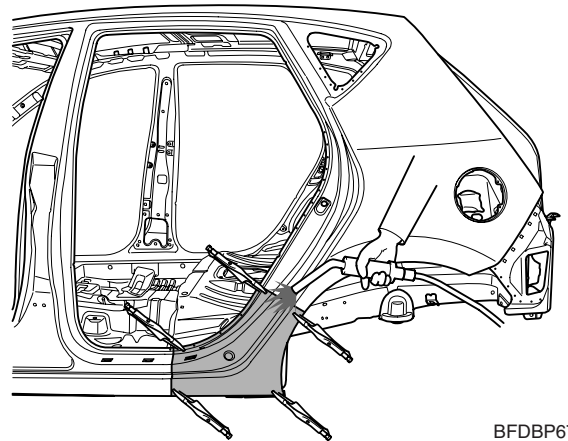
BFDBP6721

3. Apply body filler to the welded seam. Sand and finish. Apply the two-part epoxy primer to the interior of the quarter outer panel.
4. Fit and clamp the quarter outer panel in place.
5. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



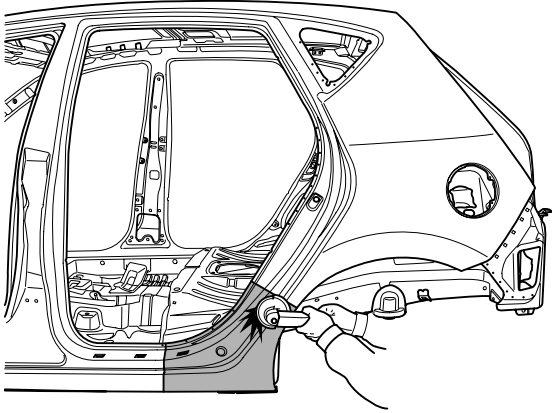
BFDBP6717A

6. MIG plug weld all holes and MIG butt weld seams.



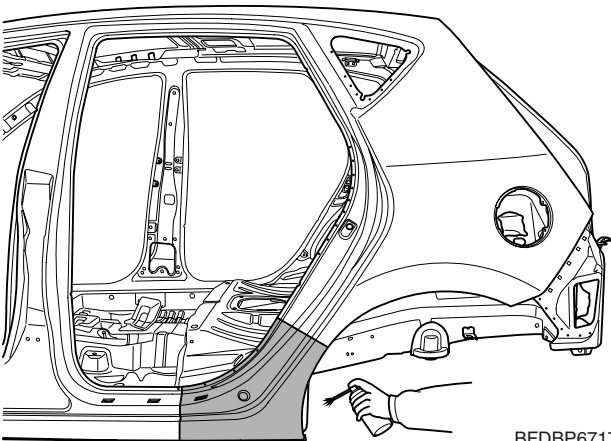
BFDBP6717B

7. Clean and prepare all welds, remove all residue.



BFDBP6717C

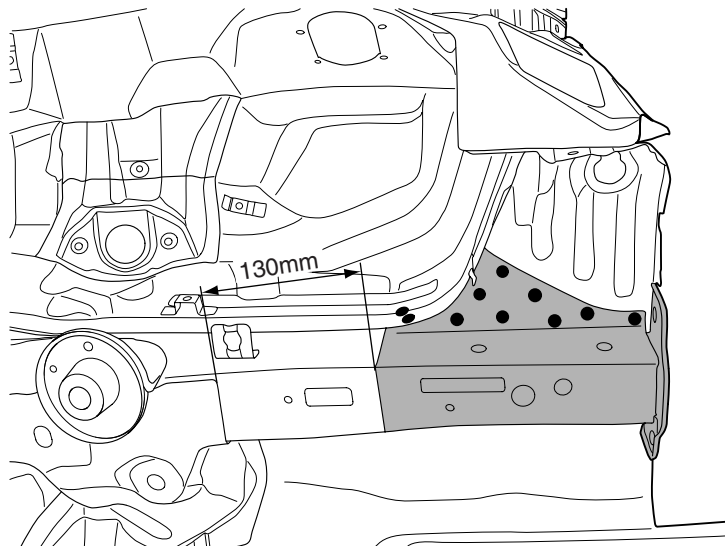
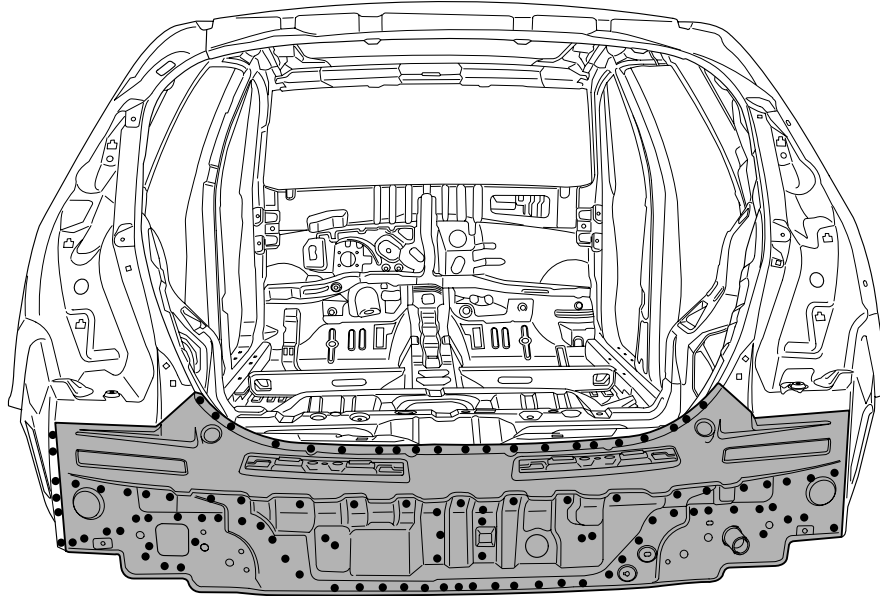
8. Apply an anti-corrosion agent to the welded parts and interior of the quarter outer panel (Refer to the CORROSION PROTECTION).
9. Prepare exterior surfaces for priming, using wax and grease remover.
10. Apply metal conditioner and water rinse.
11. Apply conversion coating and water rinse.
12. Apply the two-part epoxy primer.



BFDBP6717D

BACK COMPLETE PANEL AND REAR FLOOR SIDE MEMBER

WELDING POINTS



- MIG plug welding
- +++ MIG butt welding
- ××× MIG lap welding

REMOVAL

 NOTE

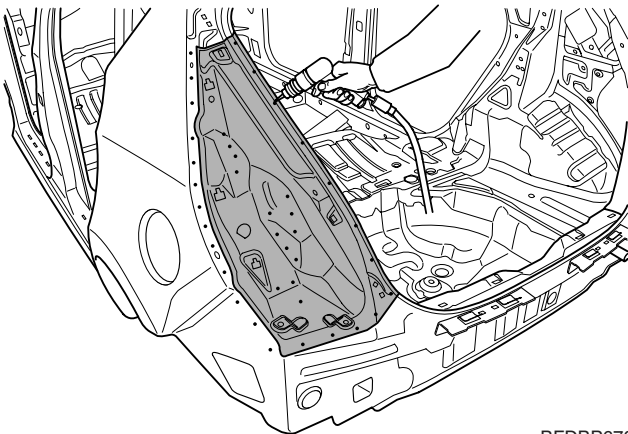
Because the rear floor side members are designed to absorb energy during a rear collision, care must be used when deciding to use this repair method. This repair is recommended only for moderate damage to the vehicle, where distortions do not extend forward of the luggage compartment region. If the damage is more severe, then the entire side member assembly should be replaced at the factory seams without employing this sectioning procedure.

The following procedure applies when only one rear floor side member needs to be replaced. If both side members are damaged and need to be replaced, then the procedure of rear floor side members and rear floor section should be followed.

Refer to the body dimension charts and measure the vehicle to determine straightening and alignment requirements.

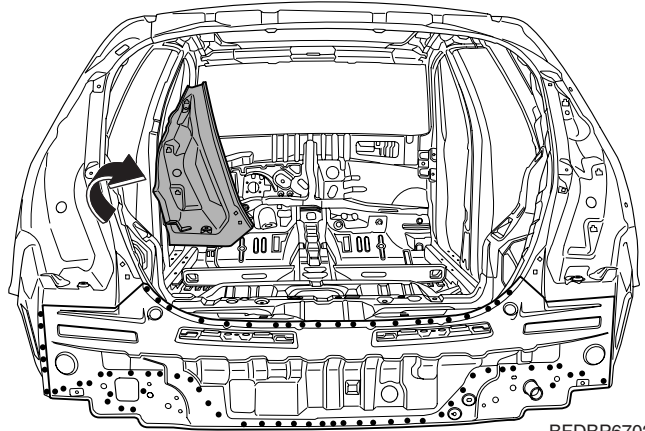
The body must be returned to its original dimensions before beginning the repair procedure.

1. Drill out all the spotwelds attaching the rear combination lamp housing panel.



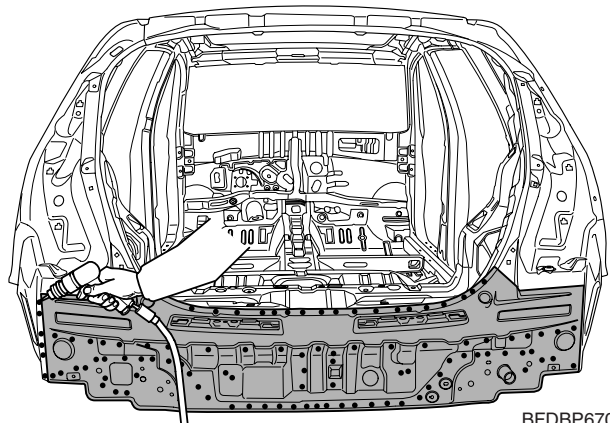
BFDBP6701

2. Remove the rear combination lamp housing panel.

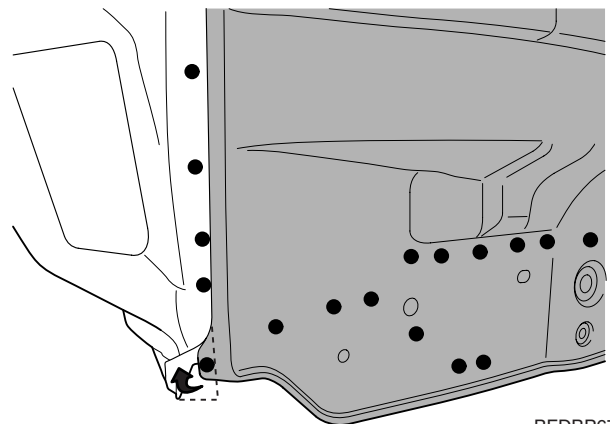


BFDBP6702

3. Drill out all the spotwelds attaching the back complete panel assembly.

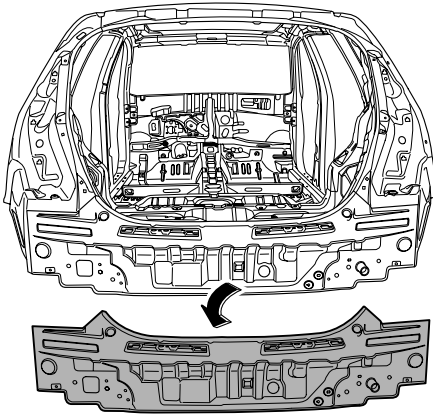


BFDBP6702A



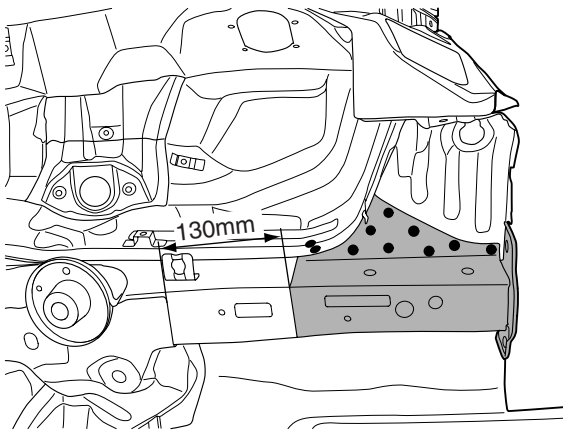
BFDBP6703

4. Remove the back complete panel assembly.



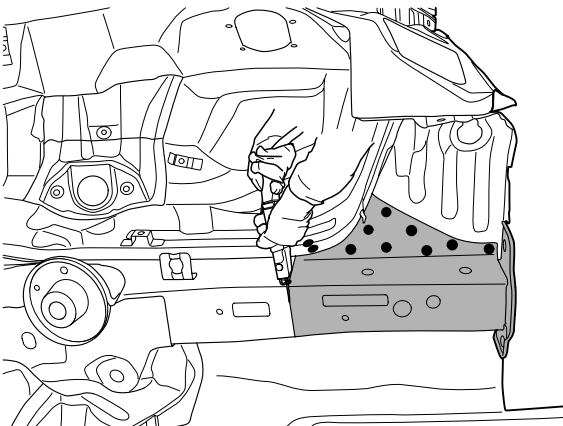
BFDBP6704

5. Depending on the extent of damage, measure and mark cutline on the rear floor side member as indicated in the illustration.



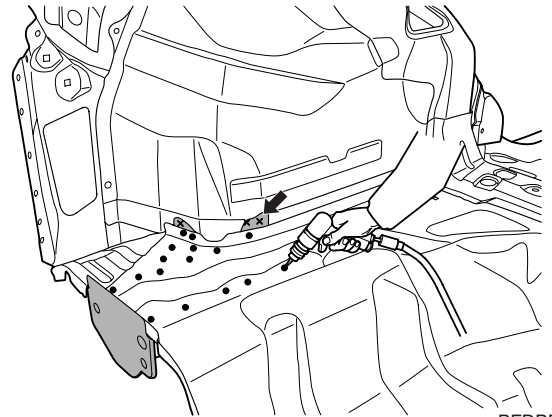
BFDBP6705A

6. Cut rear floor side member along the cutline.



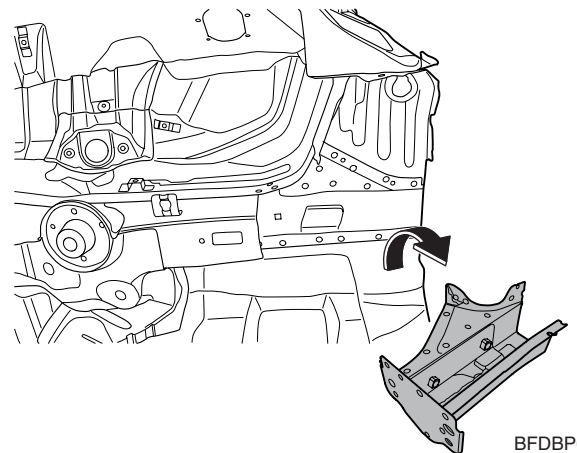
BFDBP6705B

7. Drill out all spotwelds and MIG lap welds, attaching the rear floor side member to rear floor panel.



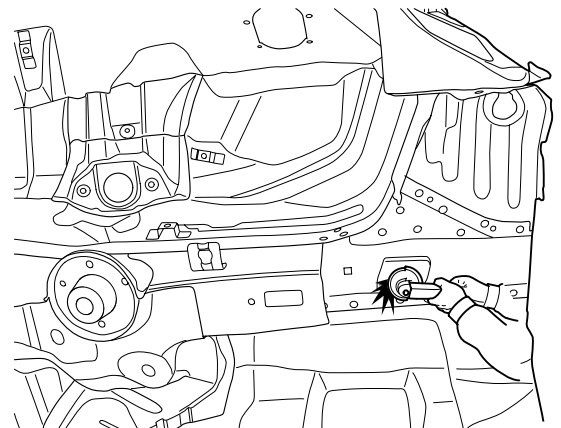
BFDBP6706

8. Remove the rear floor side member.



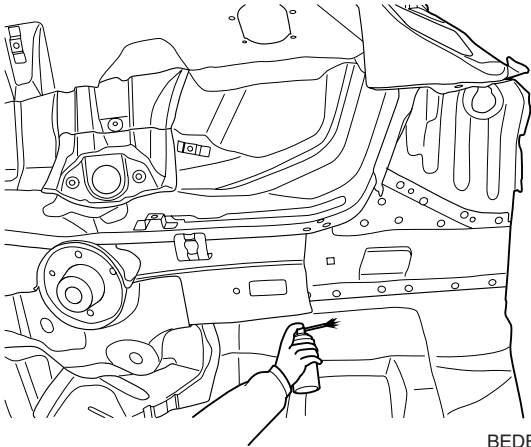
BFDBP6707

9. Clean cut portions with a disc grinder.



BEDBP6707A

10. After removing, apply the welding primer.

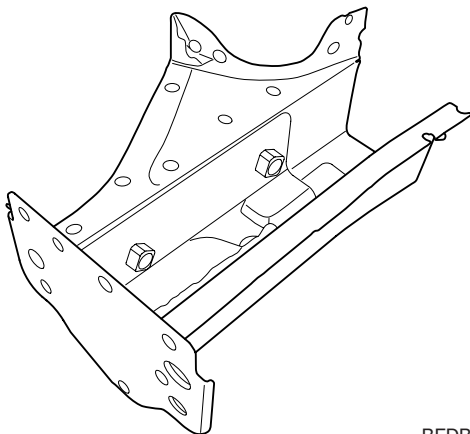


BEDBP6707B

11. Prepare all surfaces to be welded.

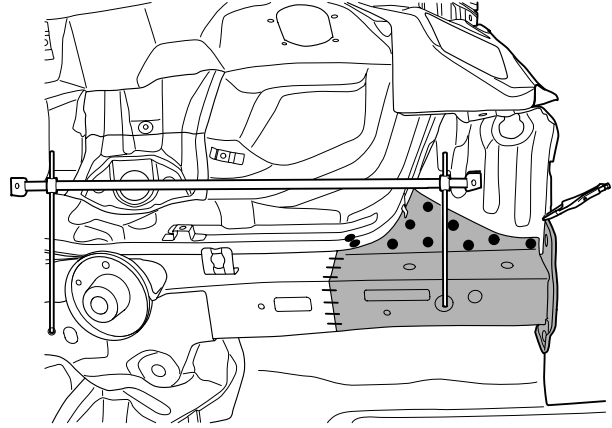
INSTALLATION

1. Transcribe the cutline to the new rear floor side member, adding 30 mm overlap to the rear end.
2. Drill 8 mm holes in the new rear floor side member for MIG plug welding.



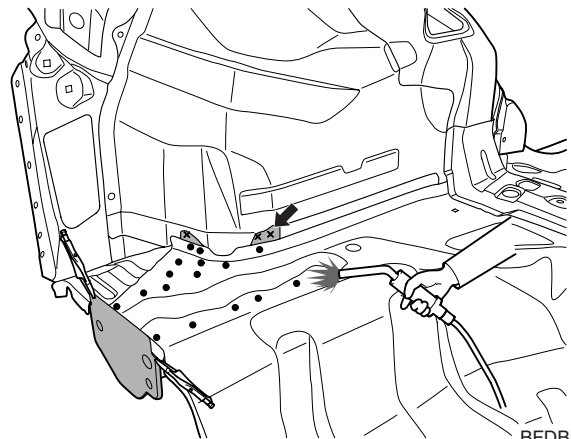
BFDBP6708

3. Fit and clamp the rear floor side member in place.
4. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



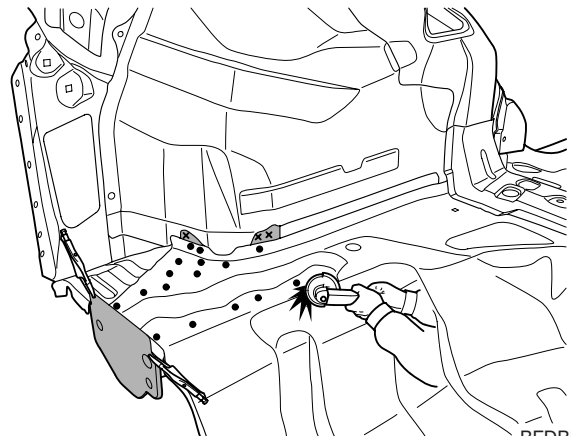
BFDBP6705C

5. MIG plug weld all holes and MIG lap weld seams.



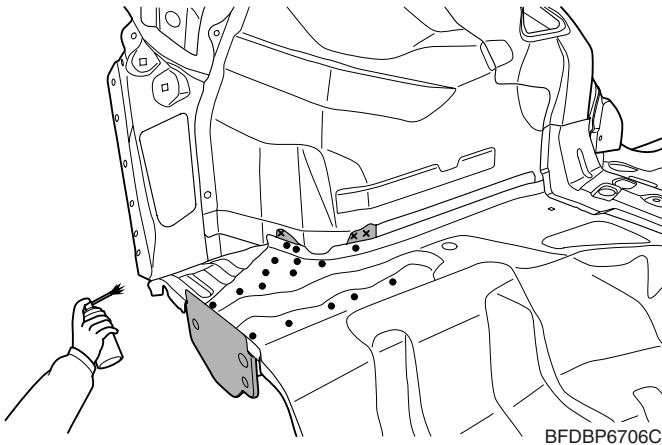
BFDBP6706A

6. Clean and prepare all welds, remove all residue.

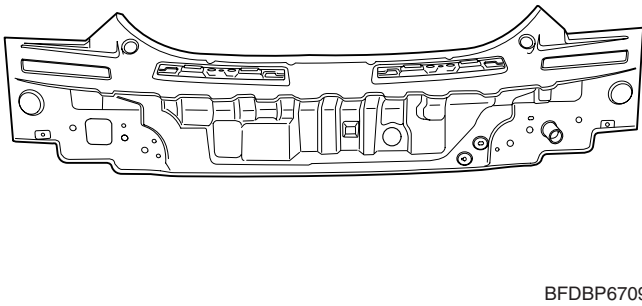


BFDBP6706B

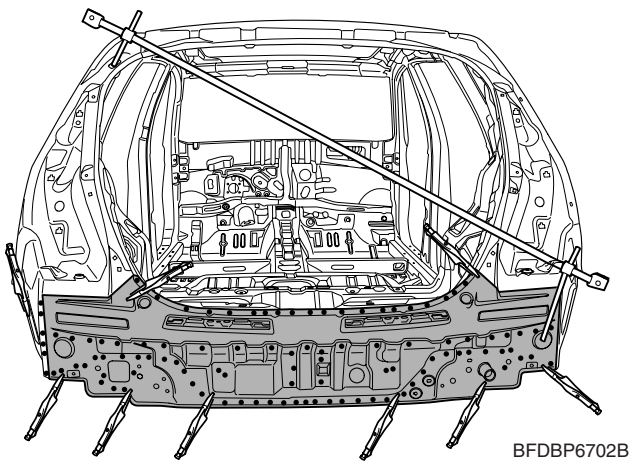
7. After removing, apply the welding primer.



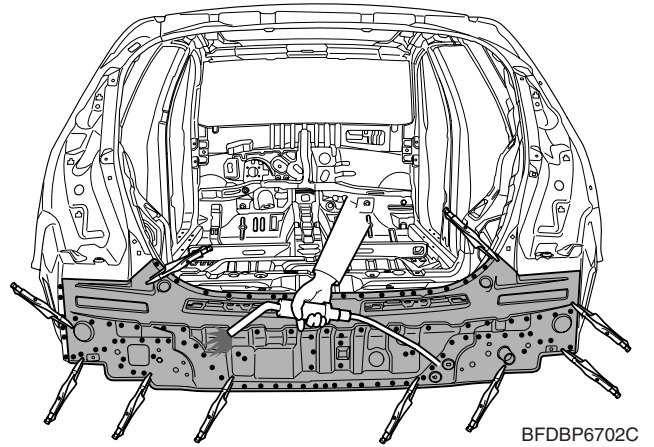
8. Fit and clamp the new back complete panel assembly in place.



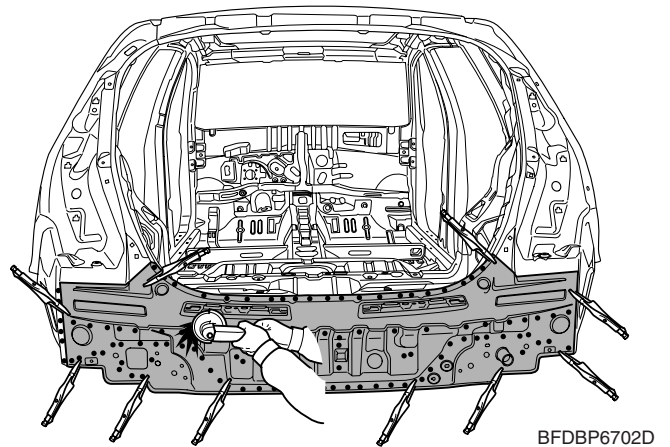
9. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



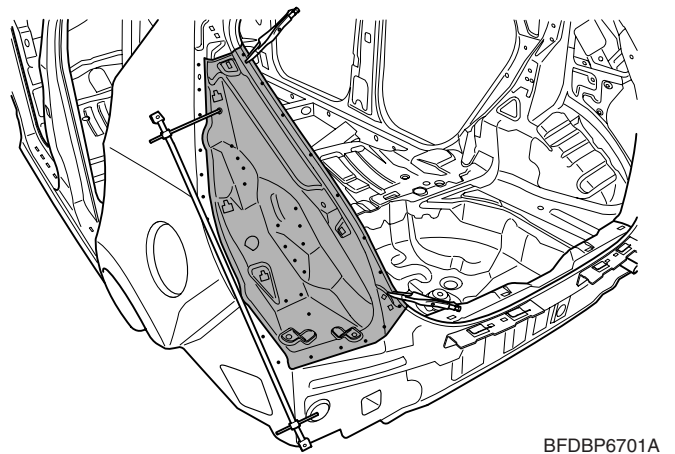
10. MIG plug weld all holes.



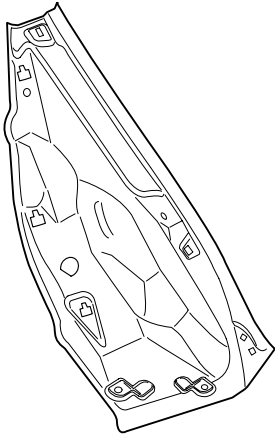
11. Clean and prepare all welds, remove all residue.



12. After removing, apply the welding primer.

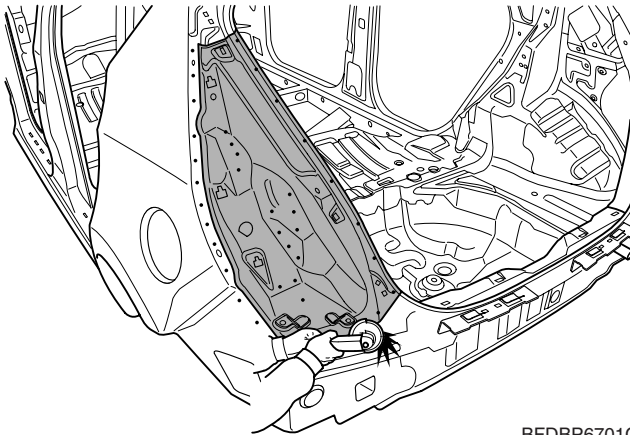


13. Fit and clamp the new rear combination lamp housing panel assembly in place.



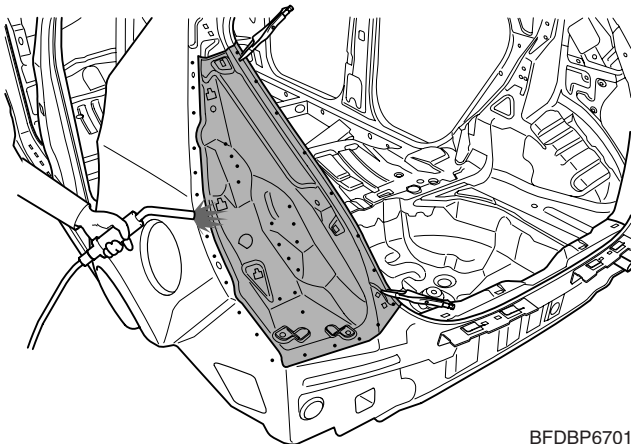
BFDBP6710

14. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.



