

SECTION **BRM**  
 BODY REPAIR

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# BODY EXTERIOR PAINT COLOR

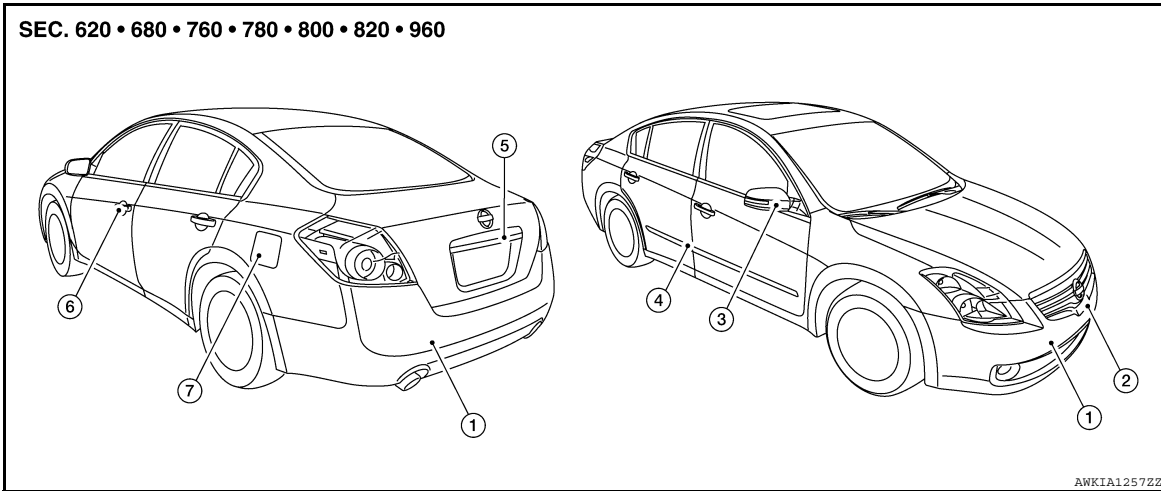
< FEATURES OF NEW MODEL >

## FEATURES OF NEW MODEL

### BODY EXTERIOR PAINT COLOR

#### Body Exterior Paint Color

INFOID:000000005440057



Component		Color code	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP	
		Description	Grey - Green	Beige	Silver	Dark Grey	Black	White	Blue	Medium Grey	
		Paint type	PM	M	M	PM	S	3P	PM	M	
		Hard clear coat	×	×	×	×	×	×	×	×	
1	Bumper fascia	Body color	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP	
2	Front grille	Chromium-plate + Smoke clear	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	Cr + HFM-09	
3	Door outside mirror	Case	Body color	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP
4	Body side molding	Body color	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP	
5	License plate finisher	Chromium-plate + body color	Cr + DAD	Cr + HAB	Cr + K12	Cr + K50	Cr + KH3	Cr + QX3	CR + RAB	Cr + RAP	
6	Door outside handle	Body color	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP	
7	Fuel filler lid	Body color	DAD	HAB	K12	K50	KH3	QX3	RAB	RAP	

M = Metallic, S = Solid, 2S = Solid and Clear, 2P = 2-stage Pearl, 3P = 3-Stage pearl, PM = Pearl metallic, Black is solvent based, all others are water based.

# PRECAUTIONS

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## PRECAUTION

### PRECAUTIONS

#### Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

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The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

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# HANDLING PRECAUTIONS FOR PLASTICS

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## HANDLING PRECAUTIONS FOR PLASTICS

### Precautions For Plastics

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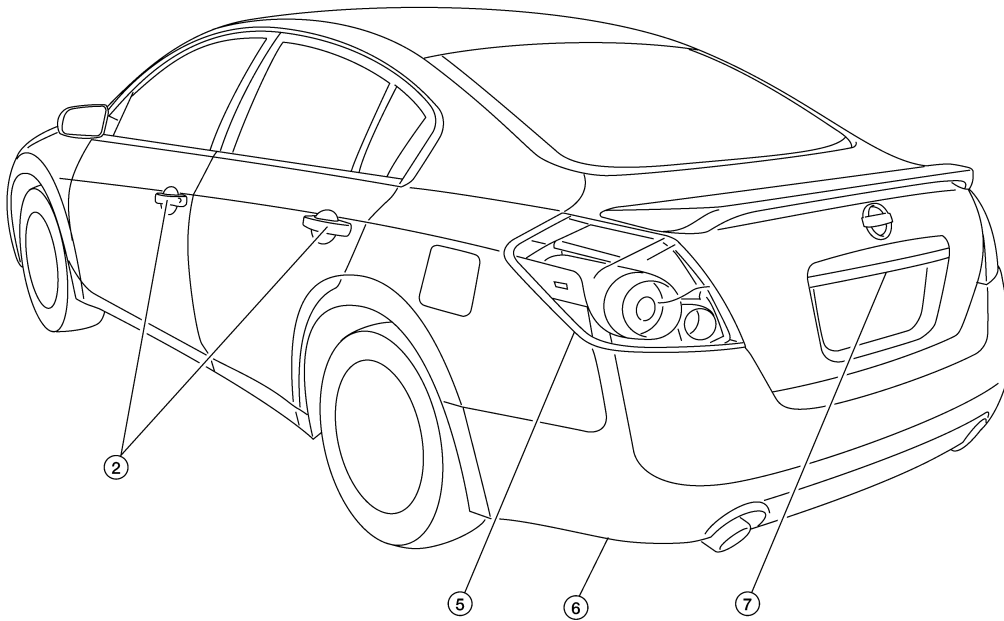
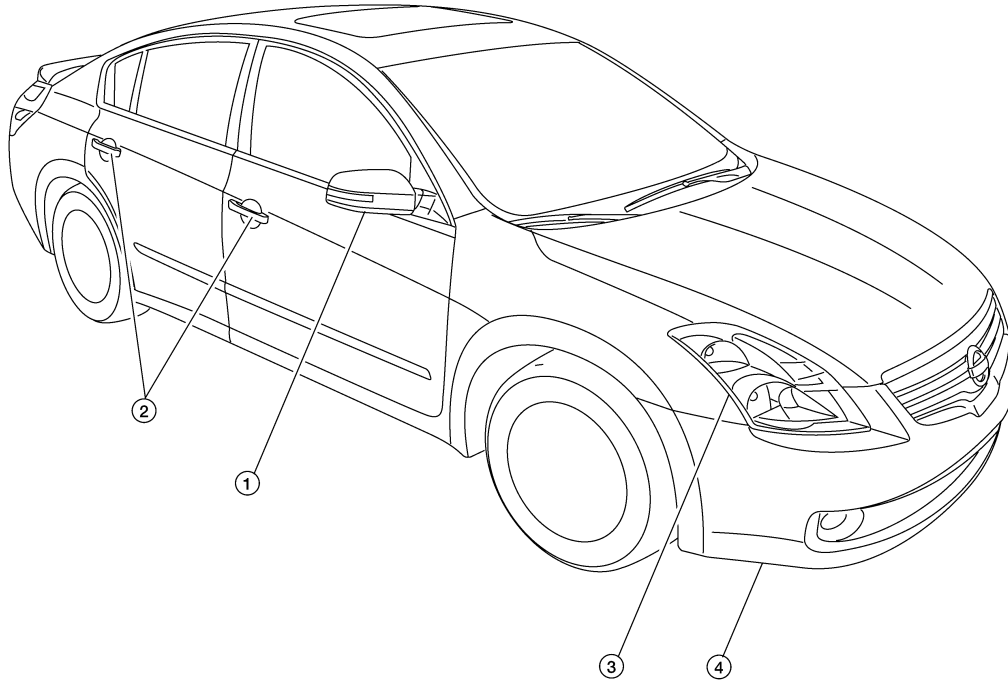
Abbreviation	Material name	Heat resisting temperature °C(°F)	Resistance to gasoline and solvents	Other cautions
PE	Polyethylene	60(140)	Gasoline and most solvents are harmless if applied for a very short time (wipe up quickly).	Flammable
PVC	Poly Vinyl Chloride	80(176)	Same as above.	Poison gas is emitted when burned.
EPM/EPDM	Ethylene Propylene (Diene) copolymer	80(176)	Same as above.	Flammable
PP	Polypropylene	90(194)	Same as above.	Flammable, avoid battery acid.
UP	Unsaturated Polyester	90(194)	Same as above.	Flammable
PS	Polystyrene	80(176)	Avoid solvents.	Flammable
ABS	Acrylonitrile Butadiene Styrene	80(176)	Avoid gasoline and solvents.	
PMMA	Poly Methyl Methacrylate	85(185)	Same as above.	
EVAC	Ethylene Vinyl Acetate	90(194)	Same as above.	
ASA	Acrylonitrile Styrene Acrylate	100(222)	Same as above.	Flammable
PPE	Poly Phenylene Ether	110(230)	Same as above.	
PC	Polycarbonate	120(248)	Same as above.	
PAR	Polyarylate	180(356)	Same as above.	
PUR	Polyurethane	90(194)	Same as above.	
POM	Poly Oxymethylene	120(248)	Same as above.	Avoid battery acid.
PBT+PC	Poly Butylene Terephthalate + Polycarbonate	120(248)	Same as above.	Flammable
PA	Polyamide	140(284)	Same as above.	Avoid immersing in water.
PBT	Poly Butylene Terephthalate	140(284)	Same as above.	
PET	Polyester	180(356)	Same as above.	
PEI	Polyetherimide	200(392)	Same as above.	

1. When repairing and painting a portion of the body adjacent to plastic parts, consider their characteristics (influence of heat and solvent) and remove them if necessary or take suitable measures to protect them.
2. Plastic parts should be repaired and painted using methods suiting the materials' characteristics.

### LOCATION OF PLASTIC PARTS

# HANDLING PRECAUTIONS FOR PLASTICS

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Item	Component	Abbreviation	Material
1.	Door Mirror	Case	ASA Acronitrile Styrene Acrylate
		Skull cap	ABS Acronitrile Butadiene Acrylate
2.	Outside door handle	Grip	PC Polycarbonate
		Escutcheon	PA Polyamide (Nylon)

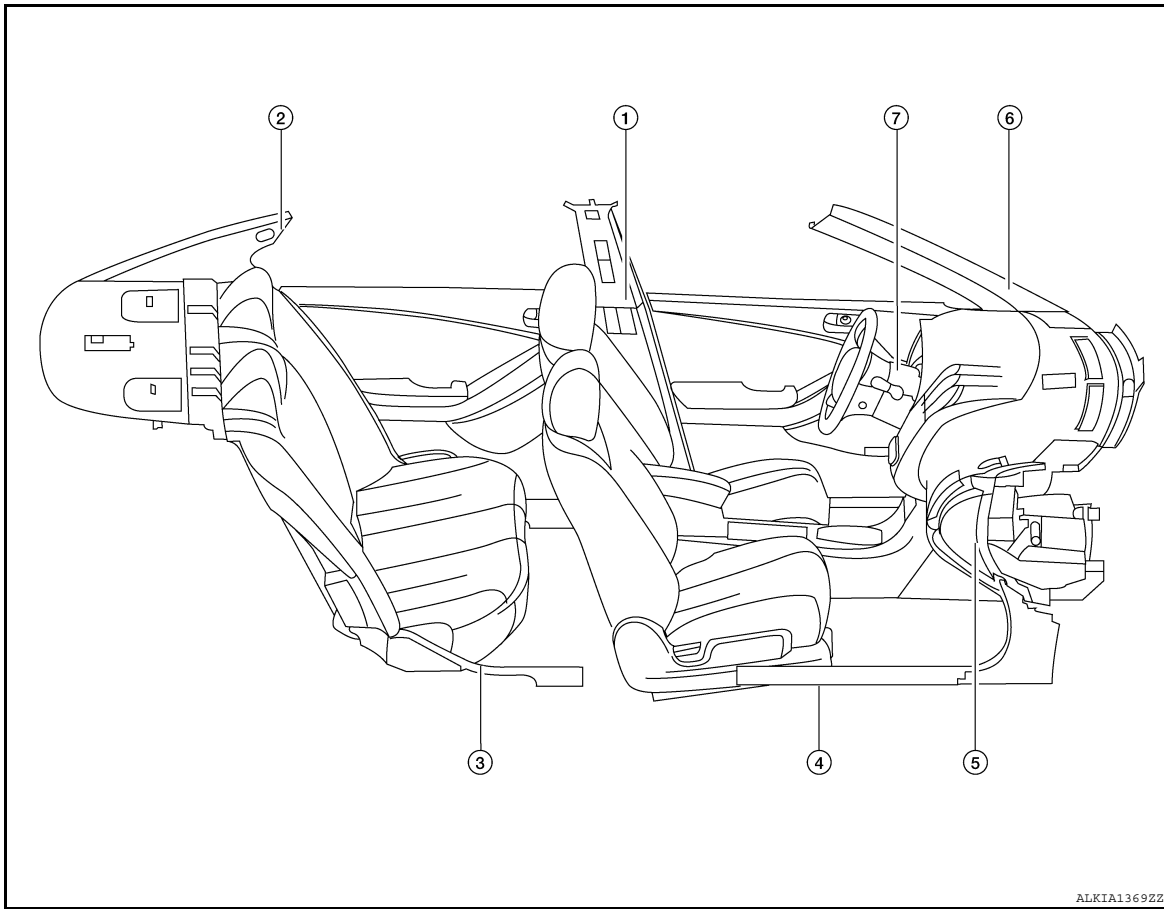
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# HANDLING PRECAUTIONS FOR PLASTICS

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Item	Component	Abbreviation	Material
3.	Front combination lamp	Lens	PC Polycarbonate
		Housing	PP Polypropylene
4.	Front bumper fascia	PP + EPM	Polypropylene + Ethylene Propylene (Diene) copolymer
5.	Rear combination lamp	Lens	PMMA Poly Methyl Methacrylate
		Housing	ABS Acronitrile Butadiene Acrylate
6.	Rear bumper fascia	PP + EPM	Polypropylene + Ethylene Propylene (Diene) copolymer
7.	Trunk lid finisher	ABS + PC	Acronitrile Butadiene Acrylate + Polycarbon-ate



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Item	Component	Abbreviation	Material
1.	Center pillar trim	PP	Polypropylene
2.	Upper quarter trim	PP	Polycarbonate
3.	Rear inner kicking plate	PP	Polypropylene
4.	Front inner kicking plate	PP	Polypropylene
5.	Dash side finisher	PP	Polypropylene
6.	Front pillar garnish	PP	Polypropylene
7.	Steering column covers	PP	Polypropylene

# BODY COMPONENT PARTS

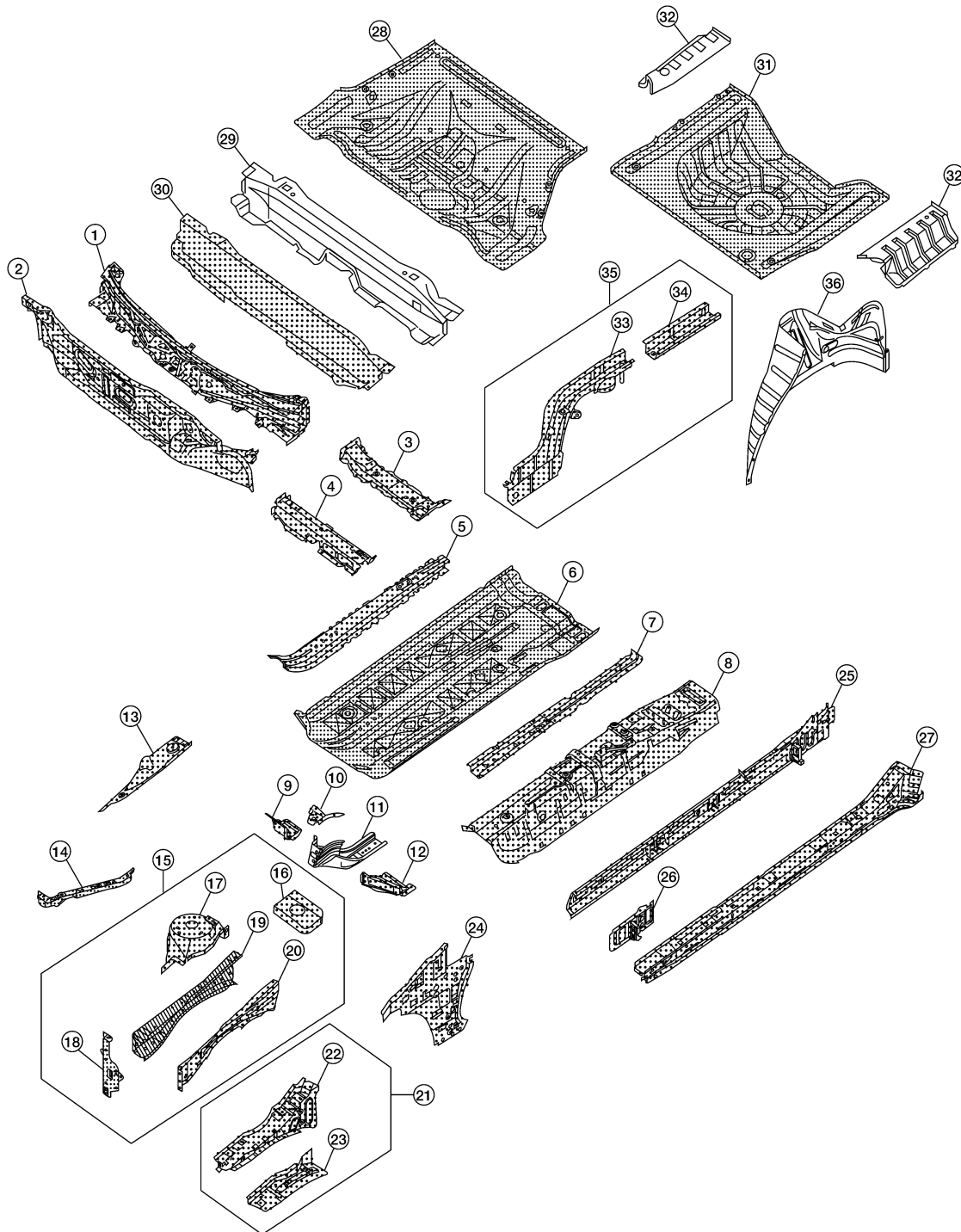
< ON-VEHICLE REPAIR >




## ON-VEHICLE REPAIR

### BODY COMPONENT PARTS

#### Underbody Component Parts

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-  : Indicates both-sided anti-corrosive pre-coated steel portions
-  : Indicates high strength steel (HSS) portions
-  : Indicates both-sided anti-corrosive steel and HSS portions

- |   |   |
|---|---|
| 1. Upper dash assembly                  | 25. Inner sill (RH, LH)                 |
| 2. Lower dash crossmember reinforcement | 26. Outer sill support bracket (RH, LH) |
| 3. Rear crossmember (RH, LH)            | 27. Outer sill (RH, LH)                 |

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## BODY COMPONENT PARTS

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| 4. Front crossmember (RHLH)                    | 28. Rear floor front                    |
| 5. Front sidemember reinforcement upper (RHLH) | 29. Rear seat crossmember               |
| 6. Front floor assembly (RHLH)                 | 30. Rear seat crossmember lower         |
| 7. Front sidemember reinforcement lower        | 31. Rear floor rear                     |
| 8. Front floor center                          | 32. Rear floor rear side (RH, LH)       |
| 9. Front suspension member plate (RH, LH)      | 33. Rear side member (RH, LH)           |
| 10. Front sidemember cap (RH, LH)              | 34. Rear side member extension (RH, LH) |
| 11. Front sidemember (RH, LH)                  | 35. Rear side member assembly (RH, LH)  |
| 12. Outrigger (RH, LH)                         | 36. Rear wheel housing outer (RH, LH)   |
| 13. Lower hoodledge support (RH, LH)           |   |
| 14. Radiator core support (RH, LH)             |   |
| 15. Front sidemember assembly (RH, LH)         |   |
| 16. Strut housing bracket (RH, LH)             |   |
| 17. Strut housing (RH, LH)                     |   |
| 18. Radiator core support side (RH, LH)        |   |
| 19. Front sidemember extension (RH, LH)        |   |
| 20. Closing plate (RH, LH)                     |   |
| 21. Hoodledge assembly (RH, LH)                |   |
| 22. Upper hoodledge (RH, LH)                   |   |
| 23. Upper hoodledge lower (RH, LH)             |   |
| 24. Dash side (RH, LH)                         |   |

