TOYOTA

REPAIR MANUAL FOR COLLISION DAMAGE

LAND CRUISER/ LAND CRUISER PRADO

RZJ9_, VZJ9_ series
KZJ9_, LJ9_ series

Apr., 1996

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FOREWORD

This repair manual has been prepared to provide essential information on body panel repair methods (including cutting and welding operations, but excluding painting) for the TOYOTA LAND CRUISER/LAND CRUISER PRADO

Applicable models:	RZJ90, 95 series	VZJ90, 95 series
	KZJ90, 95 series	LJ90, 95 series

This manual consists of body repair methods, exploded diagrams and illustrations of the body components and other information relating to body panel replacement such as handling precautions, etc. However, it should be noted that the front fenders of the TOYOTA models is bolted on and require no welding.

When repairing, don't cut and join areas that are not shown in this manual. Only work on the specified contents to maintain body strength.

Body construction will sometimes differ depending on specifications and country of destination. Therefore, please keep in mind that the information contained herein is based on vehicles for general destinations.

For the repair procedures and specifications other than collision-damaged body components of the TOYOTA LAND CRUISER/LAND CRUISER PRADO refer to the following repair manuals.

If you require the above manuals, please contact your TOYOTA Dealer.

All information contained in this manual is the most up-to-date at the time of publication. However, specifications and procedures are subject to change without prior notice.

TOYOTA MOTOR CORPORATION

TOYOTA LAND CRUISER/ LAND CRUISER PRADO REPAIR MANUAL FOR COLLISION DAMAGE

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INTRODUCTION

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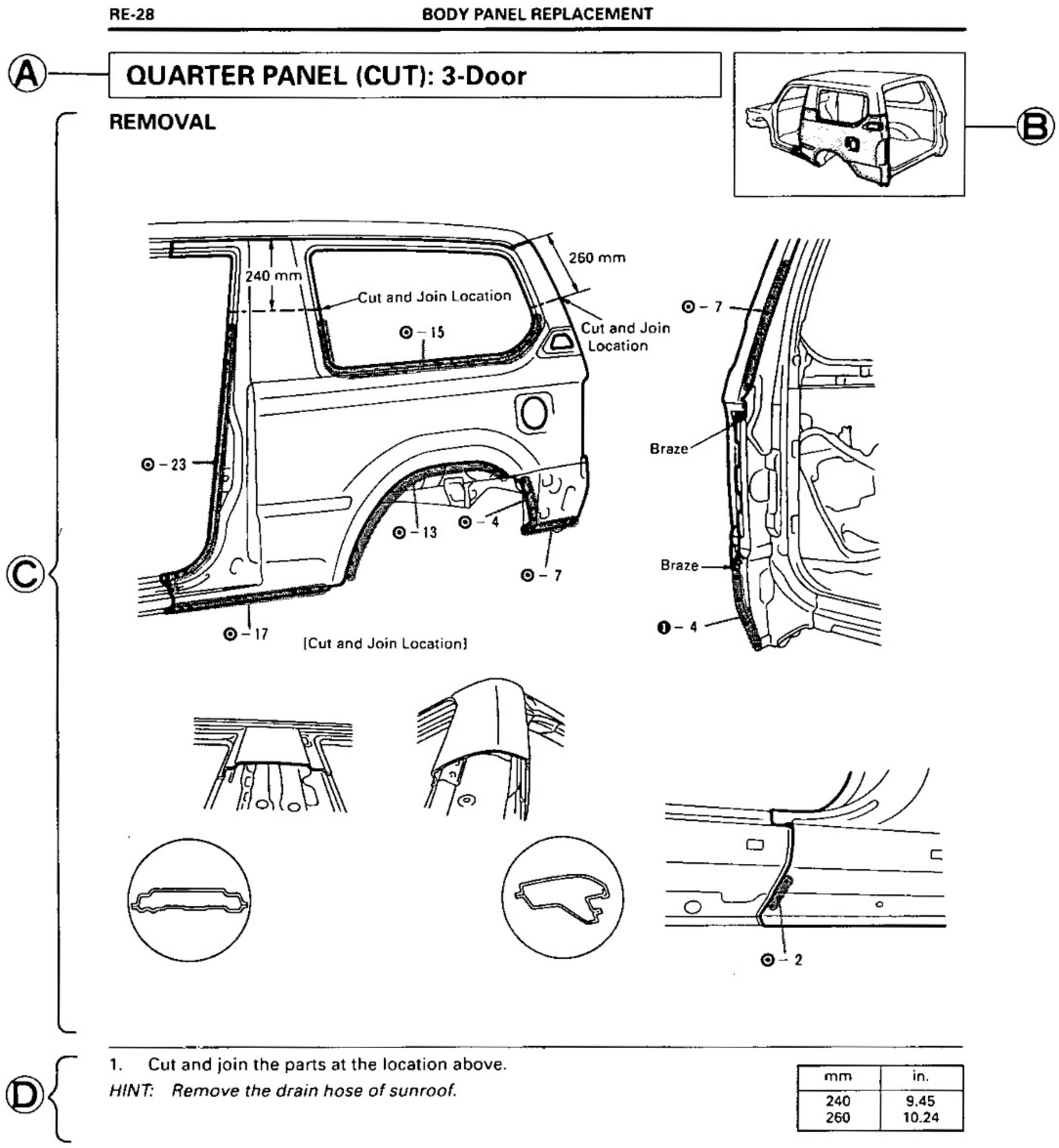
HOW TO USE THIS MANUAL

Each repair method description provided in Section RE of this manual comprises two pages, divided into 2 blocks (REMOVAL AND INSTALLATION) and includes illustrations to facilitate body repair.



Ⓐ : REPLACEMENT PARTS AND METHOD

QUARTER PANEL (CUT)

- Replacement method
  - (ASSY) .... Assembly replacement
  - (CUT) ..... Major cutting (less than 1/2 of parts used)
  - (CUT-H) .... Half cutting (about 1/2 of parts used)
  - (CUT-P) .... Partial cutting (most of parts used)
- Replacement Parts

Ⓑ : PARTS LOCATION

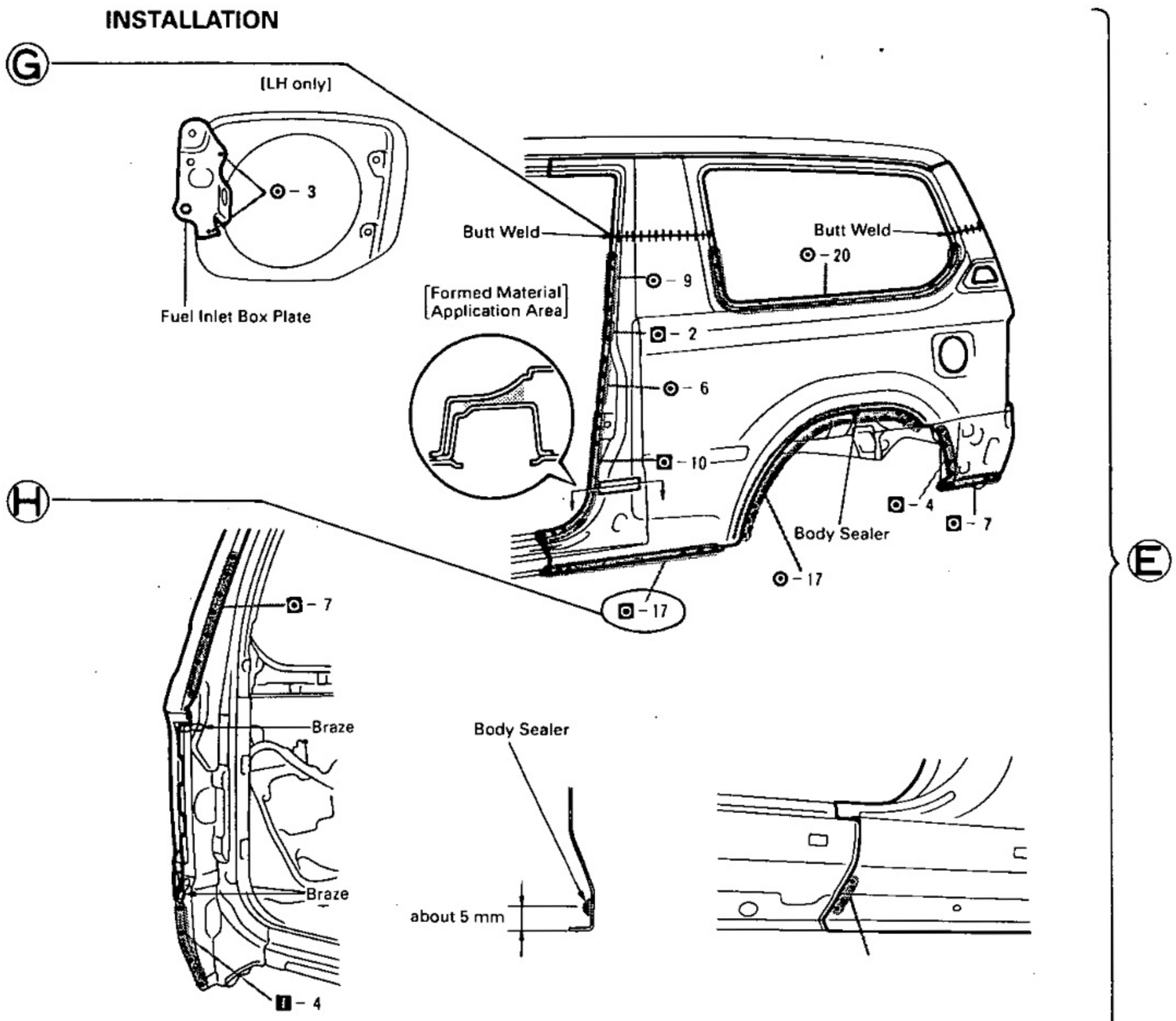
Ⓒ : REMOVAL DIAGRAM

Describes in detail removal of the damaged parts involving repair by cutting.

Ⓓ : REMOVAL GUIDE

Provides additional information to more efficiently help you perform the removal.

INSTALLATION



mm	in.
5	0.20

1. Before temporarily installing the new parts, apply body sealer to the wheel arch.

HINT:

1) Apply body sealer about 5 mm (0.20 in.) from the flange, avoiding any oozing.

2) Apply sealer evenly, about 3 – 4 mm (0.12 – 0.16 in.) in diameter.

3) For other sealing points, refer to Section AR.

2. Before temporarily installing the new parts, weld the fuel inlet box plate with standard points.
3. Temporarily install the new parts and check the fit of the front door back door and rear combination light.
4. After installing the new parts apply fomed material.

F

Ⓔ : **INSTALLATION DIAGRAM**
Describes in detail installation of the new parts involving repair by welding and/or cutting, but excluding painting.

Ⓕ : **INSTALLATION GUIDE**
Provides additional information to more efficiently help you perform the installation.

Ⓖ : **SYMBOLS**
See page IN-4.

Ⓗ : **ILLUSTRATION OF WELD POINTS**
Weld method and panel position symbols.
See page IN-5.

SYMBOLS

The following symbols are used in the Welding Diagrams in Section RE of this manual to indicate cutting areas and the types of weld required.

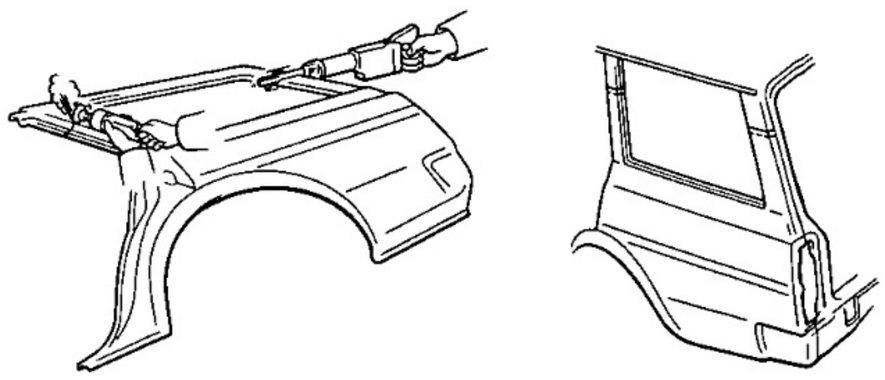
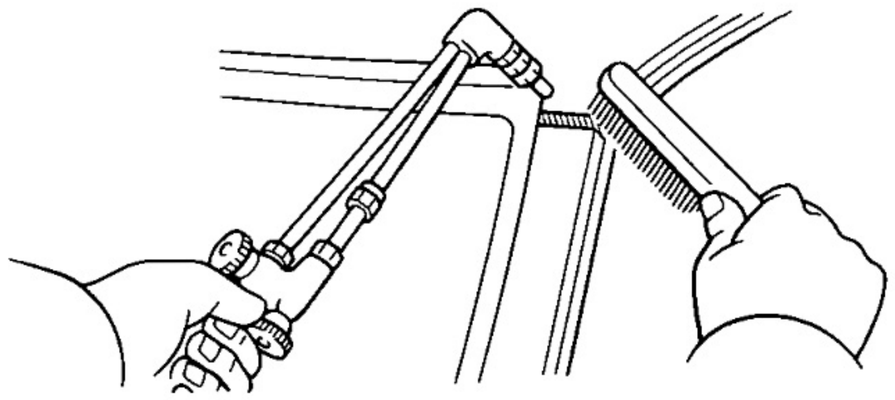
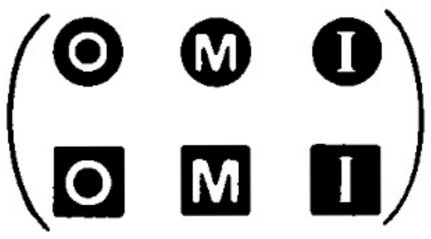
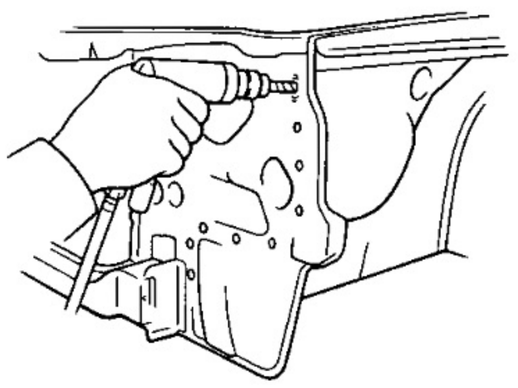
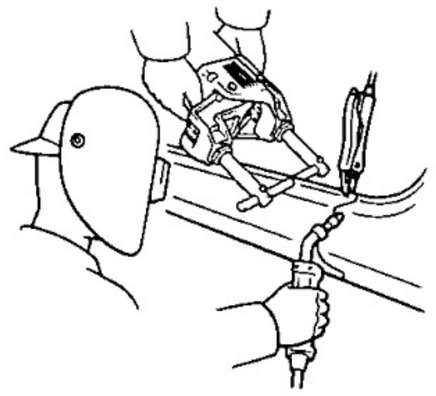
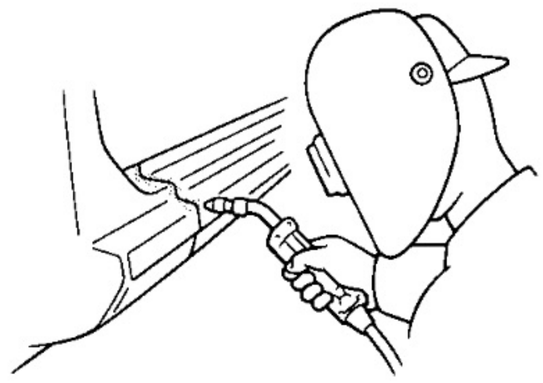
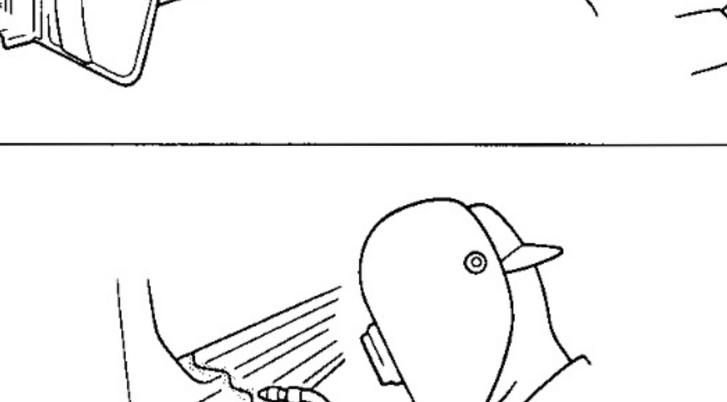
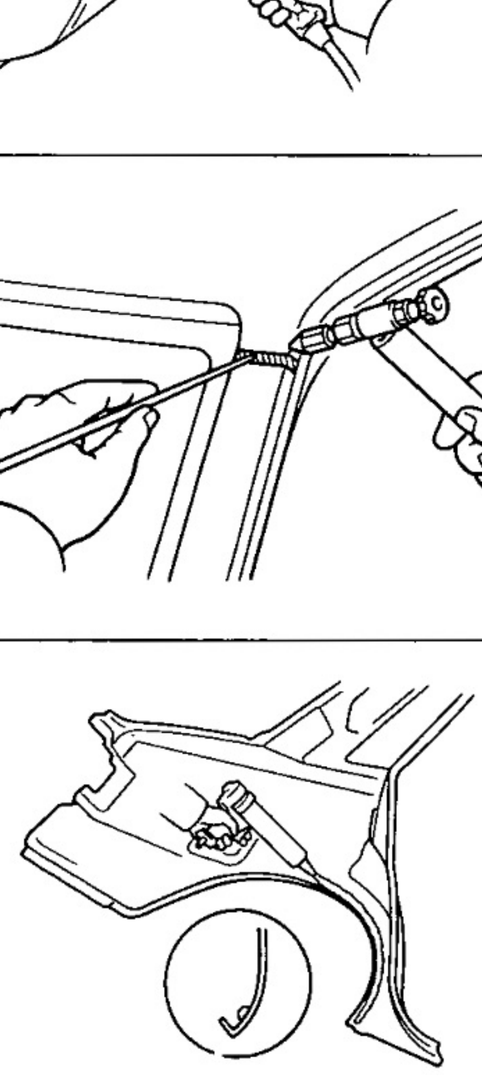
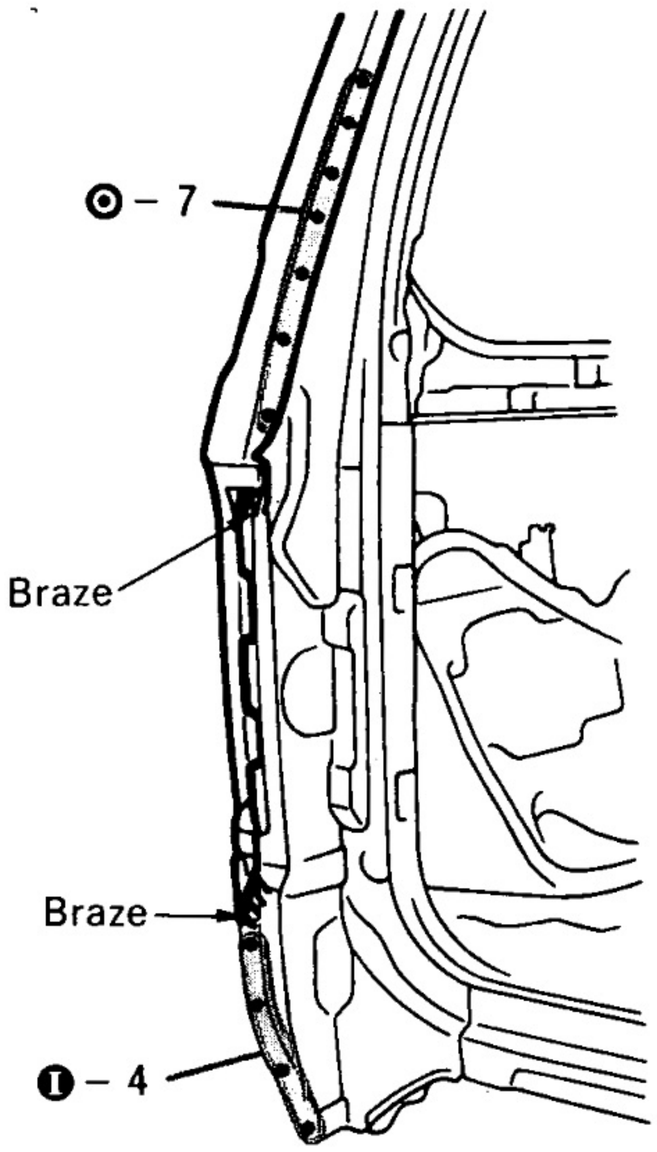
SYMBOLS	MEANING	ILLUSTRATION
	SAW CUT OR ROUGH CUT	
	REMOVE BRAZE	
	WELD POINTS SPOT WELD OR MIG PLUG WELD (See page IN-5)	 
	CONTINUOUS MIG WELD (BUTT WELD OR TACK WELD)	
	BRAZE	
	BODY SEALER	

Illustration of Weld Point Symbols

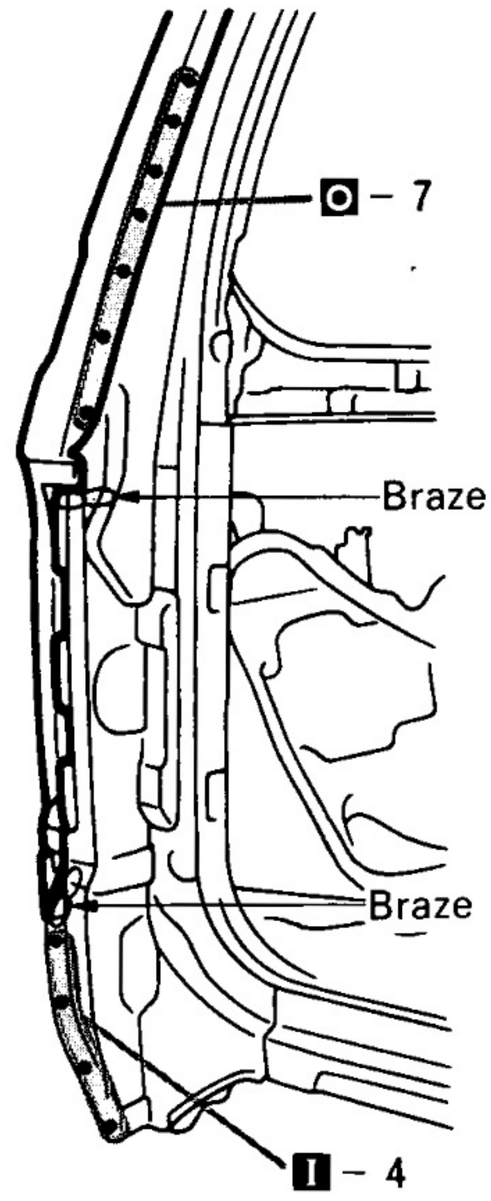
EXAMPLE:

REMOVAL

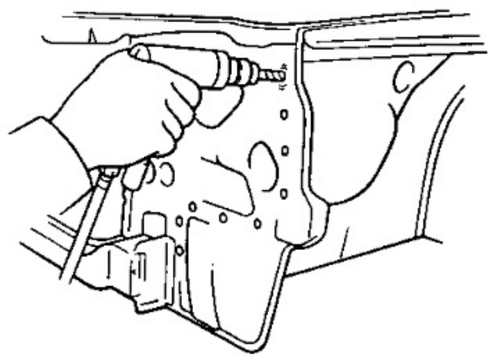
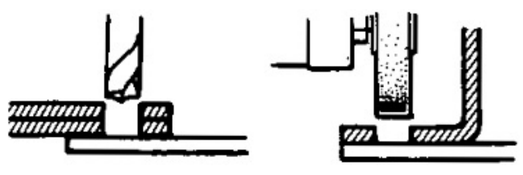
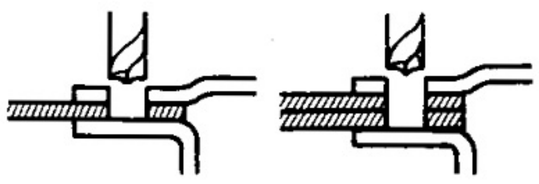


Ⓘ – 4
Weld points
Remove weld point and panel position

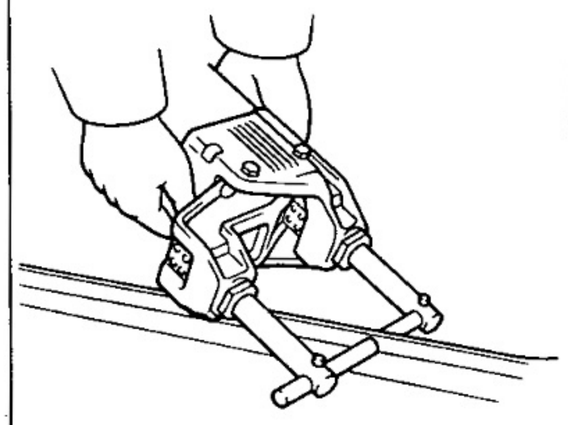
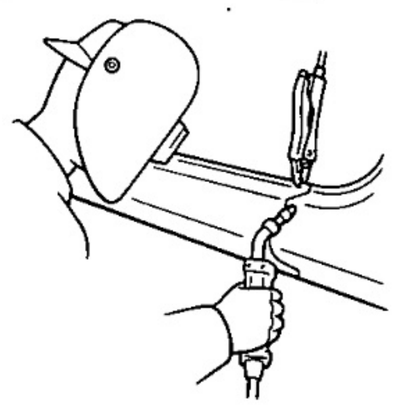
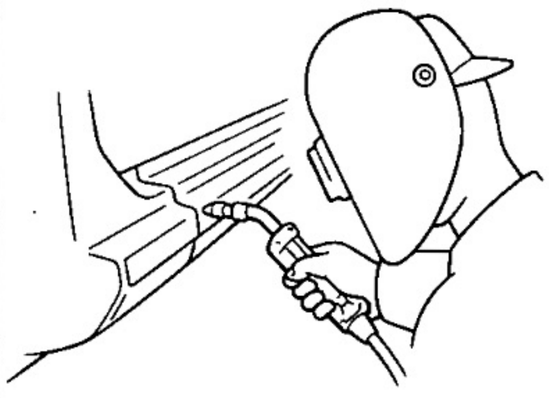
INSTALLATION



Ⓘ – 4
Weld points
Weld method and panel position

SYMBOL	MEANING	ILLUSTRATION
⊙ Ⓜ Ⓘ	Remove Weld Points	
⊙	(Outside)	
Ⓜ	(Middle)	
Ⓘ	(Inside)	

HINT: Panel position symbols are as seen from the working posture.

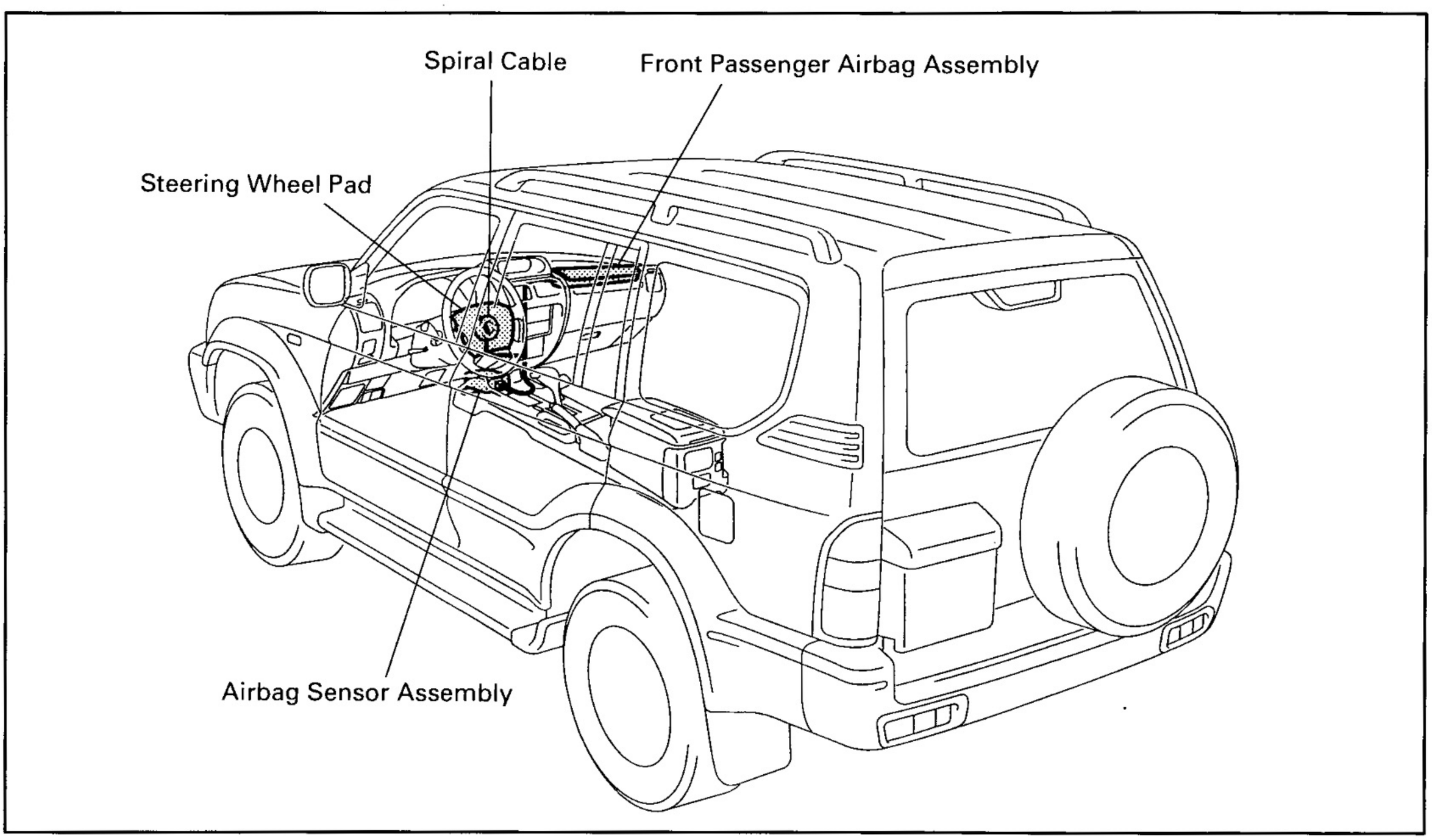
SYMBOL	MEANING	ILLUSTRATION
⊙ Ⓜ Ⓘ	Spot Weld	
◘ Ⓜ Ⓘ	Mig Plug Weld	
+	Spot MIG Weld	

HANDLING PRECAUTIONS ON RELATED COMPONENTS

1. SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The LAND CRUISER/LAND CRUISER PRADO is equipped with an SRS (Supplemental Restraint System), such as the driver airbag and a front passenger airbag.
Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident.
Further, if a mistake is made in servicing the SRS, it is possible the SRS may fail to operate when required.
Before performing servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedure described in the repair manual for relevant model.

Locations of SRS Components



Servicing vehicle with a Supplemental Restraint System (referred to as the SRS in the remainder of this manual) installed.
When handling SRS components (removal, installation or inspection, etc.), always follow the directions given in the repair manual for the relevant model year to prevent the occurrence of accidents and airbag malfunction.

Also take the following precautions when repairing the body:

- Work must be started after 90 seconds or longer from the time the ignition switch is set to the "LOCK" position and the nagative (–) terminal cable is disconnected from the battery.
  (The SRS is equipped with a back-up power source so that if work is started within 90 seconds of disconnecting the negative (–) terminal cable of the battery, the SRS may be deploy.)
  When the negative (–) terminal cable is disconnected from the battery, memory of the clock and audio system will be cancelled. So before starting work, make a record of the contents memorized by audio memory system. When work is finished, reset the audio system as before and adjust the clock.
  To avoid erasing the memory of each memory system, never use a back-up power supply from outside the vehiecle.
  When the vehicle has tilt and telescopic steering, power seat, outside rear view mirror and power shoulder belt anchorage, which are all equipped with memory, function, it is not possible to make a record of the memory contents. So when the operation is finished, it will be necessary to explain this fact to the customer, and request the customer to adjust the features and reset the memory.
  To avoid erasing the memory of each memory system, never use back-up power supply from outside the vehicle.

- When using electric welding, first disconnect the SRS connector (yellow color and 2 pins) under the steering column near the combination switch connector on the glove compartment finish plate and lower front scuff plate before starting work.
- Before repairing the body, remove the SRS parts if, during repair, shocks are likely to be applied to the sensors due to vibrations of the body or direct tapping with tools or other parts.
- Do not expose the SRS parts directly to hot air or flames.

  NOTICE:
  1) *The maximum ambient temperature tolerance is 105° C (221° F) for the airbag sensor assembly and 93° C (200° F) for the steering wheel pad, and front passenger airbag assembly. If it is possible that the ambient temperature may reach or exceed the temperature limit, remove the sensors and the steering wheel pad from the vehicle or protect them with a hot insulation material before starting work.*
  2) *Prior to welding remove adjacent SRS parts from the vehicle or protect them with fire-proof covers.*
- If the vehicle is damaged, visually inspect for damage to the steering wheel pad using the inspection procedures described in section RS of the repair manual for the relevant model year.
- When removing or handling the steering wheel pad, and front pasenger airbag assembly keep the pad upper surface facing upward. Also, lock the lock lever of the twin lock type connector at the rear of the pad and take care not to damage the connector.
  (Storing the pad or front passenger airbag assembly with its metalic surface up may lead to a serious accident if the airbag inflates for some reason.)
- Store the steering wheel pad and the front passenger airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electircal noise.
- Be careful not to let painting materials contacts the SRS parts.
- Information labels are attached to the periphery of the SRS components. Follow the NOTICES.
- Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.

2. BRAKE SYSTEM

The brake system is one of the most important safety components. Always follow the directions and notes given in section BR of the repair manual for the relevant model year when handling brake system parts.

3. DRIVE TRAIN AND CHASSIS

The drive train and chassis are components that can have great effects on the running performance and vibration resistance of the vehicle. After installing components in the sections listed in the table below, perform alignments to ensure correct mounting angles and dimensions. Particularly accurate repair of the body must also be done to ensure correct alignment.

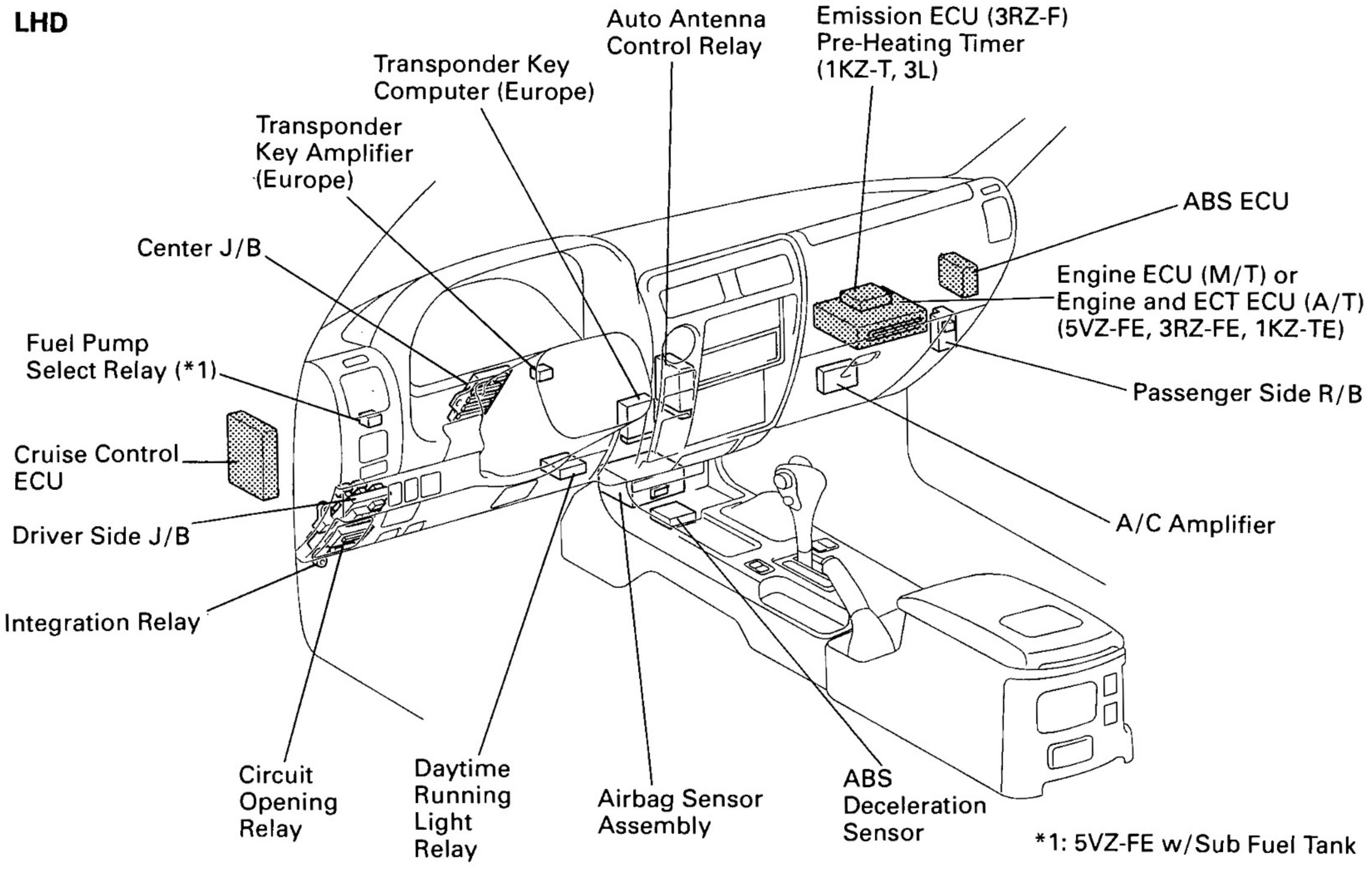
HINT: Correct procedures and special tools are required for alignment. Always follow the directions given in the repair manual for the relevant model year during alignment and section DI of this manual.

Component to be aligned	Section of repair manual for relevant model year
Front Wheels	Suspension and Axle (SA) section
Rear Wheels	Suspension and Axle (SA) section
Propeller Shaft	Propeller Shaft (PR) section

4. ECU (ELECTRONIC CONTROL UNIT)

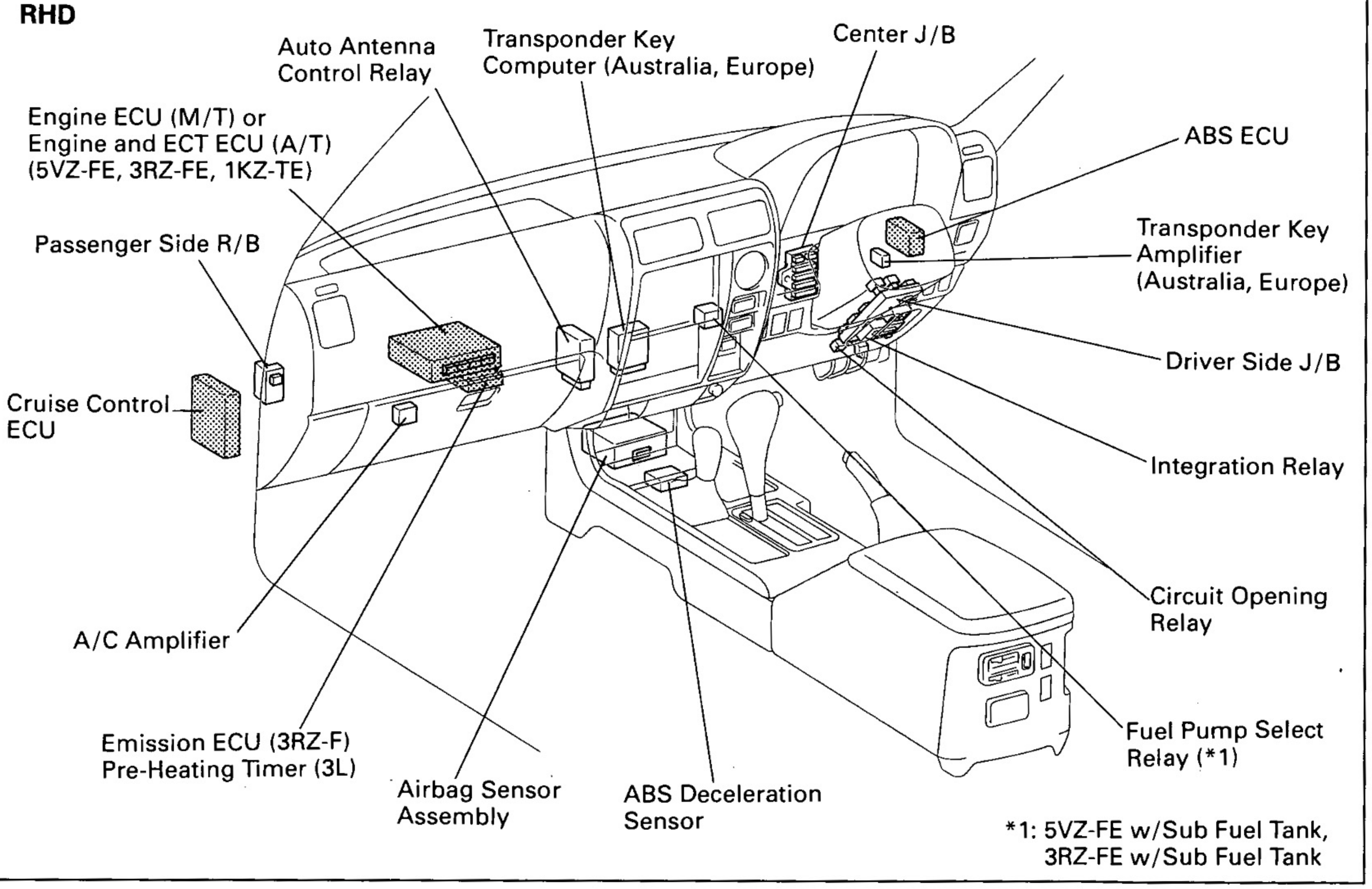
Locations of ECUs

LHD



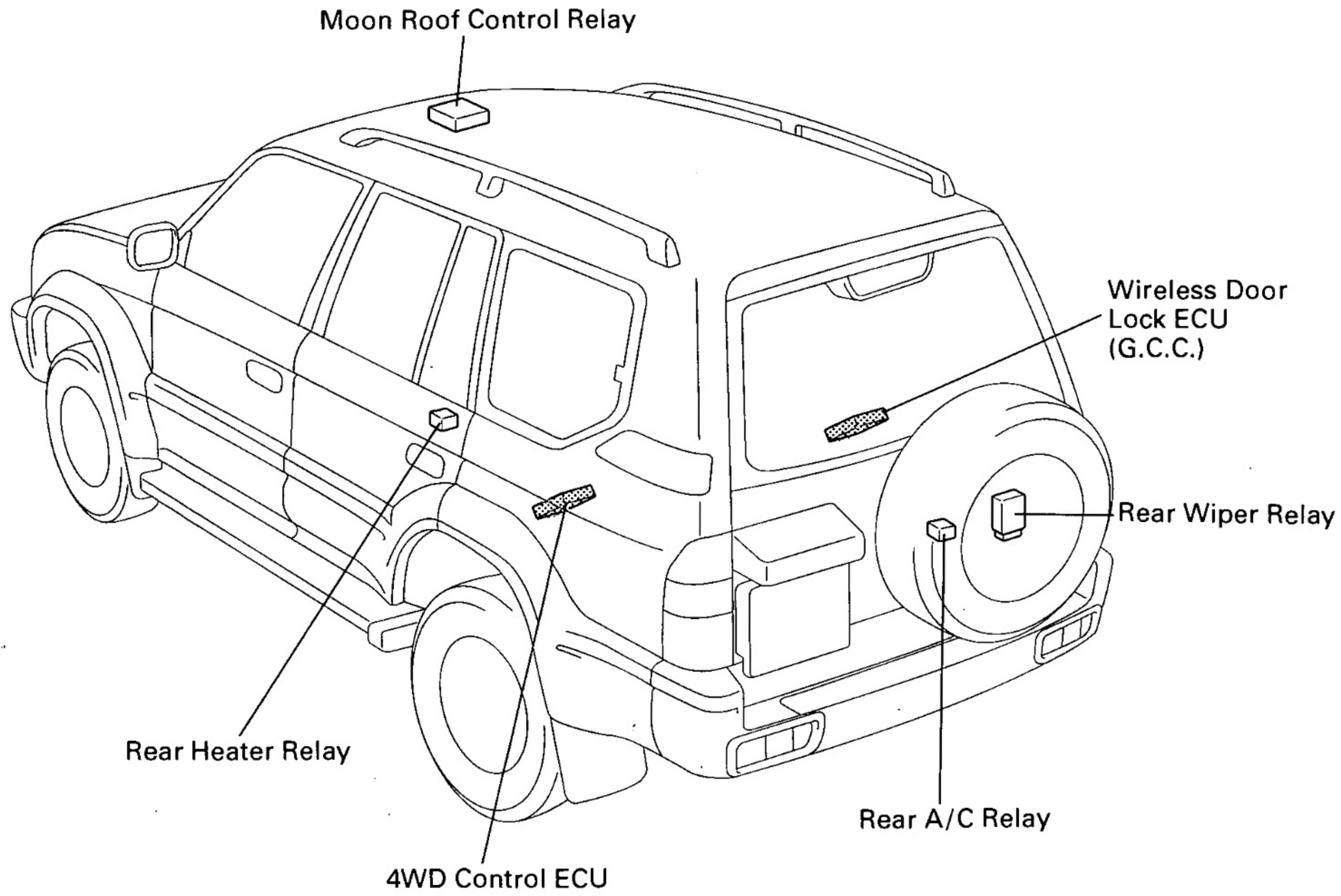
*1: 5VZ-FE w/Sub Fuel Tank

RHD

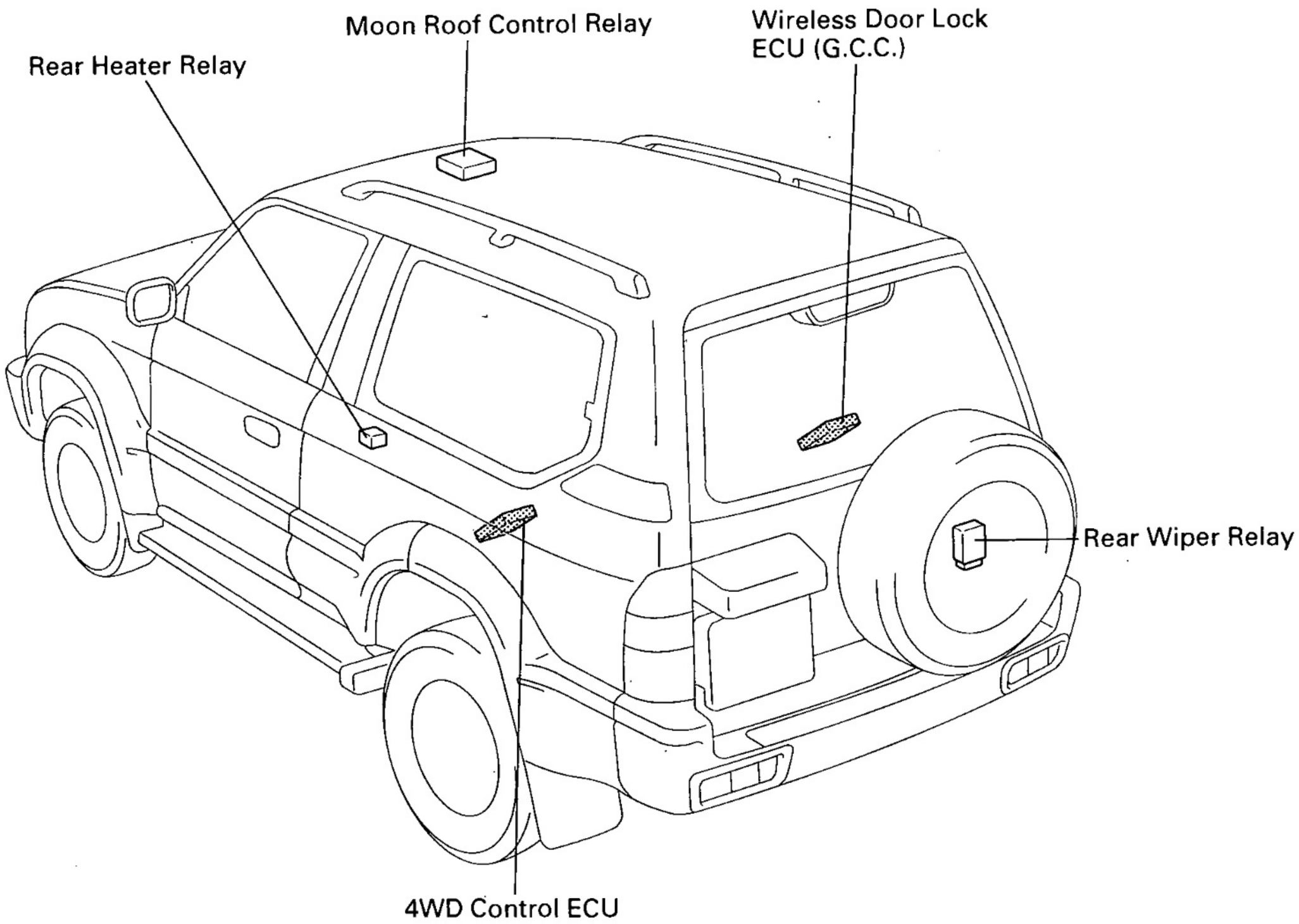


*1: 5VZ-FE w/Sub Fuel Tank, 3RZ-FE w/Sub Fuel Tank

5-Door


Moon Roof Control Relay
Wireless Door Lock ECU (G.C.C.)
Rear Wiper Relay
Rear Heater Relay
Rear A/C Relay
4WD Control ECU

3-Door


Moon Roof Control Relay
Wireless Door Lock ECU (G.C.C.)
Rear Heater Relay
Rear Wiper Relay
4WD Control ECU

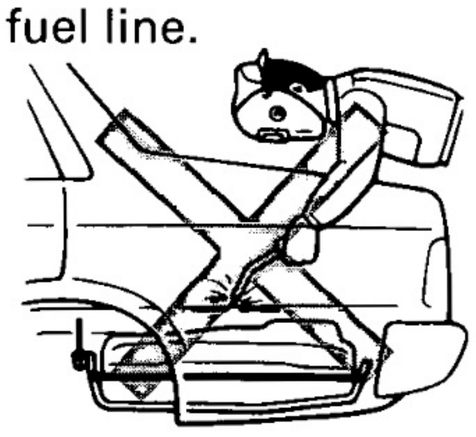
GENERAL REPAIR INSTRUCTIONS

Work Precautions

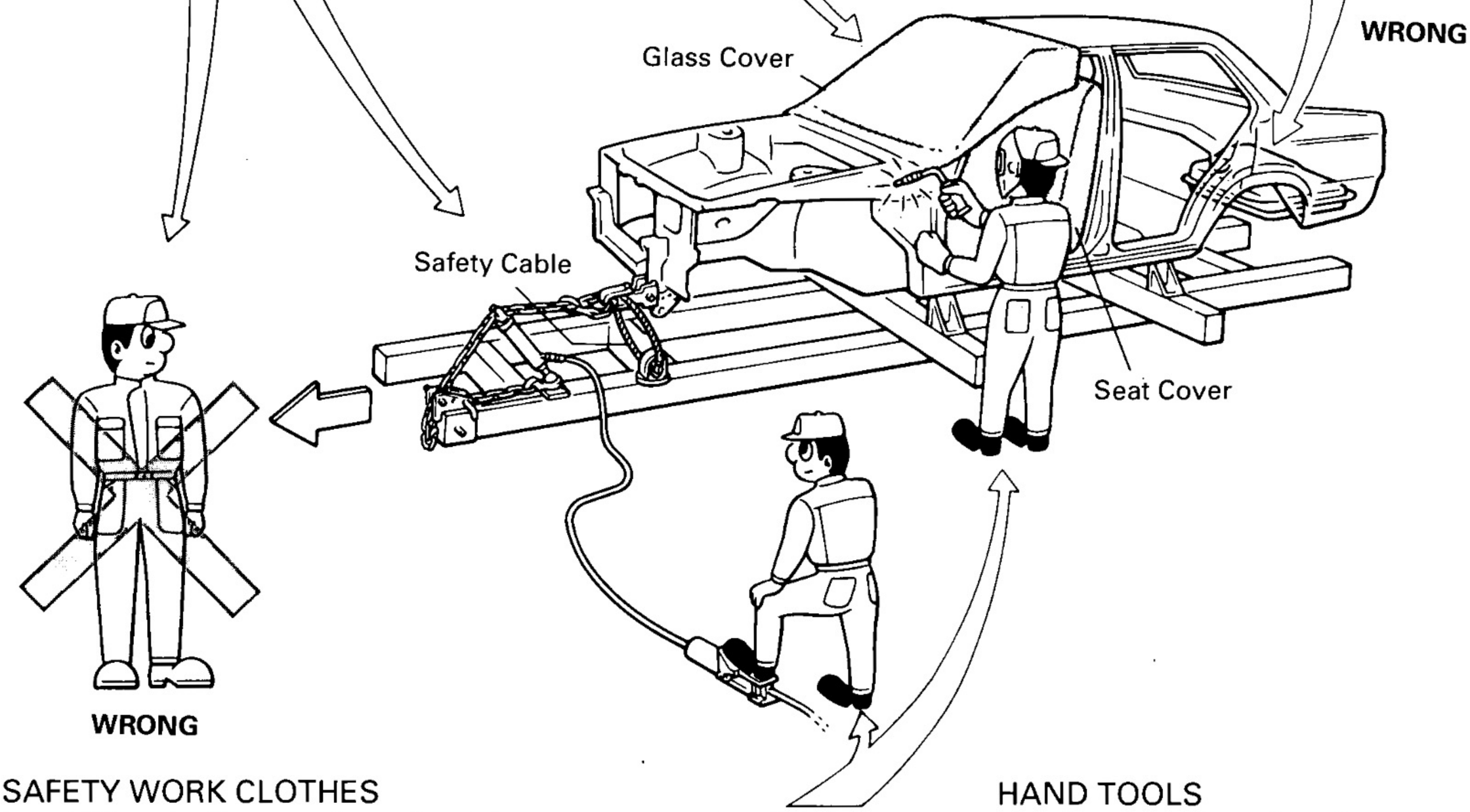
SAFETY
Never stand in direct line with the chain when using a puller on the body or frame, and be sure to attach a safety cable.

VEHICLE PROTECTION
When welding, protect the painted surfaces,windows, seats and carpet with heat-resistant, fire-proof covers.

SAFETY
1. Before performing repair work, check for fuel leaks. If a leak is found, be sure to close the opening totally.
2. If it is necessary to use a frame in the area of the fuel tank, first remove the tank and plug the fuel line.