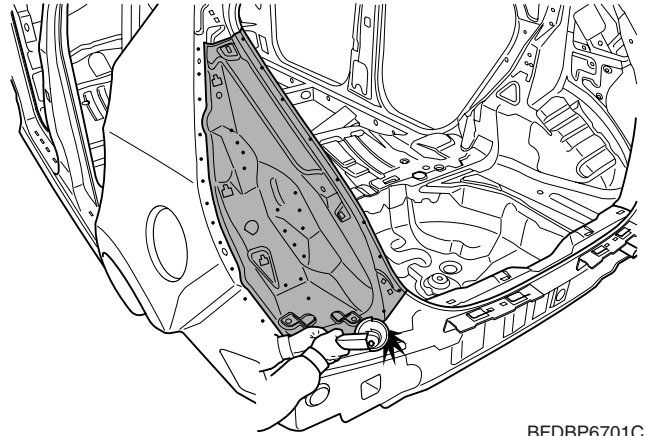
BFDBP6701C

15. MIG plug weld all holes.



BFDBP6701B

16. Clean and prepare all welds, remove all residue.



BFDBP6701C

17. Apply the two-part epoxy primer to the interior of the rear floor side member.

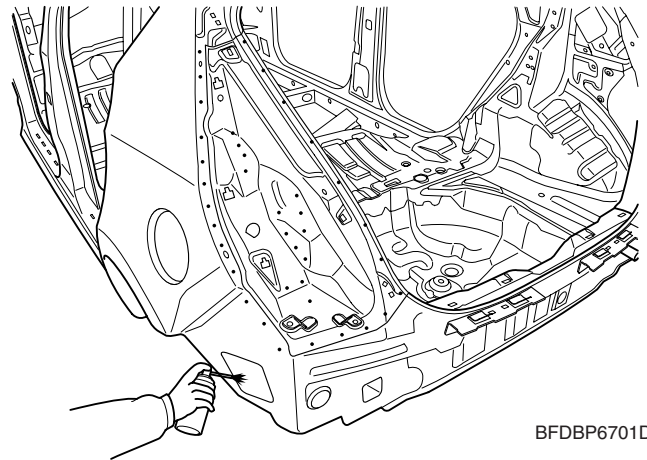
18. Apply an anti-corrosion to the interior of the rear floor side member.
(Refer to the CORROSION PROTECTION)

19. Prepare exterior surfaces for priming, using wax and grease remover.

20. Apply metal conditioner and water rinse.

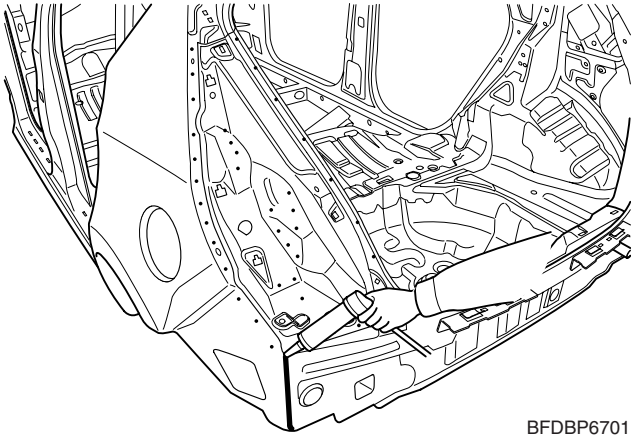
21. Apply conversion coating and water rinse.

22. Apply the two-part epoxy primer.

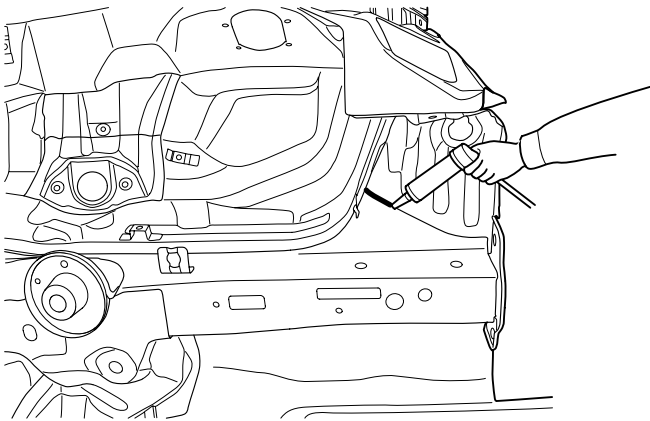


BFDBP6701D

23. Apply the correct seam sealer to all joints (Refer to the BODY SEALING LOCATIONS).

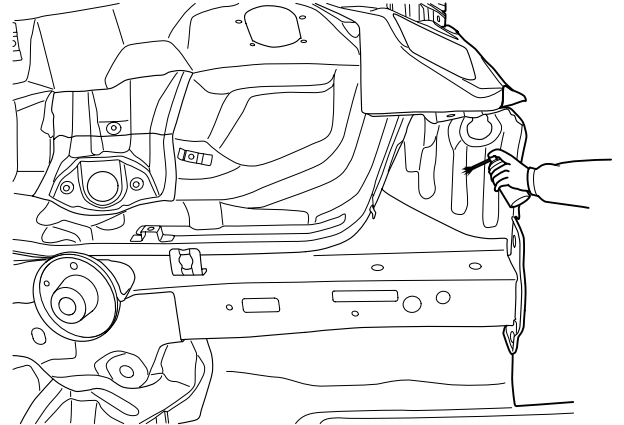


BFDBP6701E



BFDBP6705D

24. Reprime over the seam sealer to complete the repair.
25. After completing body repairs, carefully apply Under coating to the Under body (Refer to the CORROSION PROTECTION).
26. In order to improve corrosion resistance, if necessary, apply an Under body anti-corrosion agent to the panel which is repaired or replaced (Refer to the CORROSION PROTECTION).

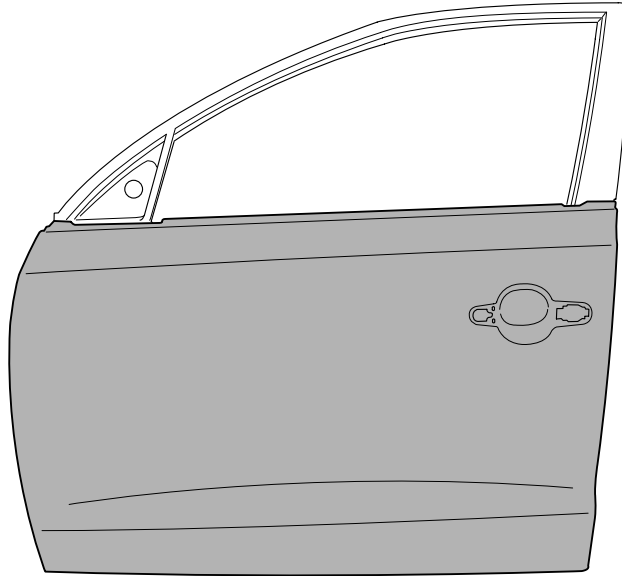


BFDBP6705E

FRONT AND REAR DOOR OUTER PANELS

WELDING POINTS

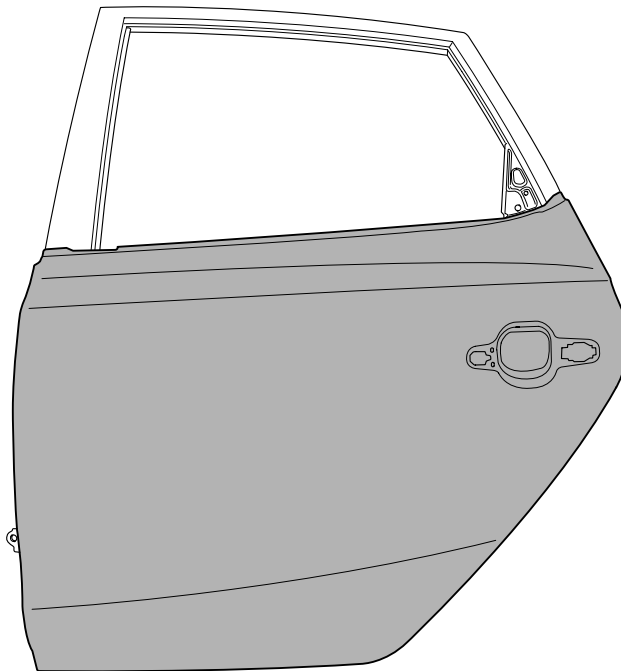
FRONT DOOR



- MIG plug welding
- +++ MIG butt welding
- ✖✖ MIG lap welding

BFDBP6711

REAR DOOR

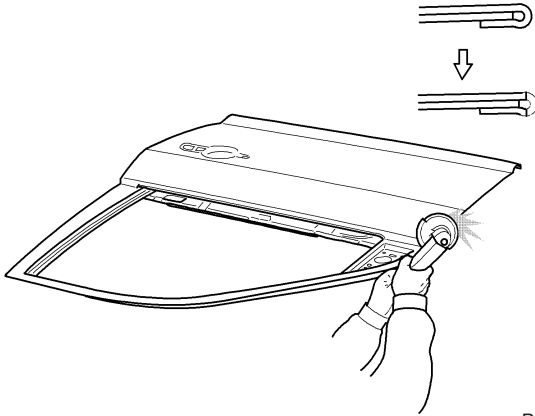


- MIG plug welding
- +++ MIG butt welding
- ✖✖ MIG lap welding

BFDBP6712

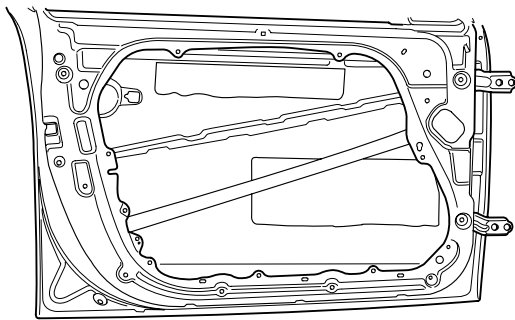
REMOVAL

1. Cut door outer panel hem with a sander.
2. After grinding off the hemming location, remove the outer panel.



PRO-1831

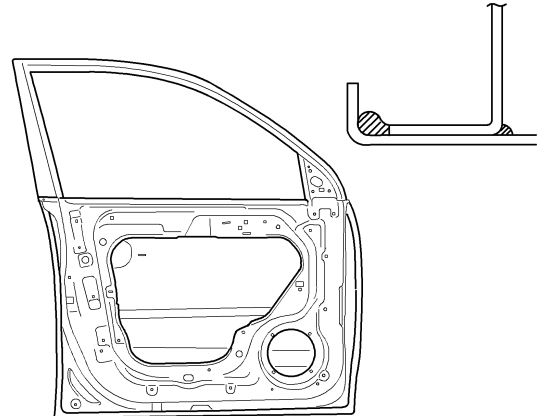
3. Dress rusty part with a sander and prepare surface to be hemmed.



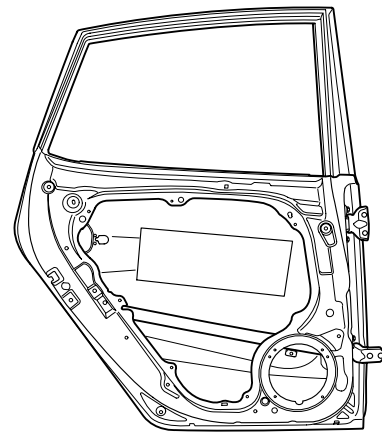
BFDBP6713

INSTALLATION

1. Apply adhesive or equivalent to outer panel hem.
2. Apply mastic sealer or equivalent to the door upper member and door reinforcement beam as shown in the figure.



PRO-1771



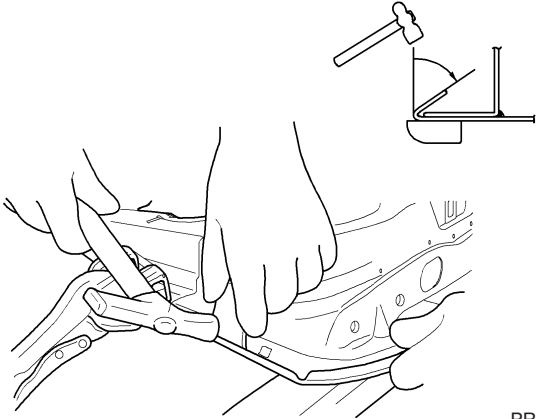
BFDBP6714

- Bend the flange hem with a hammer and dolly, then fasten tightly with a hemming tool.

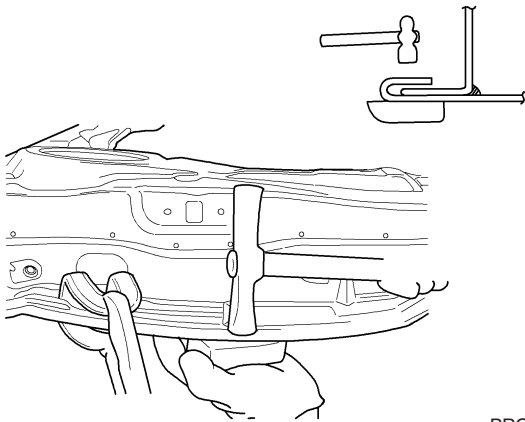
 **NOTE**

Hemming work should be done in three steps as illustration.

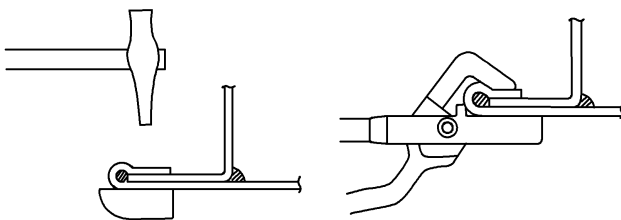
If a hemming tool cannot be used, hem with a hammer and dolly.



PRO-1870

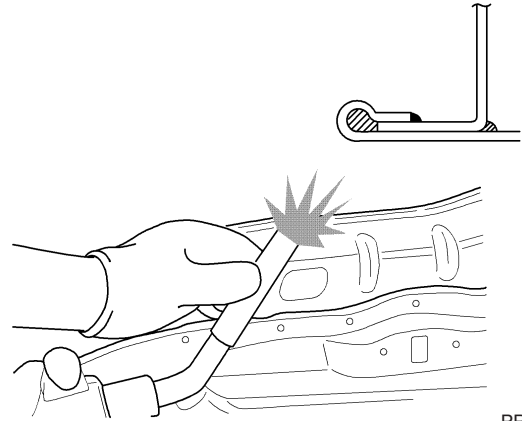


PRO-1880



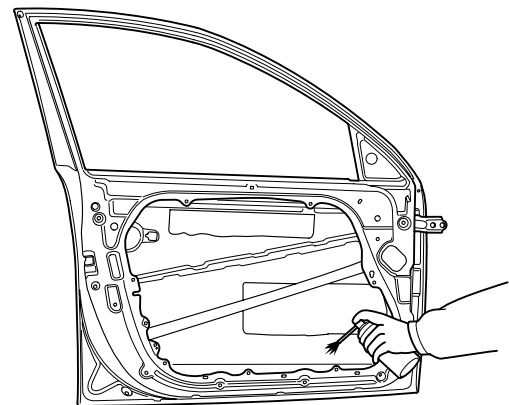
PRO-1900

- After completing the hemming work, make MIG spot welds at 50 mm intervals on the inside.
- Clean and prepare all welds, remove all residue.
- Apply the two-part epoxy primer to the interior of the door panel.



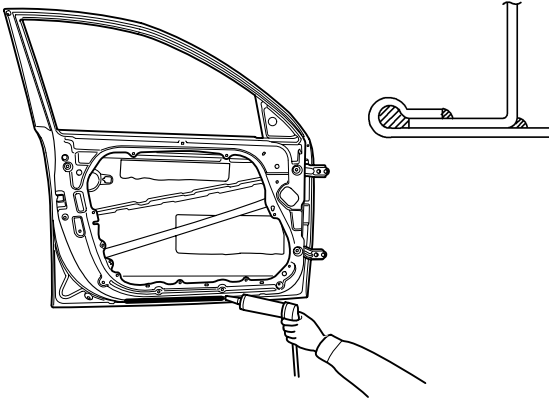
PRO-2000

- Apply an anti-corrosion agent to the welded parts and lower inside of the door panel (Refer to the CORROSION PROTECTION).
- Prepare exterior surfaces for priming, using wax and grease remover.
- Apply metal conditioner and water rinse.
- Apply conversion coating and water rinse.
- Apply the two-part epoxy primer.



BFDBP6715

12. Apply the correct seam sealer to whole panel edge.
13. Reprime over the seam sealer to complete the repair.

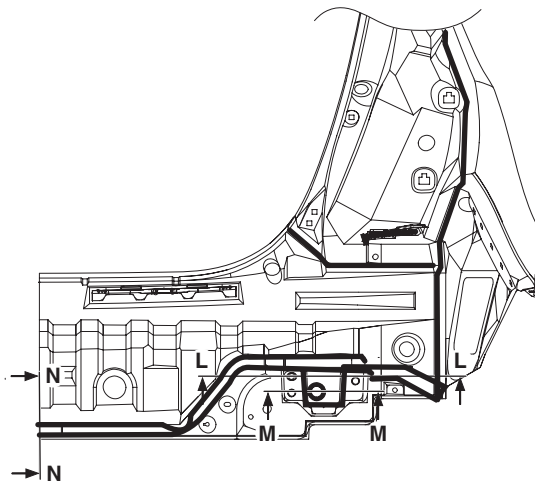
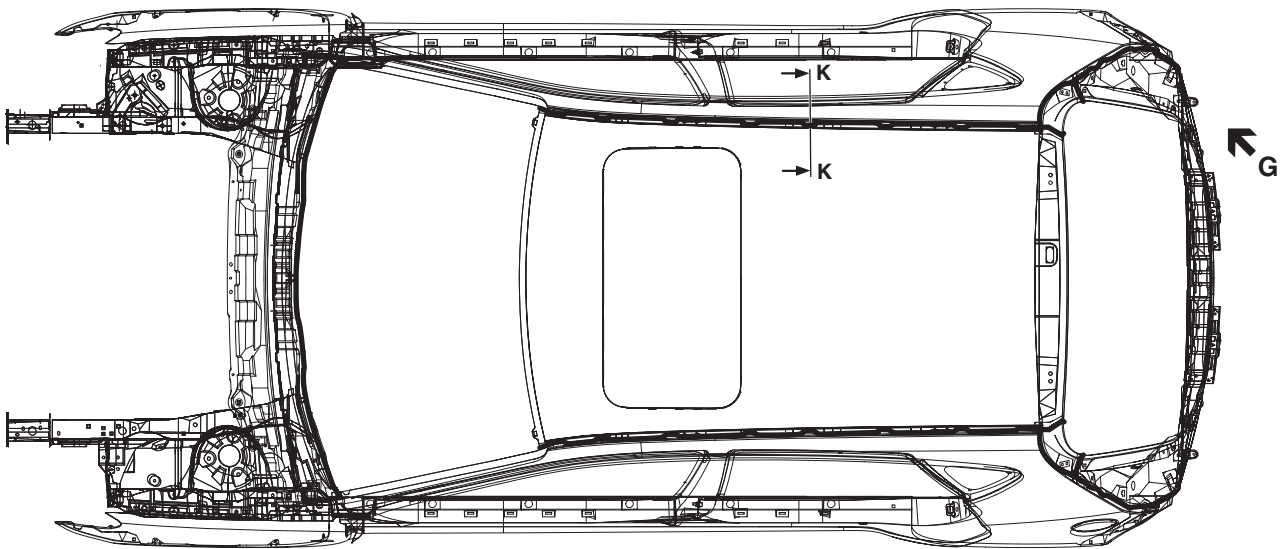
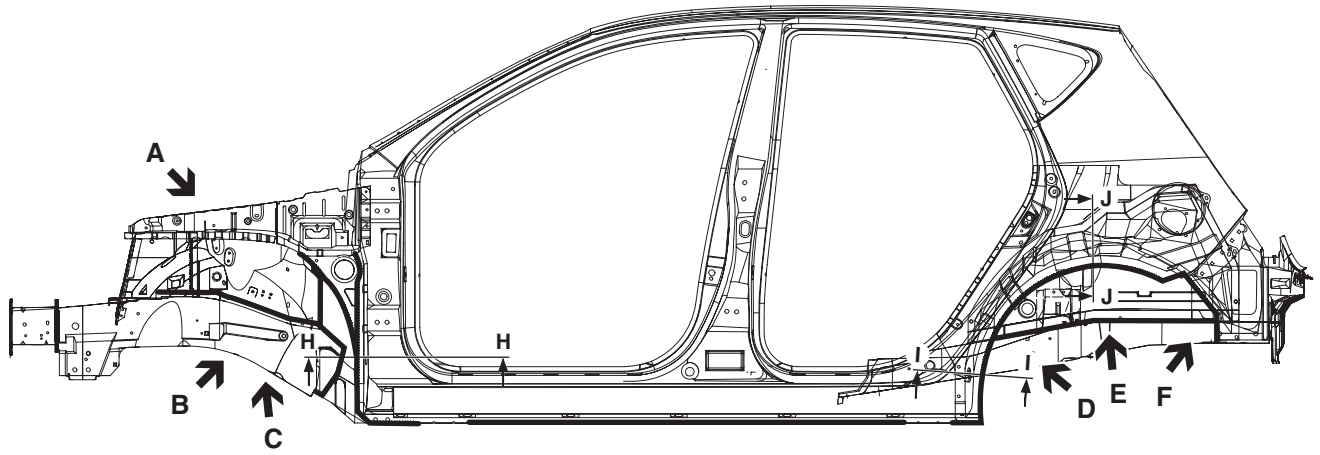


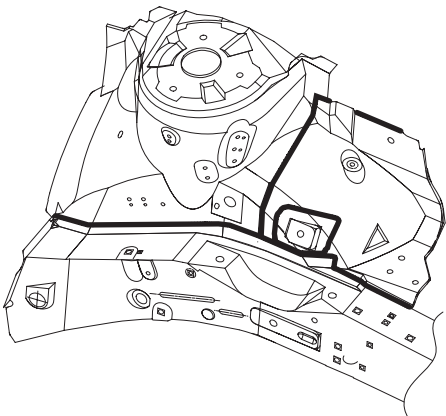
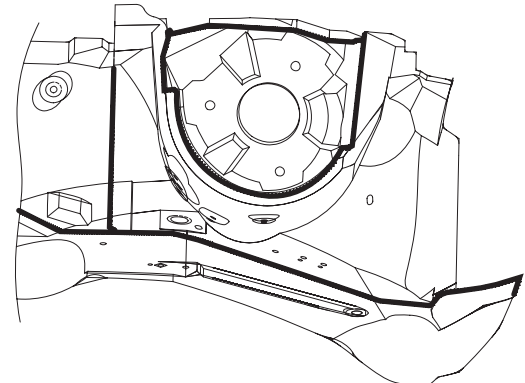
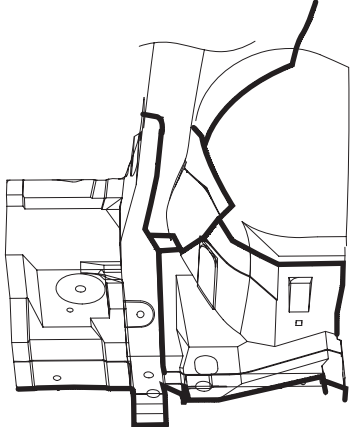
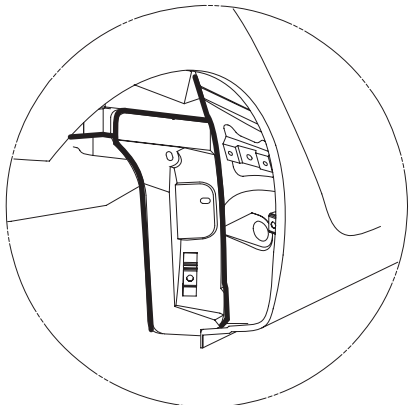
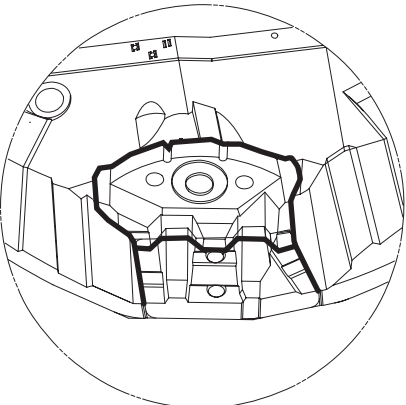
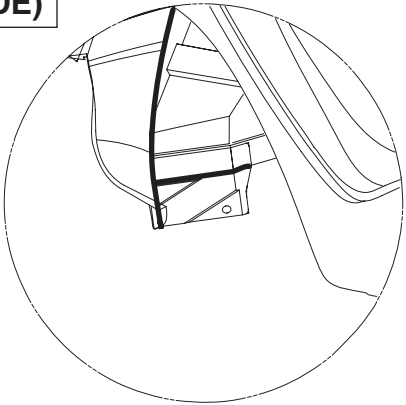
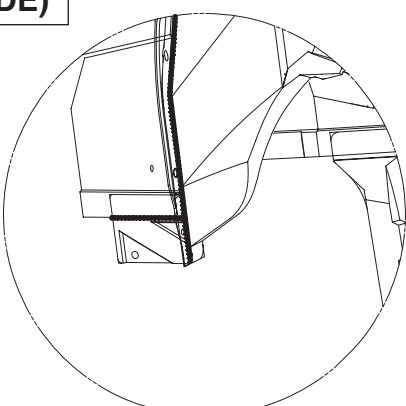
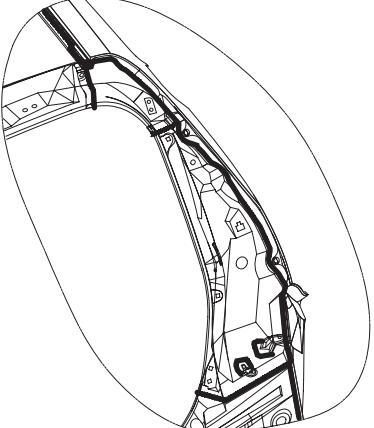
BFDBP6716