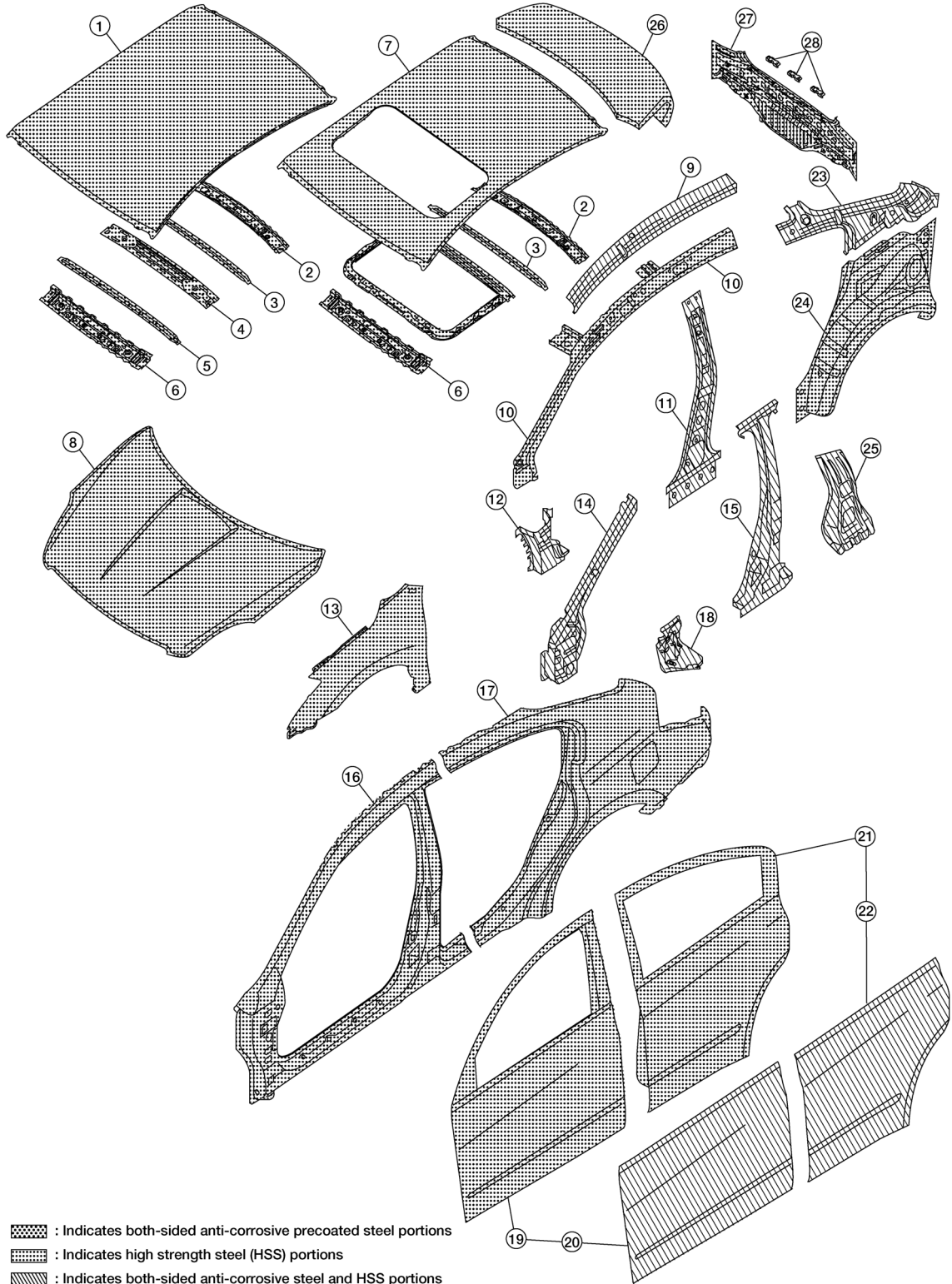


# BODY COMPONENT PARTS

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## Body Component Parts

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- |   |  |
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| <ul style="list-style-type: none"> <li>1. Roof panel assembly</li> <li>2. Rear roof rail</li> <li>3. 3rd roof rail</li> <li>4. 2nd roof rail</li> <li>5. 1st roof rail</li> <li>6. Front roof rail</li> </ul> | <ul style="list-style-type: none"> <li>21. Rear door assembly (RH, LH)</li> <li>22. Outer rear door panel (RH, LH)</li> <li>23. Rear pillar reinforcement (RH, LH)</li> <li>24. Rear wheel well housing outer (RH, LH)</li> <li>25. Rear pillar inner reinforcement (RH, LH)</li> <li>26. Trunk lid assembly (RH, LH)</li> </ul> |
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## BODY COMPONENT PARTS

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| 7. Sun roof panel assembly               | 27. Rear panel assembly        |
| 8. Hood assembly                         | 28. Upper rear bumper retainer |
| 9. Roof side rail reinforcement (RH, LH) |                                |
| 10. Outer roof side rail (RH, LH)        |                                |
| 11. Inner center pillar (RH,LH)          |                                |
| 12. Front pillar reinforcement (RHLH)    |                                |
| 13. Fender (RH, LH)                      |                                |
| 14. Front pillar inner (RH, LH)          |                                |
| 15. Center pillar reinforcement (RH, LH) |                                |
| 16. Side body (RH, LH)                   |                                |
| 17. Rear fender (RH, LH)                 |                                |
| 18. Rear fender corner (RH, LH)          |                                |
| 19. Front door assembly (RH, LH)         |                                |
| 20. Outer front door panel (RH, LH)      |                                |

# CORROSION PROTECTION

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## CORROSION PROTECTION

### Description

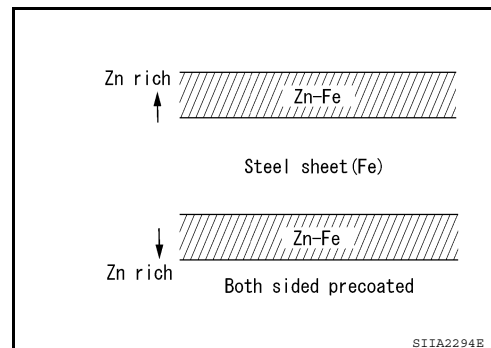
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To provide improved corrosion prevention, the following anti-corrosive measures have been implemented in NISSAN production plants. When repairing or replacing body panels, it is necessary to use the same anti-corrosive measures.

#### Anti-Corrosive Precoated Steel (Galvannealed Steel)

To improve repairability and corrosion resistance, a new type of anti-corrosive precoated steel sheet has been adopted replacing conventional zinc-coated steel sheet.

Galvannealed steel is electroplated and heated to form Zinc-iron alloy, which provides excellent and long term corrosion resistance with cationic electrodeposition primer.



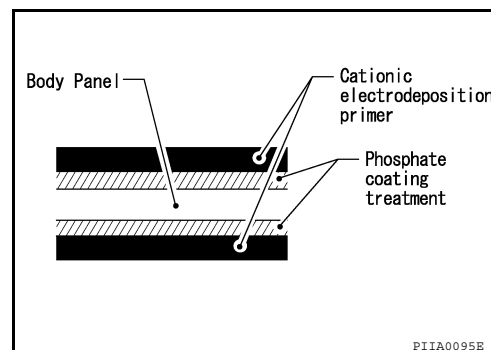
Nissan Genuine Service Parts are fabricated from galvannealed steel. Therefore, it is recommended that GENUINE NISSAN PARTS or equivalent be used for panel replacement to maintain the anti-corrosive performance built into the vehicle at the factory.

#### Phosphate Coating Treatment and Cationic Electrodeposition Primer

A phosphate coating treatment and a cationic electrodeposition primer, which provide excellent corrosion protection, are employed on all body components.

#### **CAUTION:**

**Confine paint removal during welding operations to an absolute minimum.**



Nissan Genuine Service Parts are also treated in the same manner. Therefore, it is recommended that GENUINE NISSAN PARTS or equivalent be used for panel replacement to maintain anti-corrosive performance built into the vehicle at the factory.

#### Anti-Corrosive Wax

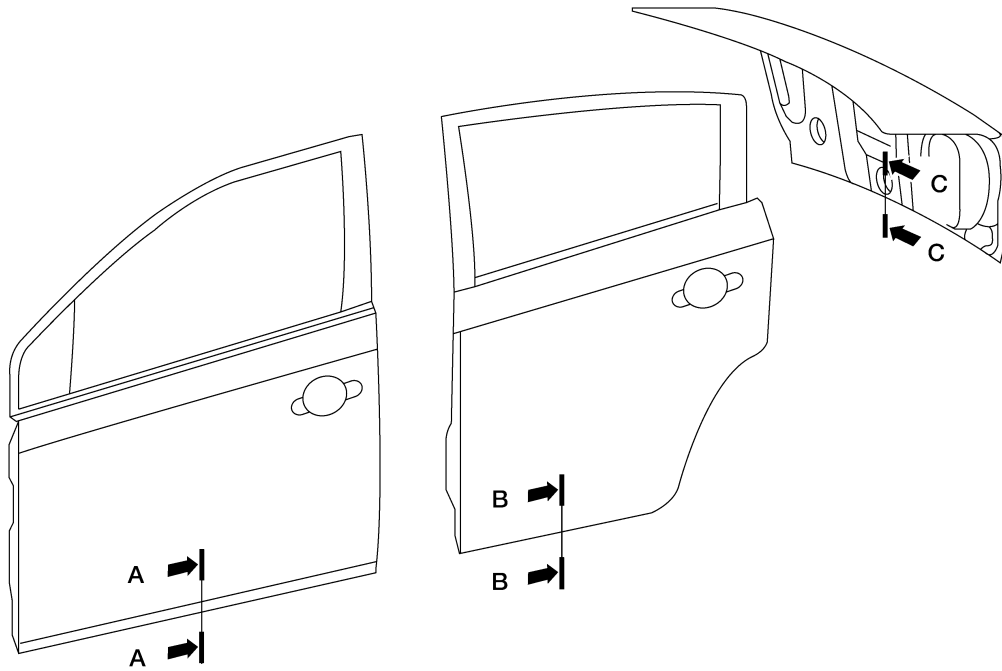
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To improve corrosion resistance, anti-corrosive wax is applied inside the body sill and inside other closed sections. Accordingly, when replacing these parts, be sure to apply anti-corrosive wax to the appropriate areas of

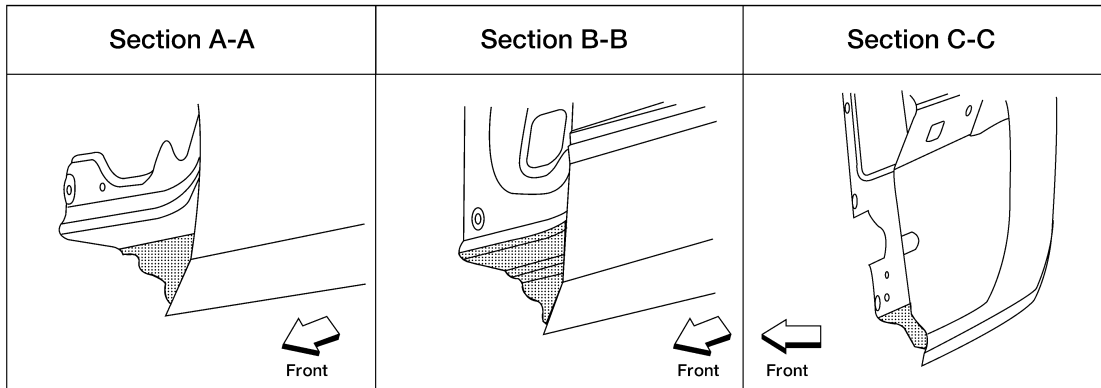
# CORROSION PROTECTION

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the new parts. Select an excellent anti-corrosive wax which will penetrate after application and has a long shelf life.



 : Indicates anti-corrosive wax coated portions



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## Undercoating

The underside of the floor and wheelhouse are undercoated to prevent rust, vibration, noise and stone chipping. Therefore, when such a panel is replaced or repaired, apply undercoating to that part. Use an undercoating which is rust preventive, soundproof, vibration-proof, shock-resistant, adhesive, and durable.

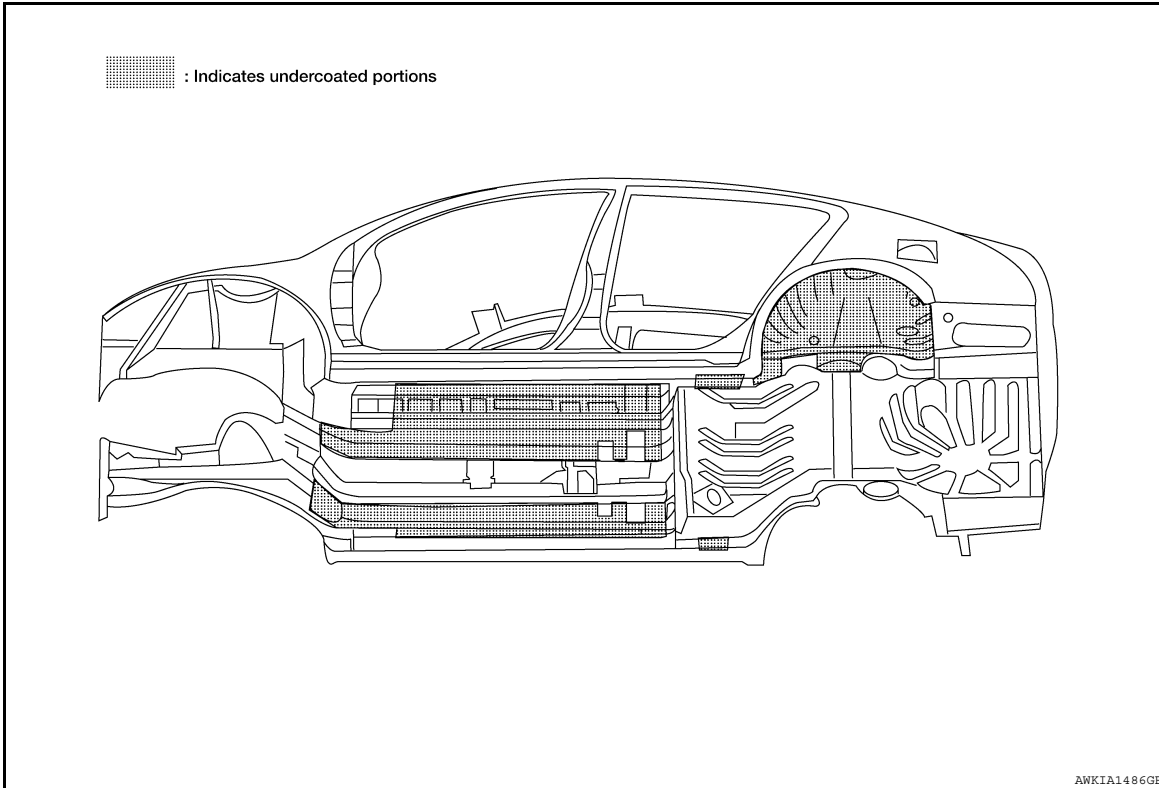
### Precautions in Undercoating

1. Do not apply undercoating to any place unless specified (such as the areas above the muffler and three way catalyst which are subjected to heat).
2. Do not undercoat the exhaust pipe or other parts which become hot.
3. Do not undercoat rotating parts.
4. Apply bitumen wax after applying undercoating.

# CORROSION PROTECTION

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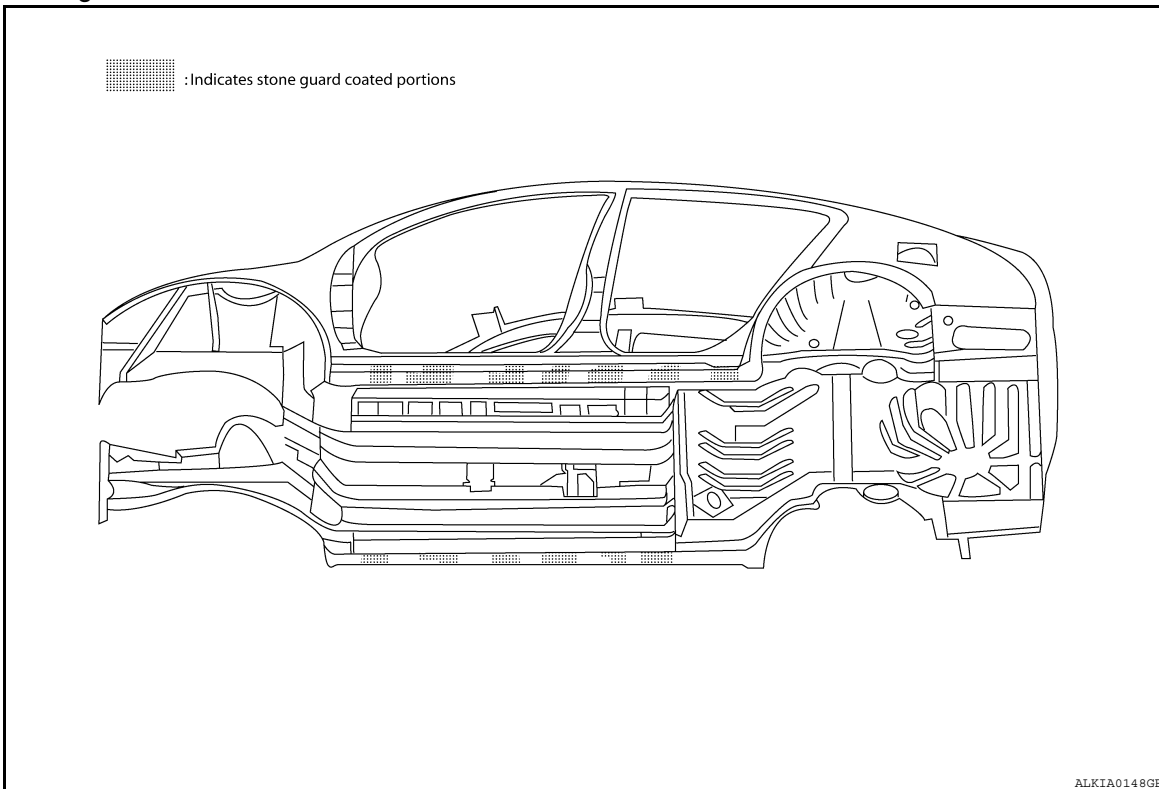
5. After putting seal on the vehicle, put undercoating on it.



## Stone Guard Coat

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To prevent damage caused by stones, the lower outer body panel (fender, door, etc.) have an additional layer of Stone Guard Coating over the ED primer coating. When replacing or repairing these panels, apply Stone Guard coating to the same portions as before. Use a coating which is rust preventive, durable, shock-resistant and has a long shelf life.



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# BODY SEALING

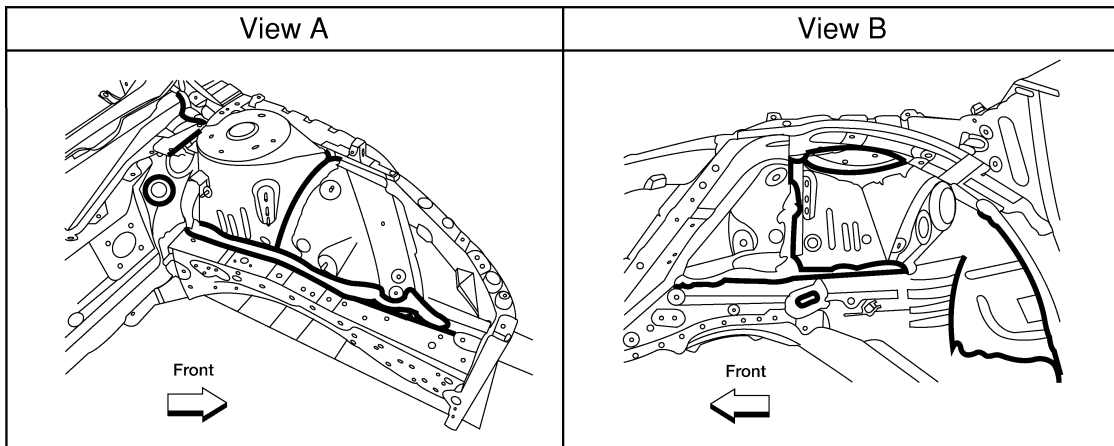
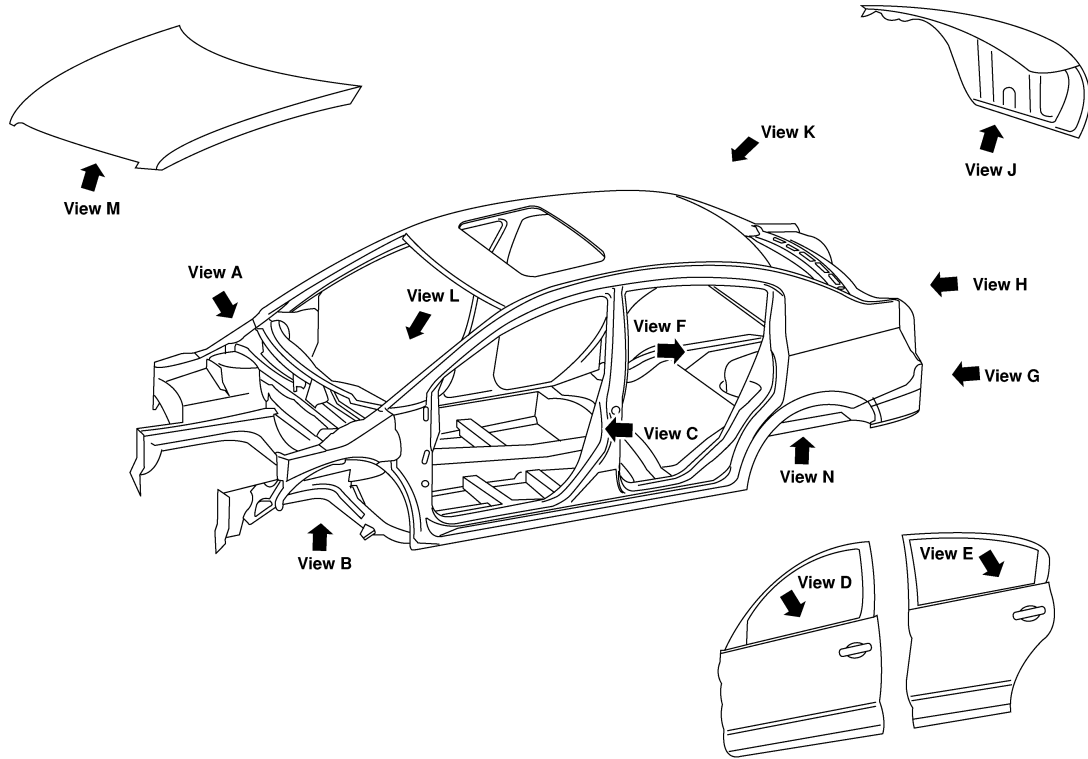
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## BODY SEALING