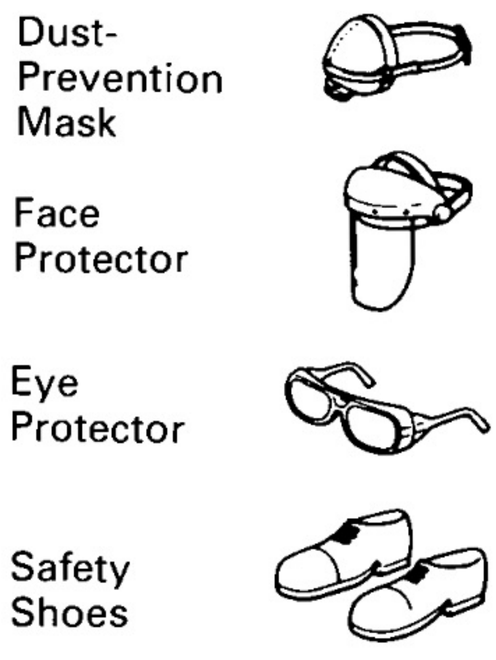
WRONG

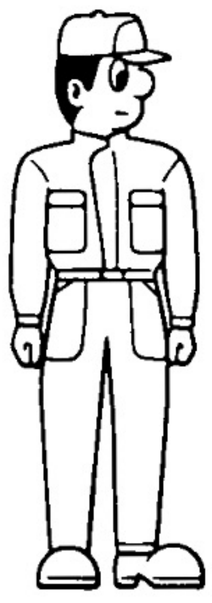


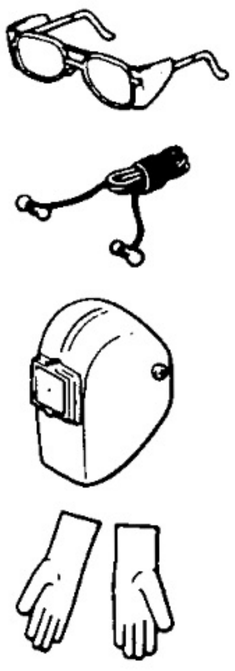
WRONG

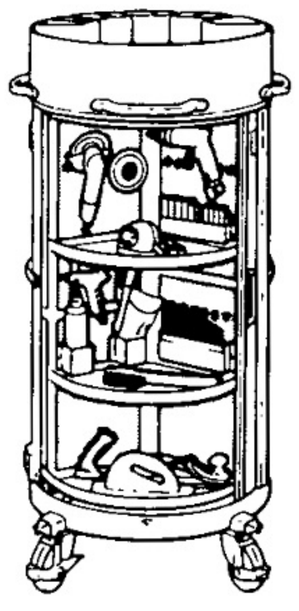
SAFETY WORK CLOTHES
In addition to the usual mechanic's wear, cap and safety shoes, the appropriate gloves, head protector, glasses, ear plugs, face protector, dust-prevention mask, etc. should be worn as the situation demands.

HAND TOOLS
Keeping your hand tools in neat order improve your work efficiency.







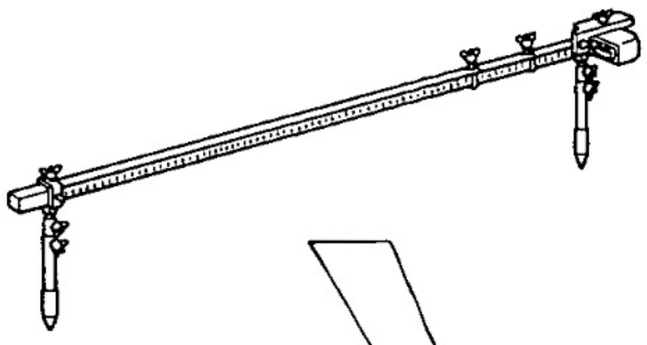


Body Tools Stand

Proper and Efficient Work Procedures

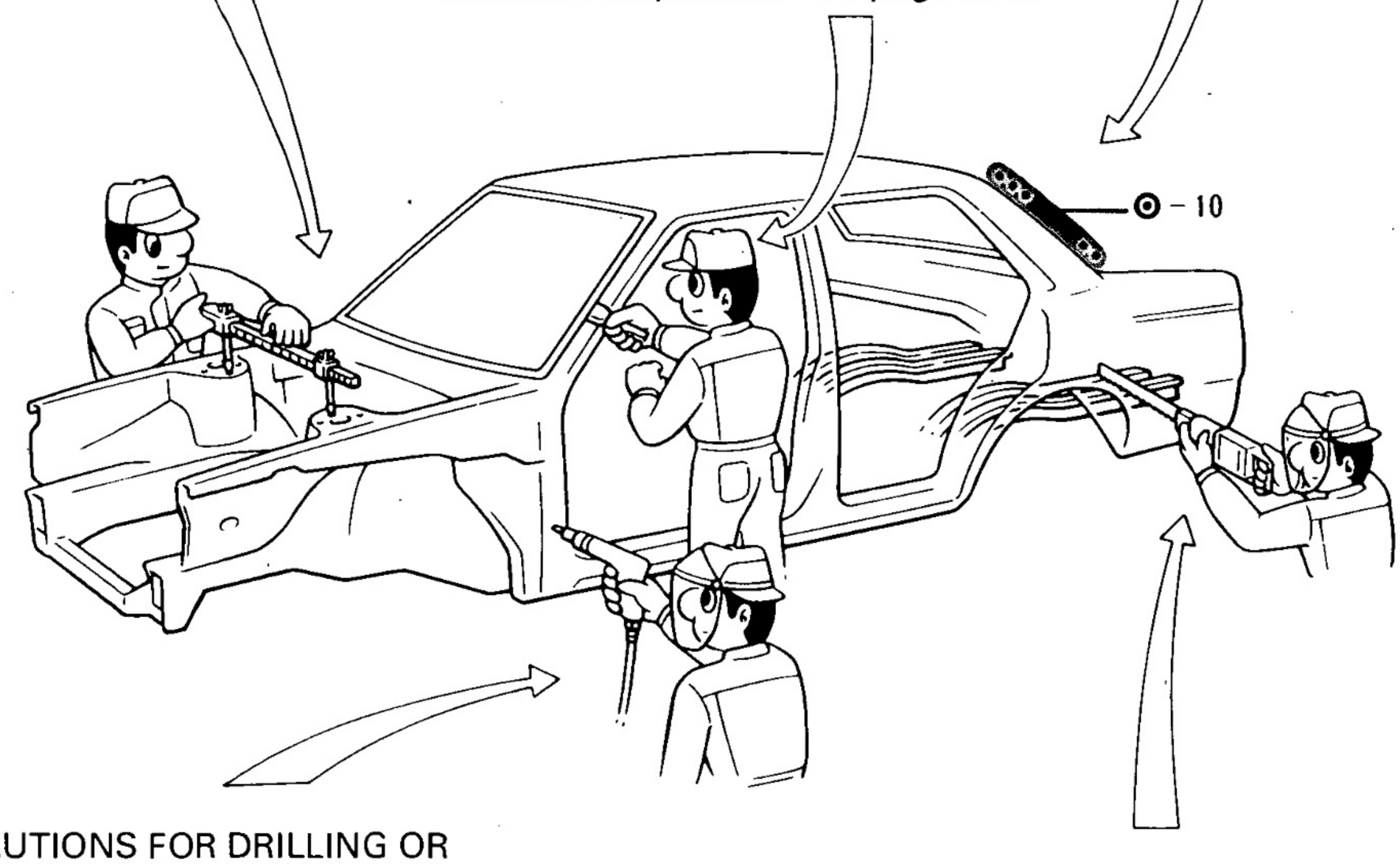
REMOVAL

PRE-REMOVAL MEASURING
Before removal or cutting operations, take measurements in accordance with the dimension diagram. Always use a puller to straighten a damaged body or frame.

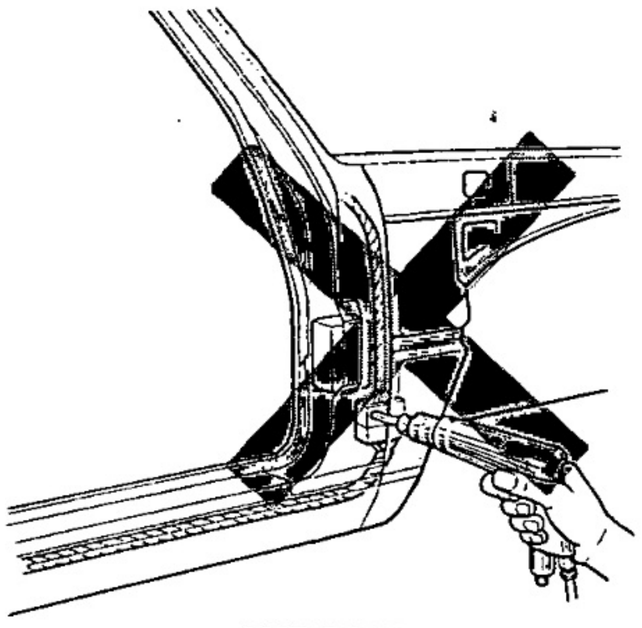


NUMBER OF SPOT WELDS AND PANEL POSITIONS
The number of spot welds and the panel positions to be removed are shown for your reference.
HINT: See "Symbols" on page IN-4,5.

REMOVAL OF ADJACENT COMPONENTS
When removing adjacent components, apply protective tape to the surrounding body and your tools to prevent damage.
HINT: See "Handling Precautions on Related Components" on page IN-6.

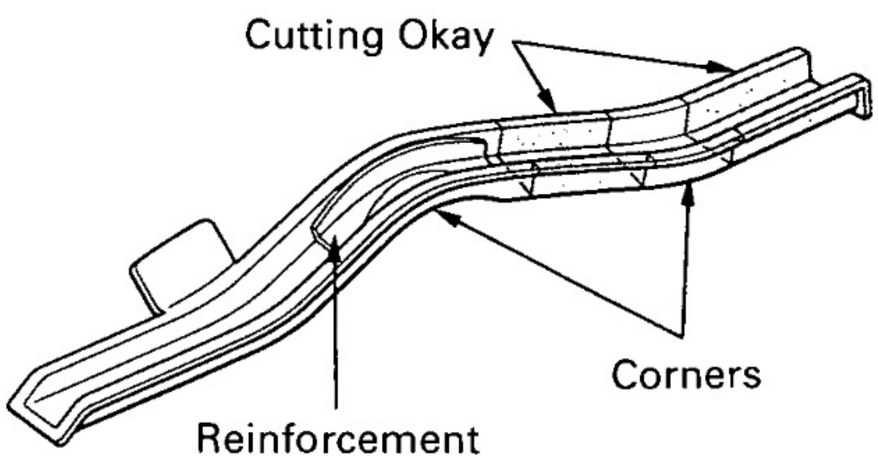


PRECAUTIONS FOR DRILLING OR CUTTING
Check behind any area to be drilled or cut to insure that there are no hoses, wires, etc., that may be damaged.
HINT: See "Handling Precautions on Related Components" on page IN-6.



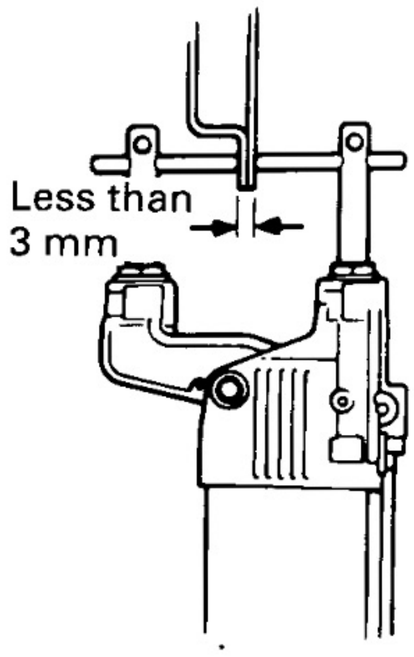
WRONG

CUTTING AREA
Always cut in a straight line and avoid reinforced area.



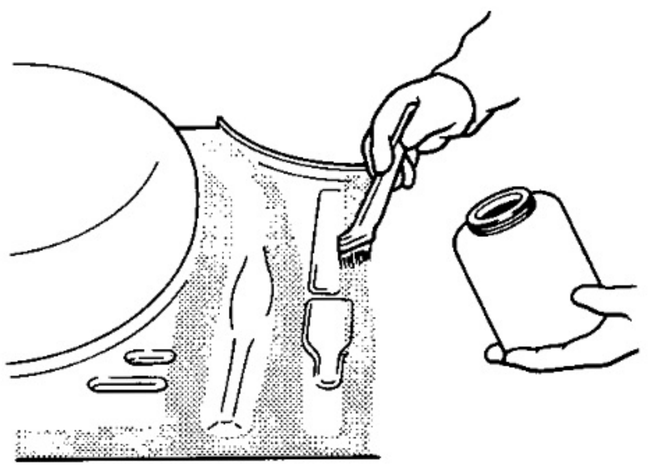
PREPARATION FOR INSTALLATION

SPOT WELD POINTS

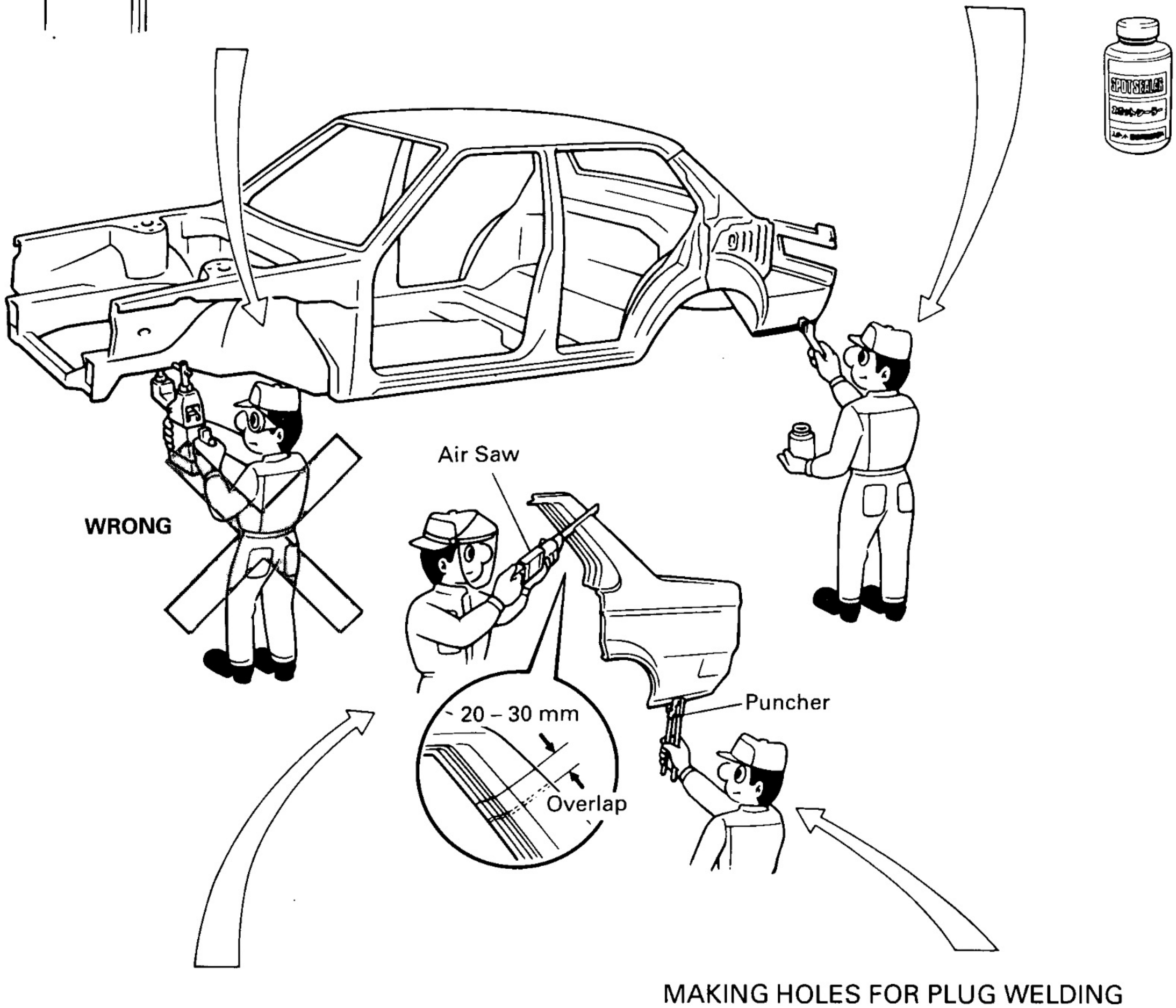


When welding panels with a combined thickness of over 3 mm (0.12in.), use a MIG (Metal Inert Gas) welder for plug welding.
HINT: Spot welding will not provide sufficient durability for panels over 3 mm (0.12in.) thick.

APPLICATION OF WELD-THROUGH PRIMER (SPOT SEALER)



Remove the paint from the portion of the new parts and body to be welded, and apply weld-through primer.
HINT: See "ANTI-RUST TREATMENT" on page AR-2.



ROUGH CUTTING OF JOINTS

For joint areas, rough cut the new parts, leaving 20 – 30 mm (0.79 – 1.18in.) overlap.

MAKING HOLES FOR PLUG WELDING

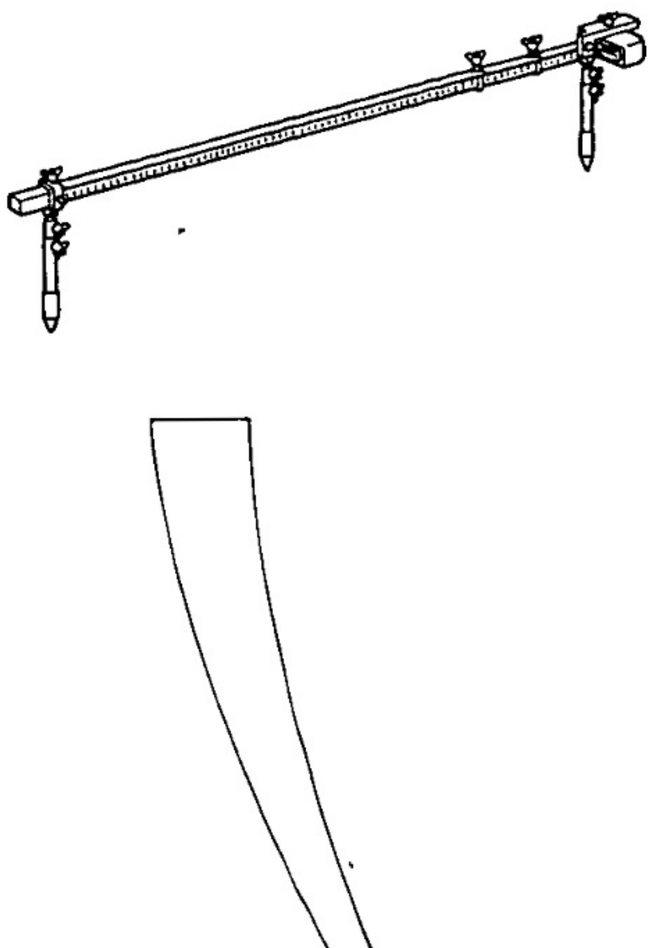
For areas where a spot welder cannot be used, use a puncher or drill to make holes for plug welding.

REFERENCE: mm (in.)

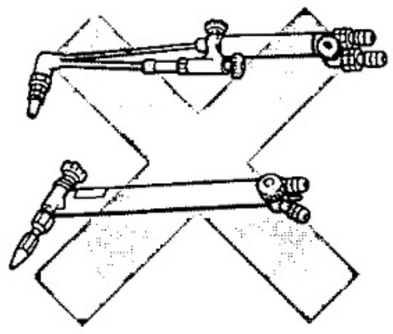
Thickness of welded portion	Size of plug hole
1.0 (0.04) under	5 (0.20) ø over
1.0 (0.04) – 1.5 (0.06)	6.5 (0.26) ø over
1.5 (0.06) over	8 (0.31) ø over

INSTALLATION

PRE-WELDING MEASUREMENTS
Always take measurements before installing underbody or engine components to insure correct assembly. After installation, confirm proper fit.



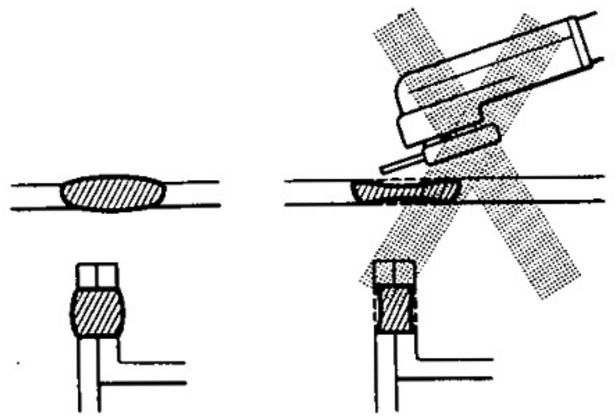
WELDING PRECAUTIONS
1. The number of welding spots should be as follows.
   Spot weld: 1.3 x No. of manufacturer's spots.
   Plug weld: More than No. of manufacturer's plugs.



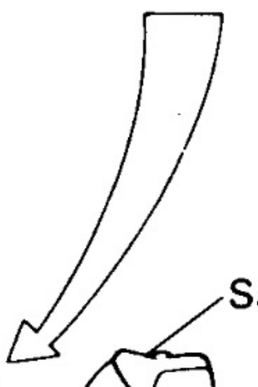
WRONG

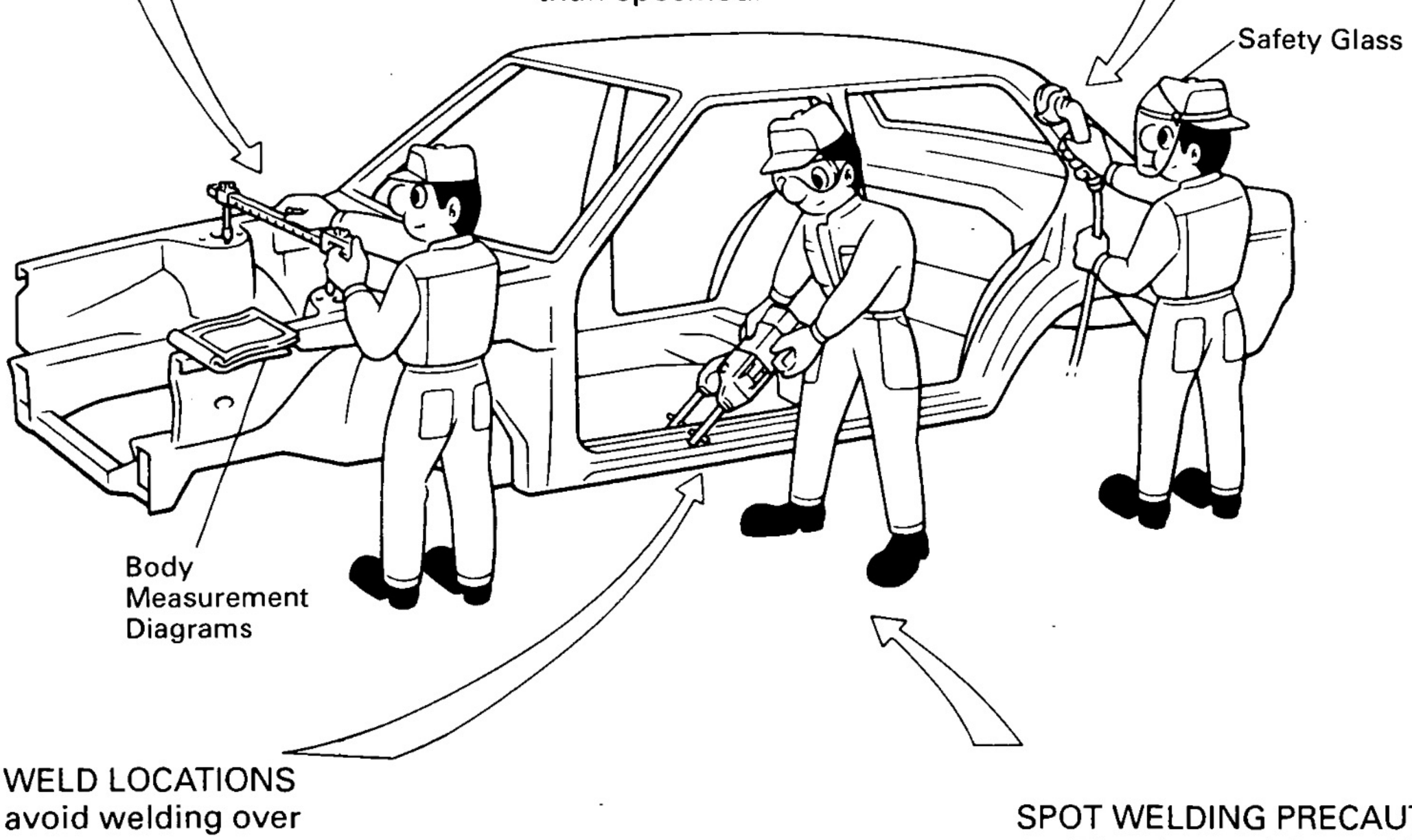
2. Plug welding should be done with a MIG (Metal Inert Gas) welder. Do not gas weld or braze panels at areas other than specified.

POST-WELDING REFINISHING
1. Always check the welded spots to insure they are secure.
2. When smoothing out the weld spots with a disc grinder, be careful not to grind off too much as this would weaken the weld.

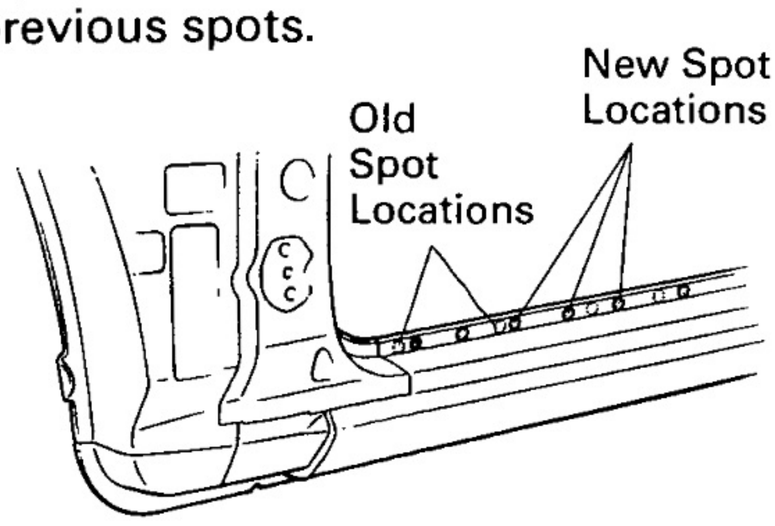


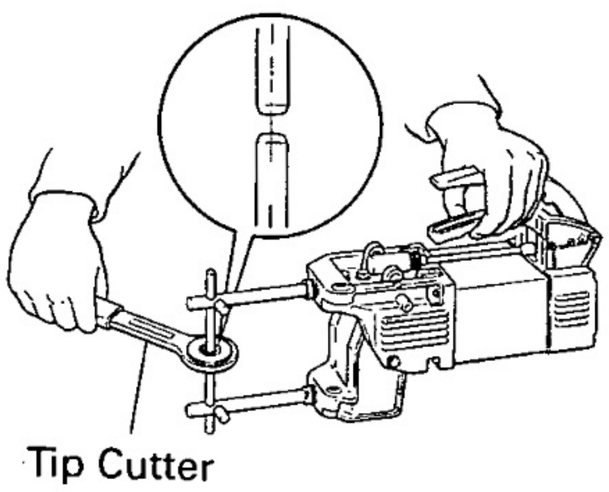
OKAY **WRONG**





SPOT WELD LOCATIONS
Try to avoid welding over previous spots.





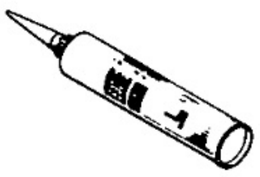
SPOT WELDING PRECAUTIONS
1. The shape of the welding tip point has an effect on the strength of the weld.
2. Always insure that the seams and welding tip are free of paint.

ANTI-RUST TREATMENT

When replacing body panels, always apply body sealer, anti-rust agent or undercoat according to the requirements of your country.

HINT: For further details, see the description given in Section AR of this manual.

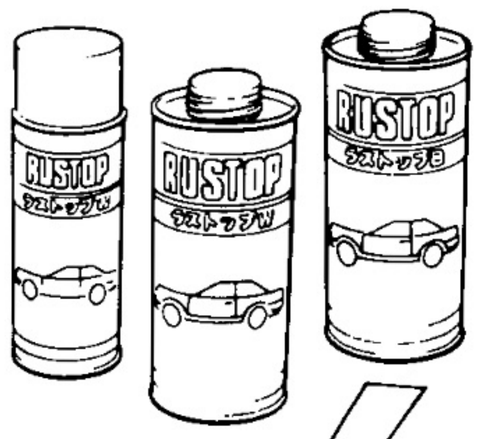
BODY SEALER
Apply body sealer to the required areas.



Cartridge Type

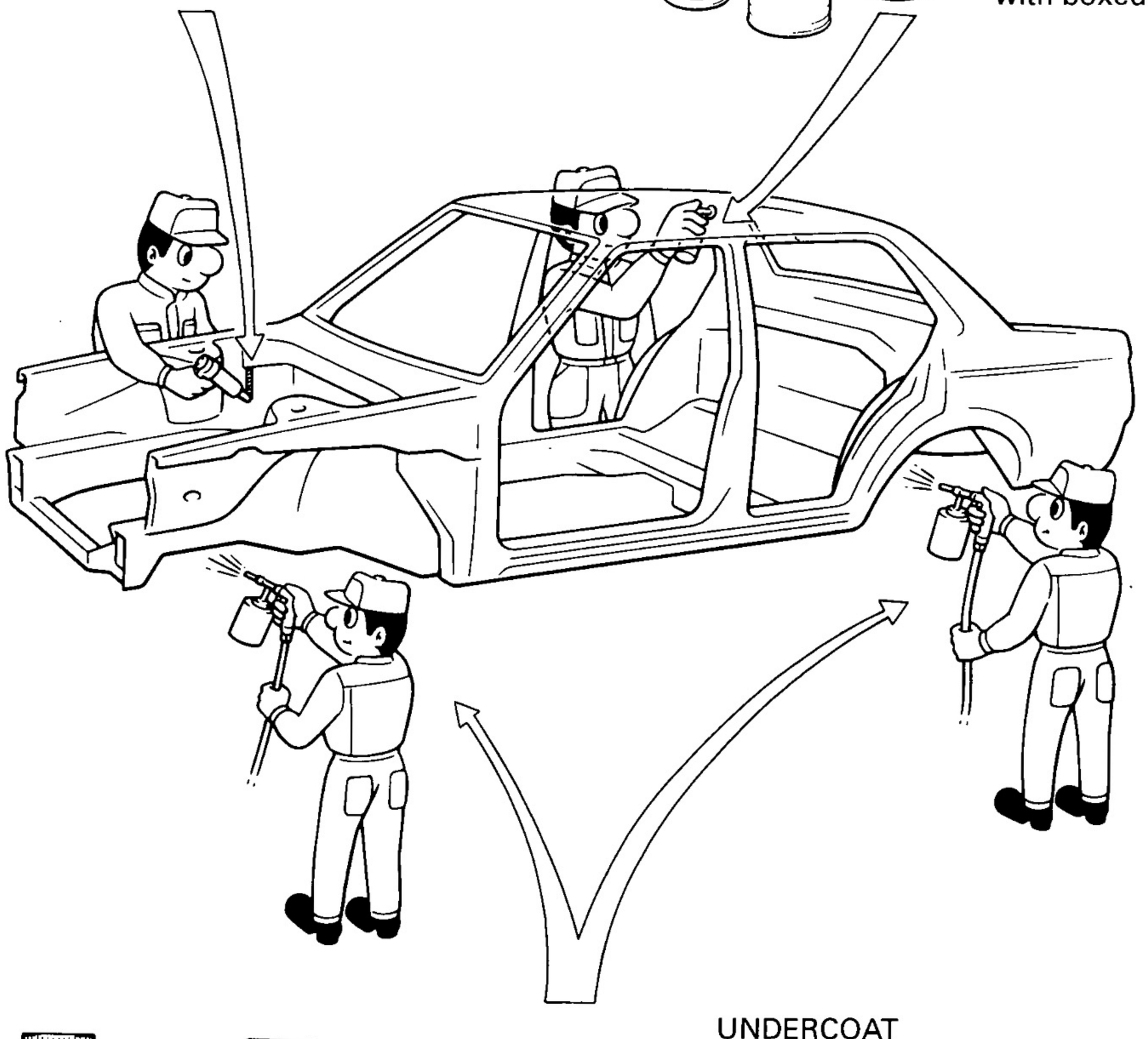
Tube Type

ANTI-RUST AGENT (WAX)

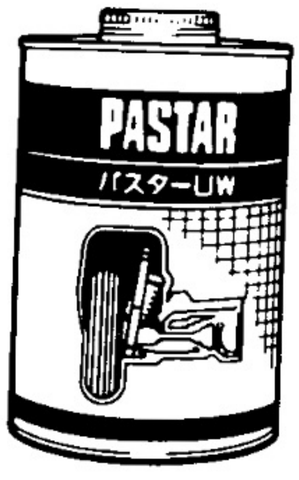


Apply anti-rust agent to following sections.

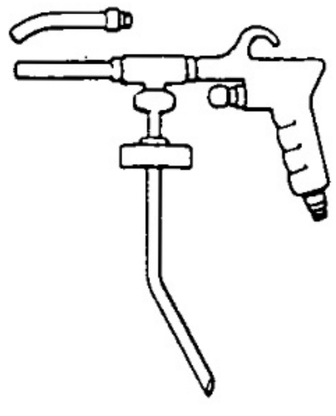
- Inside of the hems of the doors and hood.
- Around the hinges of the doors and hood.
- Inside of the welded parts with boxed cross-section.



Undercoating (Oil base)



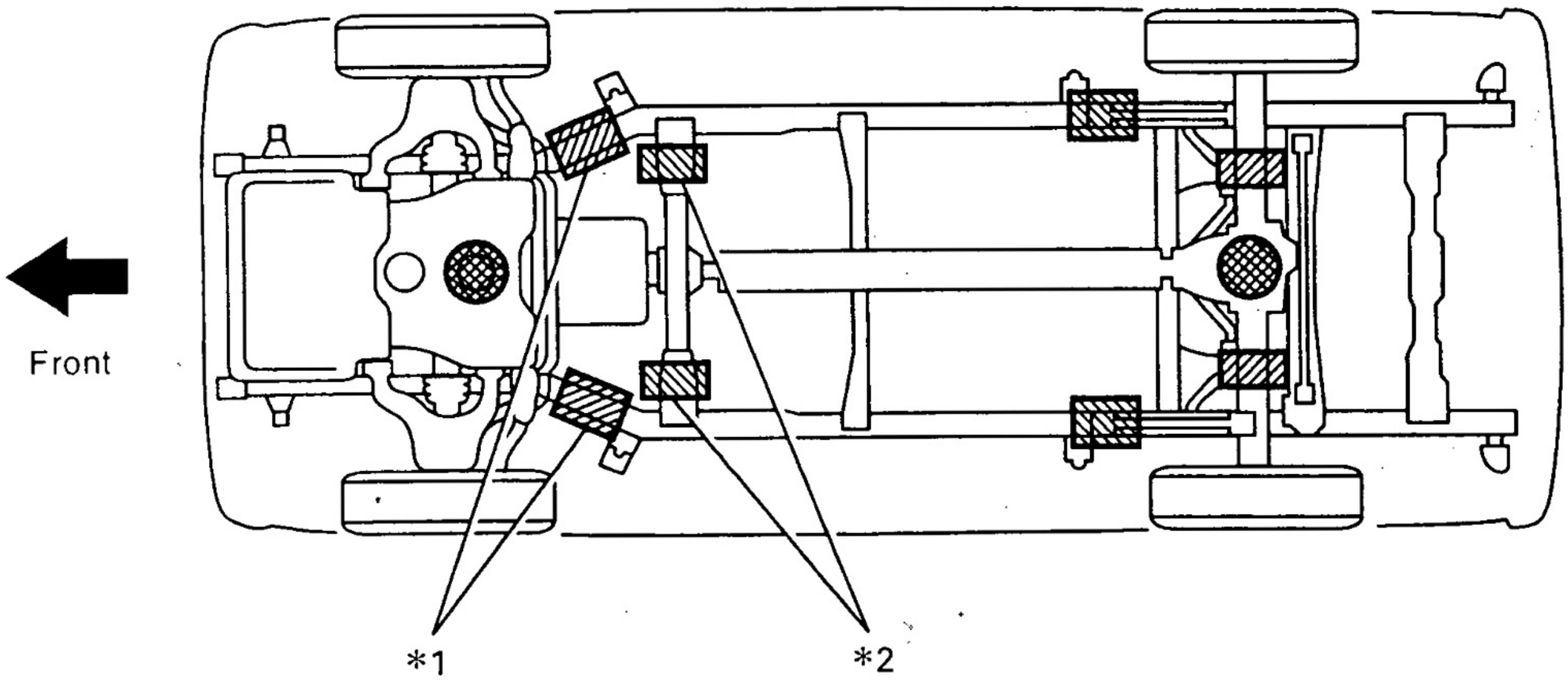
Undercoating (Water base)



Spray Gun

UNDERCOAT
Apply undercoat to the underbody and wheel housings.

VEHICLE LIFT AND SUPPORT LOCATIONS



JACK POSITION .....

Front ..... Center of crossmember

Rear ..... Center of rear axle housing

SUPPORT POSITION

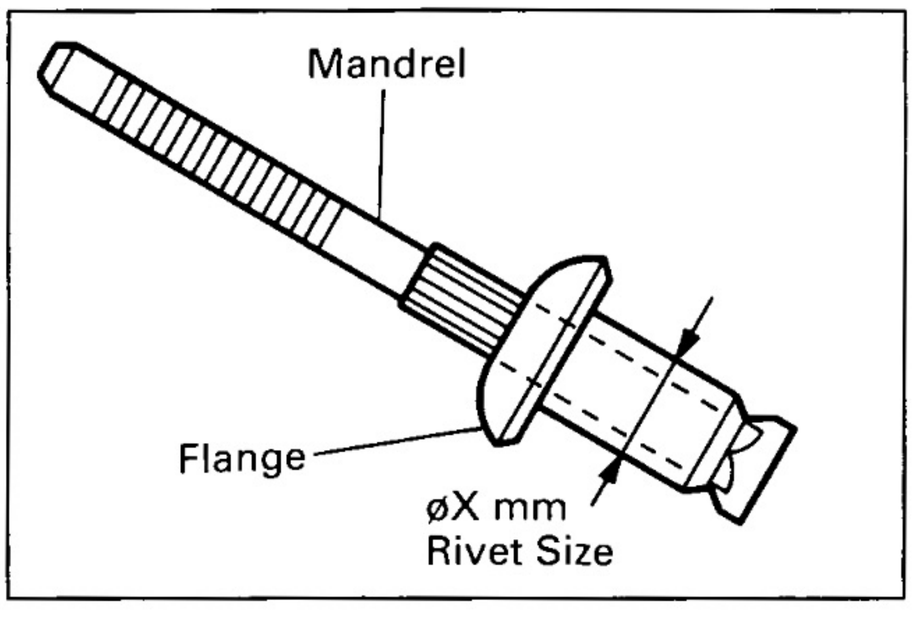
Safety stand .....

Swing arm type lift .....

*1 : Support position when equipping without side step.

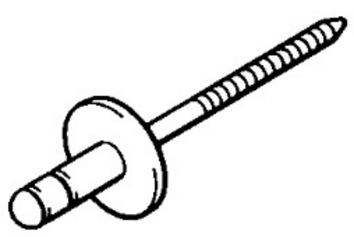
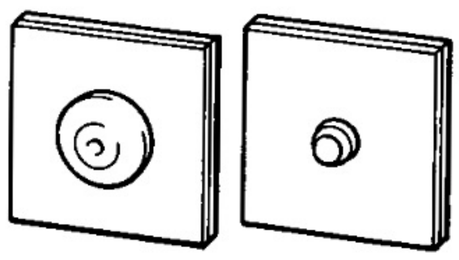
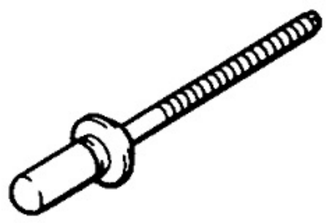
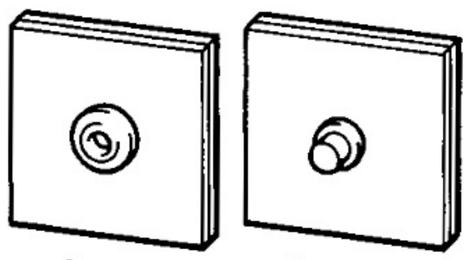
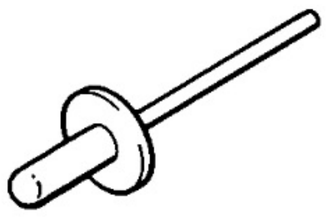
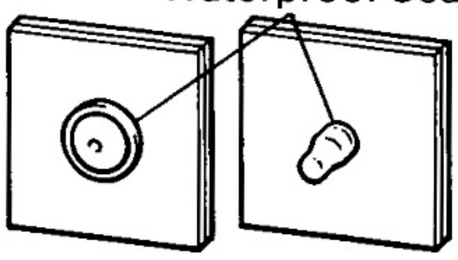
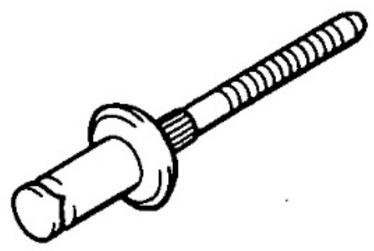
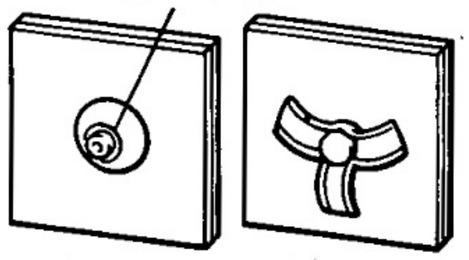
*2 : Support position when equipping with side step.

CAUTION : For 3 door models, do not use the swing arm type lift as this type lift may not support the short wheel based models securely.



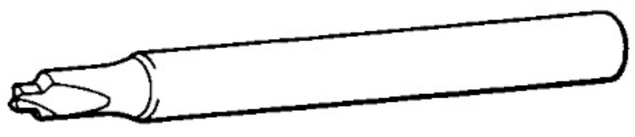
RIVET REMOVAL AND INSTALLATION

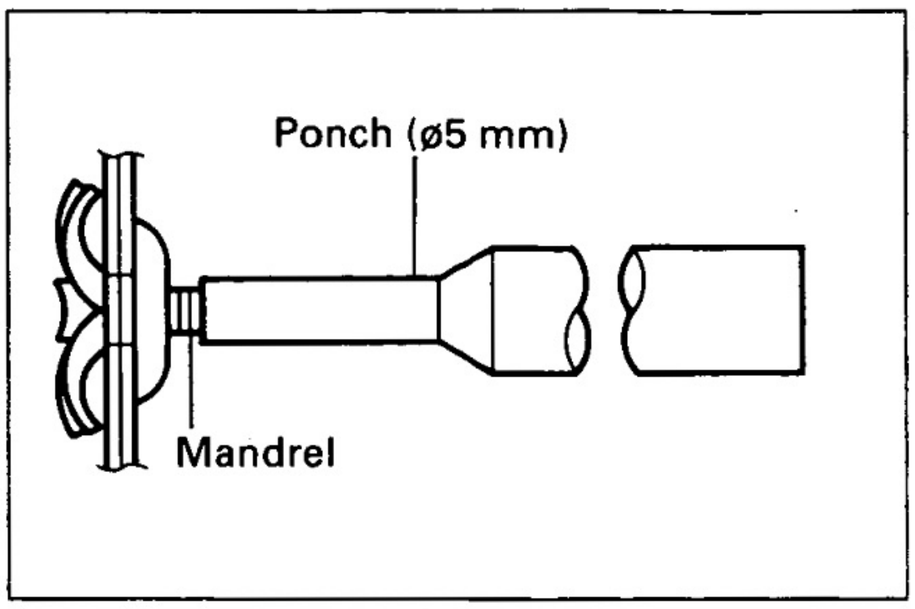
PARTS NAME AND VARIETY OF RIVET

	Aluminum-Rivet	Steel-Rivet	Waterproof-Rivet	T-Rivet
External Appearance	Before installation  After installation  Outer Inner	Before installation  After installation  Outer Inner	Before installation  After installation Waterproof Seal  Outer Inner	Before installation  After installation Mandrel  Outer Inner
Charac-teristics	• Small nonwaterproof rivet • No magnetic adherence	• Small nonwaterproof rivet • Magnetic adherence	• Small waterproof rivet • Waterproof seal	• Large waterproof rivet • Mandrel sticks out after installation

RIVET REMOVAL

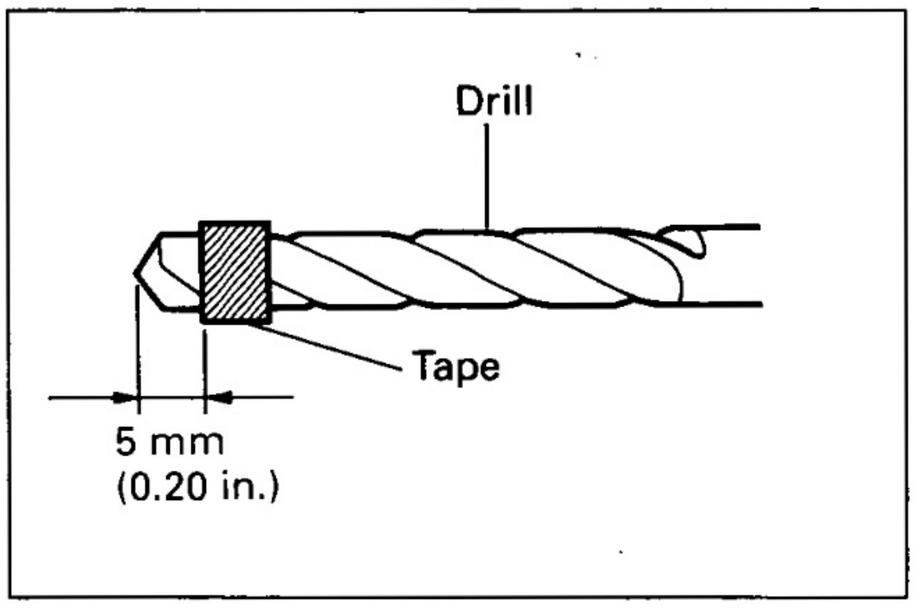
1. SELECTION OF CUTTING TOOL

	Cutting tool	Note
Aluminum-Rivet Steel-Rivet T-Rivet with ø6.4 mm	Drill blade Rivet size / Blade size ø4 mm / ø4 mm ø4.8 mm / ø5 mm ø6.4 mm / ø6.5 mm	• Cutting can be done with drill blade or rivet cutter for an aluminum-rivet with ø4.8 mm. • When a rivet cutter is used for an aluminum-rivet (except ø4.8 mm), a steel-rivet, or a T-rivet with ø6.4 mm, it is possible that the drill will spin abnormally damaging the rivet hole and breaking the rivet cutter.
Aluminum-Rivet with ø4.8 mm Waterproof-Rivet with ø4.8 mm	Rivet Cutter (P/N 09060-60350) 	• When a ordinary cutter is used for a waterproof-rivet with ø4.8 mm, the rivet can not be cut as + spins with the cutter.



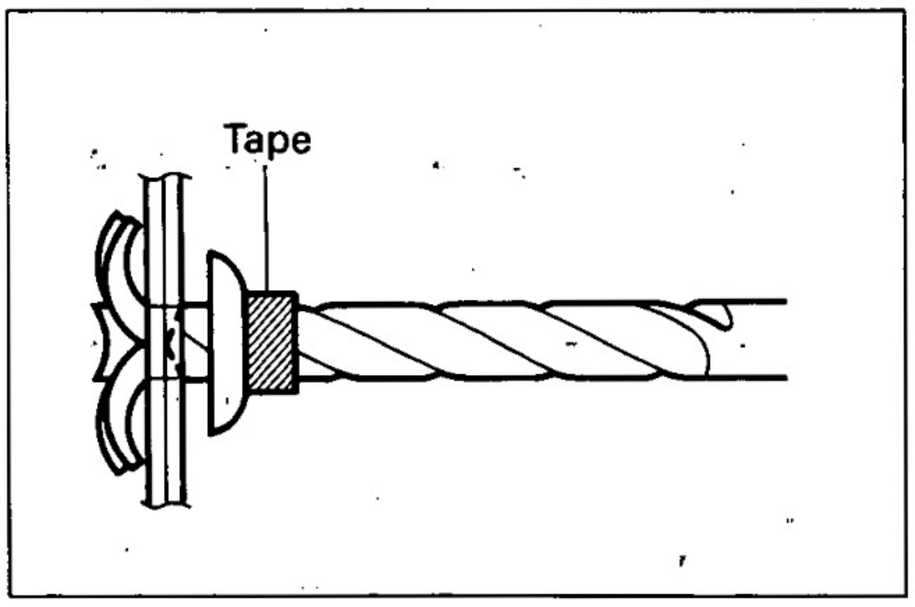
2. RIVET REMOVAL

(1) T-Rivet with ø6.4 mm:
Using a ponch with ø5 mm, stamp out the mandrel.



(2) Put tape around the drill blade 5 mm (0.20 in.) from the tip to prevent damage to the rivet hole.

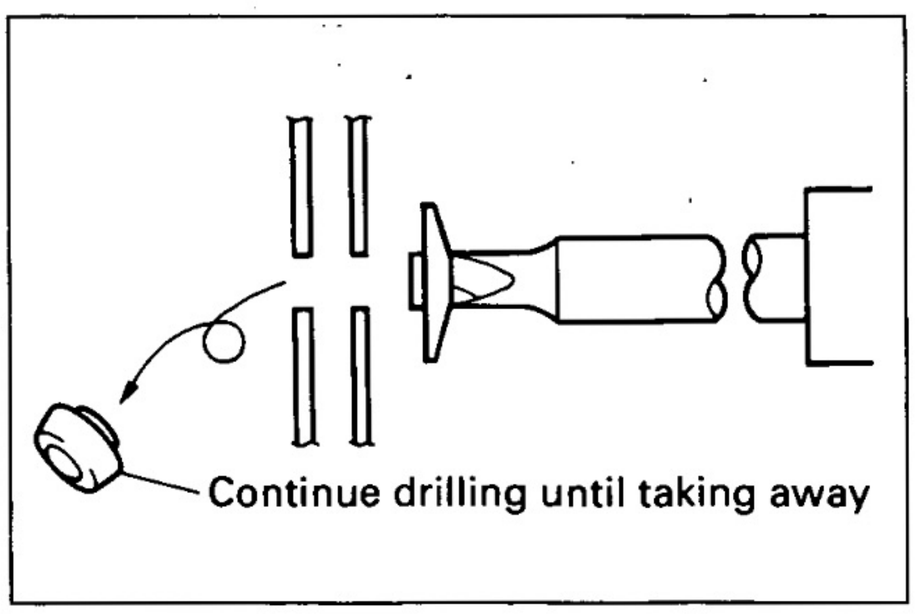
(3) Attach the drill blade or a rivet cutter to the drill.



(4) Gently and vertically put the drill to the rivet, and cut the rivets flange.

NOTE:

- **While upward drilling, wear a protective glasses.**
- **If a drill is strongly pushed deeply in to a rivet, the rivet can't be cut as it spins together with the drill.**
- **Prizing the hole with a drill can lead to damage to the rivet hole or the breaking of the rivet cutter.**
- **Take care as the cut rivet is hot.**

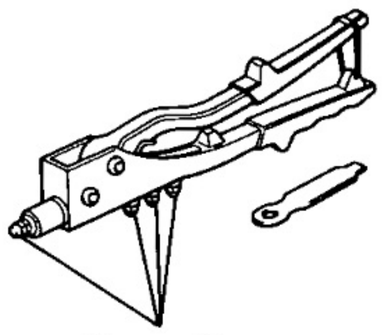


(5) Aluminum-Rivet and Waterproof-Rivet with ø4.8 mm:
Even if flange is taken off, continue drilling and push out remaining fragments with the drill.

(6) Steel-Rivet:
If the flange is taken off, stop drilling and pull out the remaining fragments with a pliers.

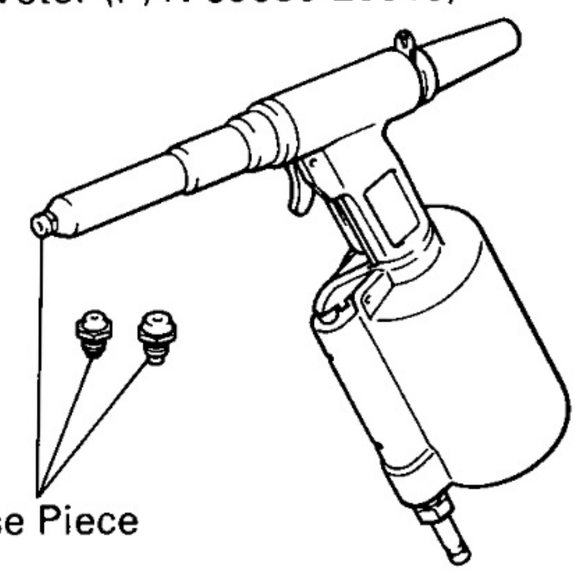
(7) T-Rivet with ø6.4 mm:
If the flange is taken off, stop drilling and push out the remaining fragments with a ponch with ø5 mm or pull out the remaining fragments with pliers.

Hand Riveter

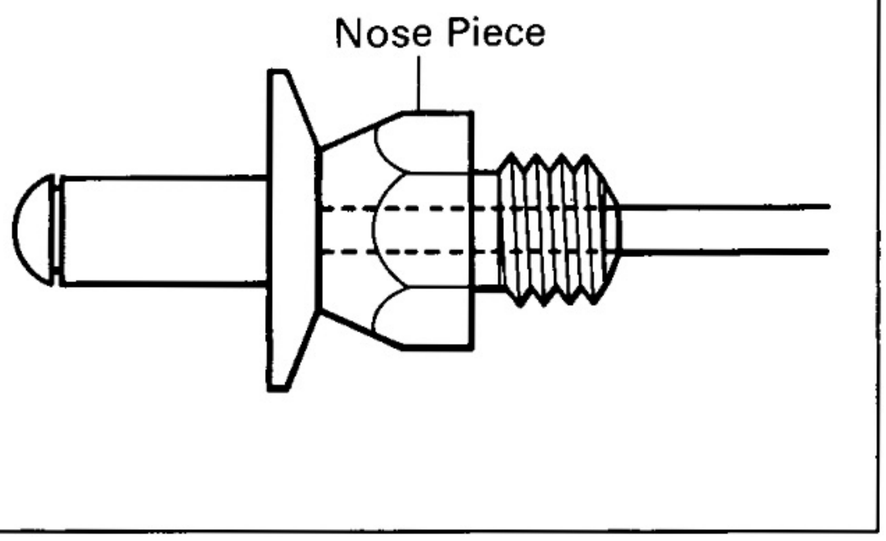


Nose Piece

Air Riveter (P/N 09050-20010)



Nose Piece



RIVET INSTALLATION

1. RIVET INSTALLATION

(1) Apply touch-up paint at the area.

