

GROUP 3

WELDED PANEL
REPLACEMENT

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ULTRA HIGH STRENGTH STEEL PLATE

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ADVANTAGES OF ULTRA HIGH STRENGTH STEEL PLATE

The ultra high strength steel plate has the following advantages as compared with conventional high strength steel plate.

- It has tensile strength approximately 1.7 times higher than the conventional high strength steel sheet.
- It has a higher yielding point and yielding ratio (yielding point/tensile strength).

These advantages allow thinner and lighter plates and better fuel efficiency than the high strength steel plate.

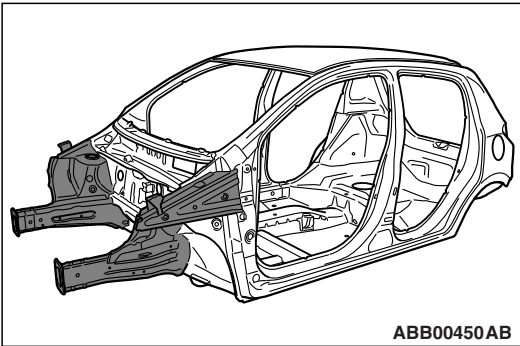
PRECAUTION UPON MAINTENANCE OF ULTRA HIGH STRENGTH STEEL PLATE

- Use a spot cutter for ultra high strength steel plate to ensure that the spot-welded area is cut off.

- For the part in which the ultra high strength steel plate is used, do not repair it by cutting and bonding to avoid the reduction in strength by heat. Instead, replace the whole assembly including the part.
- Be careful with rough extending work, because the ultra high strength steel plate has higher tensile strength and a higher yielding point than high strength steel plate and general steel plate. Careless work will cause symptom such as over-pulling and springback. Do not extend it completely at a time. Do it gradually while removing the distortion by sheet metal processing with a hammer.
- Plug welding of ϕ 8 mm (0.31 inch) diameter plug for repair ensures the strength equivalent to spot welding for 2 steel sheets. For 3 sheets, weld 2 sheets each time instead of welding from one side to give sufficient welding strength.

FENDER SHIELD

M4030004001720



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
oooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

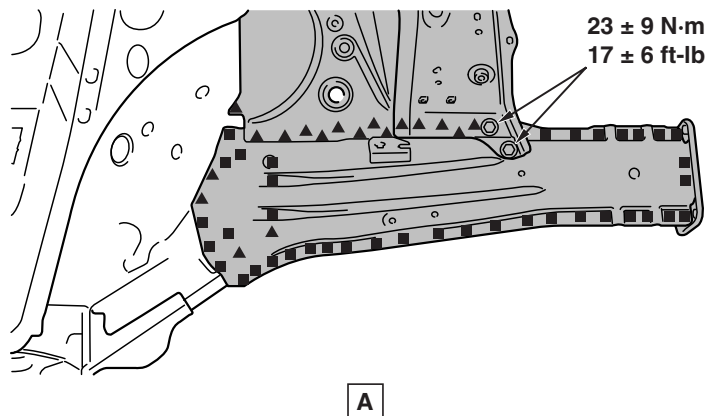
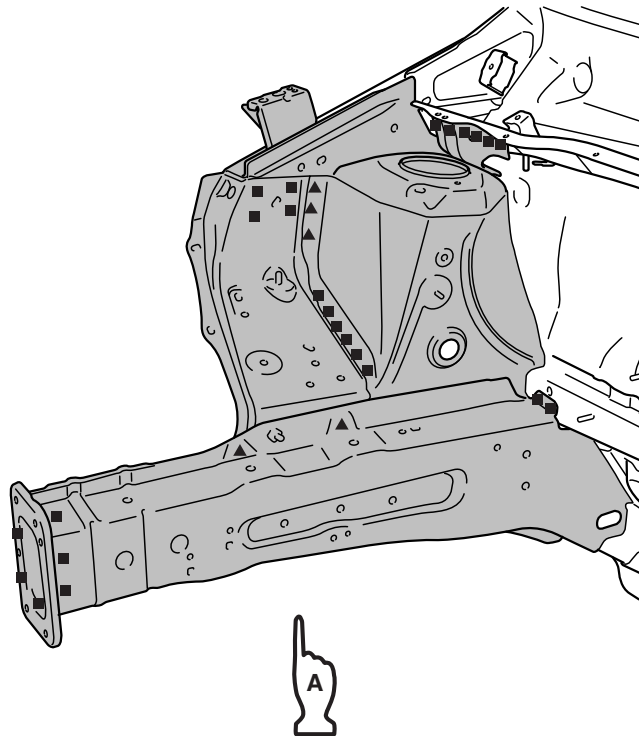


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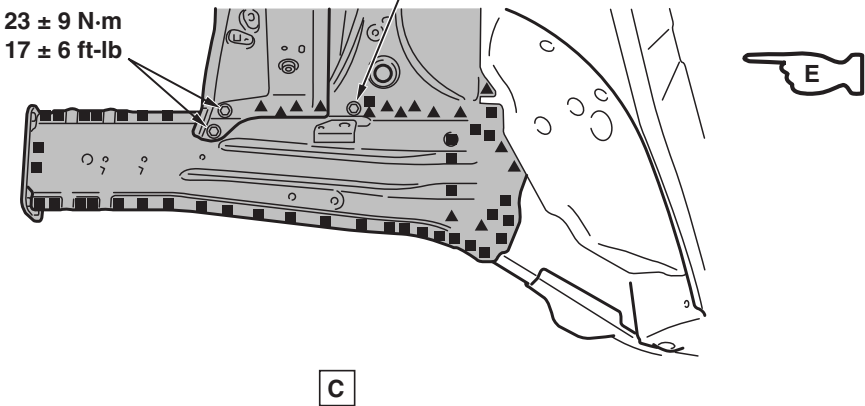
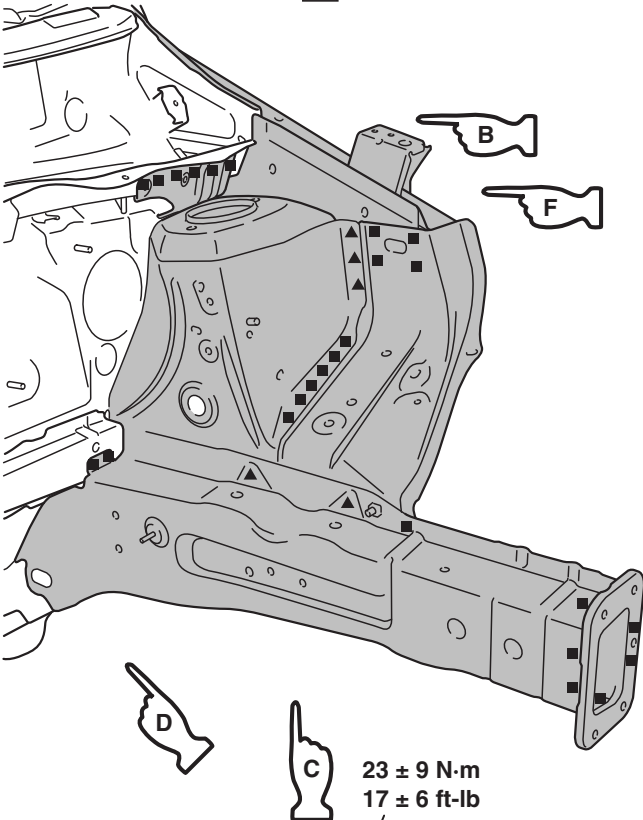
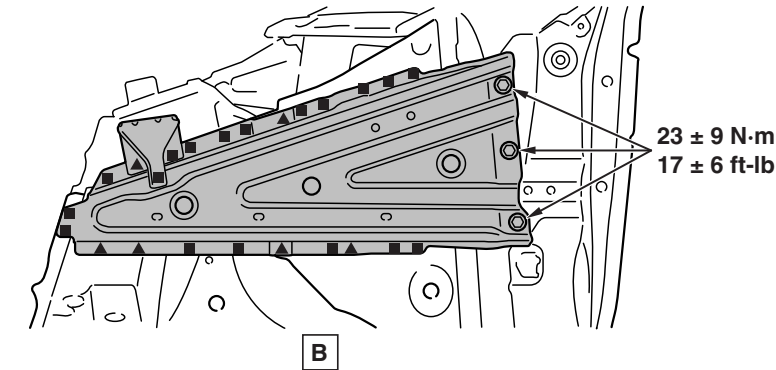
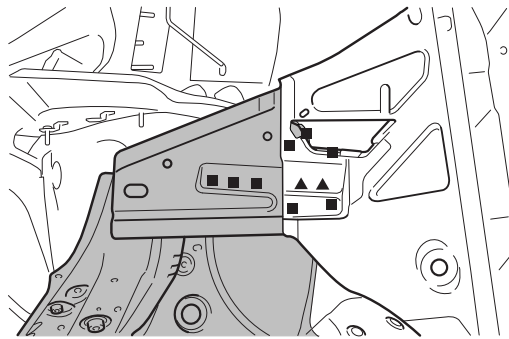
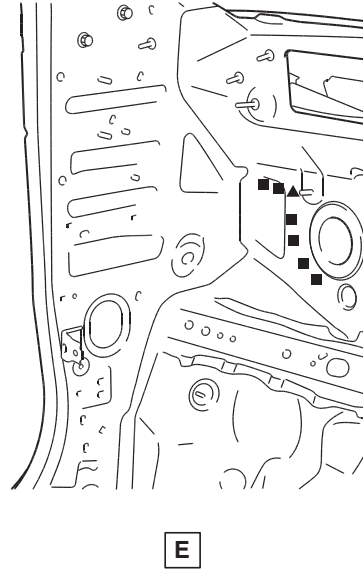
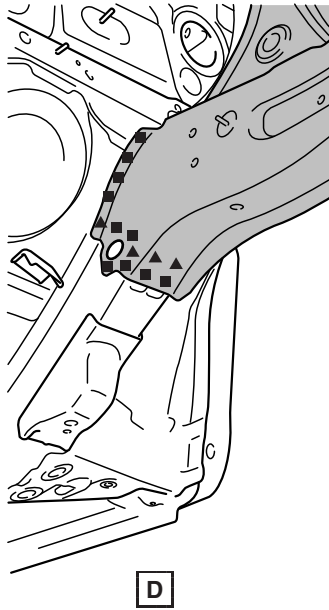


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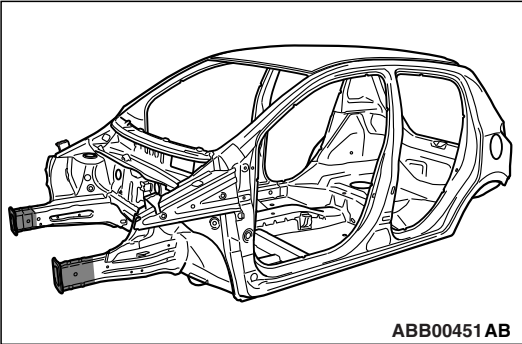
(With the upper outer frame removed)

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FRONT SIDEMEMBER (PARTIAL REPLACEMENT)

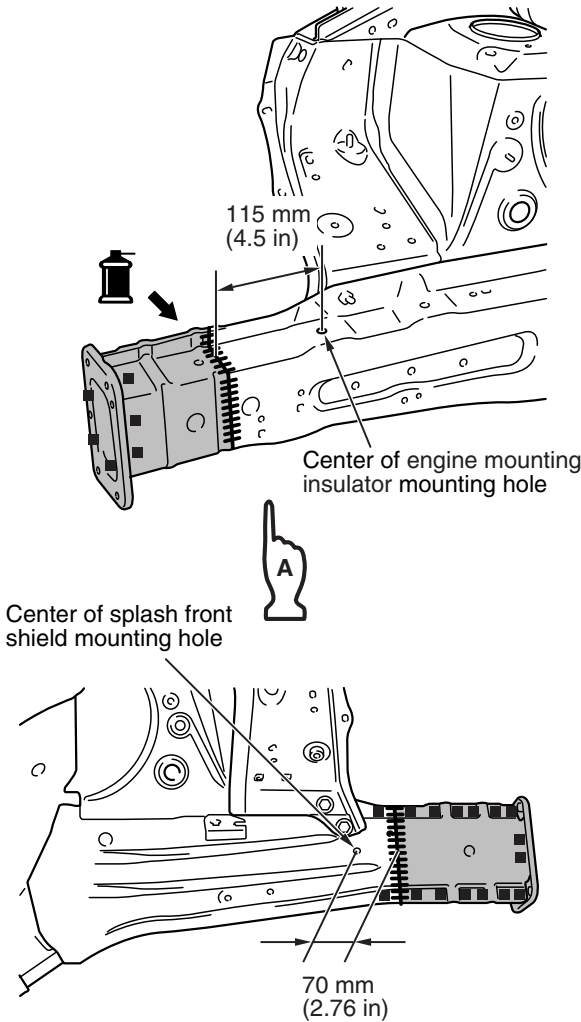
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Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

(Right side)



(Left side)