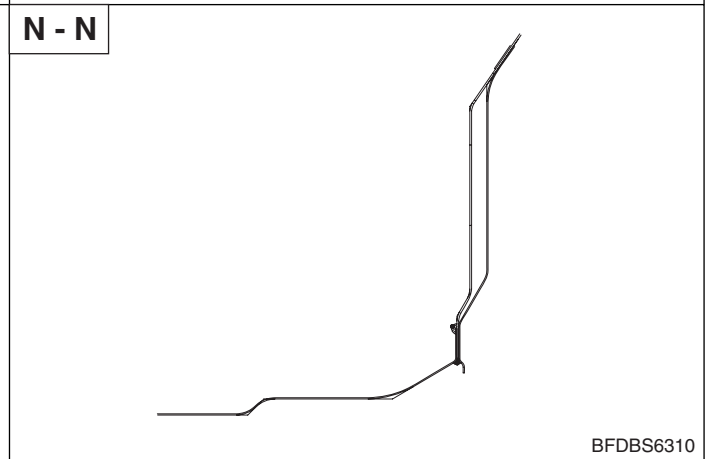
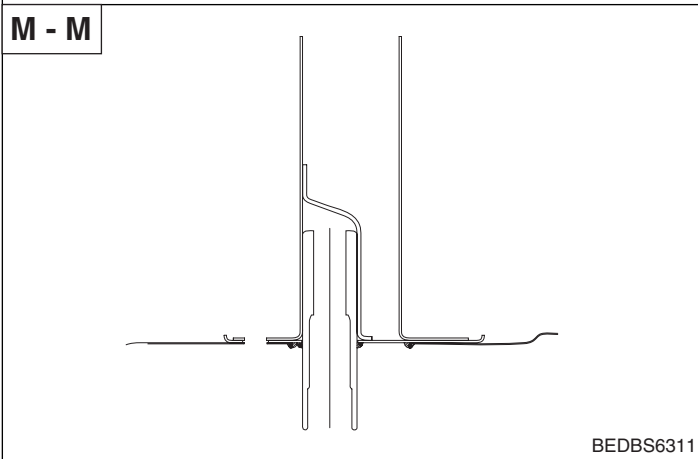
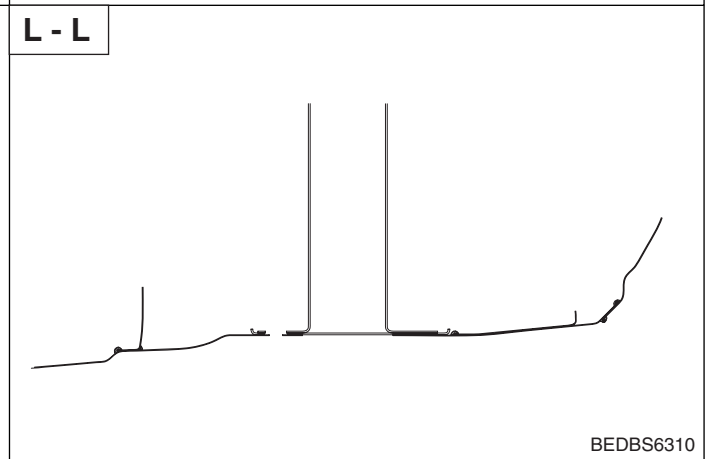
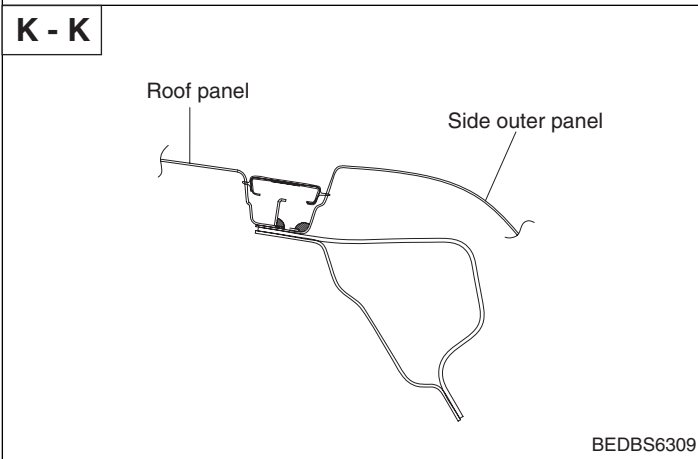
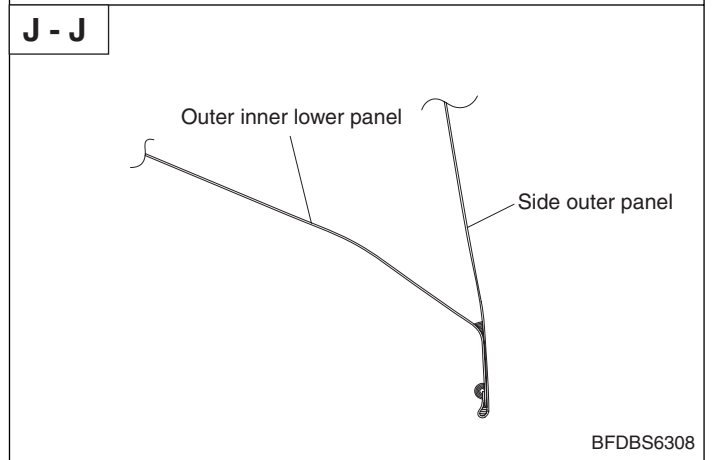
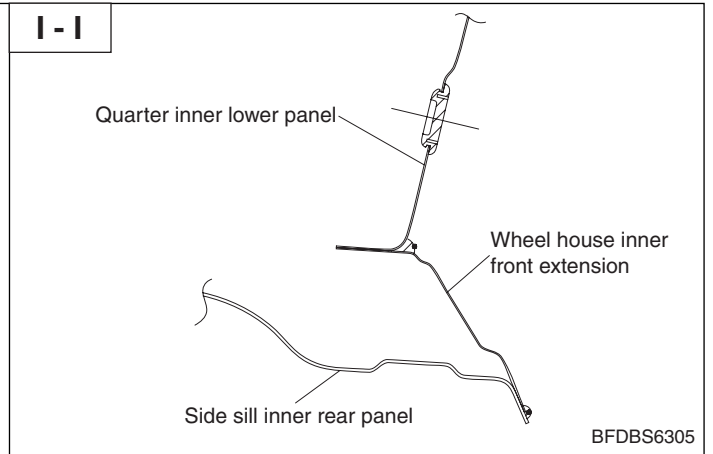
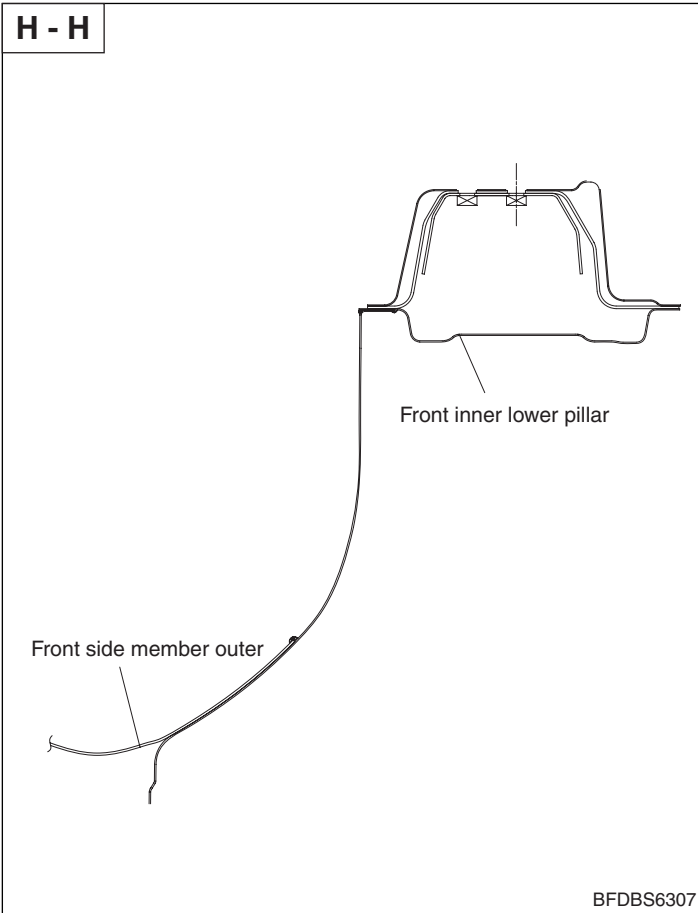
Body Sealing Locations

EXTERIOR	BS - 2
INTERIOR	BS - 5
UNDER BODY	BS - 8
HOOD	BS - 9
DOOR	BS - 10
TAIL GATE	BS - 13

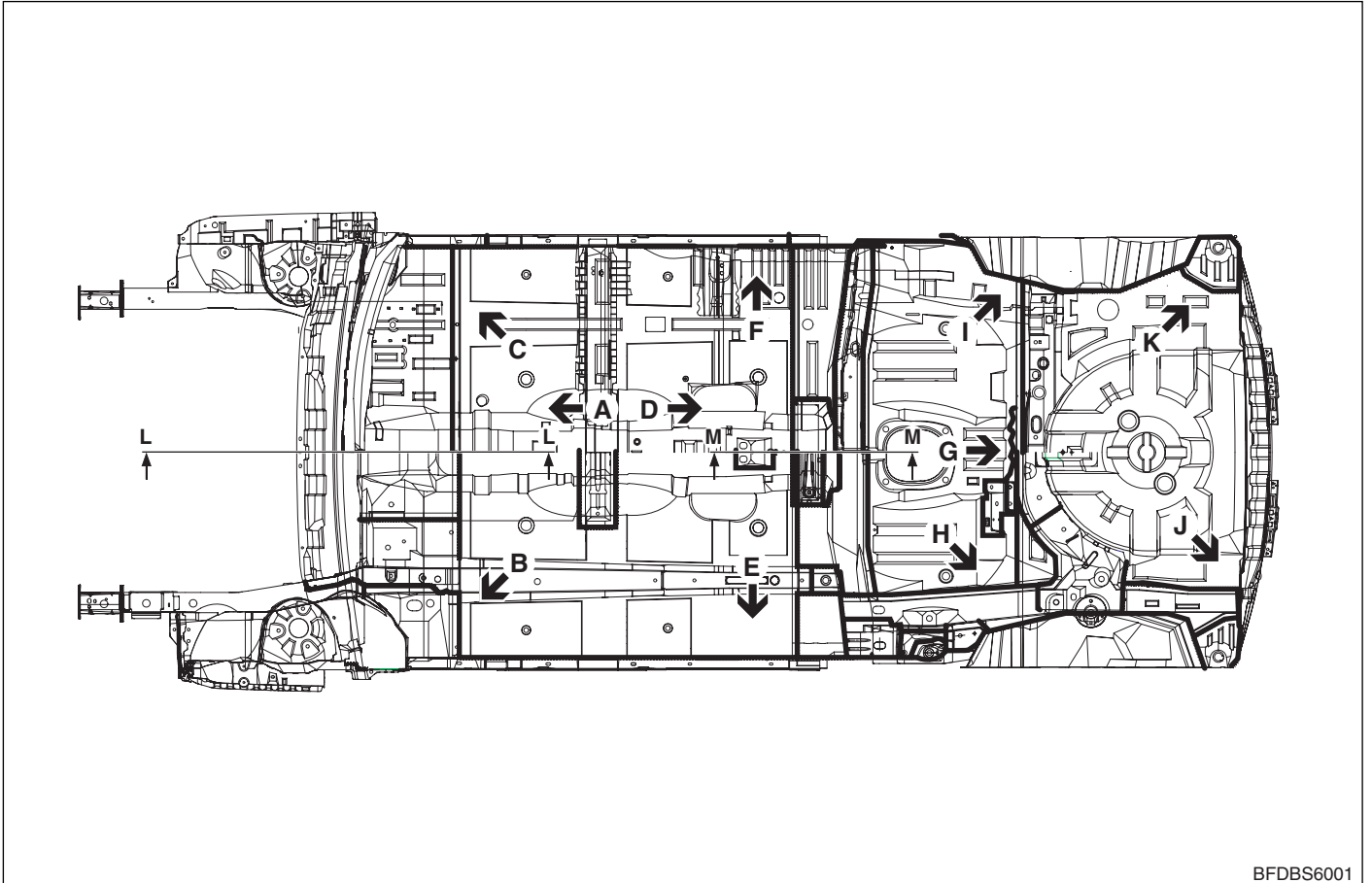
EXTERIOR



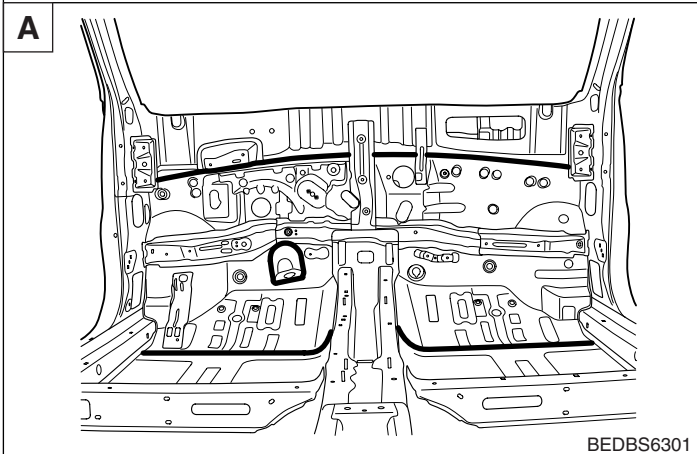
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<p>C</p>  <p>BFDBS6205</p>	<p>D</p>  <p>BFDBS6204</p>
<p>E</p>  <p>BFDBS6201</p>	<p>F (RH SIDE)</p>  <p>BFDBS6202</p>
<p>F (LH SIDE)</p>  <p>BFDBS6203</p>	<p>G</p>  <p>BFDBS6402</p>



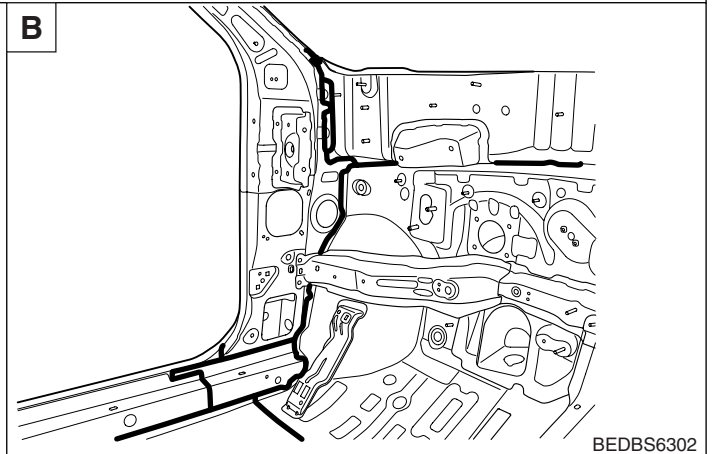
INTERIOR



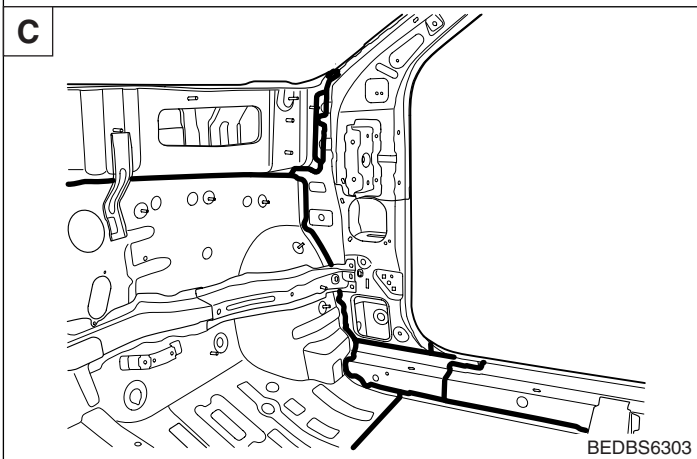
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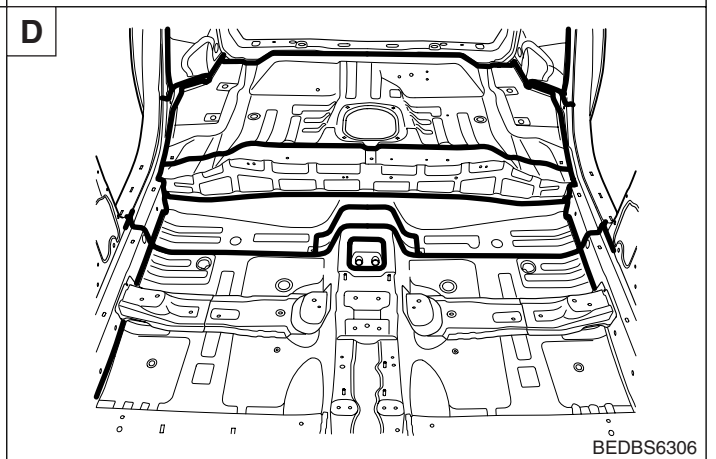
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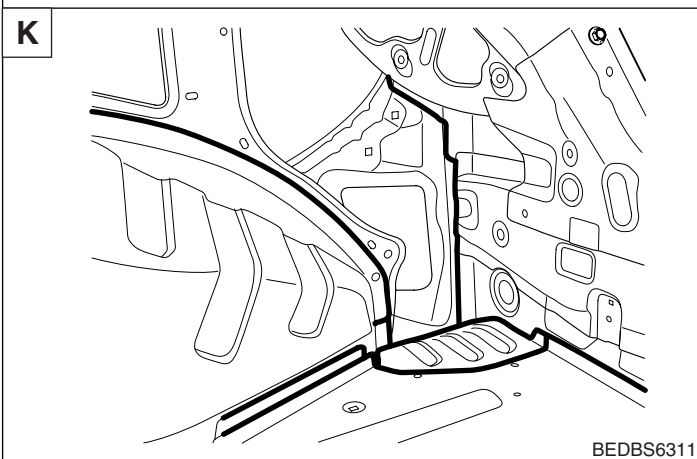
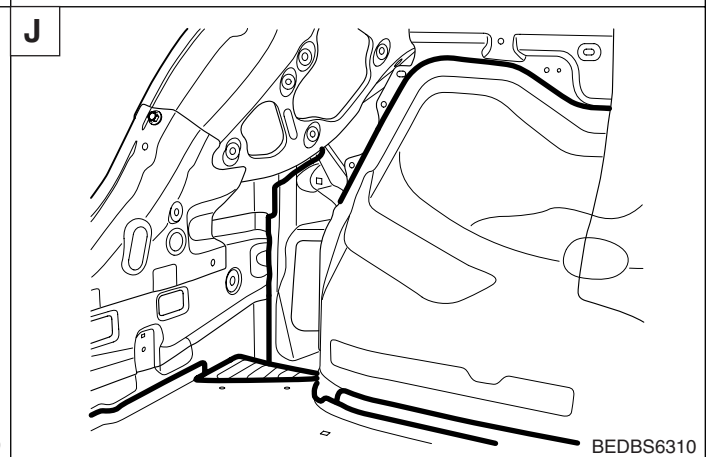
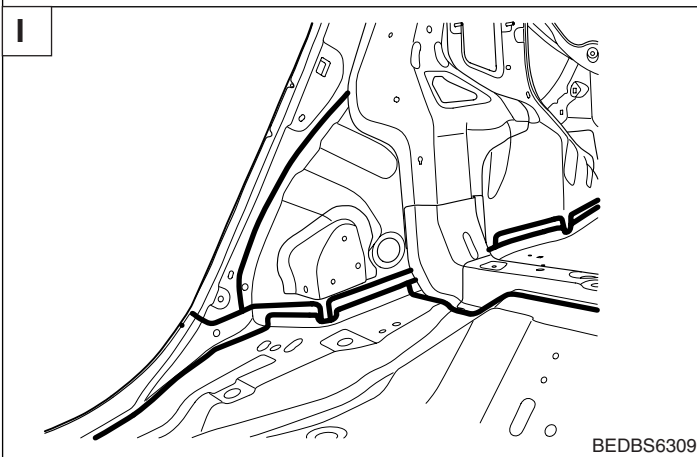
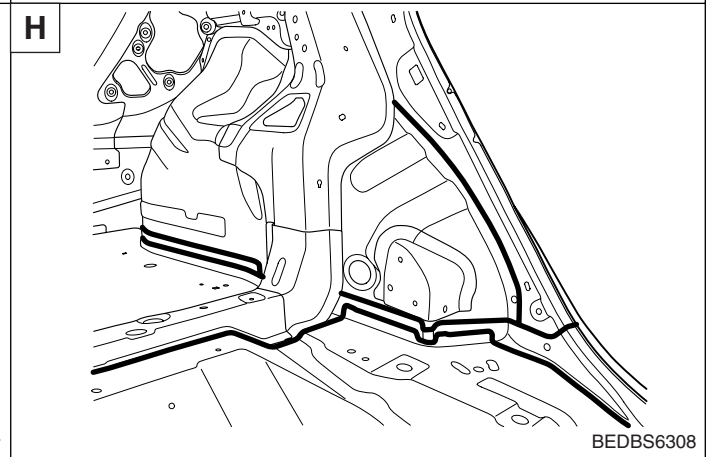
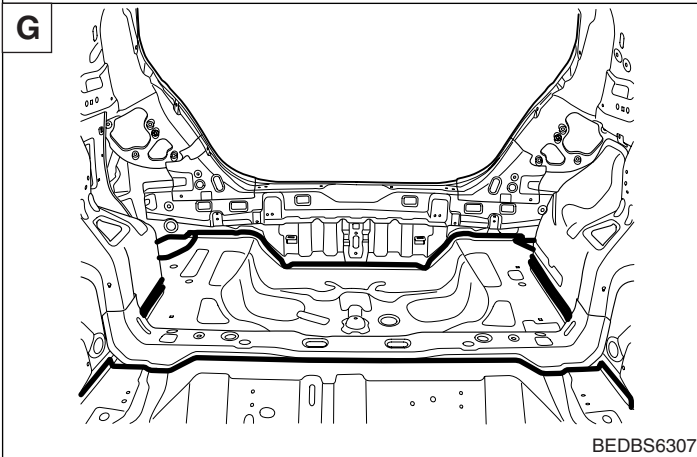
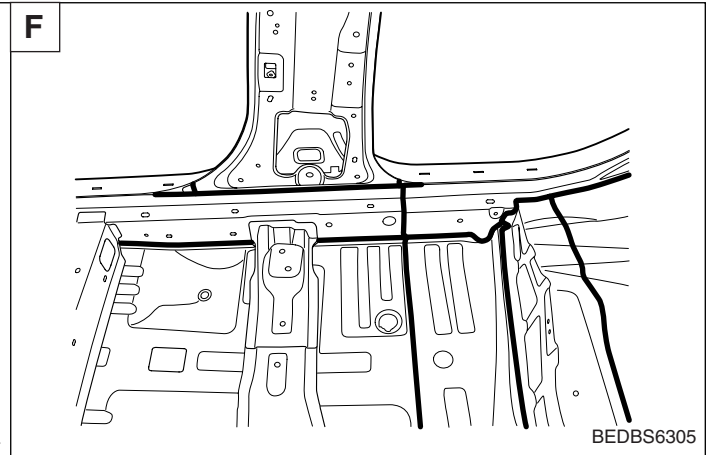
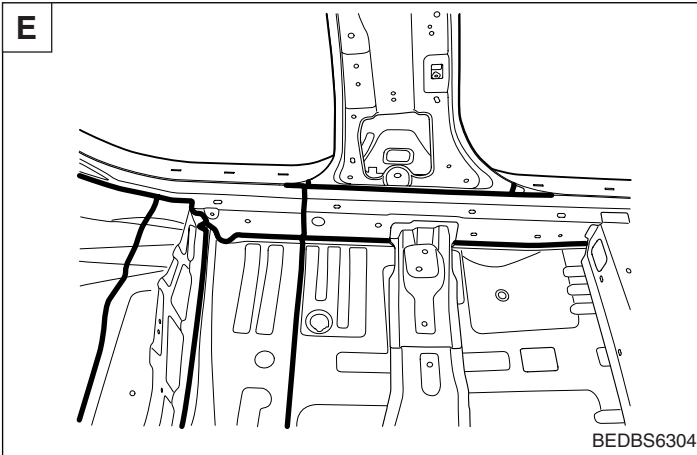
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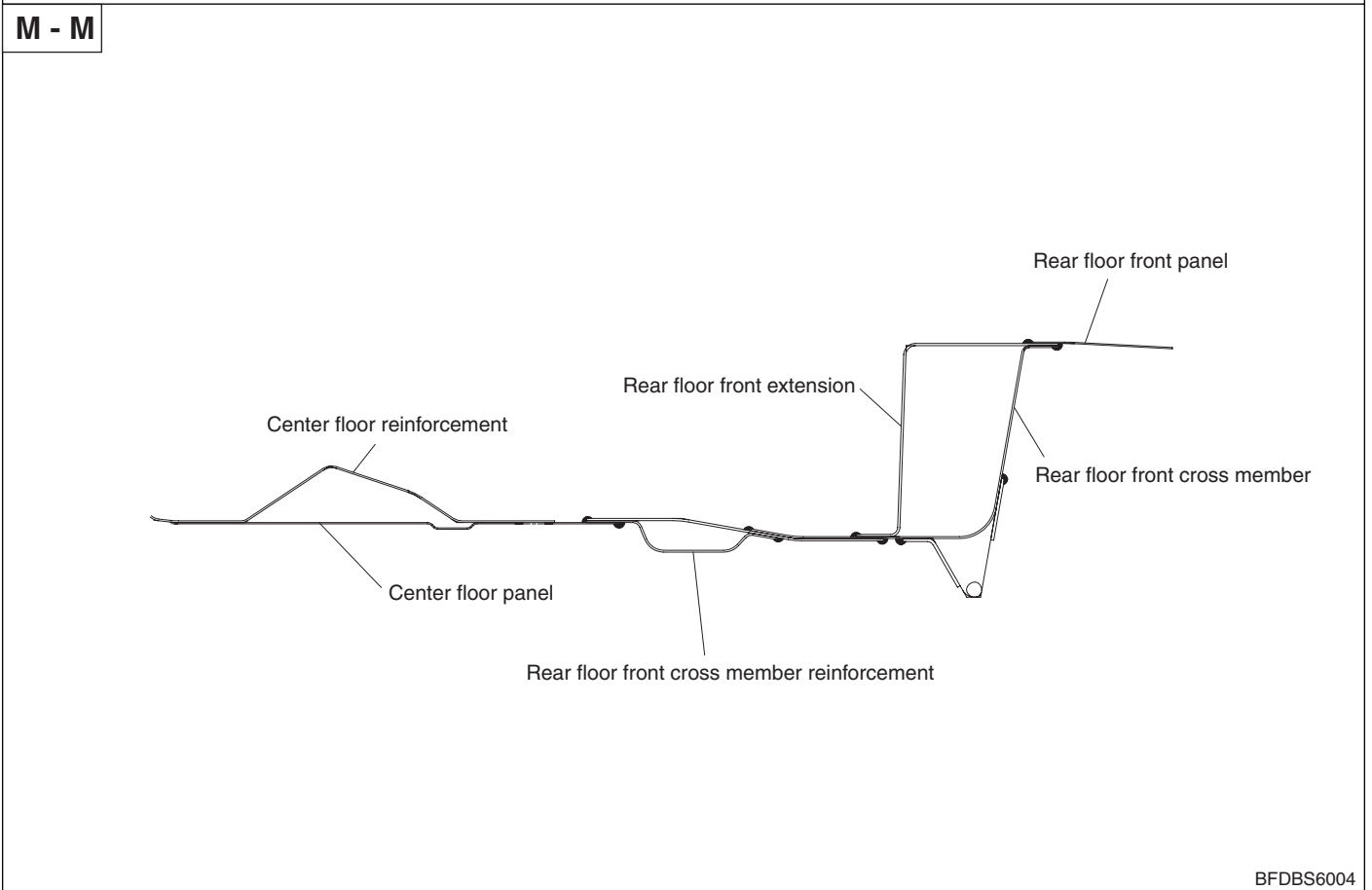
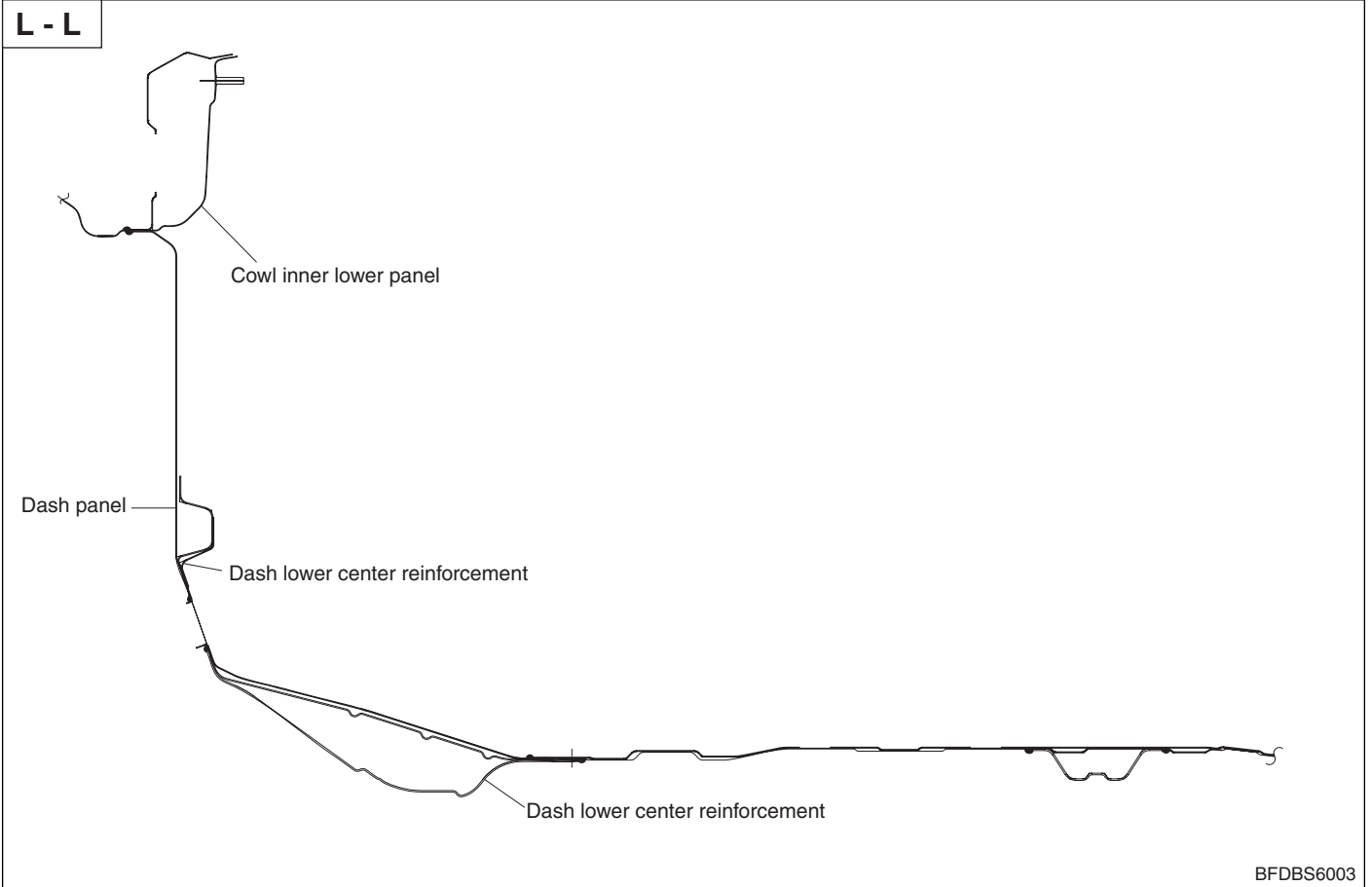