(2) Select an installation tool.

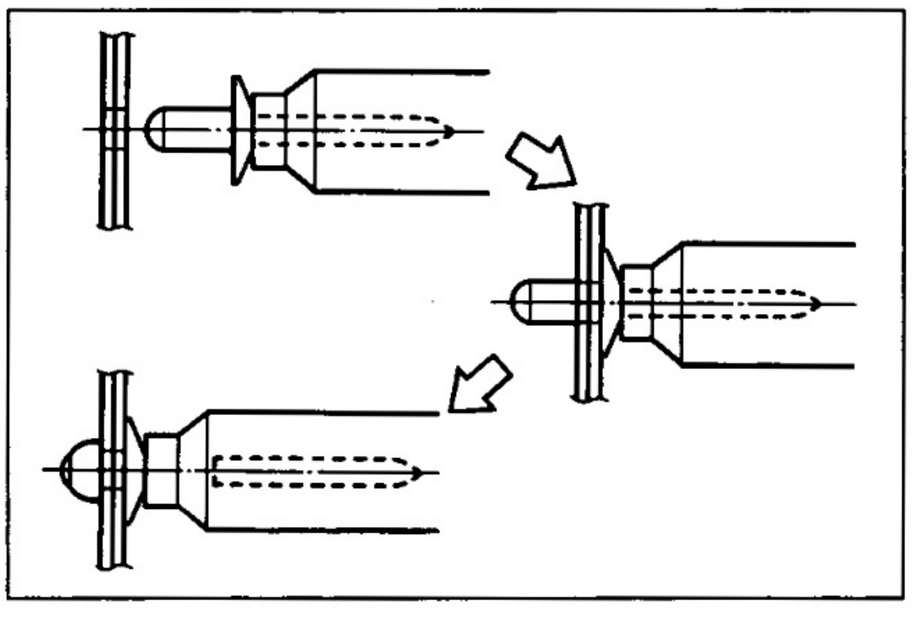
Item	Installation tool
Aluminum-Rivet Waterproof-Rivet with ø4.8 mm	Hand Riveter or Air Riveter
Steel-Rivet T-Rivet with ø6.4 mm	Air Riveter

(3) Select the smallest a nose piece possible for a rivets mandrel.

NOTE: Wrong selection of a nose piece may cause the riveter to be damaged or bad tightening.

< Reference > Nose piece of Air Riveter

Parts Name	Parts Number	Color	Rivet type
Nose piece No. 1	09050 -02020	Silver	ø4.0 mm Aluminum ø4.0 mm Steel ø4.8 mm Waterproof
Nose piece No. 2	09050 -02030	Copper	ø4.8 mm Aluminum ø4.8 mm Steel
Nose piece No. 3	09050 -02040	Black	ø6.4 mm T-Rivet

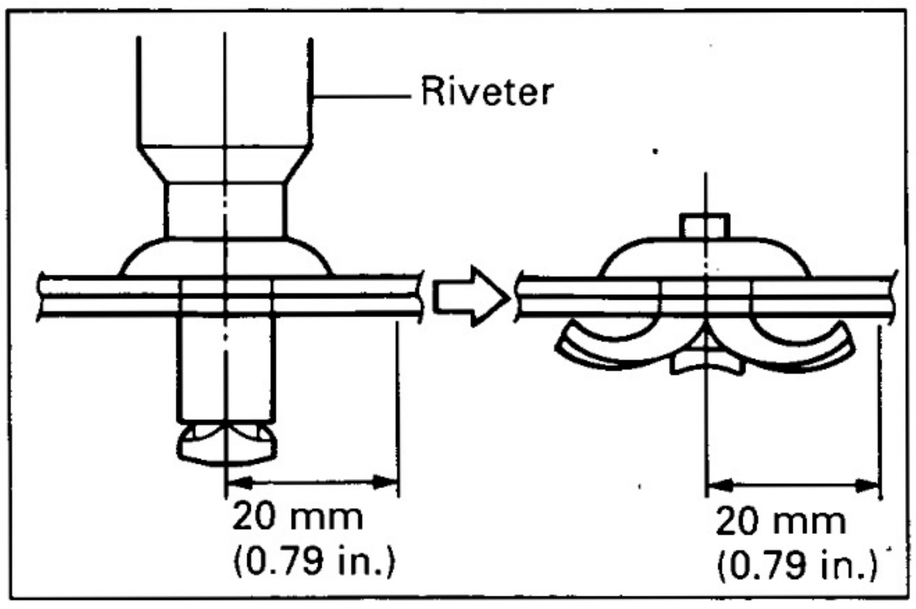


(4) Insert the nose piece to the riveter and then the mandrel of the new rivet into the nose piece.

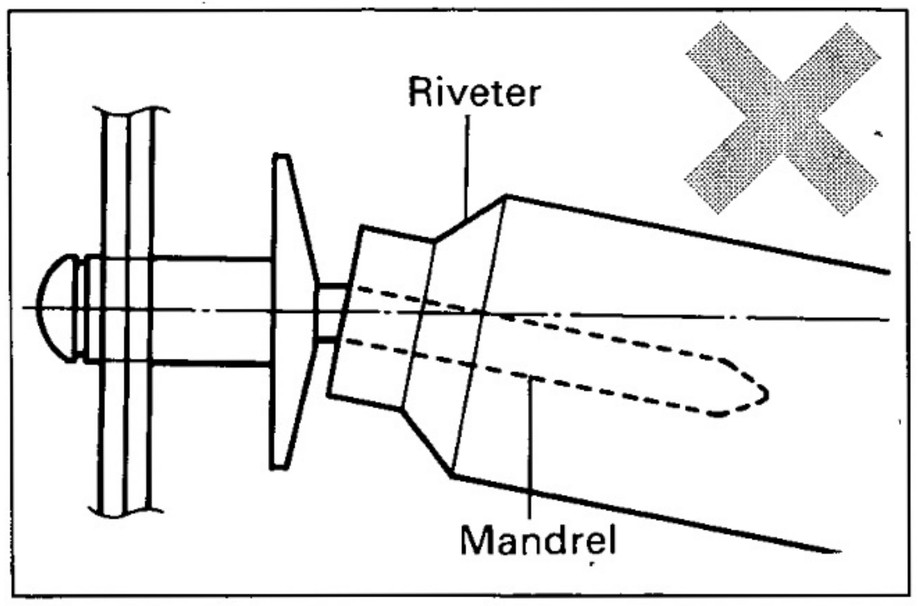
(5) Vertically insert the rivet into a hole and keep place it strongly.

NOTE:

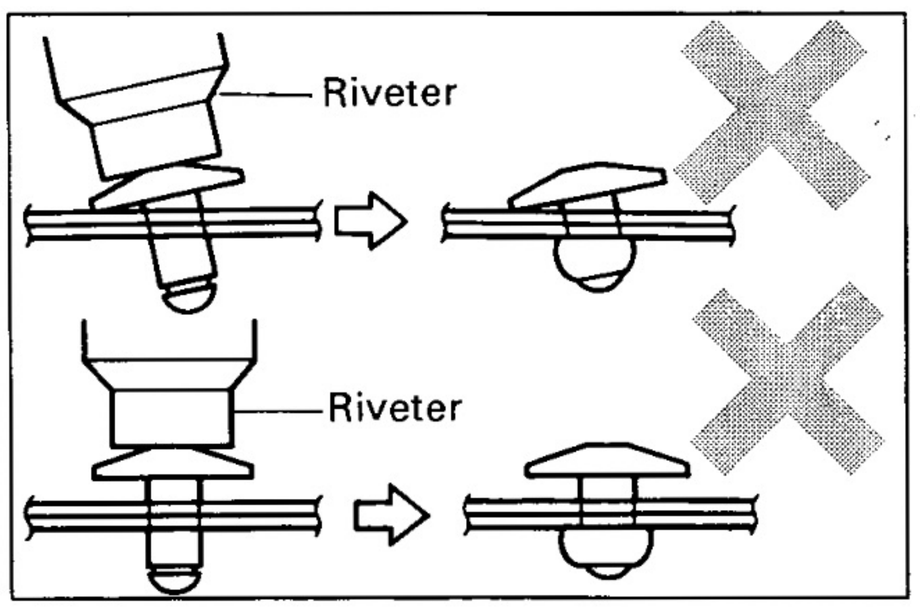
- **If the tip of the rivet is not deformed or the mandrel is not cut, repeat process (5) again.**



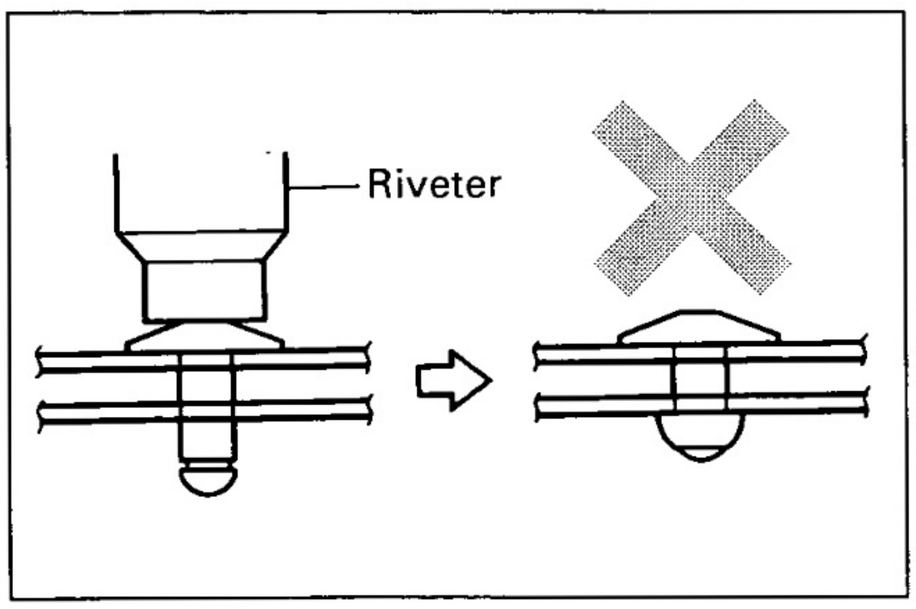
- **T-Rivet with ø6.4 mm:**
  Do not place your hands or the wire harness within a radius of 20 mm (0.79 in.) from the rivet, as the riveter is cut and opened in this area.



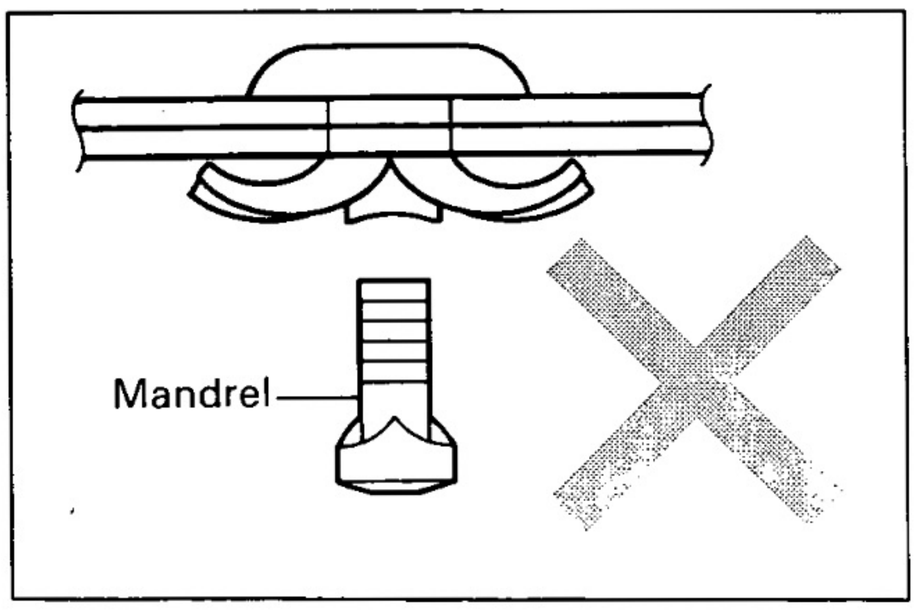
- **Prizing a riveter damages the riveter showing that it is not tightened correctly and bends the mandrel.**



- **Loose tightening may result from either tilting the riveter while handling or the riveter not connecting to the material.**



- **Loose tightening also occurs when a rivet is applied between materials without touching.**



- **T-Rivet with ø6.4 mm:**
  When a mandrel of a rivet is lost, the rivet should be replaced to prevent loose tightening.

ABBREVIATIONS USED IN THIS MANUAL

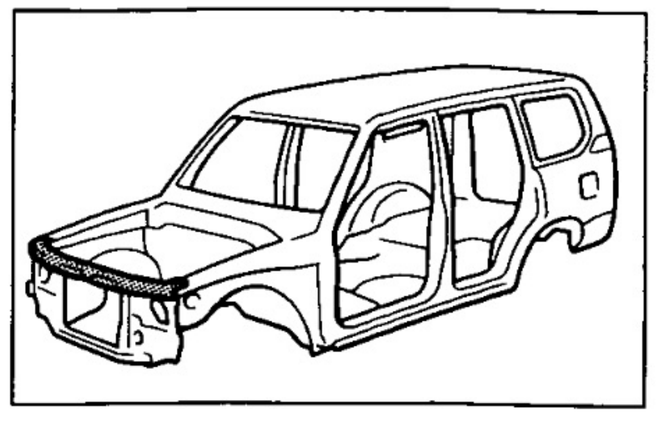
For convenience, the following abbreviations are used in this manual.

ABS	Antilock Brake System
A/C	Air Conditioner
assy	assembly
ECT	Electronic Controlled Transmission
ECU	Electronic Control Unit
e.g.	Exempli Gratia (for Example)
Ex.	Except
FWD	Front Wheel Drive Vehicles
in.	inch
LH	Left-hand
LHD	Left-hand Drive
MIG	Metal Inert Gas
M/Y	Model Year
PPS	Progressive Power Steering
RH	Right-hand
RHD	Right-hand Drive
SRS	Supplemental Restraint System
w/	with
w/o	without

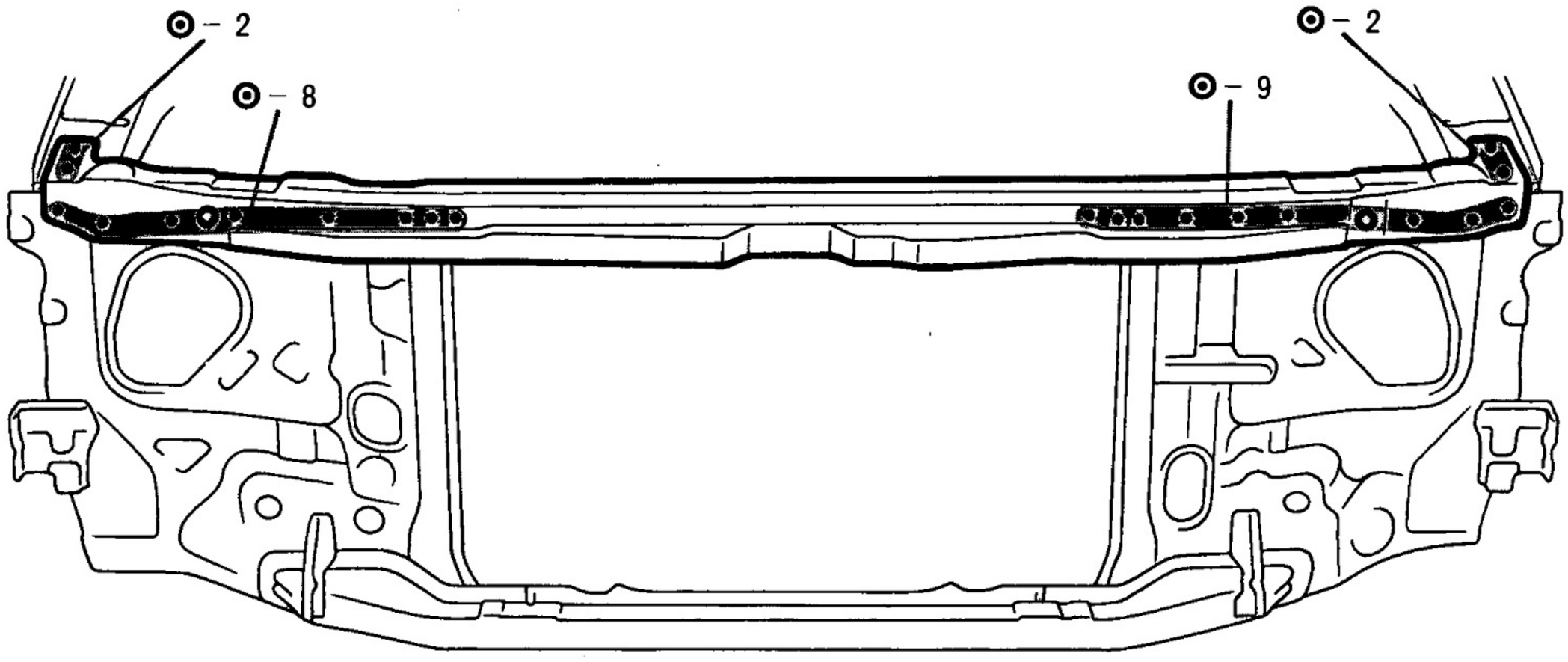
BODY PANEL REPLACEMENT

	Page
RADIATOR UPPER SUPPORT (ASSY)	RE-2
RADIATOR SIDE SUPPORT (ASSY)	RE-4
FRONT CROSSMEMBER (ASSY)	RE-6
RADIATOR SUPPORT (ASSY)	RE-8
FRONT FENDER APRON (ASSY)	RE-10
FRONT BODY PILLAR (CUT)	RE-12
CENTER BODY PILLAR (CUT)	RE-18
FRONT DOOR OUTER PANEL (ASSY)	RE-20
REAR DOOR OUTER PANEL (ASSY)	RE-22
ROCKER OUTER PANEL (CUT): 3-Door	RE-24
ROCKER OUTER PANEL (CUT): 5-Door	RE-26
QUARTER PANEL (CUT): 3-Door	RE-28
QUARTER PANEL (CUT): 5-Door	RE-30
QUARTER PANEL (CUT-P): 3-Door	RE-32
QUARTER PANEL (CUT-P): 5-Door	RE-34
QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 3-Door	RE-36
QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 5-Door	RE-40
QUARTER PANEL REAR LOWER EXTENSION (ASSY)	RE-44
BODY LOWER BACK PANEL (CUT)	RE-46
REAR FLOOR INNER CROSSMEMBER (CUT)	RE-48
ROOF SIDE INNER REAR PANEL (ASSY)	RE-50
LOWER BACK UPPER GUSSET (ASSY)	RE-52
REAR FLOOR SIDE PANEL EXTENSION (ASSY): RH	RE-54
REAR FLOOR SIDE PANEL EXTENSION (ASSY): LH	RE-56
REAR FLOOR PAN (ASSY): 3-Door	RE-58
REAR FLOOR PAN (ASSY): 5-Door	RE-60
REAR FLOOR SIDE PANEL (ASSY): RH	RE-62
REAR FLOOR SIDE PANEL (ASSY): LH	RE-64
REAR FLOOR SIDE MEMBER (ASSY)	RE-66
REAR FLOOR No.2 CROSSMEMBER (ASSY)	RE-68
ROOF PANEL (ASSY): 3-Door w/o sunroof	RE-70
ROOF PANEL (ASSY): 3-Door w/sunroof	RE-72
ROOF PANEL (ASSY): 5-Door w/o sunroof	RE-74
ROOF PANEL (ASSY): 5-Door w/sunroof	RE-76

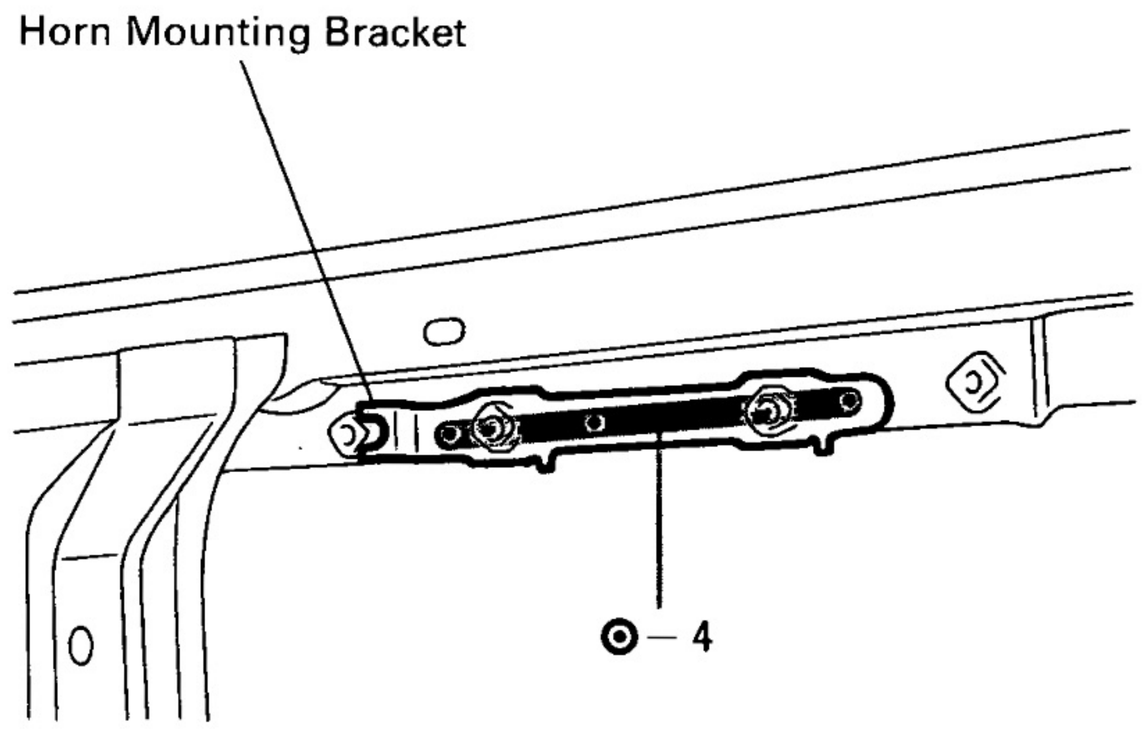
RADIATOR UPPER SUPPORT (ASSY)

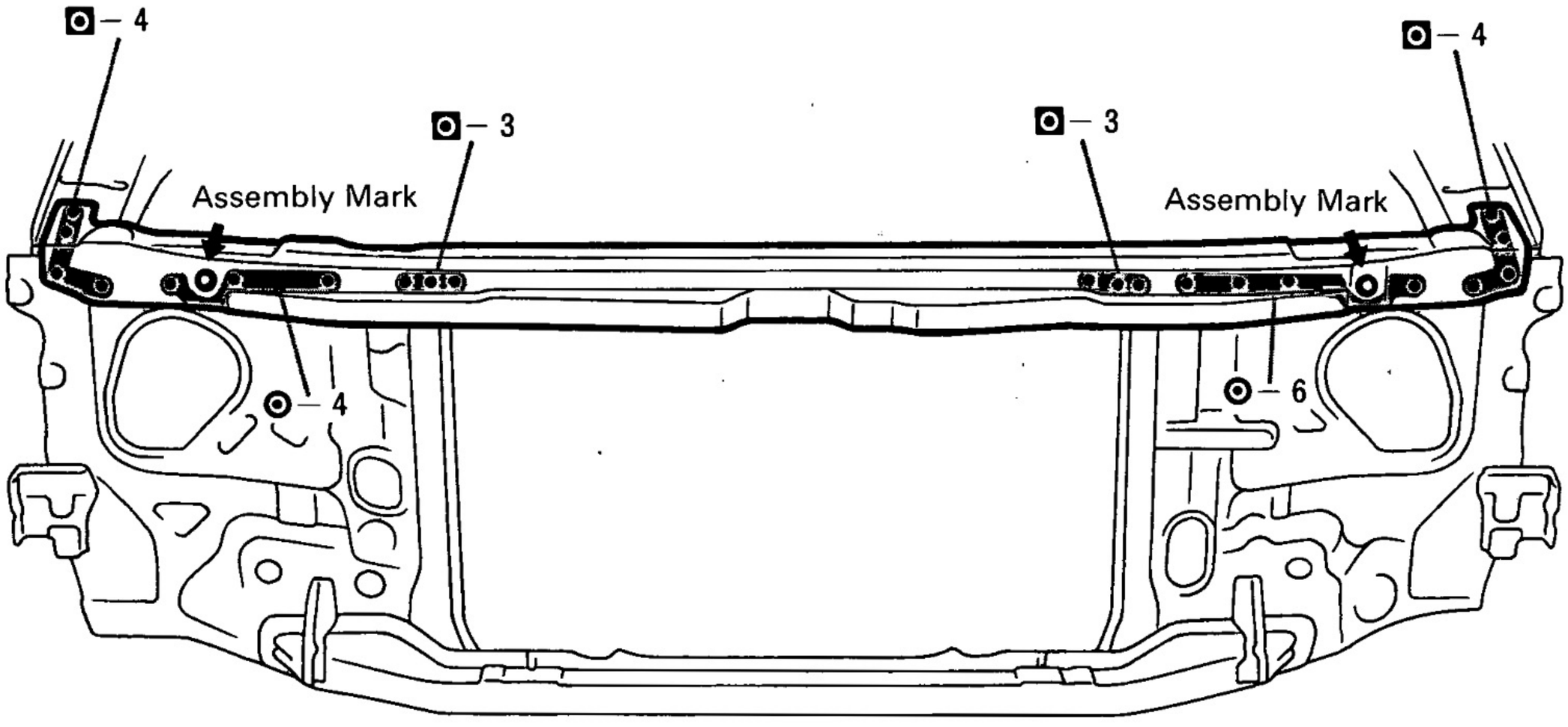


REMOVAL



INSTALLATION

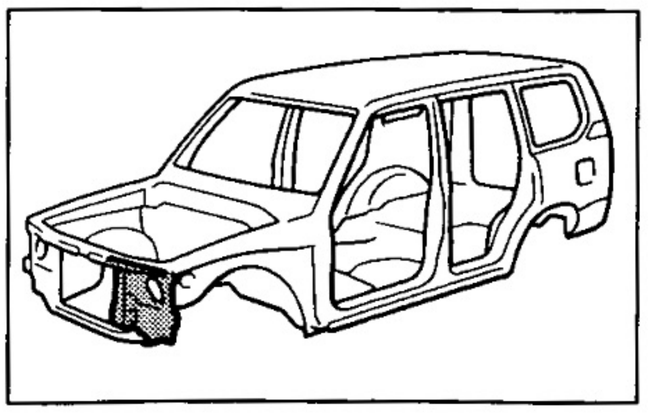




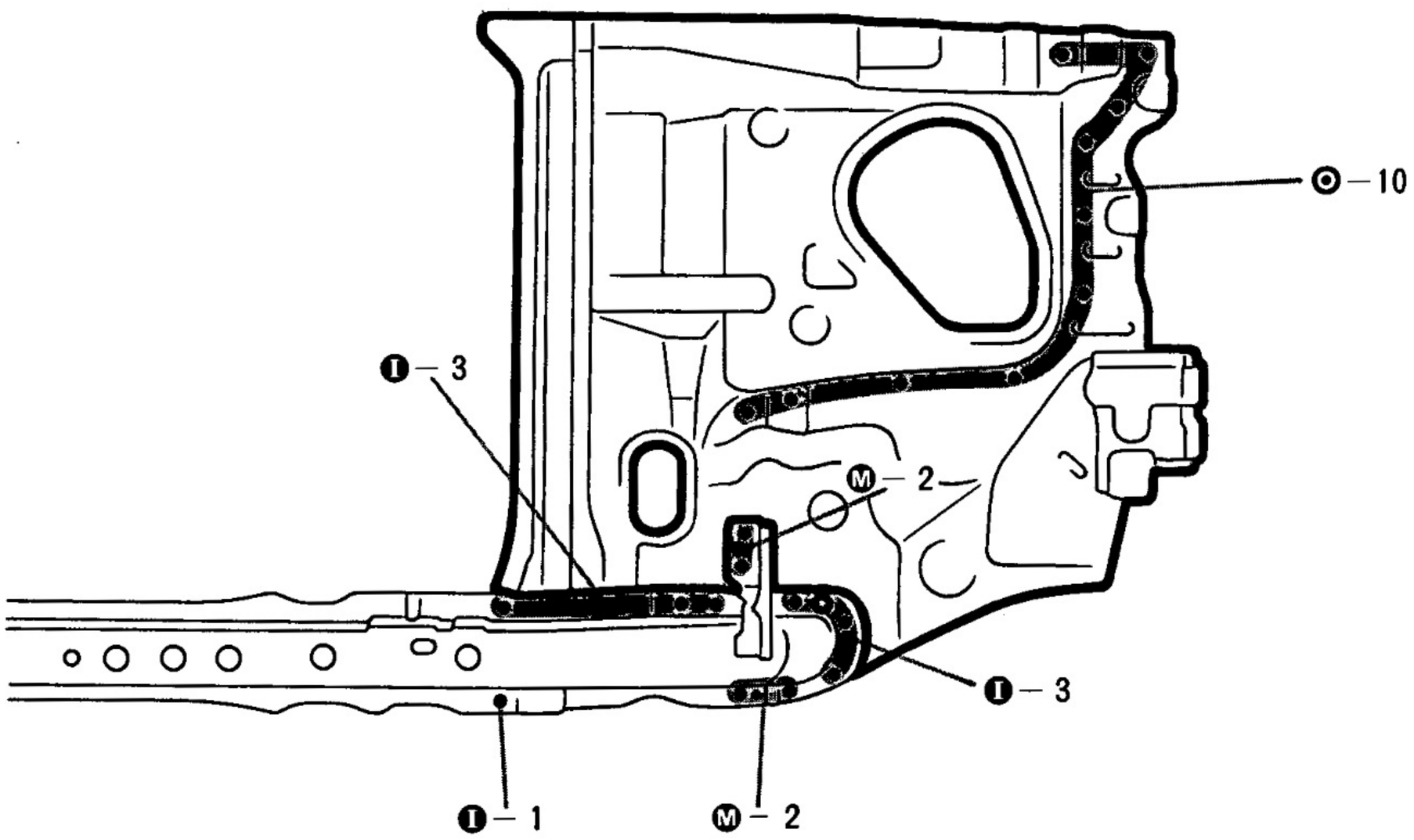
1. When temporarily installing the new parts, determine the installation position by the assembly mark. Then, measure each part in accordance with the body dimension diagram.

HINT: First install the hood lock support

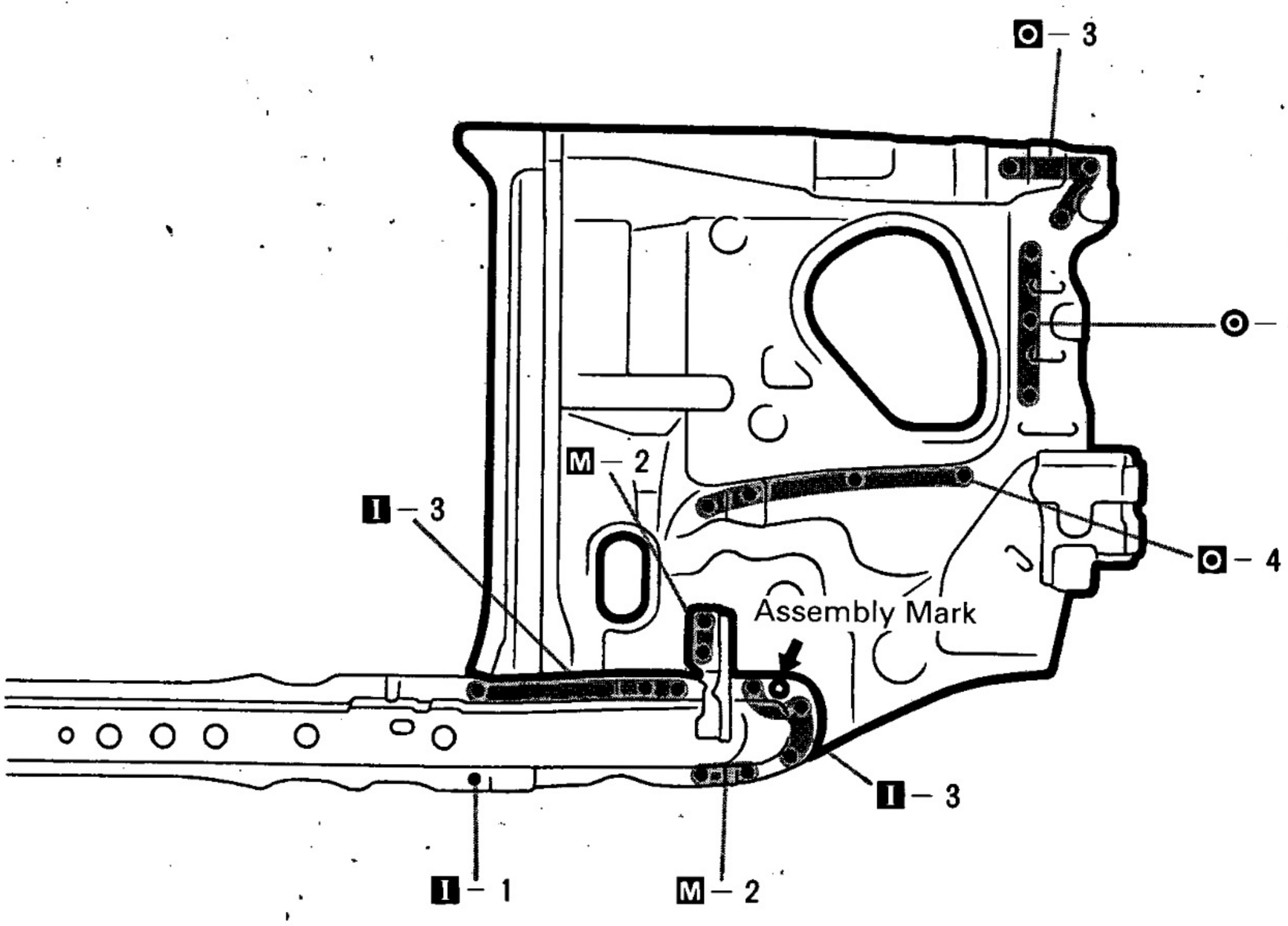
RADIATOR SIDE SUPPORT (ASSY)



REMOVAL (With the radiator upper support removed.)



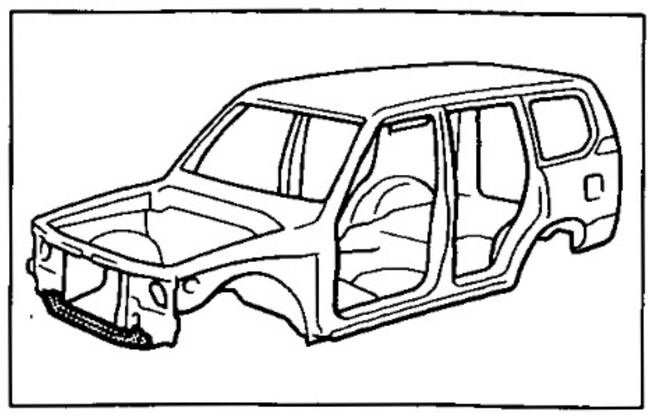
INSTALLATION



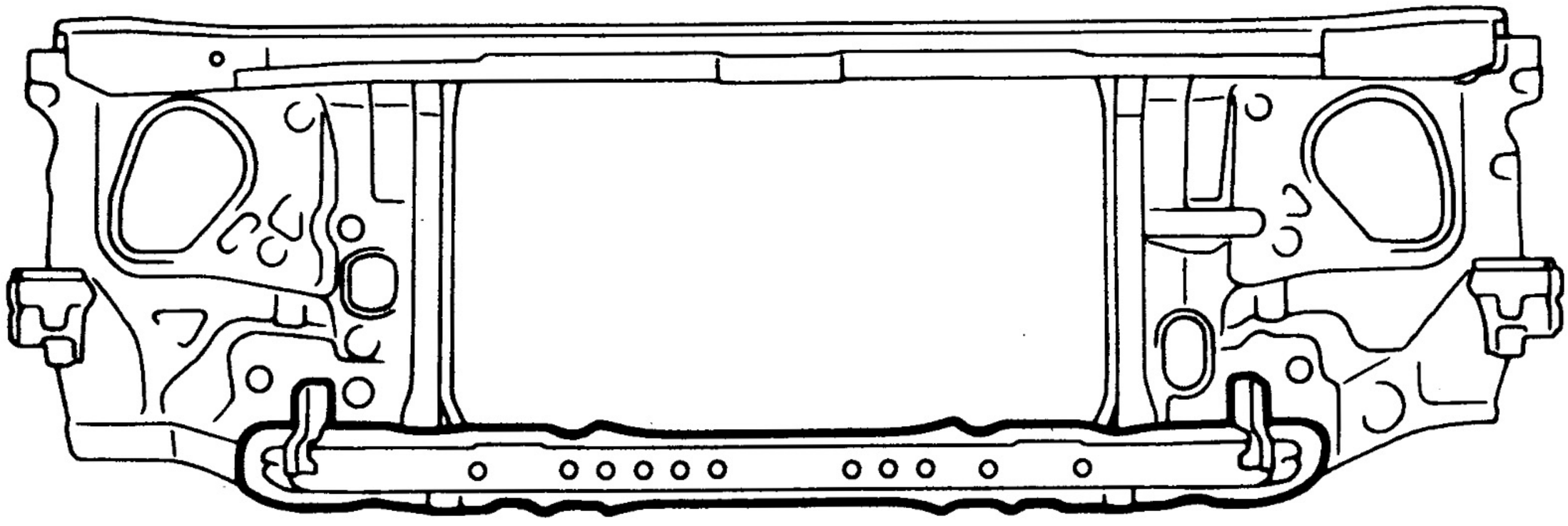
1. When temporarily installing the new parts, determine the installation position by the assembly mark. Then, measure each part in accordance with the body dimension diagram.

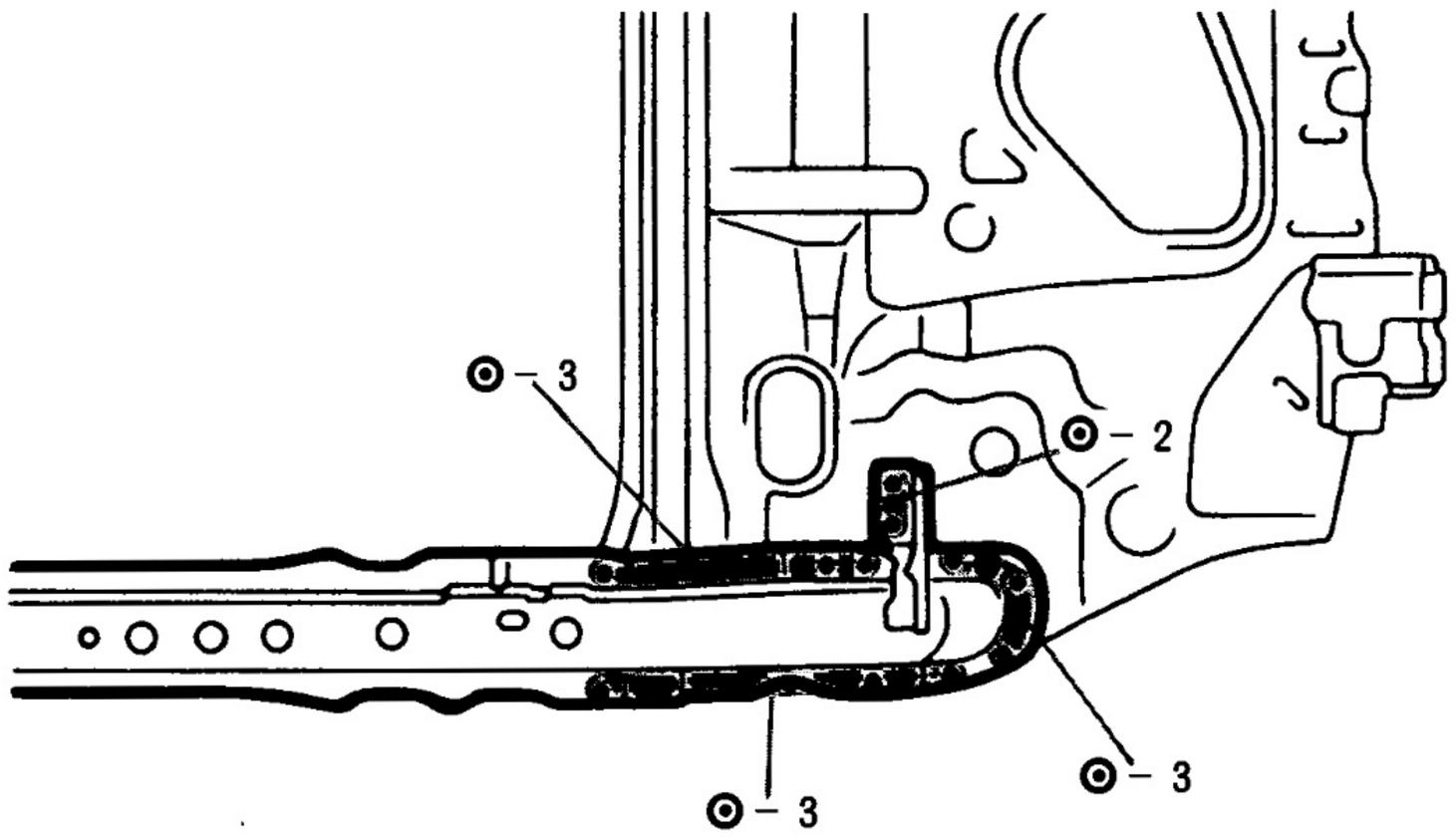
HINT: First install the radiator upper support

FRONT CROSSMEMBER (ASSY)

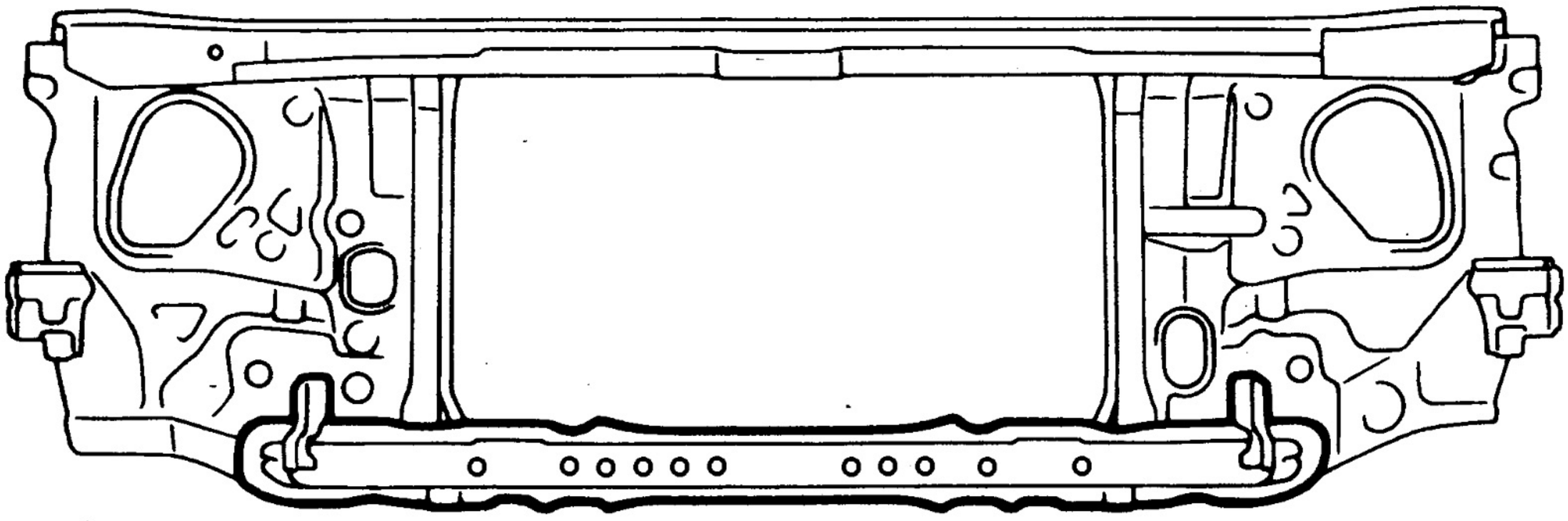


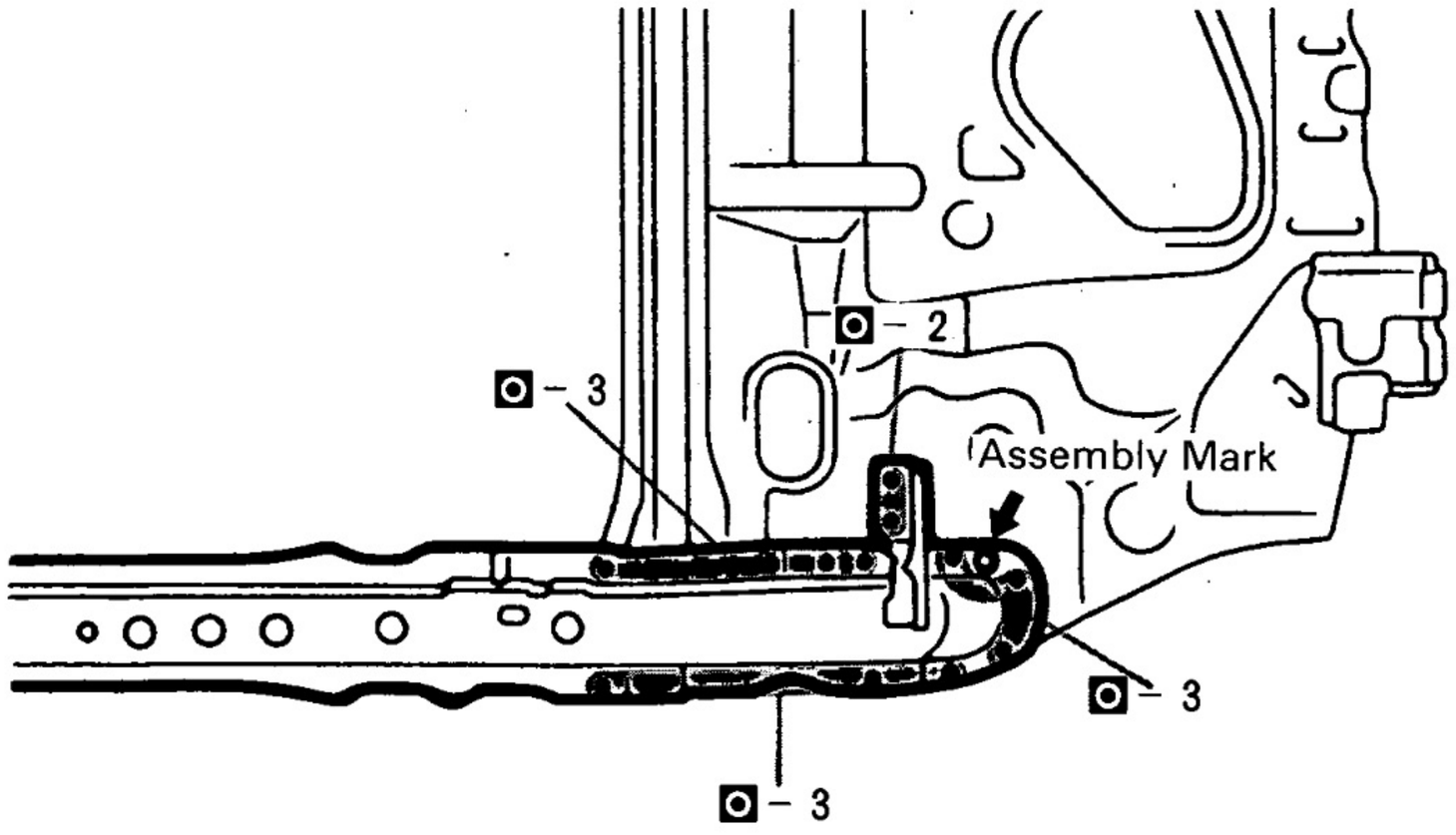
REMOVAL





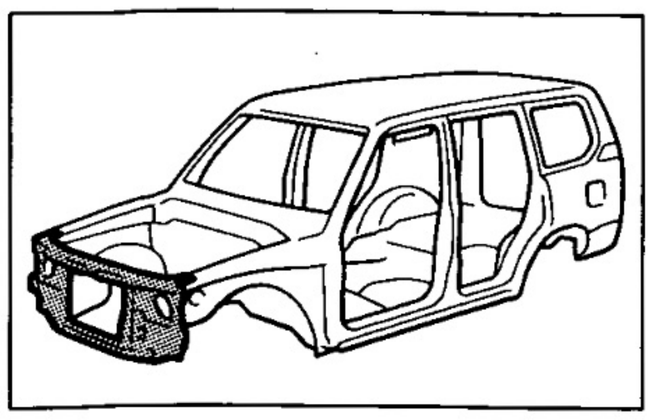
INSTALLATION



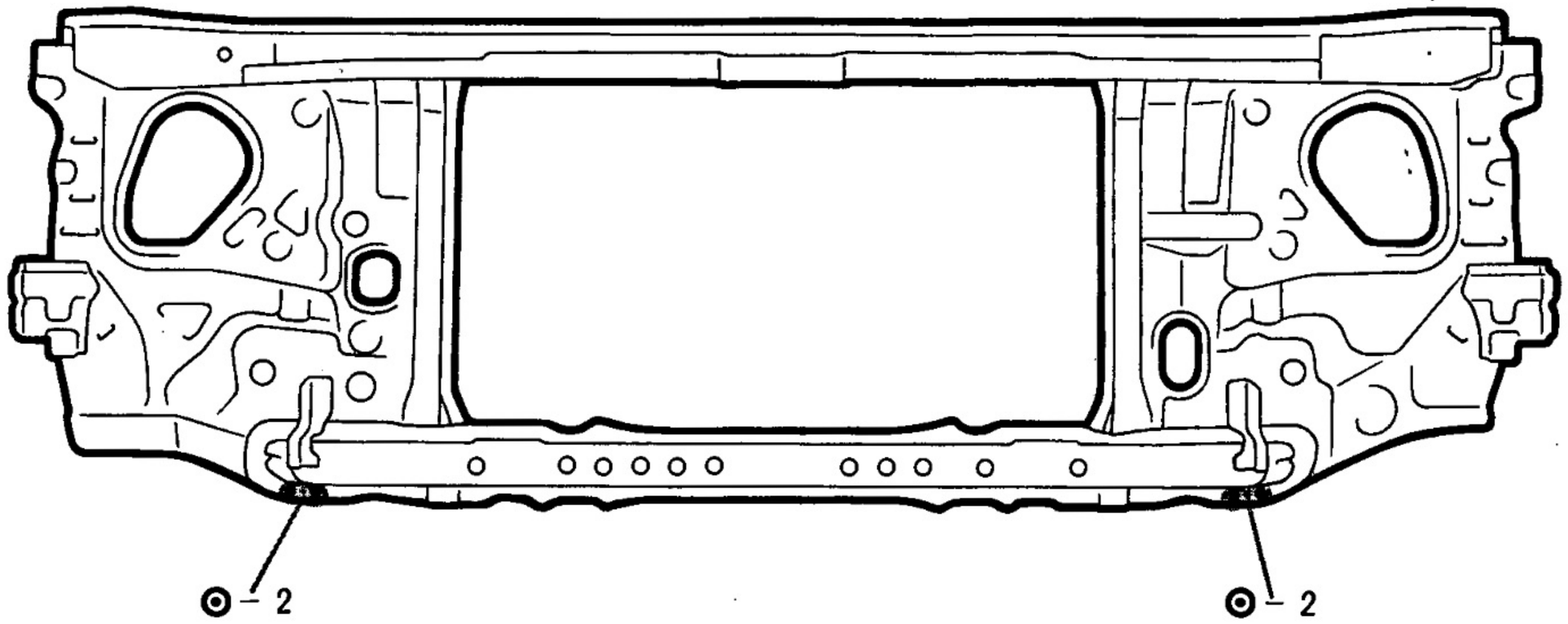


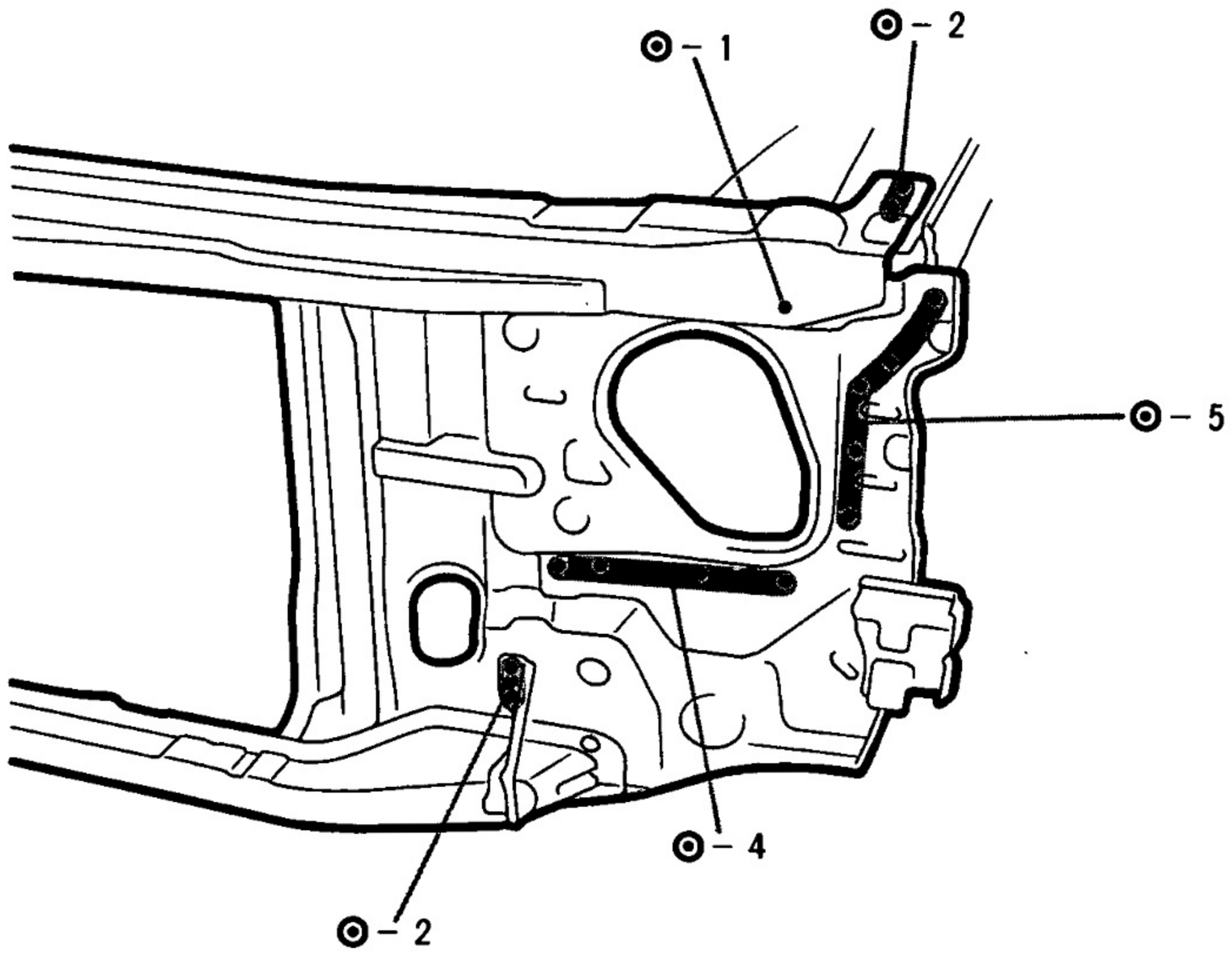
1. When temporarily installing the new parts, determine the installation position by the assembly mark. Then, measure each part in accordance with the body dimension diagram.