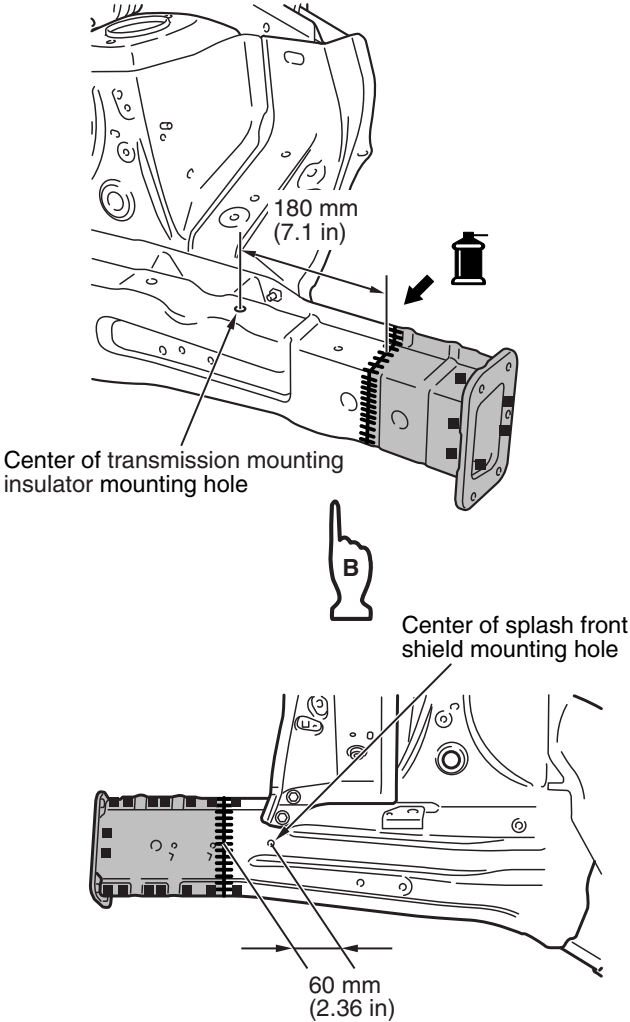
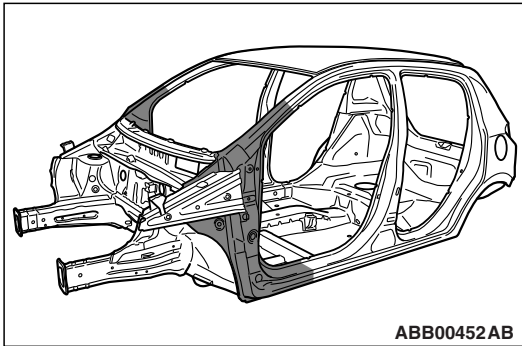


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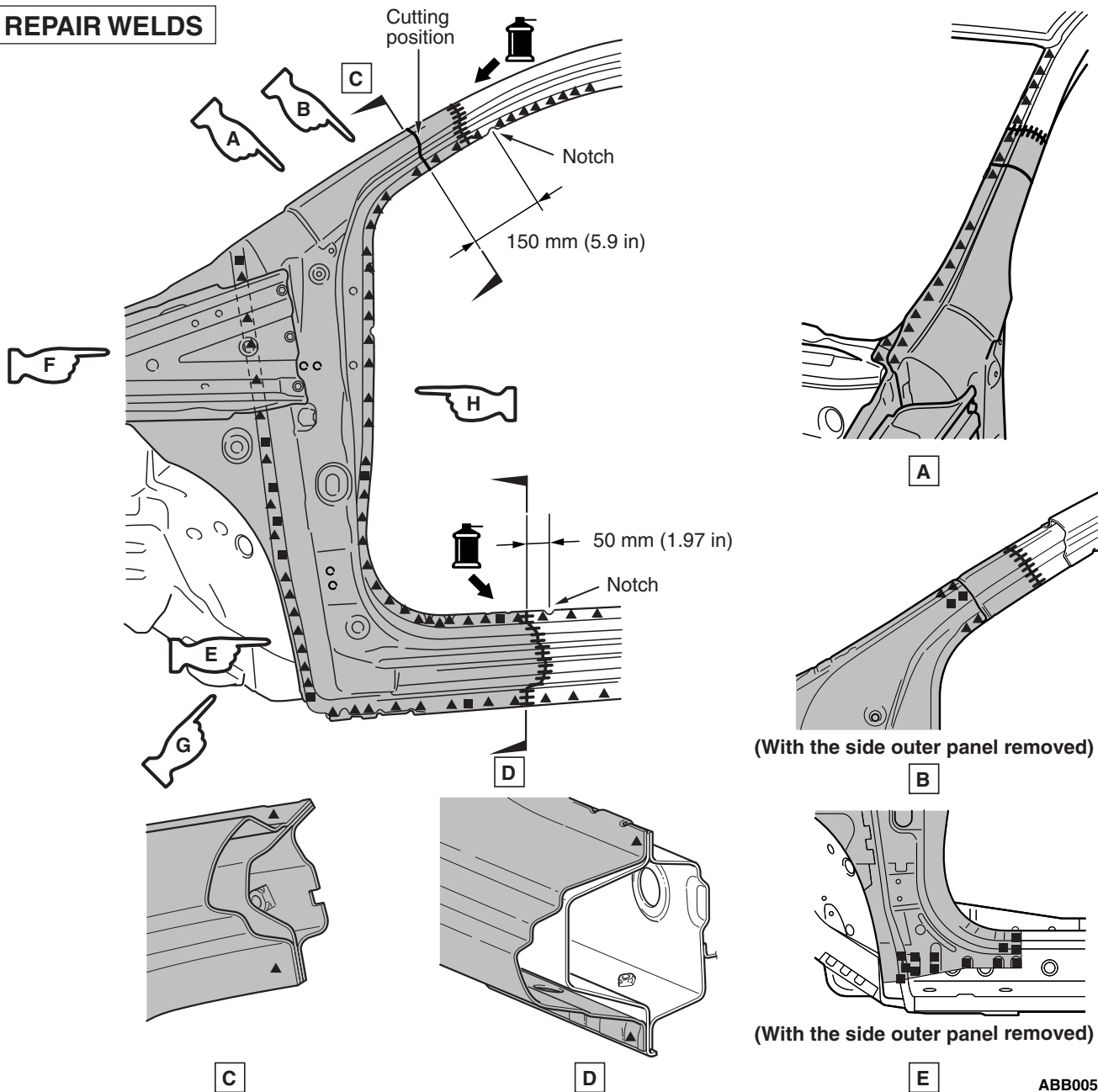
FRONT PILLAR

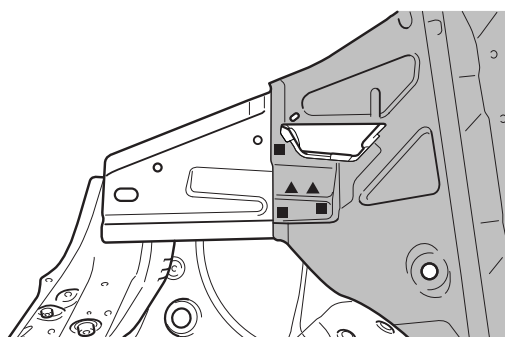
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Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

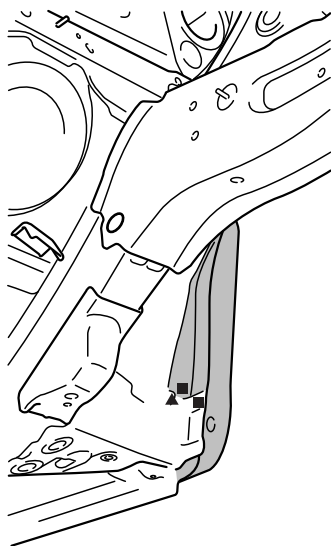
REPAIR WELDS



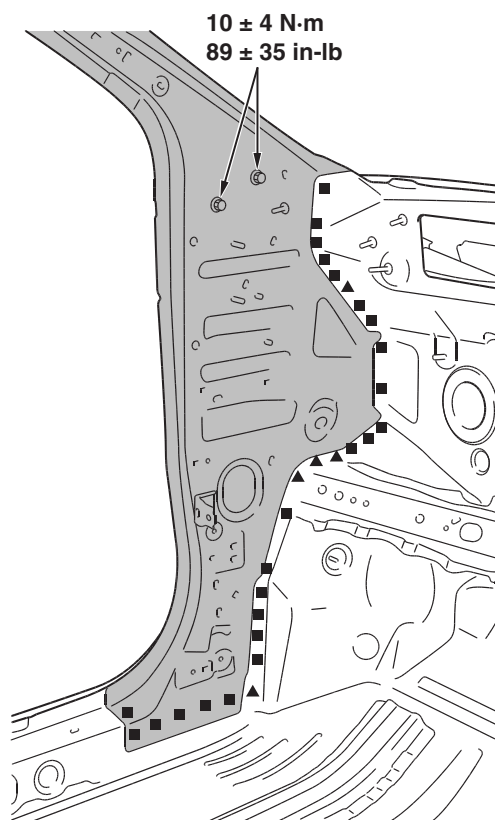


(With the upper outer frame removed)

F



G



H

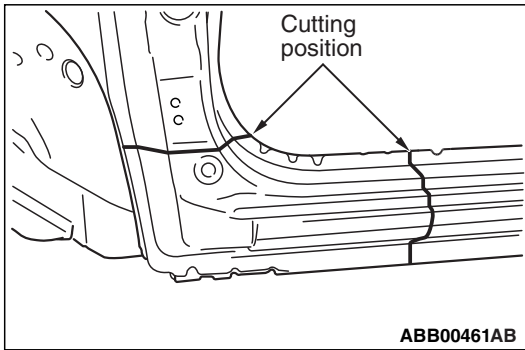
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NOTE: Refer to the Fender Shield section on [P.3-3](#) for the welding points with the upper outer frame.

NOTE ON REPAIR WORK

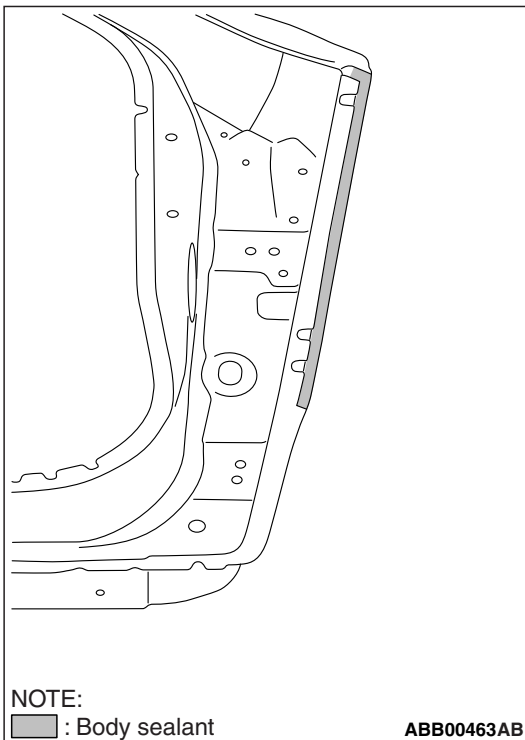
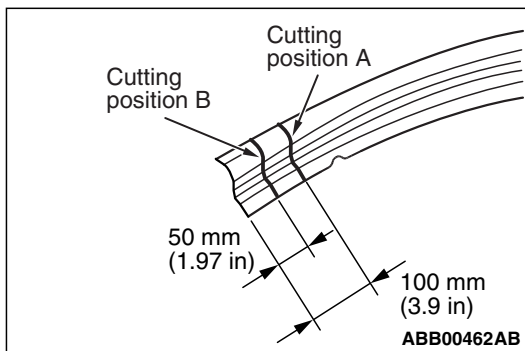
REMOVAL

To cut the welding points between the front pillar reinforcement lower and side sill reinforcement, cut the side outer panel as shown.



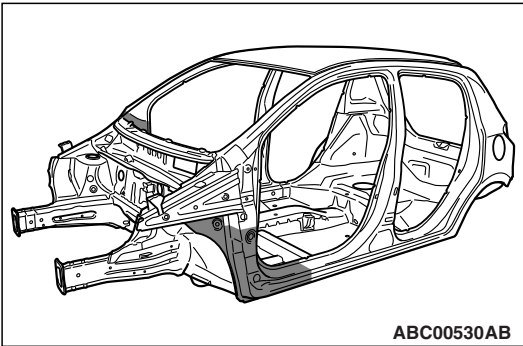
INSTALLATION

1. To reinforce the strength in the front pillar cut area, cut the side outer panel at A point [100 mm (3.9 inches)] above the cut area and cut the front pillar reinforcement upper at B point [50 mm (1.97 inches)] above the cut area.
2. Assemble the new front lower inner pillar parts.
3. Assemble the new front upper inner pillar parts.
4. Assemble the new front pillar reinforcement upper part.
5. When installing the new front outer pillar parts, apply the body sealant to the areas as shown in advance.