### Description

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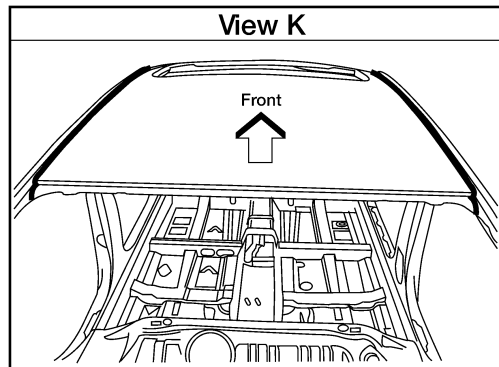
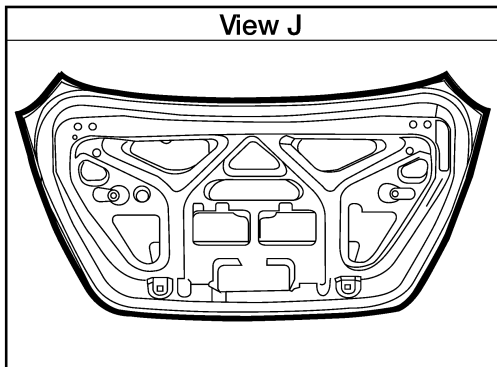
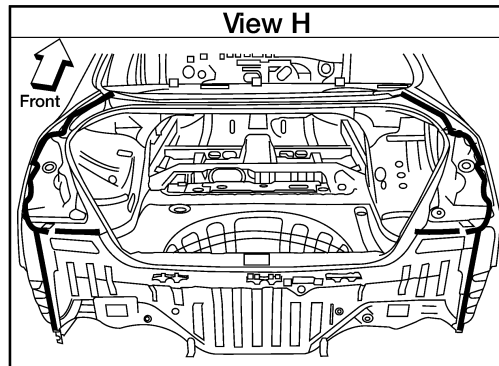
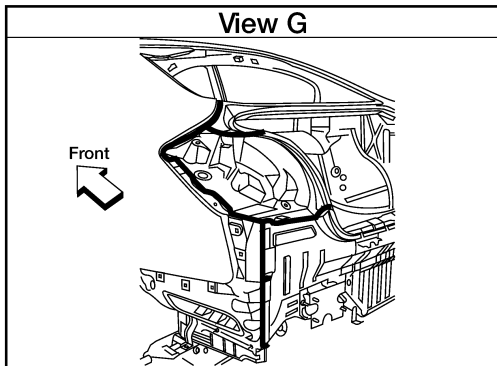
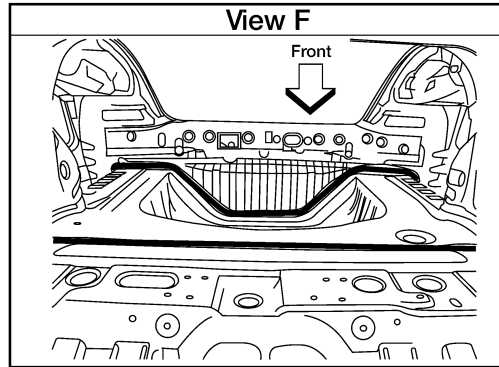
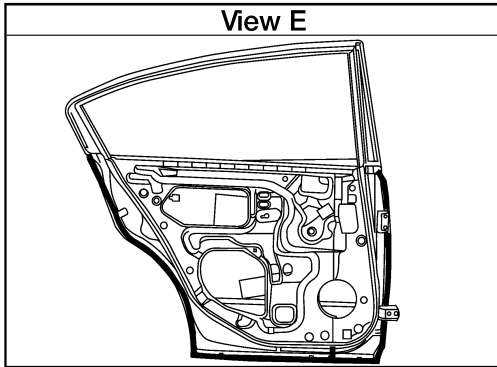
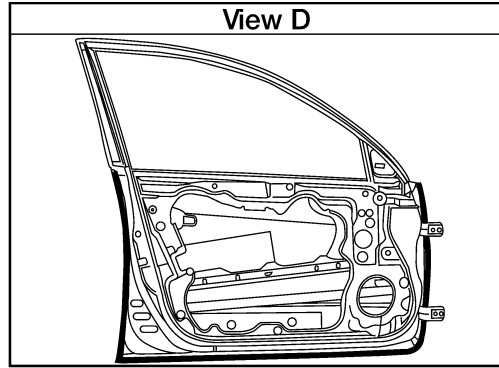
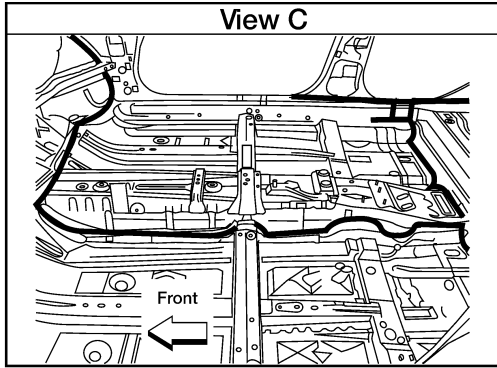
The following figure shows the areas which are sealed at the factory. Sealant which has been applied to these areas should be smooth and free from cuts or gaps. Care should be taken not to apply an excess amount of sealant and not to allow other unaffected parts to come into contact with the sealant.



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# BODY SEALING

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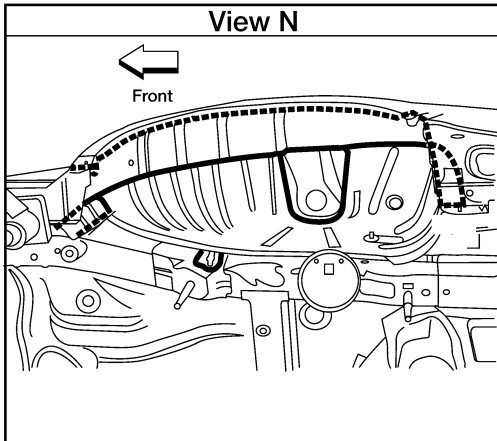
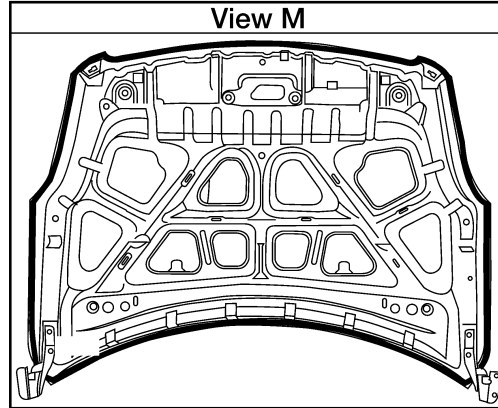
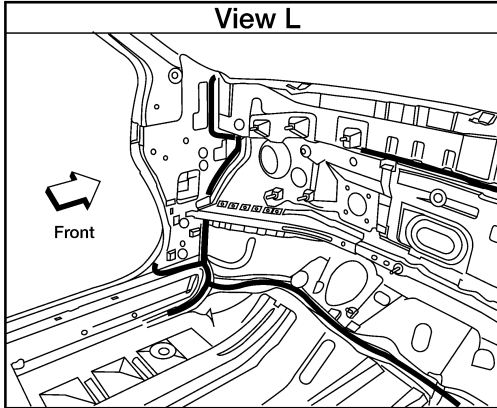
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# BODY SEALING

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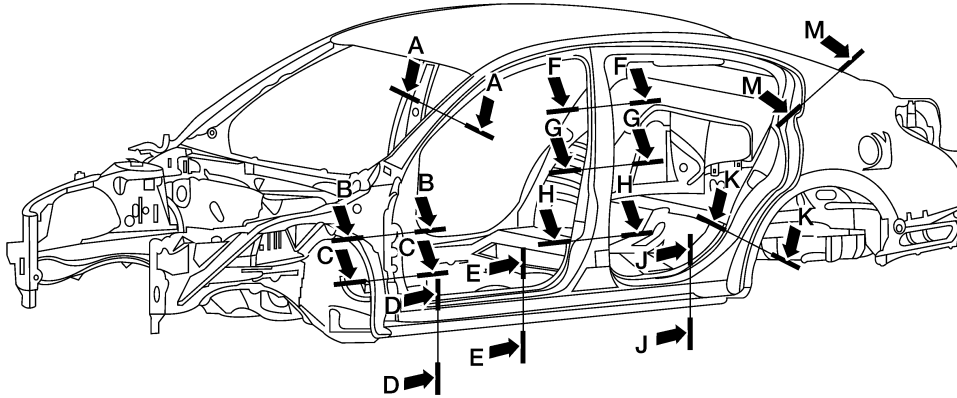
# BODY CONSTRUCTION

< ON-VEHICLE REPAIR >

## BODY CONSTRUCTION

### Body Construction

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Section G-G	Section H-H	Section J-J
Section K-K	Section M-M	

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# BODY ALIGNMENT

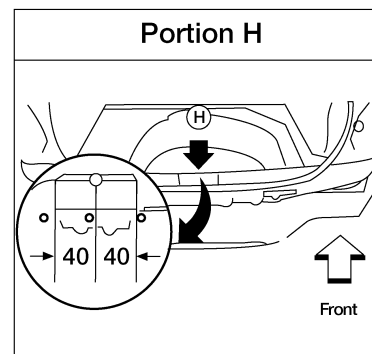
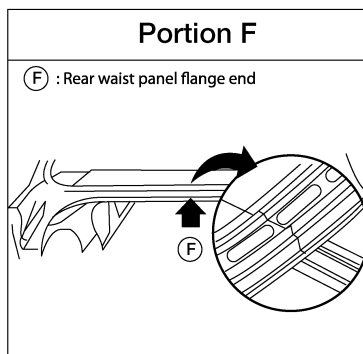
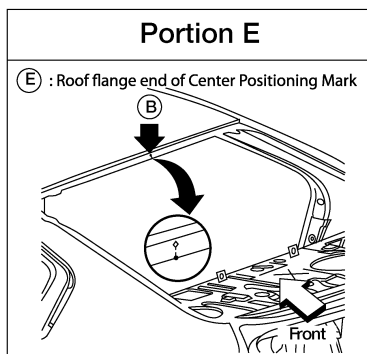
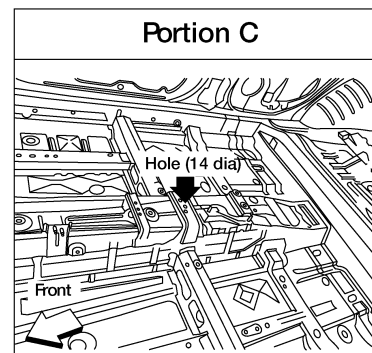
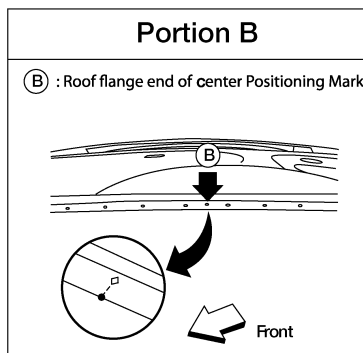
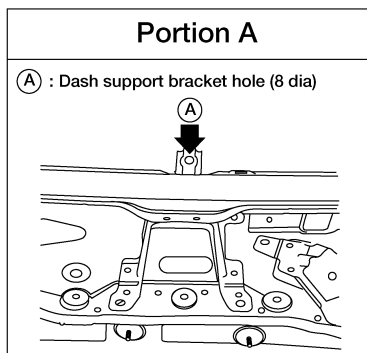
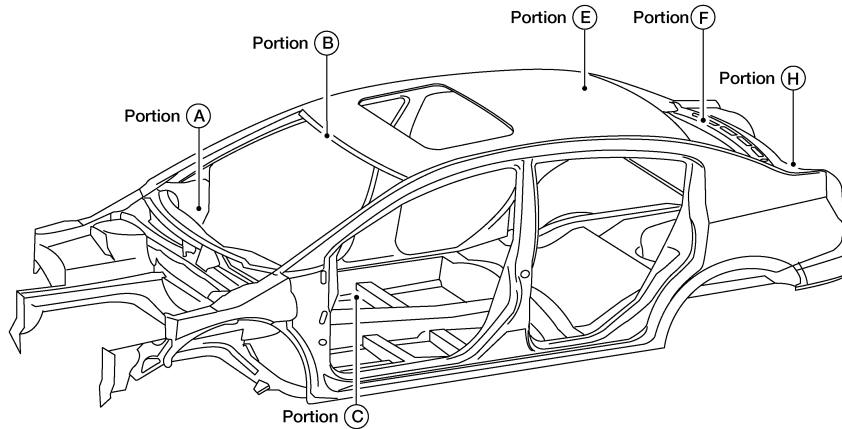
< ON-VEHICLE REPAIR >

## BODY ALIGNMENT

### Body Center Marks

INFOID:000000005440067

A mark has been placed on each part of the body to indicate the vehicle center. When repairing parts damaged by an accident which might affect the vehicle frame (members, pillars, etc.), more accurate and effective repair will be possible by using these marks together with body alignment specifications.



ALKIA0151GB

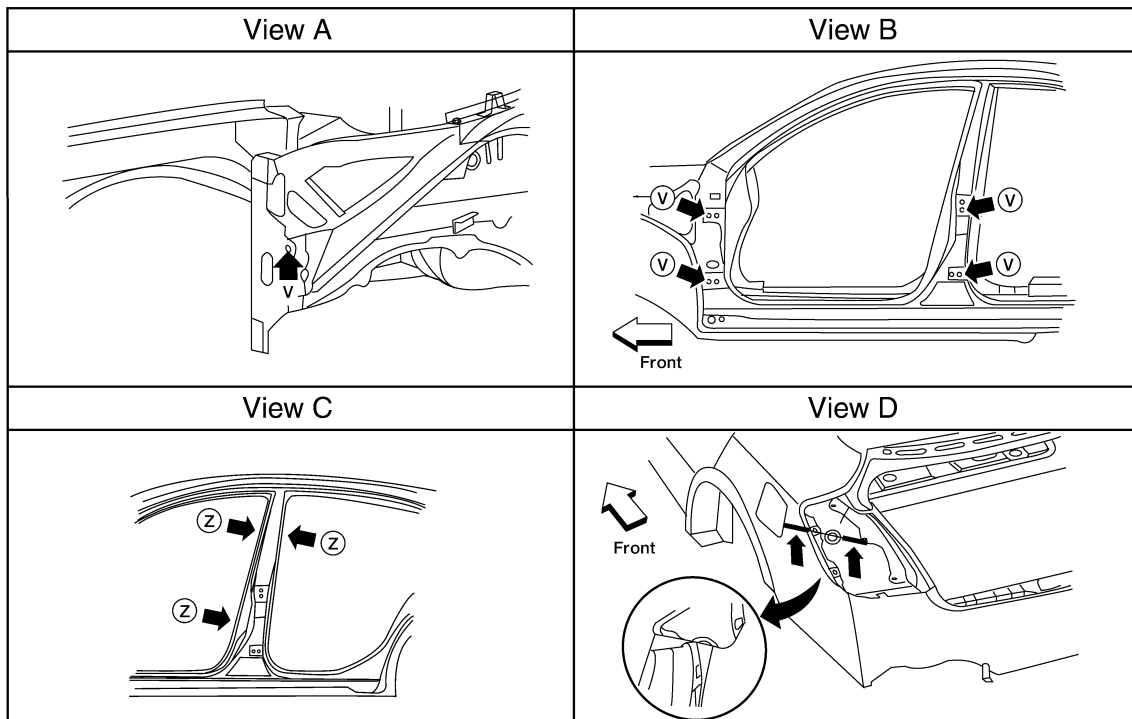
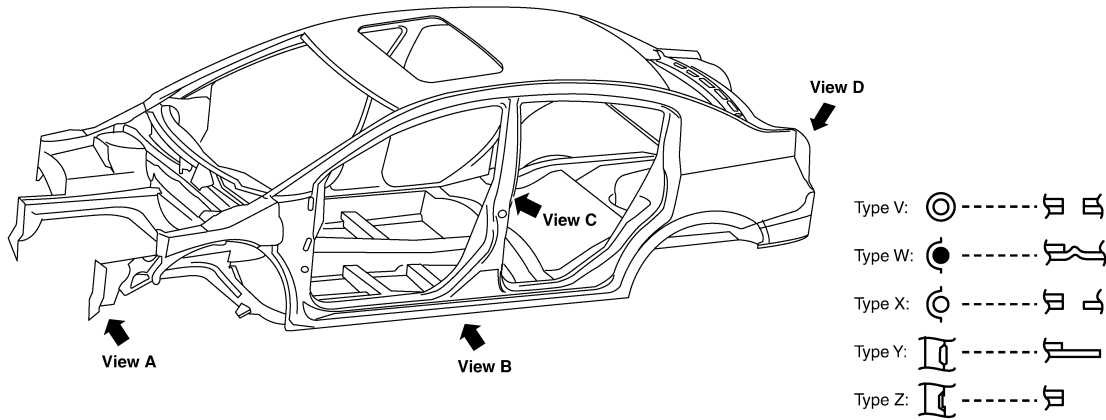
# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

## Panel Parts Matching Marks

INFOID:000000005440068

A mark has been placed on each body panel to indicate the parts matching positions. When repairing parts damaged by an accident which might affect the vehicle structure (members, pillars, etc.), more accurate and effective repair will be possible by using these marks together with body alignment specifications.



ALKIA0159GB

## Description

INFOID:000000005440069

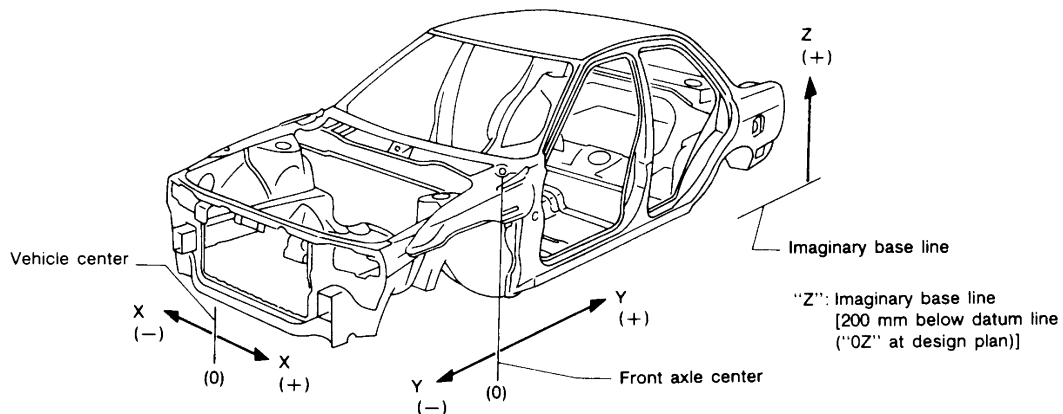
- All dimensions indicated in the figures are actual.
- When using a tracking gauge, adjust both pointers to equal length. Then check the pointers and gauge itself to make sure there is no free play.
- When a measuring tape is used, check to be sure there is no elongation, twisting or bending.
- Measurements should be taken at the center of the mounting holes.
- An asterisk (\*) following the value at the measuring point indicates that the measuring point on the other side is symmetrically the same value.
- The coordinates of the measurement points are the distances measured from the standard line of "X", "Y" and "Z".

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# BODY ALIGNMENT

< ON-VEHICLE REPAIR >



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# BODY ALIGNMENT

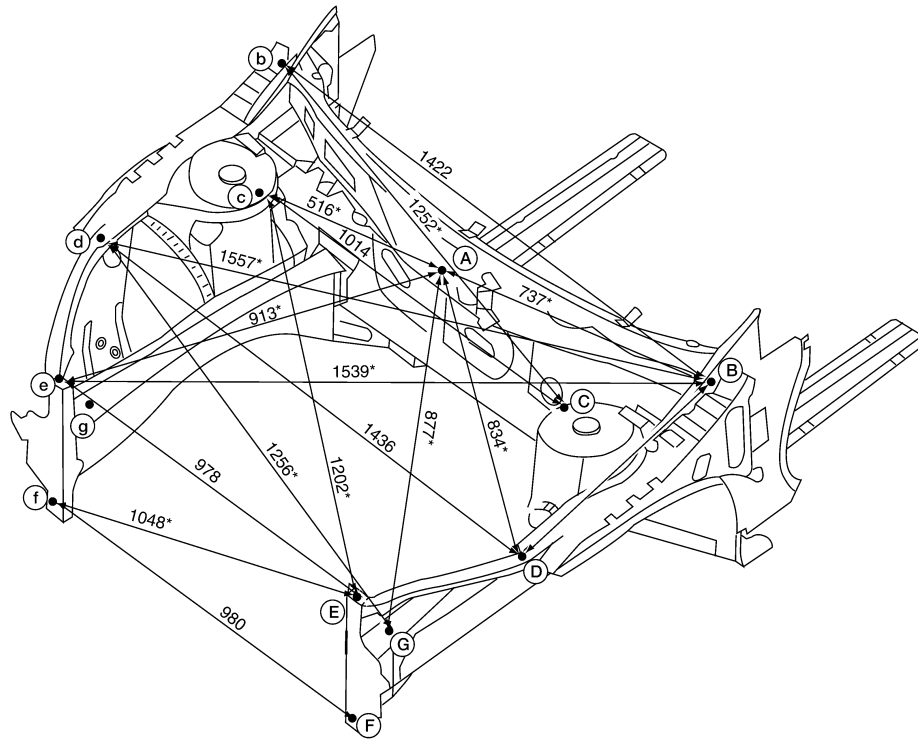
< ON-VEHICLE REPAIR >

## Engine Compartment

INFOID:000000005440070

### Measurement

Figures marked with a (\*) indicate symmetrically identical dimensions on both right and left sides of the vehicle.