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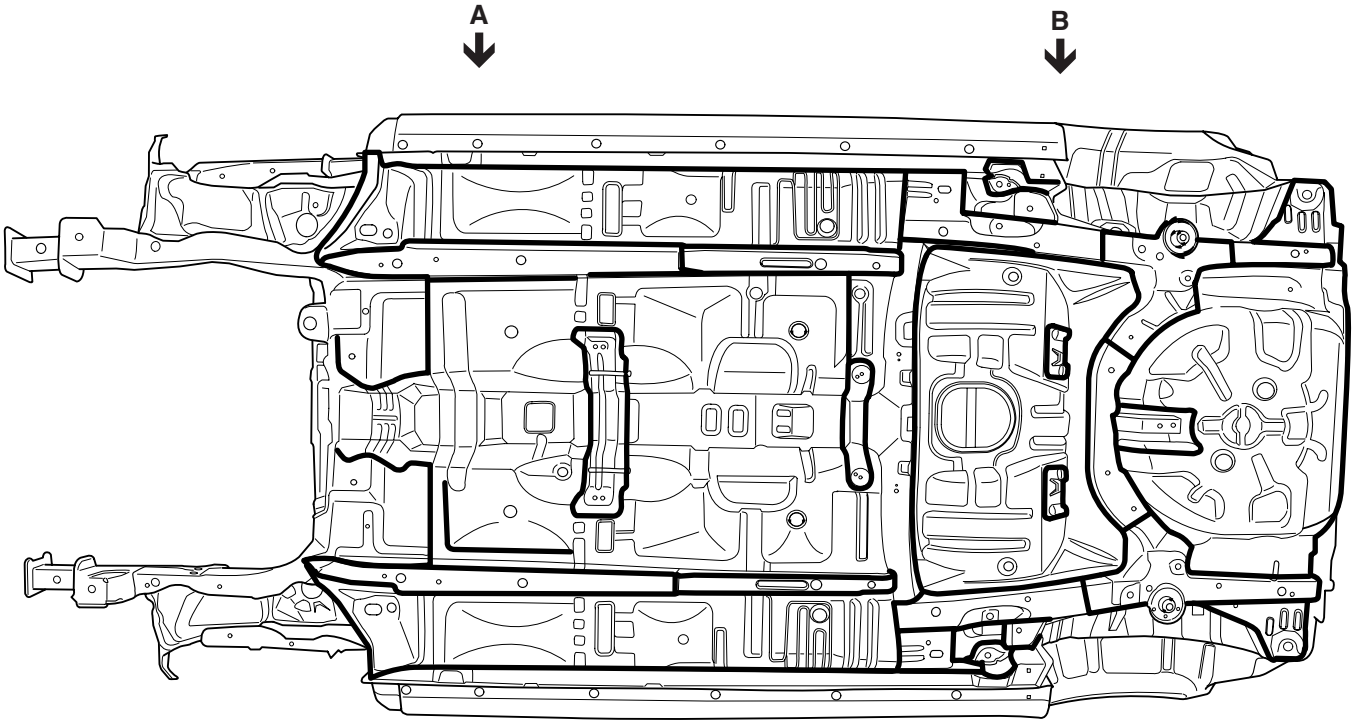


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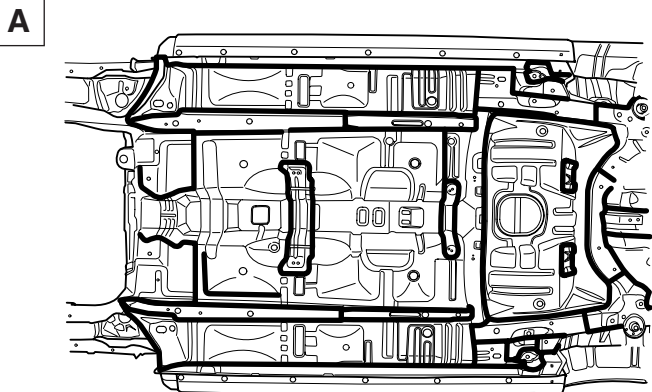




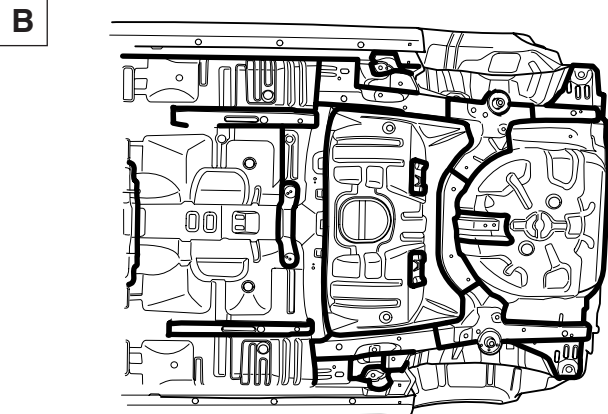
UNDER BODY



BFDBS6002

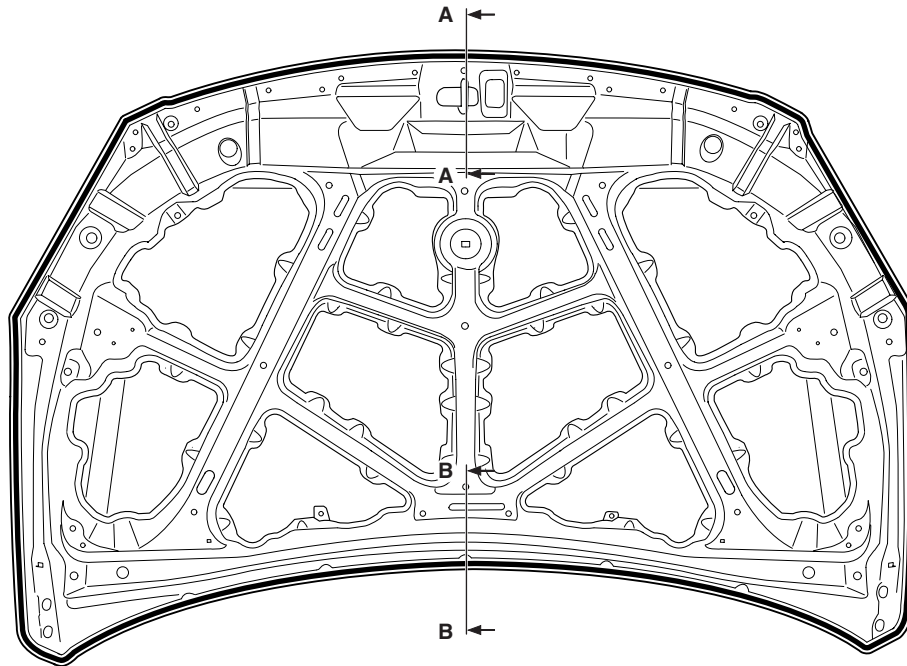


BFDBS6501



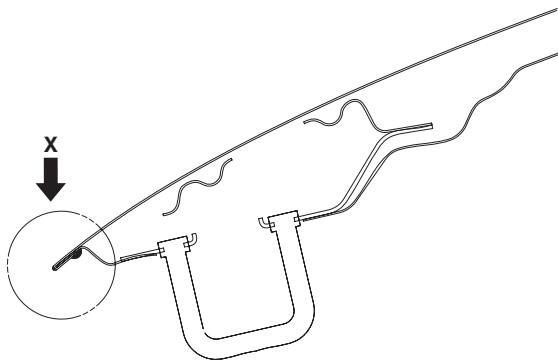
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HOOD



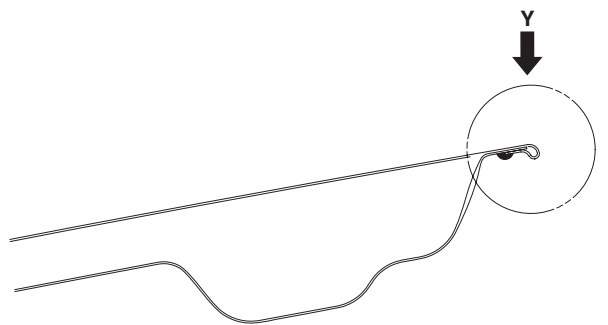
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A - A



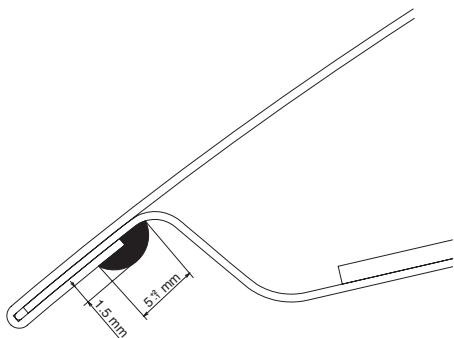
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B - B



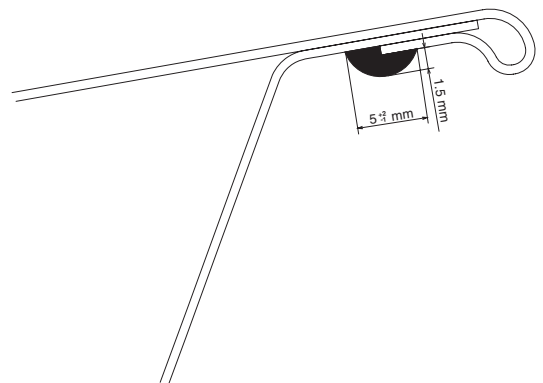
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X



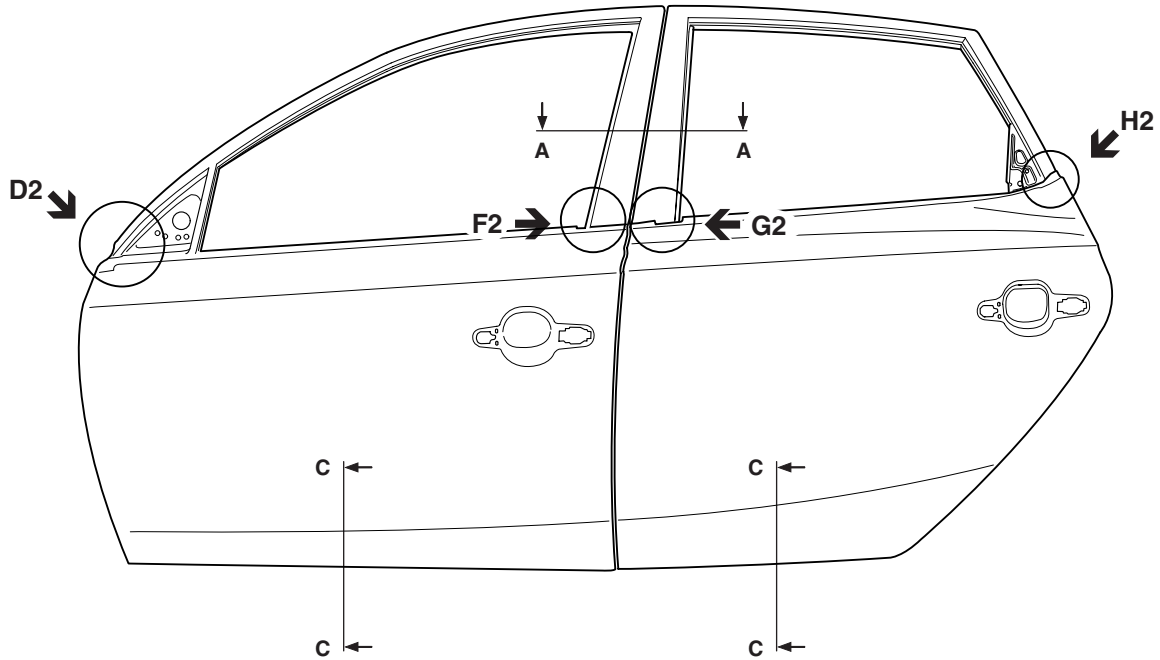
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Y

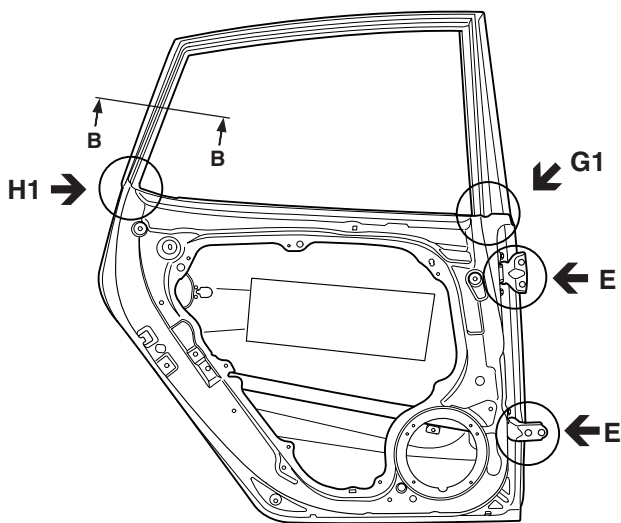


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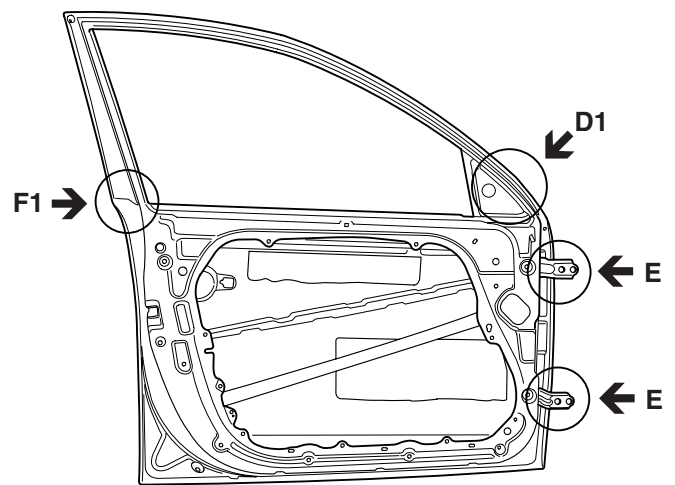
DOOR



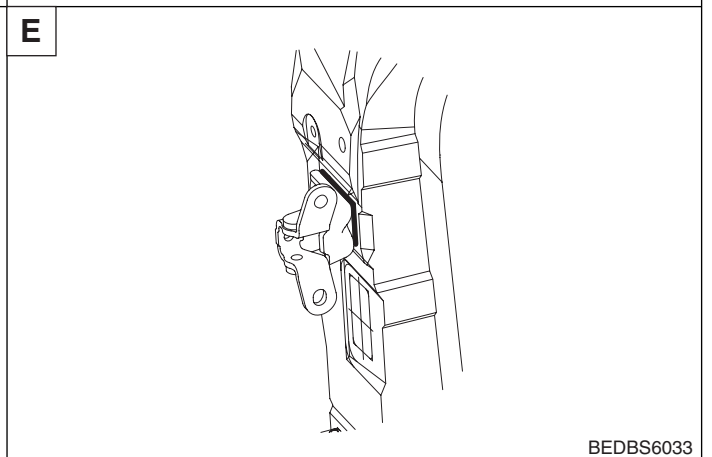
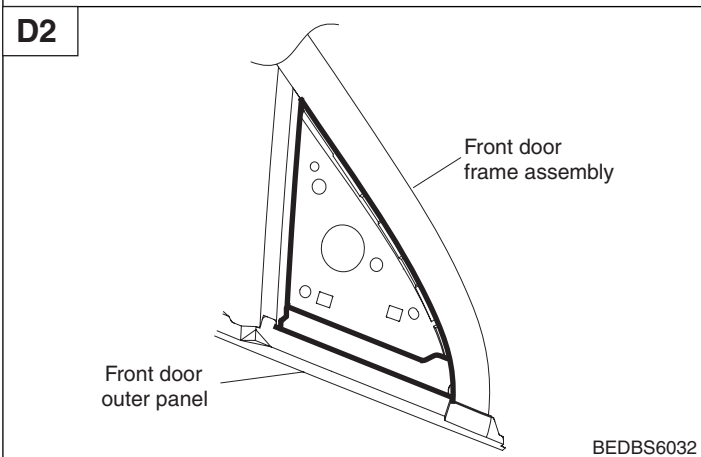
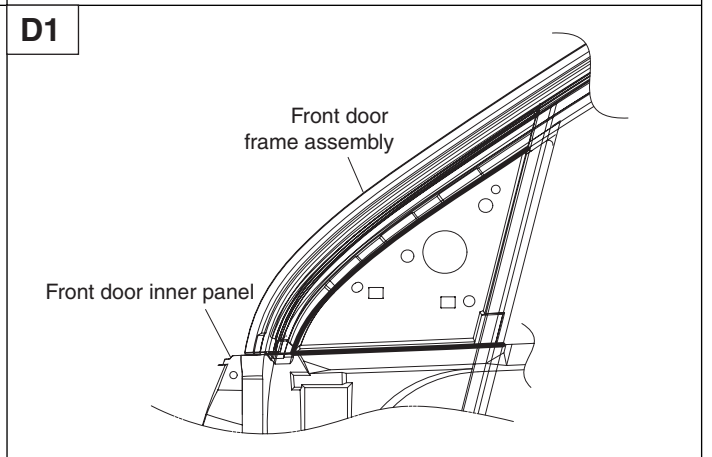
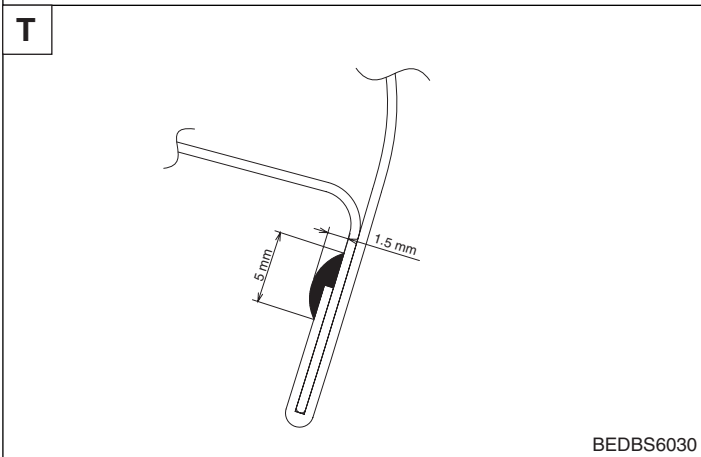
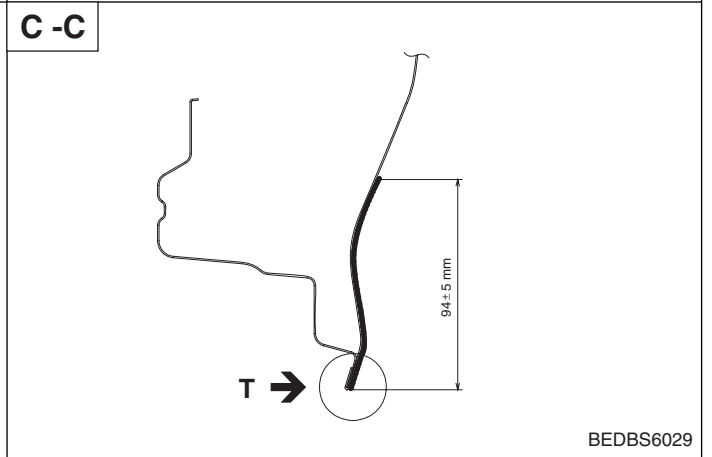
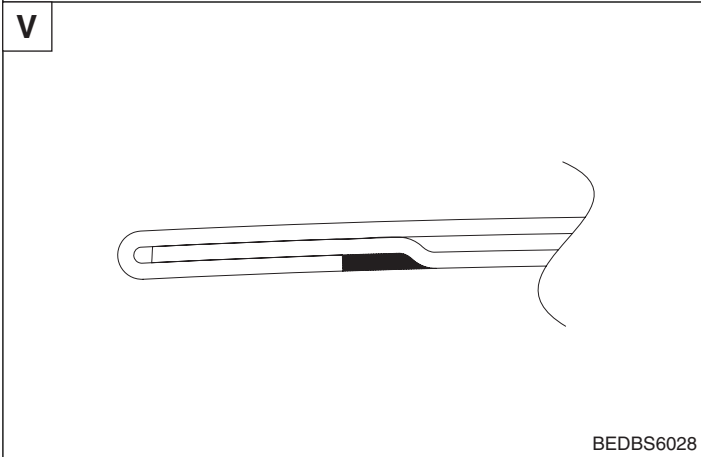
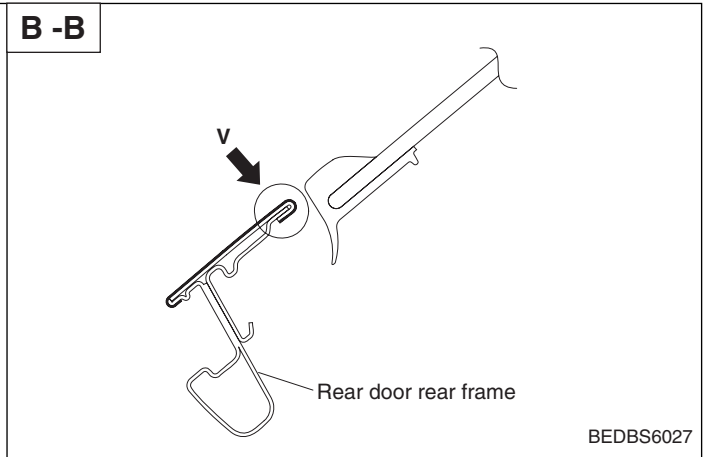
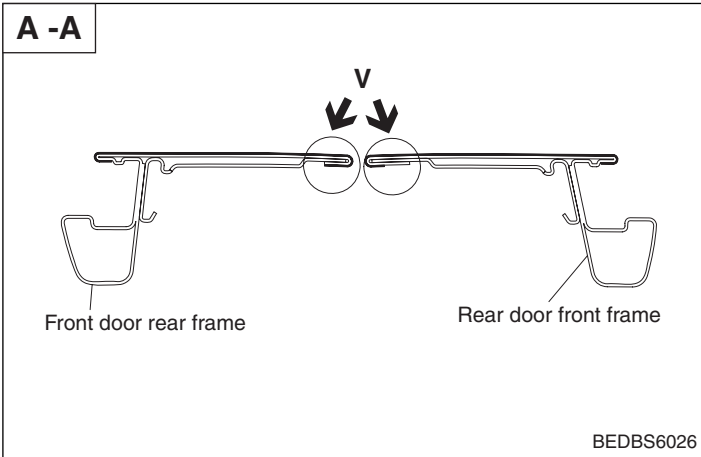
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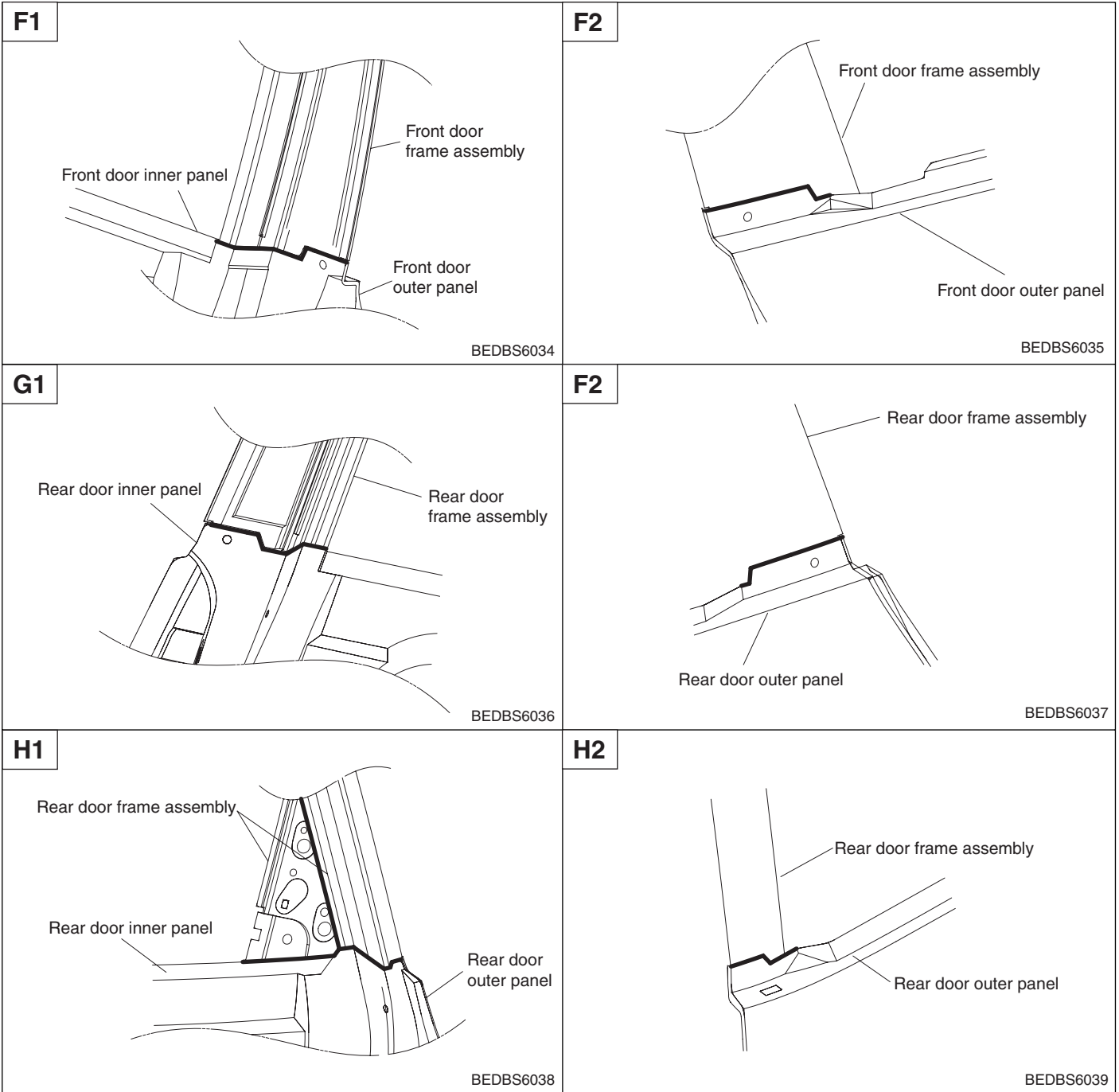