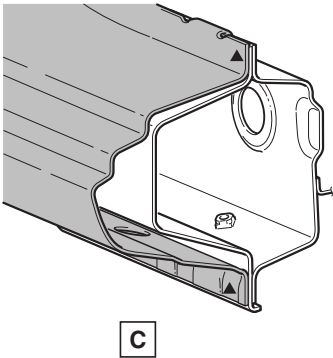
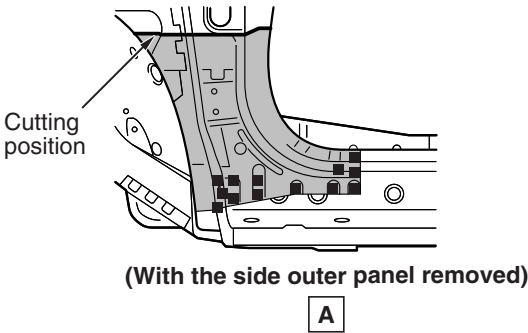
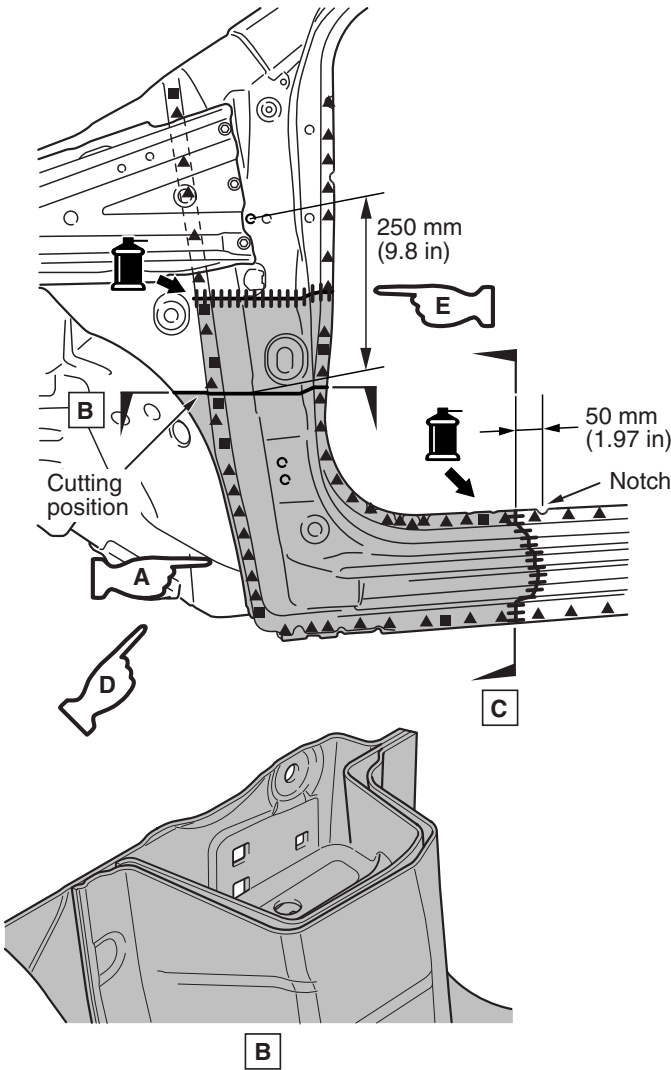
FRONT PILLAR (PARTIAL REPLACEMENT)

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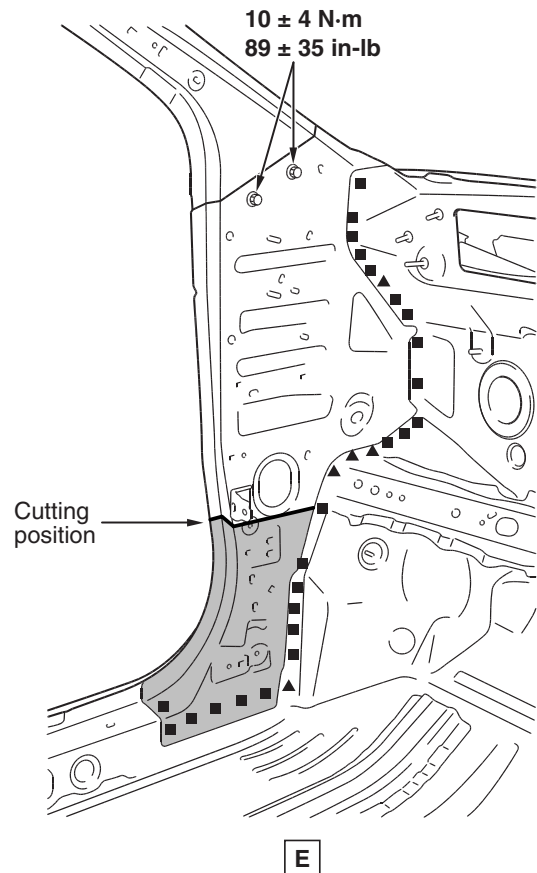
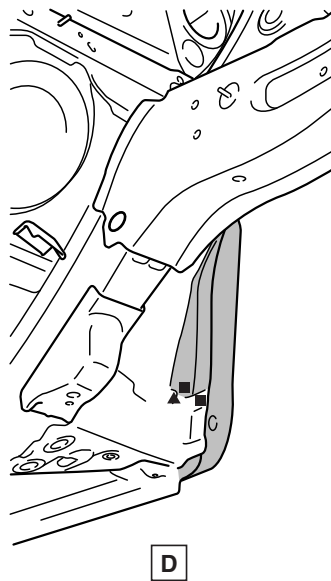


Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



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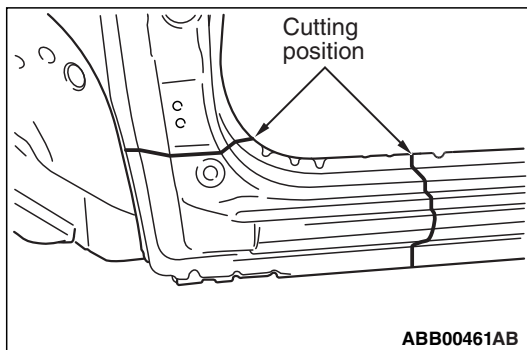
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NOTE: Refer to the Fender Shield section on [P.3-3](#) for the welding points with the upper outer frame.

NOTE ON REPAIR WORK

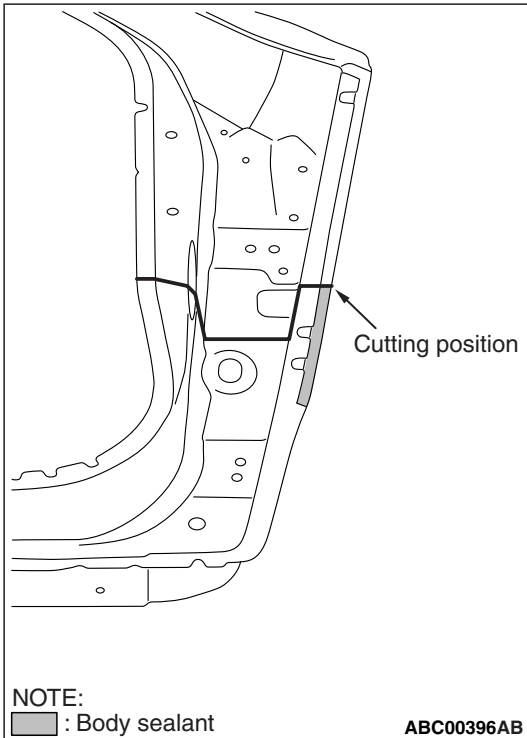
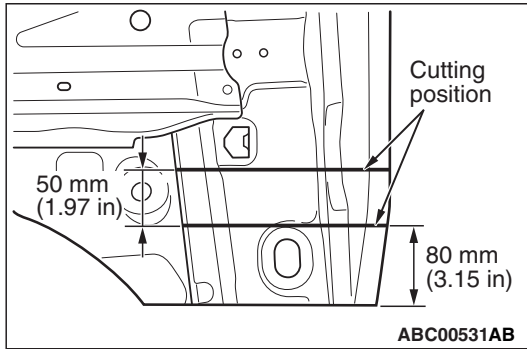
REMOVAL

1. To cut the welding points between the front pillar reinforcement lower and side sill reinforcement, cut the side outer panel as shown.
2. Cut the side outer panel, front pillar reinforcement lower and front inner pillar lower and remove.



INSTALLATION

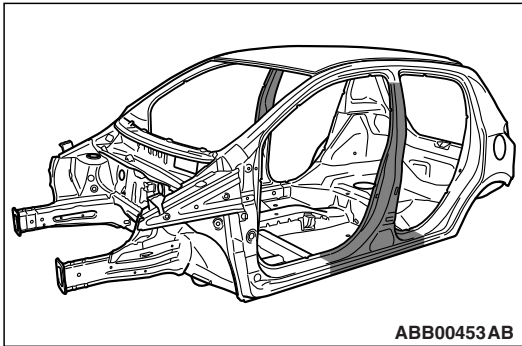
1. To reinforce the strength in the front pillar cut area, cut the side outer panel and the front pillar reinforcement lower 80 mm (3.15 inches) above the cut area and cut the side outer panel 50 mm (1.97 inches) above the cut area.
2. Assemble the new front inner pillar lower parts.
3. Assemble the new front pillar reinforcement lower parts.



4. When installing a new front outer pillar, cut the pillar along the remaining body side. Then, apply the body sealant in the area shown in the figure.

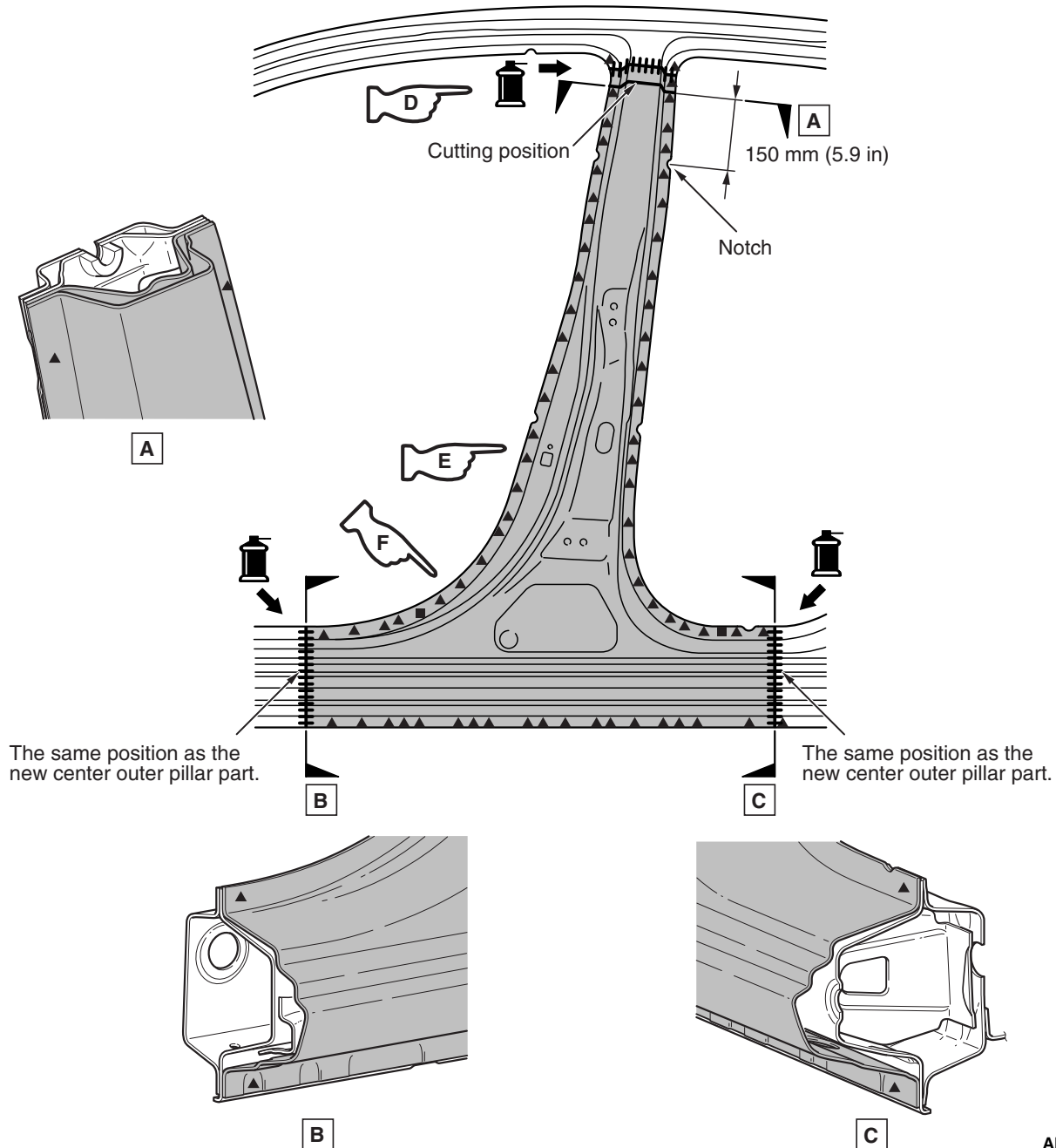
CENTER PILLAR

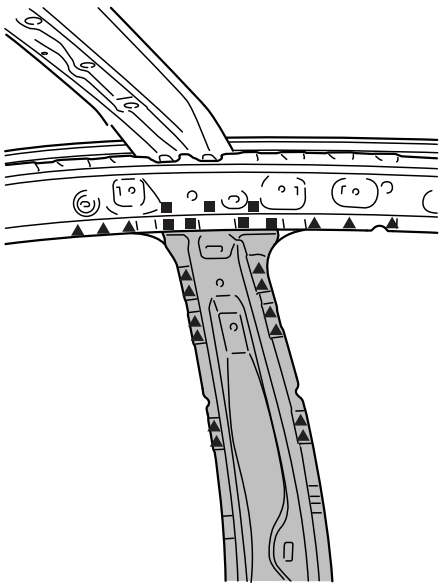
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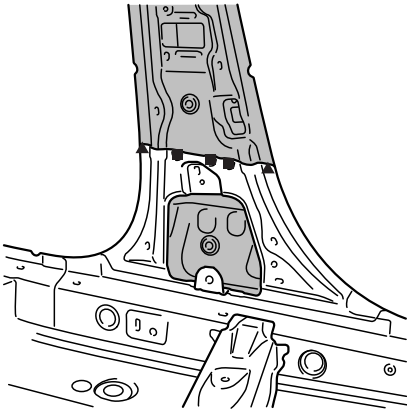
Symbol	Operation description
● ● ● ●	Spot welding
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++++	MIG spot welding
	MIG arc welding (continuous)
ooooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