RADIATOR SUPPORT (ASSY)

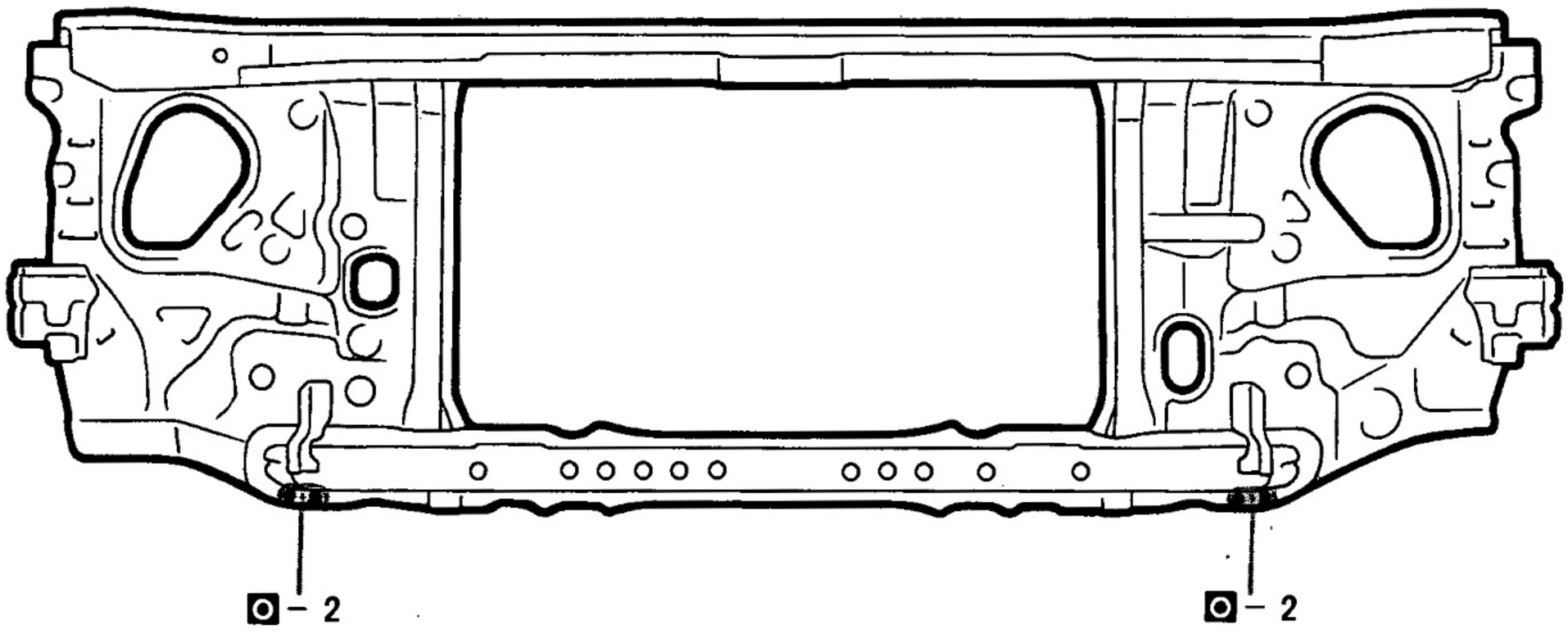


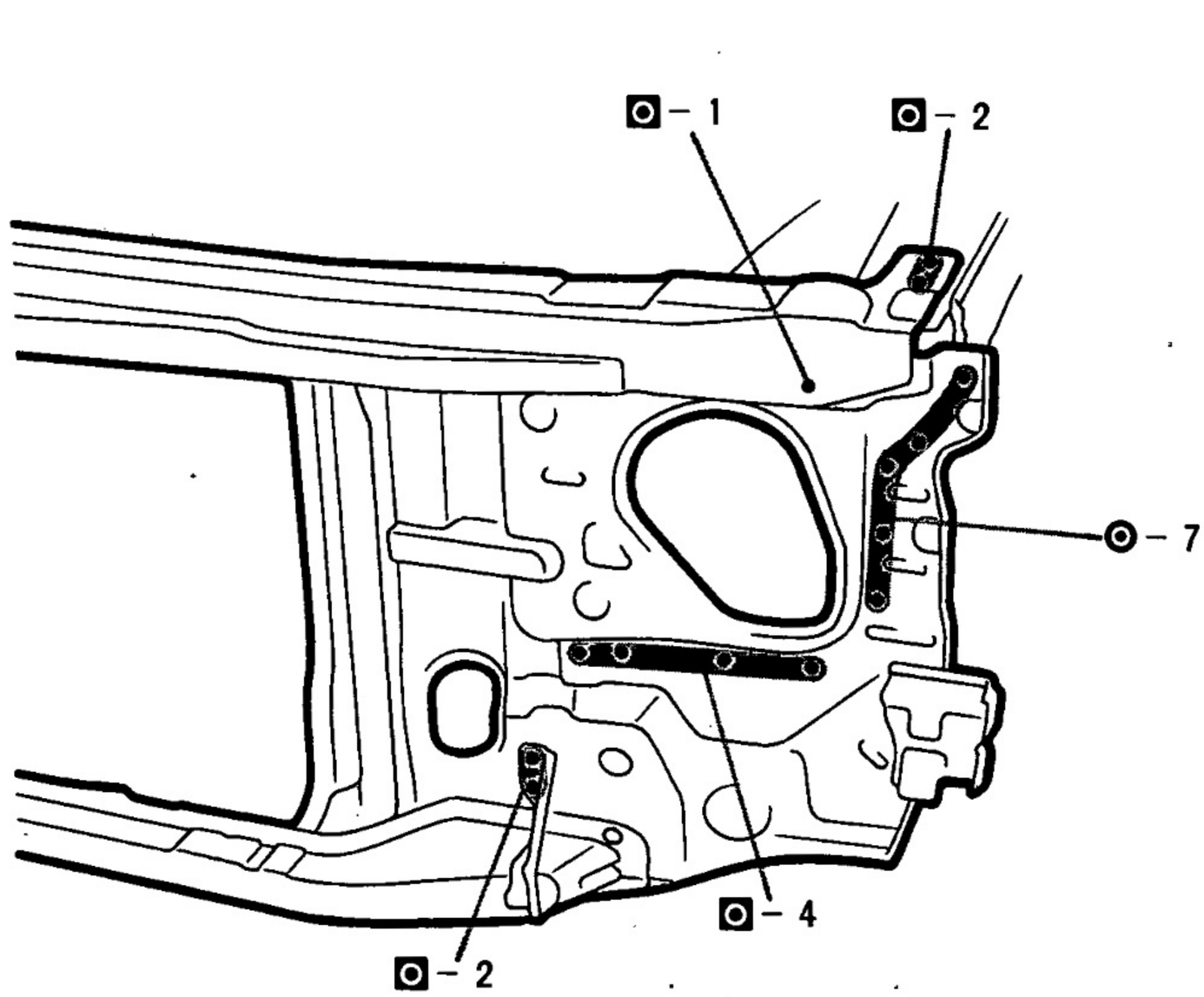
REMOVAL





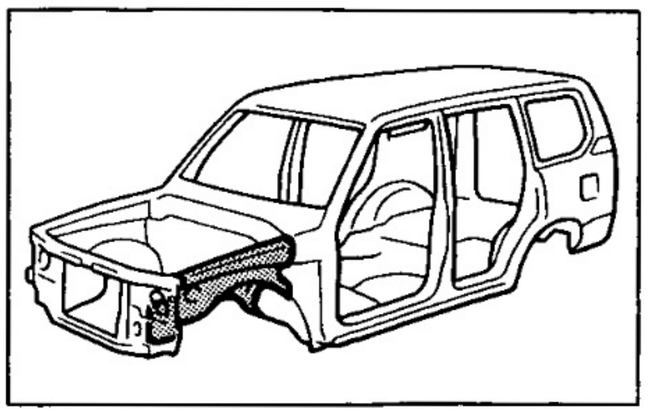
INSTALLATION



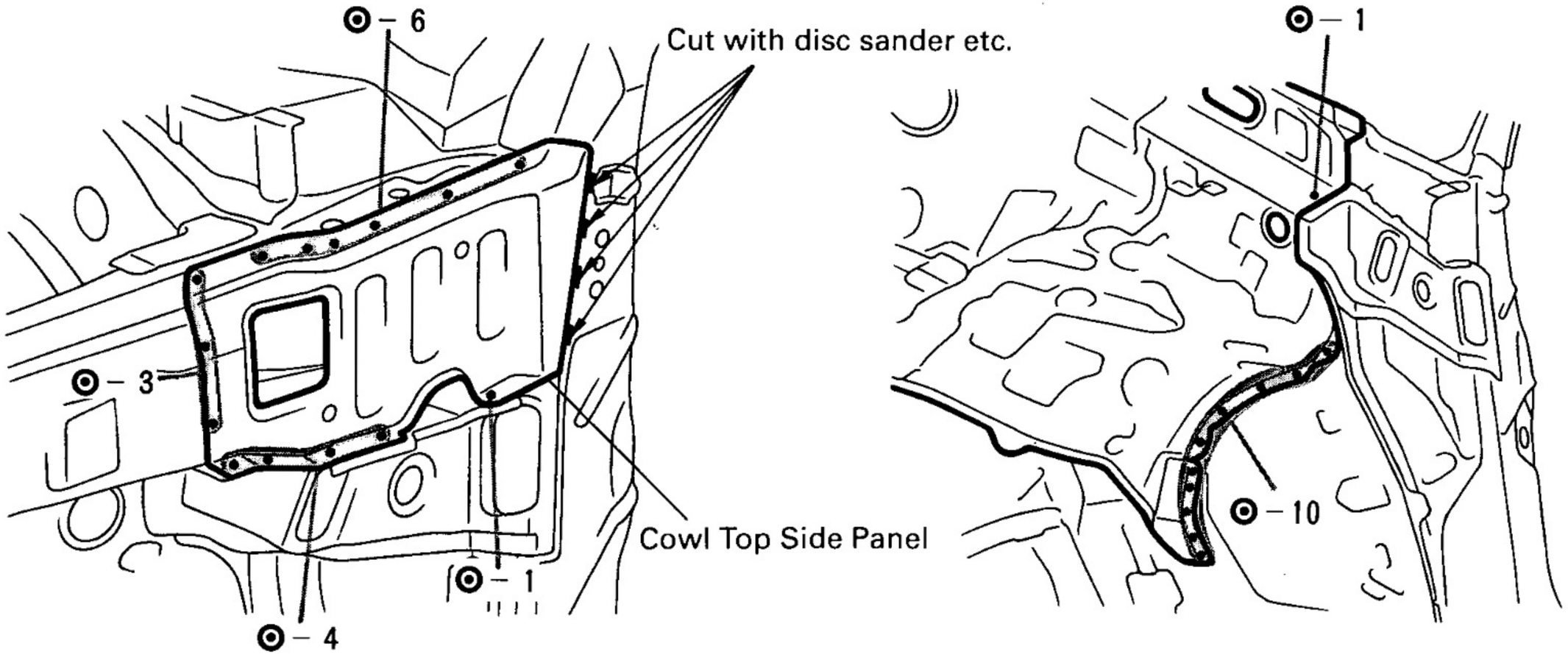


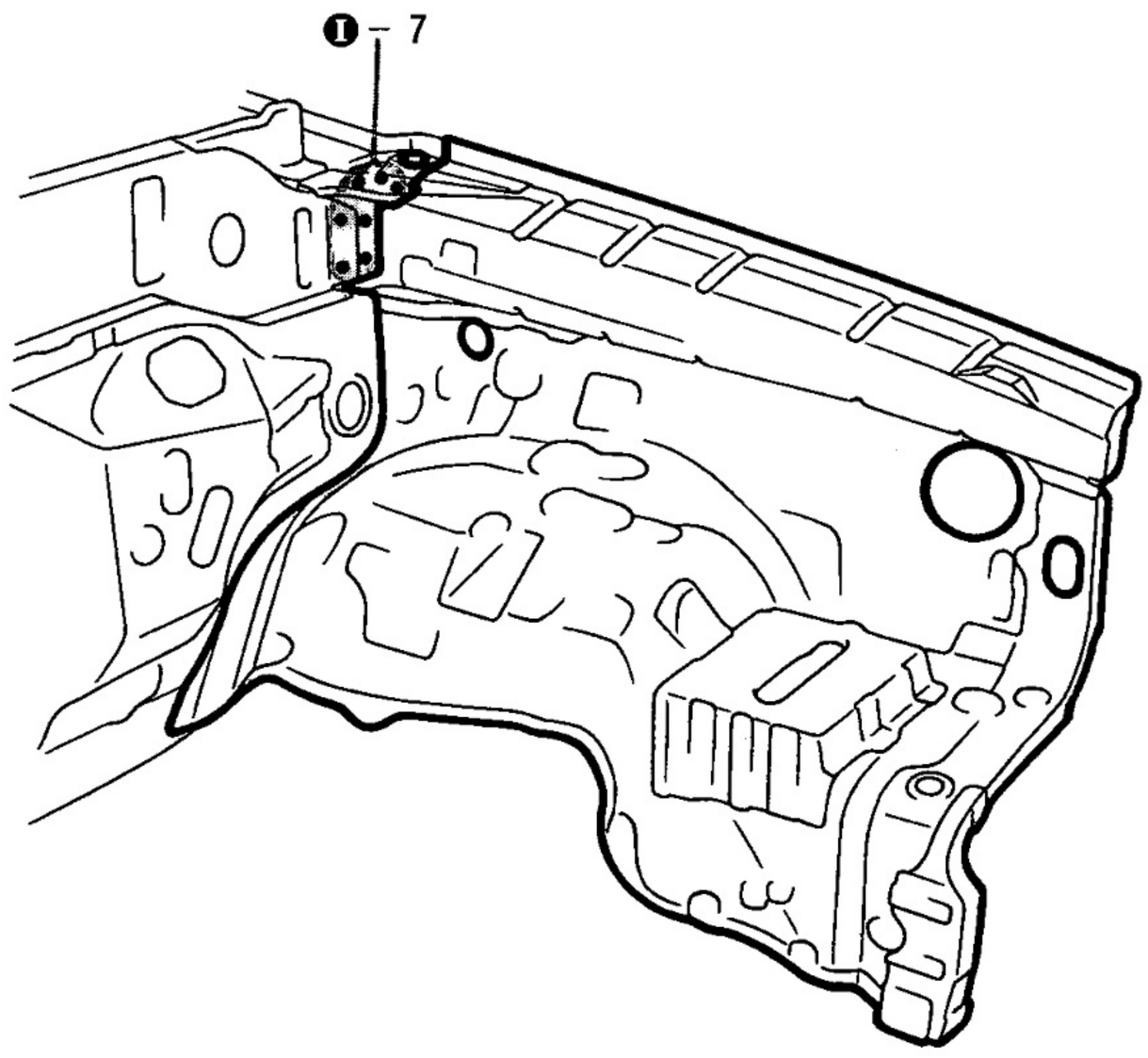
1. Temporarily install the new parts and measure each part in accordance with the body dimension diagram.

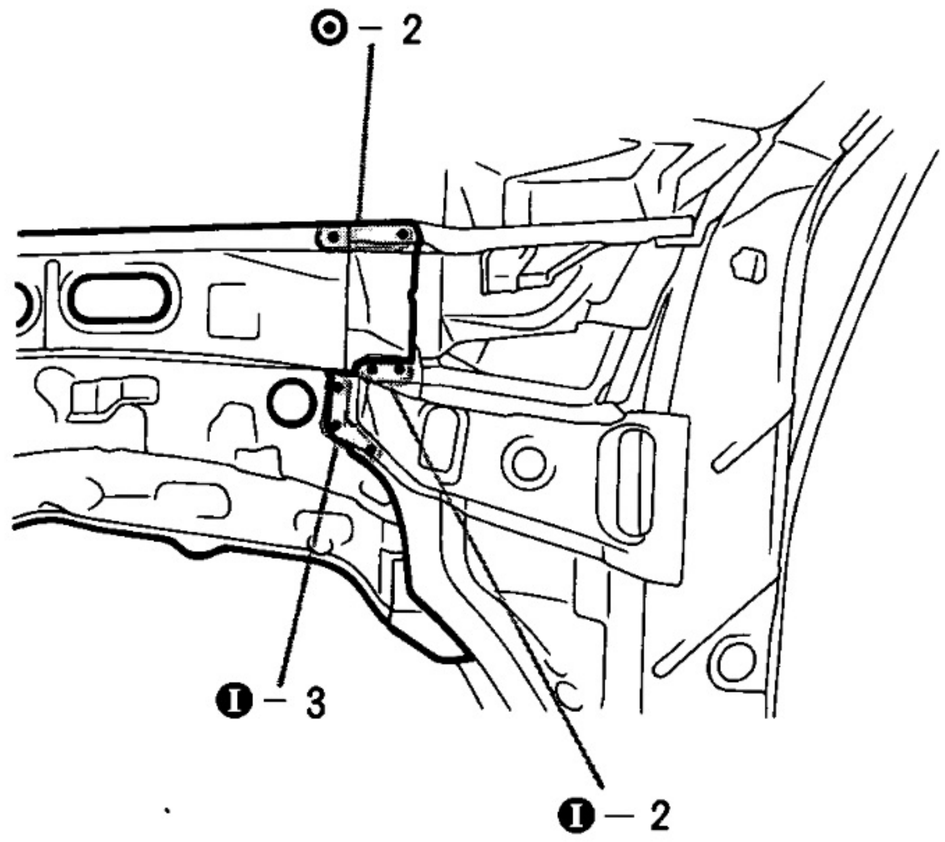
FRONT FENDER APRON (ASSY)



REMOVAL (With the radiator support removed.)

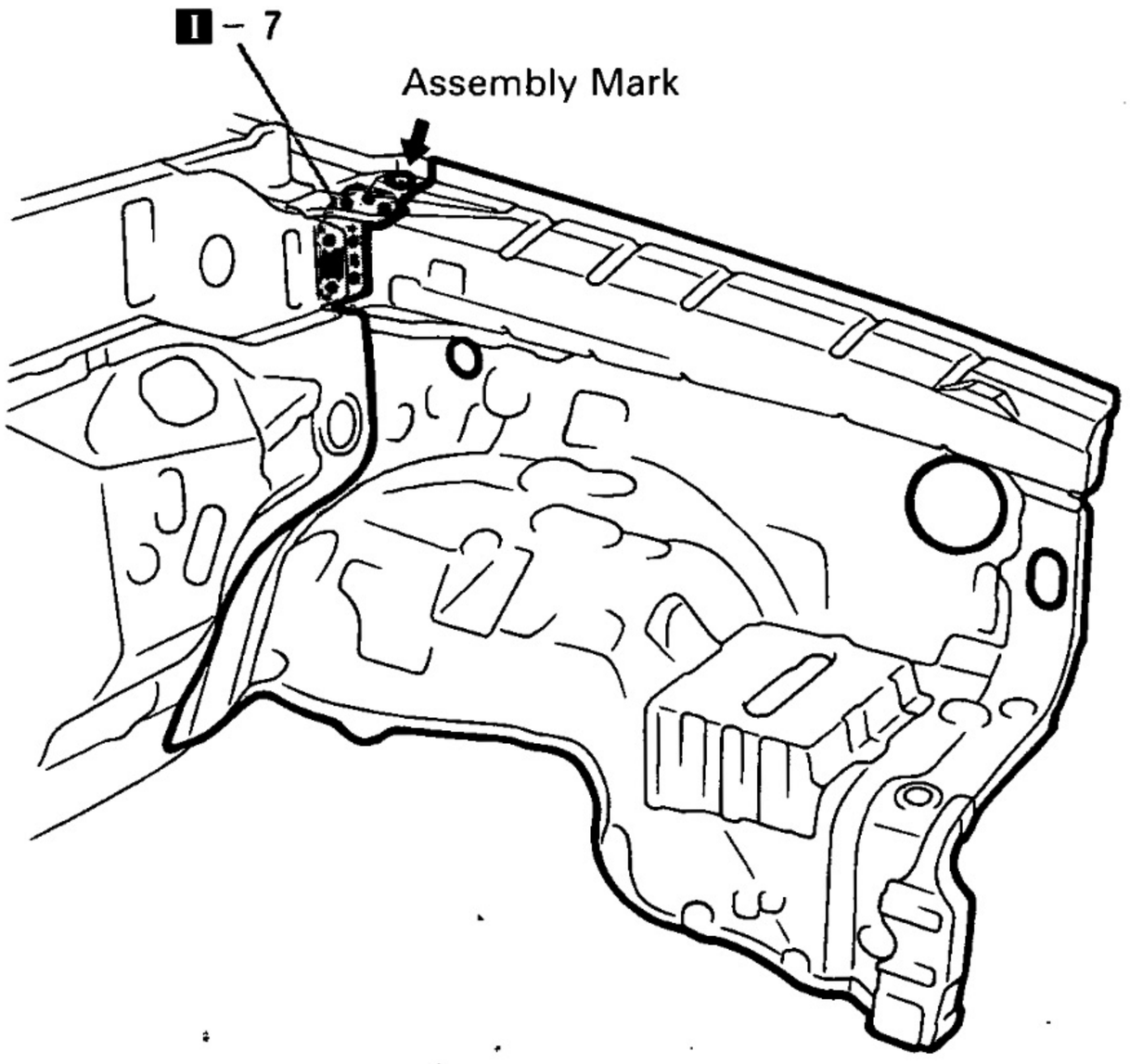


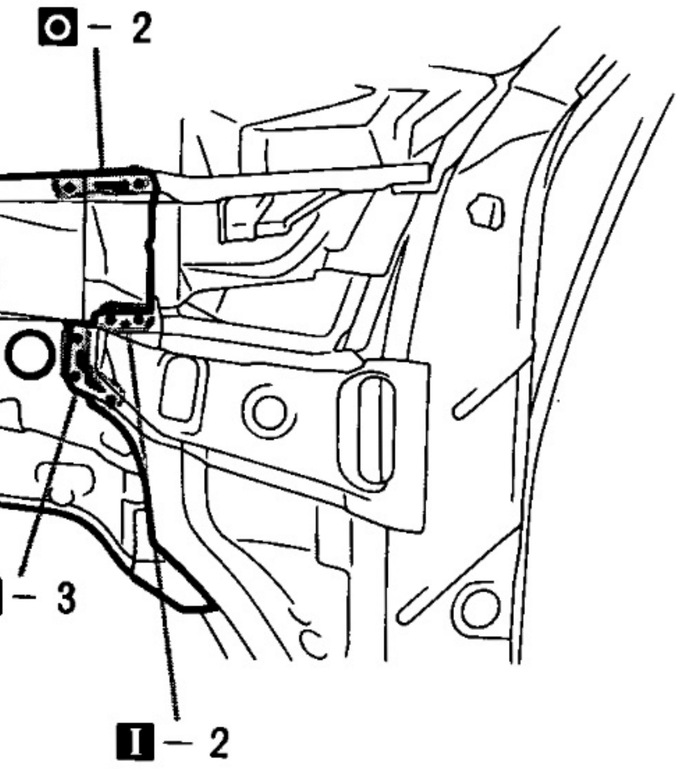


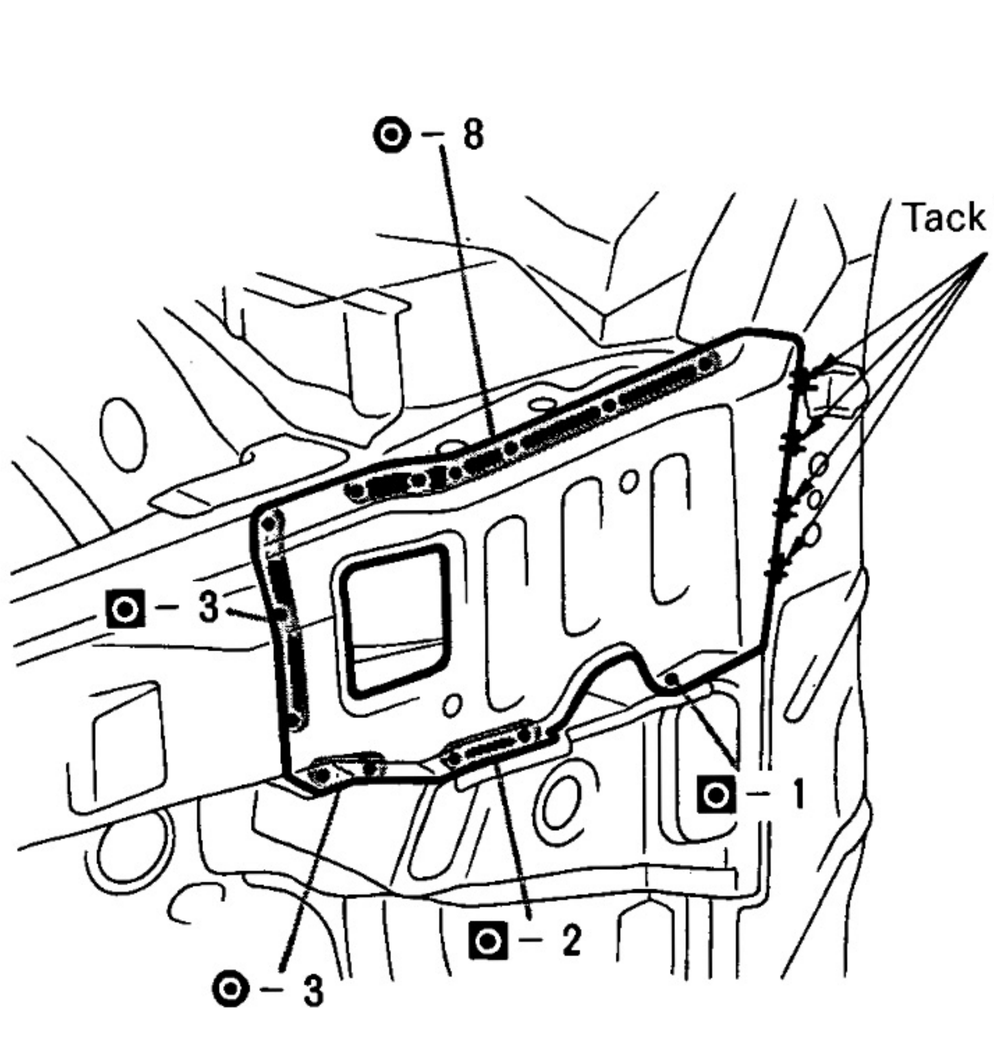


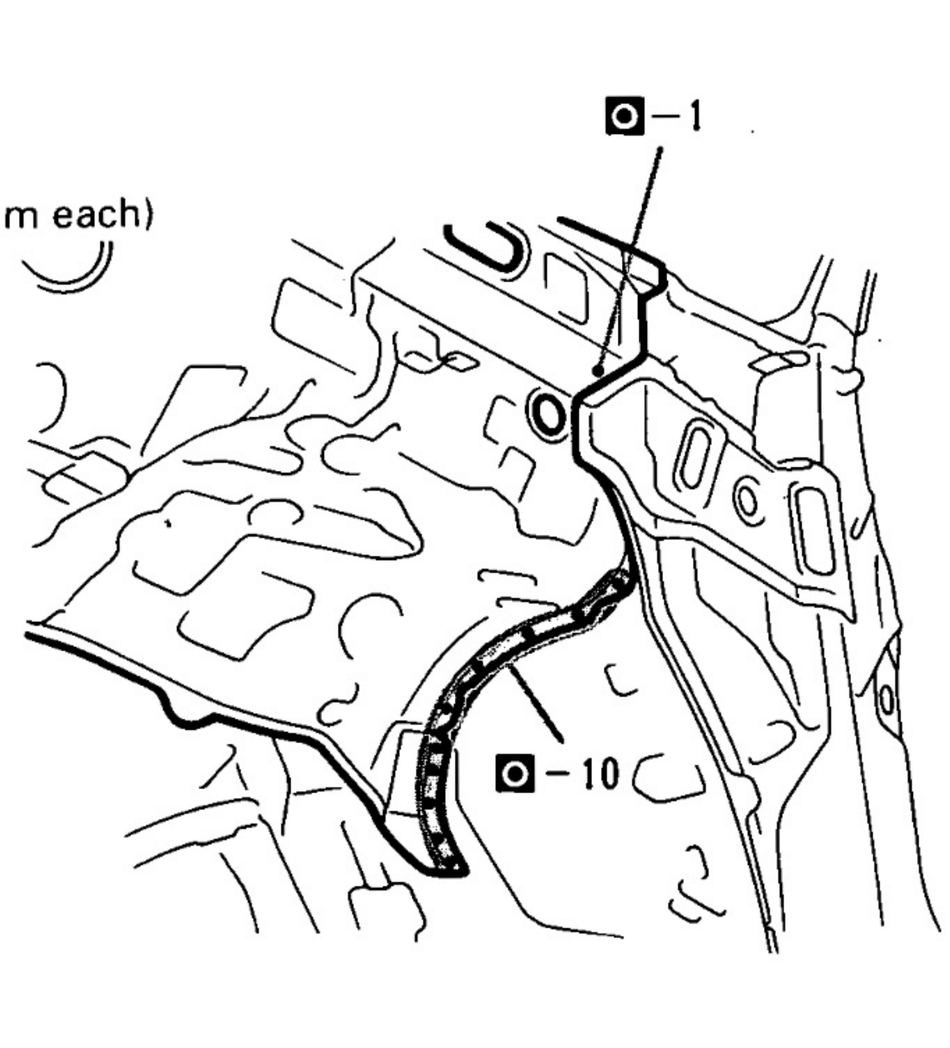
1. After removing the cowl top side panel, remove the front fender apron.

INSTALLATION





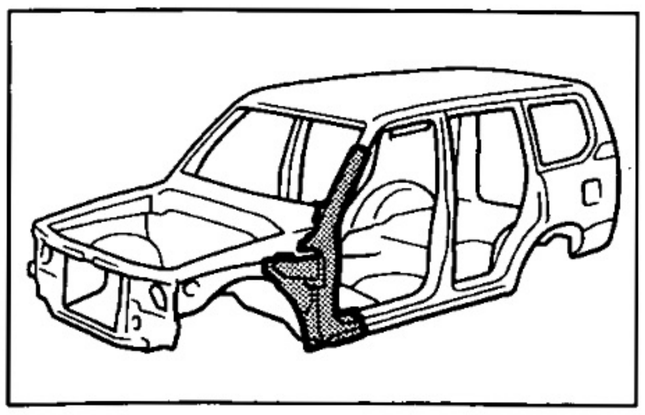




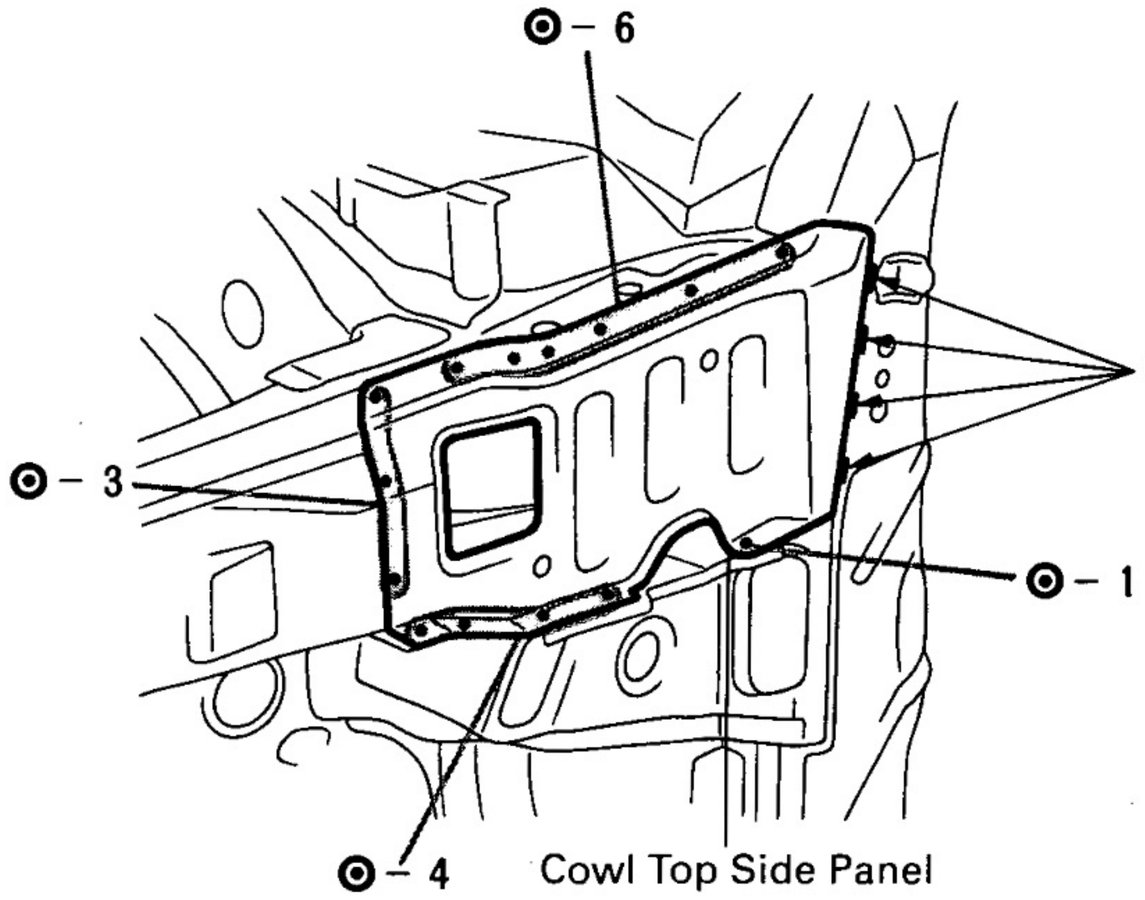
mm	in.
15	0.59

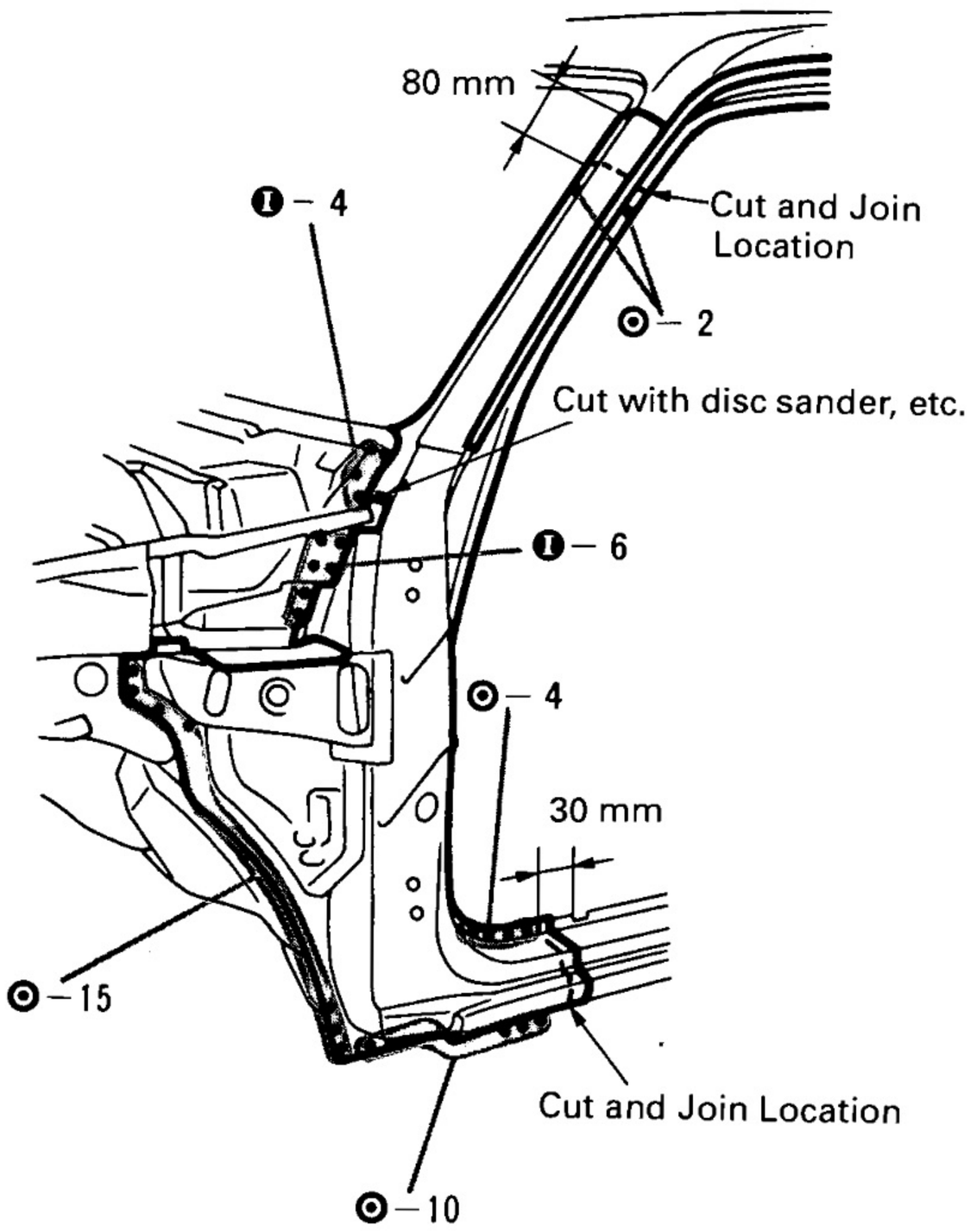
1. When temporarily installing the new parts, determine the installation position by the assembly mark. Then, measure each part in accordance with the body dimension diagram.
2. Temporarily install the front fender and hood, and check the fit.

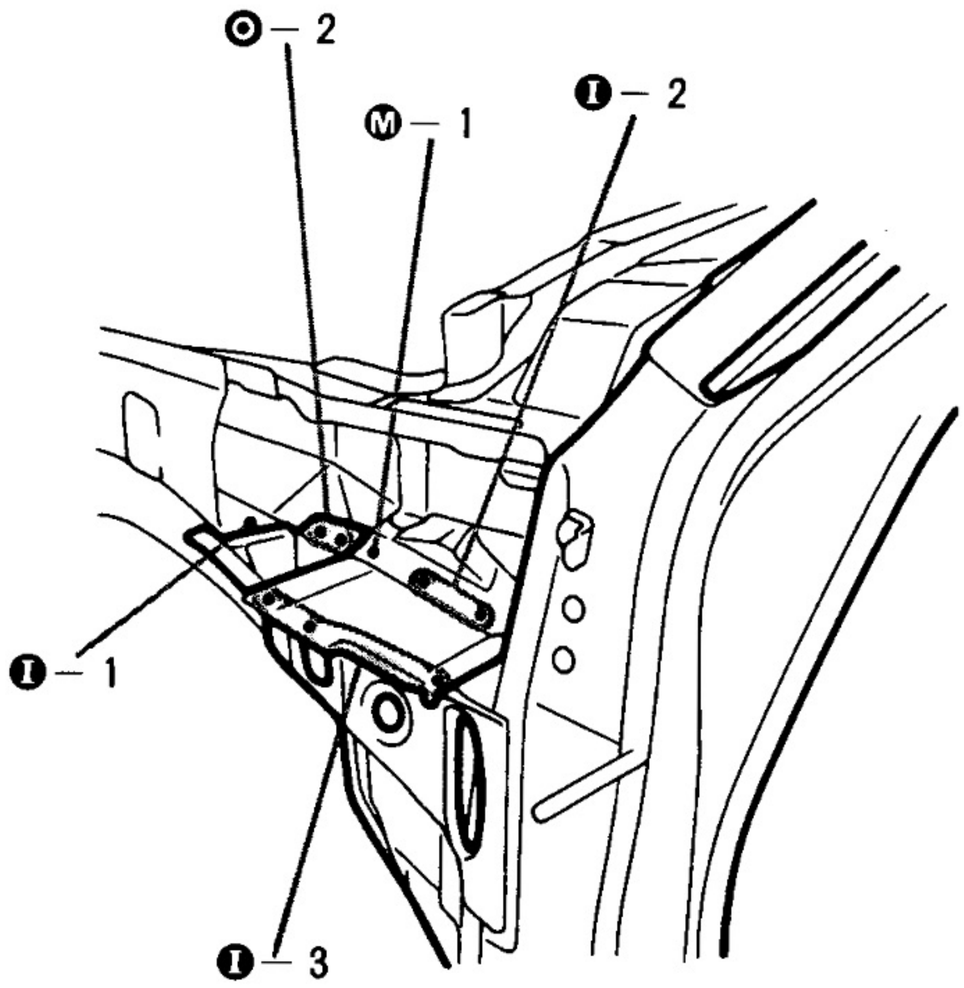
FRONT BODY PILLAR (CUT)



REMOVAL







mm	in.
30 80	1.18 3.15

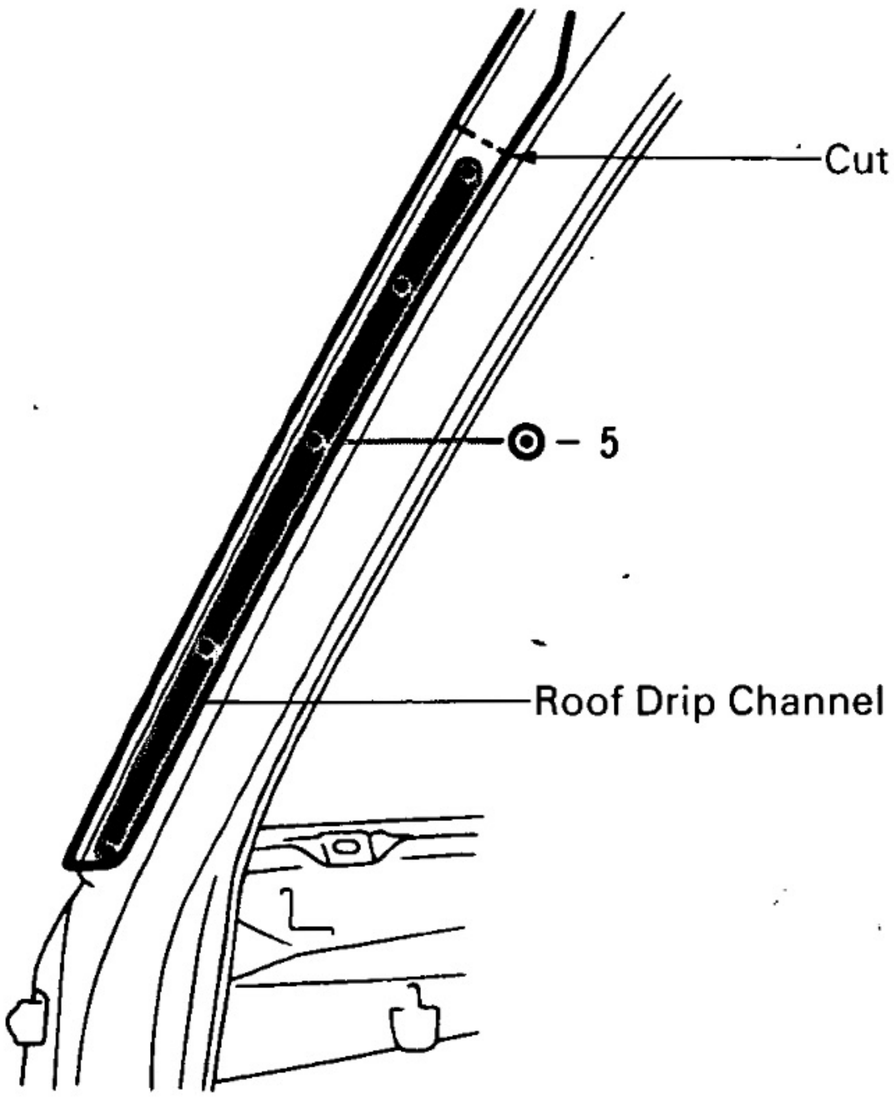
1. Cut and join the parts at the location as shown above.

HINT:

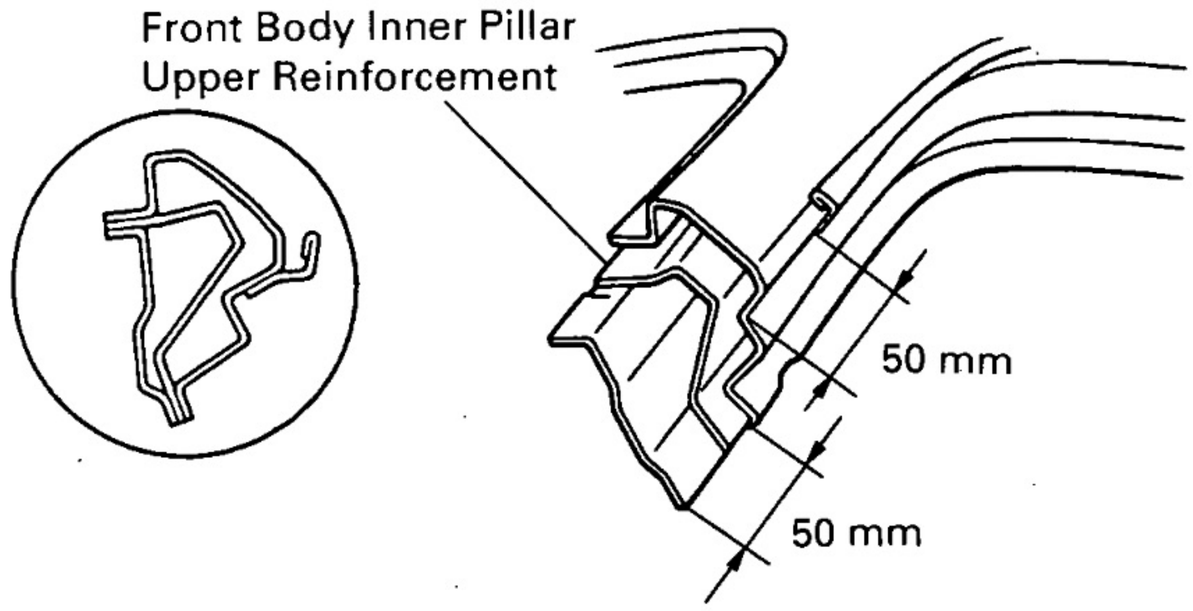
1) Remove the antenna cord and drain hose of sunroof

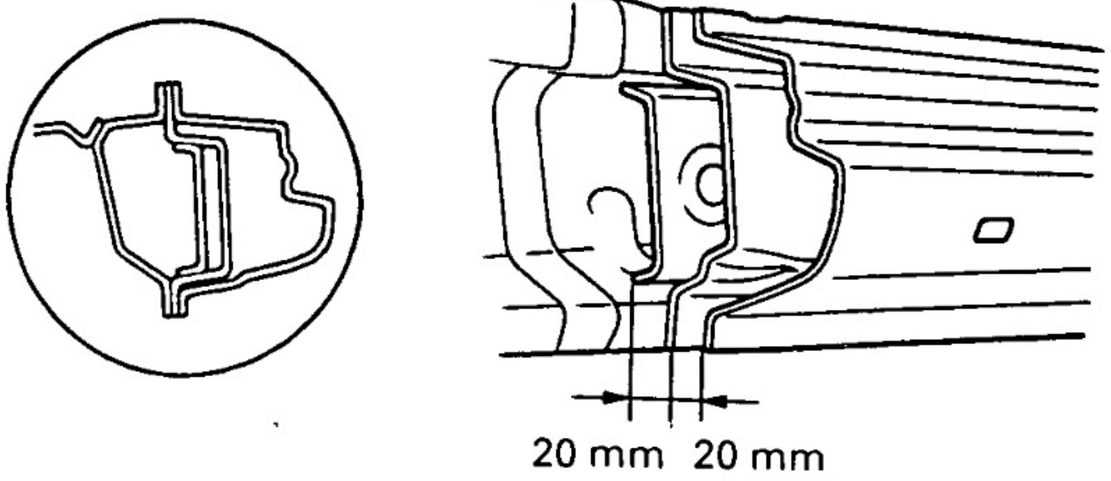
2) Leave the front body inner pillar upper reinforcement to the vehicle side.

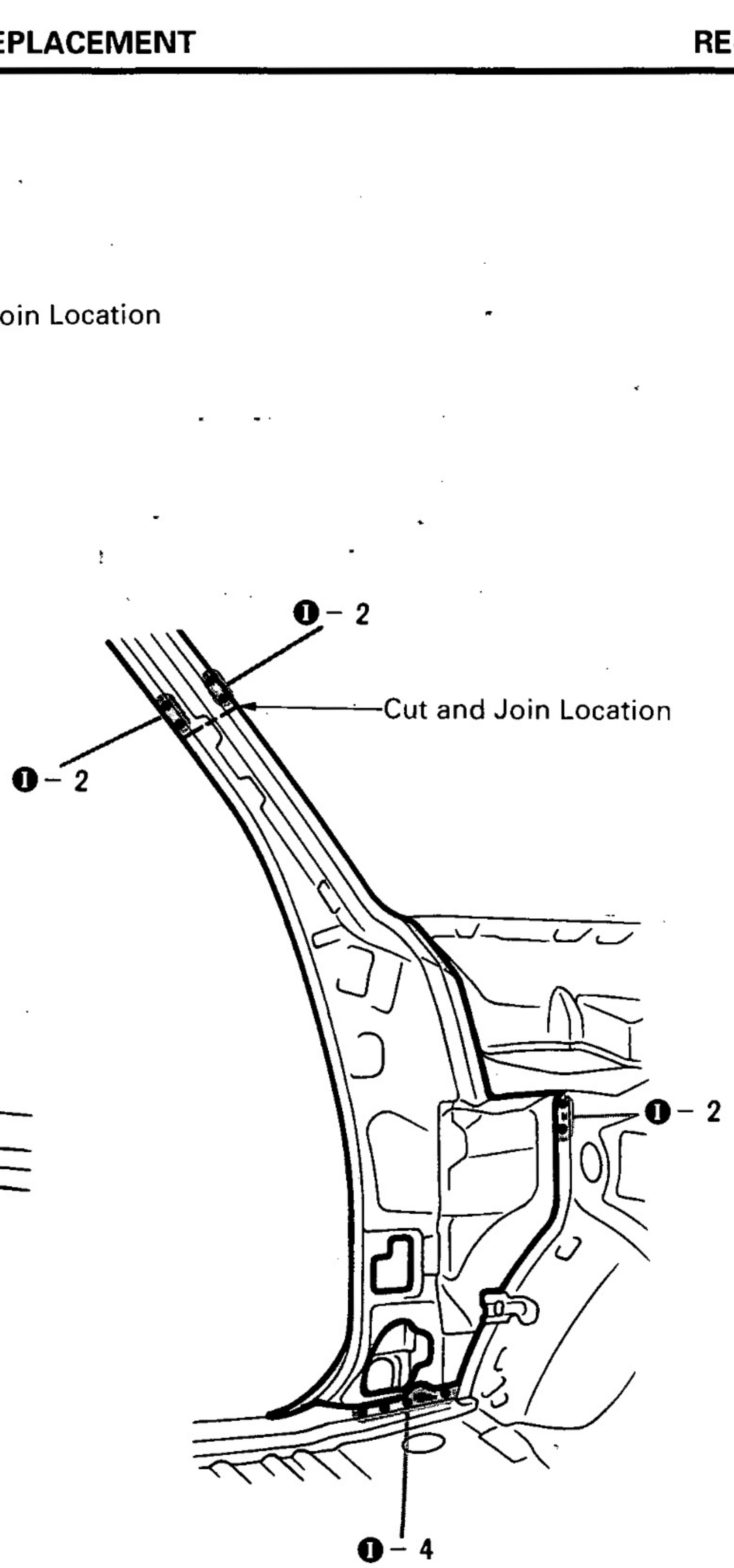
2. After removing the cowl top side panel, remove the front body pillar.