Point	Dimension
(B) ~ (D)	617*
(B) ~ (E)	989*
(B) ~ (G)	1512*
(C) ~ (B)	1268*
(C) ~ (D)	389*
(C) ~ (E)	673*
(C) ~ (G)	630*
(C) ~ (g)	1182*
(D) ~ (G)	394*
(E) ~ (G)	201*
(G) ~ (g)	990

Unit : mm

ALKIA0168GB

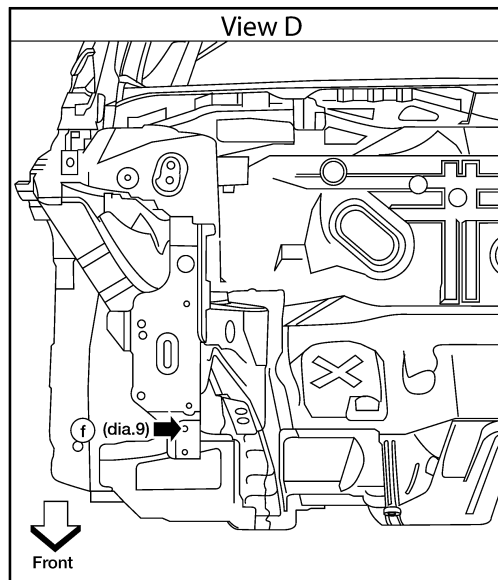
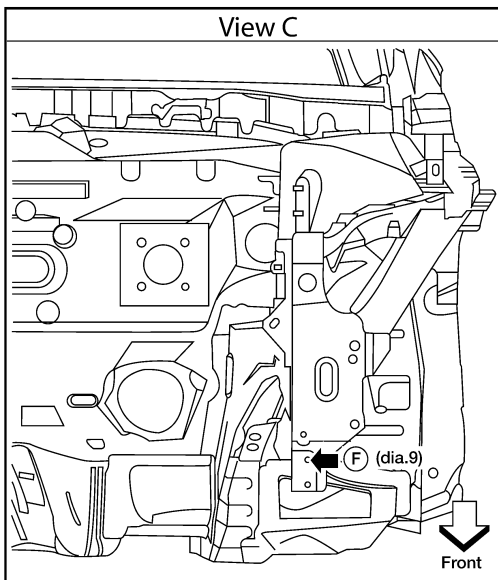
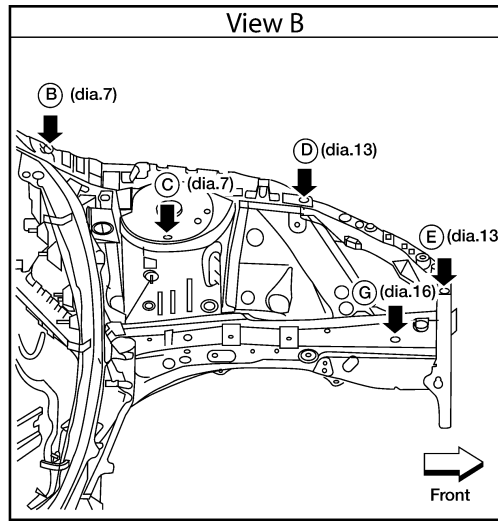
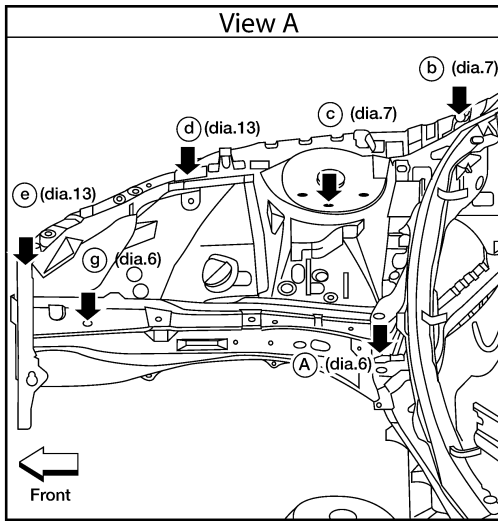
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# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

## Measurement Points



ALKIA0158GB

# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

## Underbody

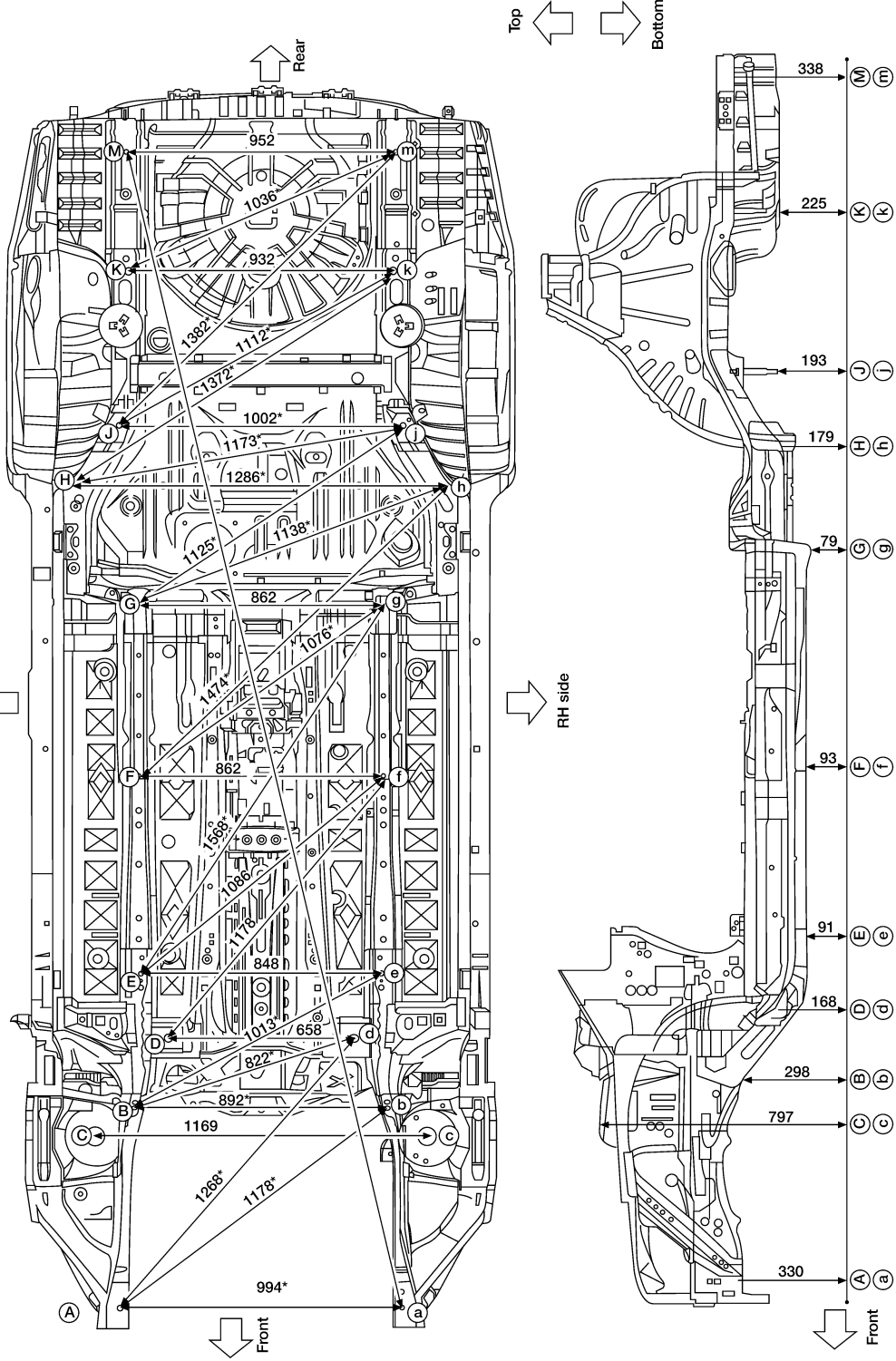
INFOID:000000005440071

### Measurement

Figures marked with a (\*) indicate symmetrically identical dimensions on both right and left hand sides of the vehicle.

As viewed from underside.

All dimensions indicated in this figure are actual.



Unit : mm

ALKIA0173GB

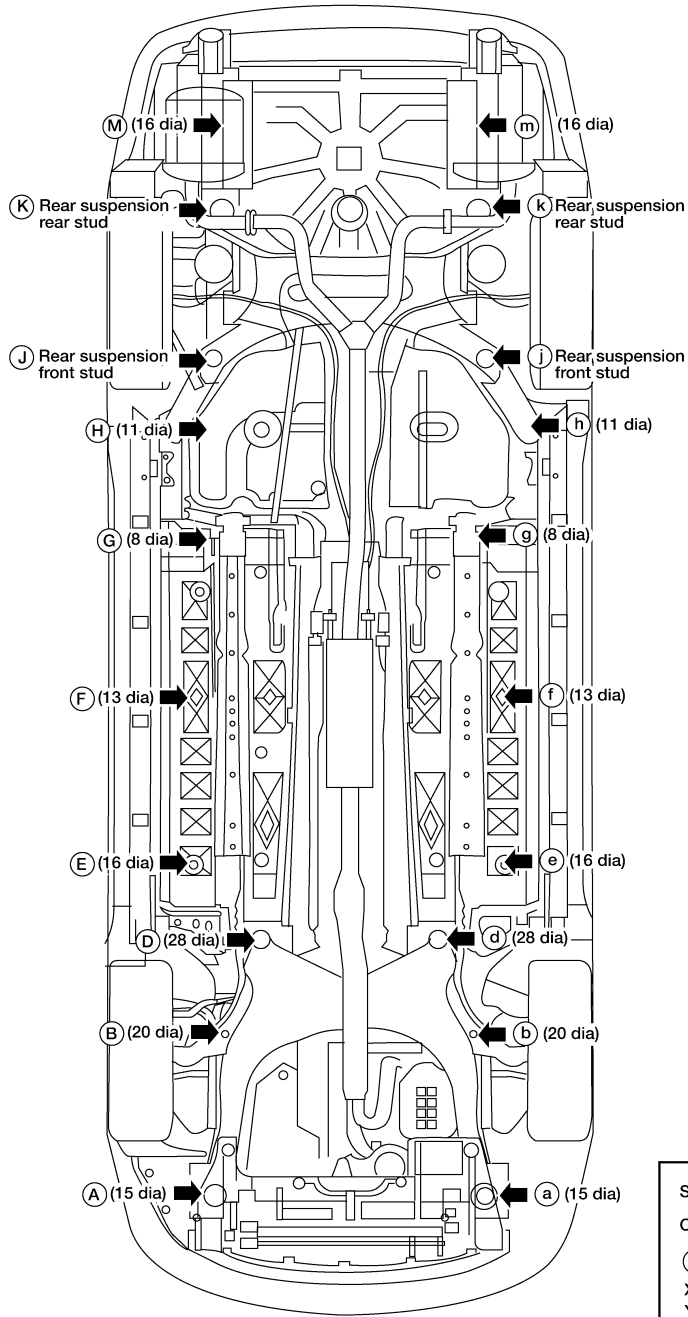
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# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

## Measurement Points



(A) (a)  
X : ± 497  
Y : -566  
Z : 330

(B) (b)  
X : ± 446  
Y : 149  
Z : 298

(D) (d)  
X : ± 327  
Y : 395  
Z : 168

(E) (e)  
X : ± 424  
Y : 624  
Z : 91

(F) (f)  
X : ± 431  
Y : 1294  
Z : 93

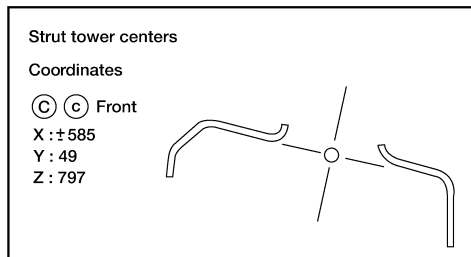
(G) (g)  
X : ± 431  
Y : 1938  
Z : 79

(H) (h)  
X : ± 643  
Y : 2301  
Z : 179

(J) (j)  
X : ± 501  
Y : 2558  
Z : 193

(K) (k)  
X : ± 466  
Y : 3107  
Z : 225

(M) (m)  
X : ± 476  
Y : 3525  
Z : 338



Unit : mm

AWKTA1489GB



# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

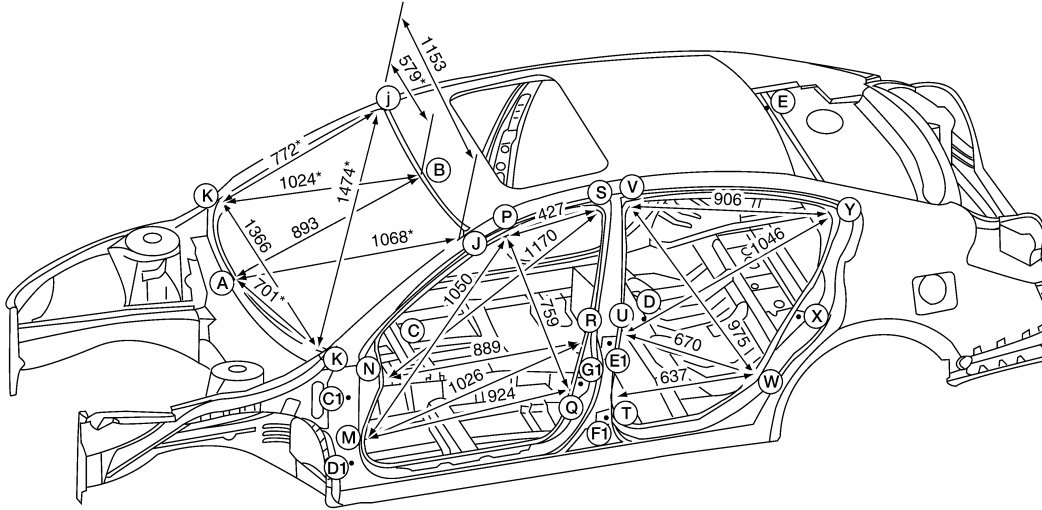
## Passenger Compartment

INFOID:000000005440072

### Measurement

Unit : mm

Figures marked with a (\*) indicate symmetrically identical dimensions on both right and left sides of the vehicle.



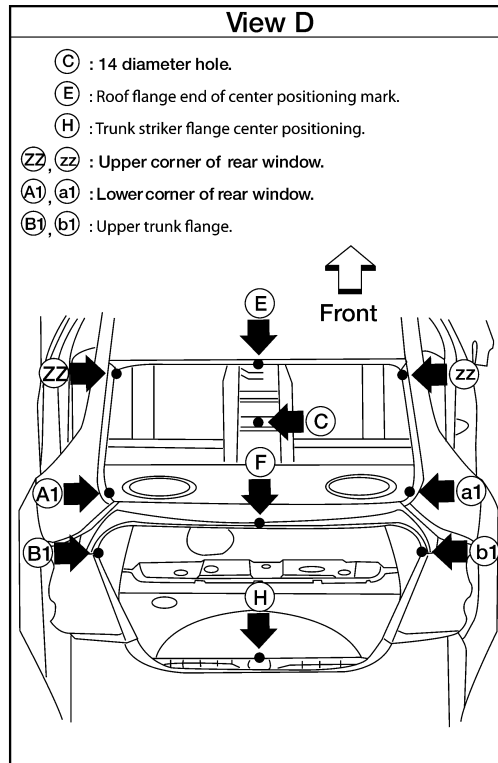
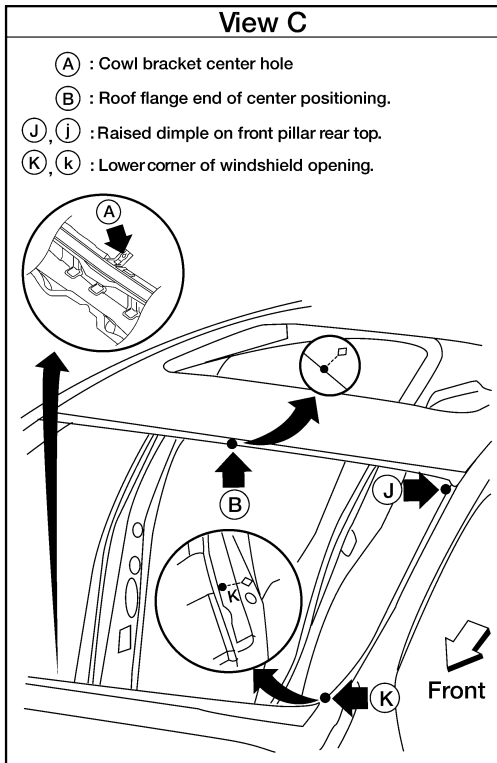
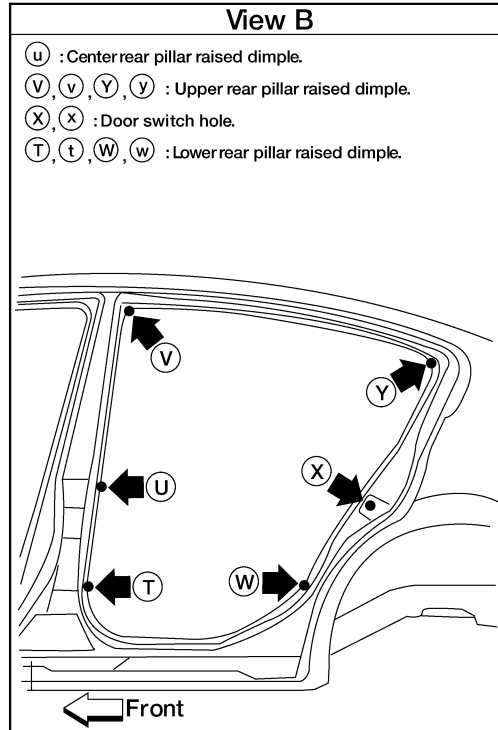
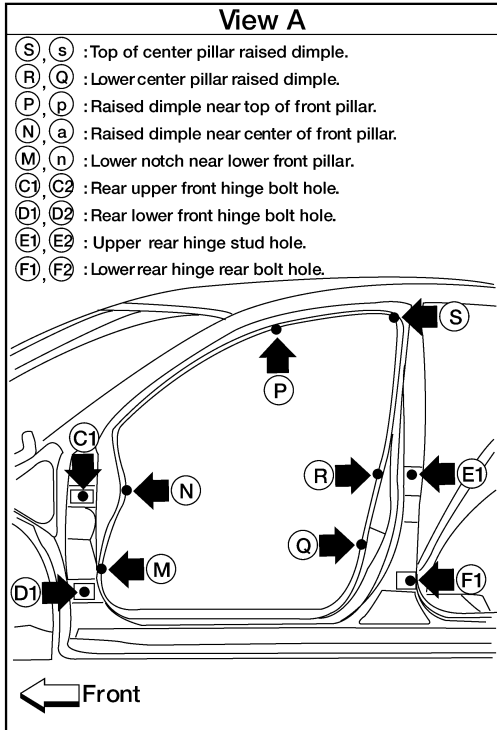
Point	Dimension	Point	Dimension	Point	Dimension	Point	Dimension
(A) - (C)	1044	(D) ~ (T)	742	(Gt) - (X)	987	(S) ~ (Q)	779
(A) - (D)	1890	(D) ~ (t)	904	(M) ~ (m)	1464	(S) ~ (s)	1143
(A) - (F)	3134	(D) ~ (u)	973	(M) ~ (P)	1050	(T) ~ (t)	1471
(B) - (C)	972	(D) ~ (U)	823	(M) ~ (q)	1735*	(T) ~ (V)	840
(C) - (E)	1796*	(D) ~ (v)	1148	(M) ~ (r)	1794*	(T) ~ (y)	1823*
(C) ~ (m)	912*	(D) ~ (V)	1054	(M) ~ (s)	1896*	(T) ~ (Y)	1212
(C) ~ (n)	928*	(D) ~ (w)	883	(M) ~ (S)	1386	(U) ~ (u)	1479
(C) ~ (p)	1100*	(D) ~ (W)	715	(N) ~ (n)	1442	(V) ~ (t)	1544*
(C) ~ (q)	860*	(D) ~ (y)	1234	(N) ~ (P)	803	(V) ~ (v)	1139
(C) ~ (r)	970*	(D) ~ (Y)	1137	(N) ~ (r)	1710*	(V) ~ (w)	1624*
(C) ~ (s)	1249*	(D1) ~ (Et)	1223	(P) ~ (p)	1181	(W) ~ (t)	1607*
(C1) ~ (Et)	1167	(D1) ~ (Fi)	1147	(Q) ~ (n)	1686*	(W) ~ (u)	1624*
(C1) ~ (Fi)	1181	(D1) ~ (Gt)	1068	(Q) ~ (p)	1521*	(W) ~ (w)	1480
(C1) ~ (Gt)	1064	(D1) ~ (X)	2054	(Q) ~ (q)	1471	(W) ~ (y)	1564*
(C1) ~ (X)	2029	(Et) ~ (X)	867	(Q) ~ (s)	1513*	(W) ~ (Y)	762
(D) ~ (E)	1102	(Fi) ~ (X)	931	(R) ~ (r)	1480	(Y) ~ (y)	1261