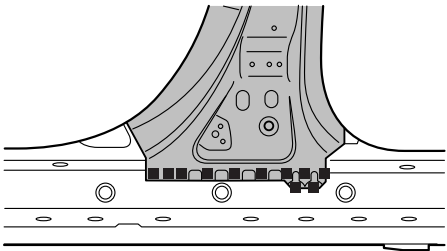




D



E



(With the side outer panel removed)

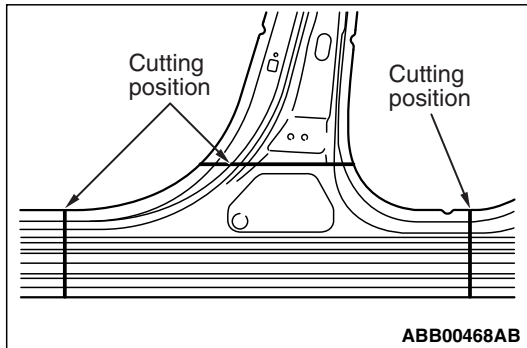
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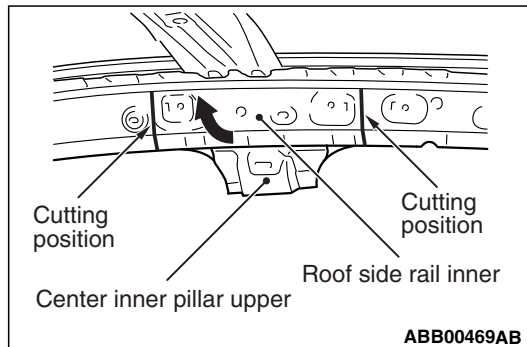
NOTE ON REPAIR WORK

REMOVAL

1. To cut the welding points between the center pillar reinforcement and side sill reinforcement, cut the side outer panel as shown.

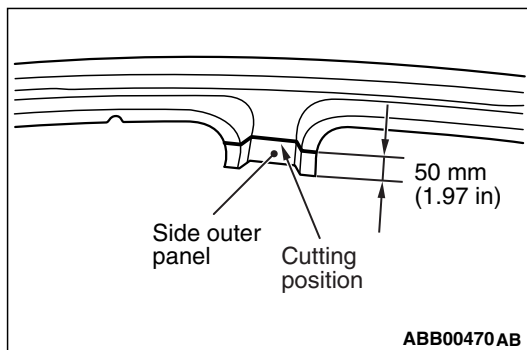


2. Since the center inner pillar upper remaining on the body side is hard to remove, cut the roof side rail inner up to the position shown in the figure, and remove the center inner pillar upper by pulling it towards you.

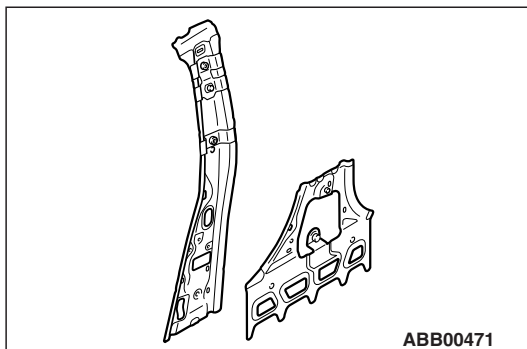


INSTALLATION

1. To reinforce the strength in the center pillar cut area, cut the side outer panel 50 mm (1.97 inches) above the cut area.

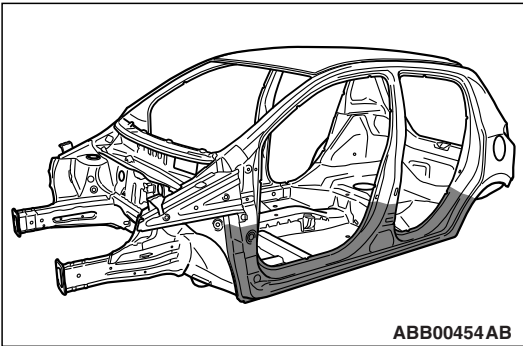


2. Remove the center inner pillar lower from the new center inner pillar parts, and install the center inner pillar to the body.



SIDE SILL

M4030007001699



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

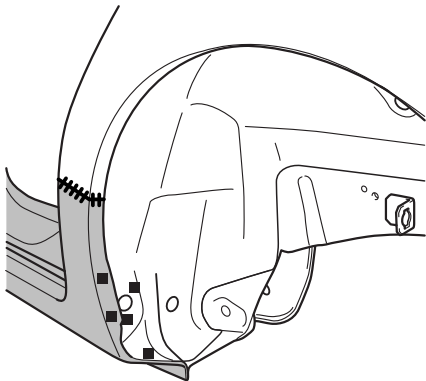
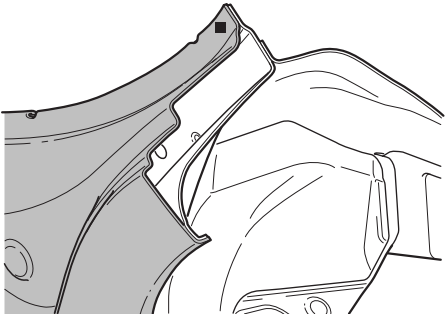
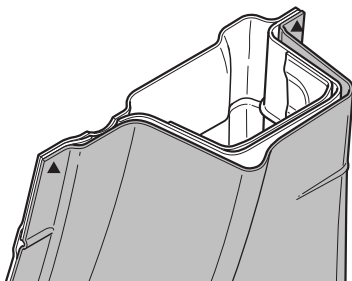
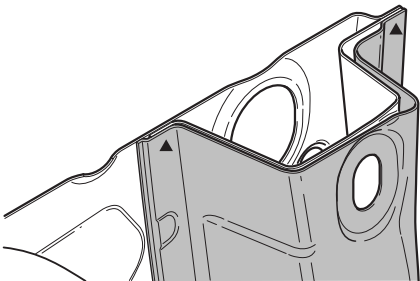
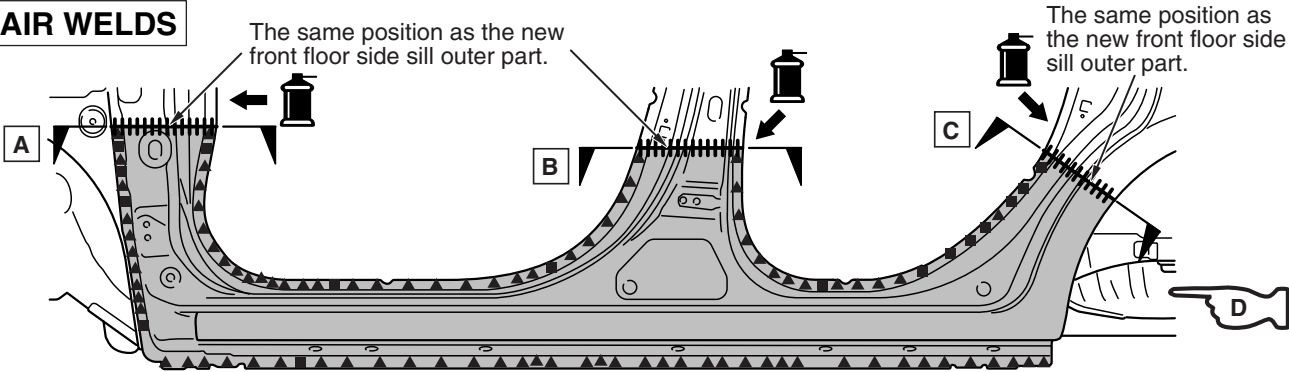
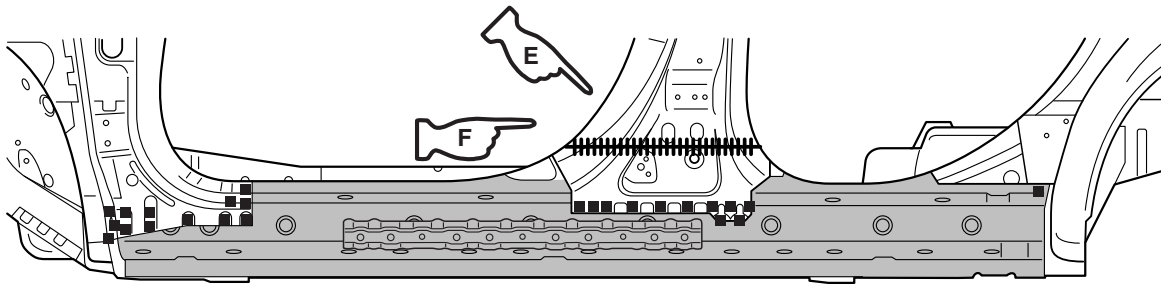
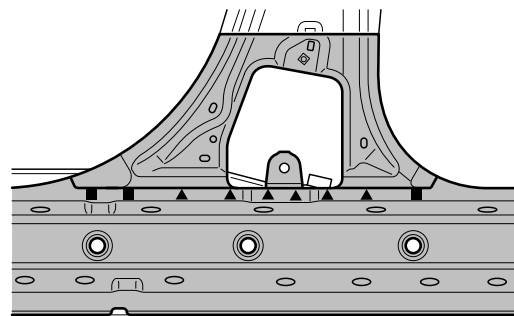
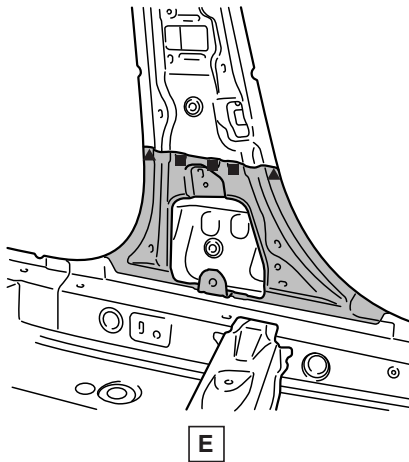


ABB00136AB



(With the side outer panel removed)



(With the center pillar reinforcement removed)

ABC00137AB

NOTE ON REPAIR WORK

REMOVAL

1. When removing the side sill reinforcement, cut the center pillar reinforcement 90 mm (3.54 inches) downward from the installation hole of the rear door hinge because the center pillar reinforcement interferes with it.
2. After removing the side sill reinforcement, remove the center inner pillar lower.

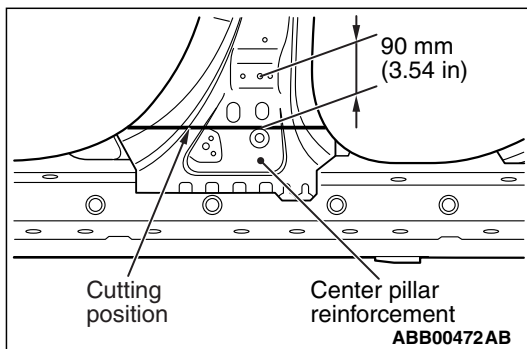
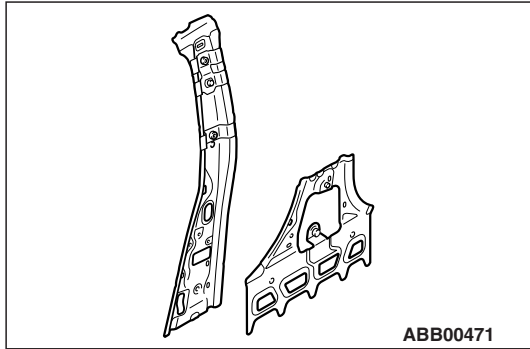
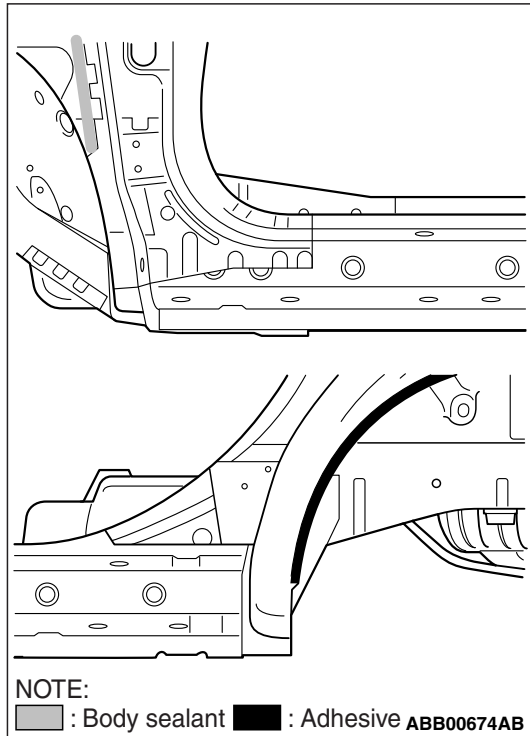


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**INSTALLATION**

1. Remove the center inner pillar upper from the new center inner pillar parts, and install the center inner pillar to the body.