BFDBS6028

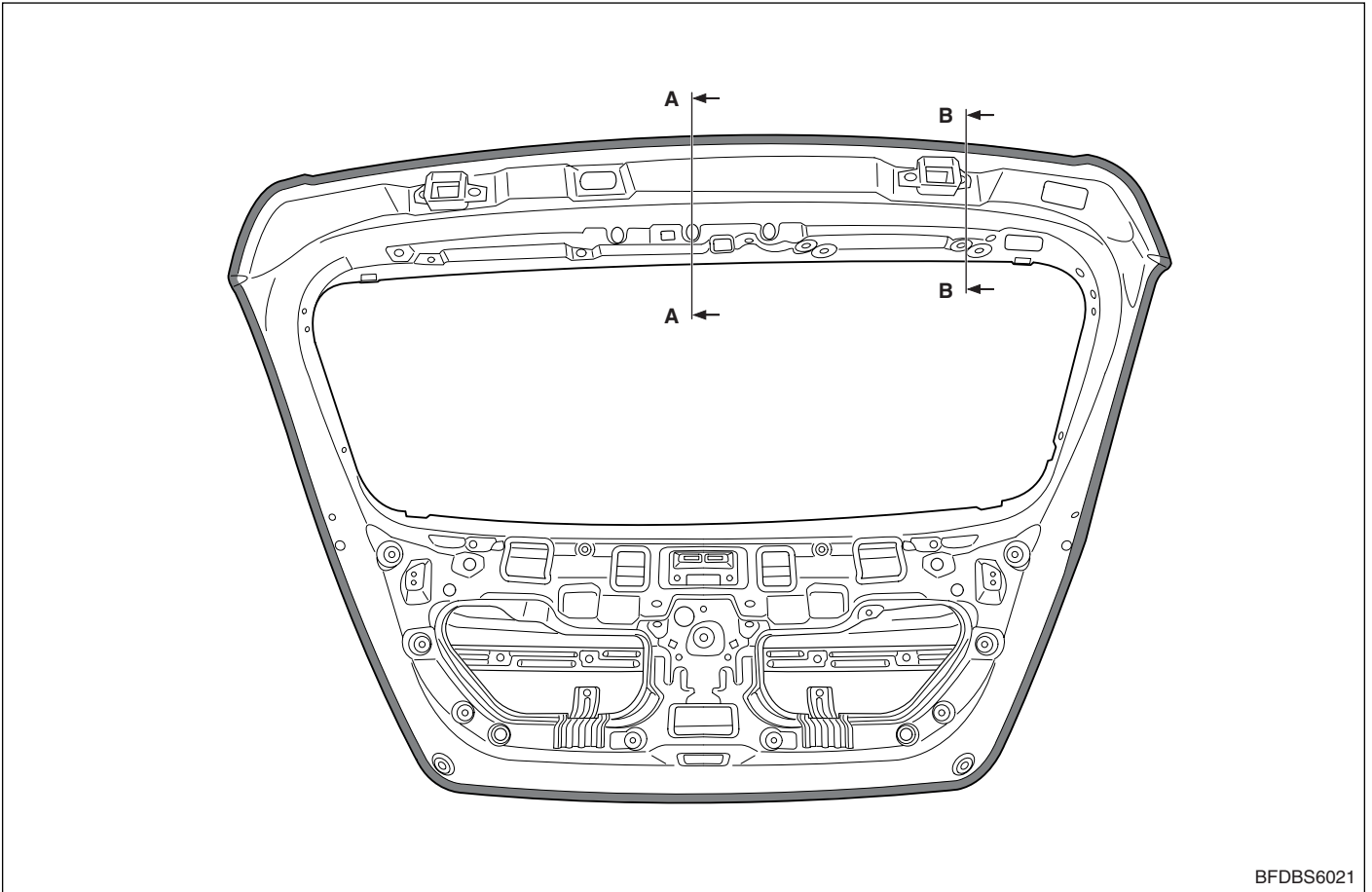


BFDBS6029



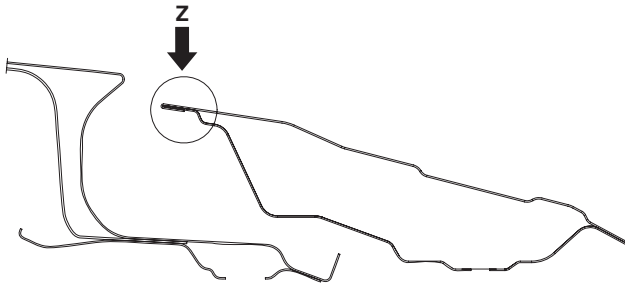


TAIL GATE



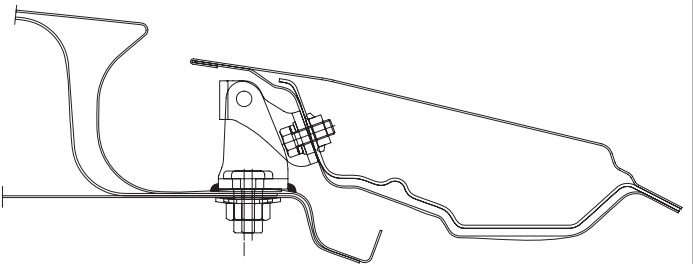
BFDBS6021

A - A

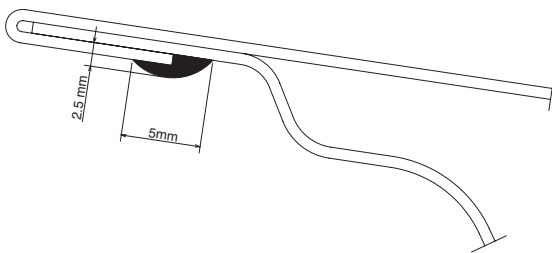


BEDBS6022

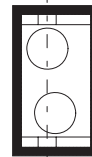
B - B



Z



BEDBS6023



BEDBS6024

Corrosion protection

ZINC-PHOSPHATE COAT & CATIONIC ELECTRODEPOSITION PRIMER CP - 2

ATTACHMENT OF ANTIVIBRATION PADS CP - 3

ANTIVIBRATION PADS-LOCATION & SECTION CP - 4

UNDER BODY & SIDE BODY COAT CP - 7

CAVITY WAX INJECTION CP - 10

SIDE BODY CP - 10

HOOD CP - 11

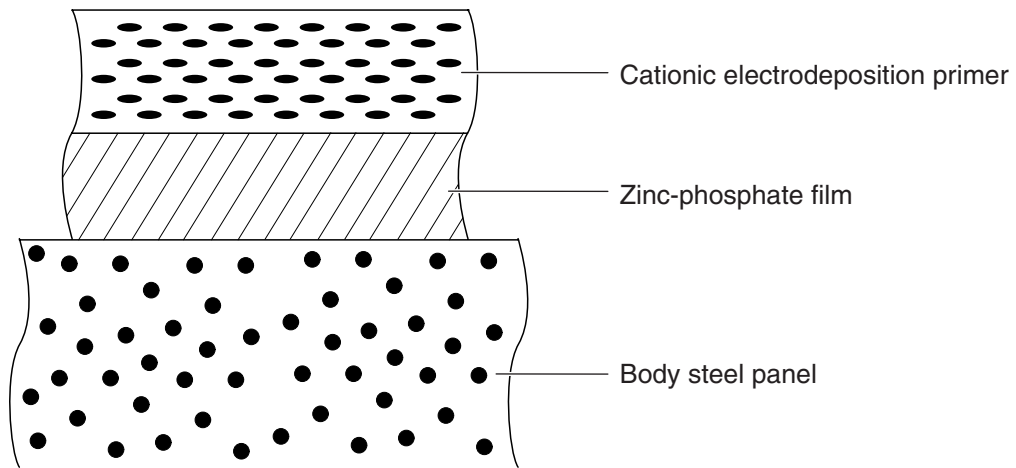
TAIL GATE CP - 12

FRONT DOOR & REAR DOOR CP - 13

UNDER BODY ANTI-CORROSION AGENT CP - 14

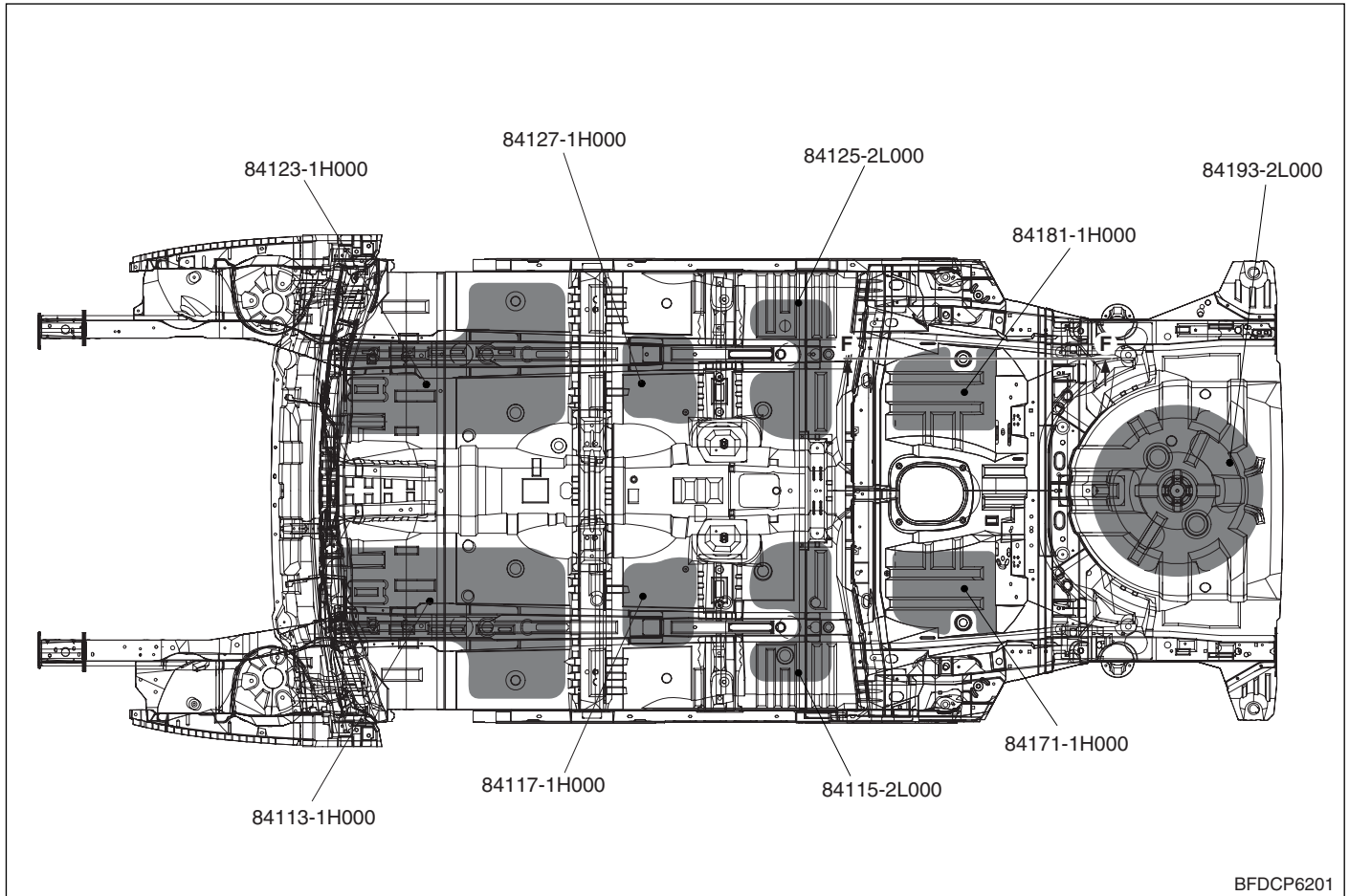
ZINC-PHOSPHATE COAT & CATIONIC ELECTRODEPOSITION PRIMER

In order to improve the adhesion of the paint coat on the steel panel, and also to improve the corrosion resistance, the entire body is coated with a film of Zinc-phosphate and a cationic electrodeposition primer.



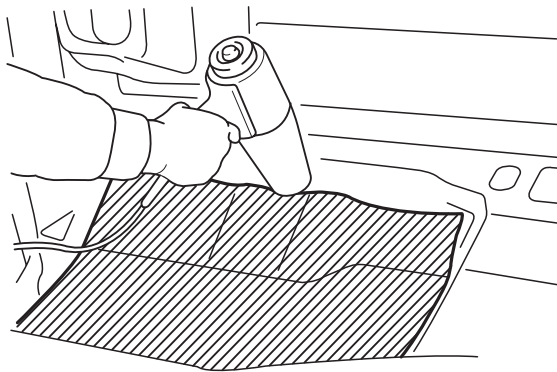
ATTACHMENT OF ANTIVIBRATION PADS

Antivibration pads are attached to the upper surface of the floor and at the interior side of the dash panel in order to absorb vibrations and shut out exhaust gas heat. If these antivibration pads are peeled off in the course of replacement or repair of a welded panel, cut and attach replacement material (in the shape shown in the figure).



BFDCP6201

1. Heat the "antivibration pad" with a blow drier to soften it.

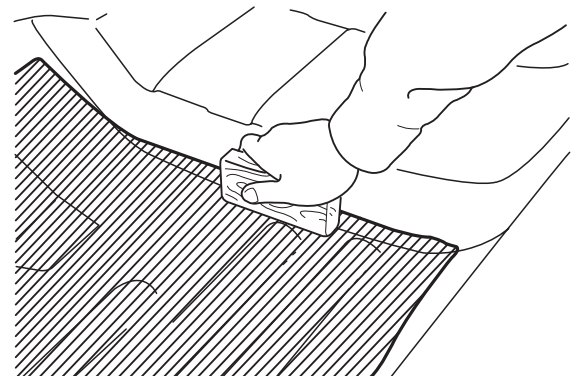


BMCCP6041

2. Align the antivibration pad layer in the position where it is to be installed, and then press it down with a roller or a block of wood so that it adheres well.

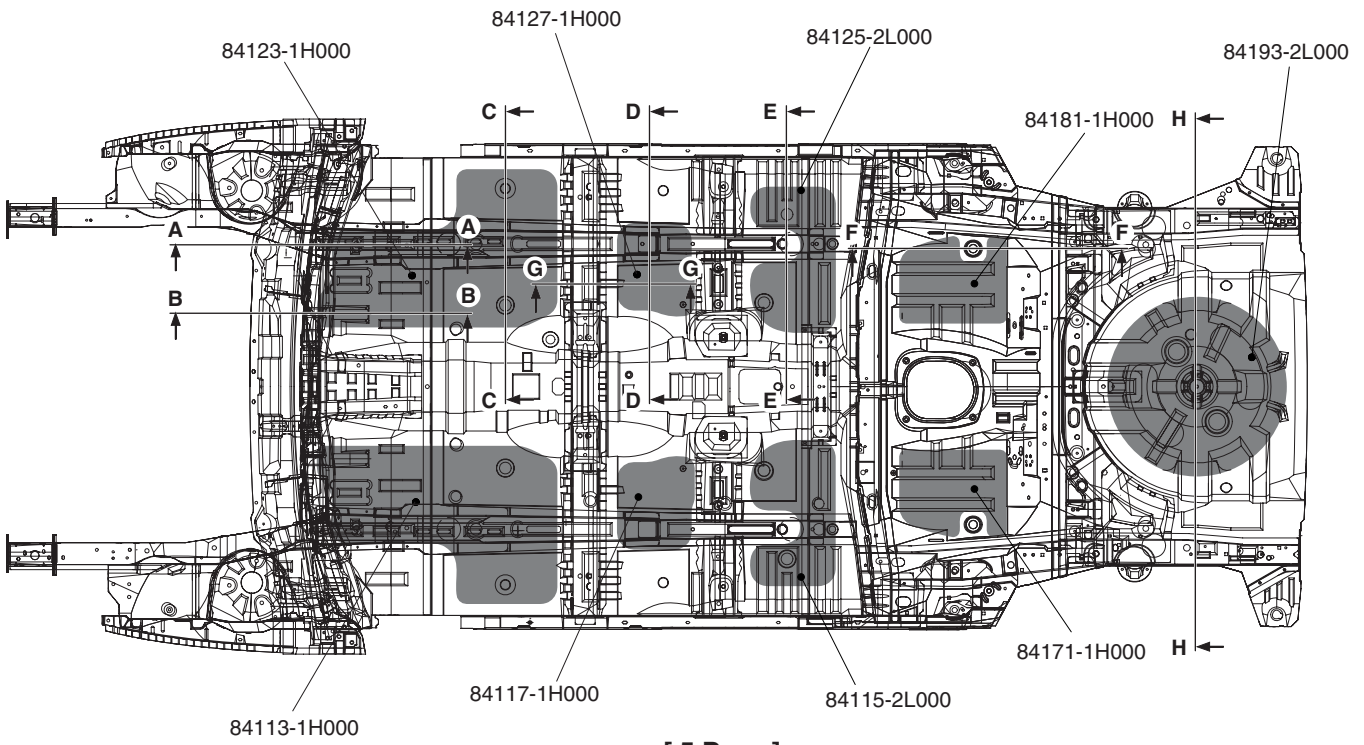
 **NOTE**

An infrared lamp can also be used to heat both the antivibration pad layer and the body panels (be sure to wear gloves).