ALKIA0167GB

# BODY ALIGNMENT

< ON-VEHICLE REPAIR >

## Measurement Points



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# BODY ALIGNMENT

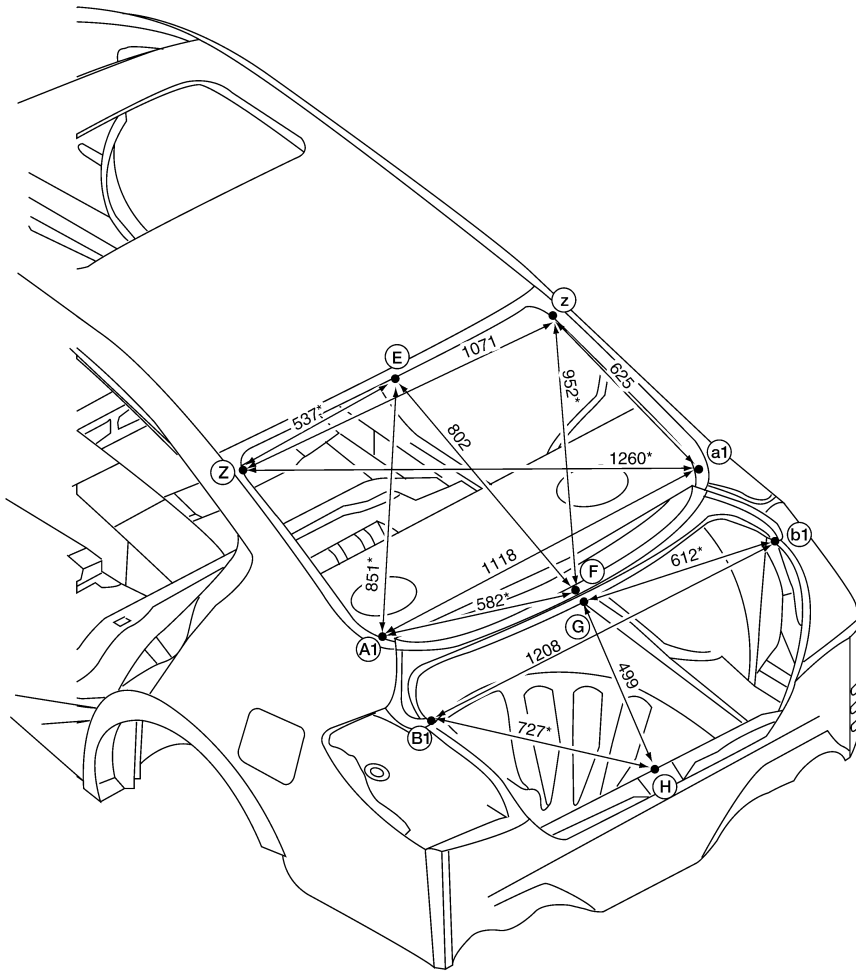
< ON-VEHICLE REPAIR >

## Rear Body

INFOID:000000005440073

### Measurement

Figures marked with a (\*) indicate symmetrically identical dimensions on both right and left sides of the vehicle.



Unit : mm

ALKIA0169GB

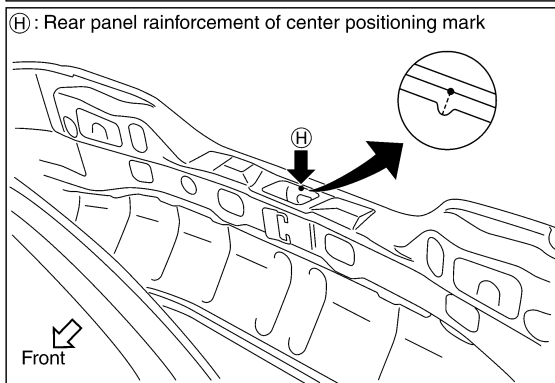
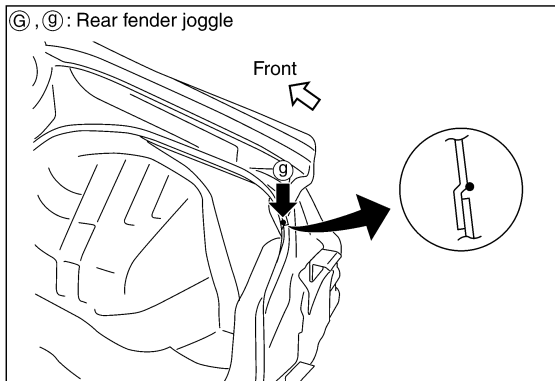
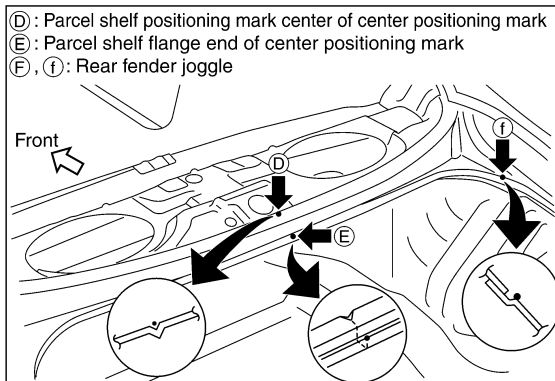
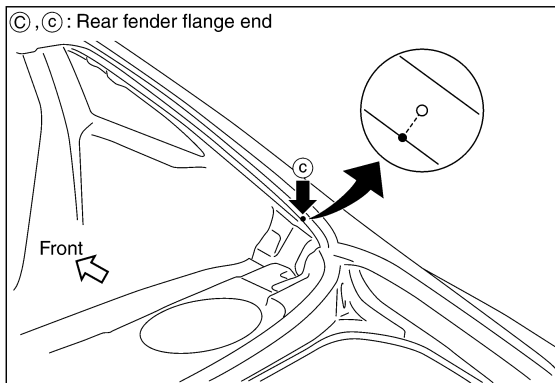
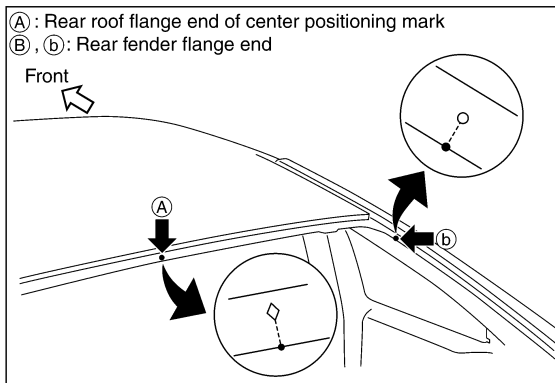
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# BODY ALIGNMENT

## < ON-VEHICLE REPAIR >

### Measurement Points



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# PRECAUTIONS IN REPAIRING HIGH STRENGTH STEEL

< ON-VEHICLE REPAIR >

## PRECAUTIONS IN REPAIRING HIGH STRENGTH STEEL

### High Strength Steel (HSS)

INFOID:000000005440074

High strength steel is used for body panels in order to reduce vehicle weight.

Accordingly, precautions in repairing automotive bodies made of high strength steel are described below:

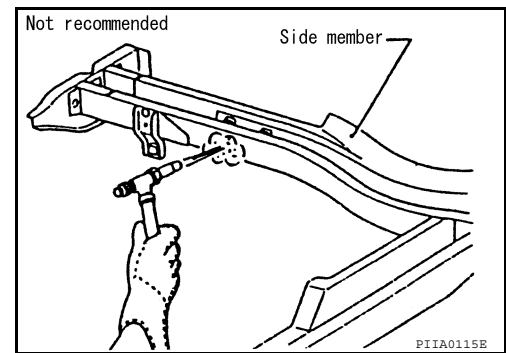
Tensile strength	Nissan/Infiniti designation	Major applicable parts
373 N/mm <sup>2</sup> (38kg/mm <sup>2</sup> ,54klb/sq in)	SP130	<ul style="list-style-type: none"> <li>• Front side member assembly</li> <li>• Hoodledge assembly</li> <li>• Upper dash</li> <li>• Front pillar reinforcement assembly</li> <li>• Rear side member assembly</li> <li>• Other reinforcements</li> </ul>

SP130 is the most commonly used HSS.

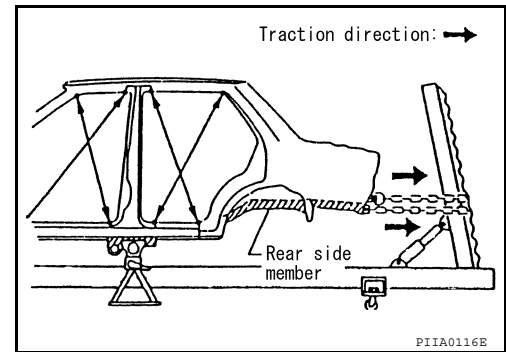
Read the following precautions when repairing HSS:

#### 1. Additional points to consider

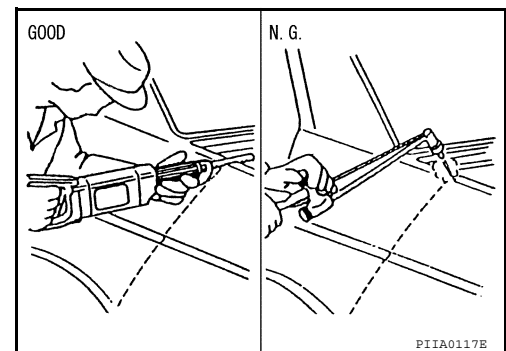
- The repair of reinforcements (such as side members) by heating is not recommended since it may weaken the component. When heating is unavoidable, do not heat HSS parts above 550°C (1,022°F). Verify heating temperature with a thermometer. (Crayon-type and other similar type thermometer are appropriate.)



- When straightening body panels, use caution in pulling any HSS panel. Because HSS is very strong, pulling may cause deformation in adjacent portions of the body. In this case, increase the number of measuring points, and carefully pull the HSS panel.



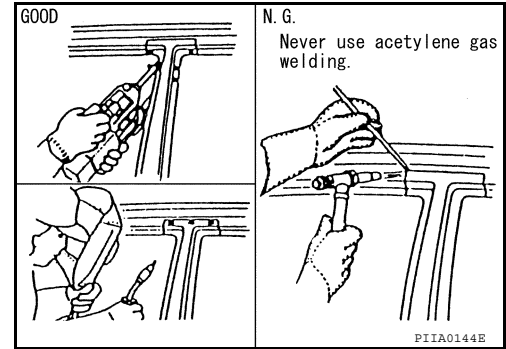
- When cutting HSS panels, avoid gas (torch) cutting if possible. Instead, use a saw to avoid weakening surrounding areas due to heat. If gas (torch) cutting is unavoidable, allow a minimum margin of 50 mm (1.97in).



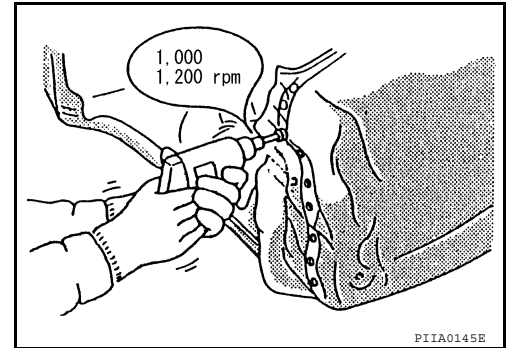
# PRECAUTIONS IN REPAIRING HIGH STRENGTH STEEL

## < ON-VEHICLE REPAIR >

- When welding HSS panels, use spot welding whenever possible in order to minimize weakening surrounding areas due to heat. If spot welding is impossible, use M.I.G. welding. Do not use gas (torch) welding because it is inferior in welding strength.



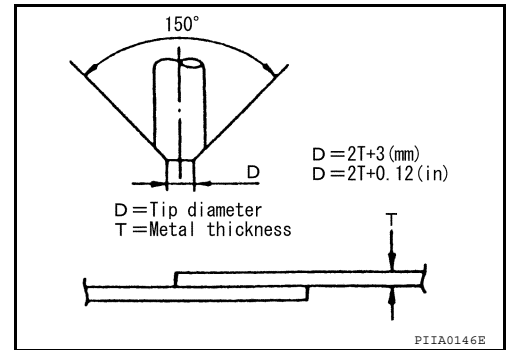
- The spot weld on HSS panels is harder than that of an ordinary steel panel. Therefore, when cutting spot welds on a HSS panel, use a low speed high torque drill (1,000 to 1,200 rpm) to increase drill bit durability and facilitate the operation.



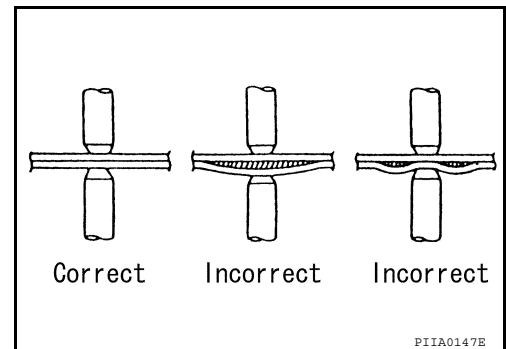
### 2. Precautions in spot welding HSS

This work should be performed under standard working conditions. Always note the following when spot welding HSS:

- The electrode tip diameter must be sized properly according to the metal thickness.



- The panel surfaces must fit flush to each other, leaving no gaps.



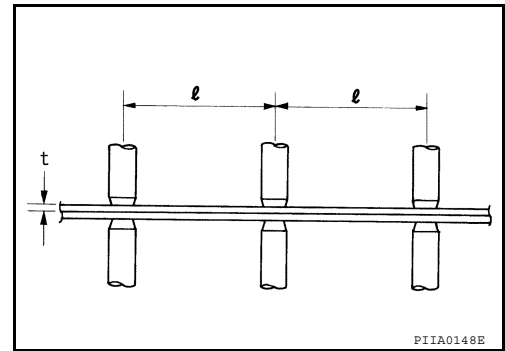
# PRECAUTIONS IN REPAIRING HIGH STRENGTH STEEL

## < ON-VEHICLE REPAIR >

- Follow the specifications for the proper welding pitch.

Thickness (t)	Minimum pitch (l)
0.6 (0.024)	10 (0.39) or over
0.8 (0.031)	12 (0.47) or over
1.0 (0.039)	18 (0.71) or over
1.2 (0.047)	20 (0.79) or over
1.6 (0.063)	27 (1.06) or over
1.8 (0.071)	31 (1.22) or over

Unit:mm



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# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

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## REPLACEMENT OPERATIONS

### Description

INFOID:000000005440075

This section is prepared for technicians who have attained a high level of skill and experience in repairing collision-damaged vehicles and also use modern service tools and equipment. Persons unfamiliar with body repair techniques should not attempt to repair collision-damaged vehicles by using this section.

Technicians are also encouraged to read Body Repair Manual (Fundamentals) in order to ensure that the original functions and quality of the vehicle can be maintained. The Body Repair Manual (Fundamentals) contains additional information, including cautions and warning, that are not including in this manual. Technicians should refer to both manuals to ensure proper repairs.


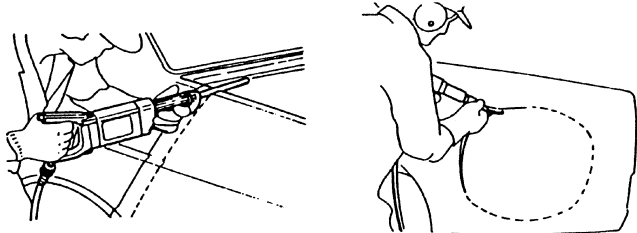


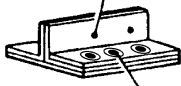
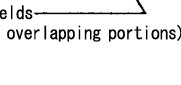
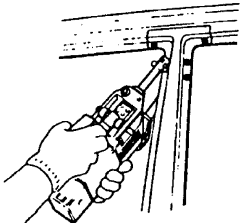


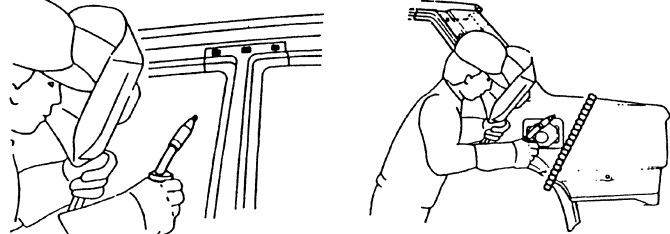


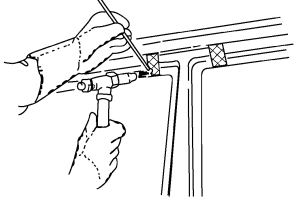

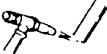
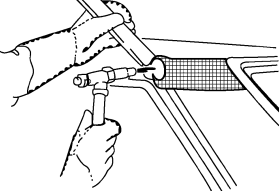
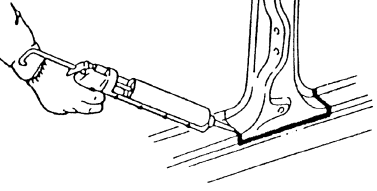
Please note that these information are prepared for worldwide usage, and as such, certain procedures might not apply in some regions or countries.



# REPLACEMENT OPERATIONS

## < ON-VEHICLE REPAIR >

The symbols used in this section for cutting and welding / brazing operations are shown below.

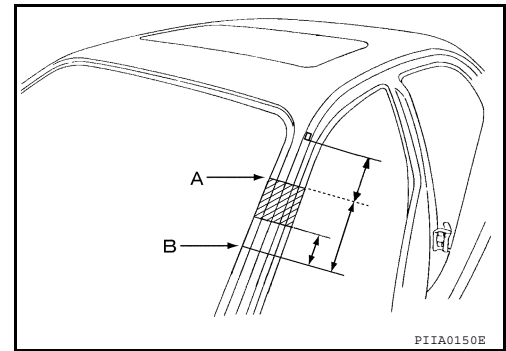
 <p>Saw cut or air chisel cut</p>		
<p>Spot weld</p> <p>●●●● 2-spot welds</p>  <p>●●●● 3-spot welds</p> 	<p>2-spot welds (2-panel overlapping portions)</p>  <p>3-spot welds (3-panel overlapping portions)</p> 	
<p>■ ■ ■ ■ MIG plug weld</p>  <p>■■■■ MIG seam weld/ Point weld</p> 		
<p>▨ ▨ ▨ ▨ Brazing</p>  		
<p>▨ ▨ ▨ ▨ Soldering</p>  		
<p>———— Sealing</p>		

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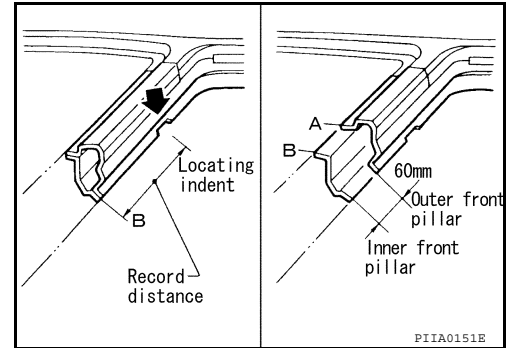
# REPLACEMENT OPERATIONS

## < ON-VEHICLE REPAIR >

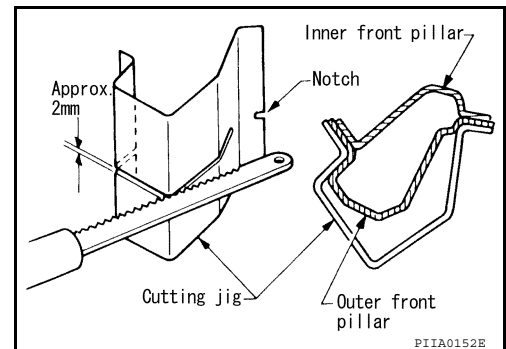
- Front pillar butt joint can be determined anywhere within shaded area as shown in the figure. The best location for the butt joint is at position A due to the construction of the vehicle. Refer to the front pillar section.



- Determine cutting position and record distance from the locating indent. Use this distance when cutting the service part. Cut outer front pillar over 60 mm above inner front pillar cut position.

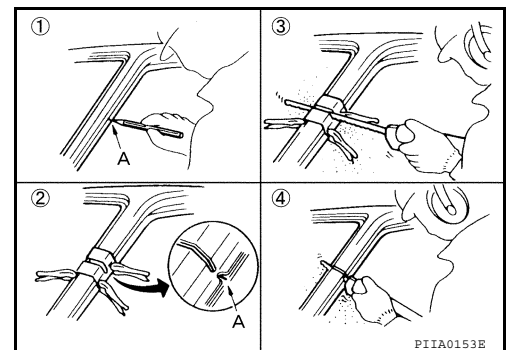


- Prepare a cutting jig to make outer pillar easier to cut. Also, this will permit service part to be accurately cut at joint position.