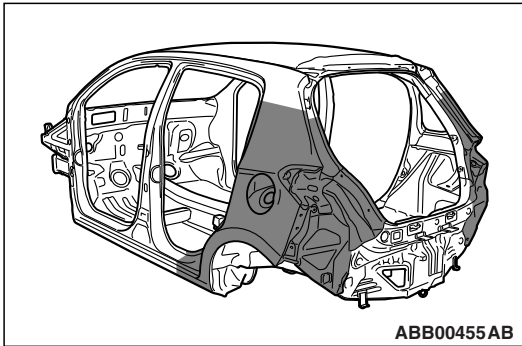
2. When installing the new front floor side sill outer part, apply the body sealant and adhesives in advance to the areas shown in the figure.

Adhesive: Epoxyayresin adhesive

Brand: 3M™ AAD Part No.8115 or equivalent

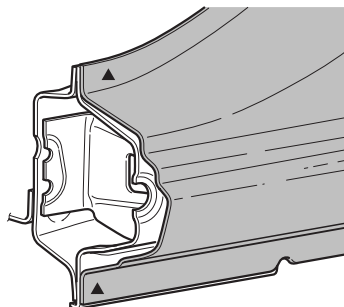
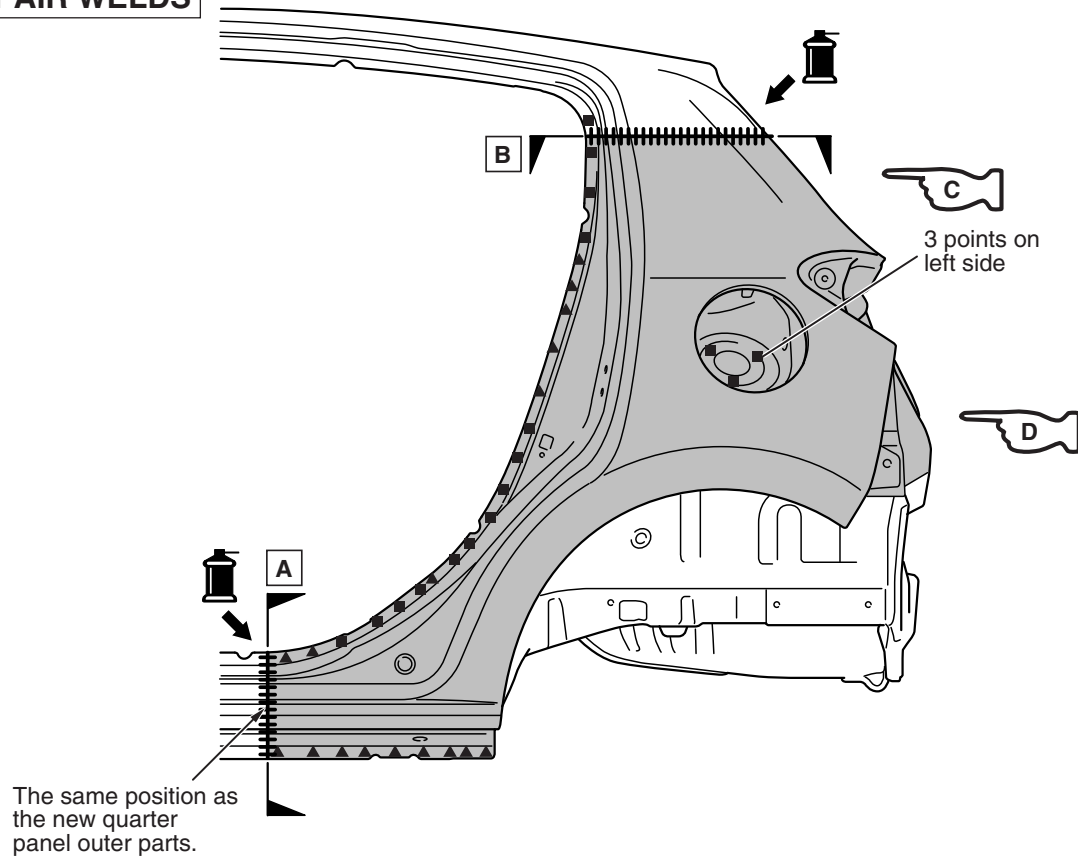
QUARTER OUTER

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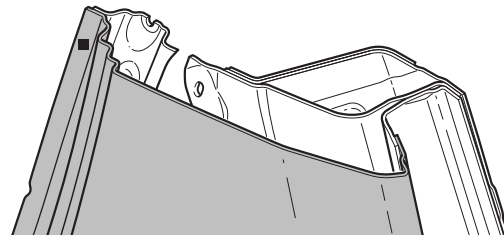


Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

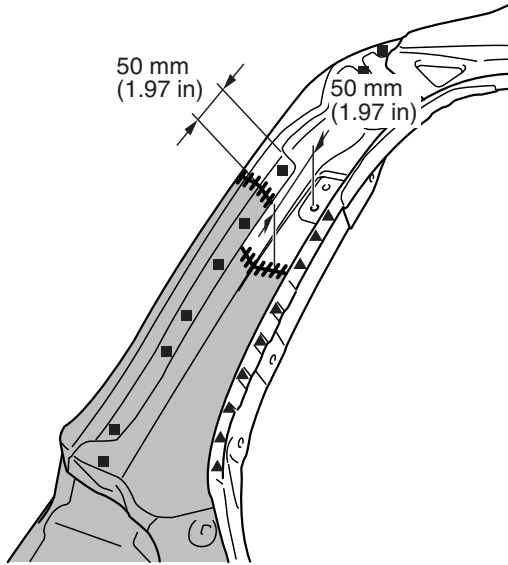


A

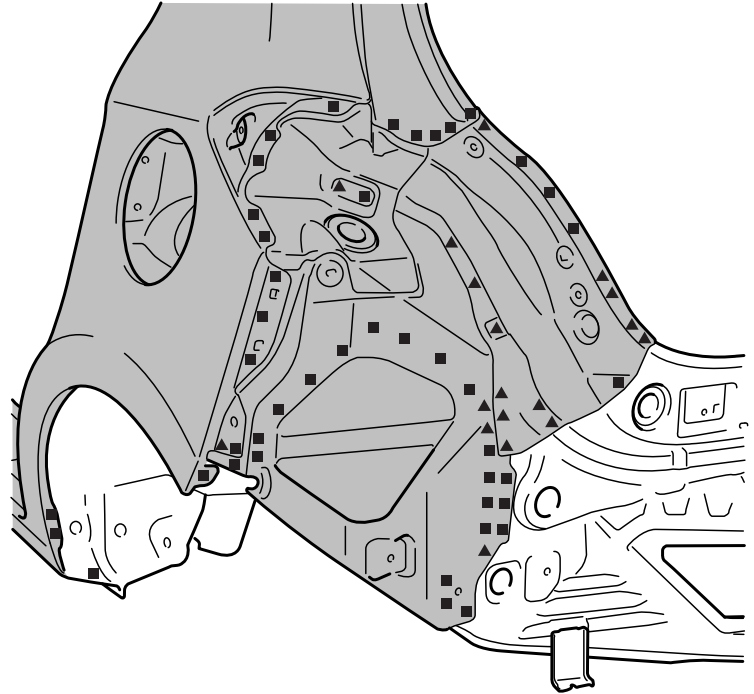


B

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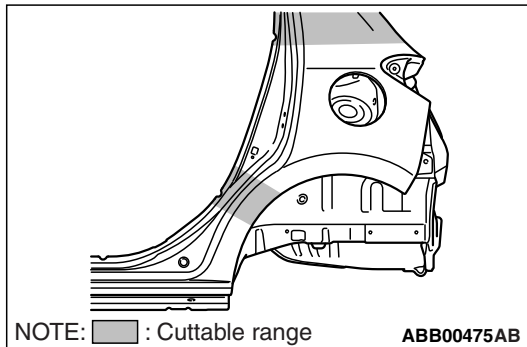


C



D

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NOTE: Partial replacement is possible depending on the range of damage.

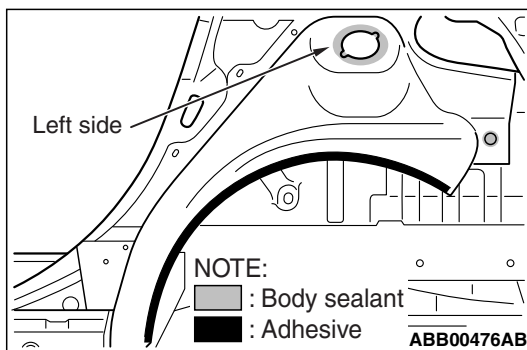
NOTE ON REPAIR WORK

INSTALLATION

When installing the new quarter panel outer parts, apply the body sealant and adhesives in advance to the areas shown in the figure.

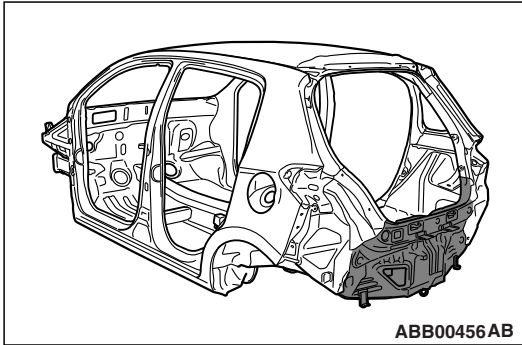
Adhesive: Epoxyayresin adhesive

Brand: 3M™ AAD Part No.8115 or equivalent



REAR END PANEL

M4030000300168



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
oooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

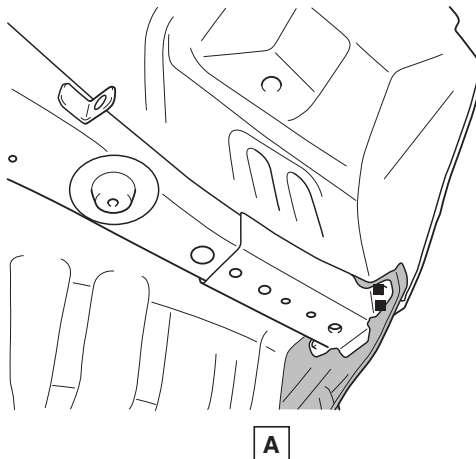
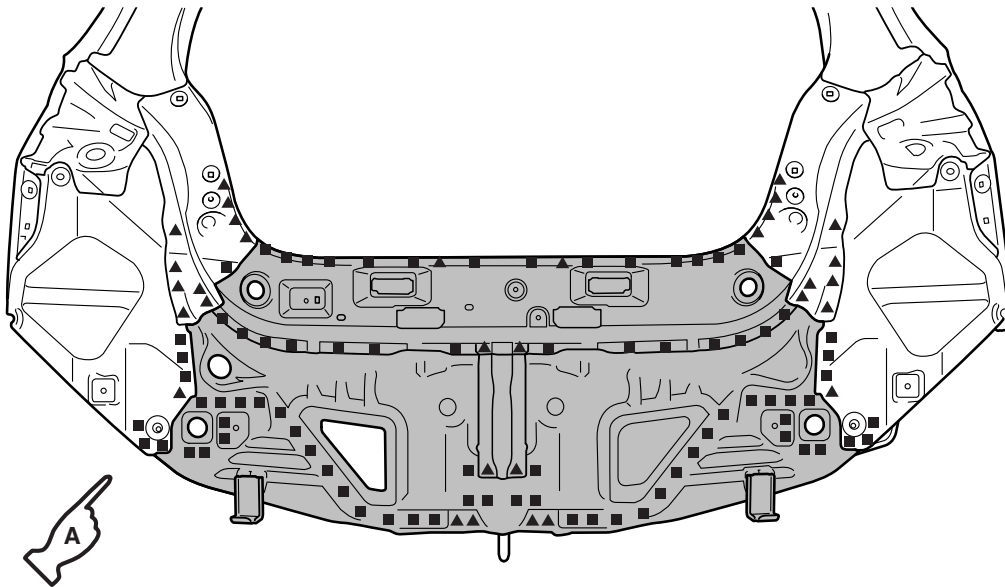
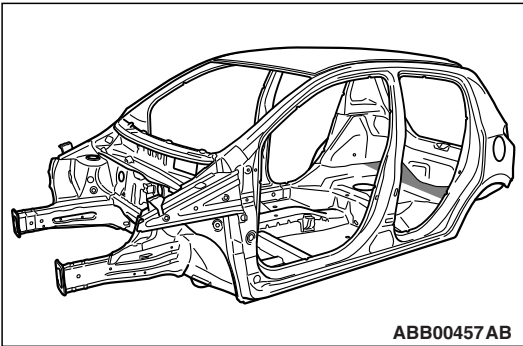