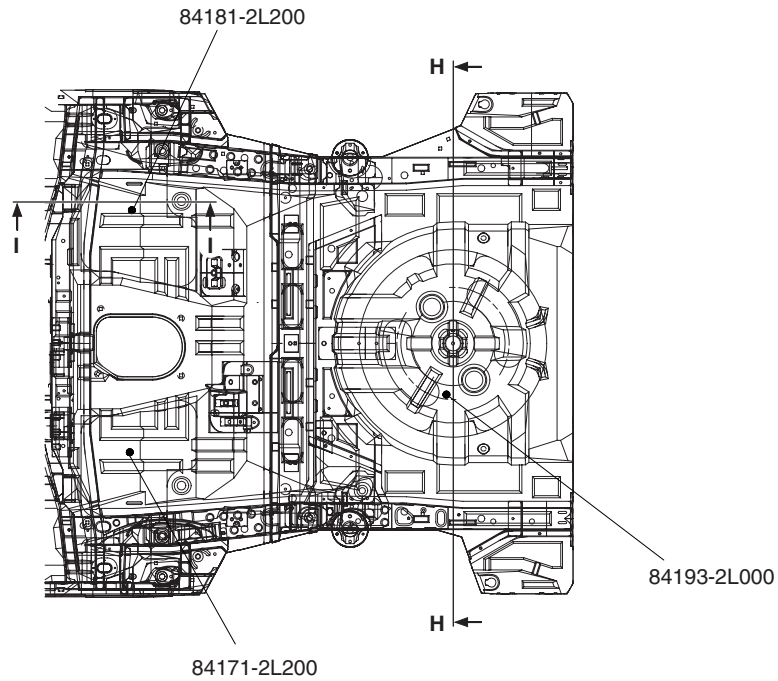


BMCCP6042

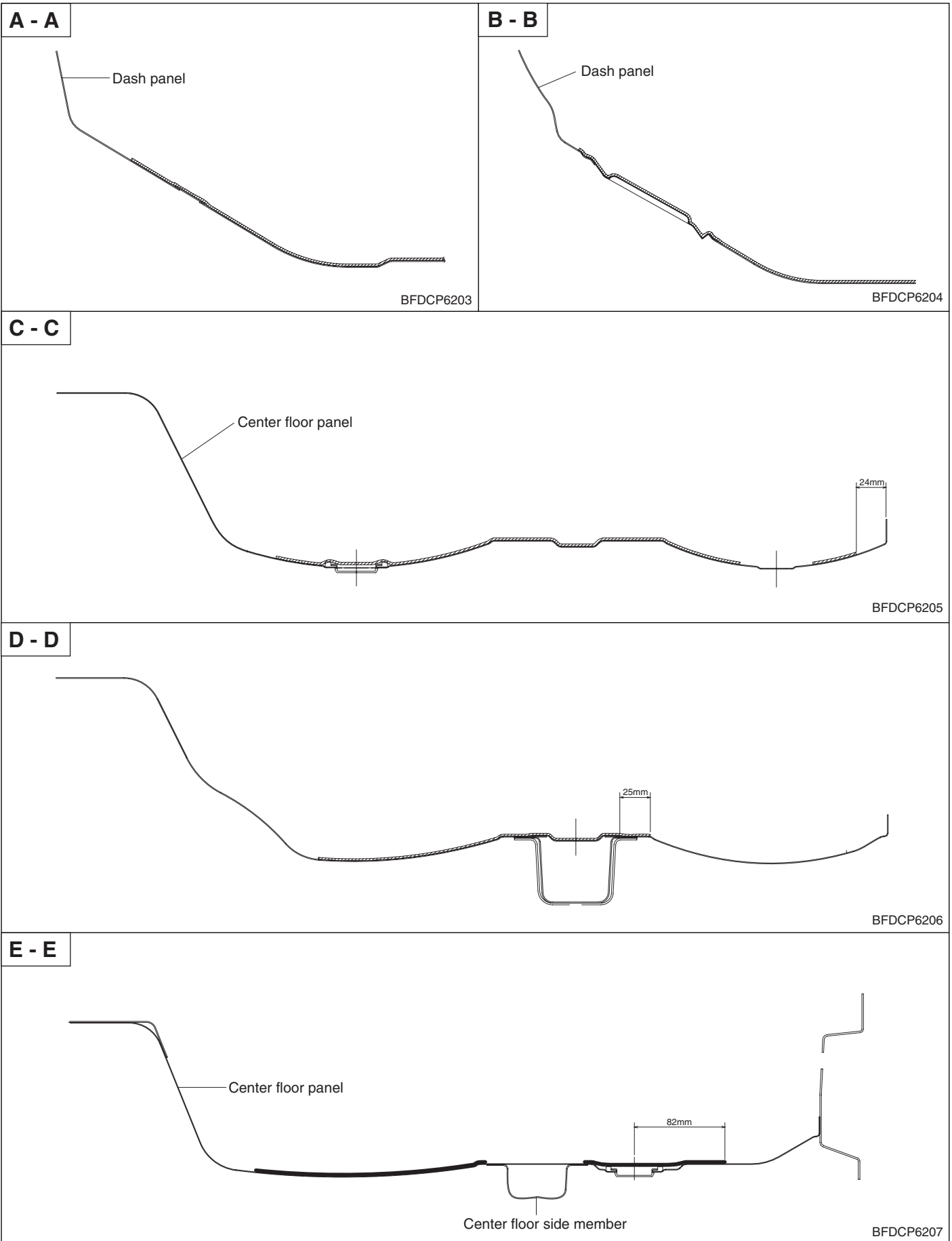
ANTIVIBRATION PADS-LOCATION & SECTION

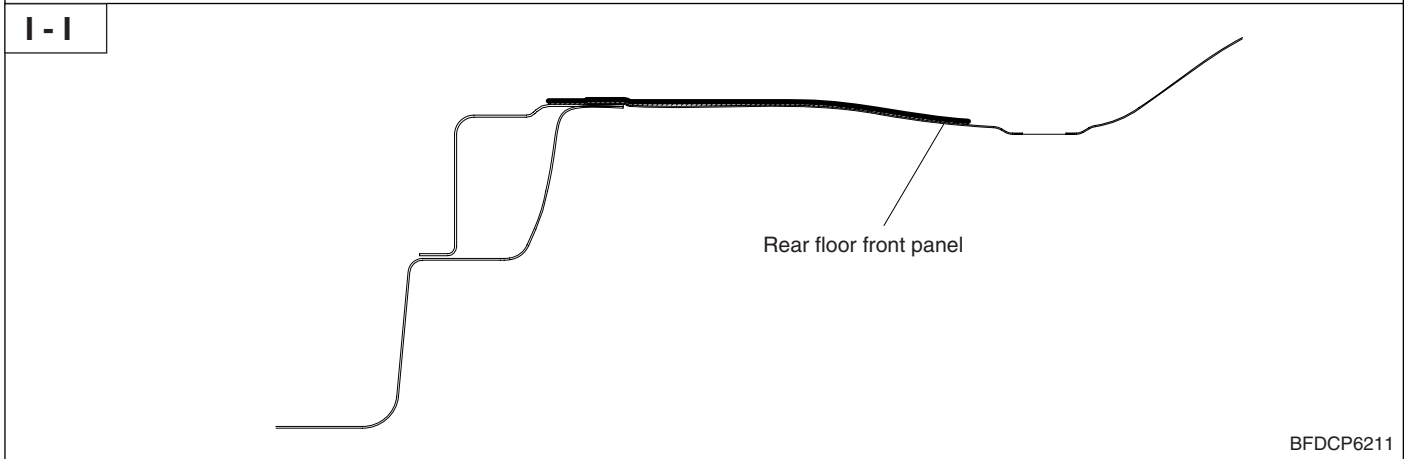
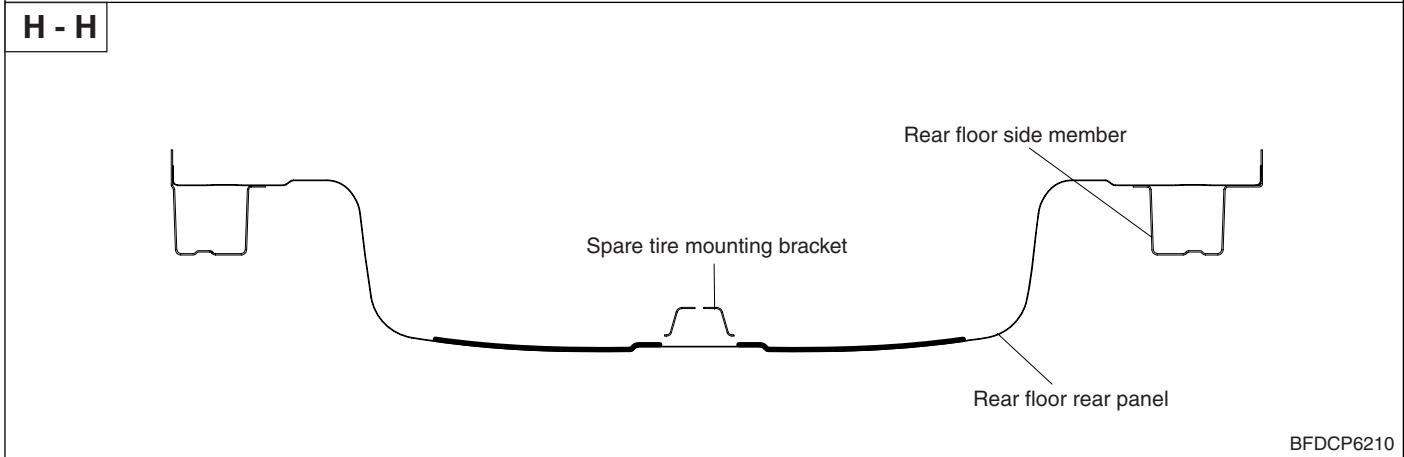
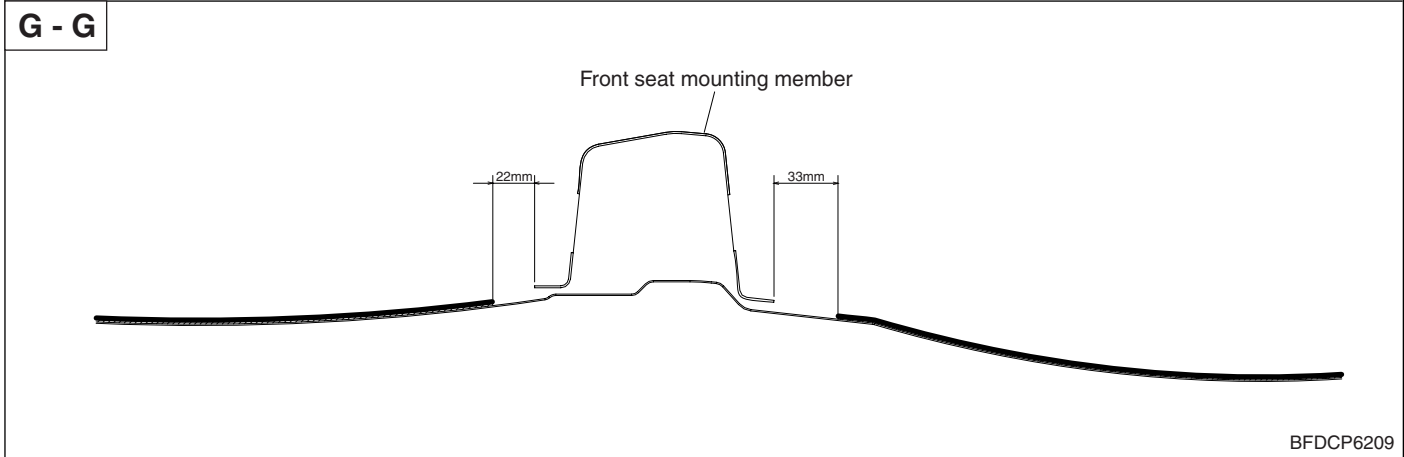
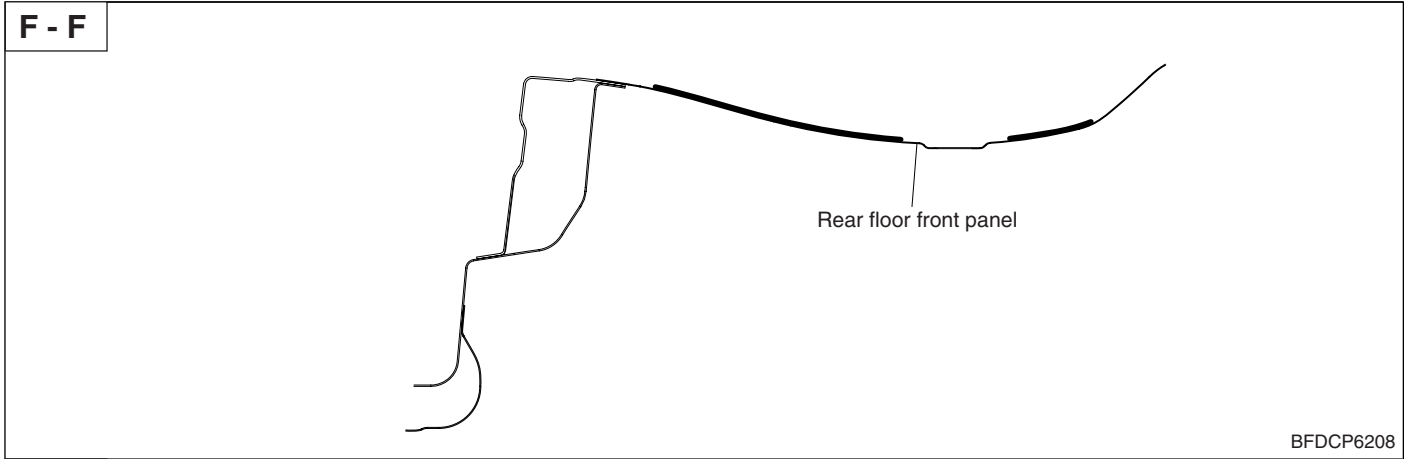


[5 Door]



[Wagon]

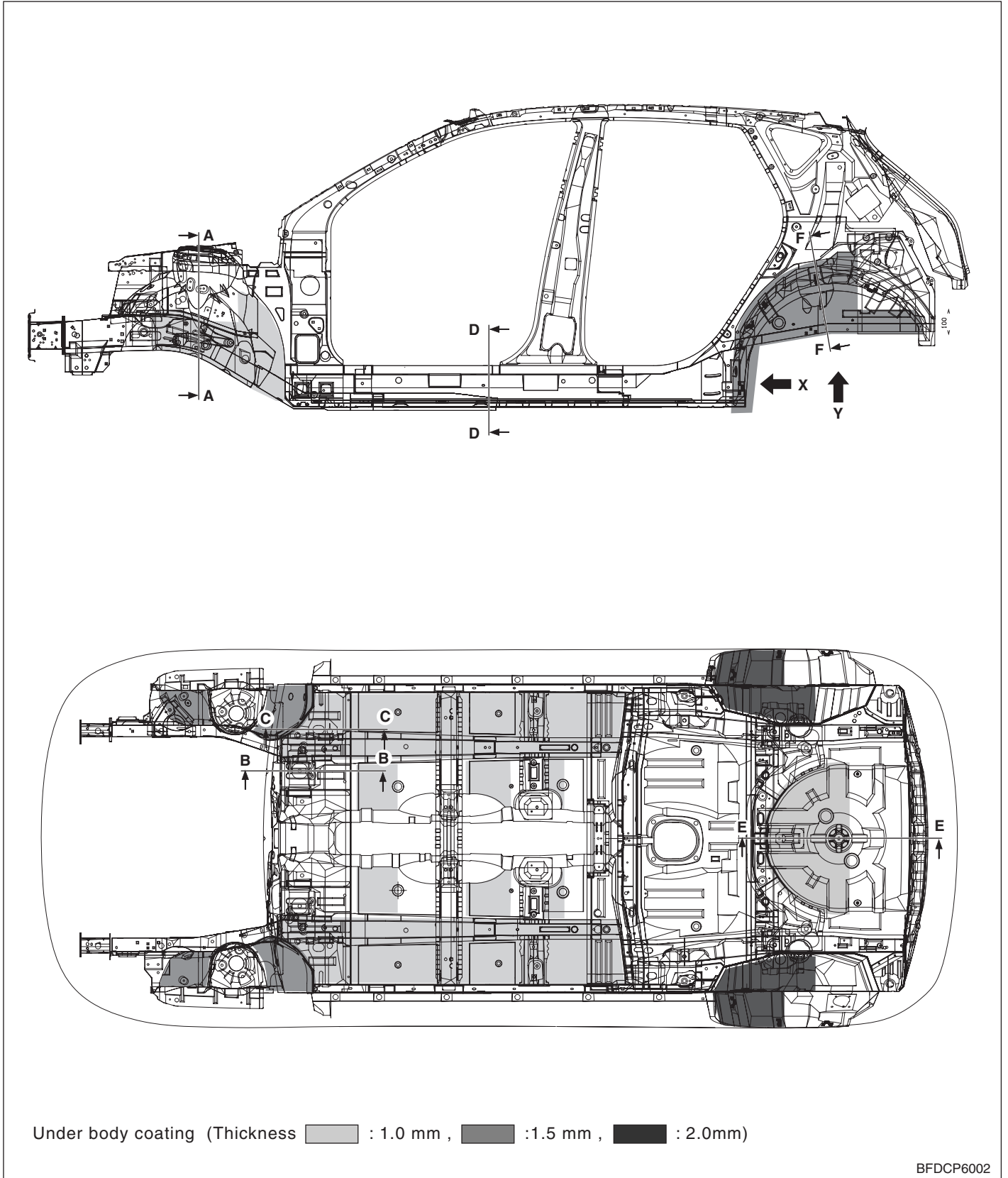


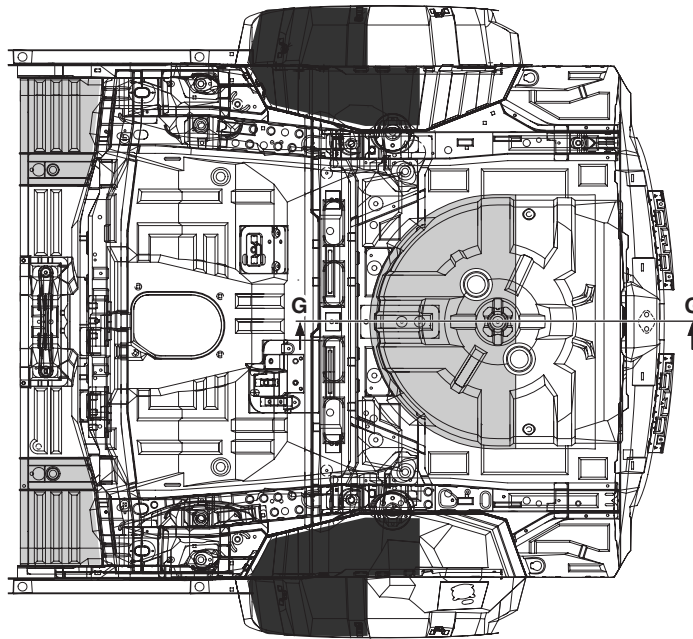


UNDER BODY & SIDE BODY COAT

In order to provide corrosion, stone chipping and vibration resistance, under body coat is applied to the under sides of the floor and wheel house.

Therefore, when such panel is replaced or repaired, apply under body coat to that part.

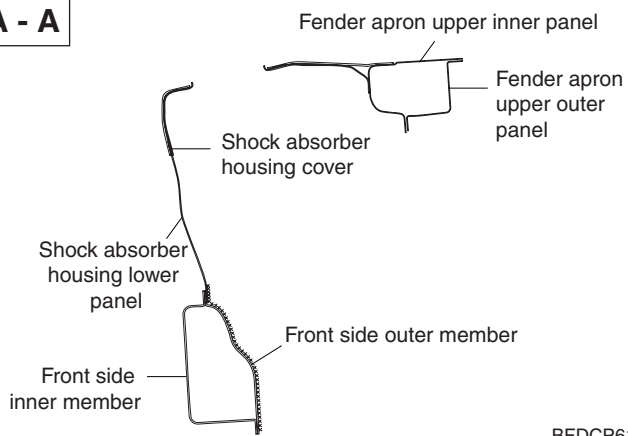




[Wagon]

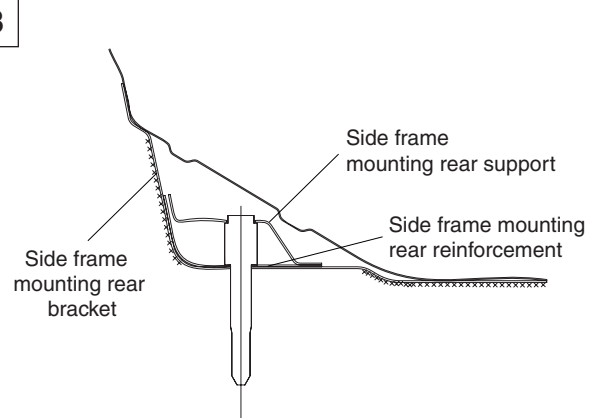
BFDCP6103

A - A



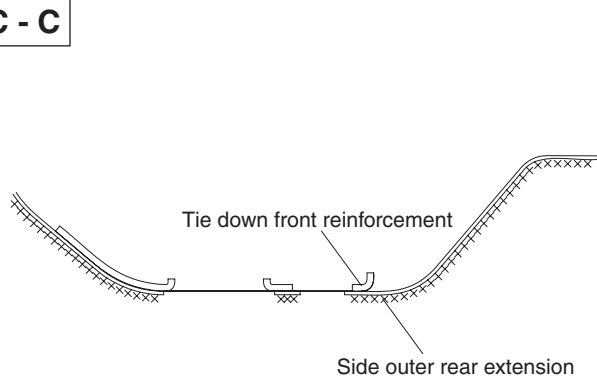
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B - B



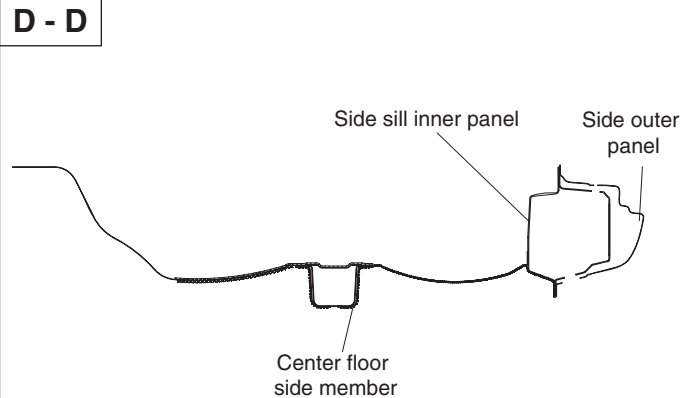
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C - C

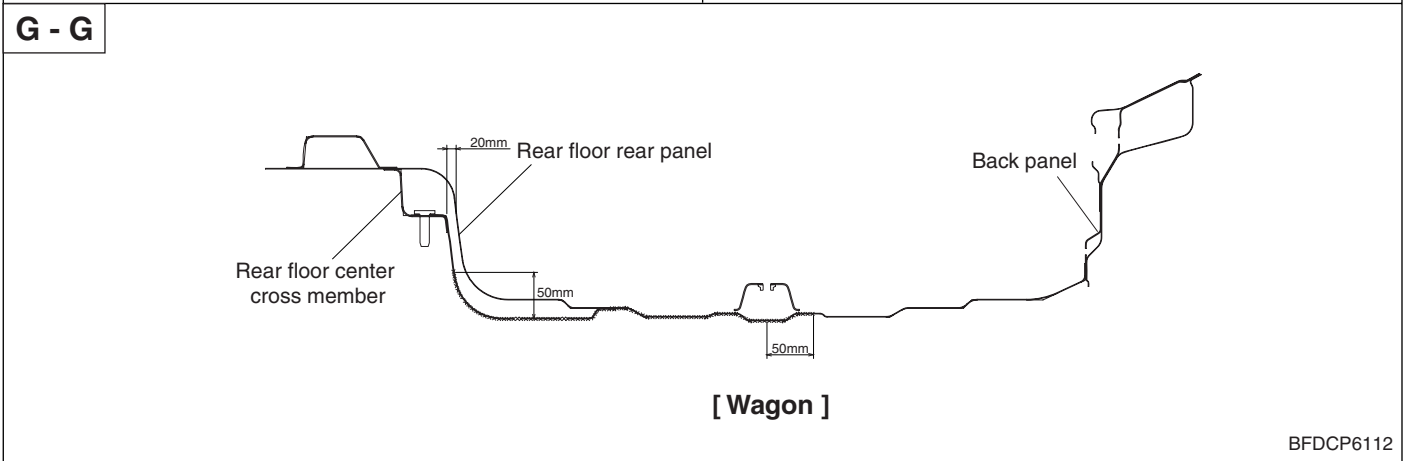
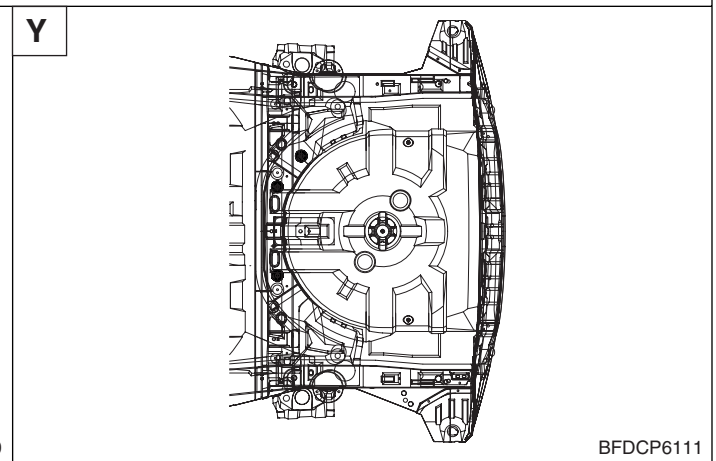
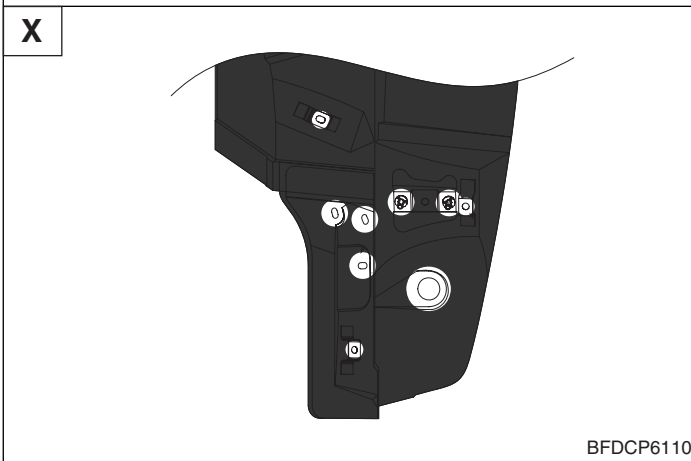
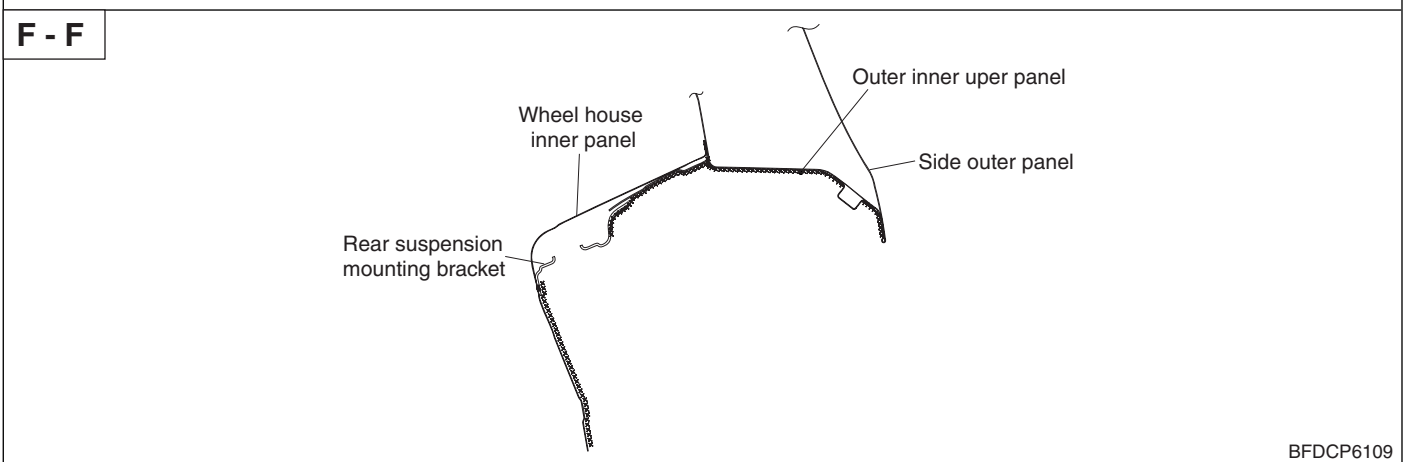
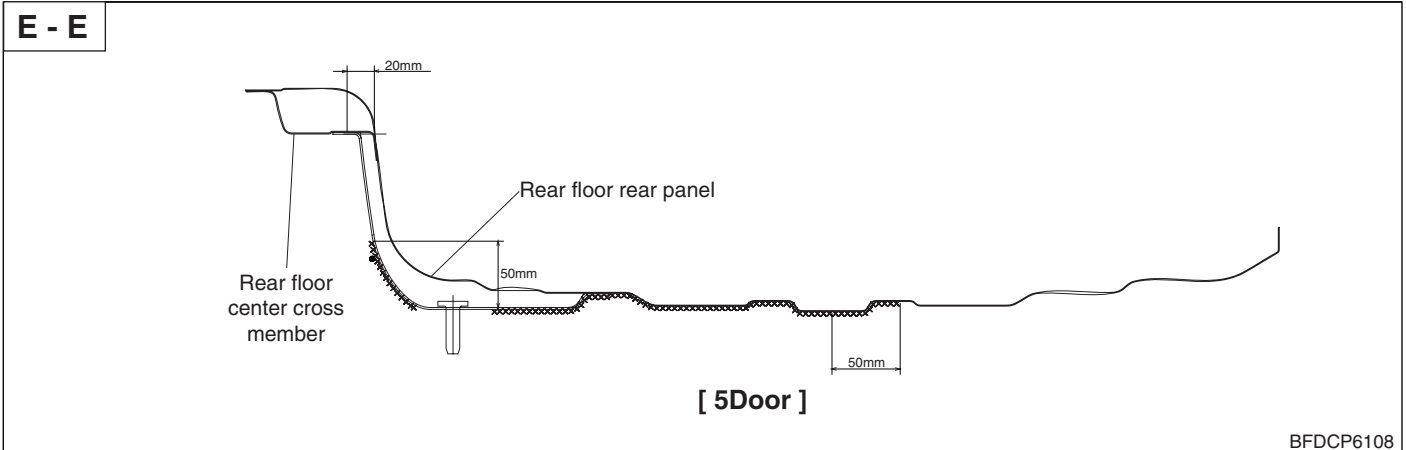


BFDCP6106

D - D



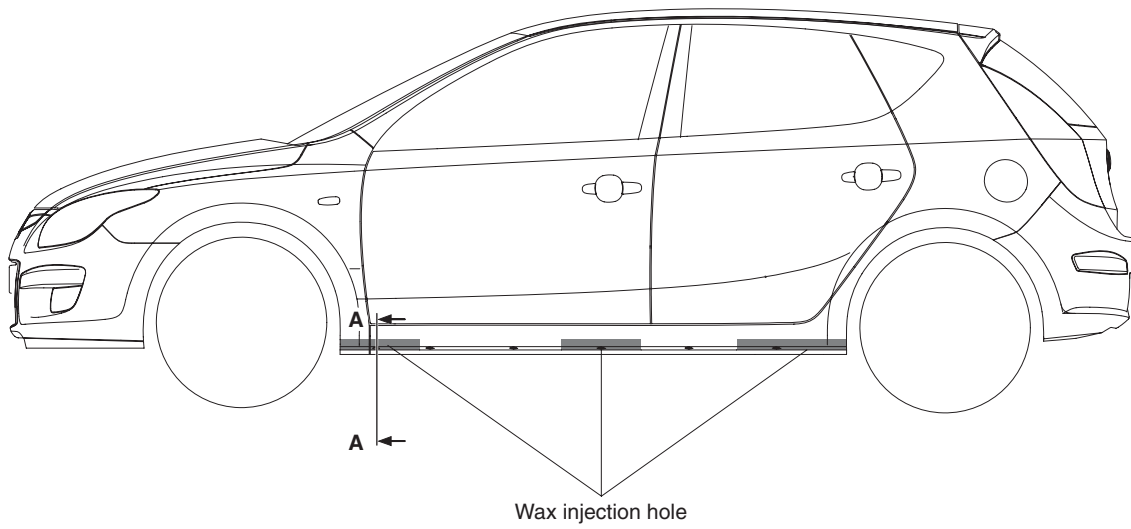
BFDCP6107



CAVITY WAX INJECTION

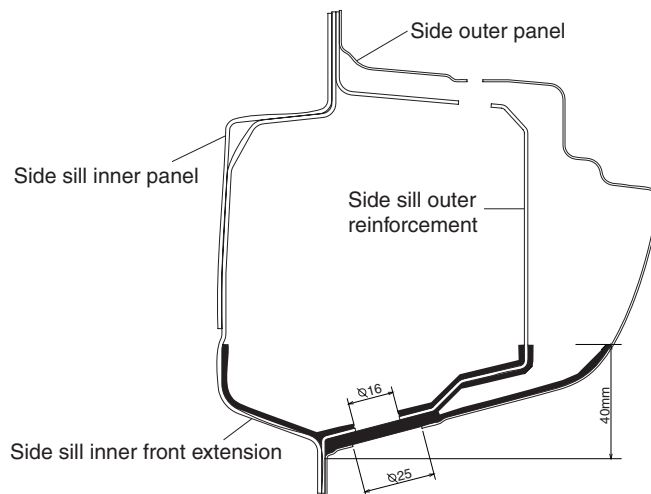
In order to provide greater corrosion resistance, cavity wax injection has been performed for the lower areas of the vehicle, such as the side member, the side sill and the inside of other panels which have a hollow construction. When replacing these parts, be sure to apply cavity wax to the appropriate areas of the new parts.