[Cut and Join Location]





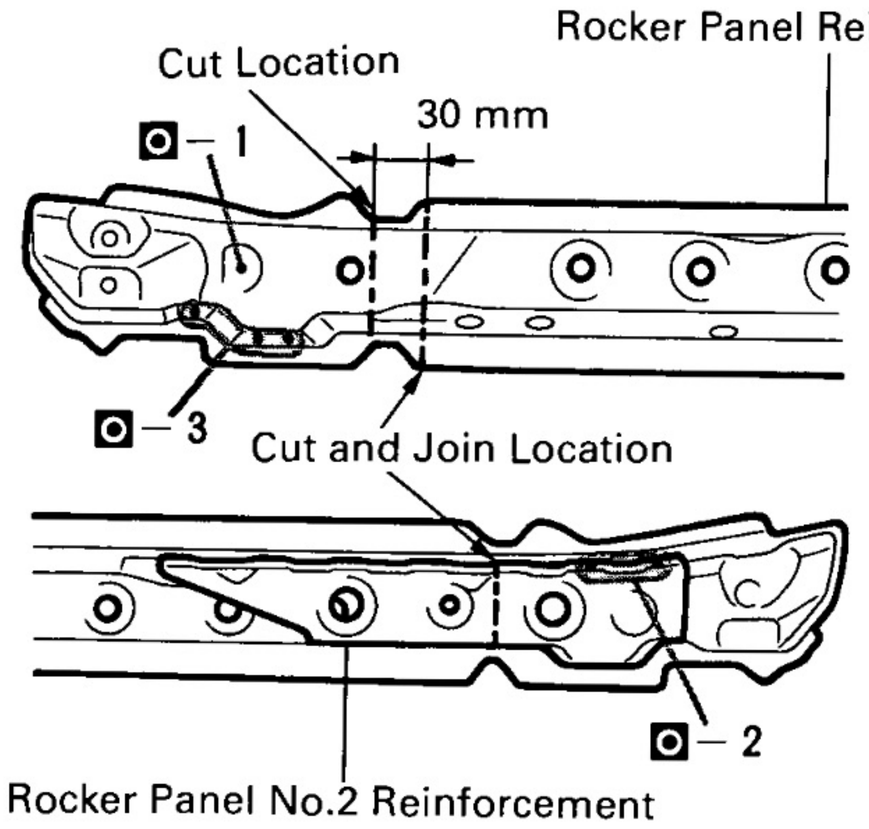


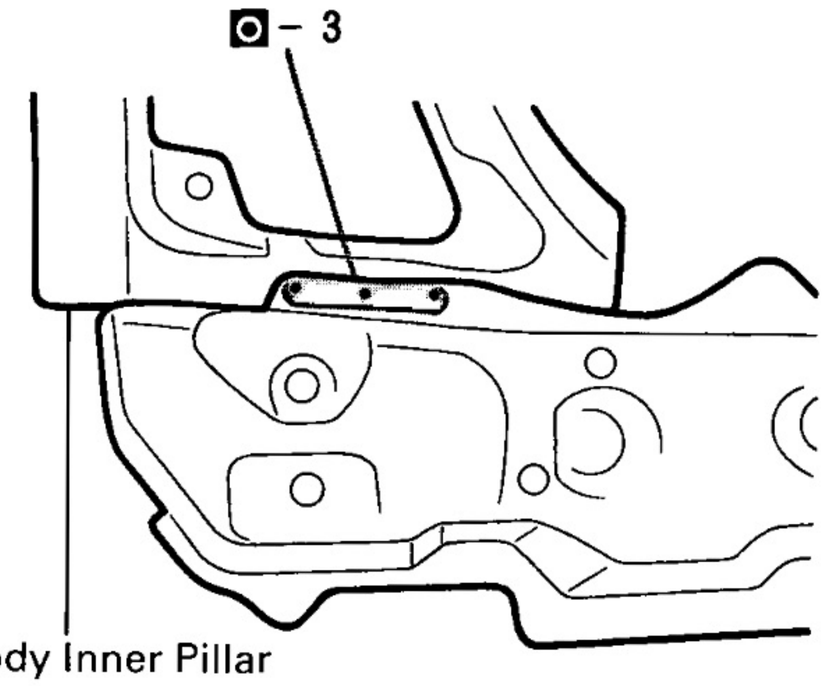
mm	in.
20	0.79
50	1.97

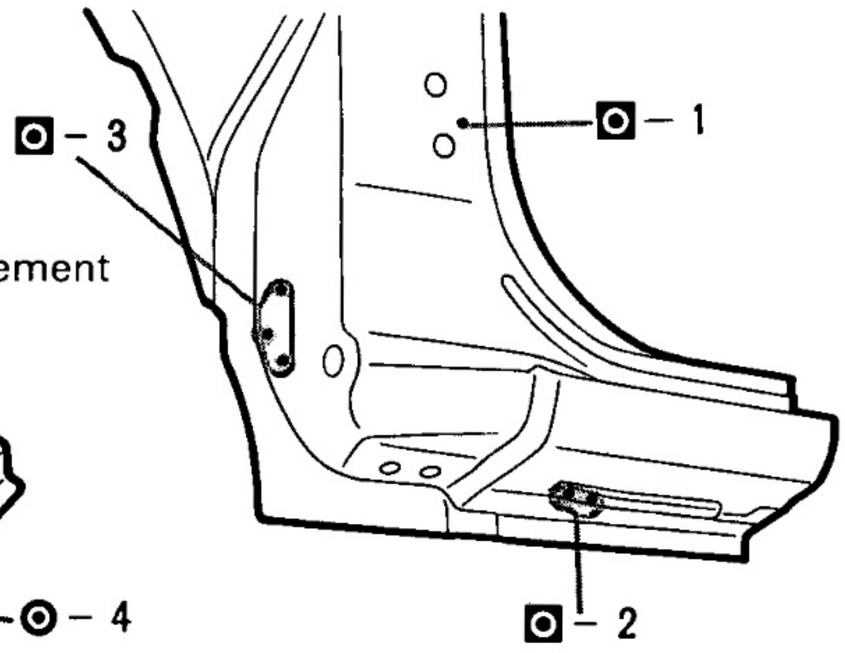
3. As shown above, cut and join the front body outer pillar and inner pillar at position shifted about 50 mm (1.97 in.) each.

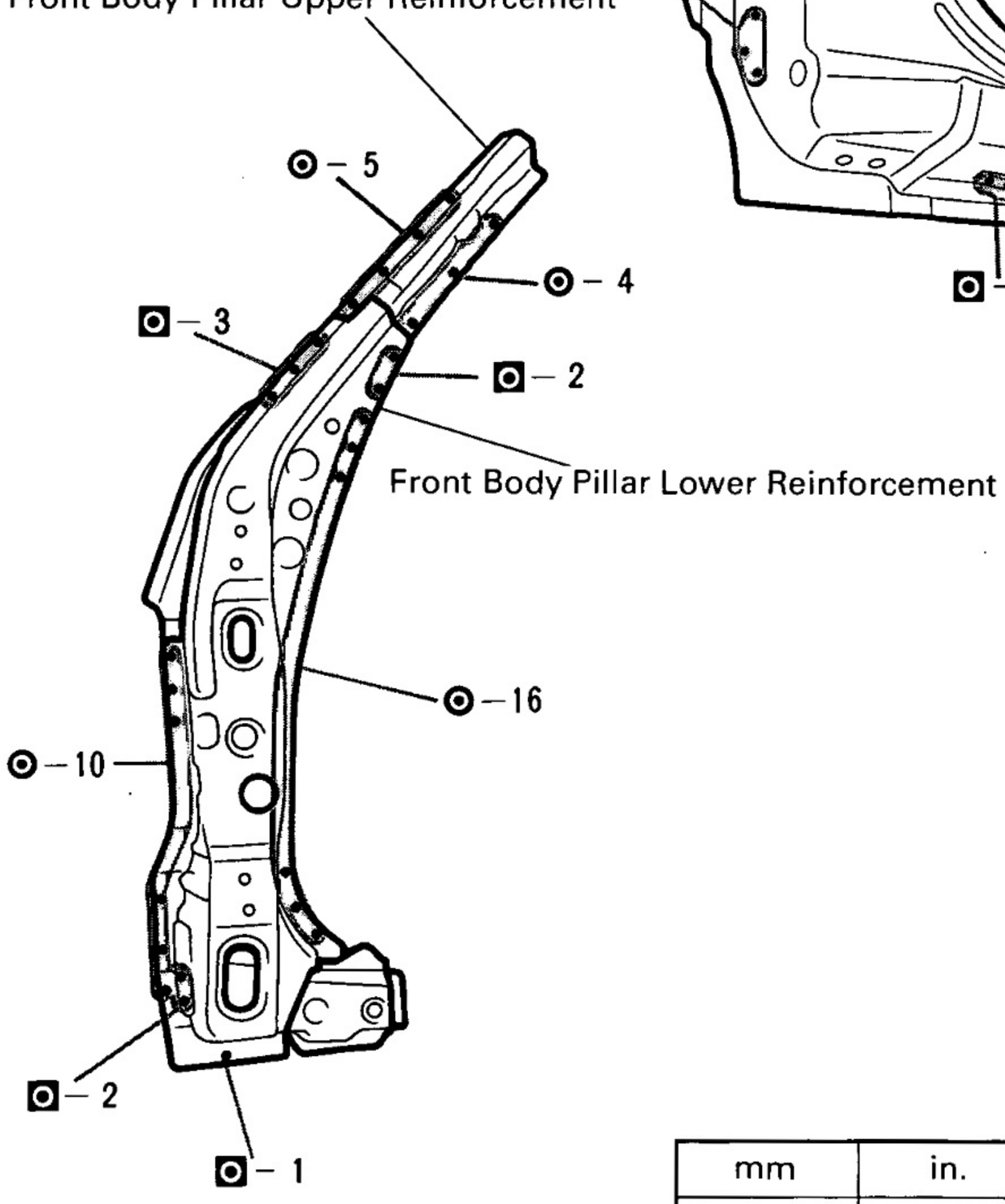
4. As shown above, cut and join the rocker outer panel and rocker panel reinforcement and rocker panel No.2 reinforcement at position shifted about 20 mm (0.79 in.) each.

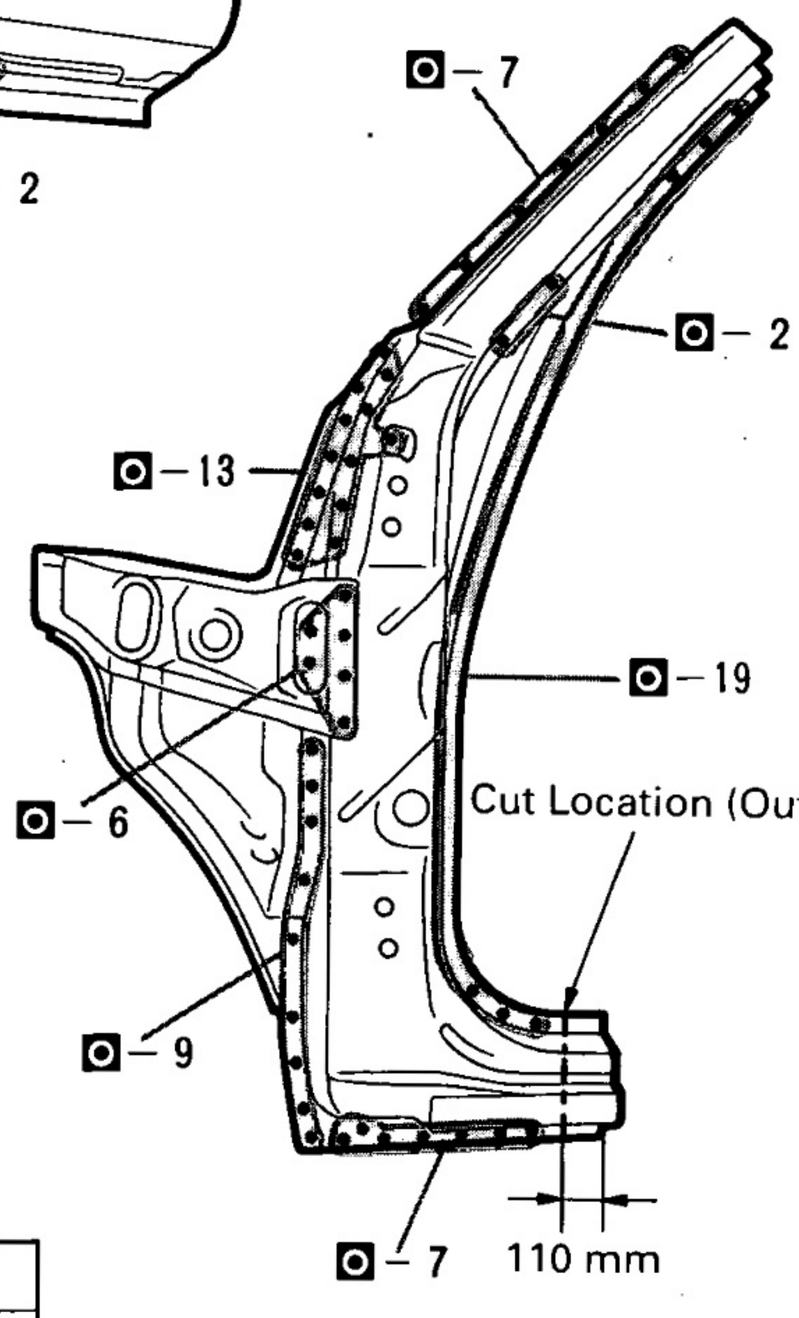
INSTALLATION







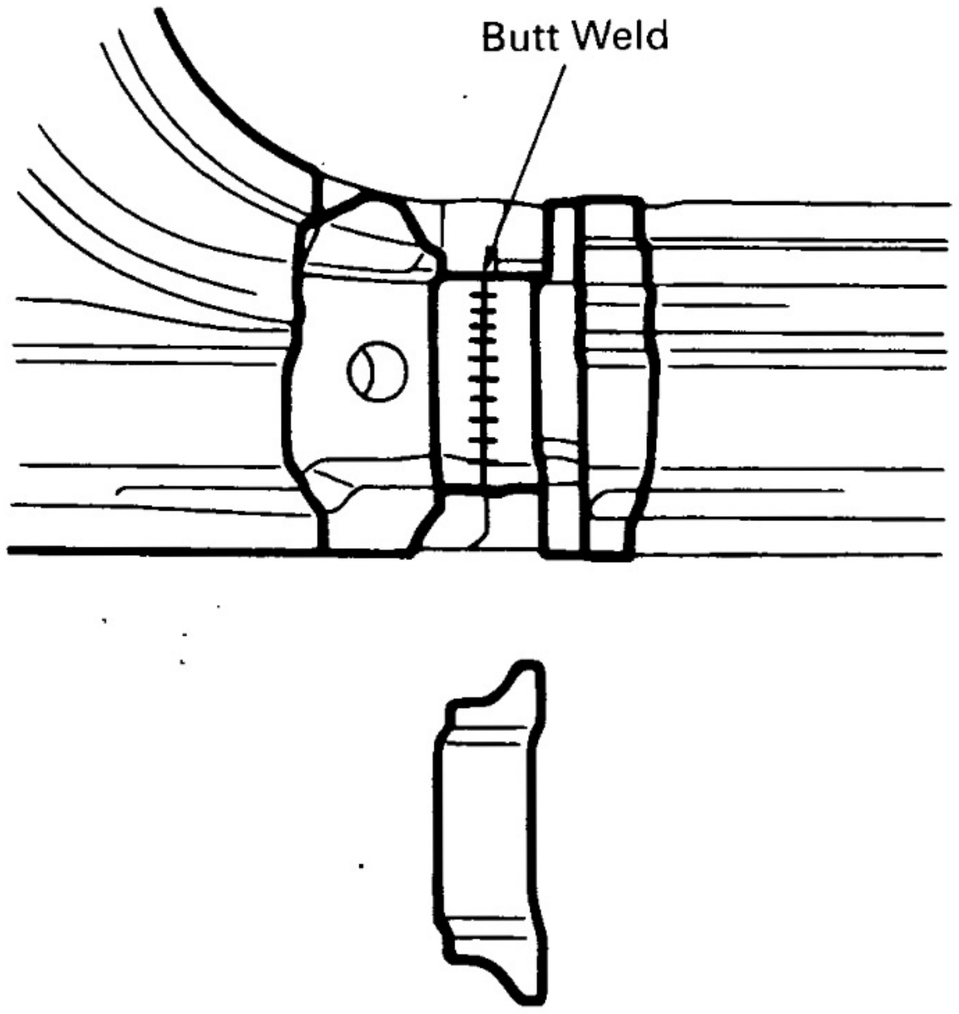


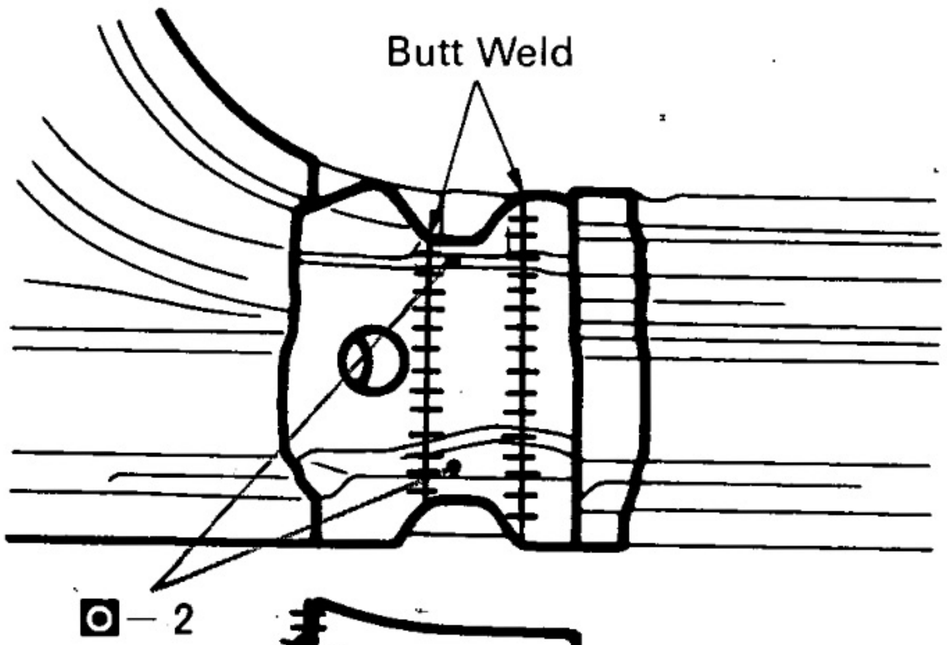


mm	in.
30	1.18
110	4.33

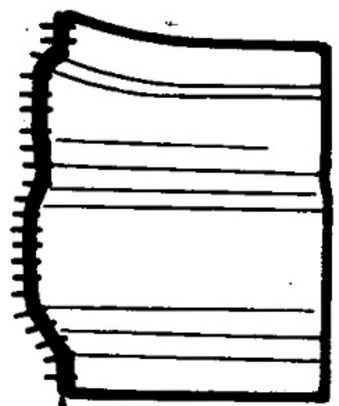
1. Cut and weld the rocker panel reinforcement and rocker panel No.2 reinforcement's new parts at the locations shown above.
2. Cut a width of 110 mm (4.33 in.) at the rocker of the pillar outer.
3. Before temporarily installing the new parts, weld the front body inner pillar, rocker panel lower reinforcement, front body pillar upper reinforcement, front outer pillar with standard points.

(Continued on Next Page)

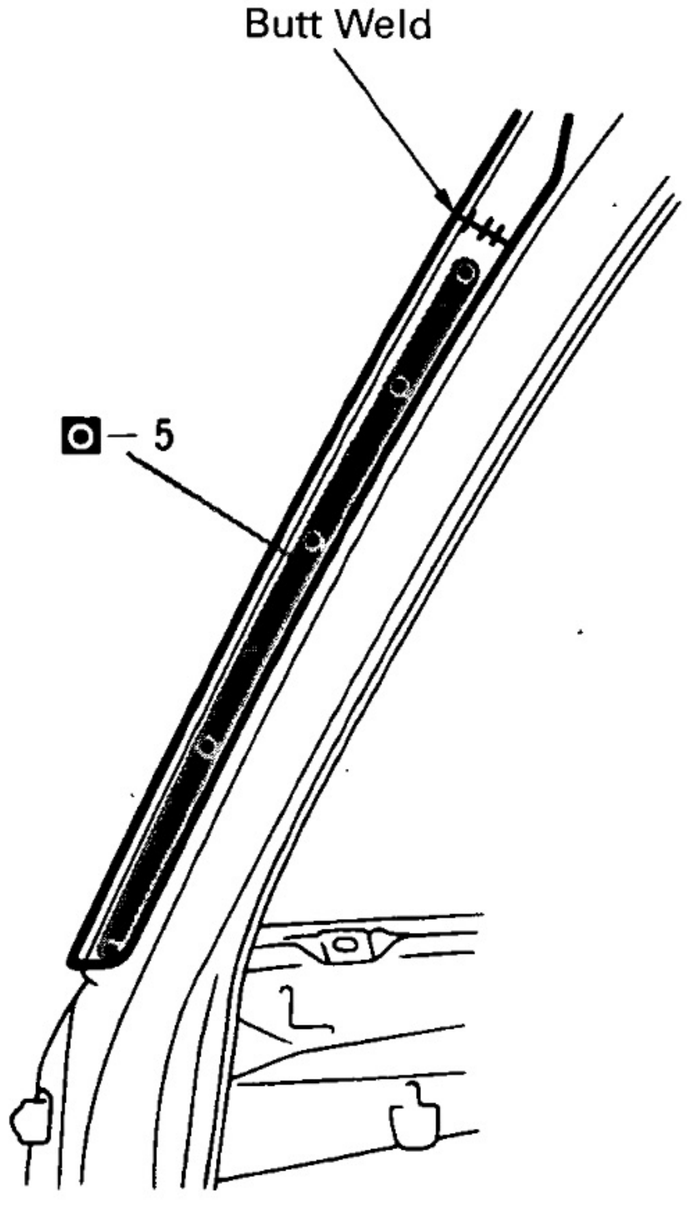


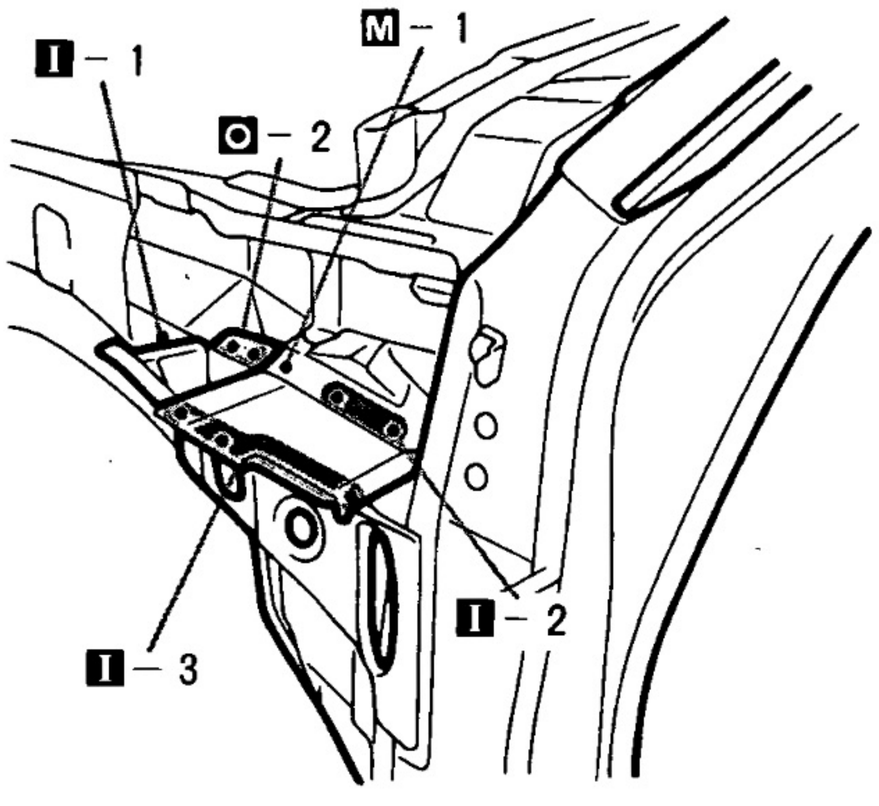


Butt Weld



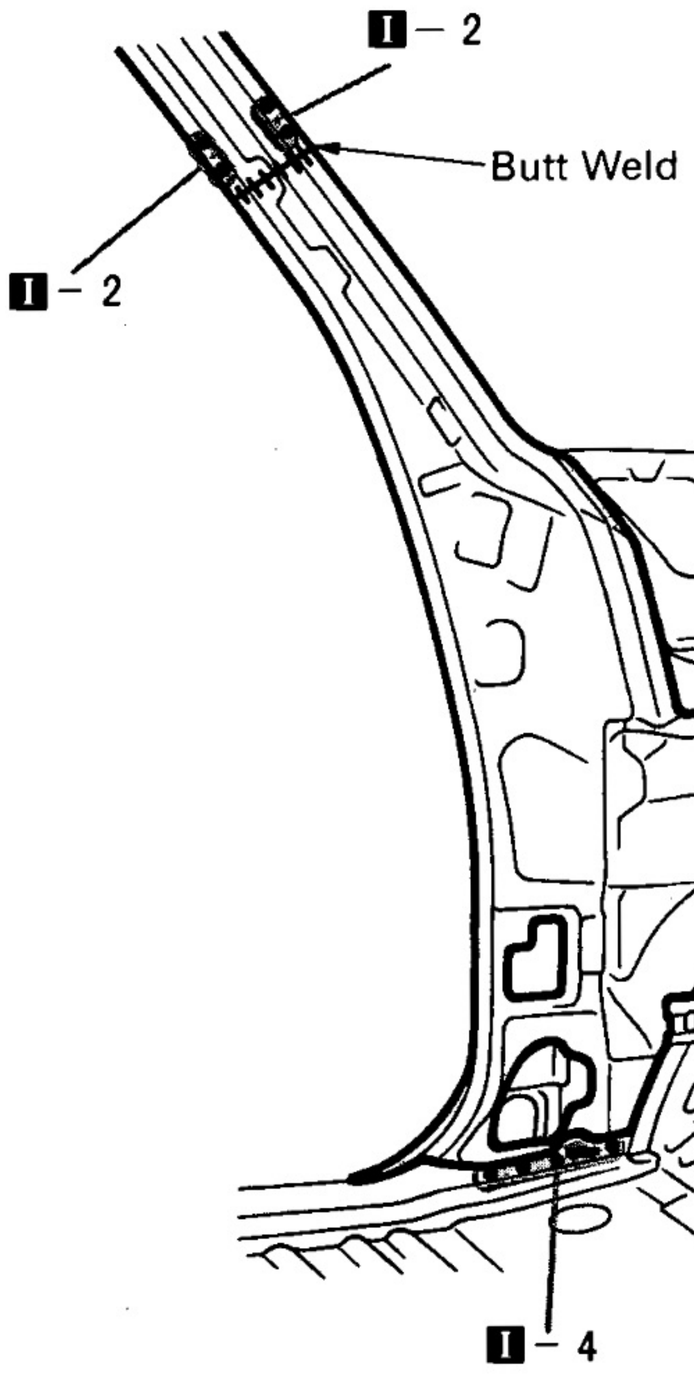
Butt Weld

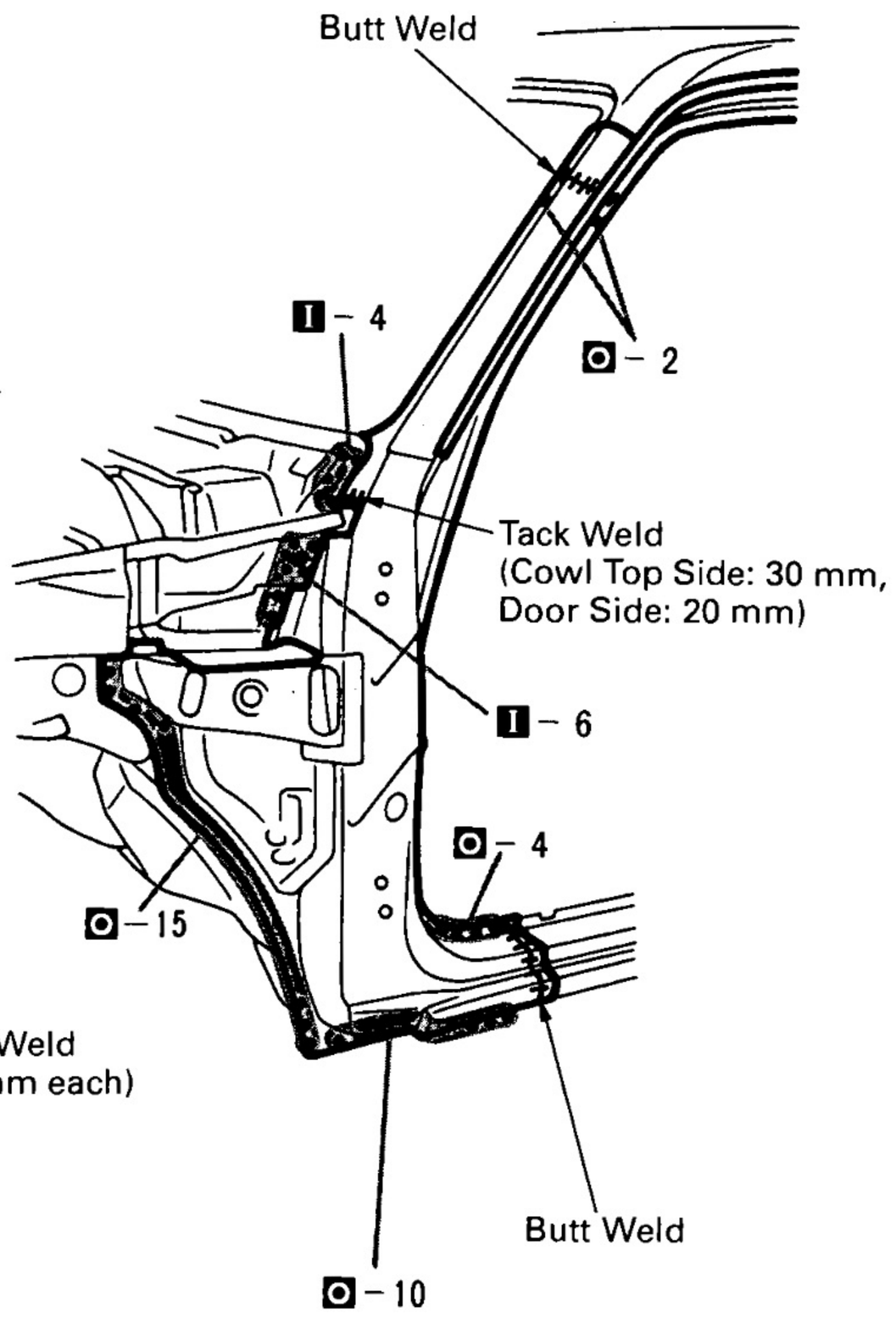


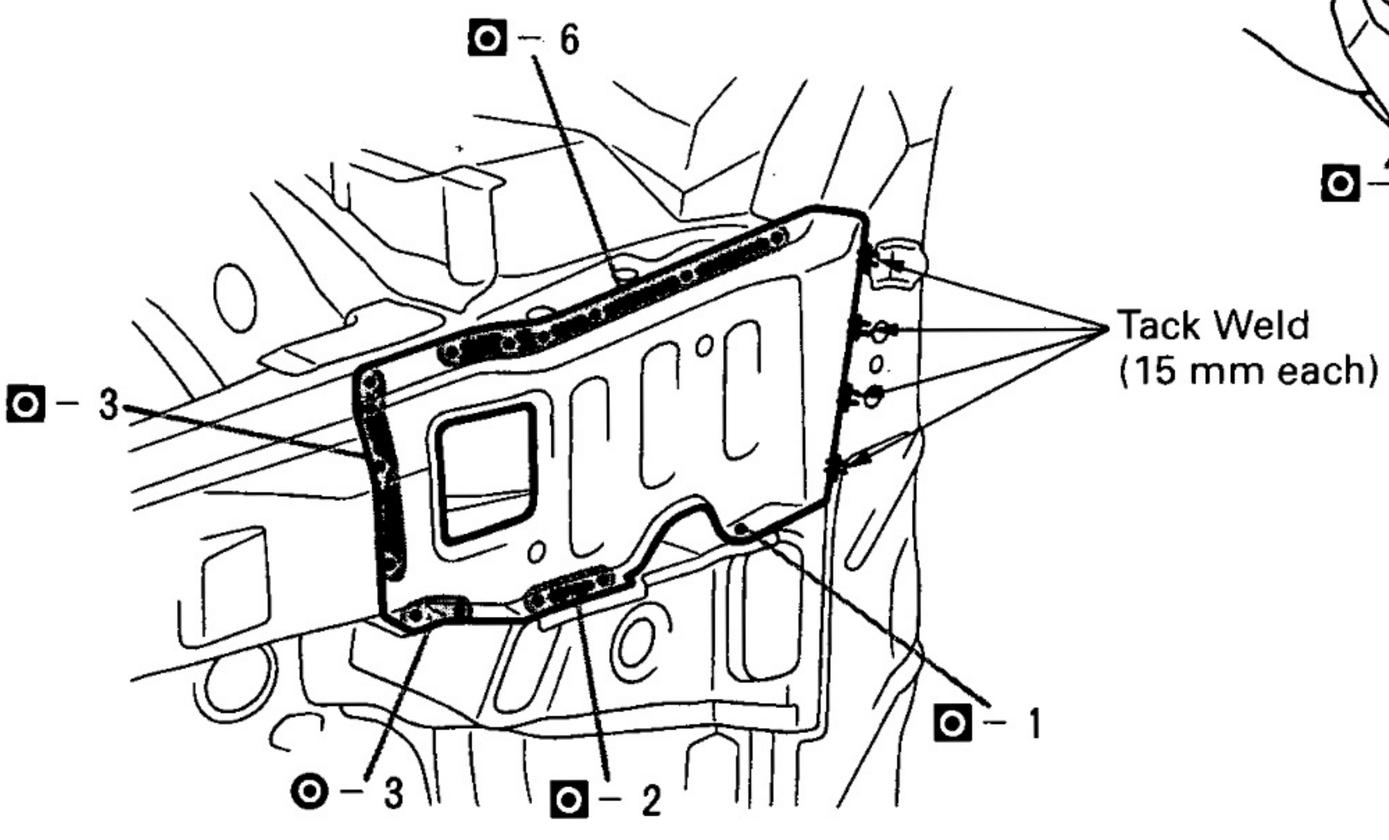


4. Temporarily install the new parts and measure each part in accordance with the body dimension diagram.
5. Before welding the new parts, check the fit of the front door, front fender and windshield glass.
6. At the rocker's cut and join location, install the panel outer after butt welding the rocker panel reinforcement.

(Cont'd)

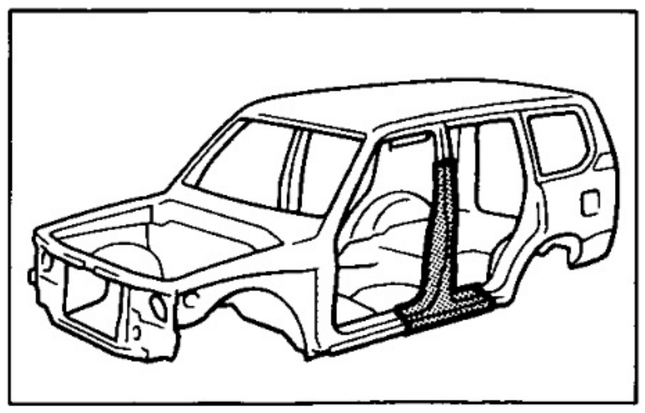




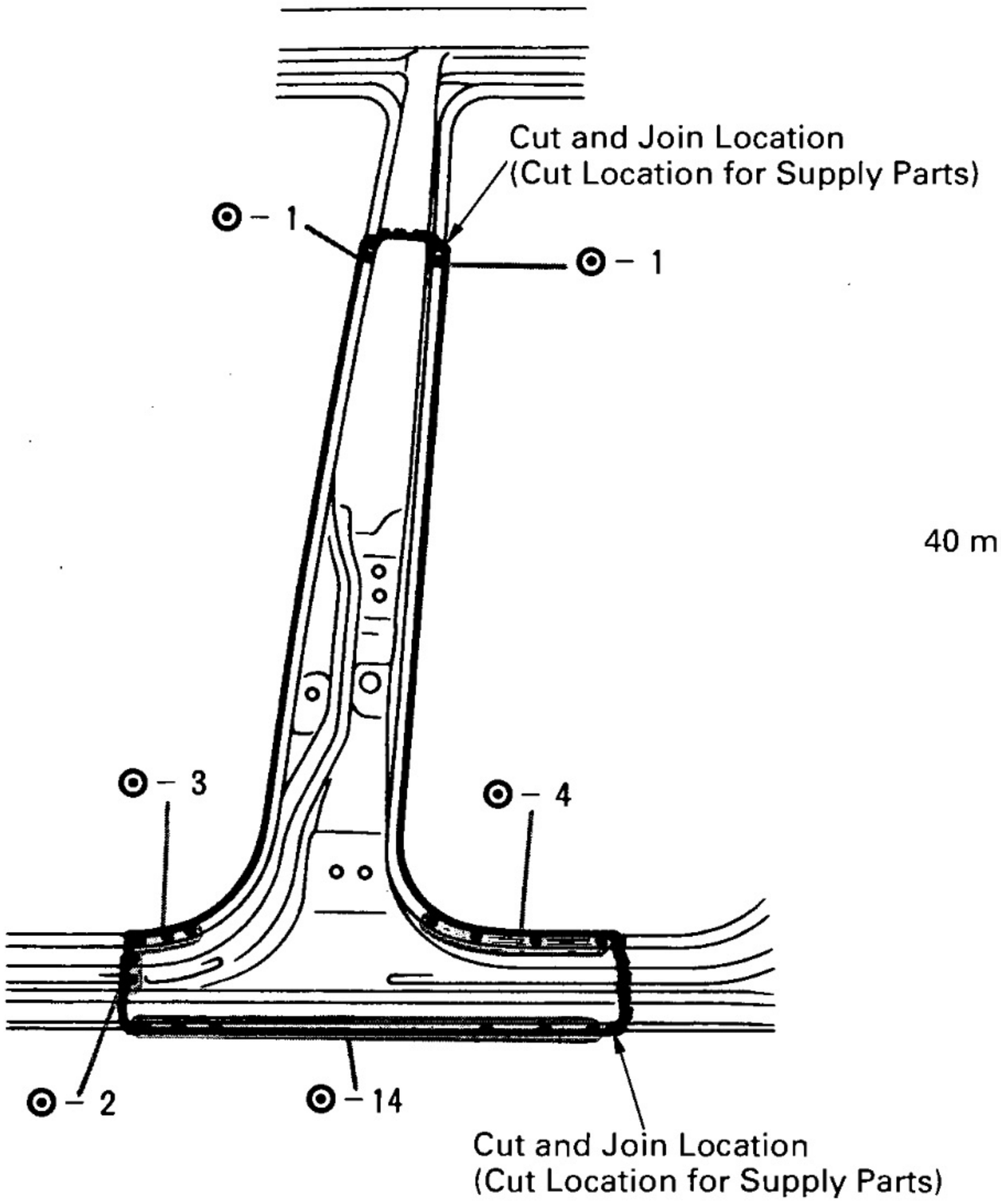


mm	in.
15	0.59
20	0.79
30	1.18

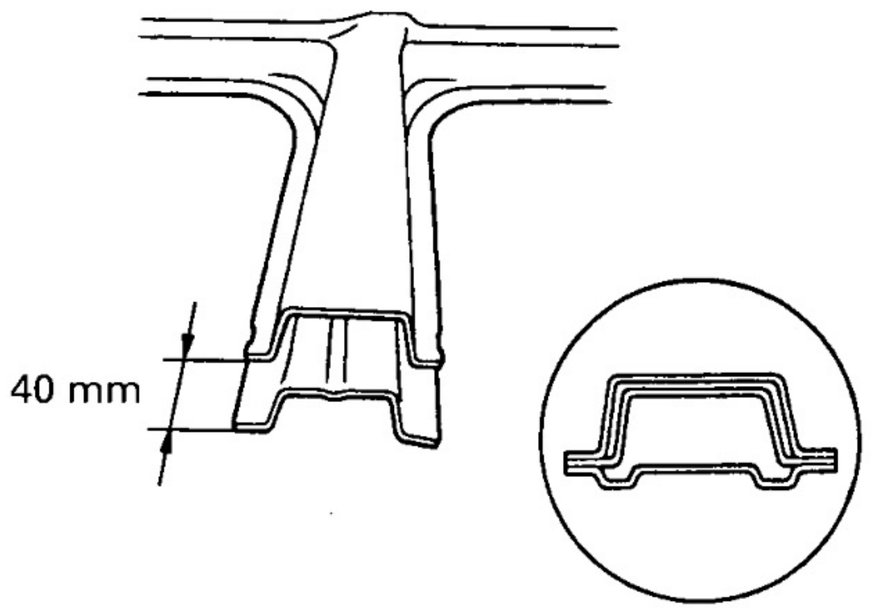
CENTER BODY PILLAR (CUT)

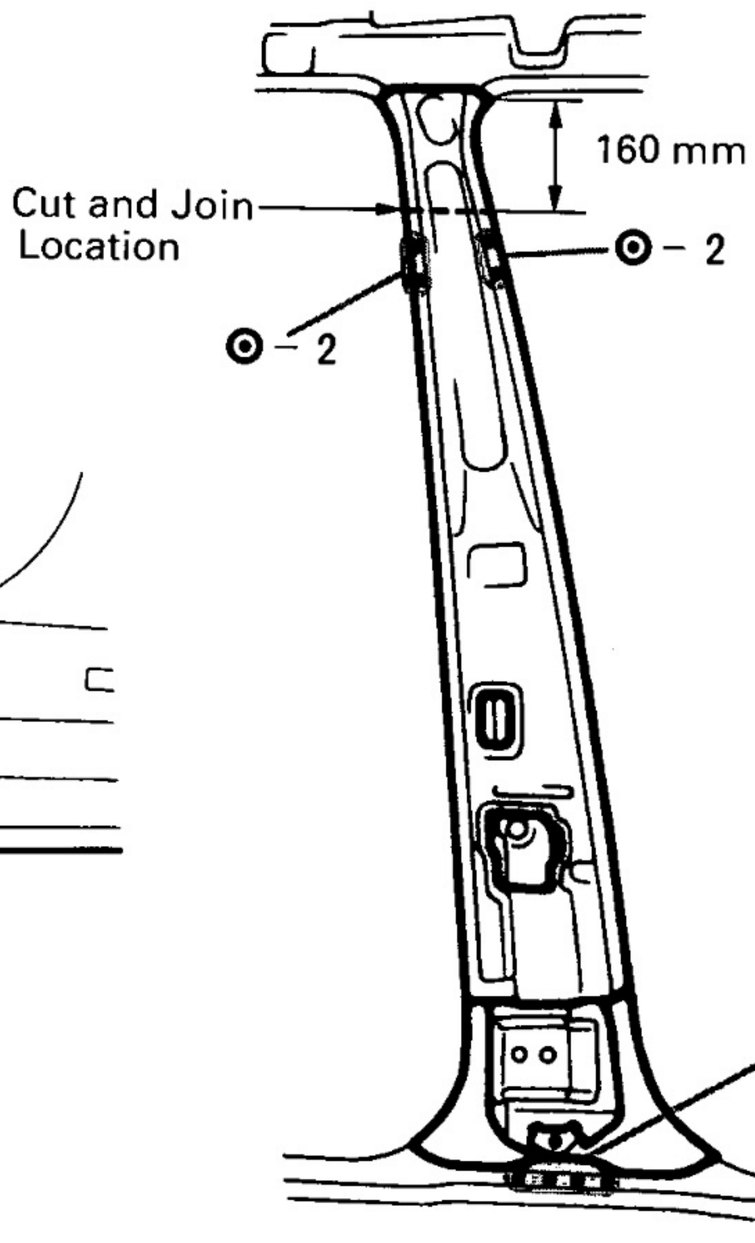


REMOVAL

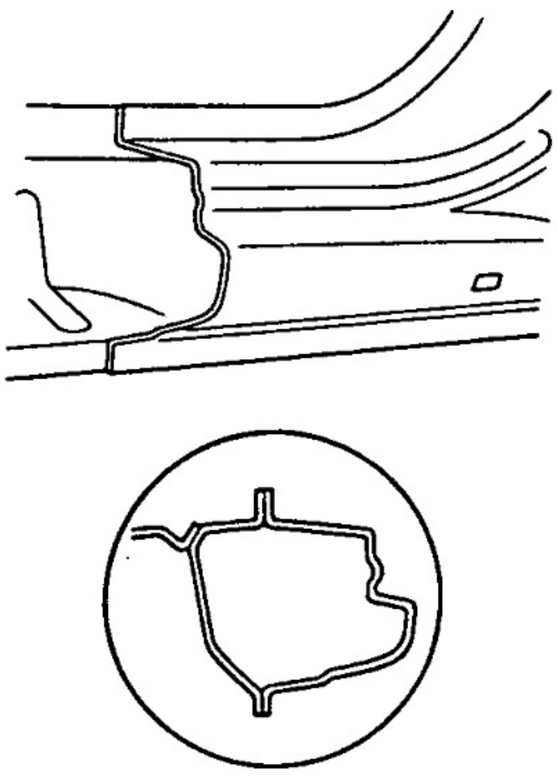


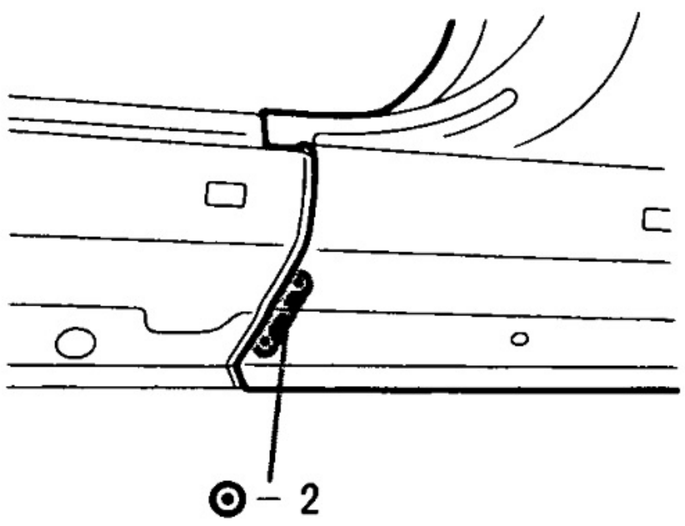
[Cut and Join Location]





[Cut and Join Location]

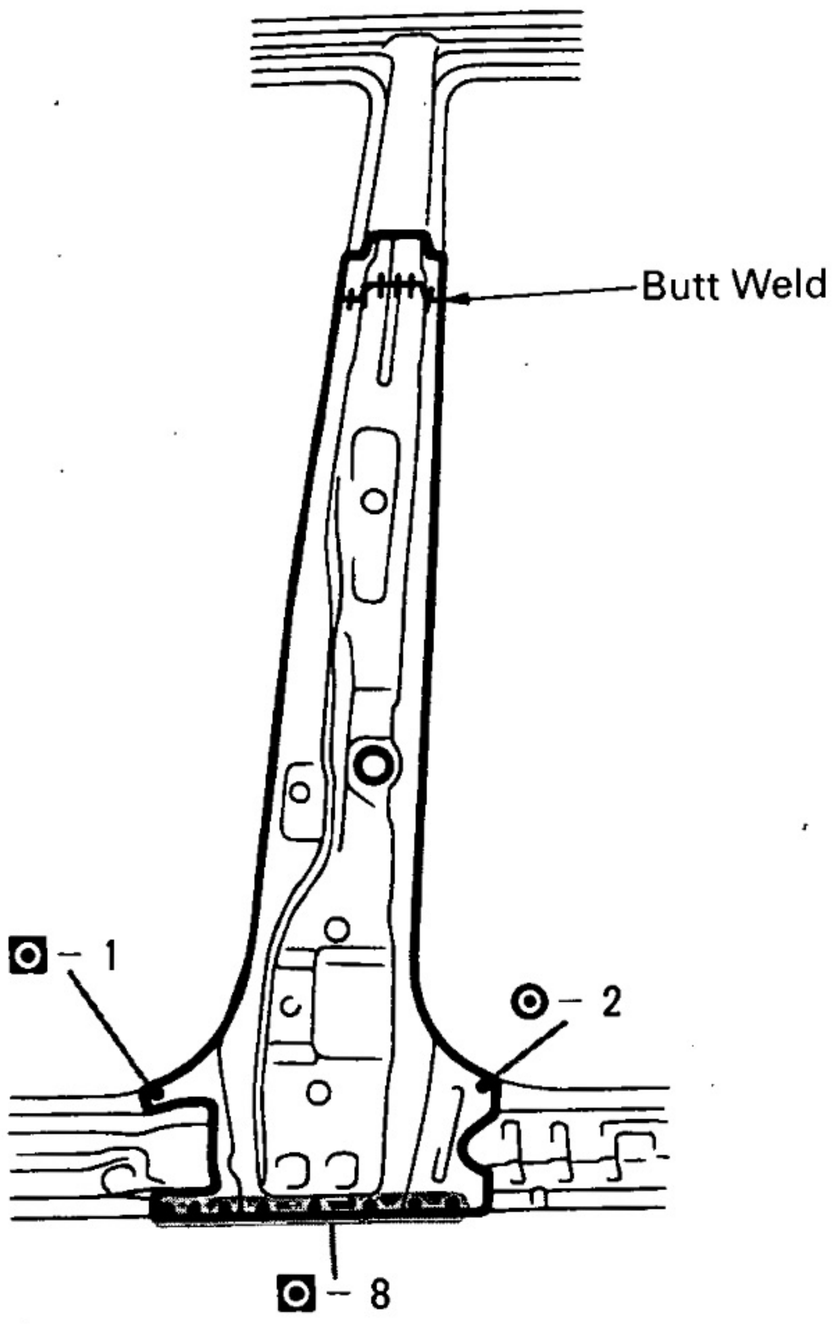


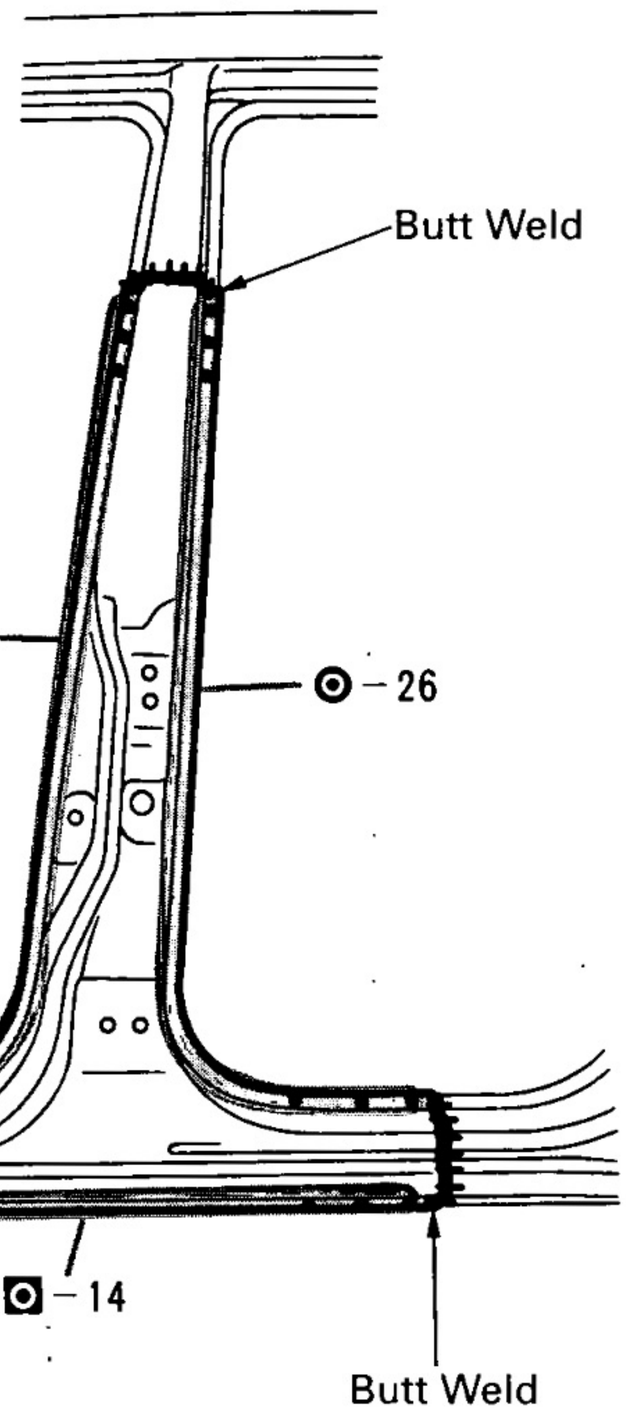


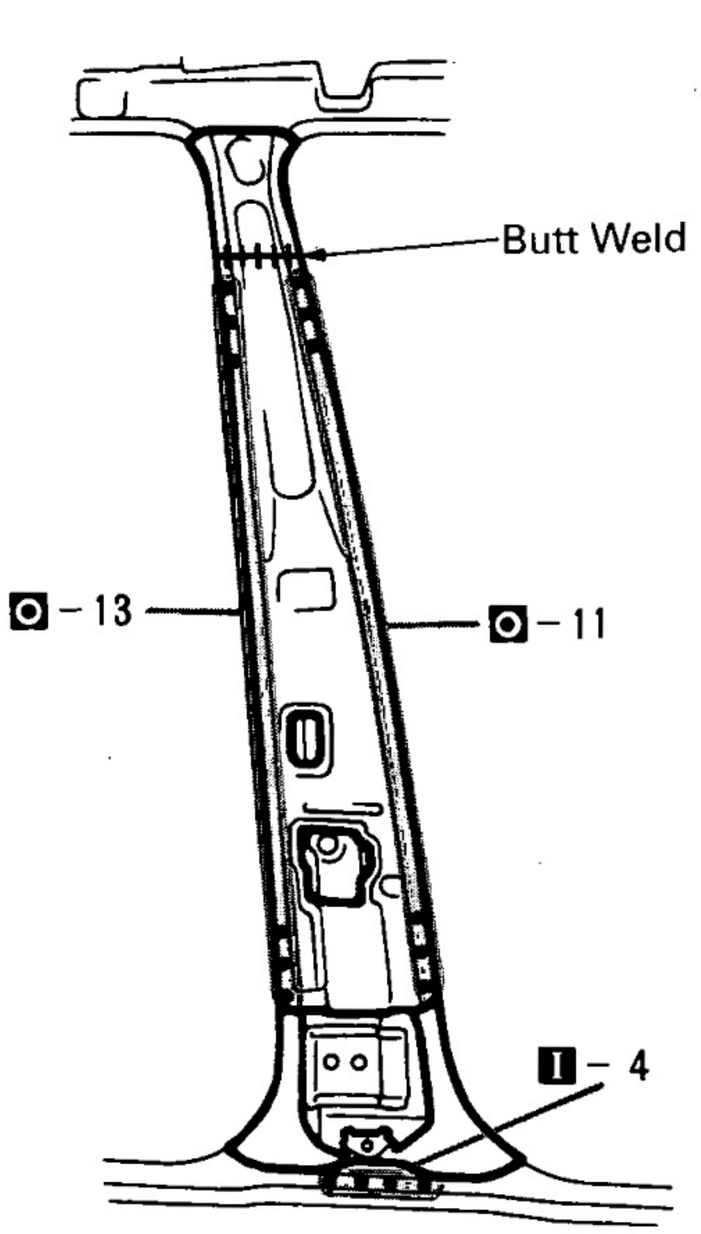
mm	in.
40	1.57
160	6.30

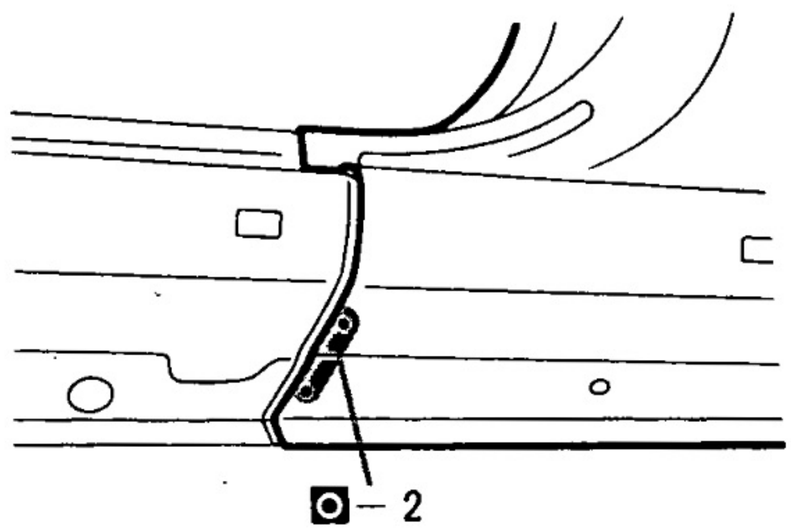
1. Cut and join the parts at the location shown above.
2. As shown above, cut and join the outer pillar and reinforcement at position shifted about 40 mm (1.57 in.).