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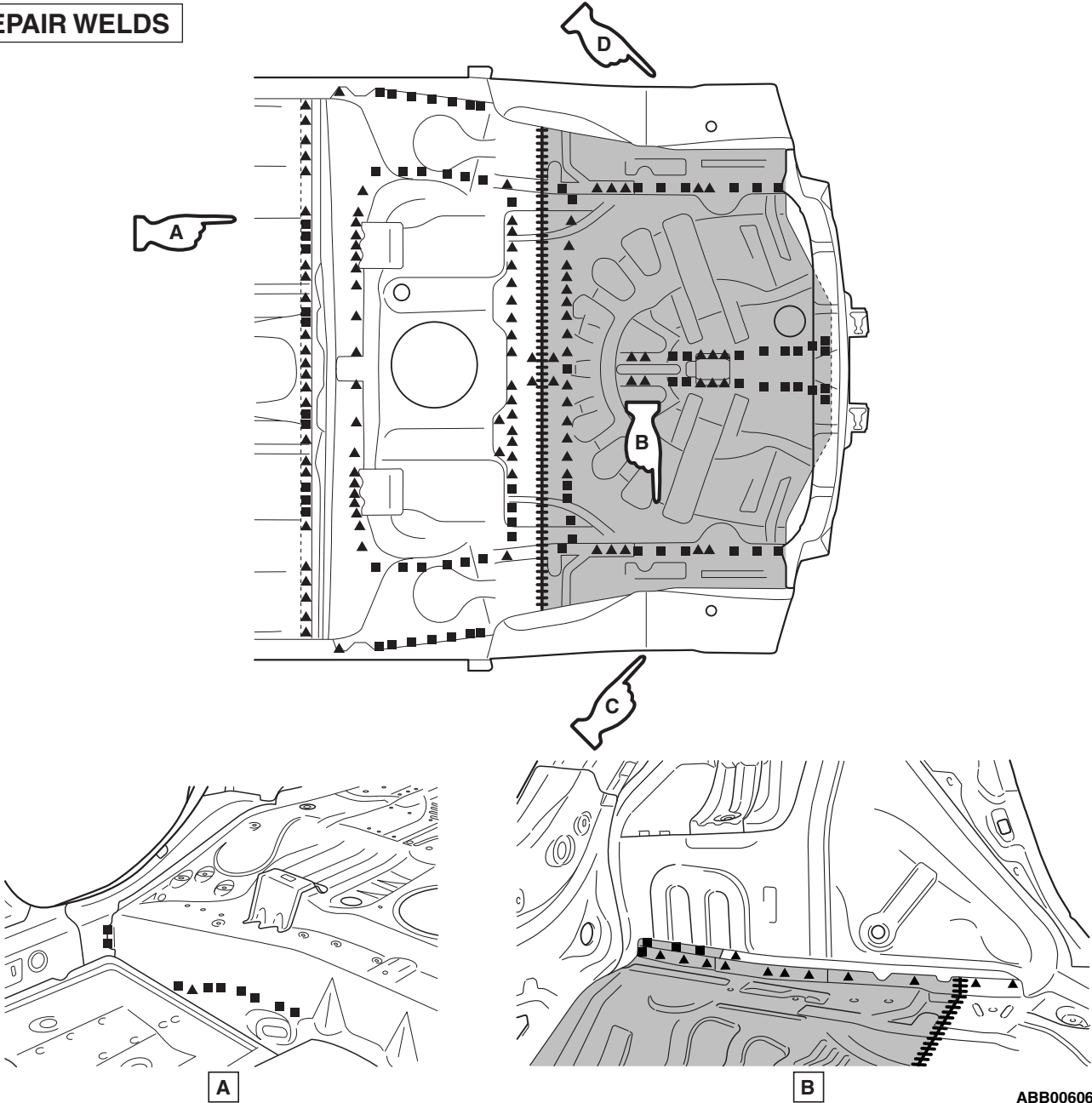
REAR FLOOR

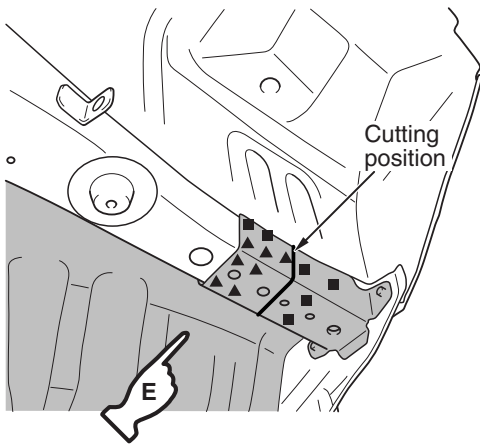
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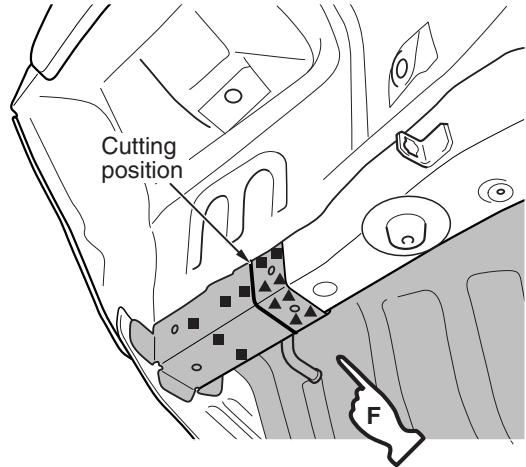
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	MIG arc welding (continuous)
oooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS

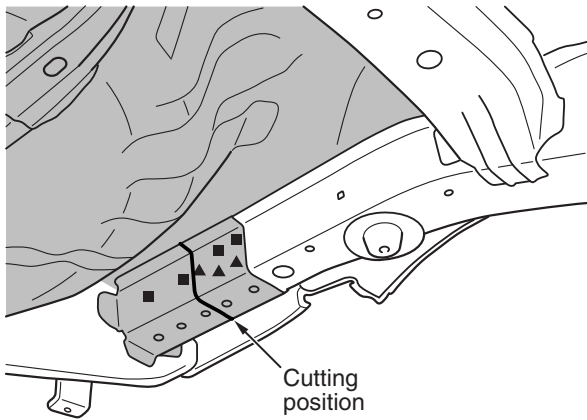




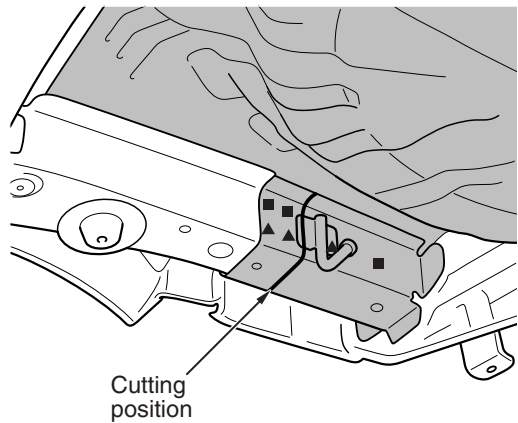
C



D



E



F

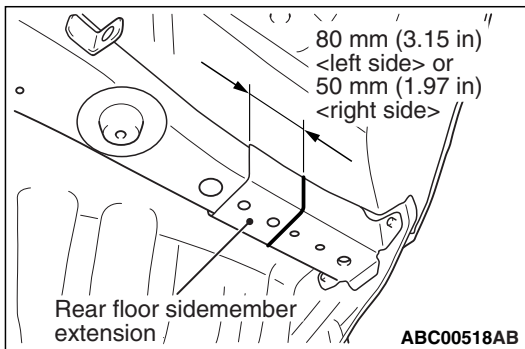
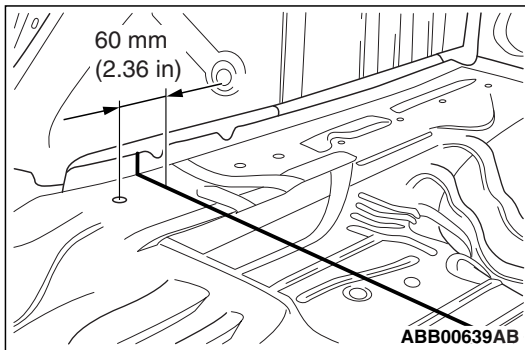
ABC00527AB

NOTE: Refer to the Rear End Panel section on [P.3-21](#) for the welding points with the rear end panel.

NOTE ON REPAIR WORK

REMOVAL

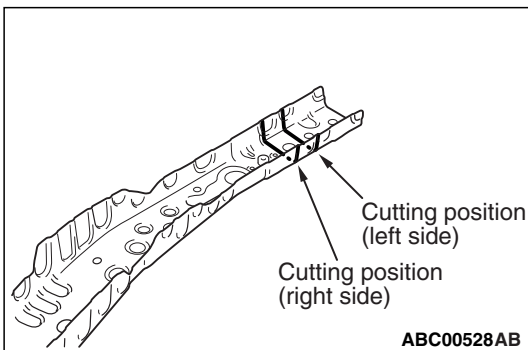
1. When removing the rear floor pan, cut it 60 mm (2.36 inches) behind the installation hole of the rear seat belt anchor.
2. To remove the rear floor sidemember extension and the rear floor sidemember reinforcement, follow the steps below:



- (1) Cut off the rear floor sidemember extension together with the rear floor sidemember reinforcement 80 mm (3.15 inches) <left side> or 50 mm (1.97 inches) <right side> behind the edge of the extension.
- (2) Remove the rear floor sidemember extension remaining on the body side.

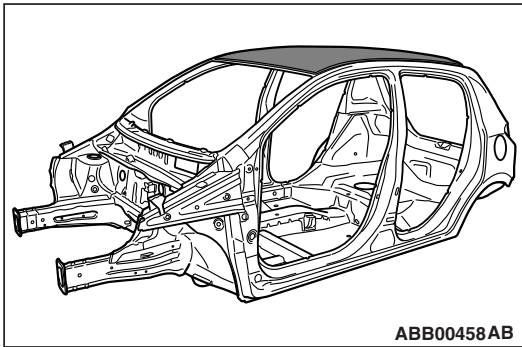
INSTALLATION

1. Align the new rear floor sidemember reinforcement with the vehicle body, and cut out an excessive part. Then install it to the vehicle body.
2. Install the new rear floor sidemember extension.



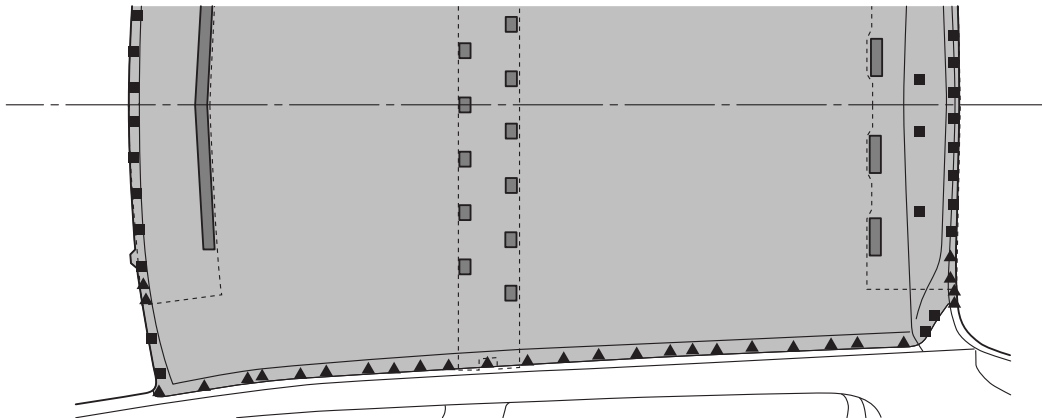
ROOF

M4030011001733



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
+ + + +	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