SIDE BODY



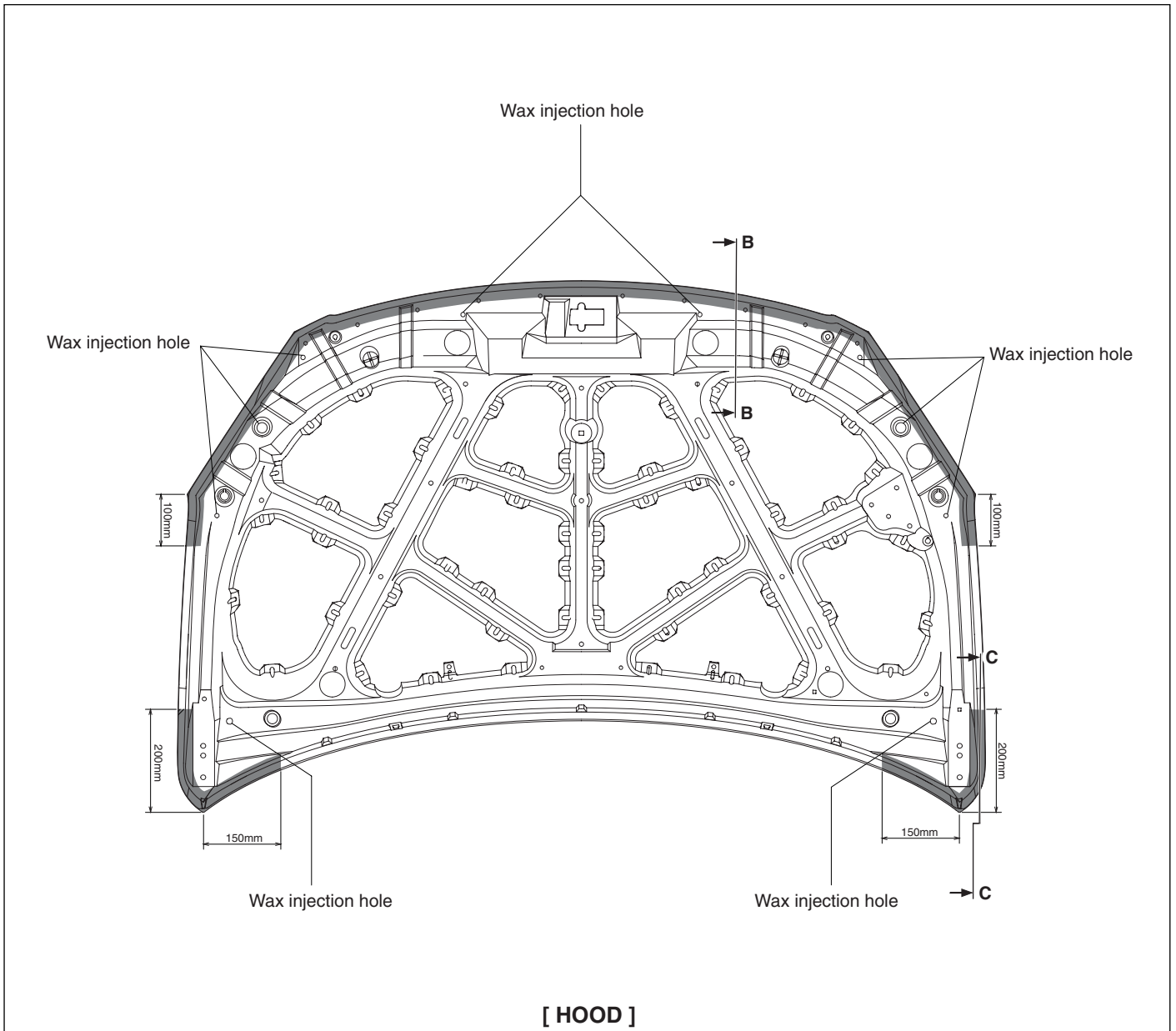
BFDCP6212

A - A



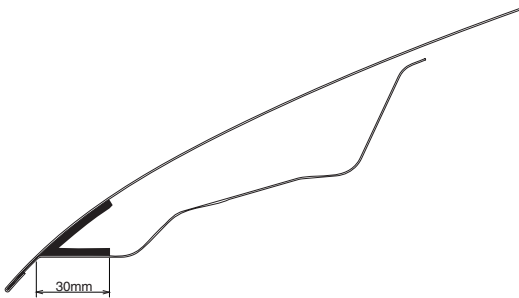
BFDCP6213

HOOD



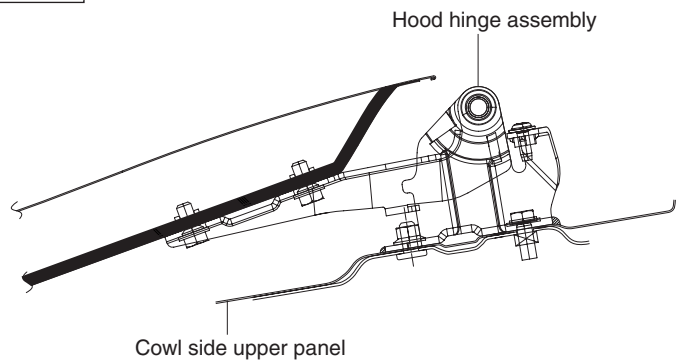
BFDCP6116

B - B



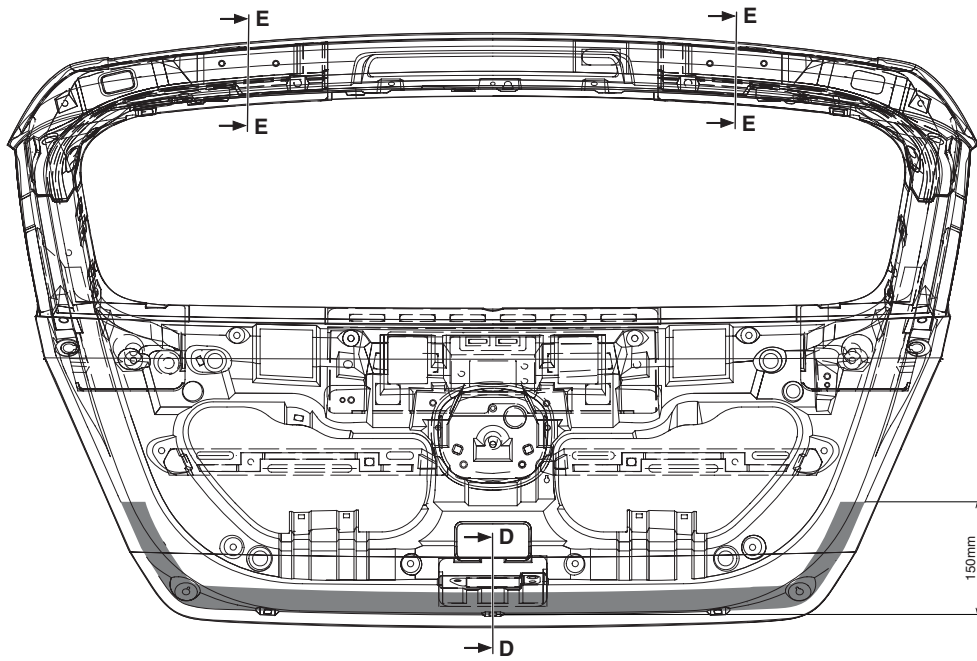
BFDCP6117

C - C



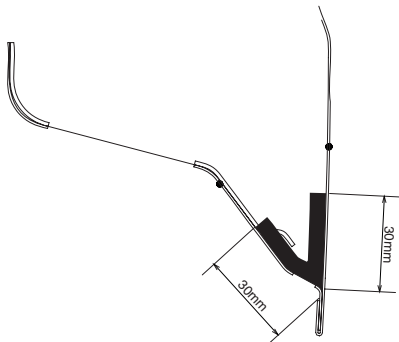
BFDCP6118

TAIL GATE



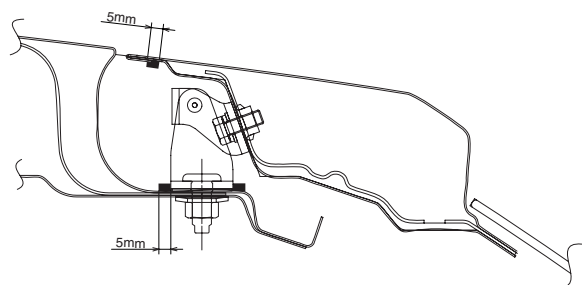
BFDCP6119

D - D



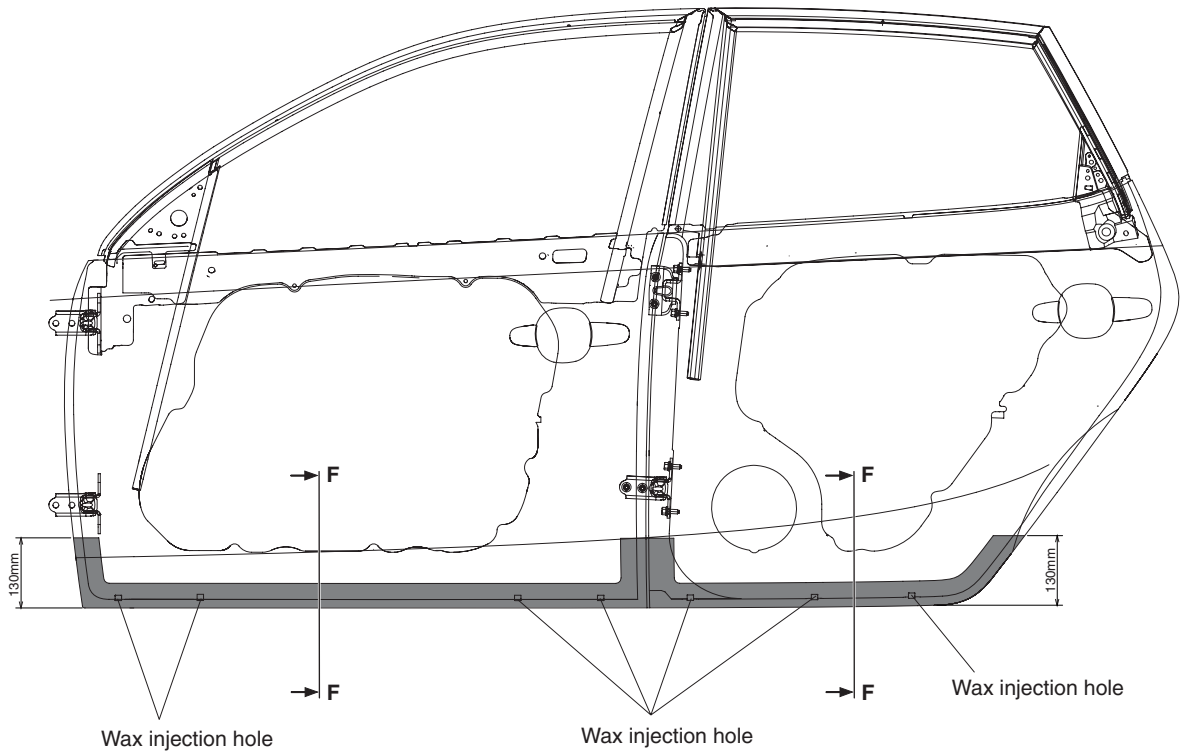
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E - E



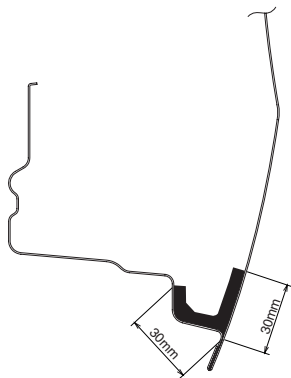
BFDCP6121

FRONT DOOR & REAR DOOR



BFDCP6122

F - F



BFDCP6123

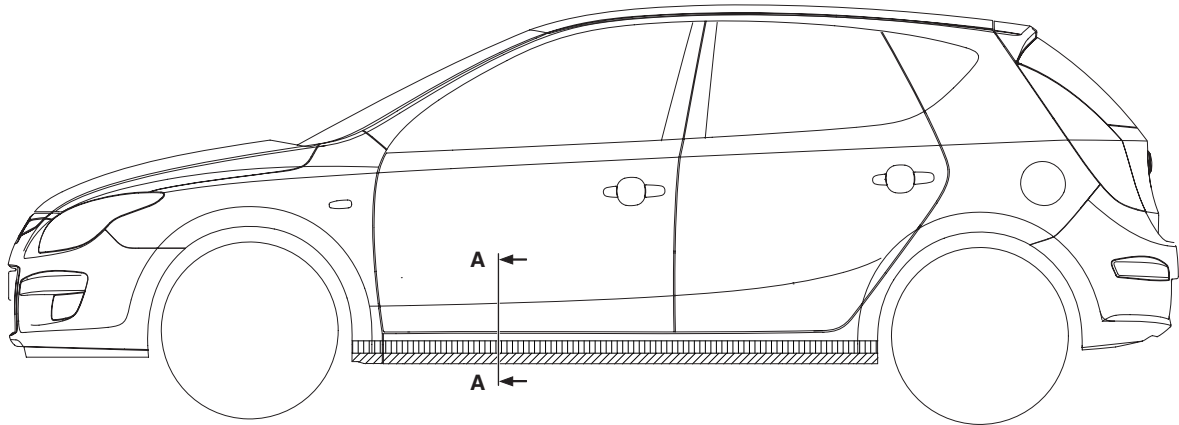
UNDER BODY ANTI-CORROSION AGENT

The undersides of the floor and wheel house are undercoated to provide greater corrosion resistance. Therefore, when such panel is replaced or repaired, apply under body anti-corrosion agent to that part.



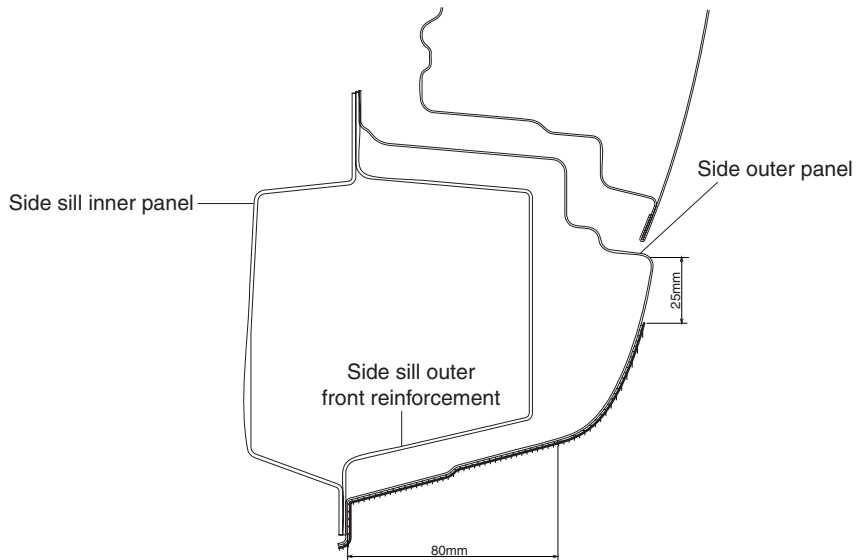
NOTE

Do not apply the under body anti-corrosion agent to come in contact with tires, muffler and exhaust pipe.



BFDCP6114

A - A



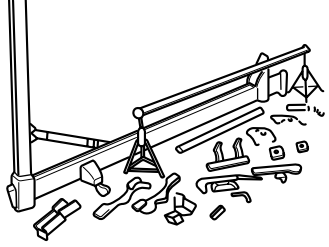
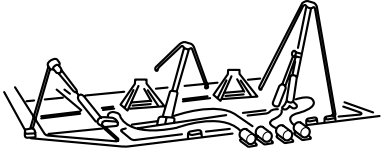
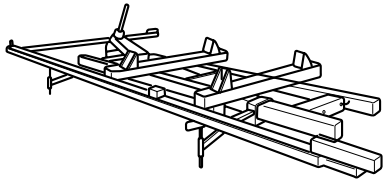
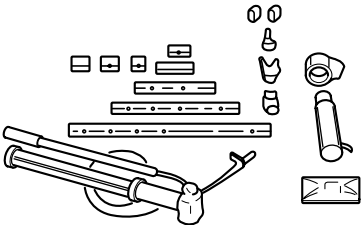
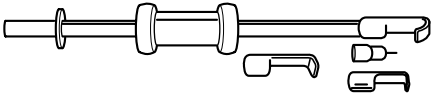
BFDCP6115

Body Modification Tools

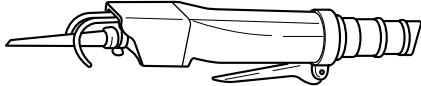
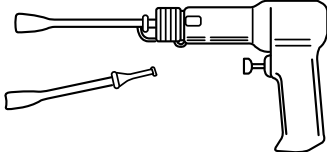
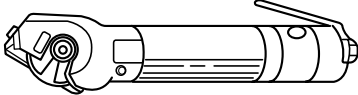
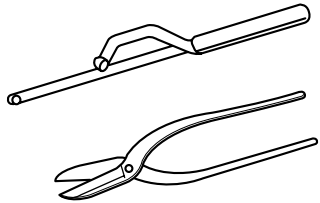
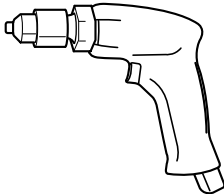
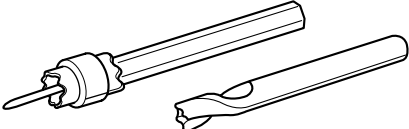
- MODIFICATION TOOLS BT - 2
- CUT AND DISASSEMBLY TOOLS BT - 3
- ASSEMBLY TOOLS BT - 4
- MEASUREMENT TOOLS BT - 4
- WELDING MACHINE BT - 5
- BUFFING AND GRINDING TOOLS BT - 6
- HANDHELD TOOLS BT - 8
- REPAIR TOOLS SET BT - 9

BODY MODIFICATION TOOLS

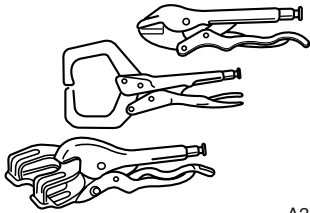
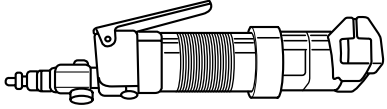
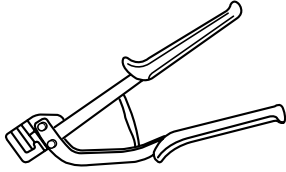
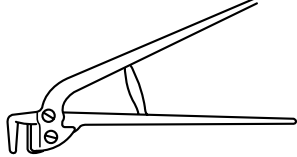
MODIFICATION TOOLS

Name	Used for	Figure
<p>Frame straightener</p>	<p>Modify twisted or bent body</p>	 <p>A3EB3501</p>
		 <p>A3EB3502</p>
		 <p>A3EB3503</p>
<p>Port power</p>	<p>Push out, stretch, pull in damaged area</p>	 <p>A3EB3504</p>
<p>Body puller</p>	<p>Stretch damaged area</p>	 <p>A3EB3505</p>

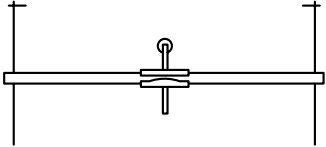
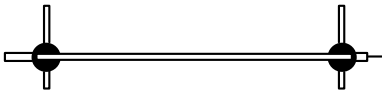
CUT AND DISASSEMBLY TOOLS

Name	Used for	Figure
<p>Air saw</p>	<p>Cut a panel</p>	 <p>A3EB3506</p>
<p>Air chisel</p>	<p>Cut or bend a panel, cut and disassemble spot welded area</p>	 <p>A3EB3507</p>
<p>Rotary cutter</p>	<p>Cut a panel</p>	 <p>A3EB3508</p>
<p>Hand saw and metal scissors</p>	<p>Cut a panel</p>	 <p>A3EB3509</p>
<p>Air drill</p>	<p>Fix a spot cutter or drill to cut or disassembly spot welding area, to finish a hole</p>	 <p>A3EB3510</p>
<p>Spot cutter</p>	<p>Cut and disassemble spot welded area</p>	 <p>A3EB3511</p>

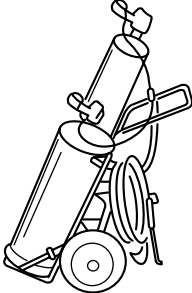
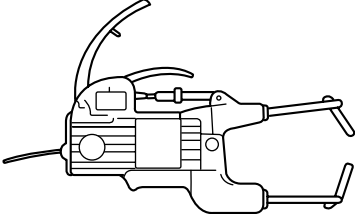
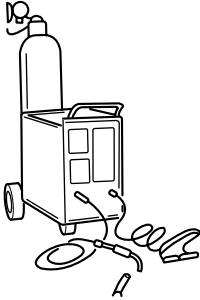
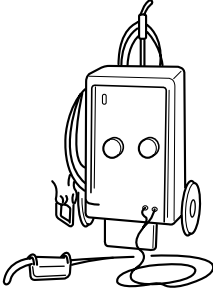
ASSEMBLY TOOLS

Name	Used for	Figure
<p>Vice pliers</p>	<p>Fix a panel or area to weld</p>	 <p>A3EB3512</p>
<p>Air bench</p>	<p>Finish contact area of flange and finish a hole for plug welding</p>	 <p>A3EB3513</p>
<p>Quick bench</p>	<p>Finish a hole for plug welding</p>	 <p>A3EB3514</p>
<p>Flanging tool</p>	<p>Finish contact area of flange</p>	 <p>A3EB3515</p>

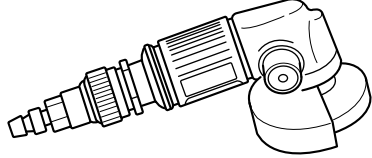
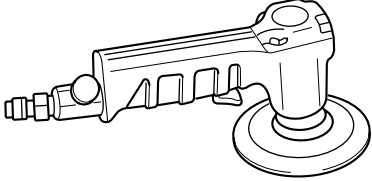
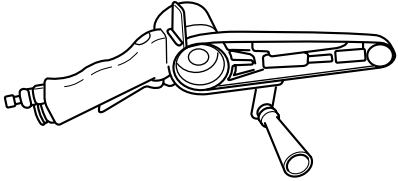
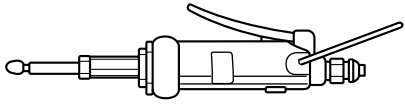
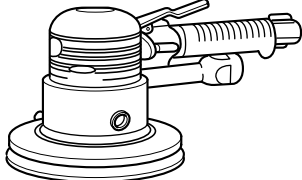
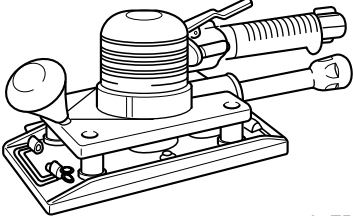
MEASUREMENT TOOLS

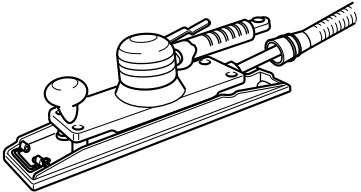
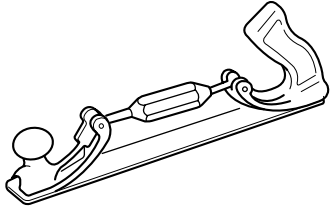
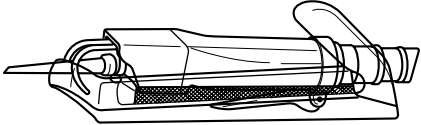
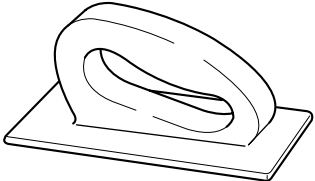
Name	Used for	Figure
<p>Centering gauge</p>	<p>Measure distortion of body and frame</p>	 <p>A3EB3516</p>
<p>Tracking gauge</p>	<p>Measure body and frame</p>	 <p>A3EB3517</p>

WELDING MACHINE

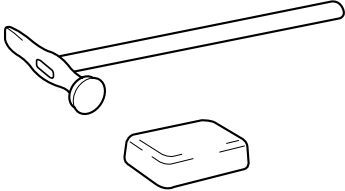
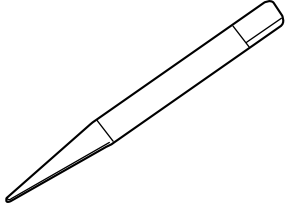
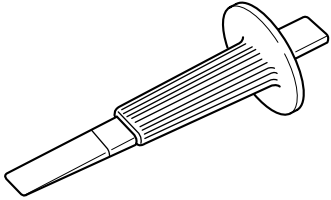
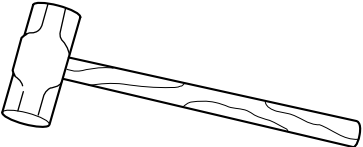
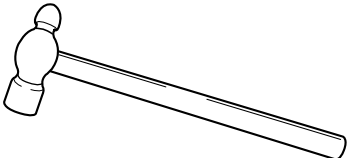
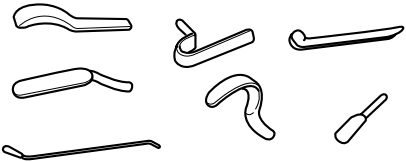
Name	Used for	Figure
<p>Gas welding machine</p>	<p>Cut a panel</p>	 <p>A3EB3518</p>
<p>Spot welding machine</p>	<p>Weld a panel</p>	 <p>A3EB3519</p>
<p>Carbon arc welding machine</p>	<p>Weld a panel</p>	 <p>A3EB3520</p>
<p>Stud welding machine</p>	<p>Stretch a panel, weld a stud bolt to fix front window mold clip</p>	 <p>A3EB3521</p>

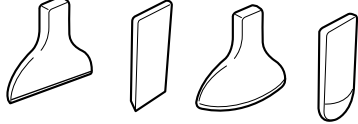
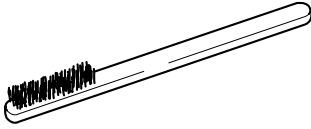
BUFFING AND GRINDING TOOLS

Name	Used for	Figure
Disk grinder	Buff	 <p>A3EB3522</p>
Disk sander	Buff	 <p>A3EB3523</p>
Belt sander	Buff paints	 <p>A3EB3524</p>
Small sized grinder	Buff paints or smooth finishing	 <p>A3EB3525</p>
Double action sander	Grind rough area of puttee assembled area	 <p>A3EB3526</p>
Orbital sander(short)	Grind rough area of puttee assembled area	 <p>A3EB3527</p>

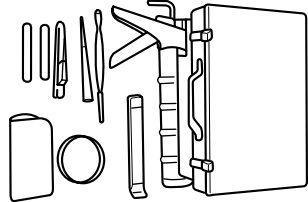
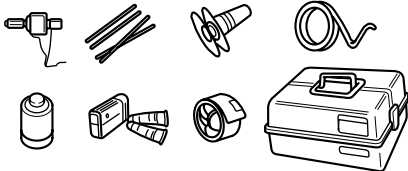
Name	Used for	Figure
<p>Orbital sander(long)</p>	<p>Used for puttee grinding of wide area</p>	 <p>A3EB3528</p>
<p>Flexible file</p>	<p>Grind touch up area, uneven area of a panel</p>	 <p>A3EB3529</p>
<p>Surform tool</p>	<p>Buff rough area of puttee area</p>	 <p>A3EB3530</p>
<p>Hand file</p>	<p>Grind body puttee, pulley, finish puttee</p>	 <p>A3EB3531</p>

HANDHELD TOOLS

Name	Used for	Figure
<p>Body hammer and dolly</p>	<p>-</p>	 <p>A3EB3532</p>
<p>Center punch</p>	<p>Punch a hole in the middle of a spot welding area</p>	 <p>A3EB3533</p>
<p>Plane chisel</p>	<p>Cut and disassemble a panel</p>	 <p>A3EB3534</p>
<p>Weight hammer</p>	<p>Used when greater force is required</p>	 <p>A3EB3535</p>
<p>Bowl pin hammer</p>	<p>Used when smaller force is required</p>	 <p>A3EB3536</p>
<p>Spoon</p>	<p>Used for an area where not reached by hand</p>	 <p>A3EB3537</p>

Name	Used for	Figure
<p>Body chisel</p>	<p>Bend rough body line damaged or sheet metal etc.</p>	 <p>A3EB3538</p>
<p>Wire brush</p>	<p>Remove paints, rust, slag on welded area which are hard to recognize</p>	 <p>A3EB3539</p>

REPAIR TOOLS SET

Name	Used for	Figure
<p>Window tool set</p>	<p>Repair window collar</p>	 <p>A3EB3540</p>
<p>Repair tool set for plastics</p>	<p>Repair plastic parts</p>	 <p>A3EB3541</p>

Plastic Parts

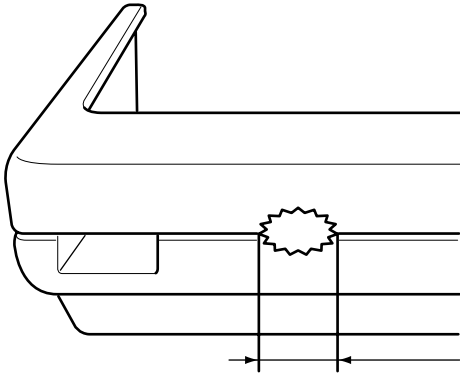
POLYPROPYLENE(PP) BUMPER	
REPAIRABILITY	PP - 2
BUMPER REPAIR PROCEDURE	PP - 3
REPAIR METHOD FOR PP BUMPER	PP - 4

POLYPROPYLENE(PP) BUMPER

REPAIRABILITY

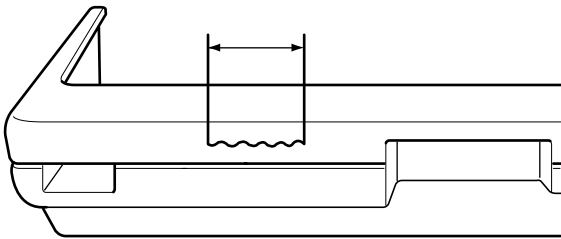
The three types of damaged bumpers shown below can be repaired. Because of cost and quality considerations, bumpers with more damage may be repaired, but replacing the bumper is encouraged.