INSTALLATION



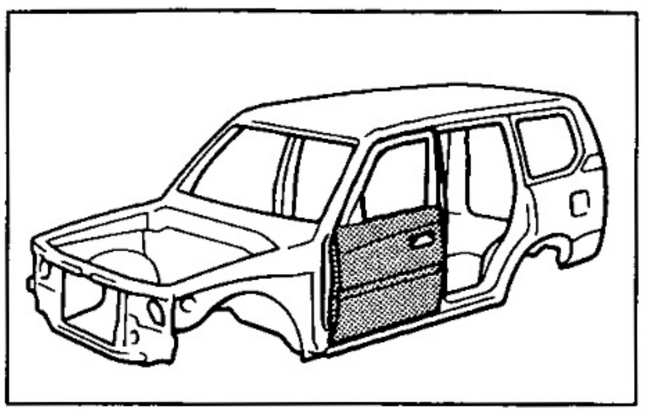




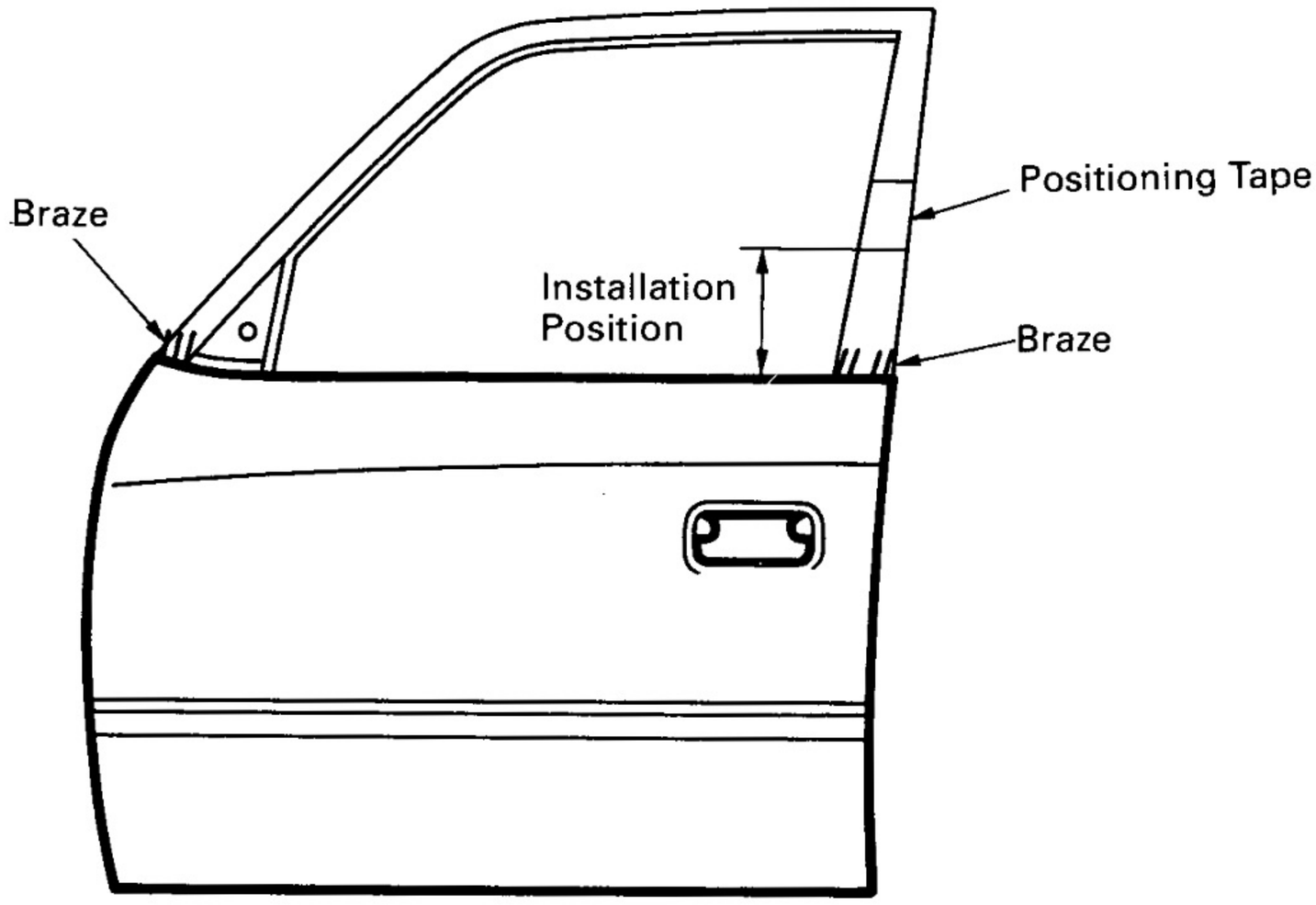


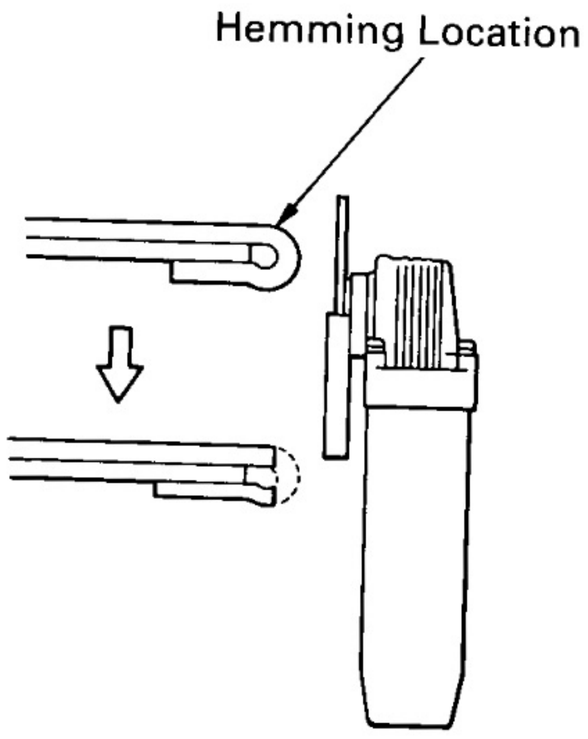
1. Temporarily install the new parts and measure each part in accordance with the body dimension diagram.
2. Before welding the new parts, check the fit of the front door and rear door.
3. After welding the reinforcement to the vehicle side, install the inner pillar.

FRONT DOOR OUTER PANEL (ASSY)



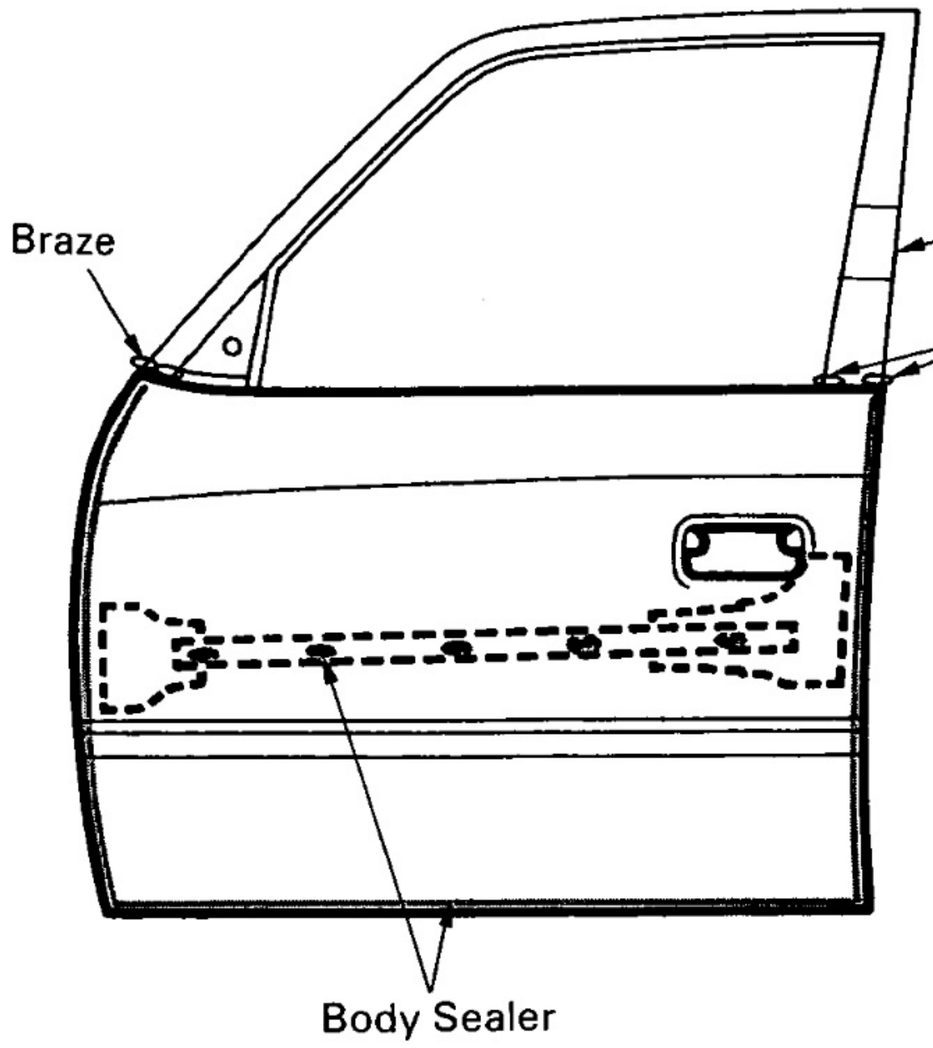
REMOVAL

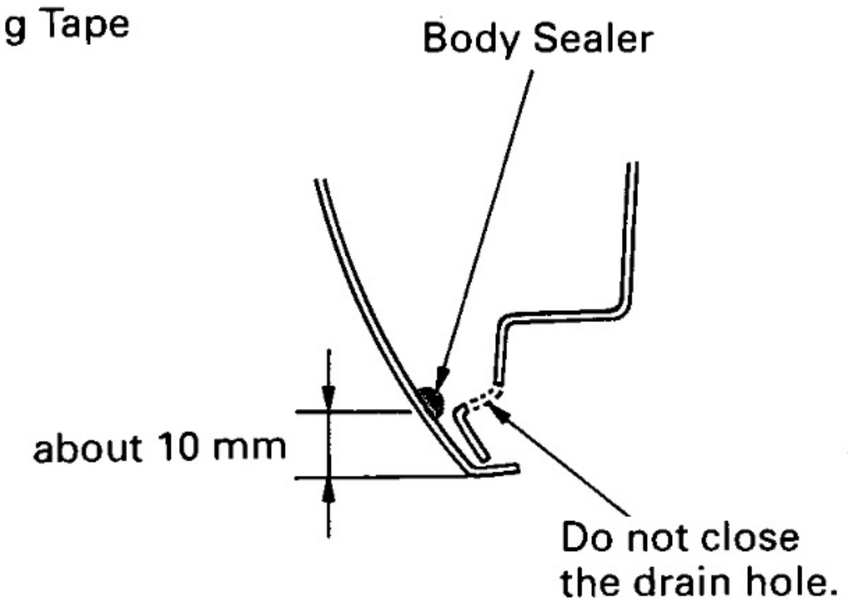


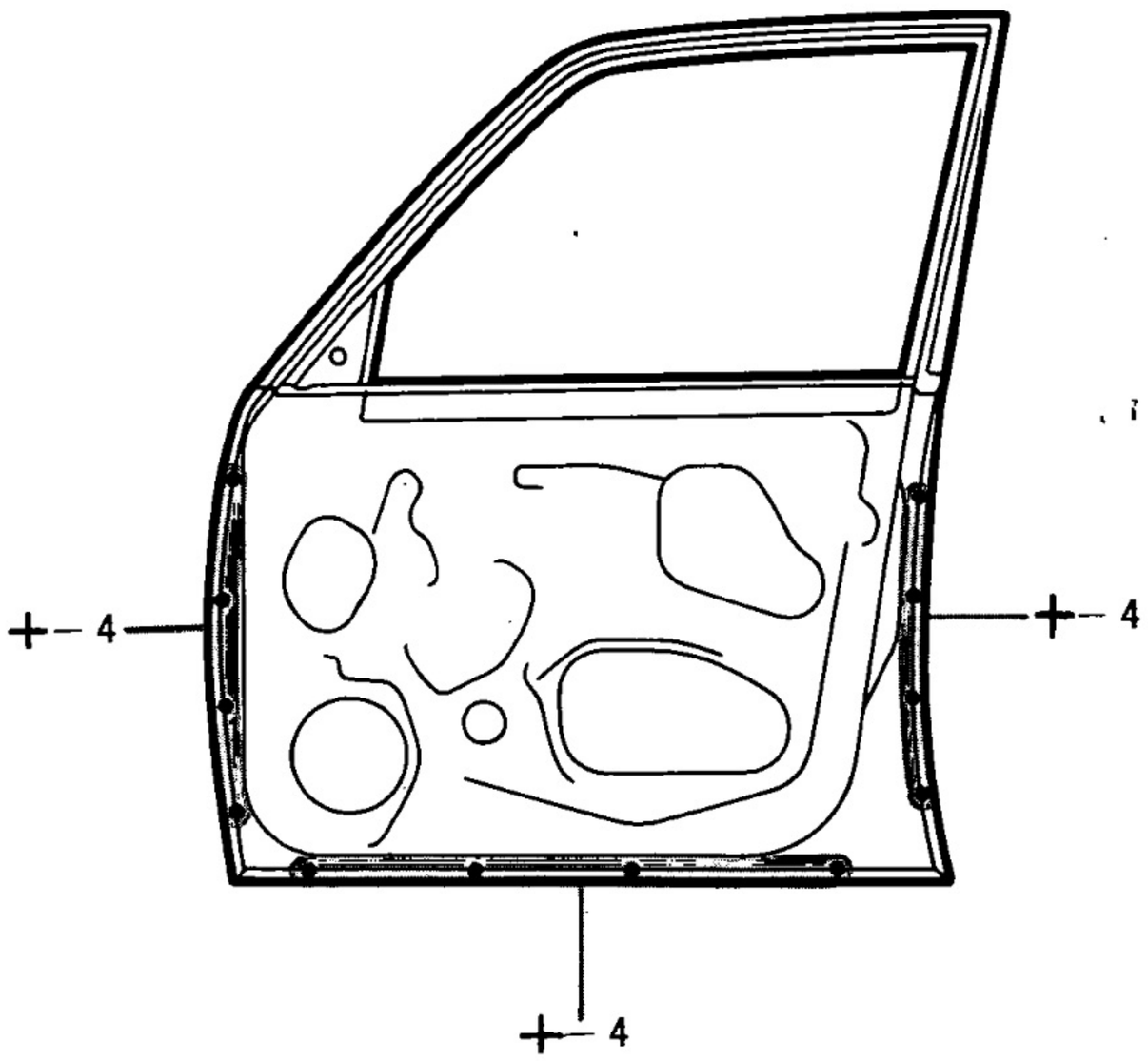


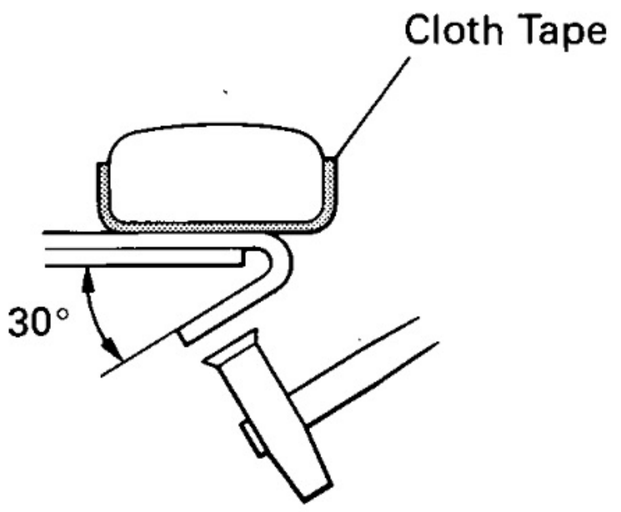
1. Before removing the outer panel, make the installation position with a tape.
2. After grinding off the hemming location, remove the outer panel.

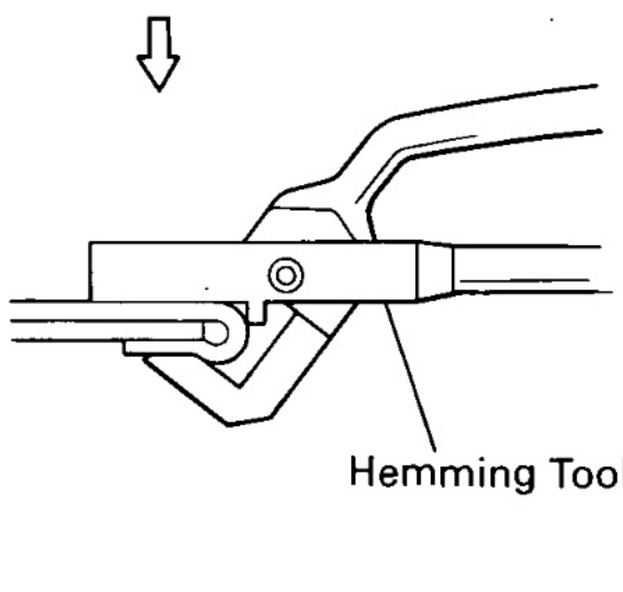
INSTALLATION











mm	in.
10	0.39

1. Before temporarily installing the new parts, apply body sealer to the reinforcement, side impact protection beam and back side of the new parts.

HINT:

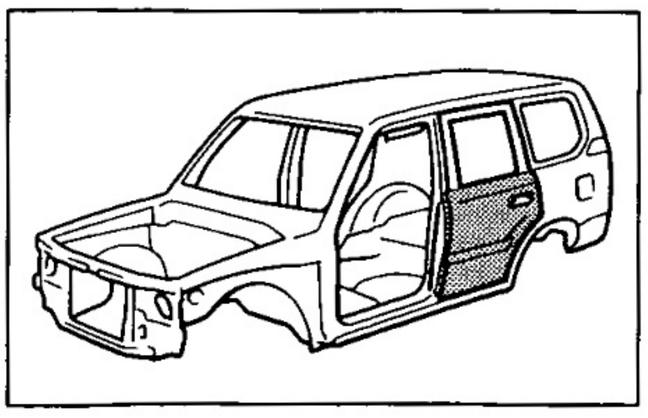
1) Apply sealer evenly about 10 mm (0.39 in.) from the flange and 3 mm (0.12 in.) in diameter to the outer panel and apply just enough sealer for the reinforcement and side impact protection beam to make contact.
2) For other sealing points, refer to section AR.

2. Bend the flange hem about 30° with a hammer and dolly, then fasten tightly with a hemming tool.

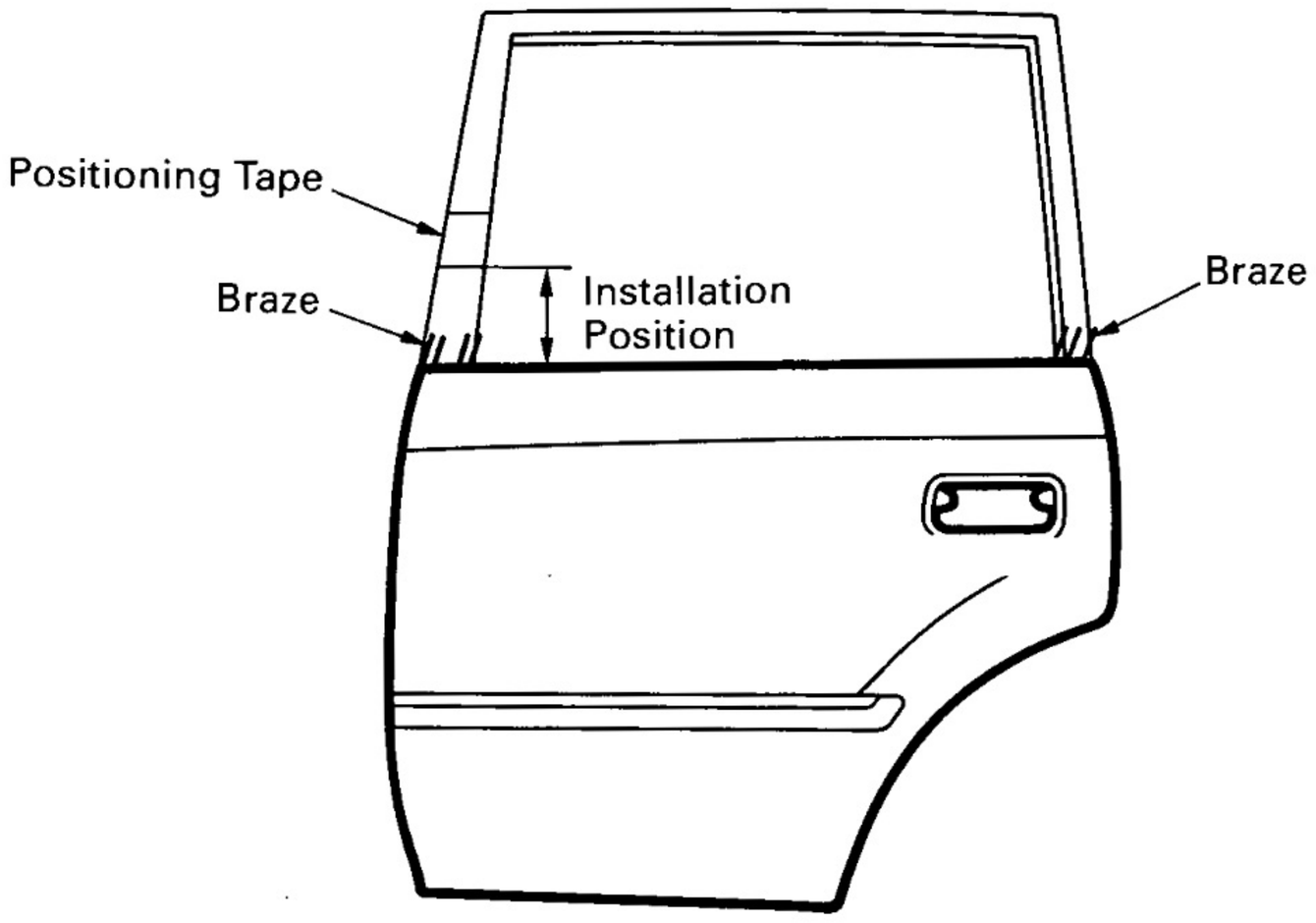
HINT:

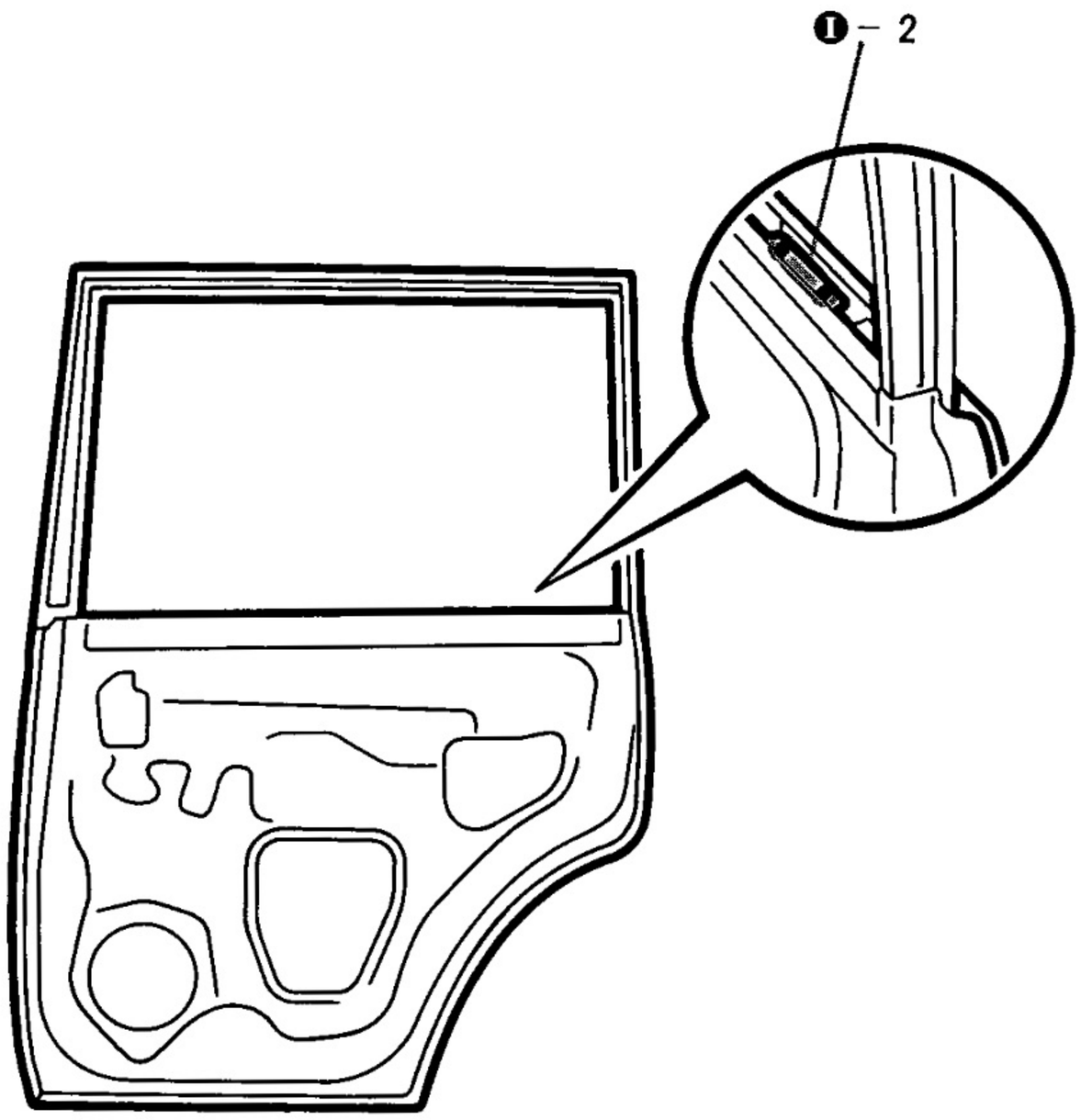
1) Perform hemming in three steps, being careful not to warp the panel.
2) If a hemming tool cannot be used, hem with a hammer and dolly.

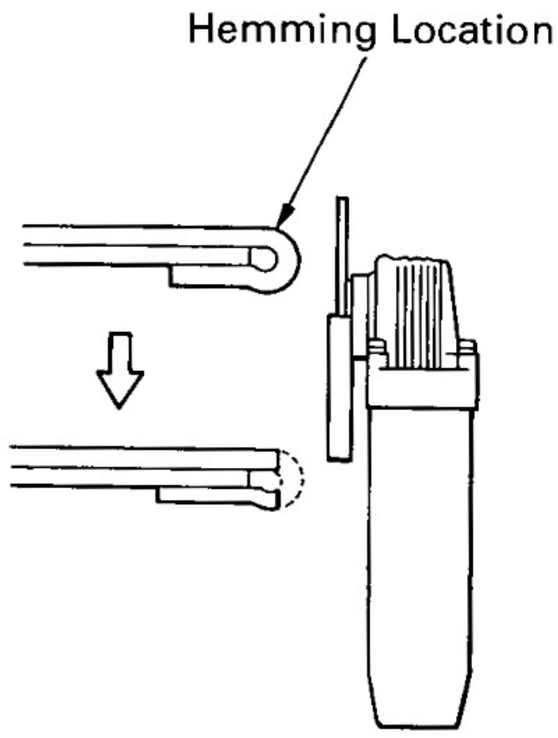
REAR DOOR OUTER PANEL (ASSY)



REMOVAL

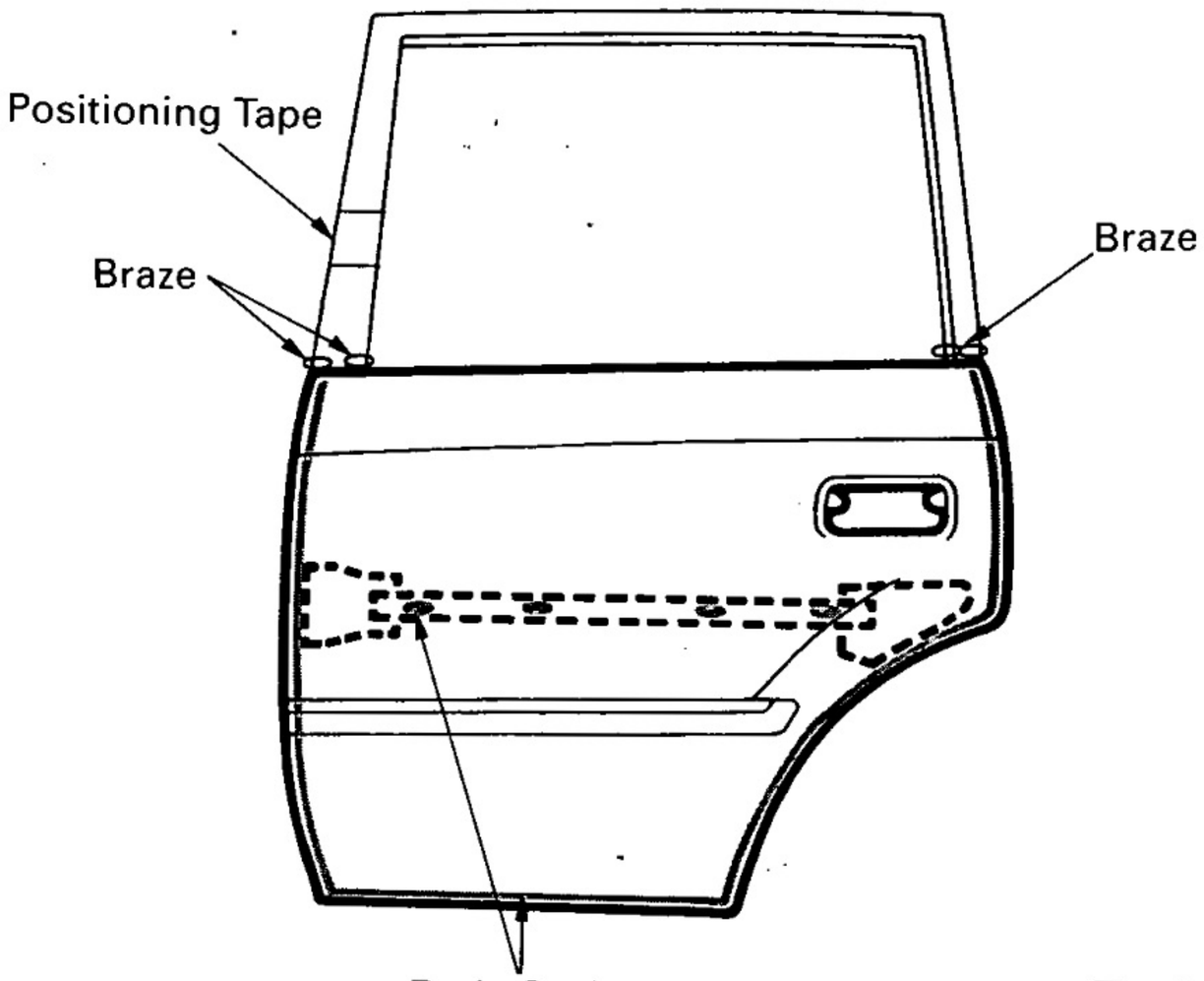


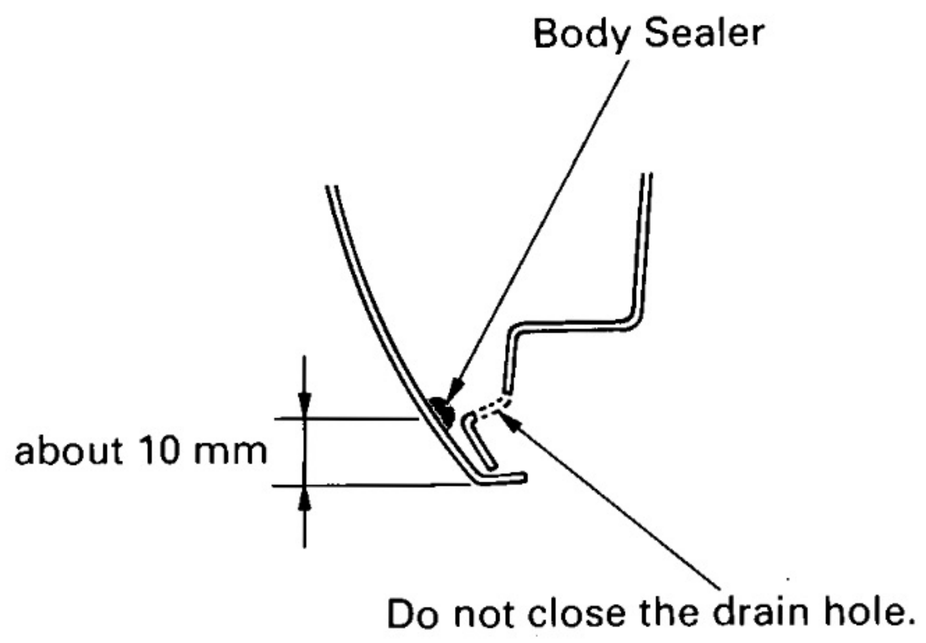


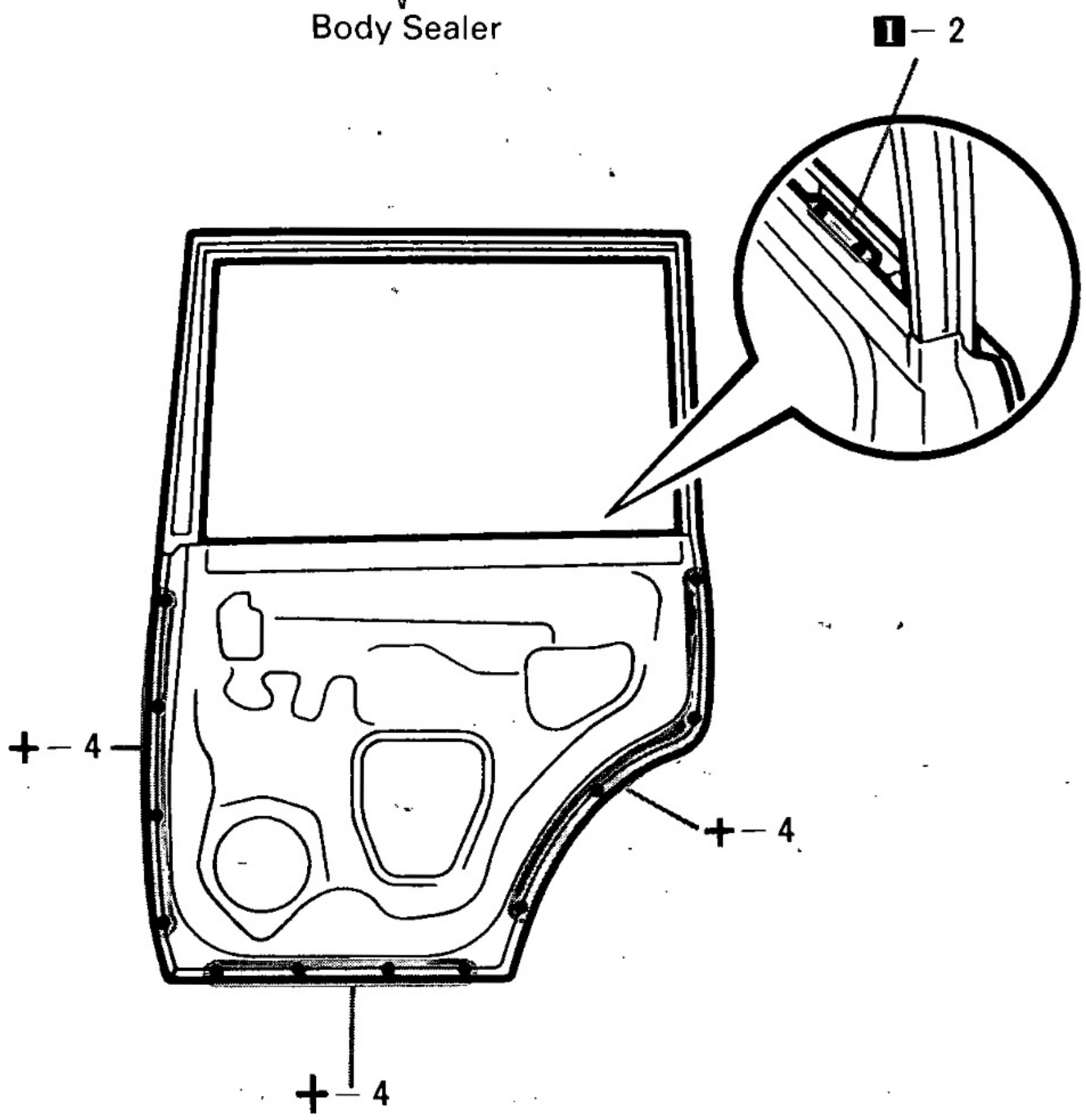


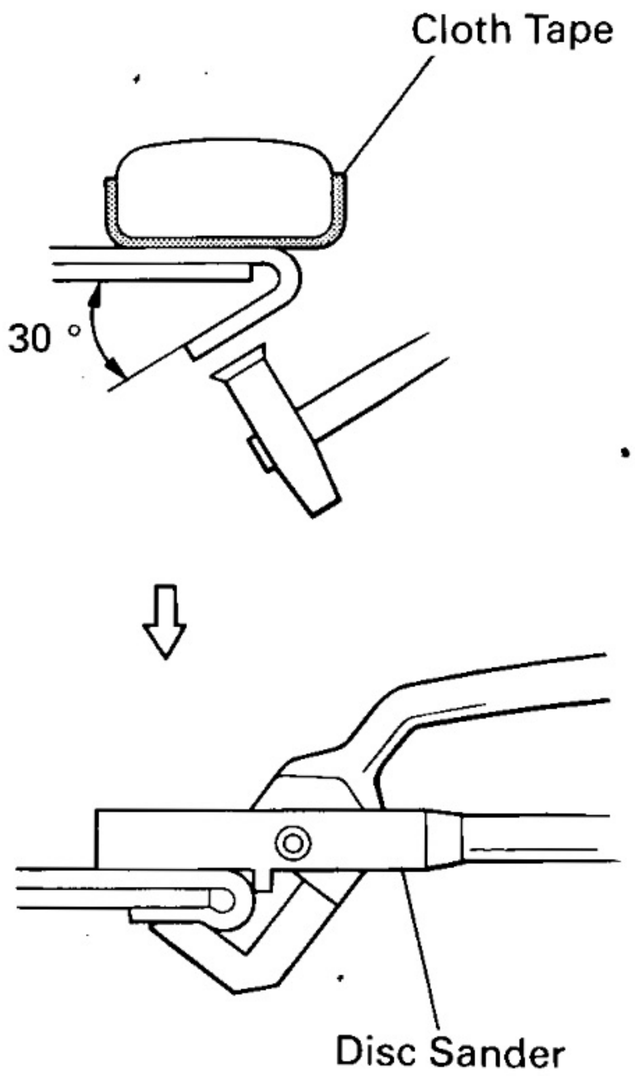
1. Before removing the outer panel, make the installation position with a tape.
2. After grinding off the hemming location, remove the outer panel.

INSTALLATION









mm	in.
10	0.39

1. Before temporarily installing the new parts, apply body sealer to the side impact protection beam and back side of the new parts.

HINT:

1) Apply sealer evenly about 10 mm (0.39 in.) from the flange and 3 mm (0.12 in.) in diameter to the outer panel and apply just enough sealer for the side impact protection beam to make contact.

2) For other sealing points, refer to section AR.

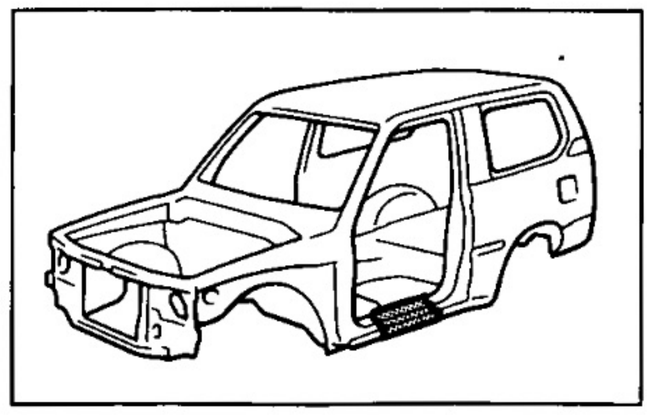
2. Bend the flange hem about 30° with a hammer and dolly, then fasten tightly with a hemming tool.

HINT:

1) Perform hemming in three steps, being careful not to warp the panel.

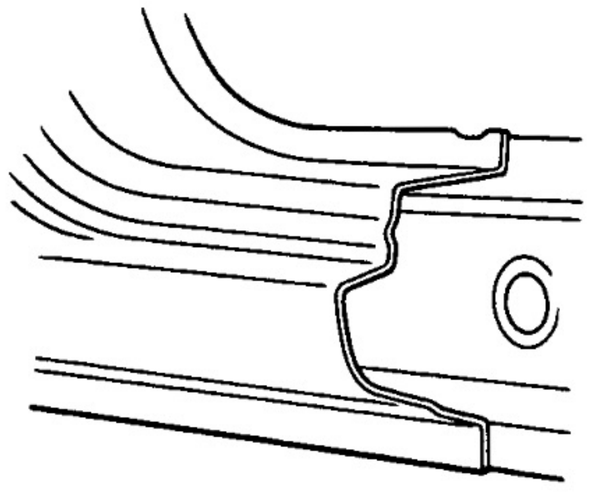
2) If hemming tool cannot be used, hem with a hammer and dolly.

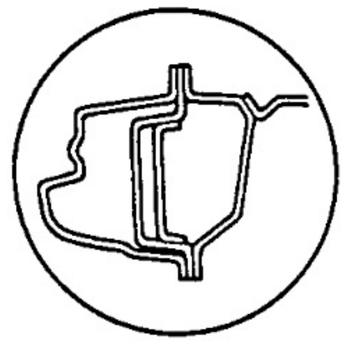
ROCKER OUTER PANEL (CUT): 3-Door



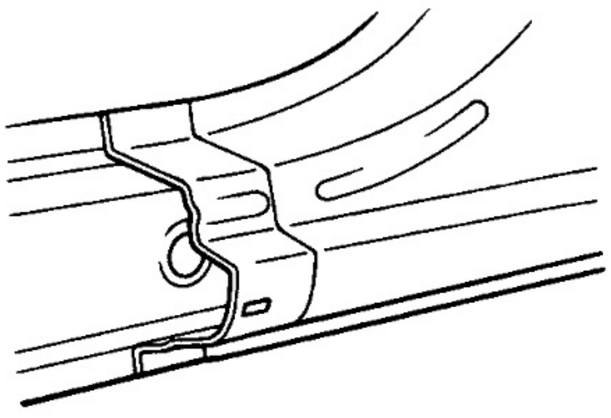
REMOVAL

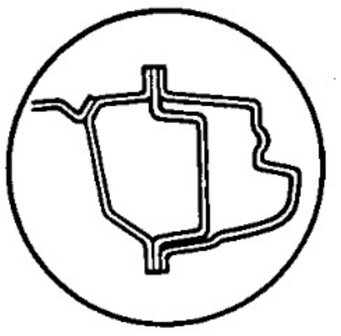
[Cut and Join Location]

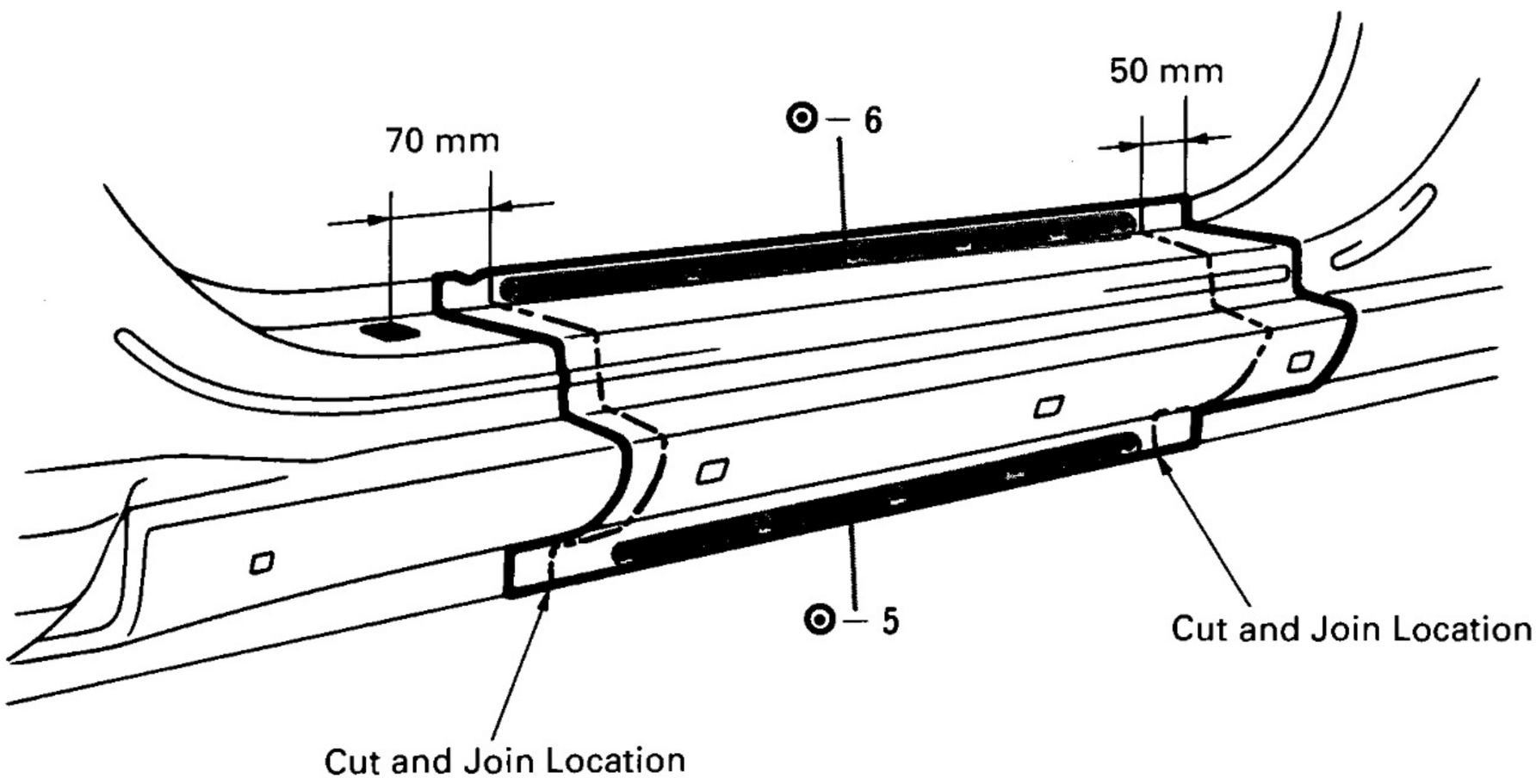




[Cut and Join Location]





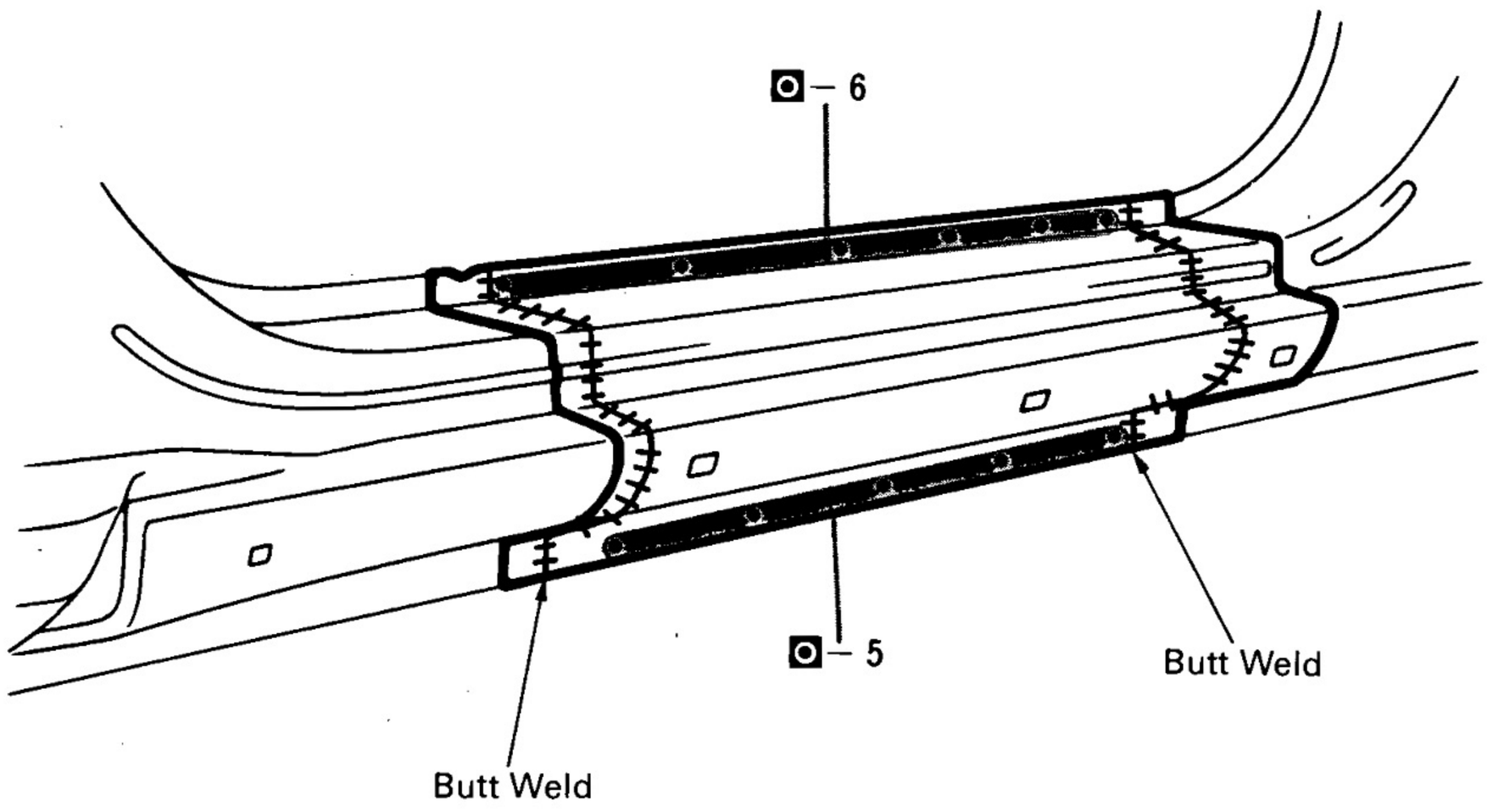


mm	in.
50 70	1.97 2.76

1. Cut and join the parts at the location shown above.

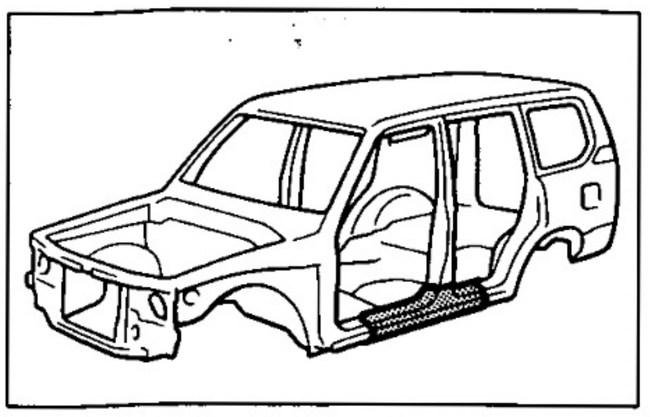
HINT: Take care not to damage the internal reinforcement.