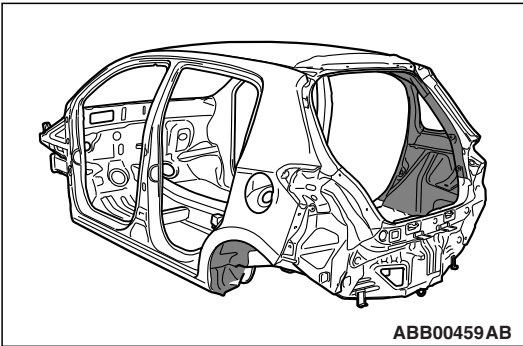
NOTE:
■ : Adhesive

ABB00636AB

Adhesive: Urethane body sealer
Brand: 3M™ AAD Part No.08360 or equivalent

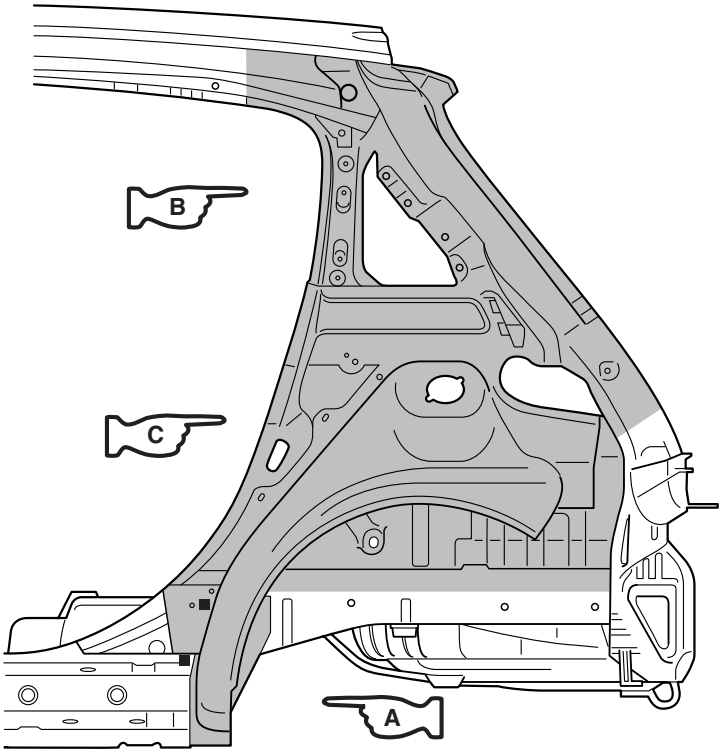
QUARTER INNER

M4030012001435



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



(With the quarter outer removed)

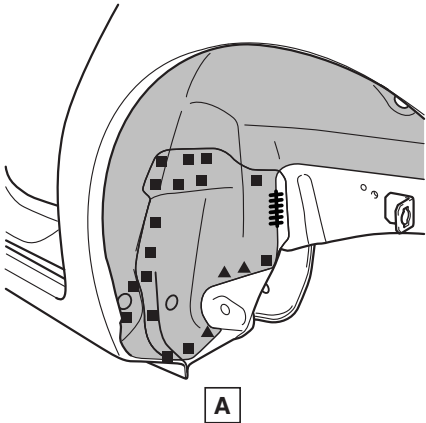
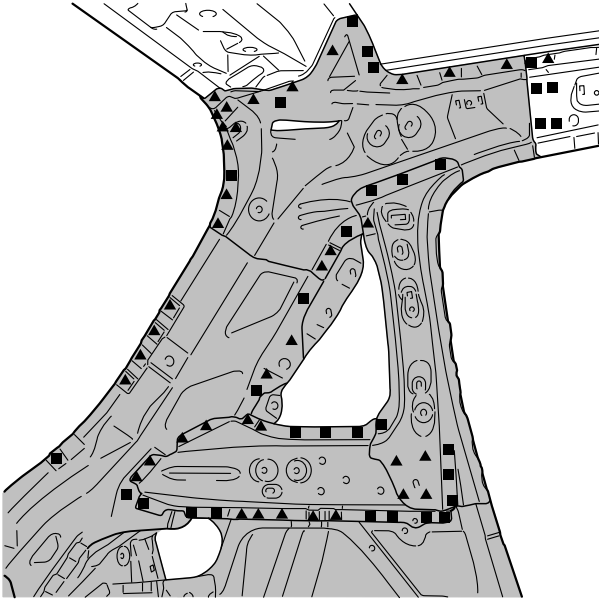
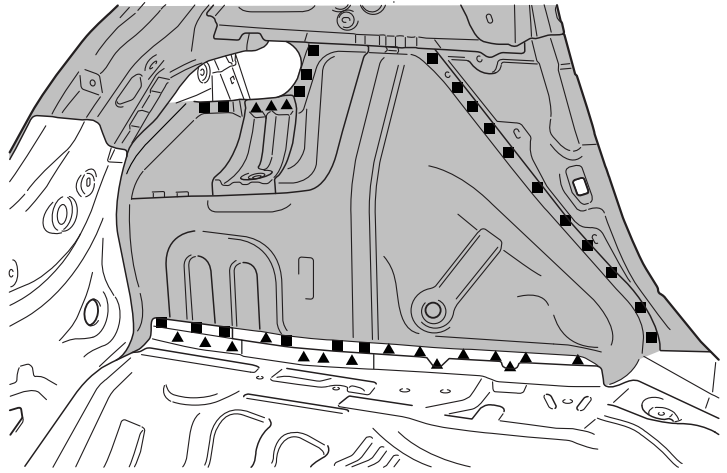


ABB00630AB



B



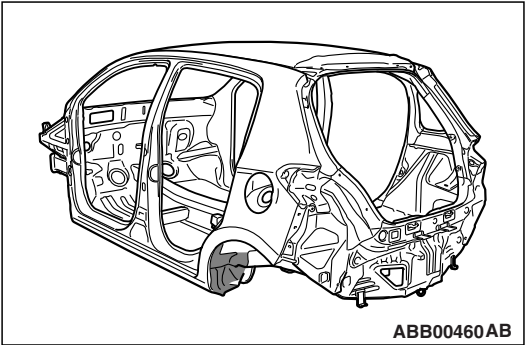
C

ABB00632AB

NOTE: Refer to the Quarter Outer section on [P.3-19](#) for the welding points with the quarter outer.

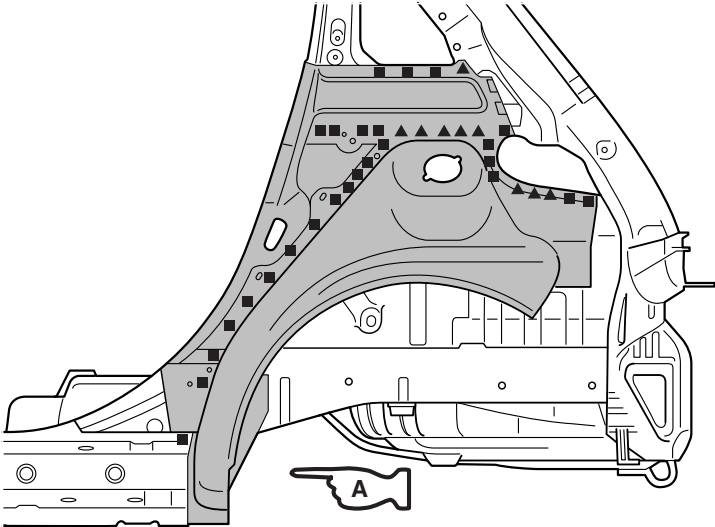
QUARTER INNER LOWER

M4030001100327



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
+ + + +	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



(With the quarter outer removed)

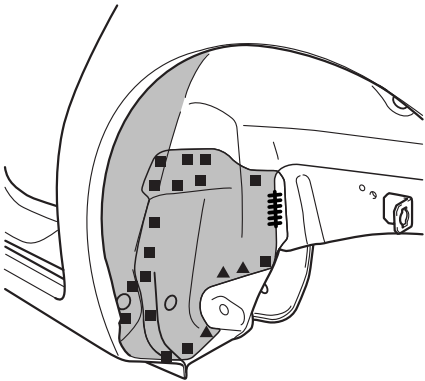
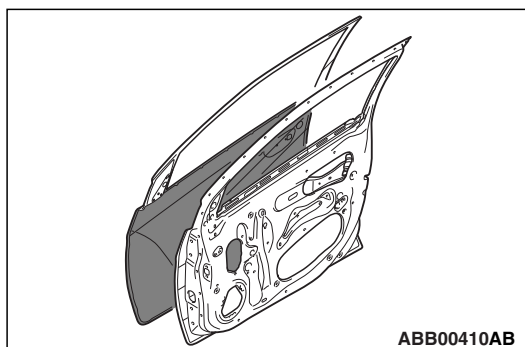


ABB00634AB

NOTE: Refer to the Quarter Outer section on [P.3-19](#) for the welding points with the quarter outer.

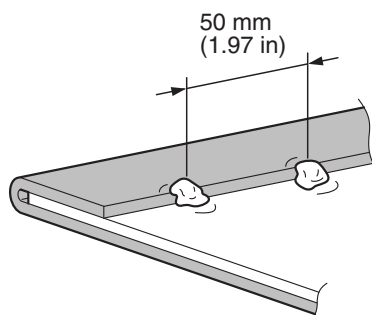
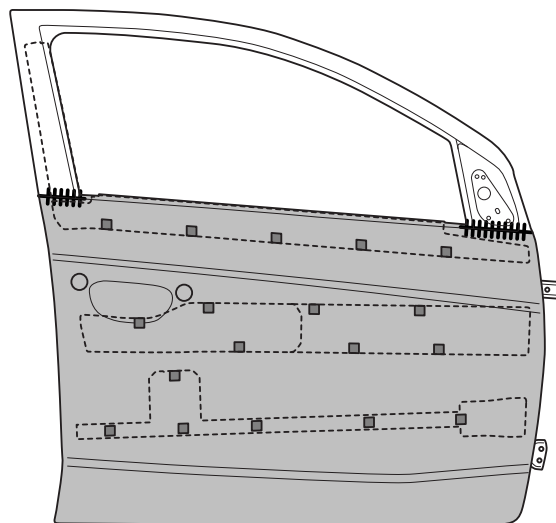
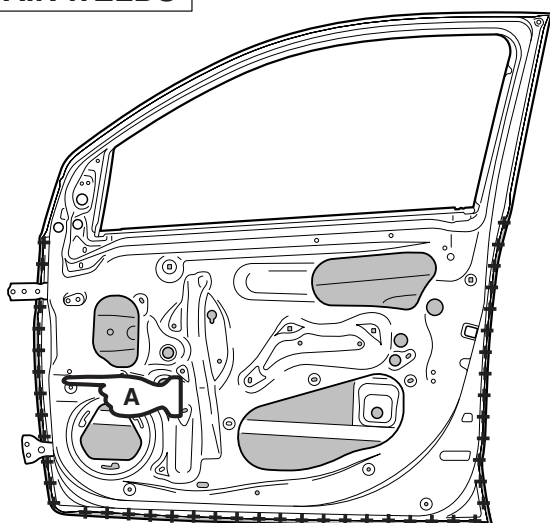
FRONT DOOR OUTER PANEL (WELDED TYPE)

M4030001501050



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



A

NOTE:
■ : Adhesive

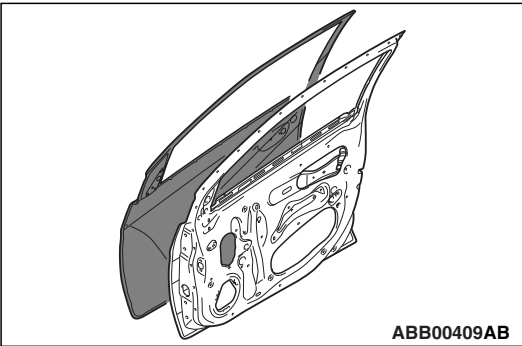
ABB00403AB

Adhesive: Urethane body sealer
Brand: 3M™ AAD Part No.08360 or equivalent

NOTE: After hemming the new front door panel outer part, MIG spot weld the flange overlap section at a pitch of 50 mm (1.97 inches).