1. If a hole on a bumper is less than 2 in.(50 mm).



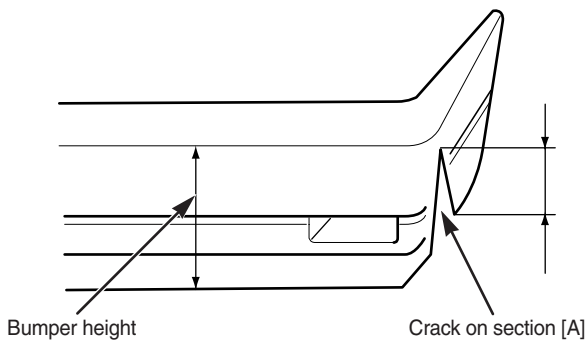
A3EB3601

2. If a crack on a bumper is less than 100 mm(4 in).



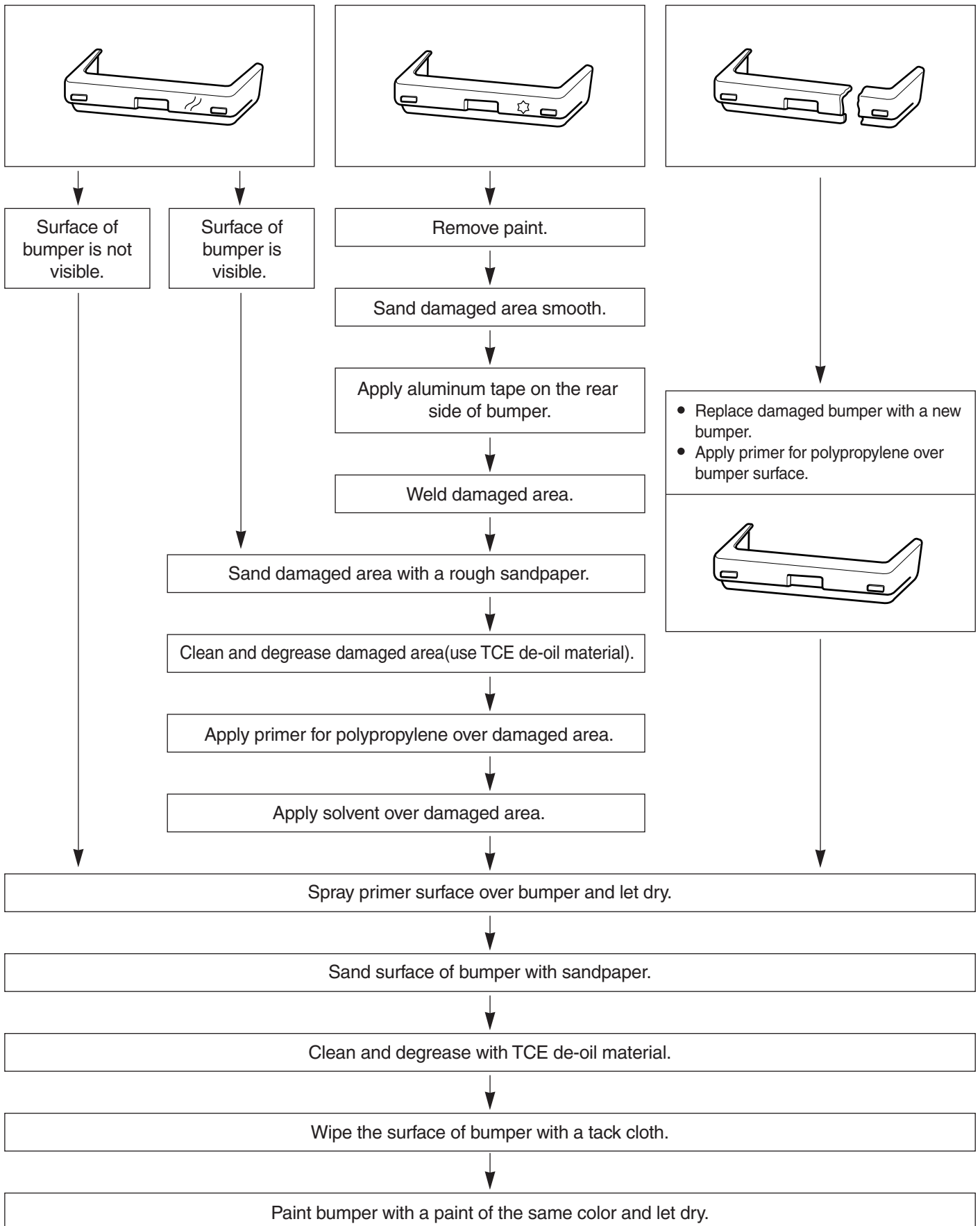
A3EB3602

3. If a crack on bumper section is [A] is less than 100 mm (4 in) (less than half of the bumper height).



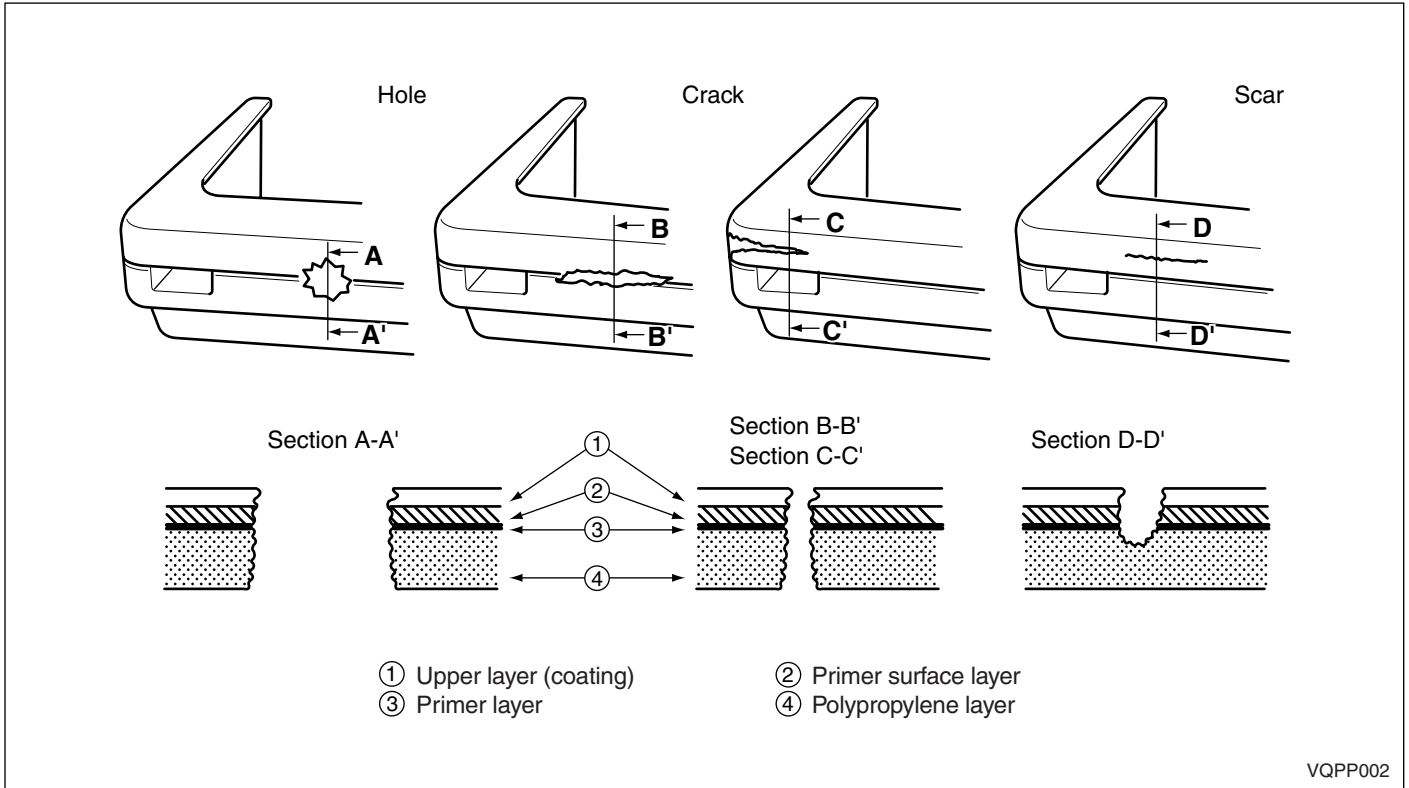
A3EB3603

BUMPER REPAIR PROCEDURE



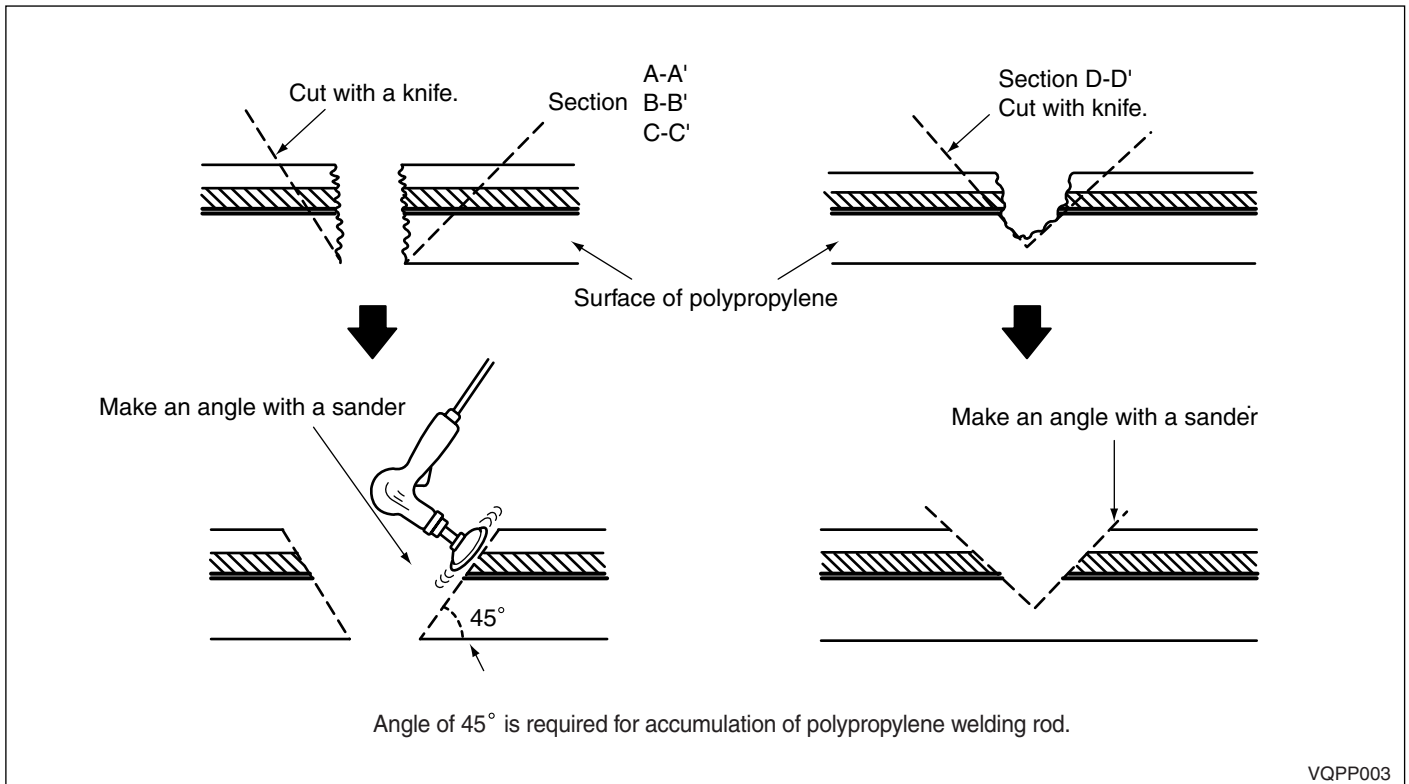
REPAIR METHOD FOR PP BUMPER

Damage to the bumper that reaches the surface of the polypropylene cannot be fixed just by painting. Use the repair methods shown below to repair damage that reaches the surface of the polypropylene.



VQPP002

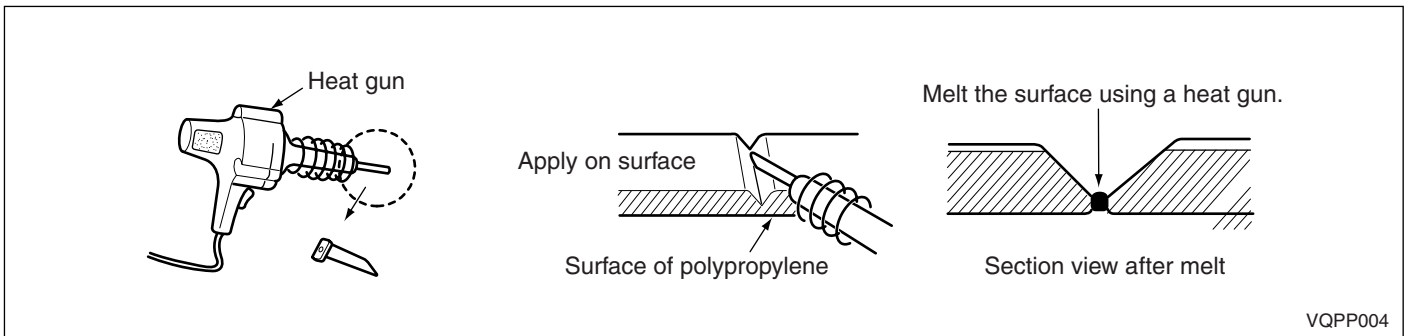
1. Rough cut the damaged area 45° using a knife and then sand the angle smooth.



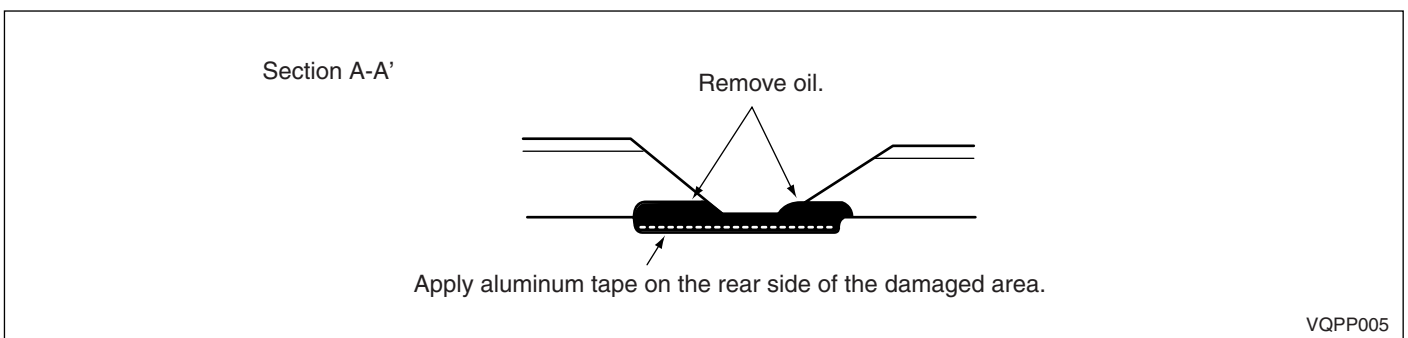
VQPP003

2. Welding damaged area

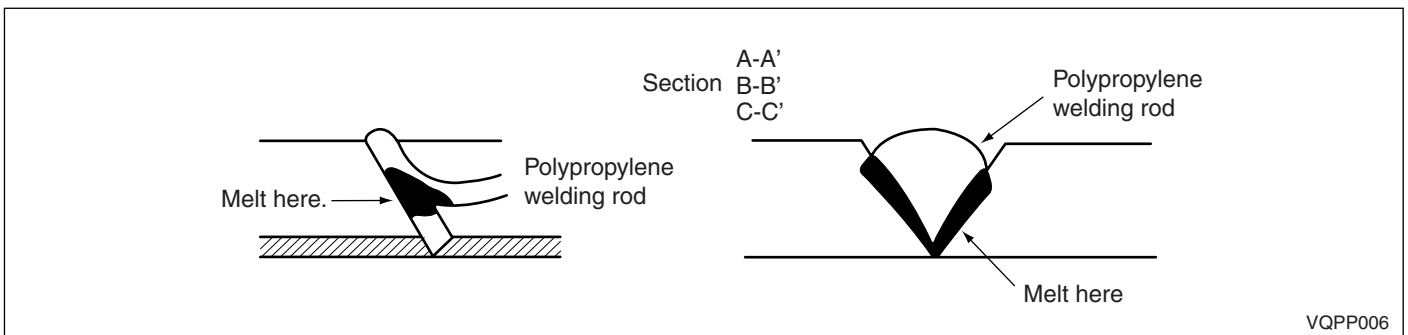
a) To repair cracked area, melt the area using a heat gun and attachment.



b) To repair a hole, remove oil from the damaged area and apply aluminum tape to the rear side of the damaged area.

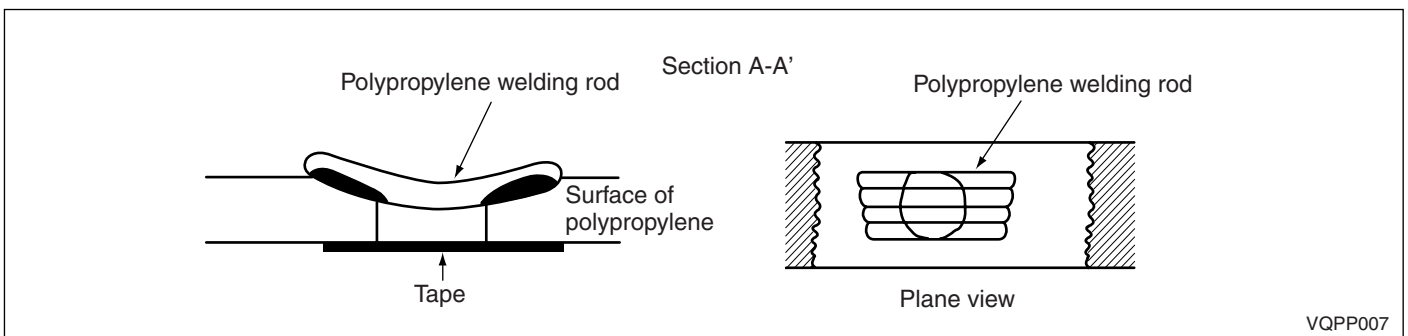


3. Melt polypropylene welding rod using a heat gun and fill in the cracked area.

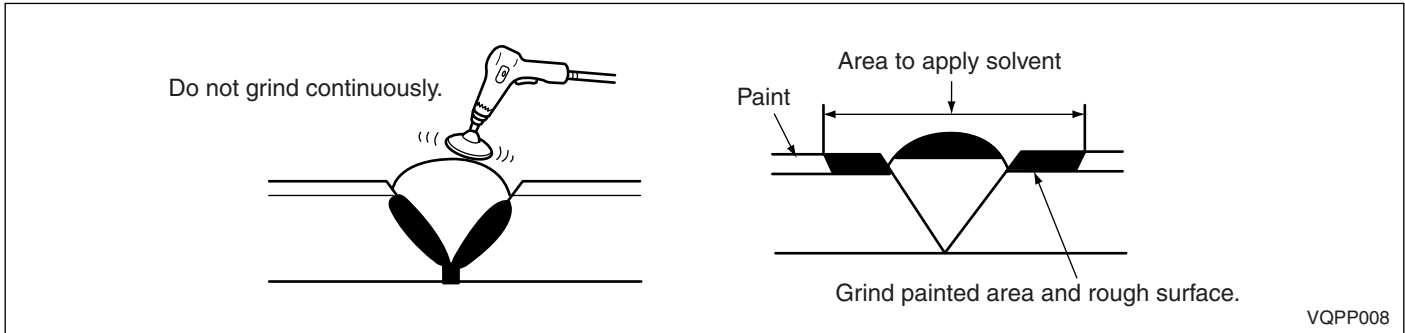


NOTE

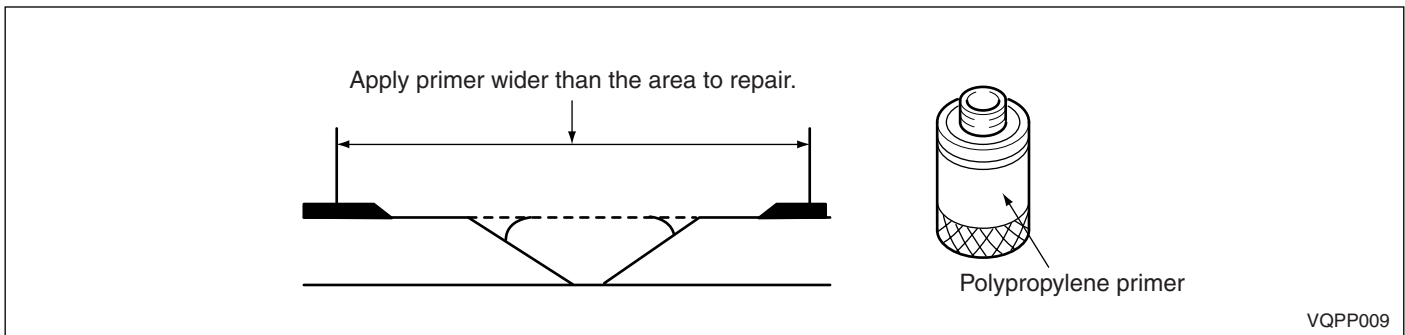
- Heat and melt the area indicated.
- Melt the welding rod carefully so that it does not over-melt. If the welding rod over-melts like jelly, the welding strength will deteriorate.
- Use the heat gun 10~20 mm (0.4~0.8 in) away from the repair area to be welded. Welding rod should not move until the welded area is cooled.



4. Grind polypropylene surface carefully. It melts easily due to the heat generated by friction. If melted, remove that area. Also, grind the area where solvent is to be applied.



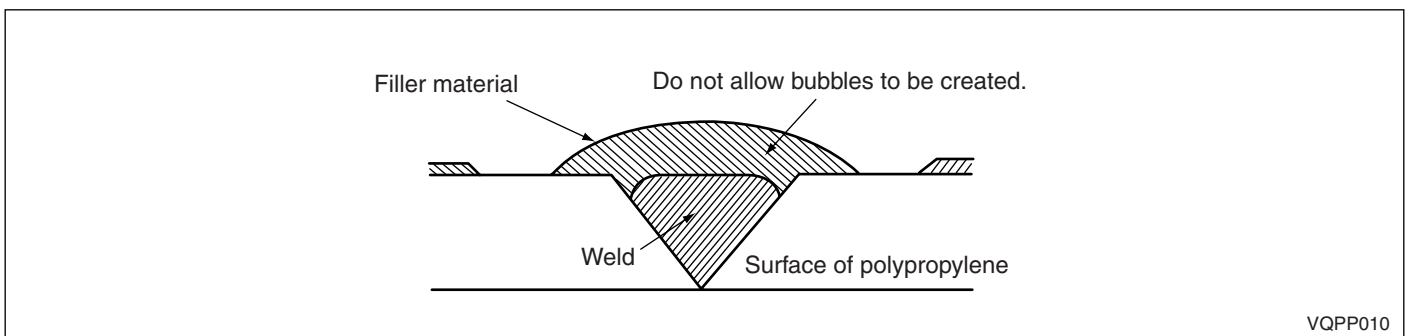
5. Apply polypropylene primer evenly with a brush over an area wider than the area to be repaired. Dry it at 20°C (68°F) for more than 10 minutes.



6. Mix main filler material and hardener at a ratio depending on paint specifications. Mix filler material and apply over the damaged area.

NOTE

- Mix main filler material and hardener so that no bubbles are made.
- Work immediately after mixing filler material because the filler material hardens quickly (in about 5 minutes).
- Dry it at 20°C (68°F) for about 30 minutes before sanding.



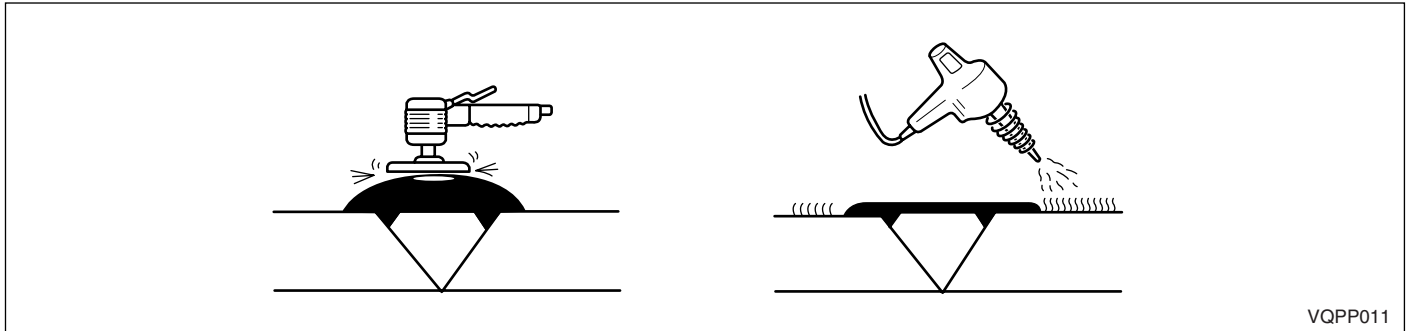
- Filler material consists of two types of epoxy. When the filler material hardens, you will have a desirable finish with flexibility like polypropylene.
- Use only filler material designed for use on polypropylene bumpers.

- Sand the damaged area with sandpaper using #180~#240 grit paper.

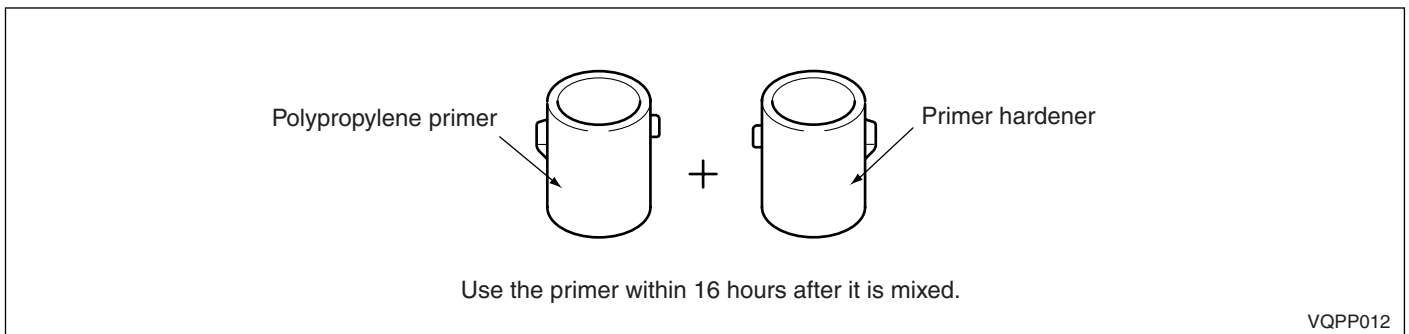
 **NOTE**

- The surface will not be even if excessive force is applied during sanding.
- If there is fuzz in the damaged area, heat it a little bit with a heater gun and melt it.

- Degrease the painted surface.



- Mix polypropylene primer and hardener at a ratio depending on paint specifications. Spray polypropylene primer on the surface of the damaged area and the bumper.



- Apply polypropylene primer.

 **NOTE**

Use only water to clean after applying polypropylene primer. Solvent, if used, will melt the primer.

- Lightly sand the sprayed area using a primer a sandpaper(#400~#600). The polypropylene surface should not be exposed.(Either wet sanding or dry sanding is all right.)
- Use agent(TCE(Tri Chloro Ethane) degreasing material) to remove any grease or oil, and wipe the finished surface of the bumper quickly with a clean cloth.

 **NOTE**

- The painting method for the polypropylene bumper is the same used to paint the urethane bumper.
- Therefore, use urethane primer only on urethane bumpers and polypropylene primer on polypropylene bumpers.

- Air dry at 20°C(68°F) for about 8 hours, or dry in 60°C(140°F) for about 2 hours. (Since drying time varies according to the type of paint used, follow paint manufacturers directions for drying times.)

 **NOTE**

Air dry if possible. Forced drying may create air bubbles on the top layer.