INSTALLATION

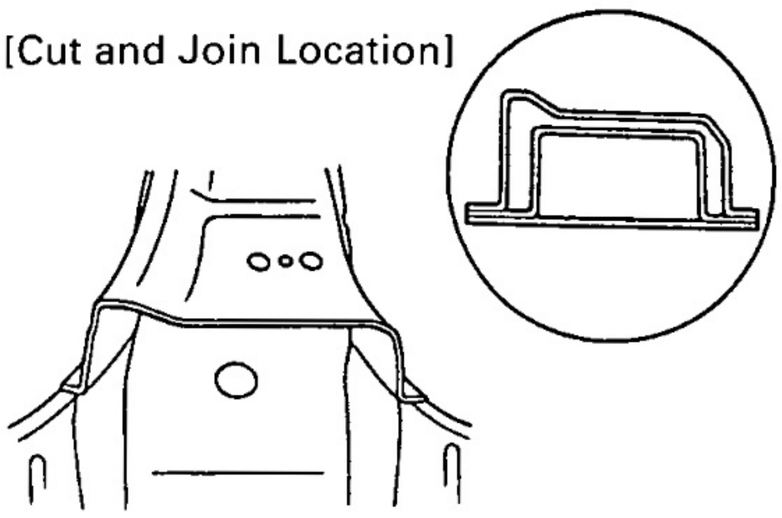


1. Temporarily install the new parts and check the fit for the front door.

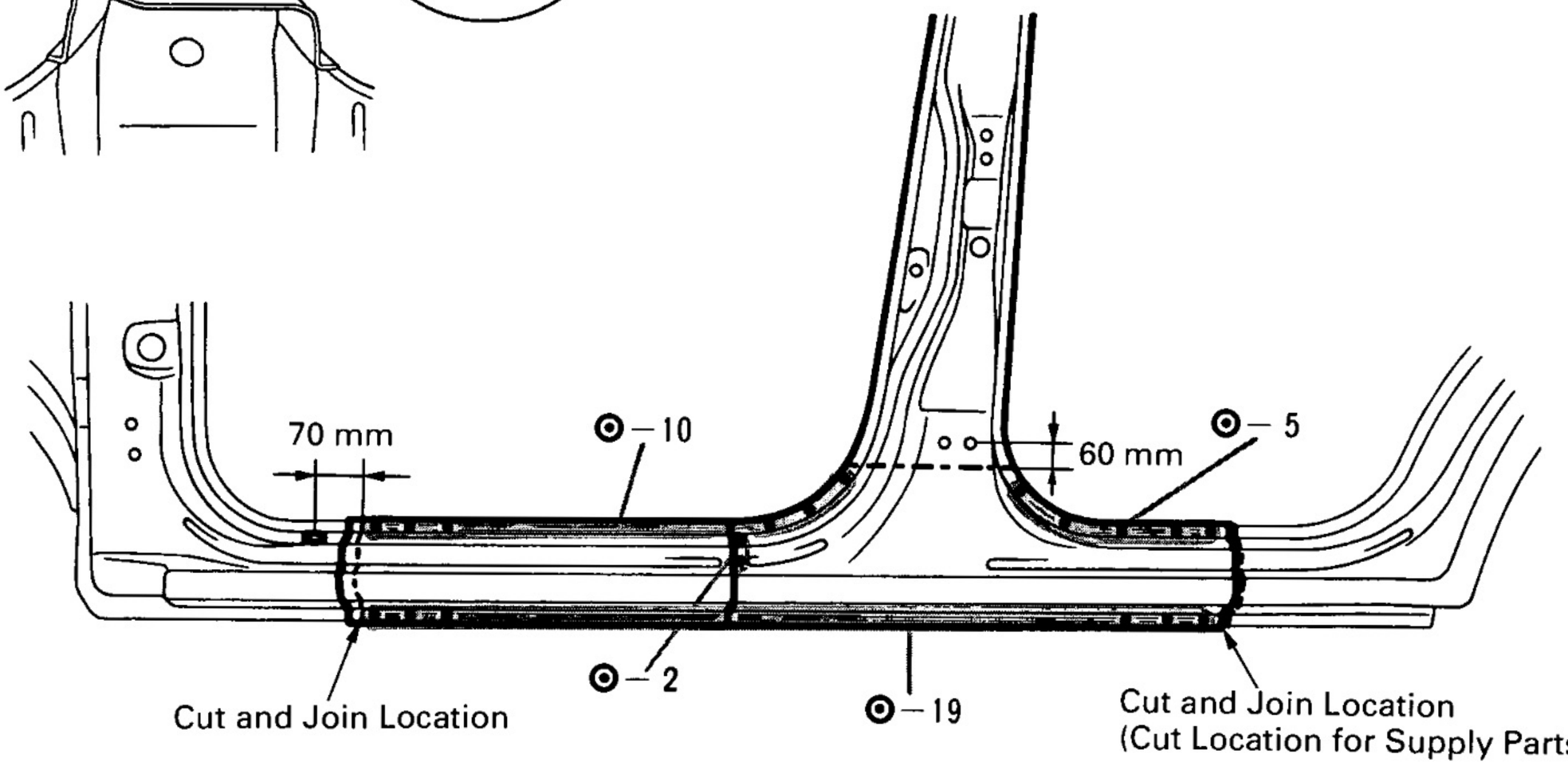
ROCKER OUTER PANEL (CUT): 5-Door

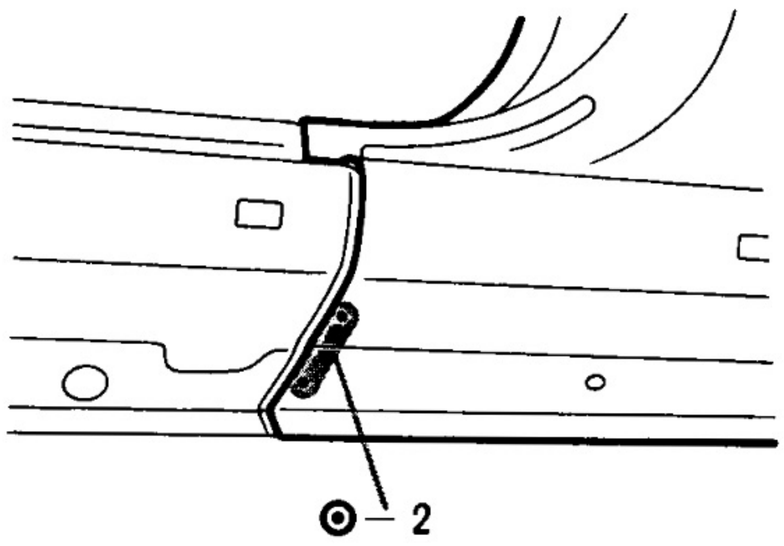


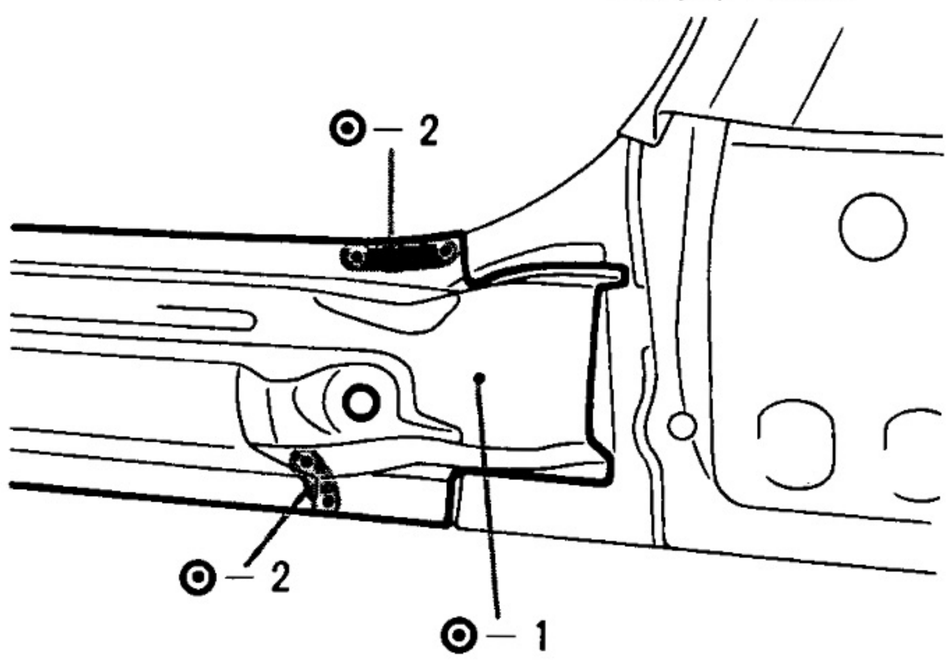
REMOVAL



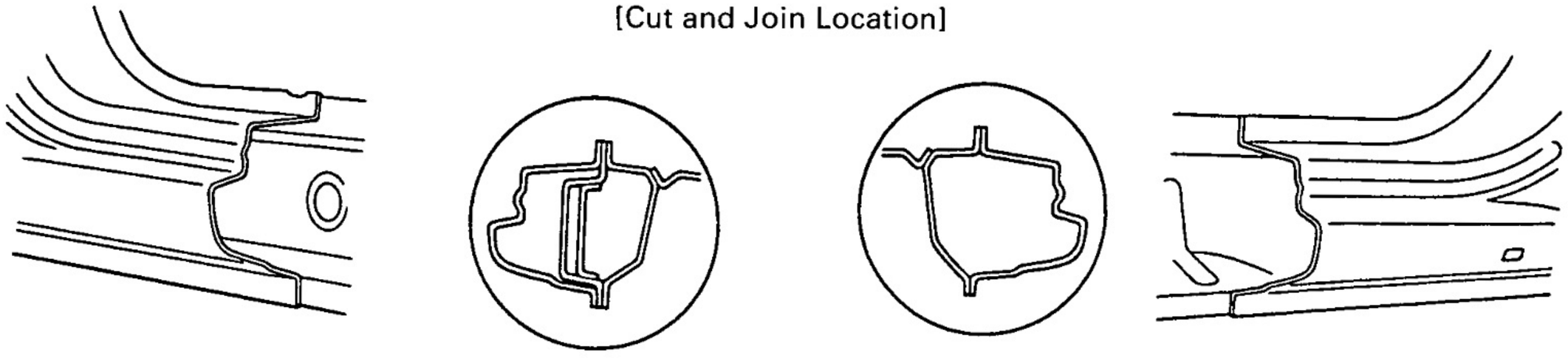
[Cut and Join Location]







[Cut and Join Location]



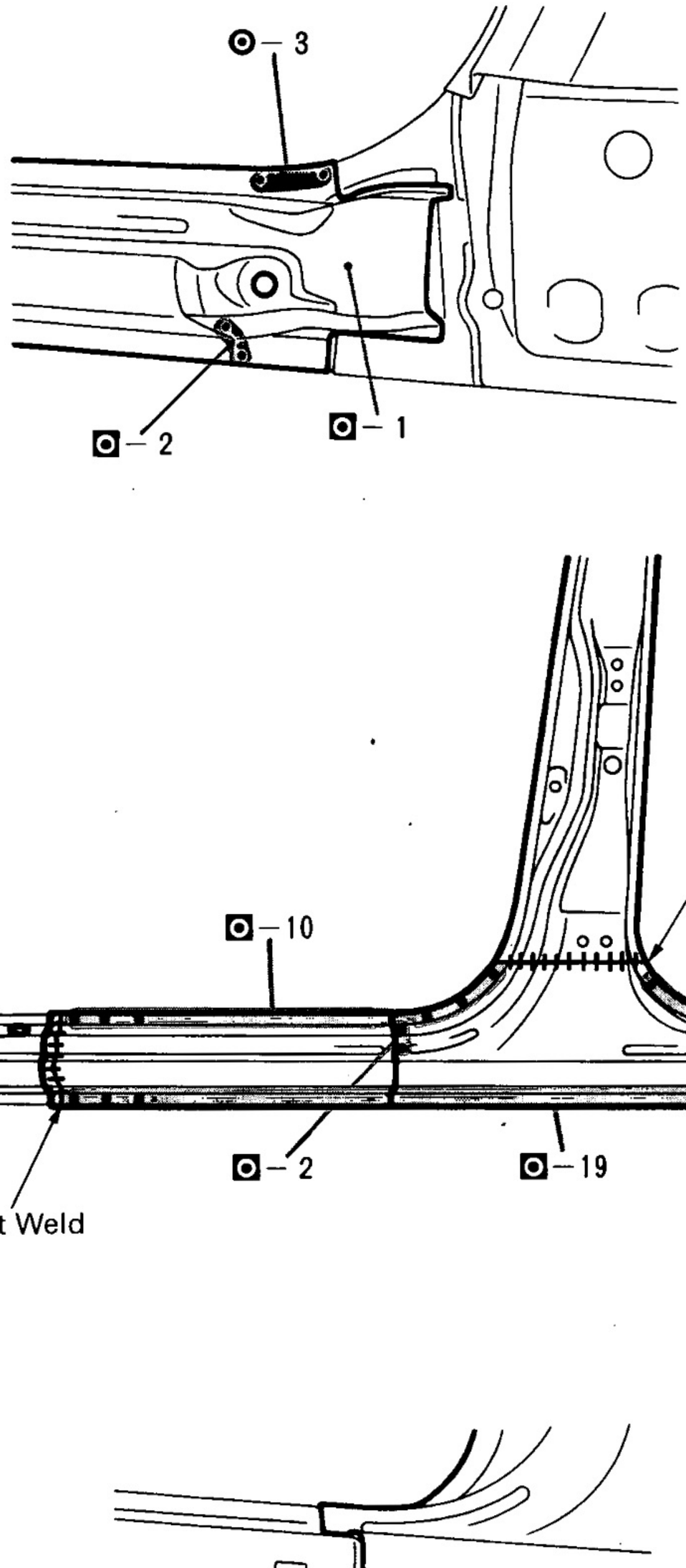
mm	in.
60 70	2.36 2.76

1. Cut and join the parts at the location shown above.

HINT: Take care not to damage the internal reinforcement.

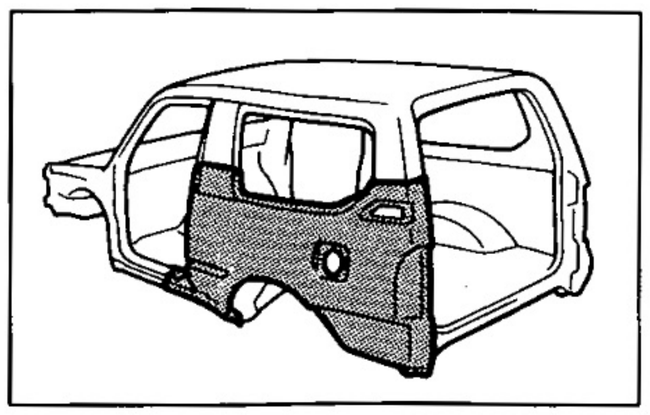
2. After removing the rear door side's outer panel, replace the front door side's outer panel.

INSTALLATION

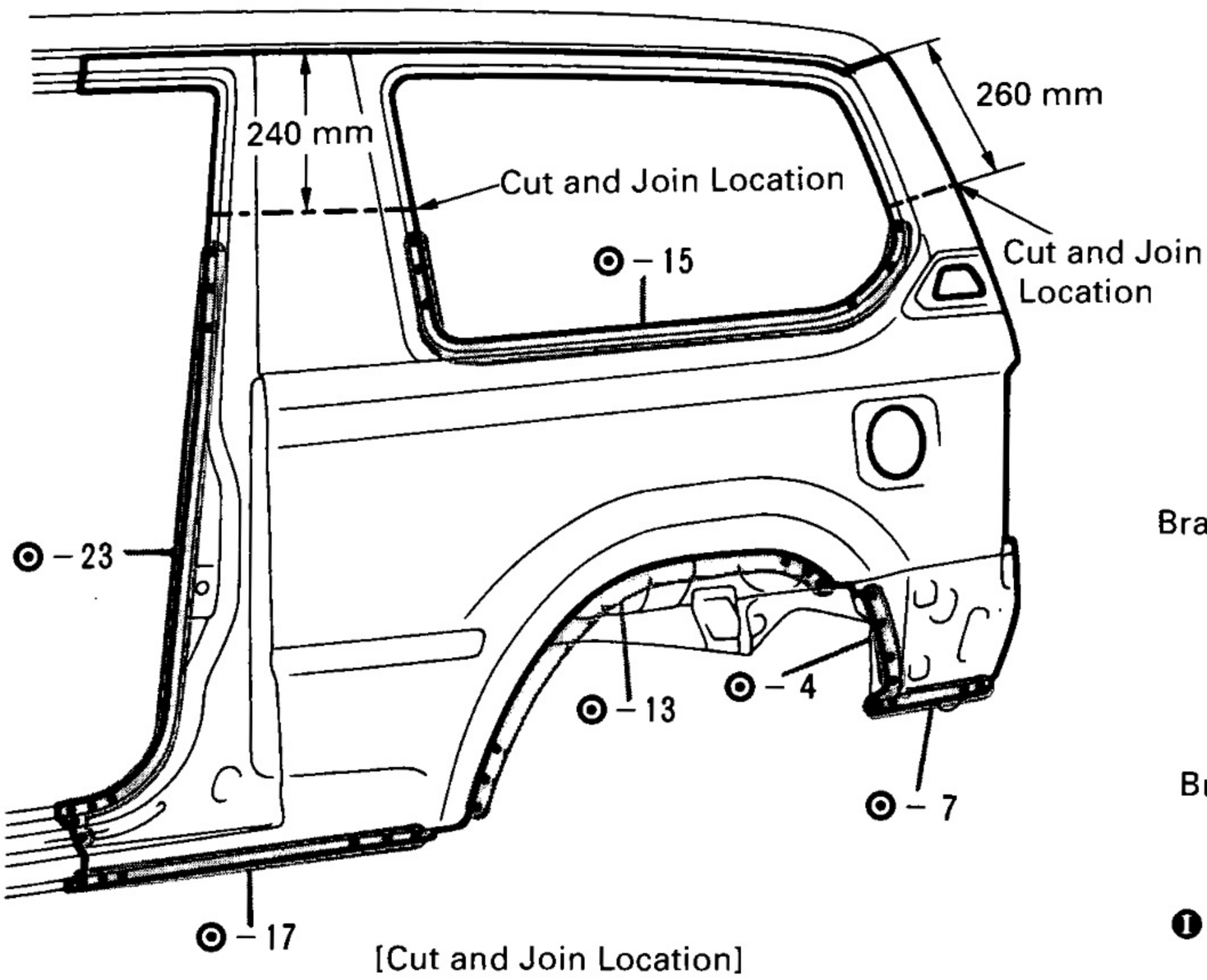


1. Temporarily install the new parts and check the fit for the front door and rear door.

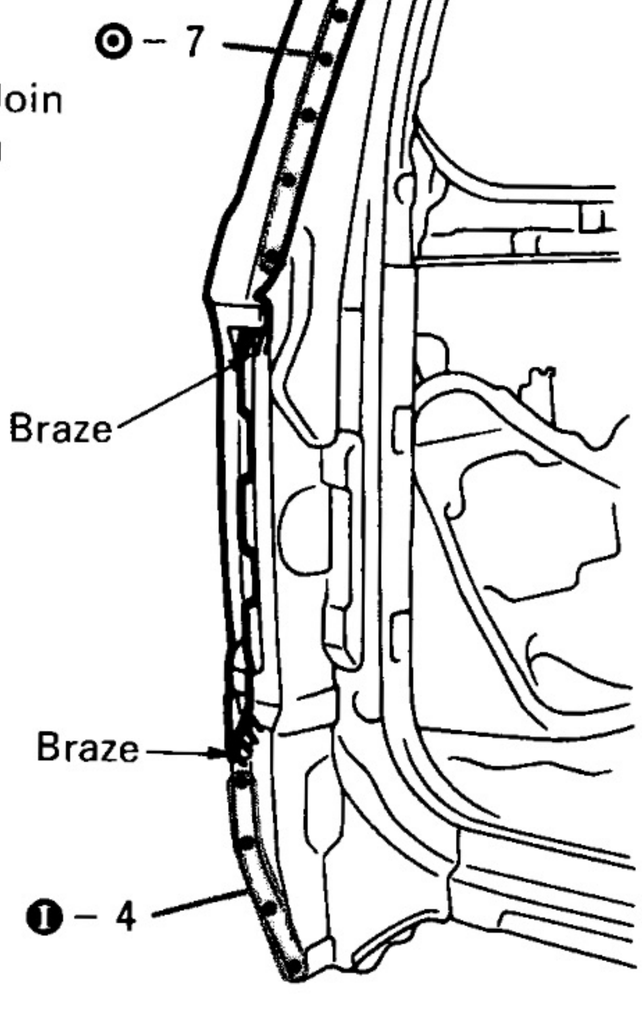
QUARTER PANEL (CUT): 3-Door

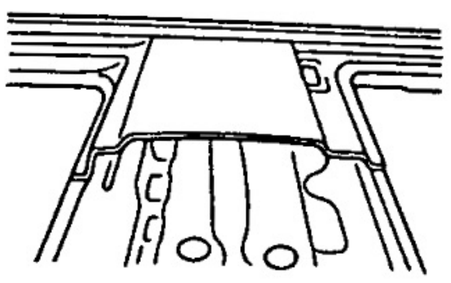


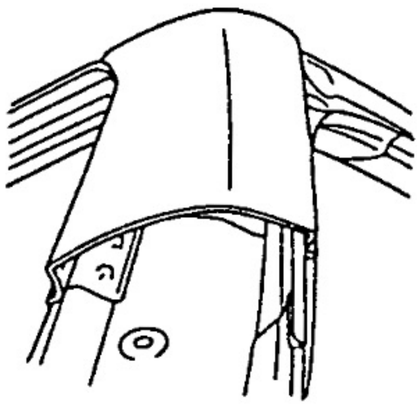
REMOVAL

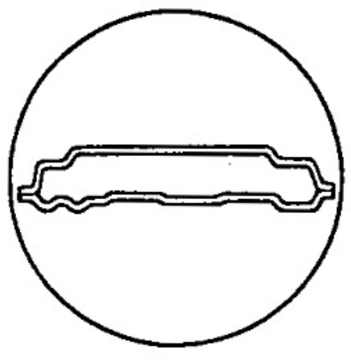


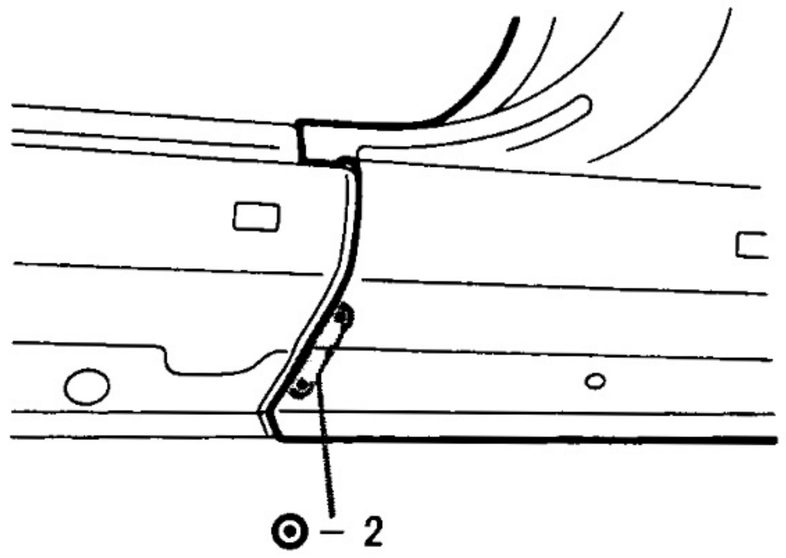
[Cut and Join Location]









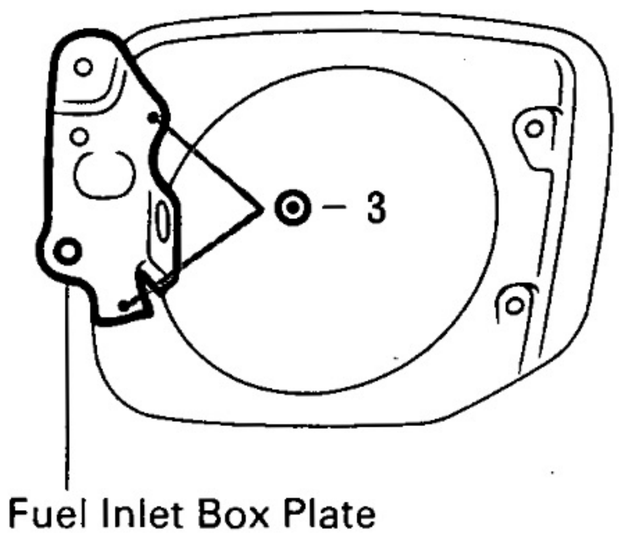


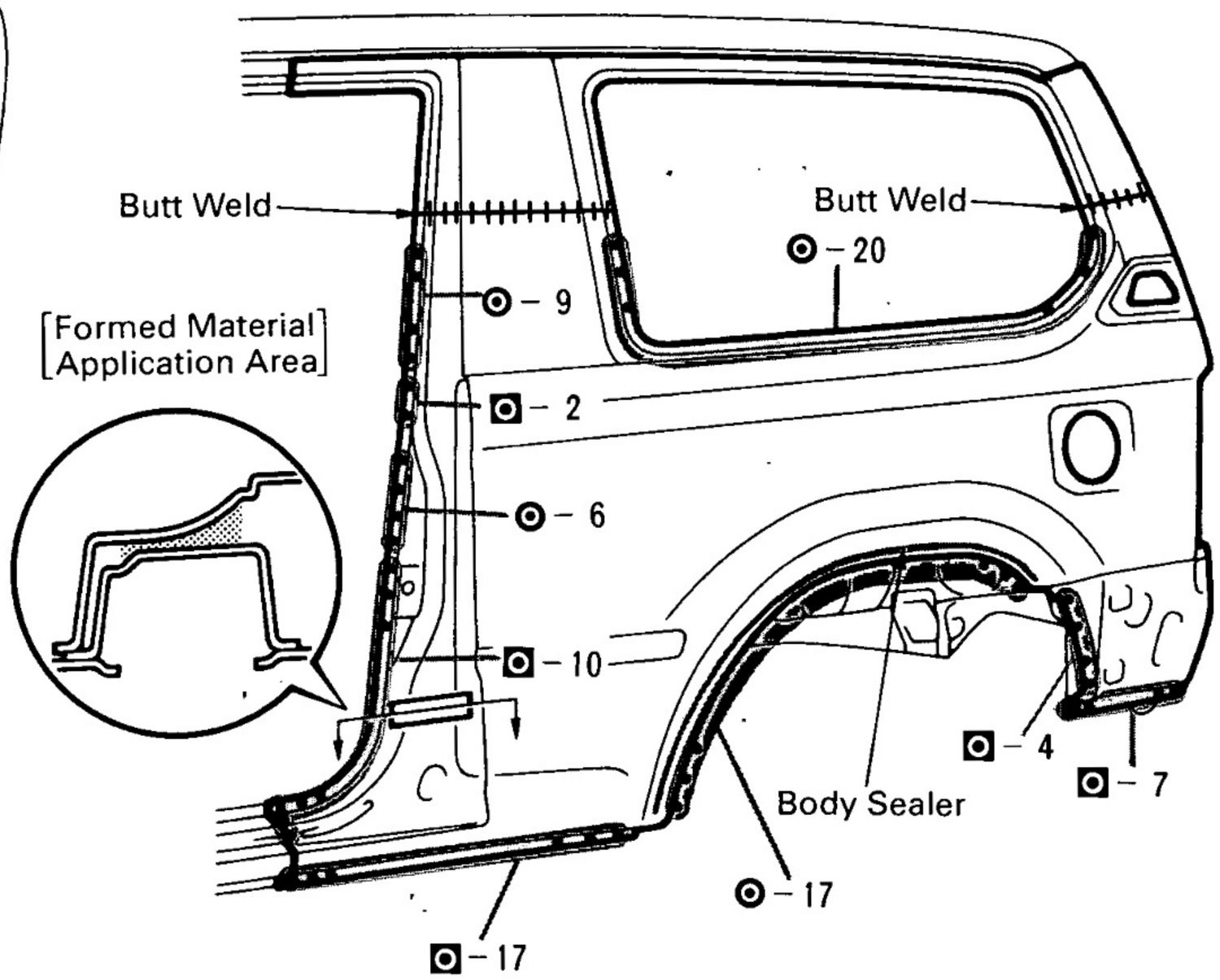
1. Cut and join the parts at the location above.

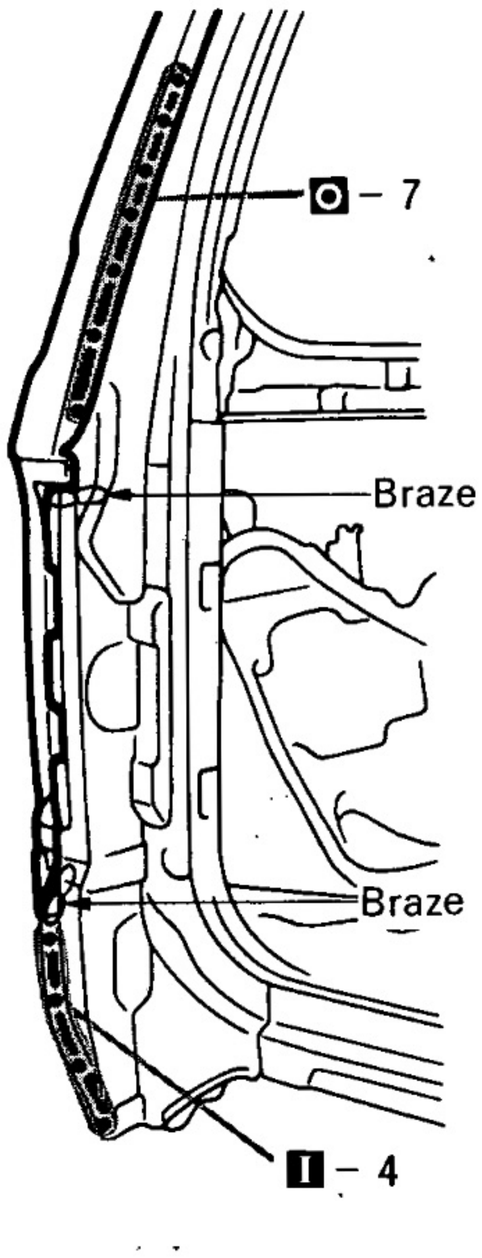
HINT: Remove the drain hose of sunroof.

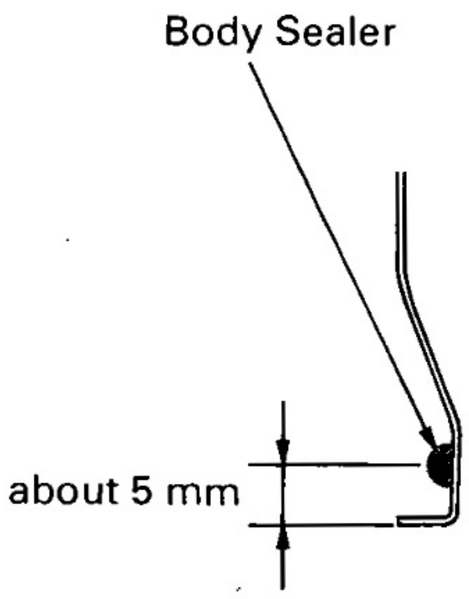
mm	in.
240 260	9.45 10.24

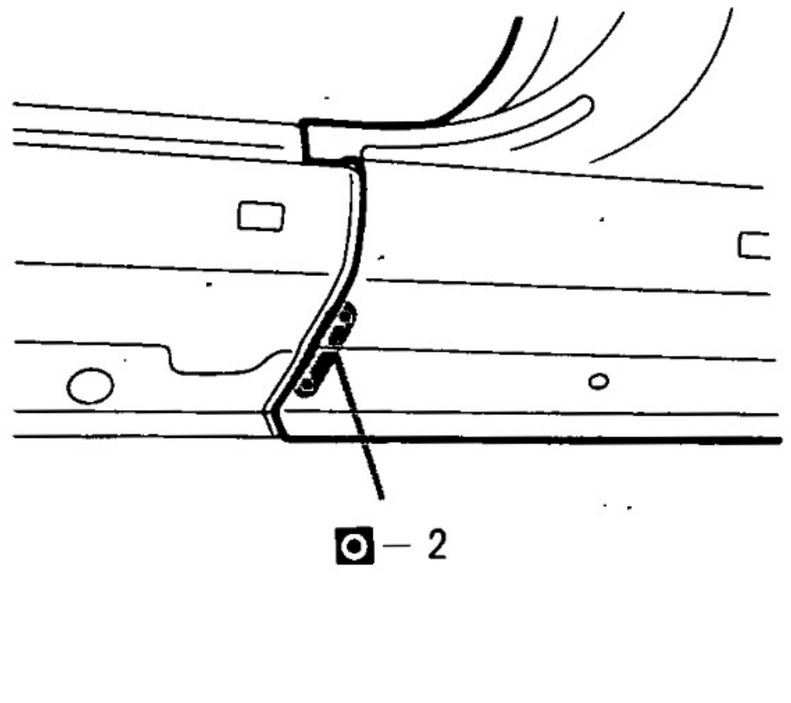
INSTALLATION











mm	in.
5	0.20

1. Before temporarily installing the new parts, apply body sealer to the wheel arch.

HINT:

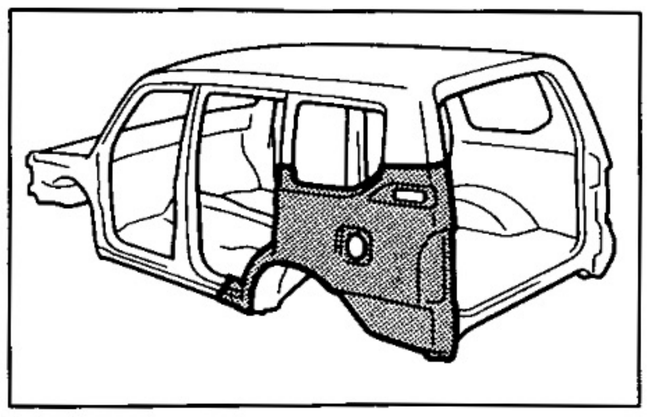
1) Apply body sealer about 5 mm (0.20 in.) from the flange, avoiding any oozing.

2) Apply sealer evenly, about 3 – 4 mm (0.12 – 0.16 in.) in diameter.

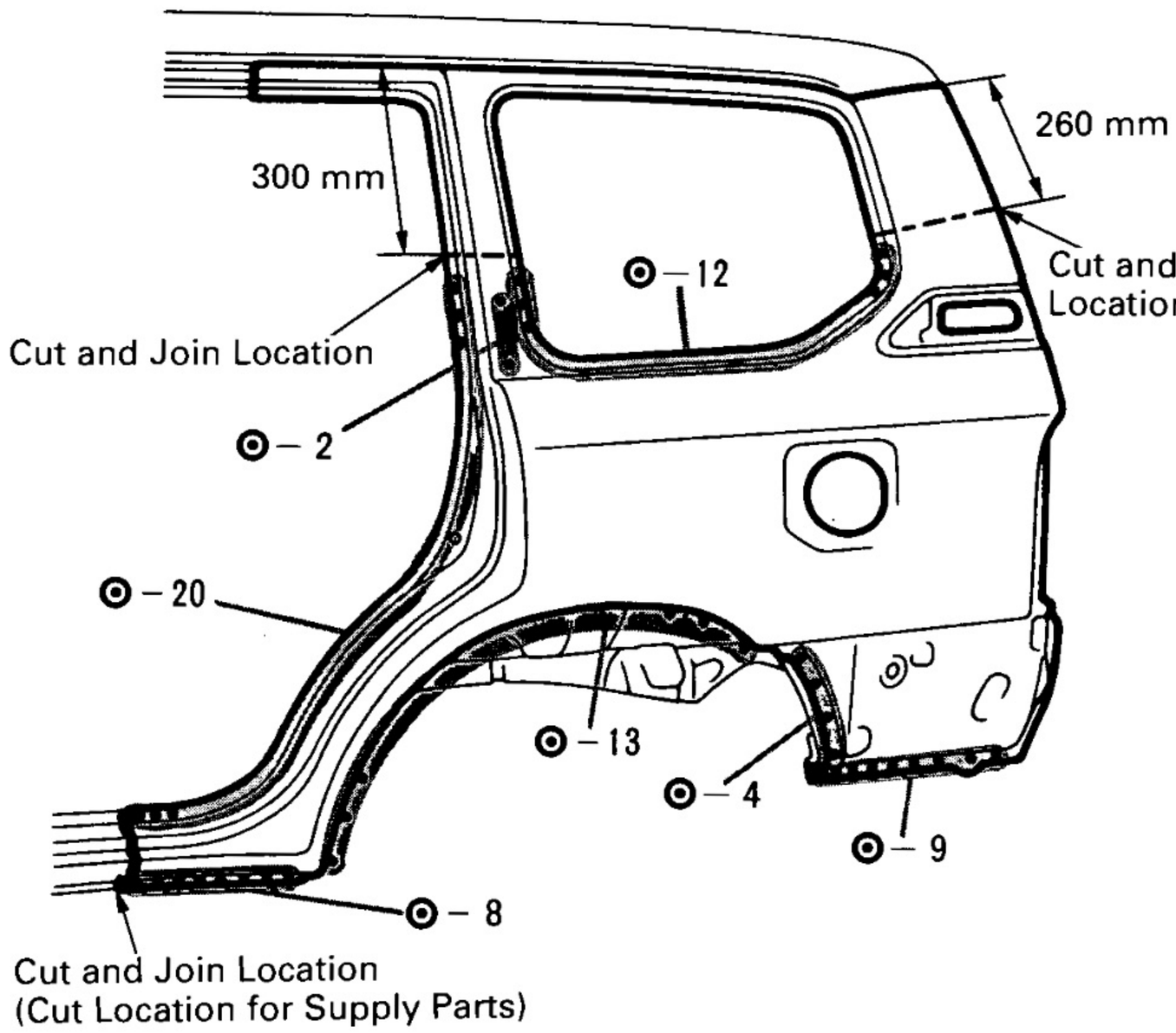
3) For other sealing points, refer to Section AR.

2. Before temporarily installing the new parts, weld the fuel inlet box plate with standard points.
3. Temporarily install the new parts and check the fit of the front door, back door and rear combination light.
4. After installing the new parts apply fomed material.

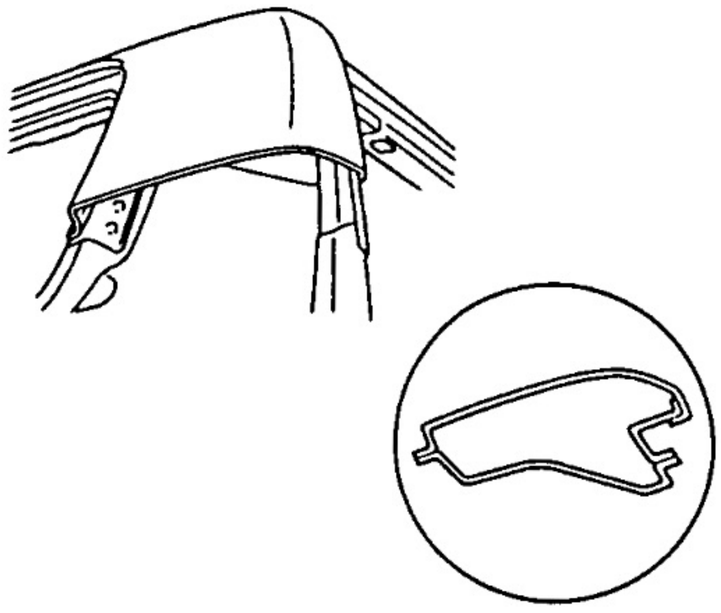
QUARTER PANEL (CUT): 5-Door



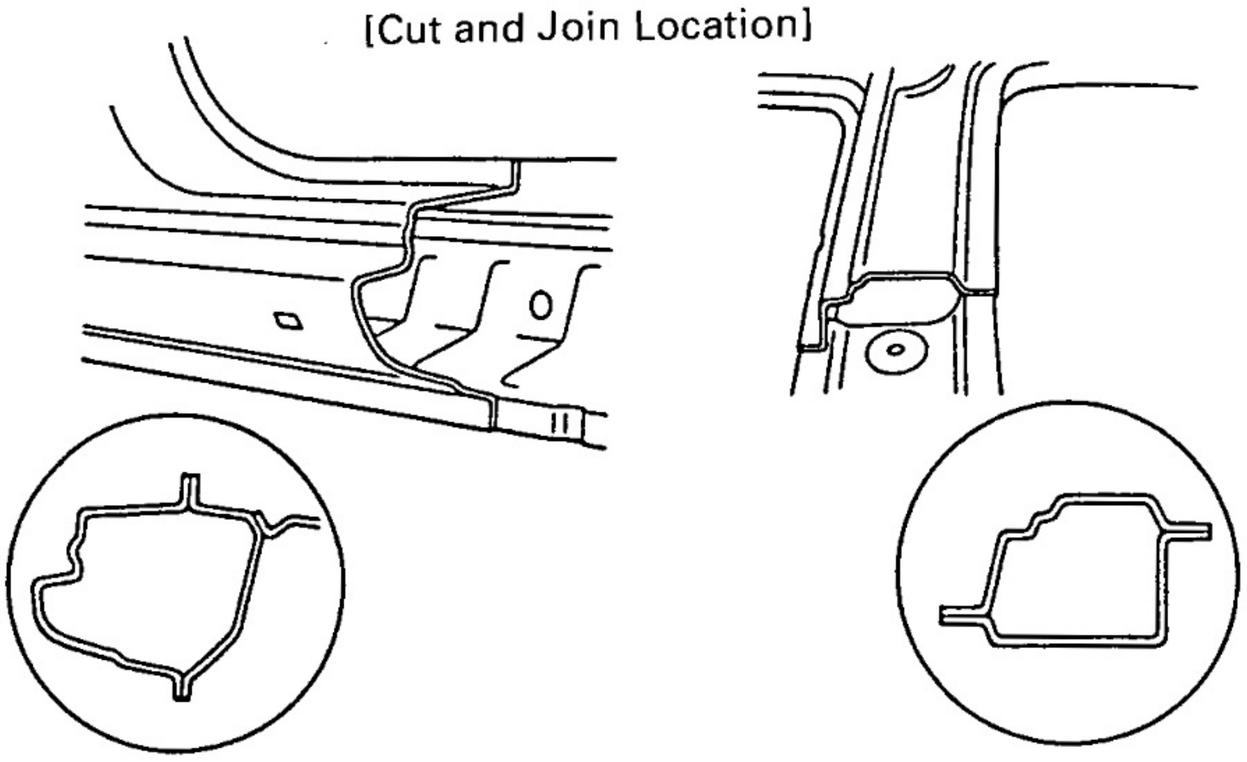
REMOVAL

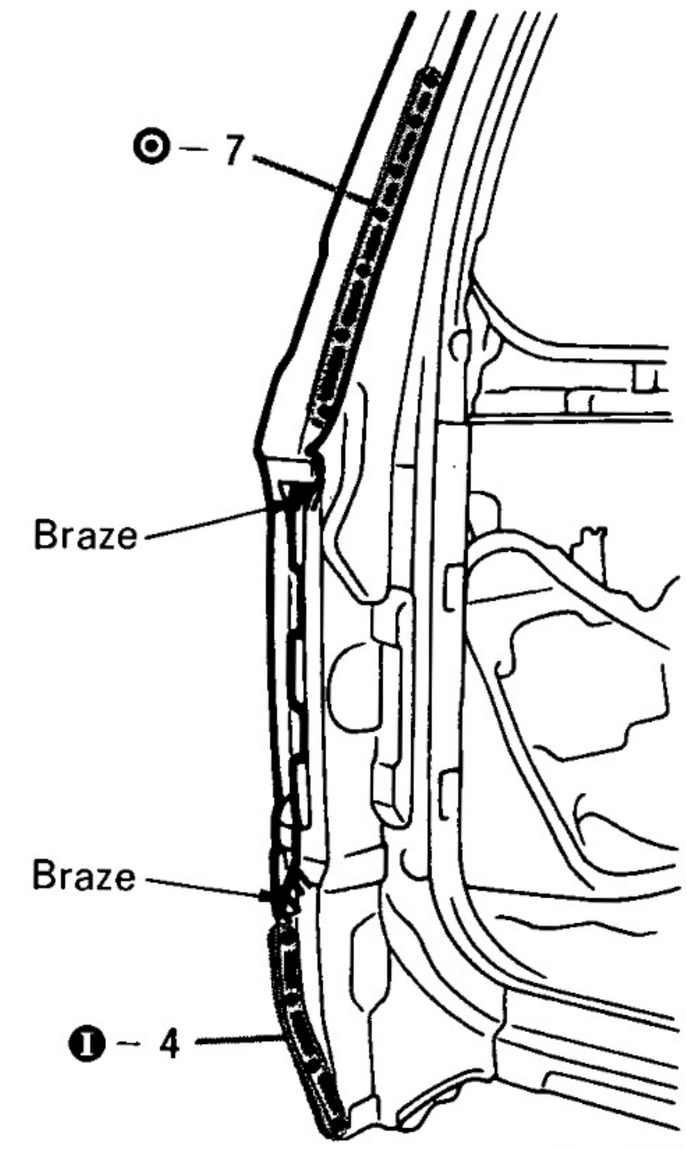


[Cut and Join Location]



[Cut and Join Location]



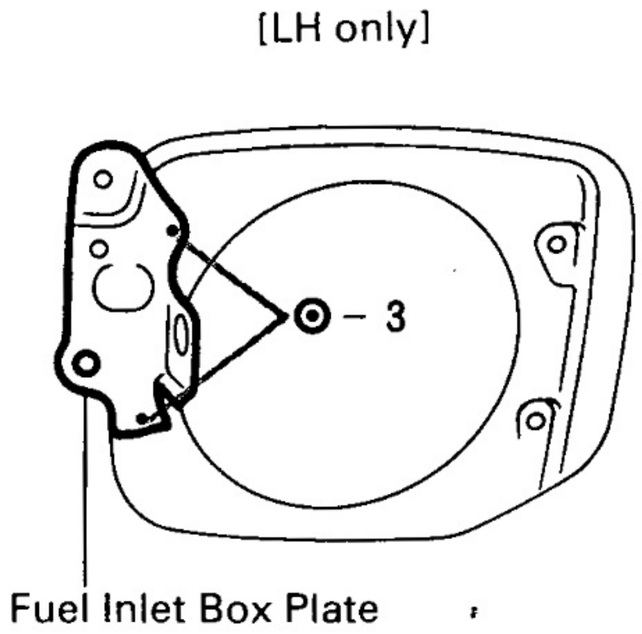


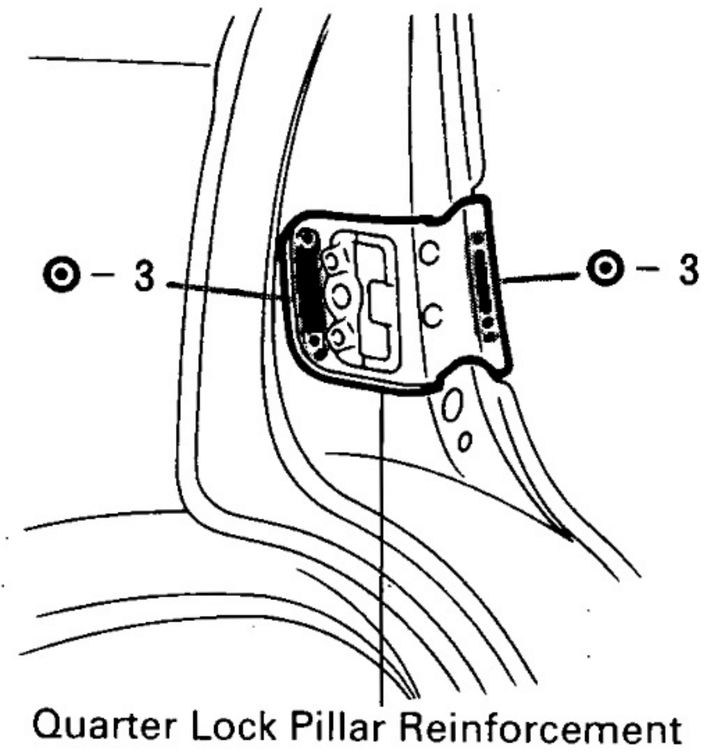
mm	in.
260	10.23
300	11.81

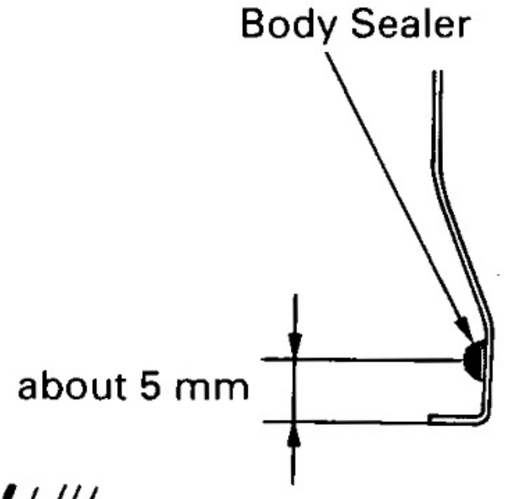
1. Cut and join the parts at the location shown above.

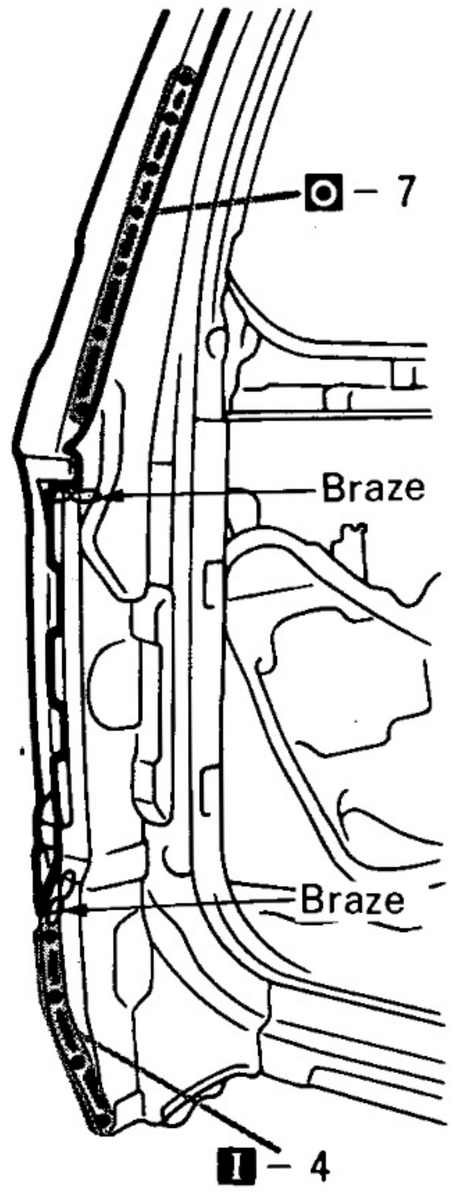
HINT: Remove the drain hose of sunroof.

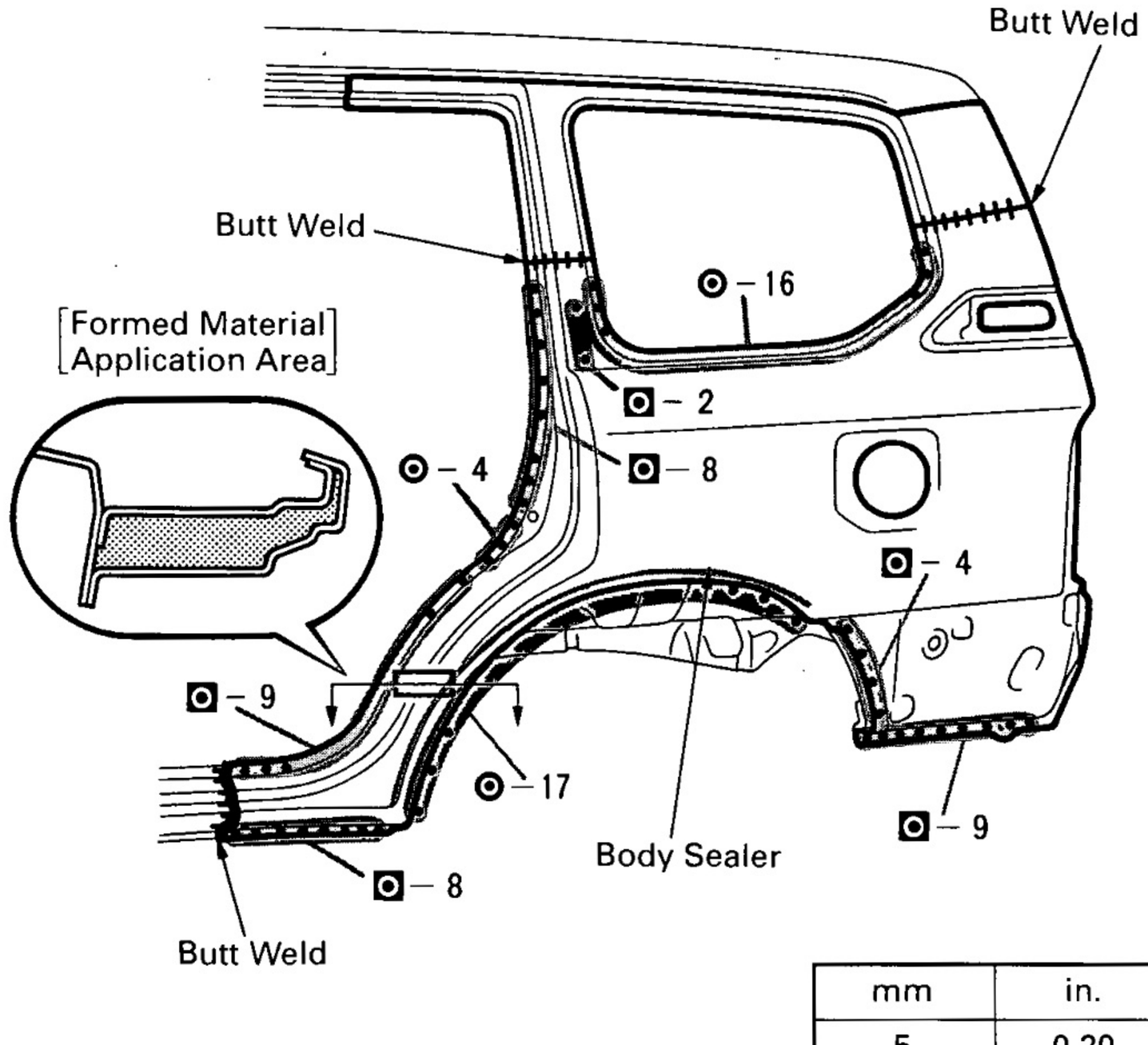
INSTALLATION











mm	in.
5	0.20

1. Before temporarily installing the new parts, apply body sealer to the wheel arch.

HINT:

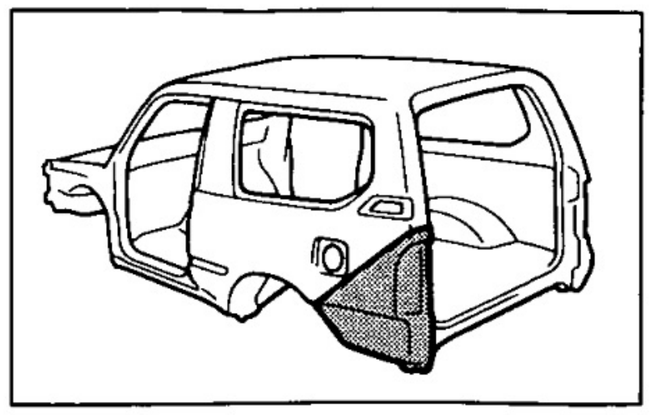
1) Apply body sealer about 5 mm (0.20 in.) from the flange, avoiding any oozing.

2) Apply sealer evenly, about 3 – 4 mm (0.12 – 0.16 in.) in diameter.

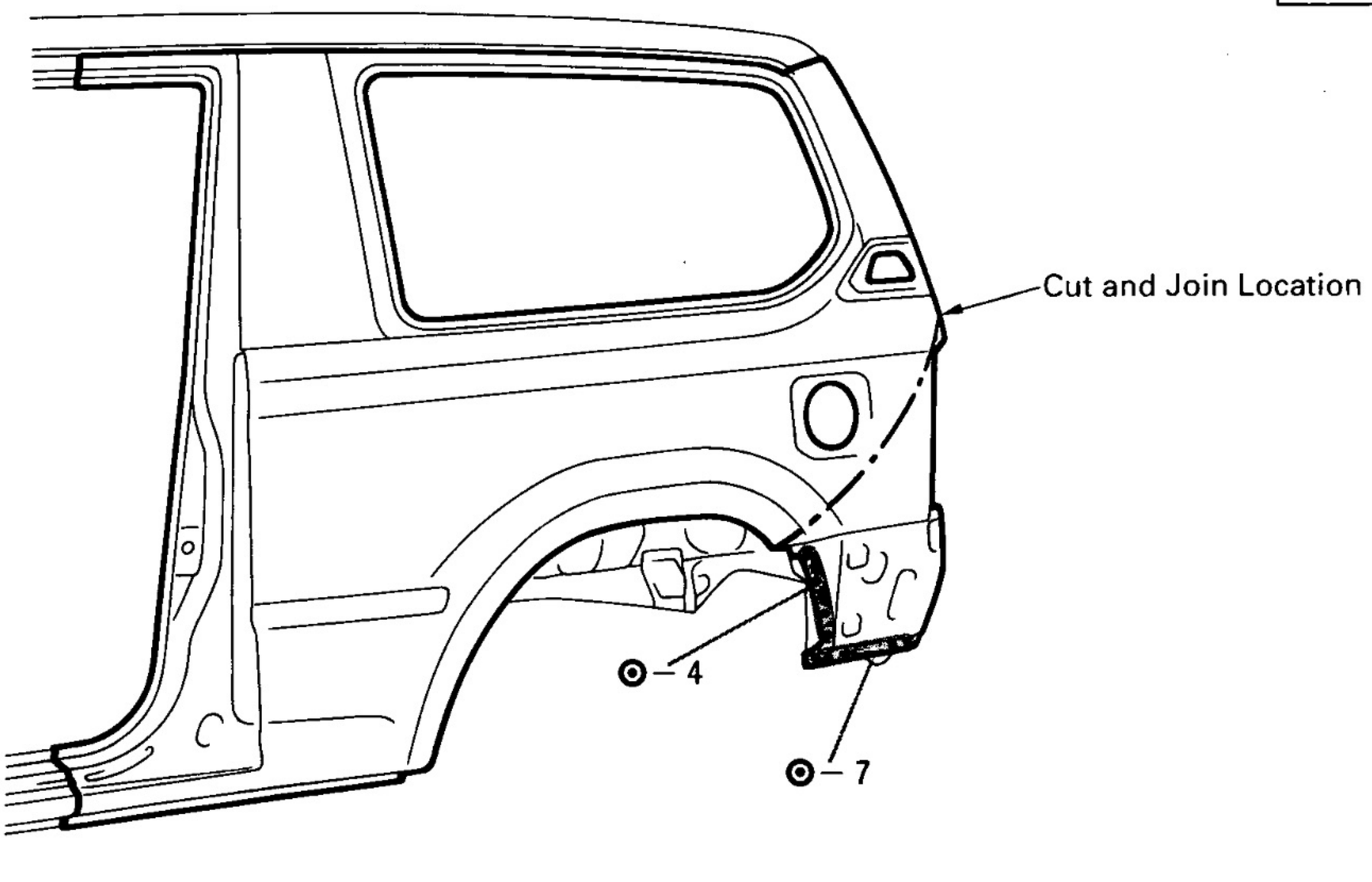
3) For other sealing points, refer to Section AR.