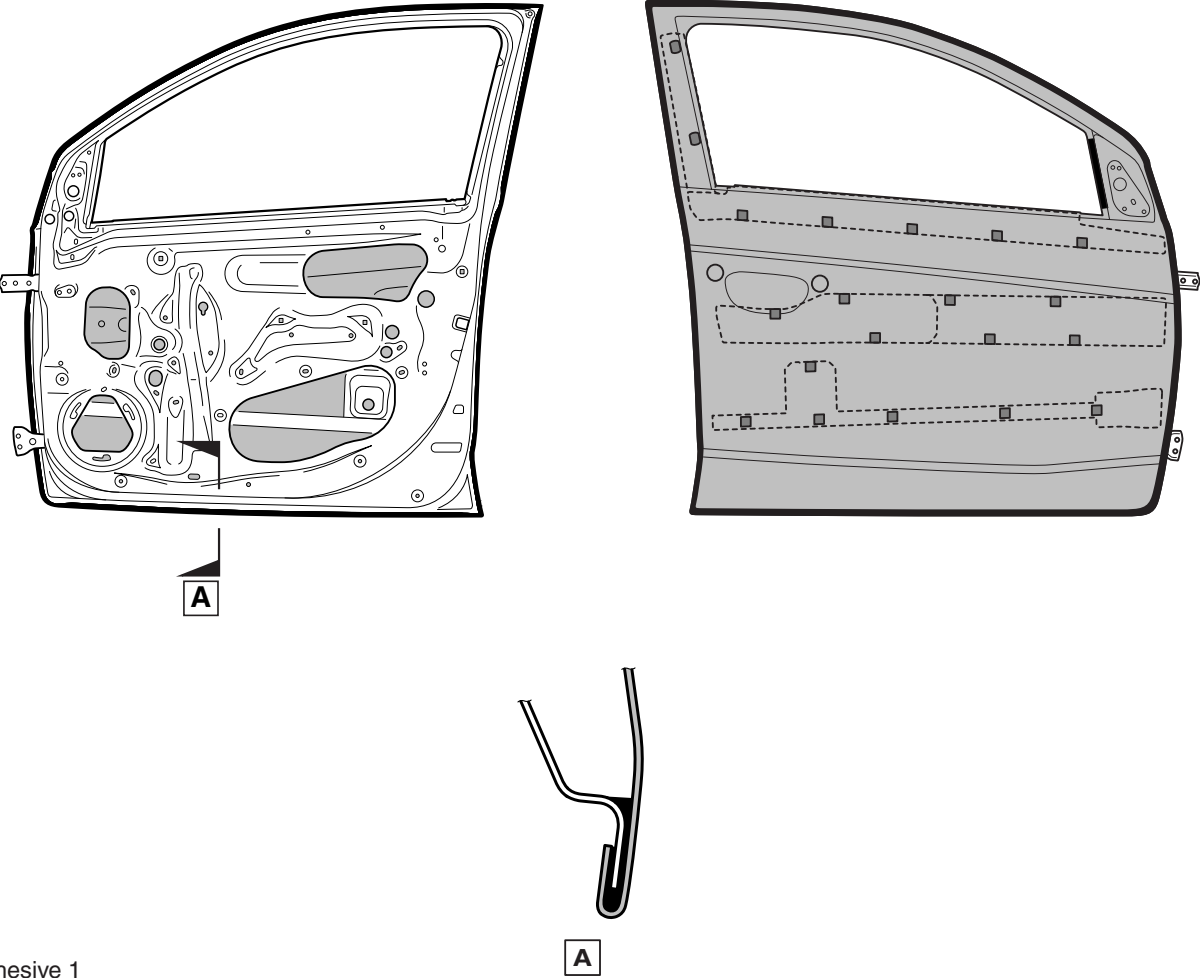
FRONT DOOR OUTER PANEL (ADHESION TYPE)

M4030001701128



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



NOTE:
■ : Adhesive 1
■ : Adhesive 2

- **Adhesive 1: Urethane body sealer**
Brand: 3M™ AAD Part No.08360 or equivalent
- **Adhesive 2: Epoxyayresin adhesive**
Brand: 3M™ AAD Part No.8115 or equivalent

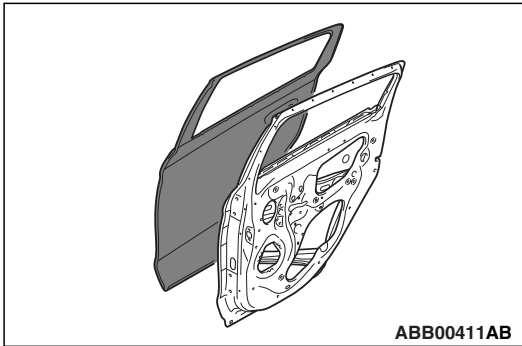
NOTE ON REPAIR WORK

INSTALLATION

1. When installing the new front door panel outer part, grind the bonding surface and remove the paint to improve adhesion. Then, degrease the front door panel outer.
2. Install the front door panel outer and hem it. Then, wipe off the adhesive that squeezed out.

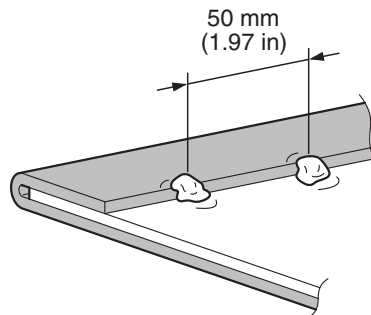
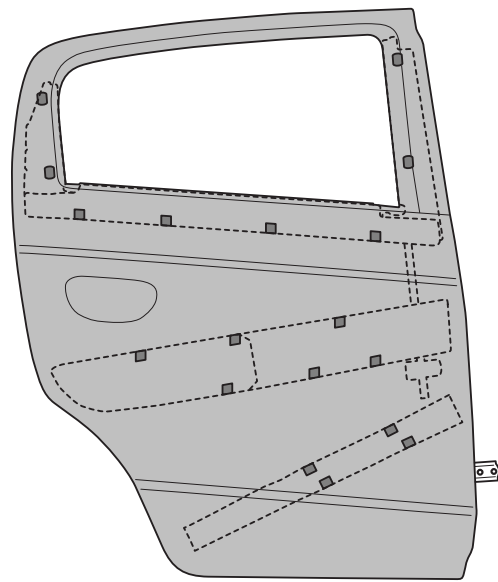
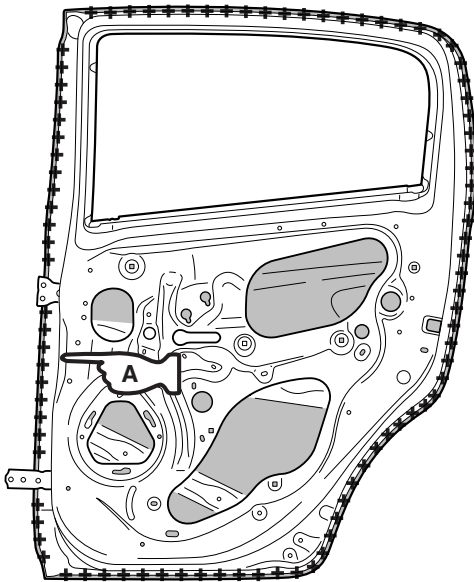
REAR DOOR OUTER PANEL (WELDED TYPE)

M4030001600786



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



A

NOTE:
■ : Adhesive

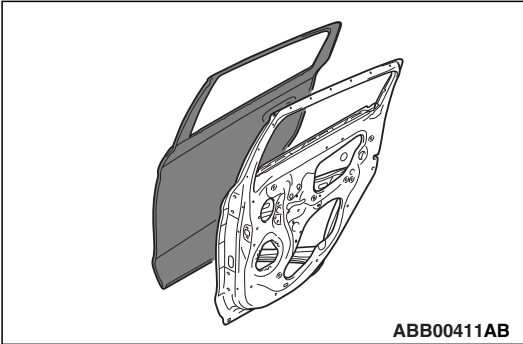
Adhesive: Urethane body sealer
Brand: 3M™ AAD Part No.08360 or equivalent

ABB00405AB

NOTE: After hemming the new rear door panel outer part, MIG spot weld the flange overlap section at a pitch of 50 mm (1.97 inches).

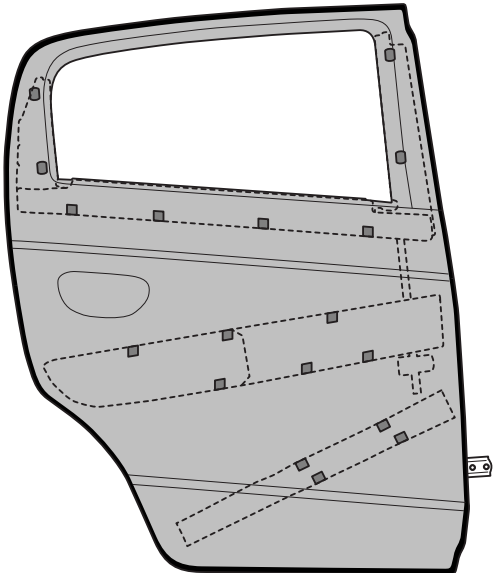
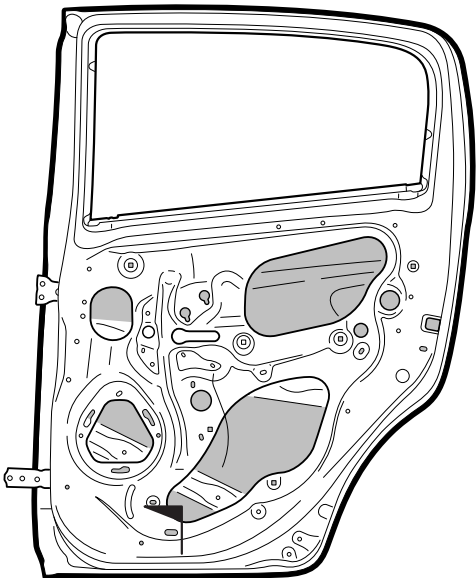
REAR DOOR OUTER PANEL (ADHESION TYPE)

M4030001800768



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
ooooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



A

ABB00406AB

NOTE:

- : Adhesive 1
- : Adhesive 2

- Adhesive 1: Urethane body sealer
Brand: 3M™ AAD Part No.08360 or equivalent
- Adhesive 2: Epoxyayresin adhesive

Brand: 3M™ AAD Part No.8115 or equivalent

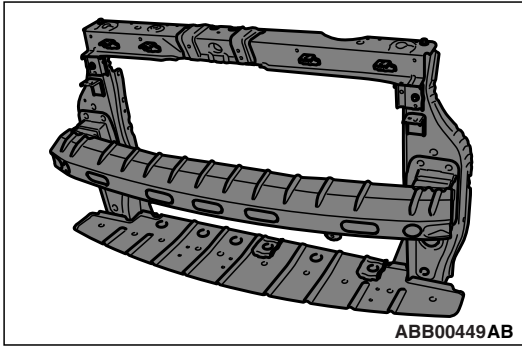
NOTE ON REPAIR WORK

INSTALLATION

1. When installing the new rear door panel outer part, grind the bonding surface and remove the paint to improve adhesion. Then, degrease the rear door panel outer.
2. Install the rear door panel outer and hem it. Then, wipe off the adhesive that squeezed out.

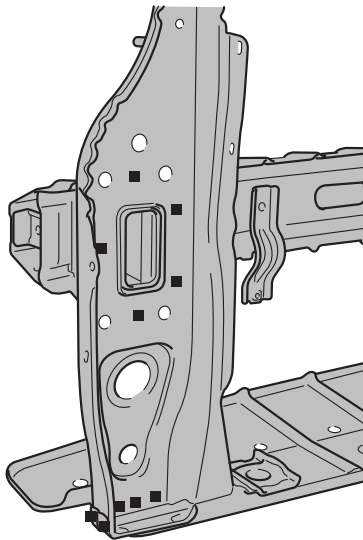
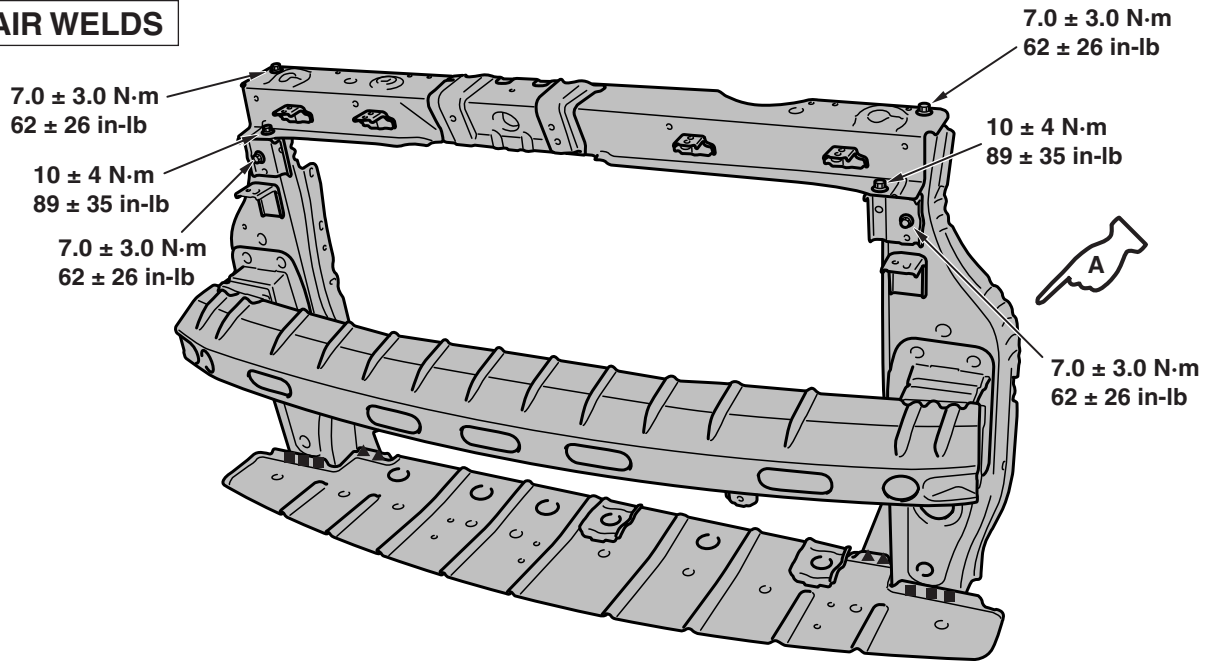
FRONT END CROSSMEMBER

M4030003100390



Symbol	Operation description
● ● ● ●	Spot welding
■ ■ ▲ ▲	MIG plug welding (■: indicates two panels to be welded ▲: indicates three panels to be welded)
++++	MIG spot welding
	MIG arc welding (continuous)
oooo	Braze welding
	Anti-corrosion agent application locations (Use access holes to apply liberally to butt-welded joints.)

REPAIR WELDS



A

ABC00529AB

NOTES