- An example of cutting operation using a cutting jig is as follows.

1. Mark cutting lines.  
A: Cut position of outer pillar  
B: Cut position of inner pillar
2. Align cutting line with notch on jig. Clamp jig to pillar.
3. Cut outer pillar along groove of jig. (At position A)
4. Remove jig and cut remaining portions.
5. Cut inner pillar at position B in same manner.

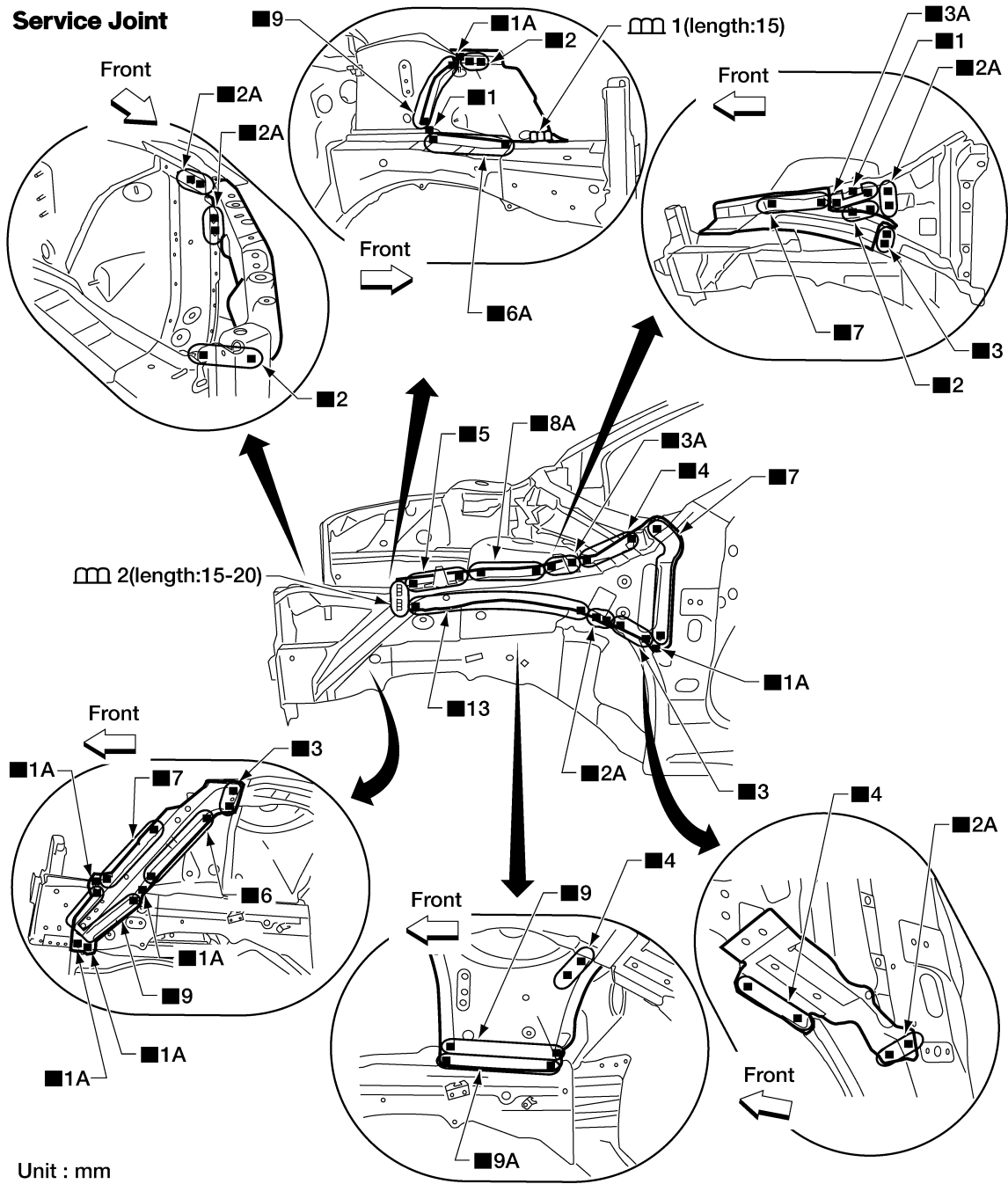


# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

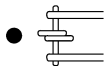
## Hoodledge

INFOID:000000005440076

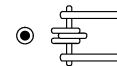


Unit : mm

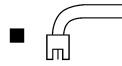
2-spot welds



3-spot welds



MIG Plug weld



( For 3 panels plug weld method )



MIG seam weld/  
Point weld



### Change parts

- Front strut housing (LH)
- Hoodledge connector
- Upper front hoodledge
- Radiator core support upper
- Hoodledge reinforcement
- Hoodledge reinforcement rear

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# REPLACEMENT OPERATIONS

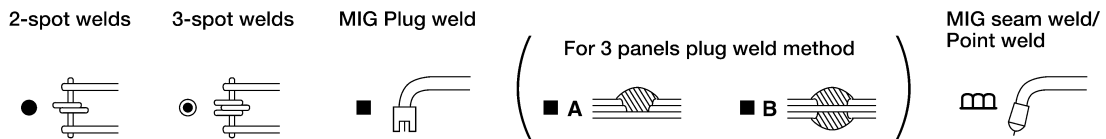
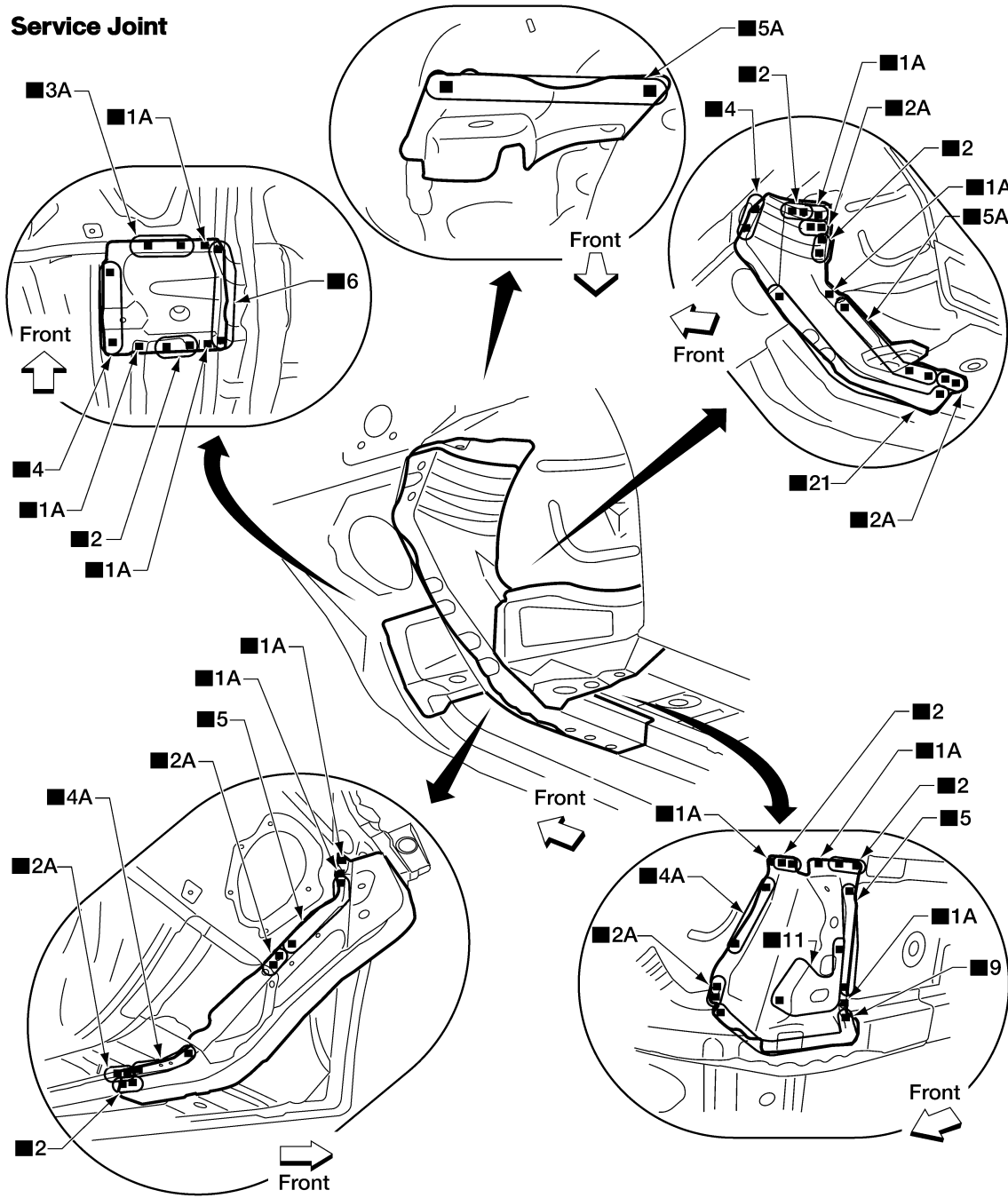
< ON-VEHICLE REPAIR >

## Front Side Member

INFOID:000000005440077

- Work after hoodledge partial has been removed.

### Service Joint



ALKIA0085GB

#### Change parts

- Front side member rear assembly
- Front side member rear reinforcement
- Front suspension member plate
- Front side member outrigger assembly
- Front side member rear closing plate assembly

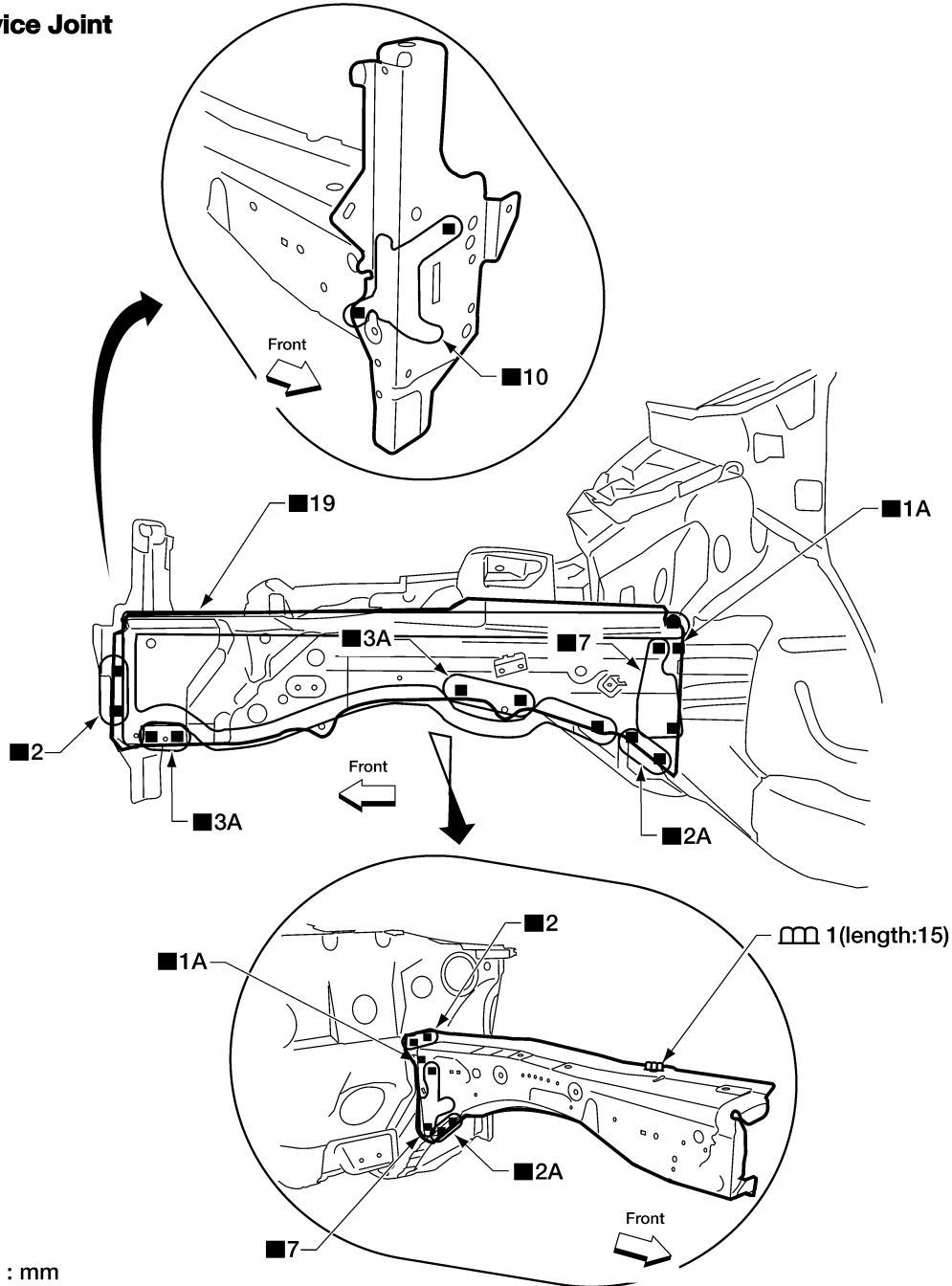
# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

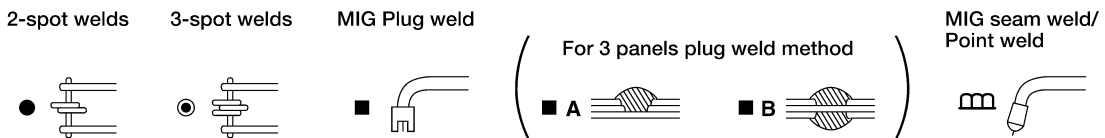
## Front Side Member (Partial Replacement)

INFOID:000000005440078

### Service Joint



Unit : mm



ALKIA0086GB

### Change parts

- Front side member front assembly
- Front side member front closing plate
- Radiator core side support

## Front Pillar

INFOID:000000005440079

## OUTER

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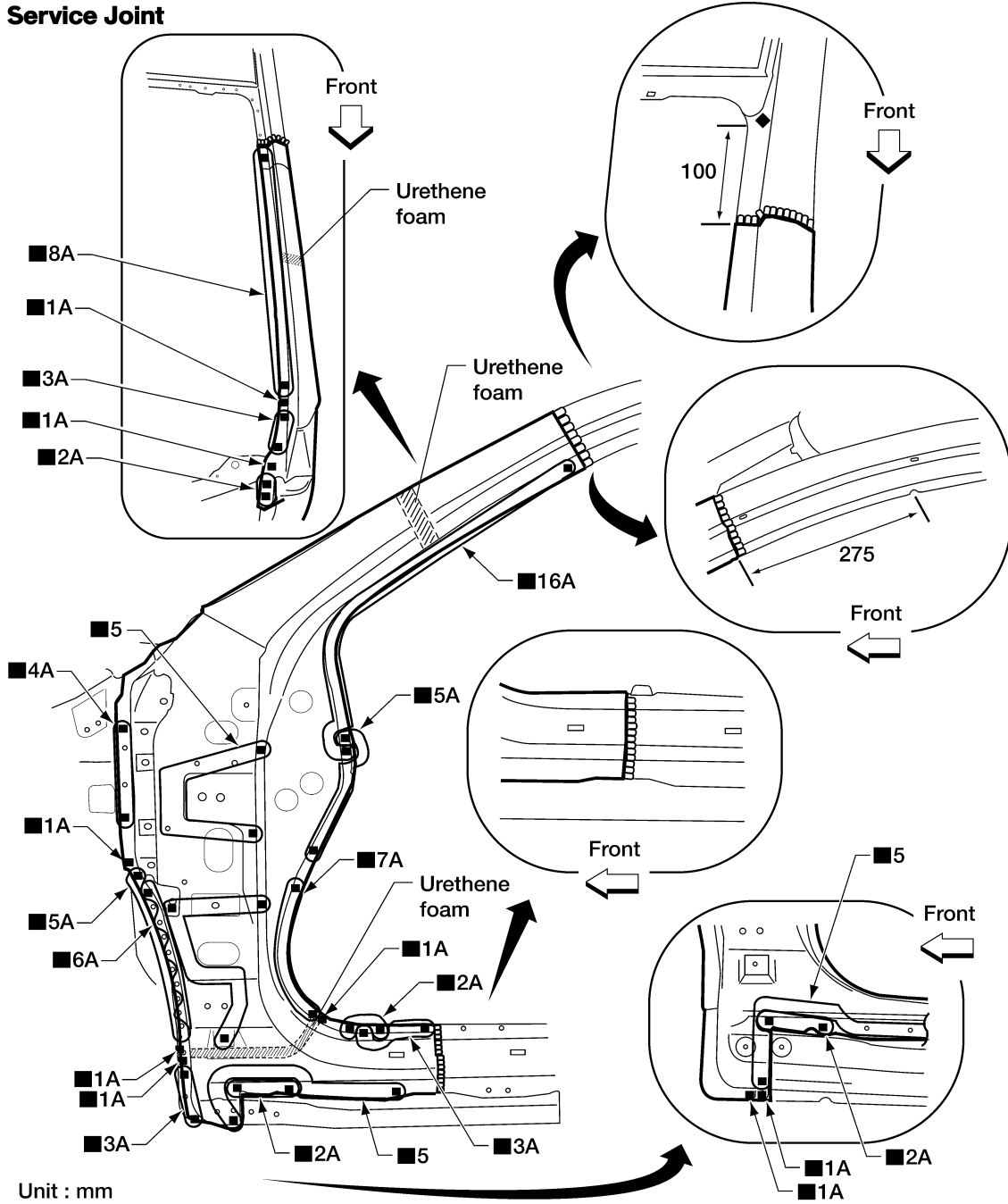
BRM

# REPLACEMENT OPERATIONS

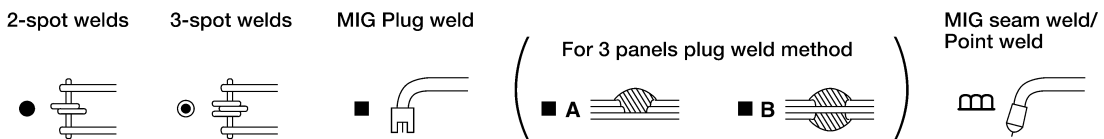
< ON-VEHICLE REPAIR >

- Work after hoodledge and hoodledge reinforcement rear has been removed.

## Service Joint



Unit : mm



ALKIA0087GB

Change parts

- Front pillar section of body side outer

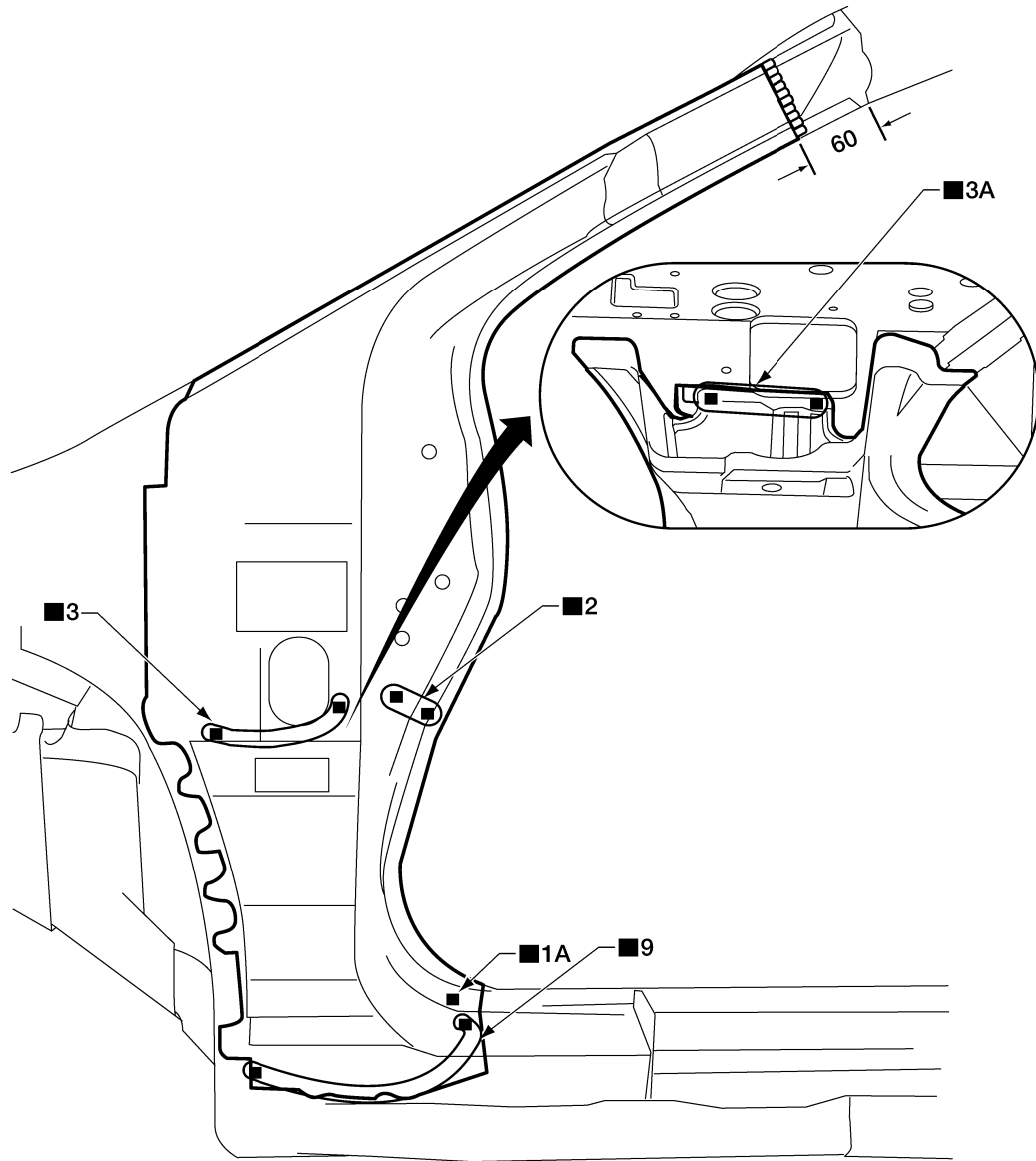
## REINFORCEMENT

# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

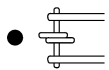
- Work after front pillar outer has been removed.

## Service Joint

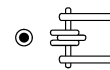


Unit : mm

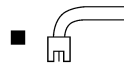
2-spot welds



3-spot welds



MIG Plug weld



For 3 panels plug weld method



MIG seam weld/  
Point weld



AWKIA0566ZZ

Change parts

- Front pillar upper reinforcement
- Front pillar lower reinforcement

INNER

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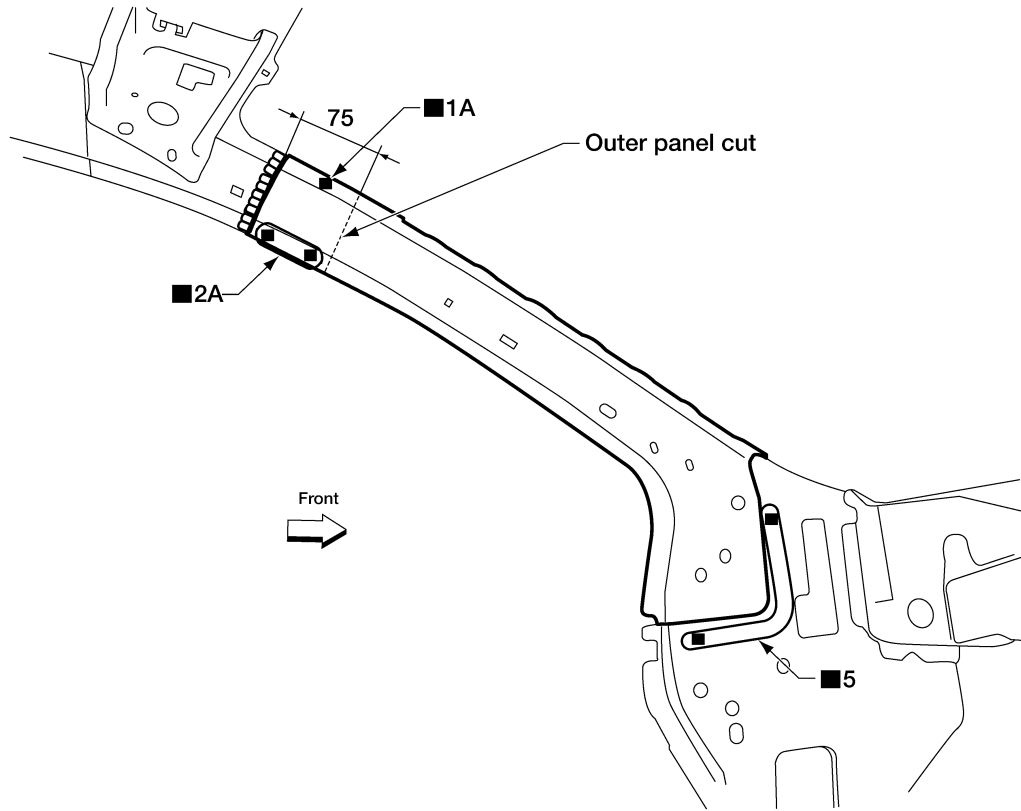
BRM

# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

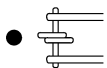
- Work after front pillar reinforcement has been removed.

## Service Joint



Unit : mm

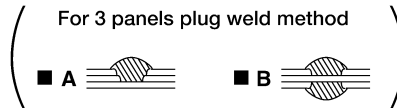
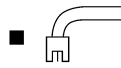
2-spot welds



3-spot welds



MIG Plug weld



MIG seam weld/  
Point weld



ALKIA0089GB

Change parts

- Front pillar inner reinforcement

## Dash Side

INFOID:000000005440080

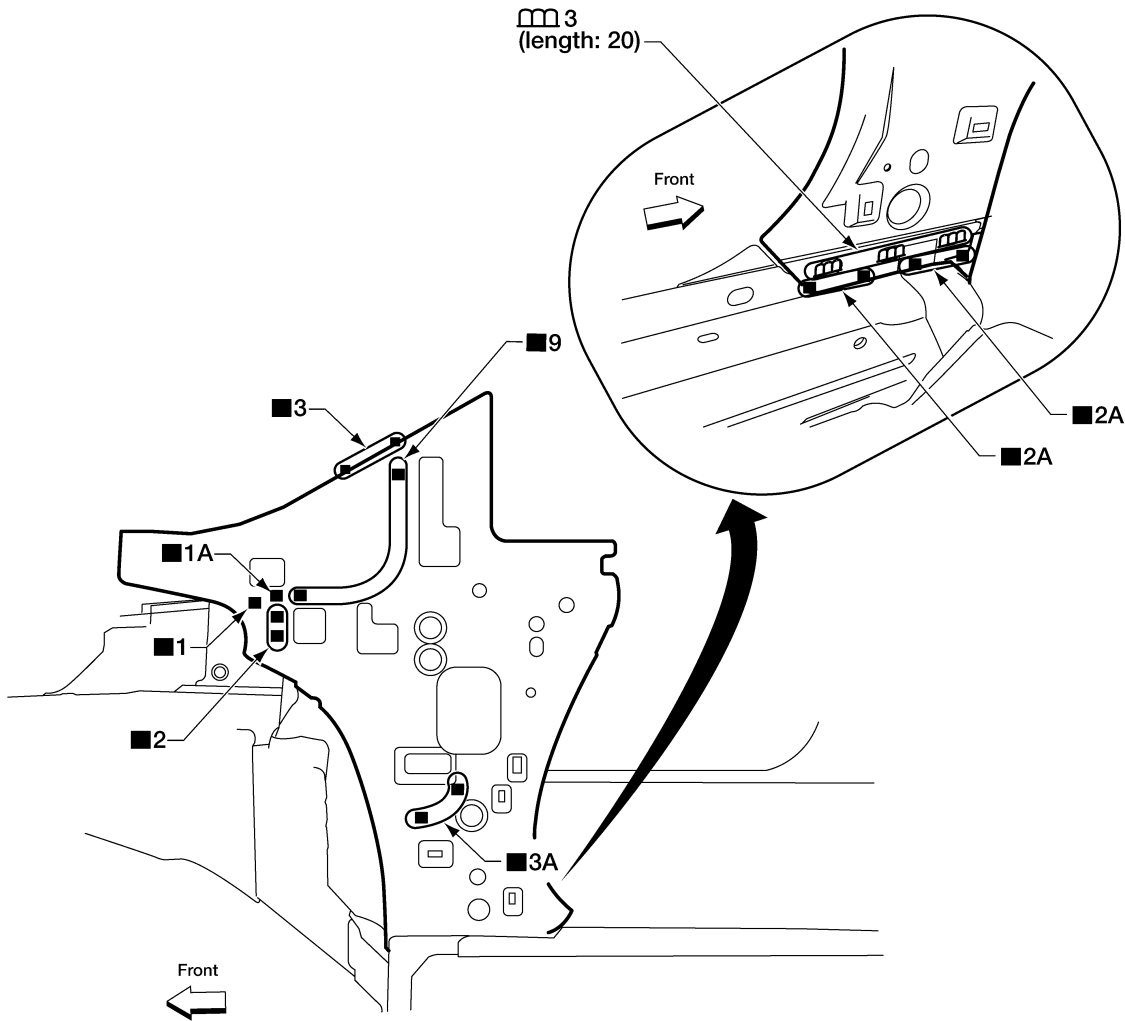
Work with front pillar reinforcement removed.



# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

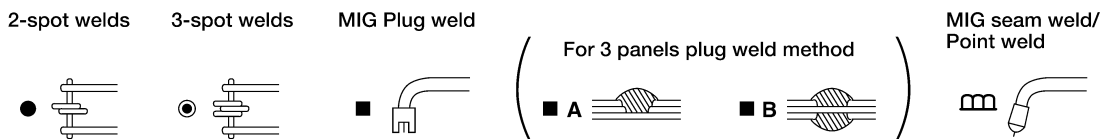
## Service Joint



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BRM

Unit : mm



ALKIA0091GB

Change parts  
● Dash side

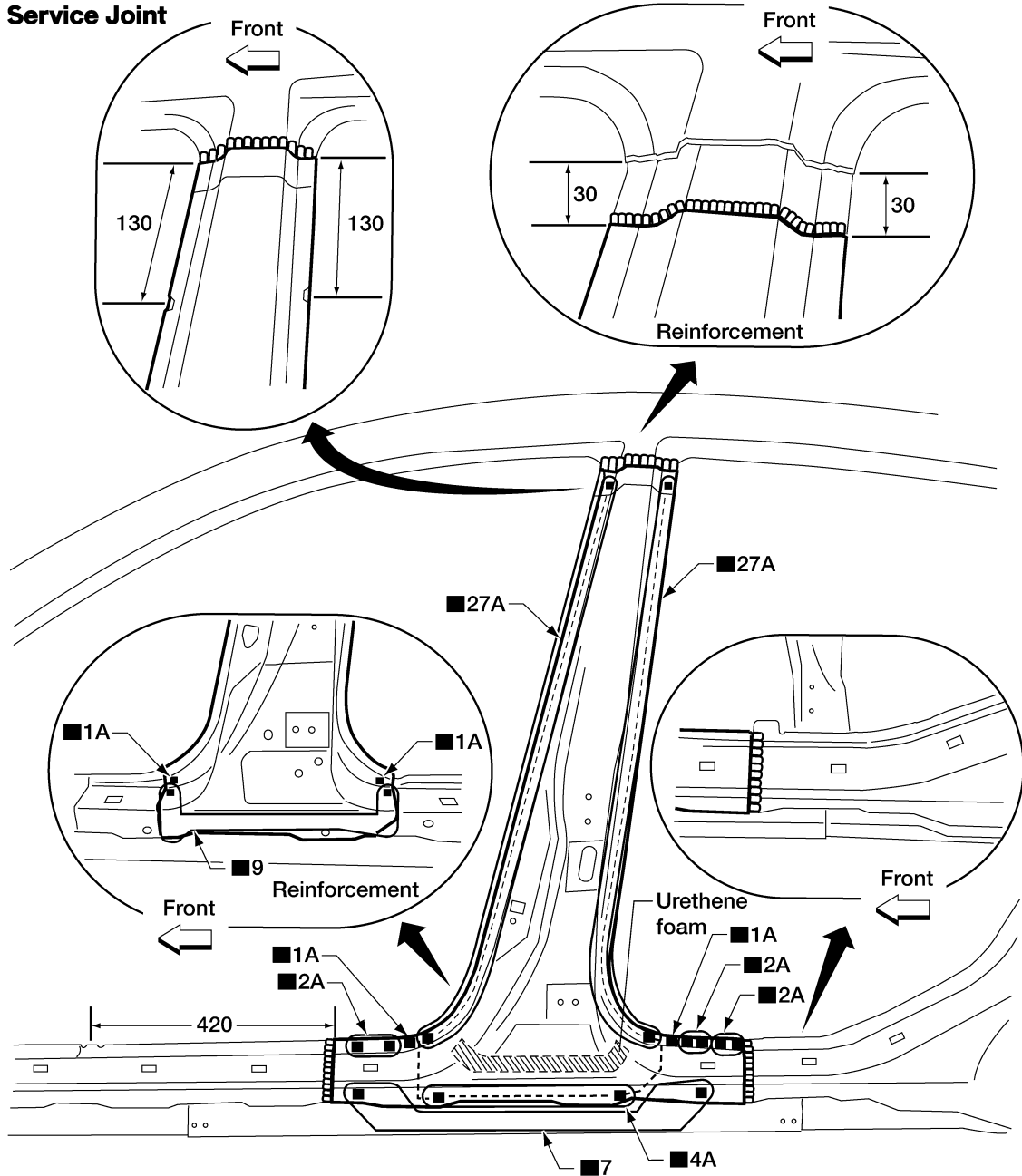
## Center Pillar

## OUTER

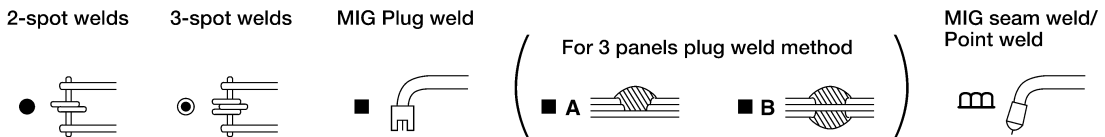
INFOID:000000005440081

# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >



Unit : mm



AWKIA1228GB

Change parts

- Center pillar portion of body side outer
- Center pillar reinforcement

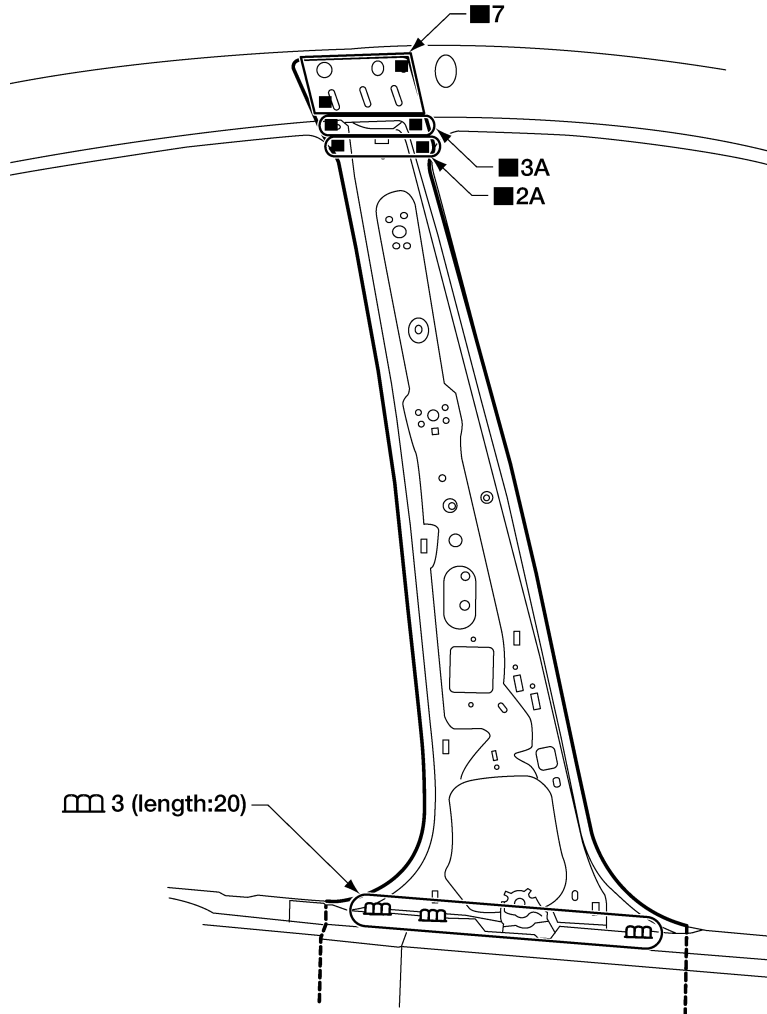
## INNER

Work after center pillar outer and outer sill have been removed.

# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

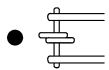
## Service Joint



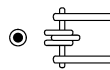
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Unit : mm

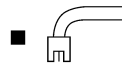
2-spot welds



3-spot welds



MIG Plug weld



For 3 panels plug weld method



MIG seam weld/  
Point weld



ALKIA0093GB

Change parts

- Center pillar inner

# REPLACEMENT OPERATIONS

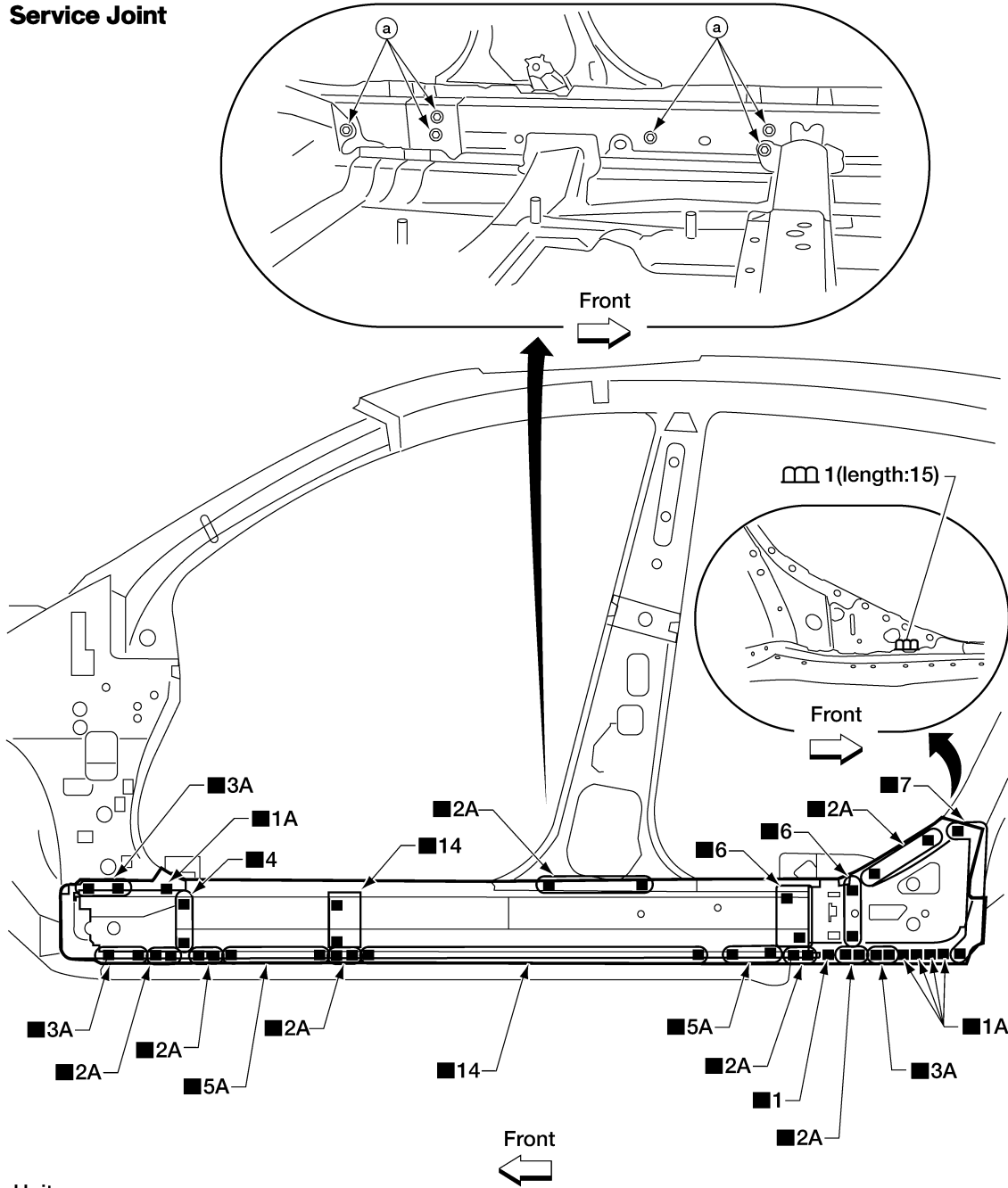
< ON-VEHICLE REPAIR >

## Outer Sill

INFOID:000000005440082

Work after the front pillar reinforcement, center pillar reinforcement, and rear fender have been removed.

### Service Joint



Unit : mm

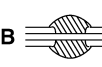
2-spot welds

3-spot welds

MIG Plug weld

For 3 panels plug weld method

MIG seam weld/  
Point weld



ALKIA0094GB

Change parts

- Outer sill reinforcement

A. 24Nm (2.4Kg-m, 18lb-ft)

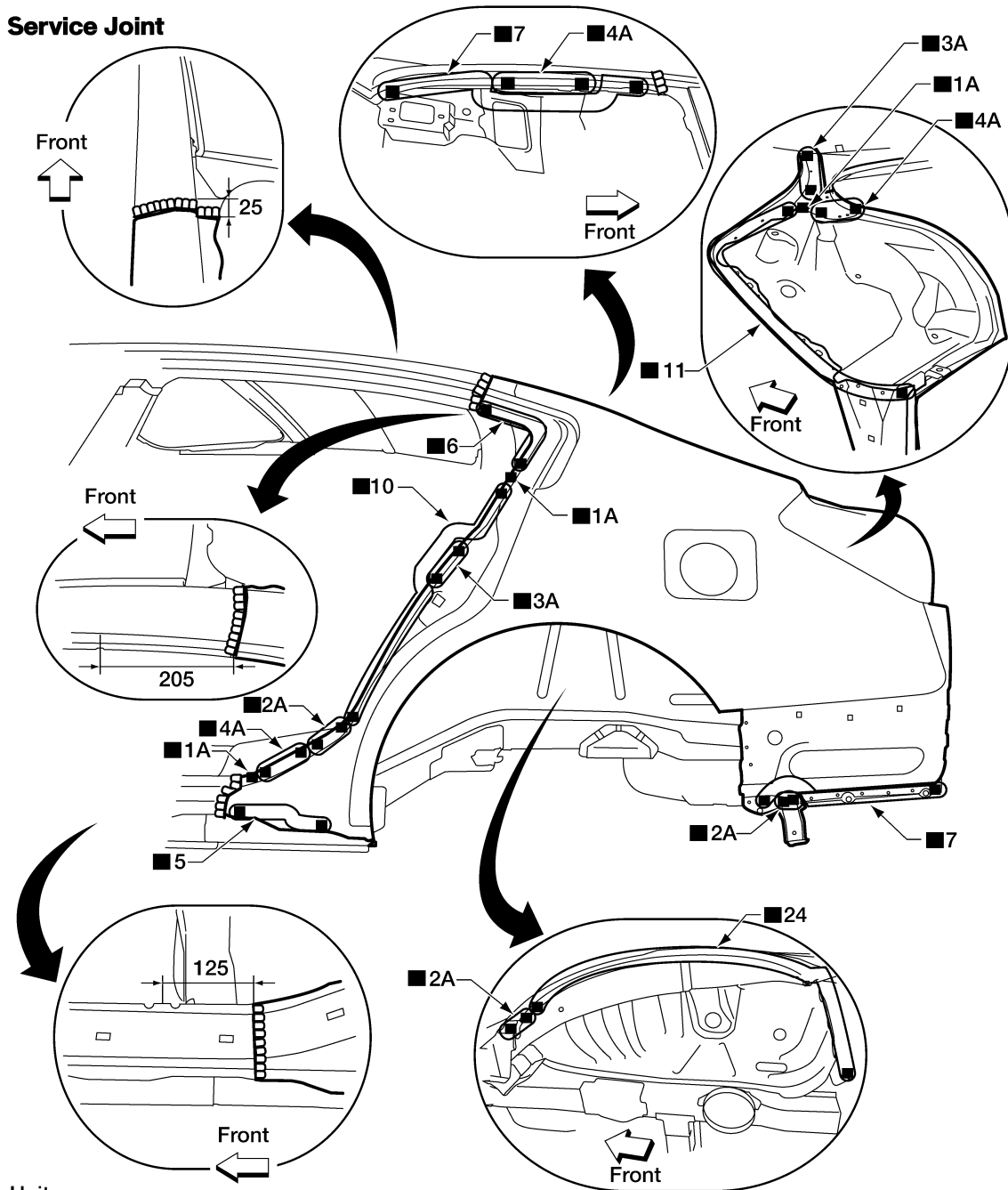
# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

## Rear Fender

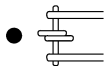
INFOID:000000005440083

### Service Joint

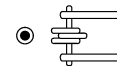


Unit : mm

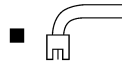
2-spot welds



3-spot welds



MIG Plug weld



( For 3 panels plug weld method )



MIG seam weld/  
Point weld



Change parts

- Rear fender

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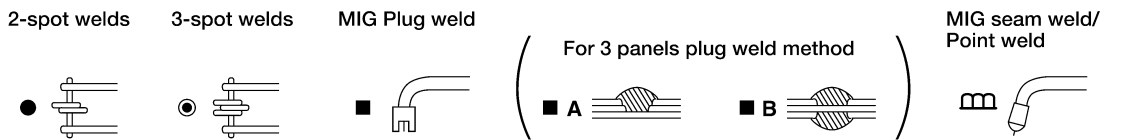
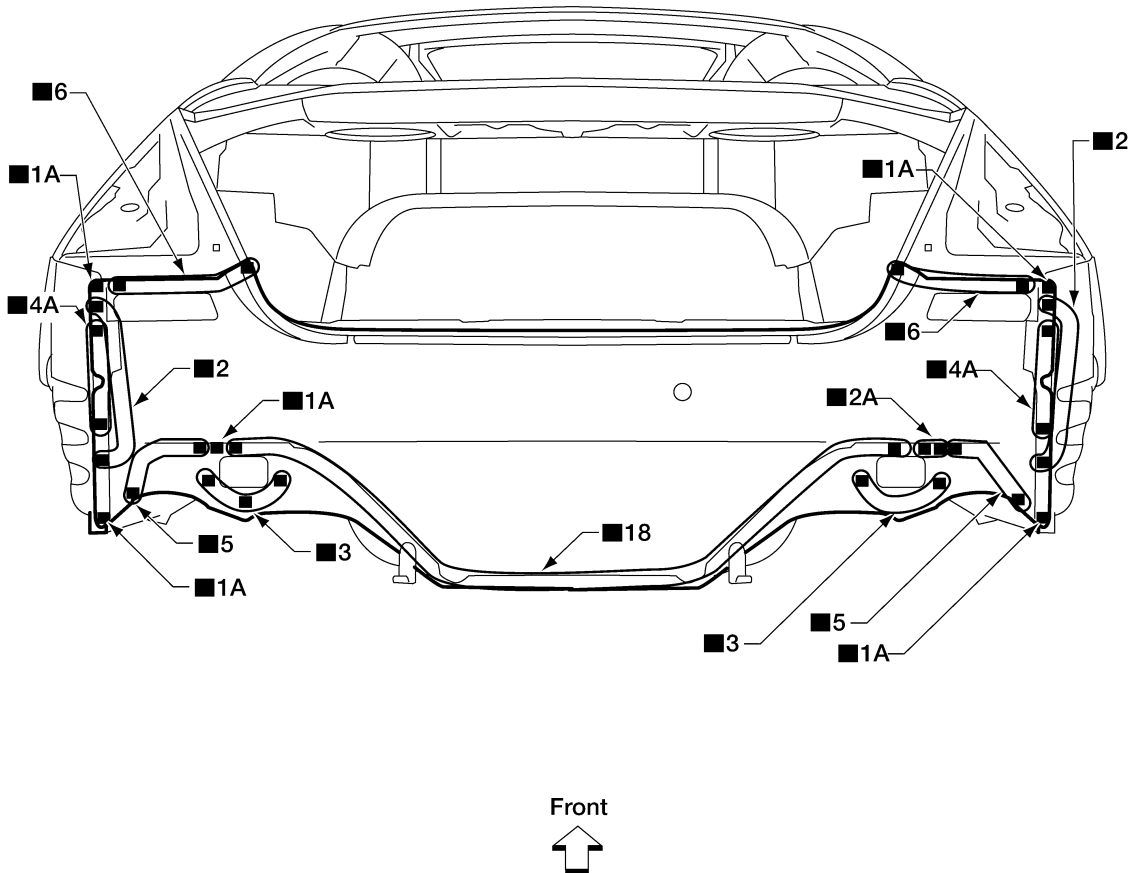
# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

## Rear Panel

INFOID:000000005440084

### Service Joint



ALKIA0096GB

Change parts

- Rear panel assembly

## Rear Floor Rear

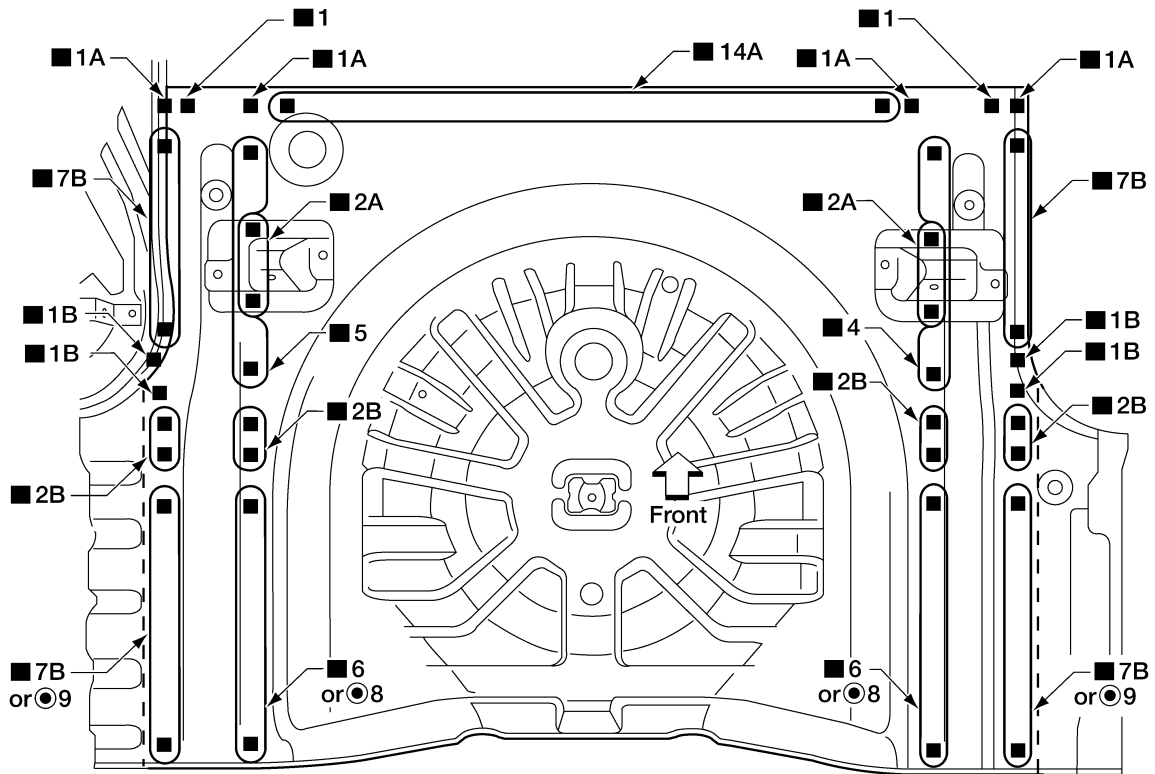
INFOID:000000005440085

- Work after rear panel assembly has been removed.

# REPLACEMENT OPERATIONS

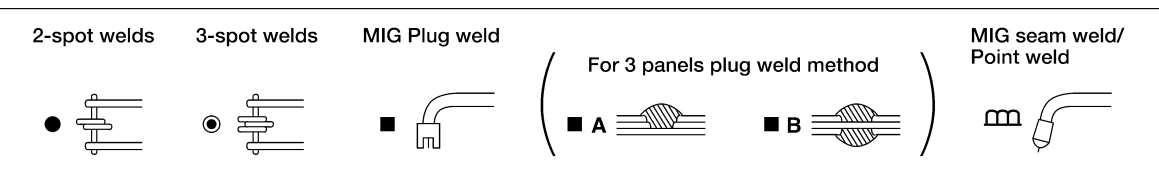
< ON-VEHICLE REPAIR >

## Service Joint



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ALKIA0241GB

- Change parts
- Rear floor rear

# REPLACEMENT OPERATIONS

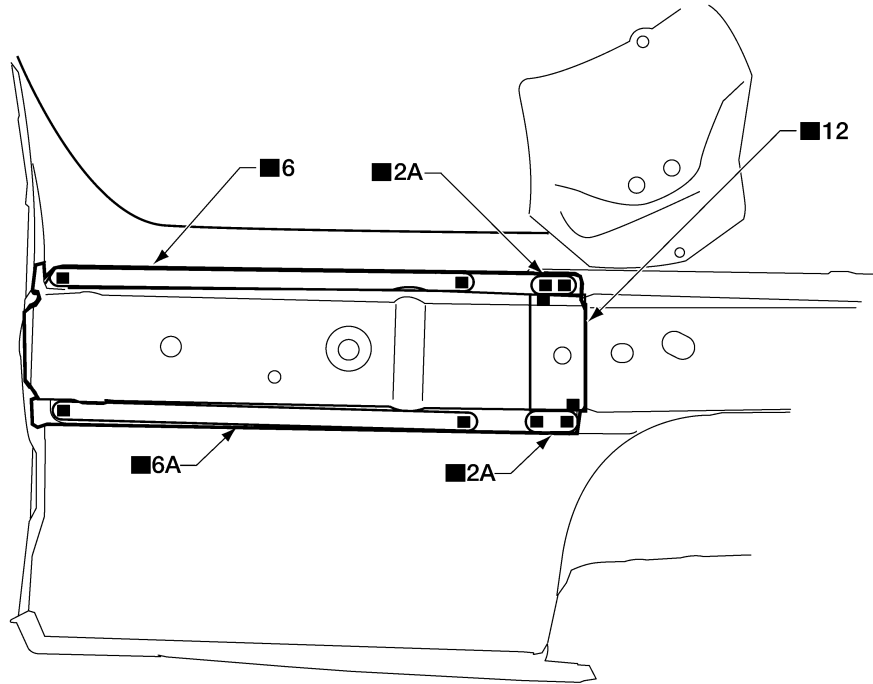
< ON-VEHICLE REPAIR >

## Rear Side Member Extension

INFOID:000000005440086

- Work after rear panel assembly has been removed.

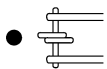
### Service Joint



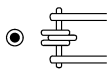
Front



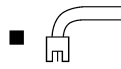
2-spot welds



3-spot welds



MIG Plug weld



For 3 panels plug weld method



MIG seam weld/  
Point weld



ALKIA0098GB

Change parts

- Rear side member extension



# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >

## Foam Repair

INFOID:000000005440087

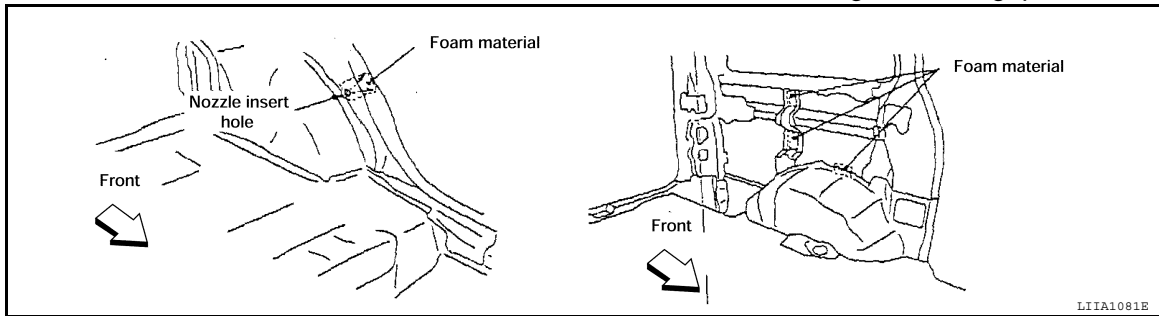
During factory assembly, foam insulators are installed in certain body panels and locations around the vehicle. Use the following procedure(s) to replace any factory-installed foam insulators.

### URETHANE FOAM APPLICATIONS

Use commercially available spray for sealant (foam material) repair of material used on vehicle. Read instructions on product for fill procedures.

### FILL PROCEDURES

1. Fill procedures after installation service part.
  - Remove foam material remaining on vehicle side.
  - Clean area in which foam was removed.
  - Install service part.
  - Insert nozzle into hole near fill area and fill foam material or fill in enough to close gap with service part.



2. Fill procedures before installation service part
  - Remove foam material remaining on vehicle side.
  - Clean area in which foam material on wheelhouse outer side.

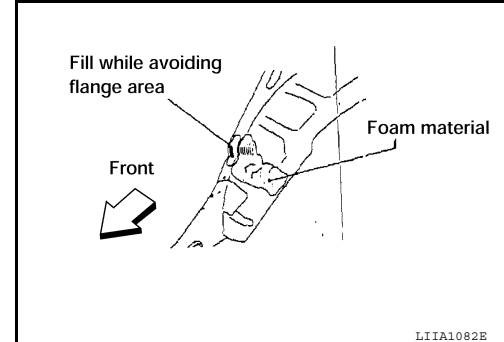
#### NOTE:

Fill in enough to close gap with service part while avoiding flange area.

- Install service part.

#### NOTE:

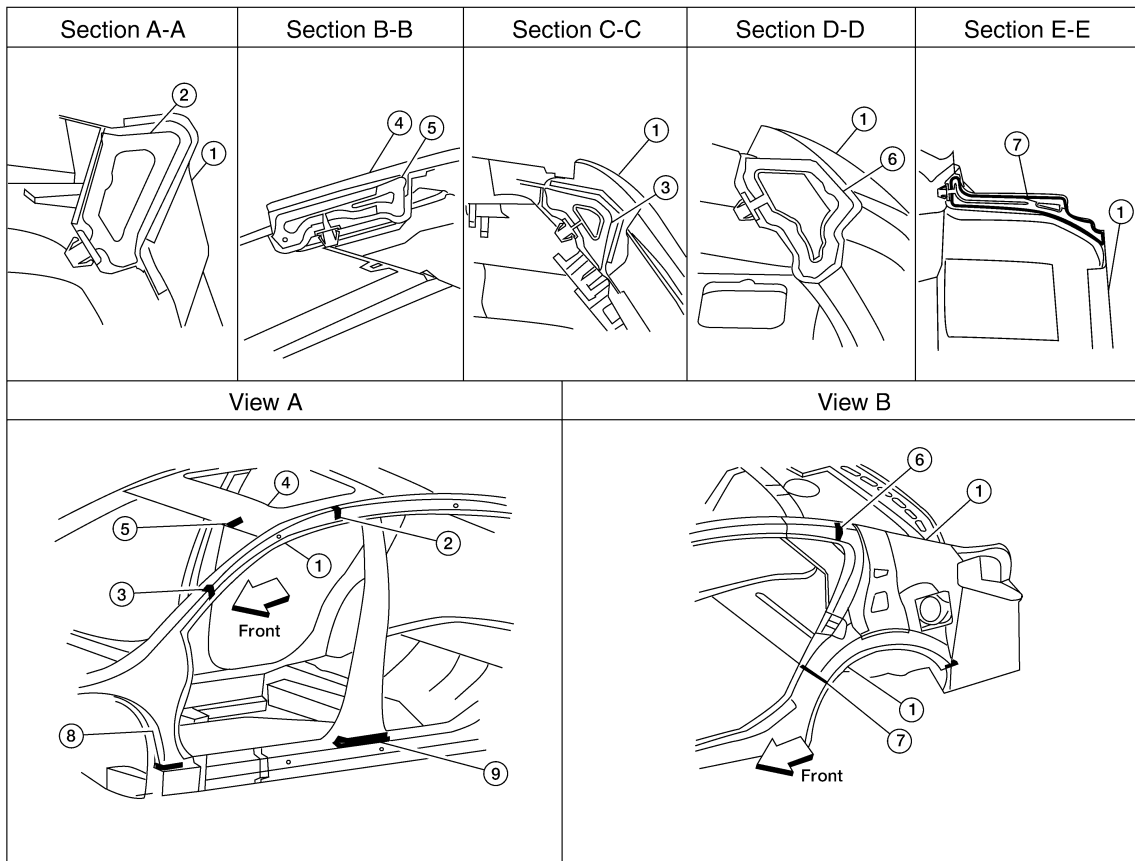
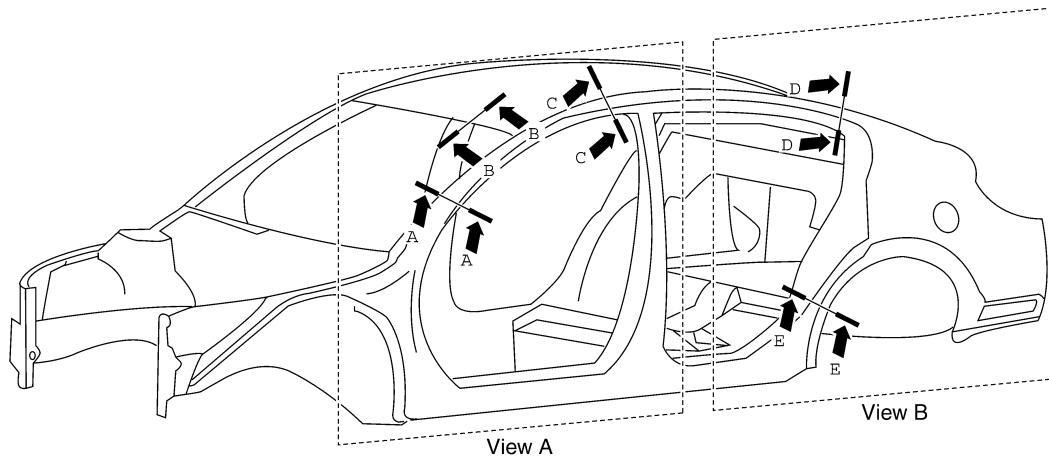
Refer to label for information on working times.



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# REPLACEMENT OPERATIONS

< ON-VEHICLE REPAIR >



AWK1A1525GB

- |  |   |  |
|--|---|--|
| 1. Body side outer                               | 2. Body side insulation (foam) upper front pillar               | 3. Body side insulation (foam) front pillar                |
| 4. Roof panel assembly                           | 5. Roof panel insulation (foam) front roof rail                 | 6. Body side insulation (foam) rear pillar                 |
| 7. Body side insulation (foam) rear pillar lower | 8. Body side insulation strip, front pillar lower reinforcement | 9. Body side insulation strip, center pillar reinforcement |