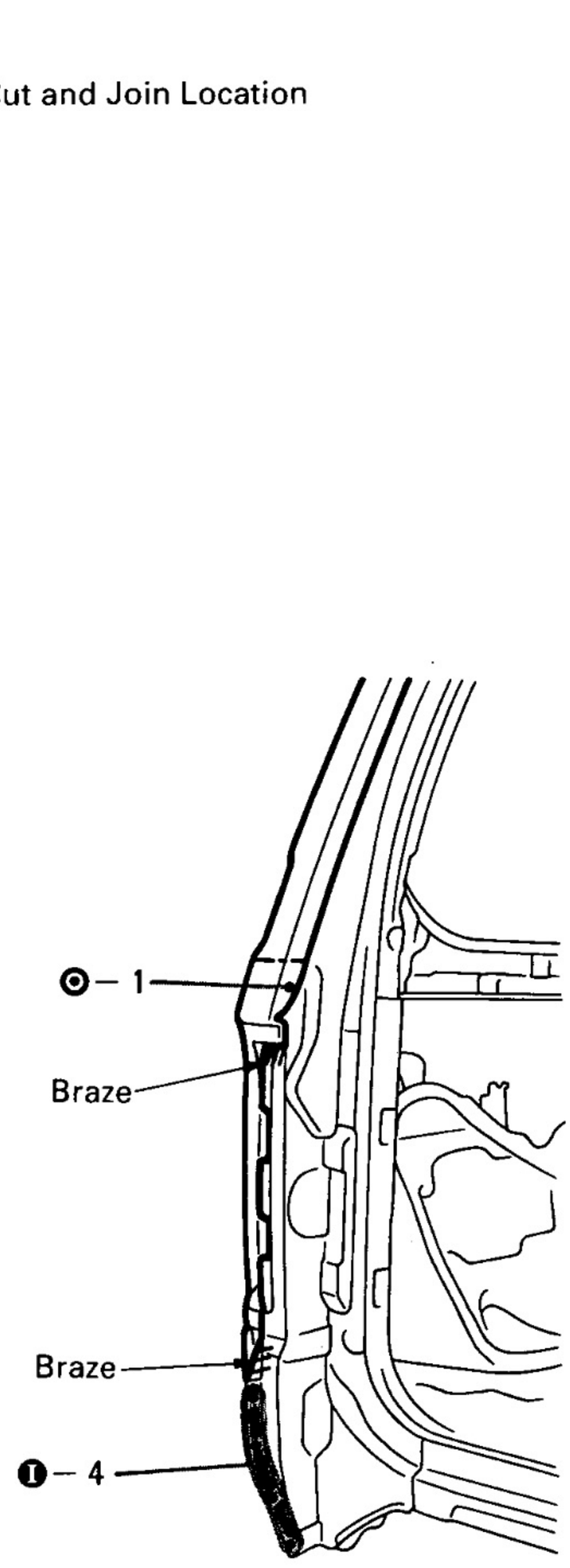
2. Before temporarily installing the new parts, weld the fuel inlet box plate and quarter lock pillar reinforcement with standard points.
3. Temporarily install the new parts and check the fit of the rear door, back door and rear combination light.
4. After installing the newparts, apply formed material.

QUARTER PANEL (CUT-P): 3-Door



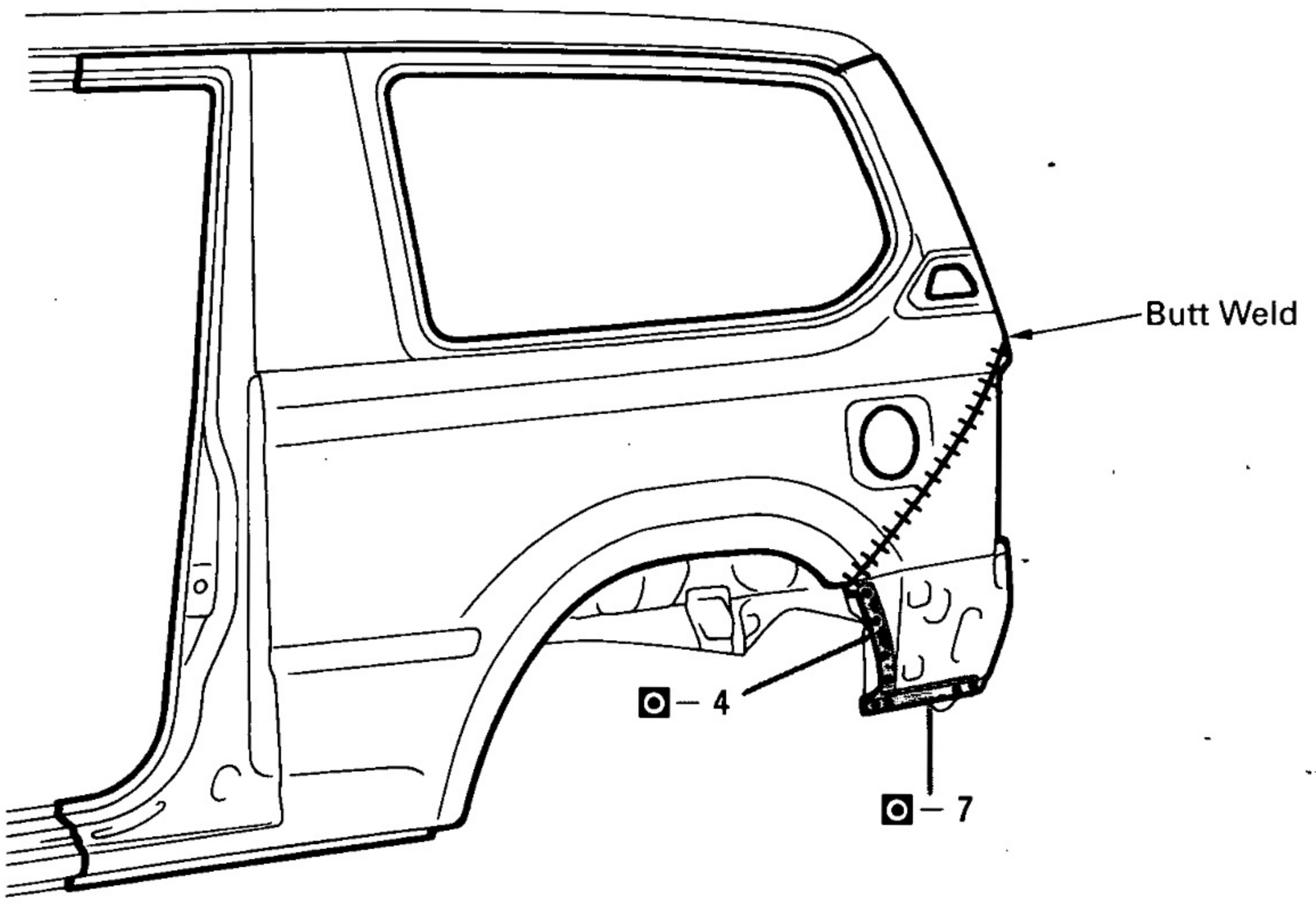
REMOVAL

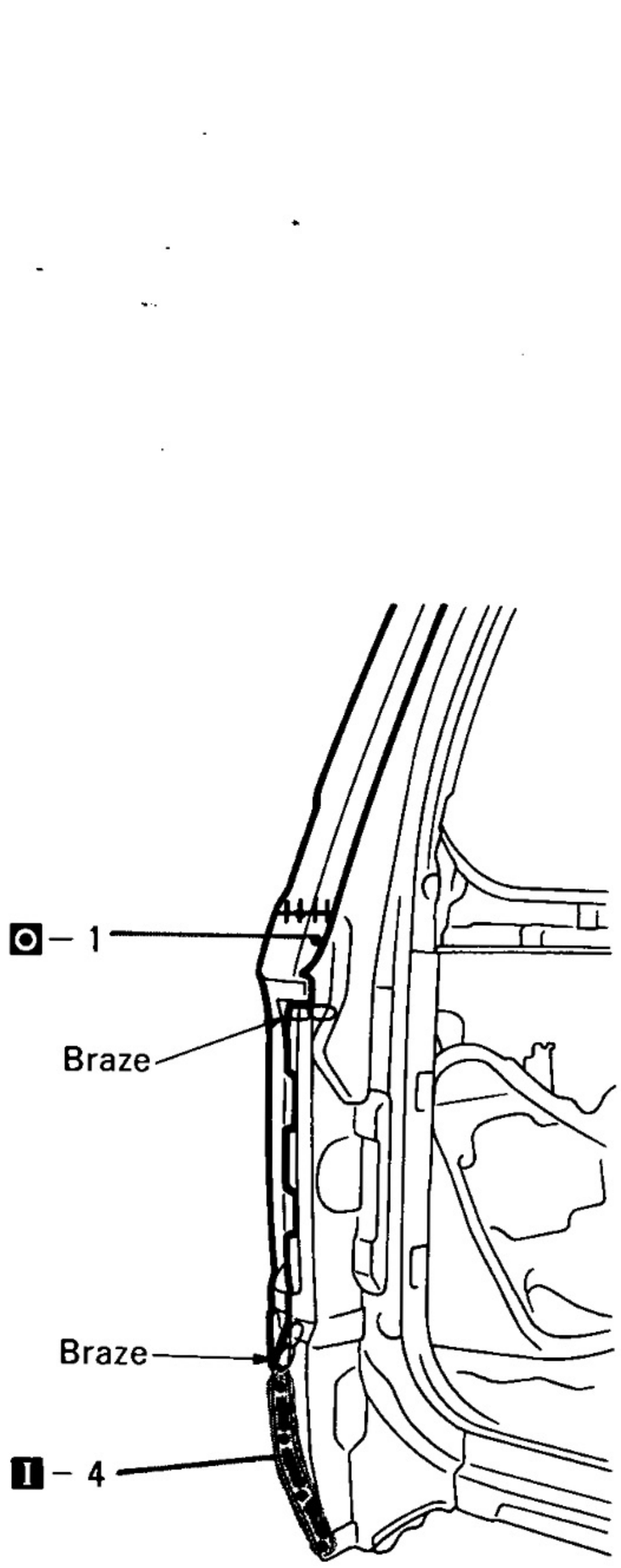




1. Cut and join the parts at the location shown above.

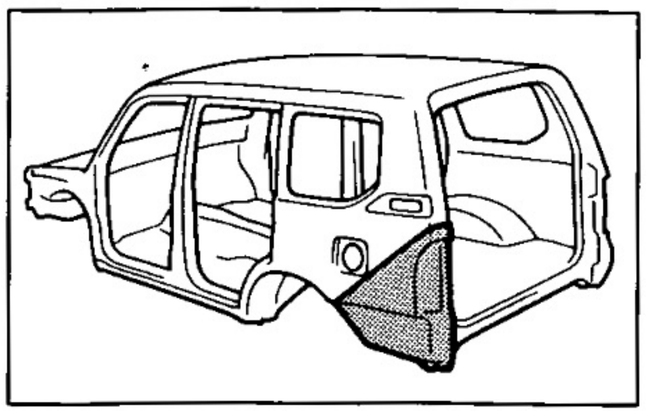
INSTALLATION



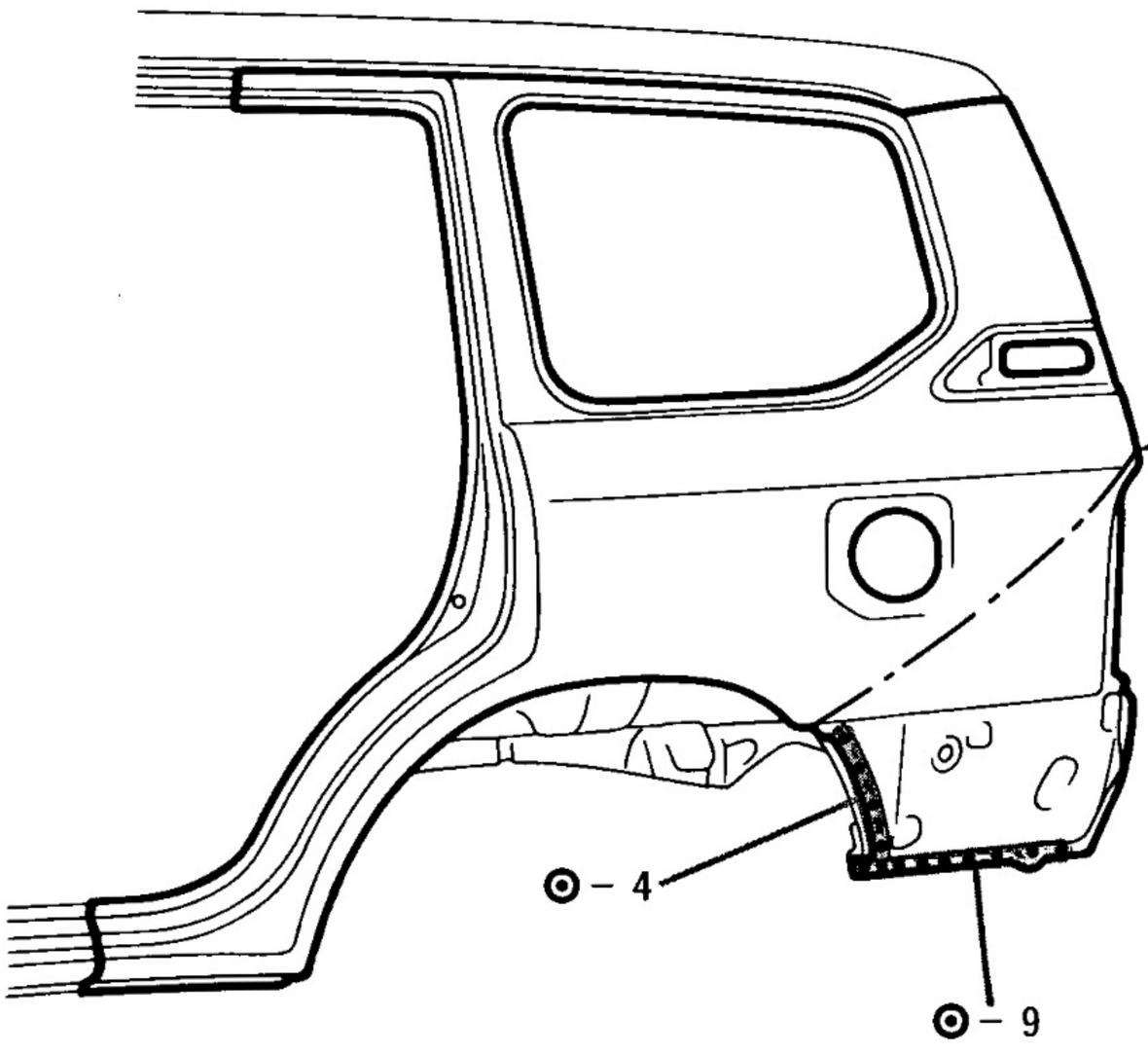


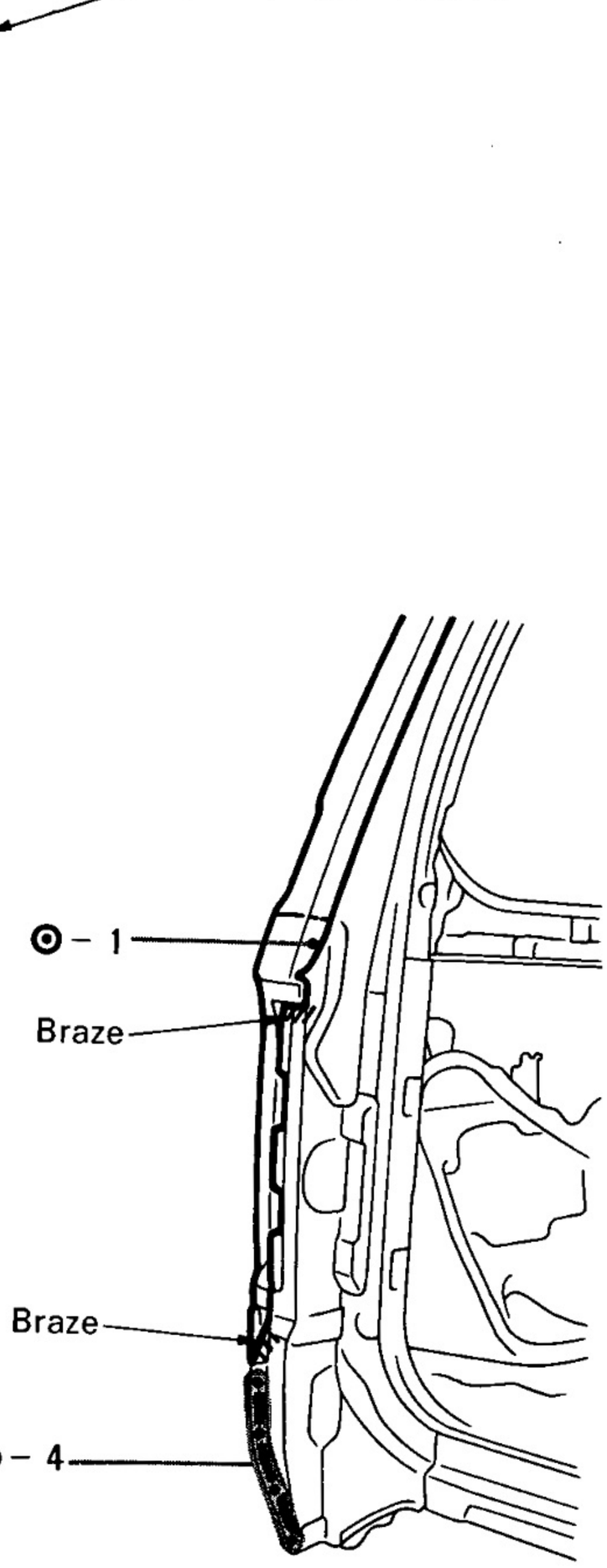
1. Temporarily install the new parts and check the fit of the back door and rear combination light.

QUARTER PANEL (CUT-P): 5-Door



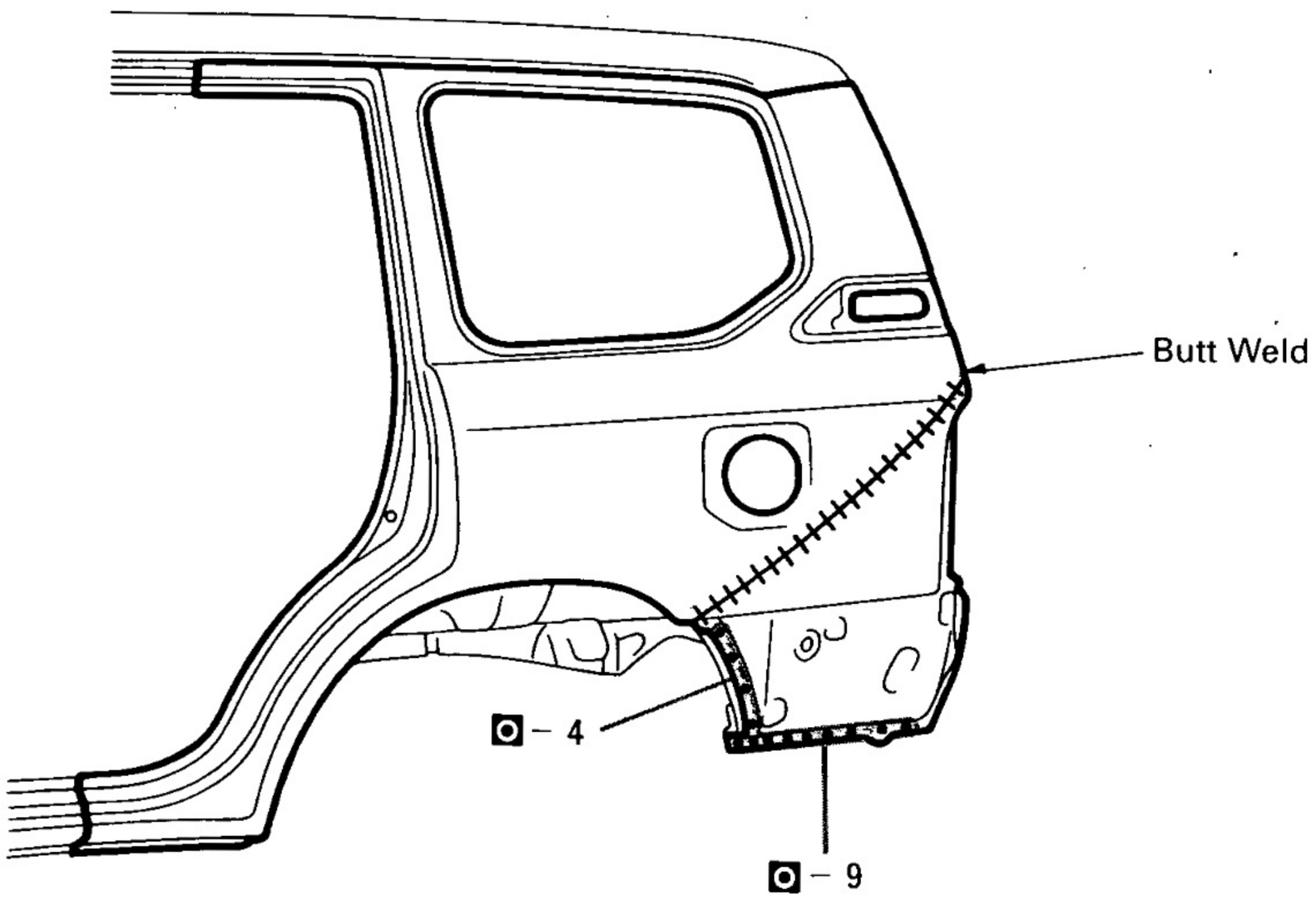
REMOVAL

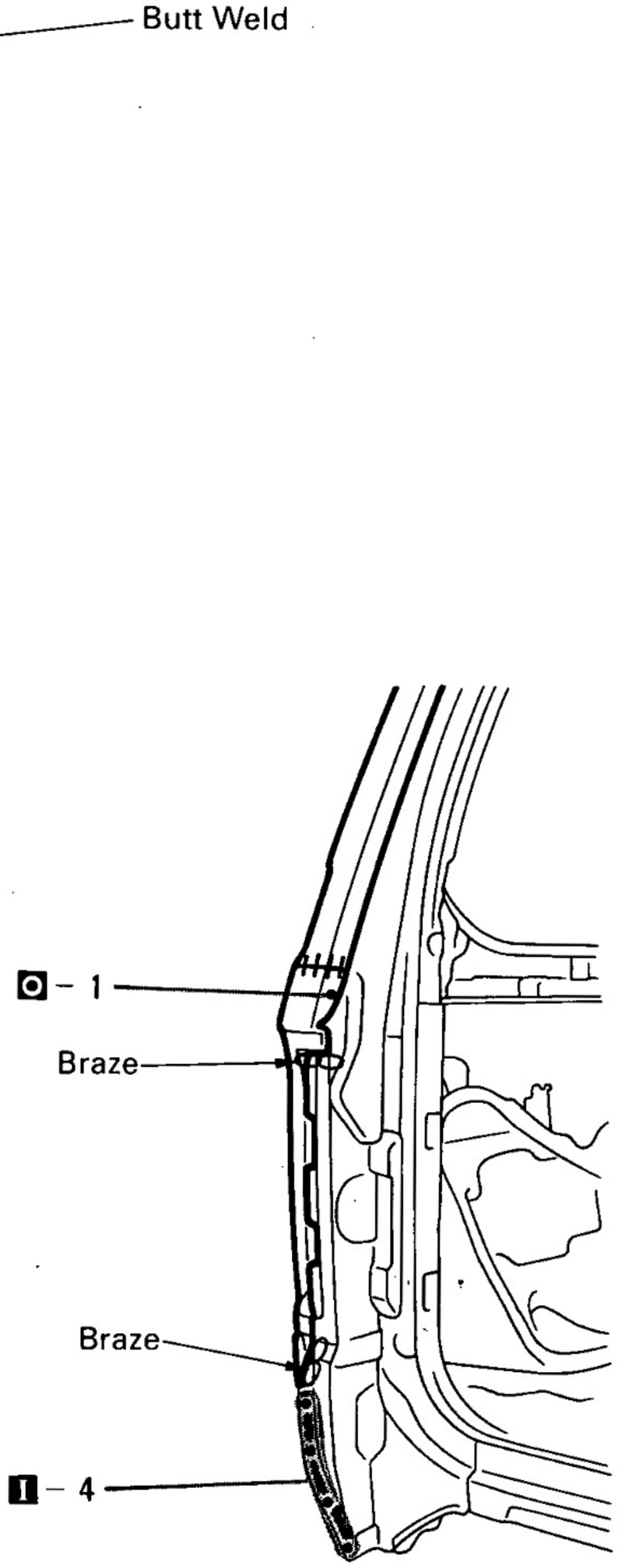




1. Cut and join the parts at the location shown above.

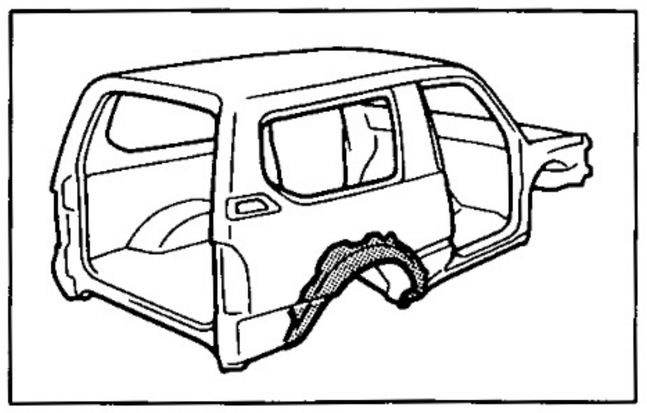
INSTALLATION



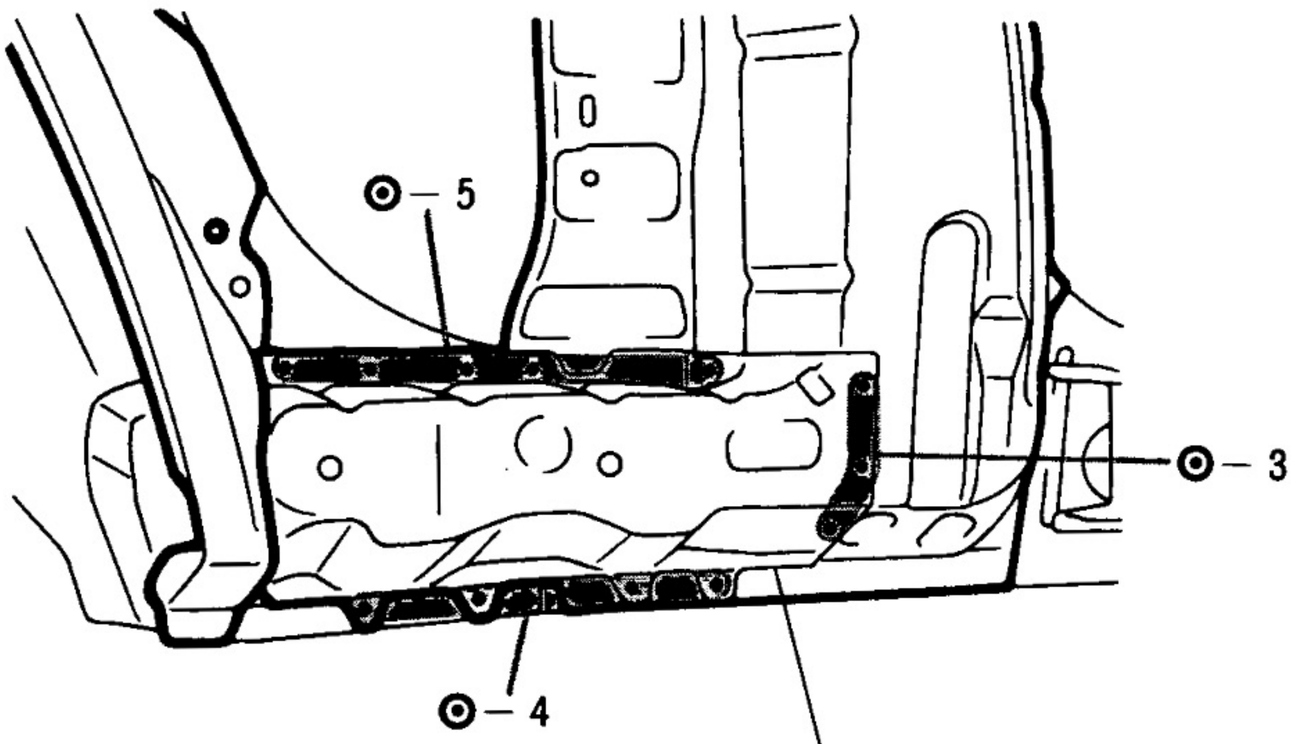


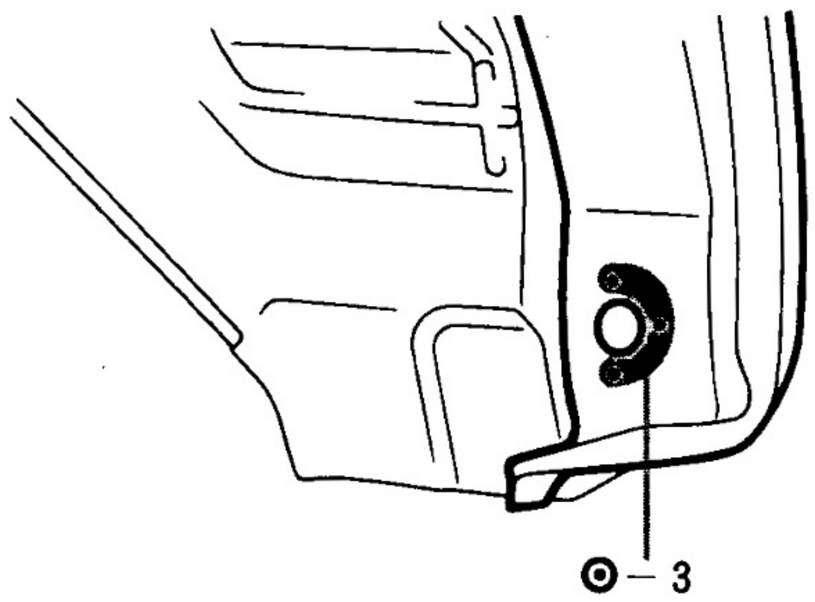
1. Temporarily install the new parts and check the fit of the back door and rear combination light.

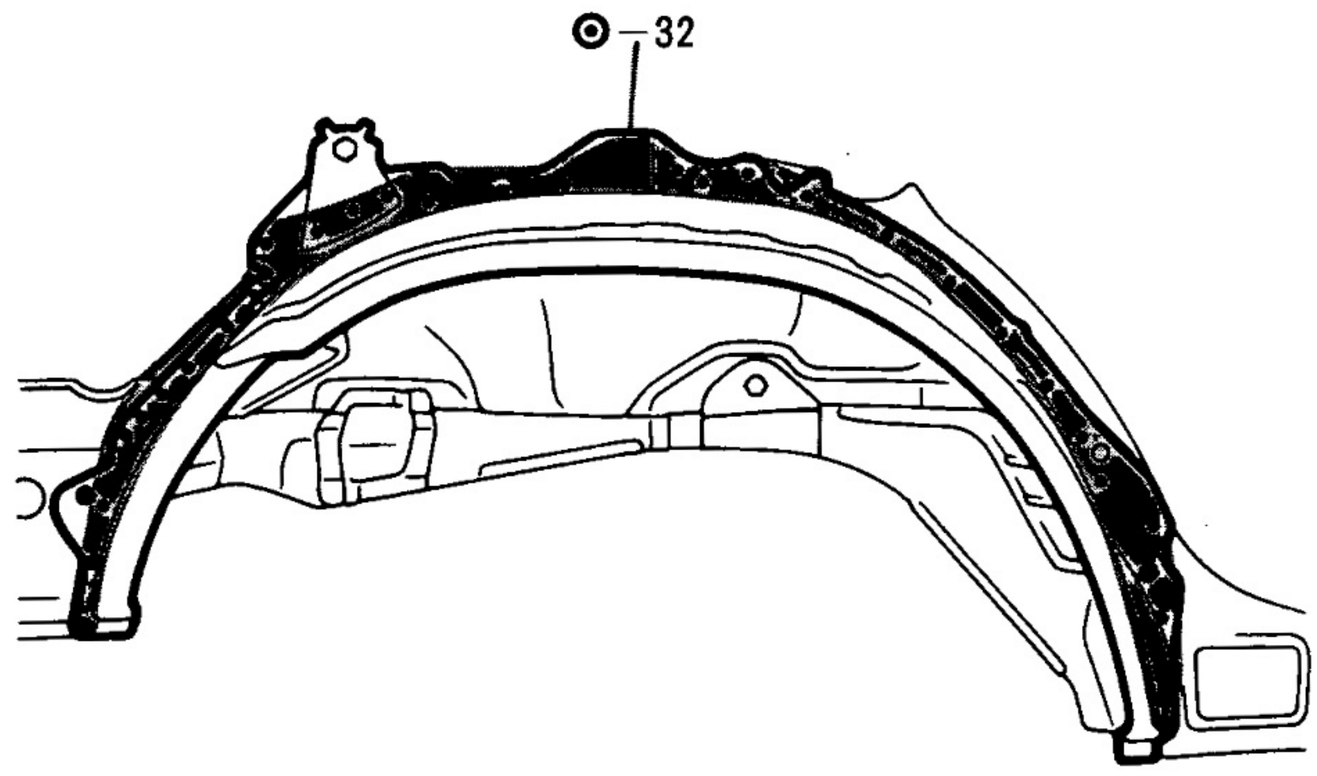
QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 3-Door Right Side



REMOVAL (With the quarter panel removed.)

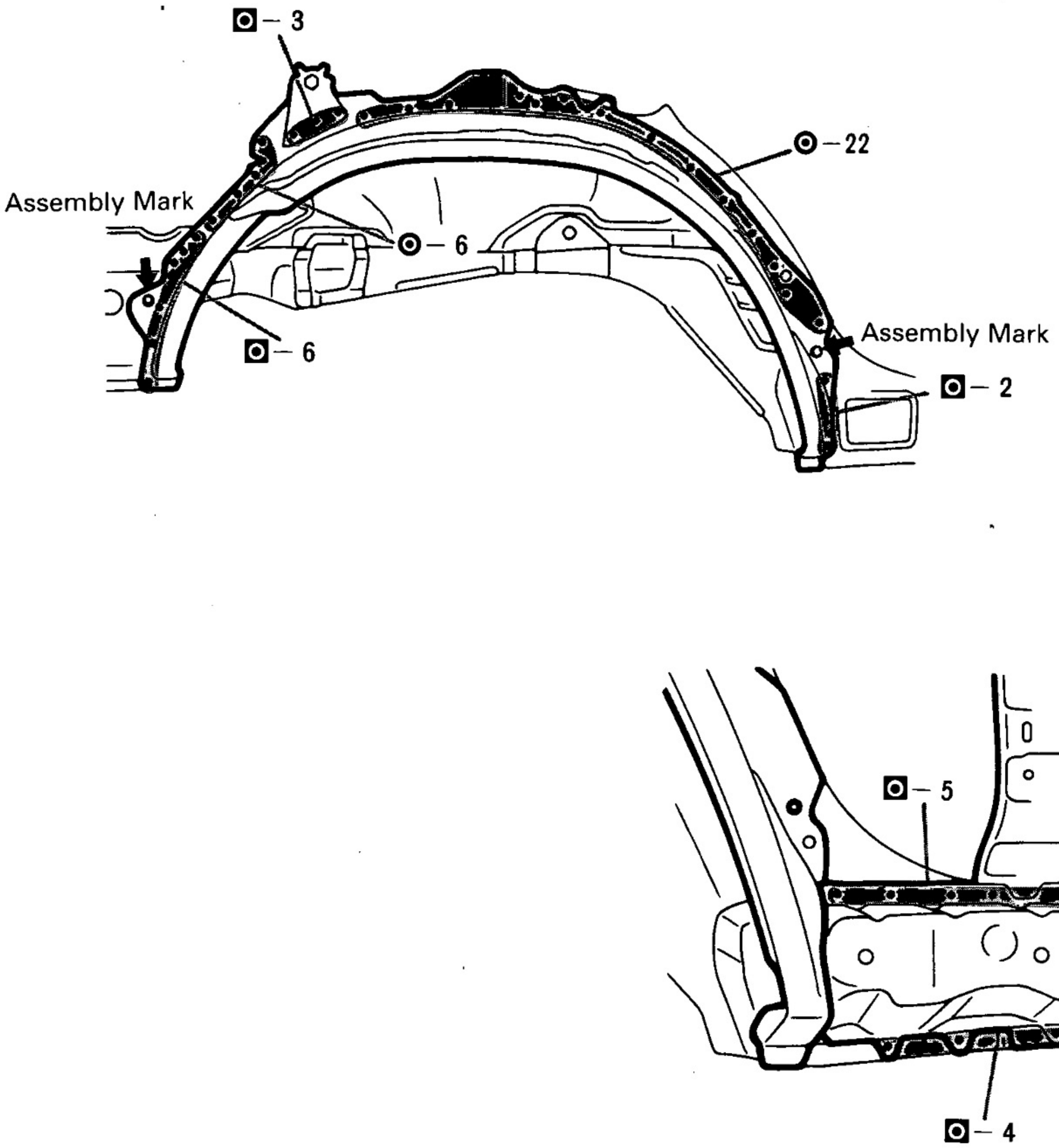






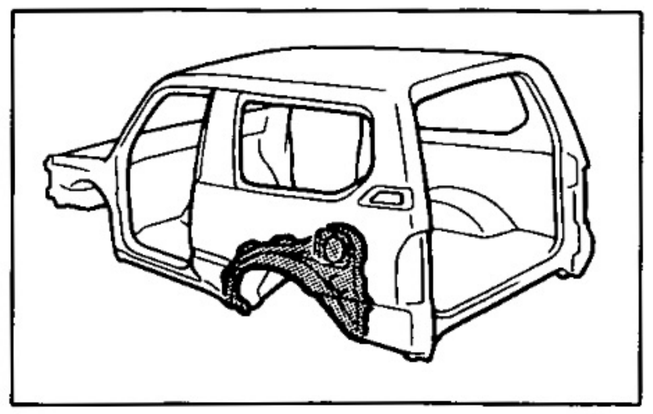
1. After removing the rocker outer rear panel, remove quarter wheel housing outer panel.

INSTALLATION

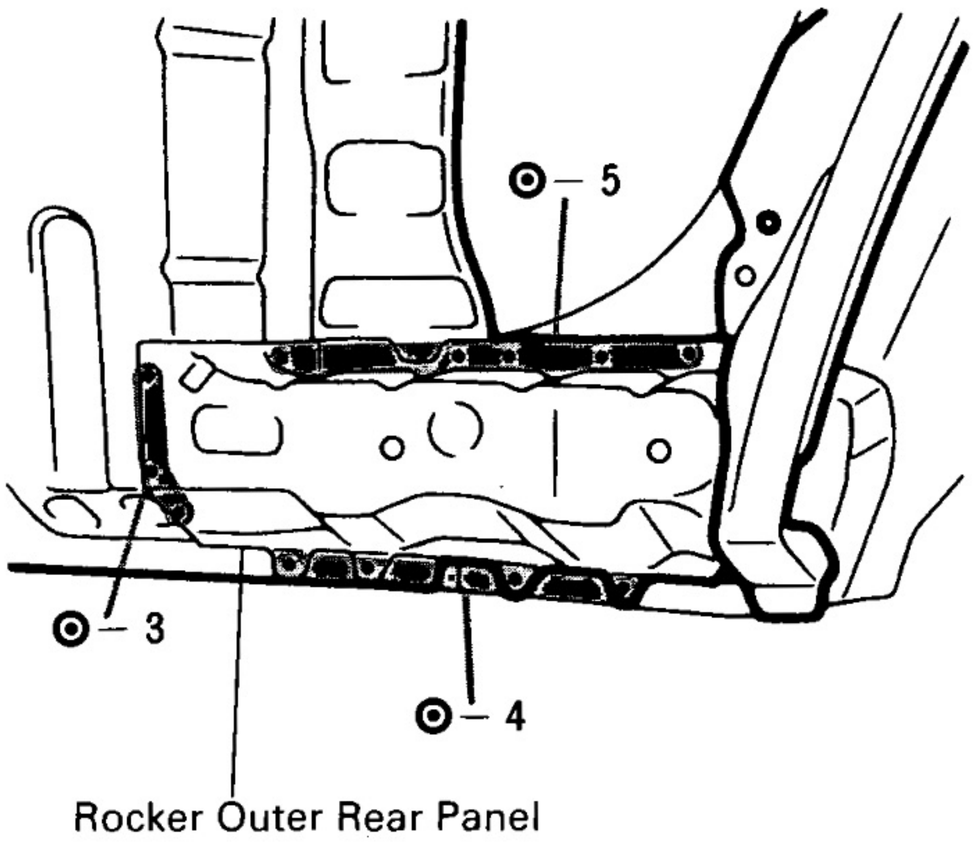


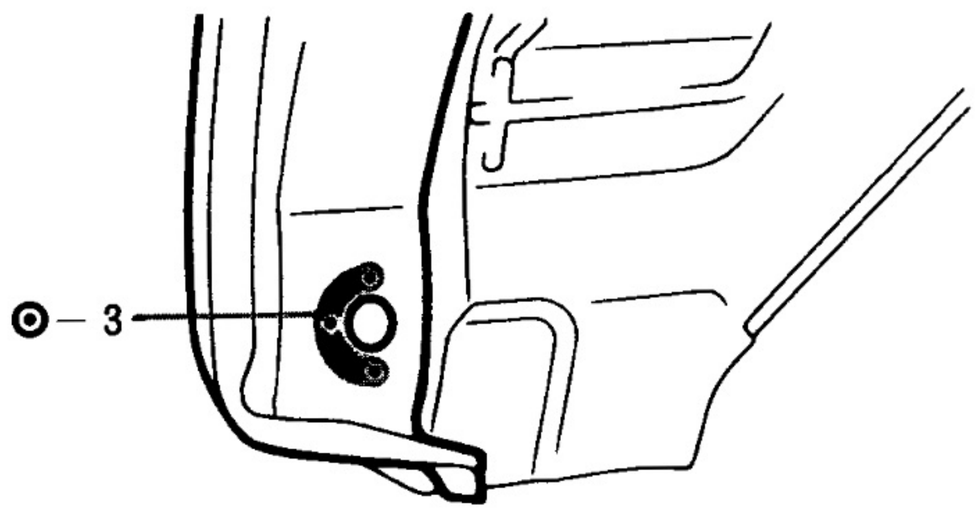
1. Determine the position of the new parts by the assembly marks of the inner and outer panels.
2. Before welding the new parts, temporarily install the quarter panel and check the fit.

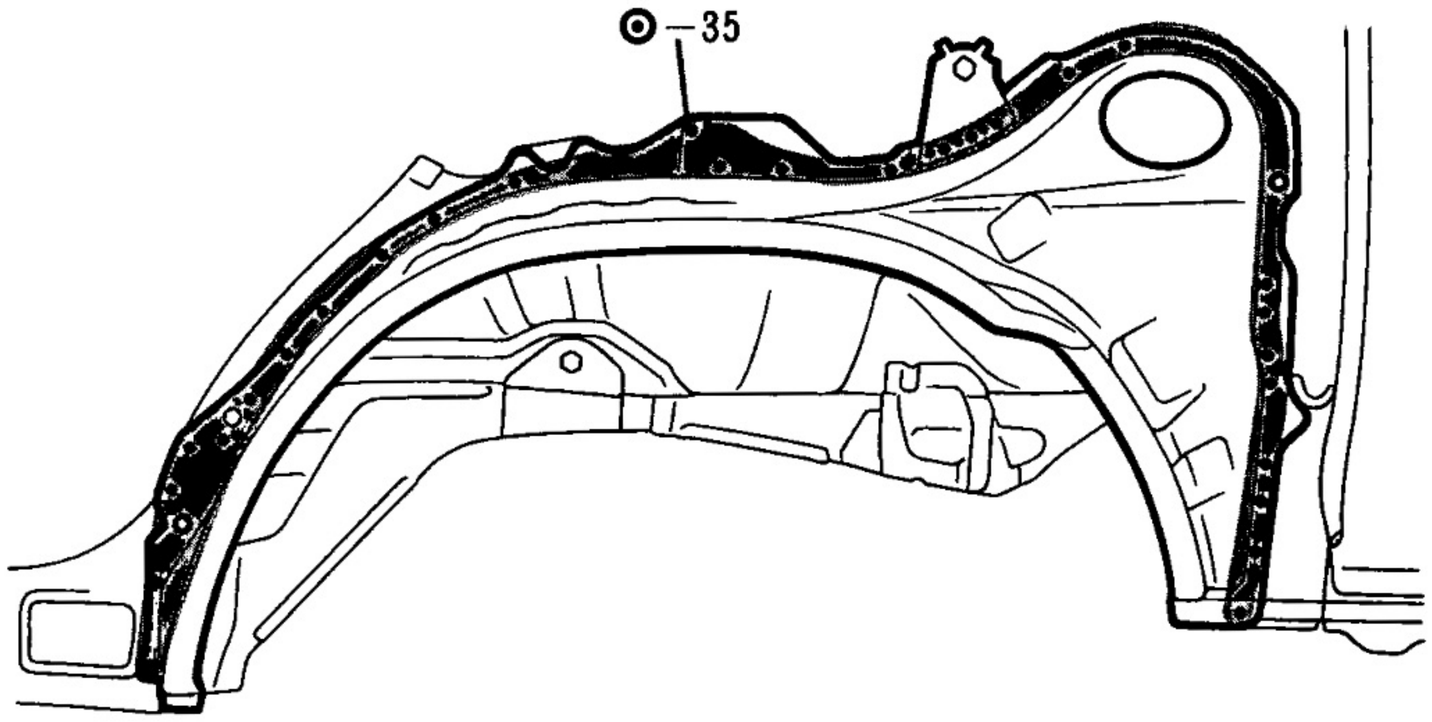
QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 3-Door Left Side



REMOVAL (With the quarter panel removed.)

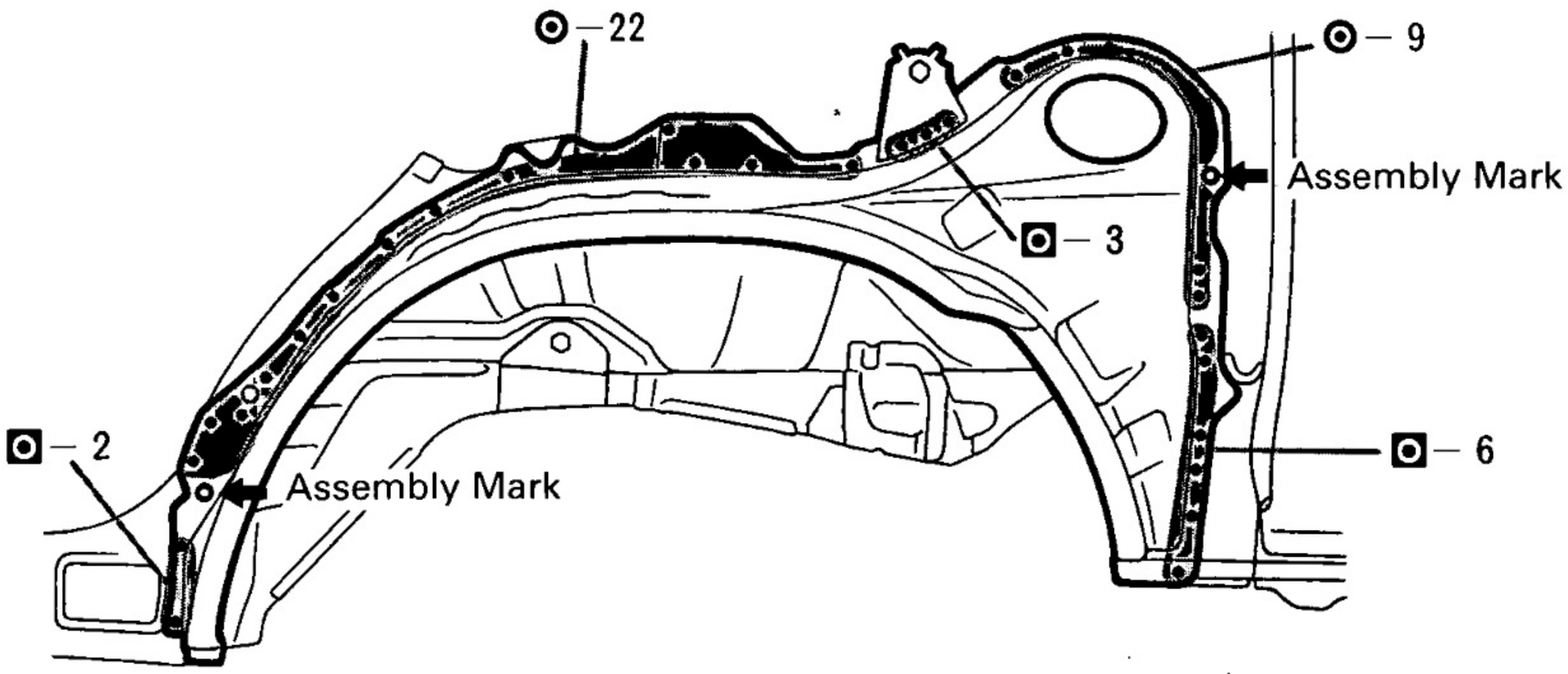


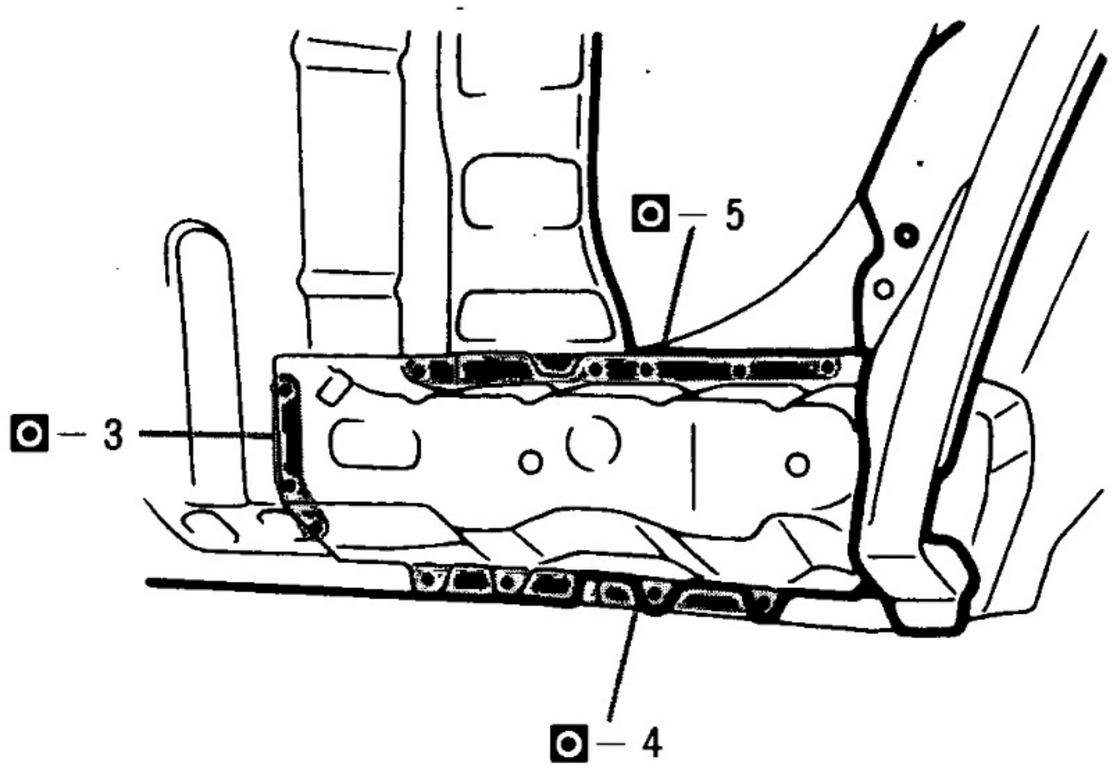


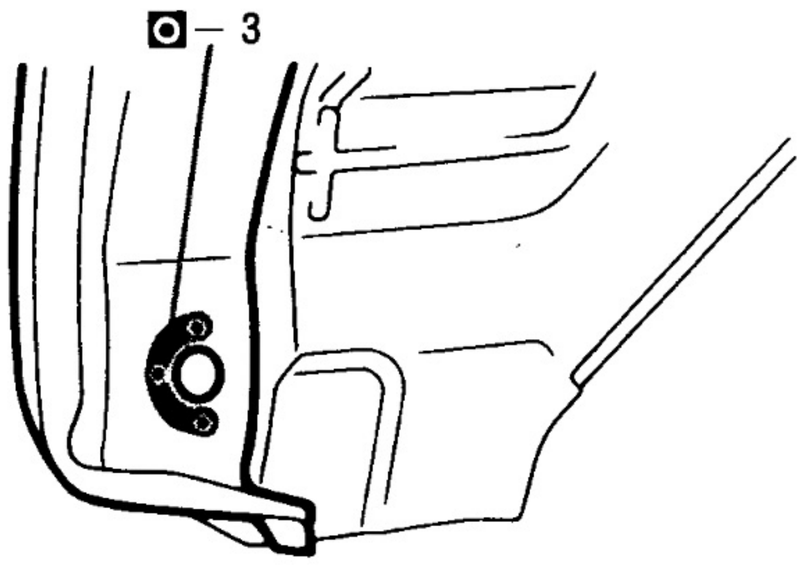


1. After removing the rocker outer rear panel, remove quarter wheel housing outer panel.

INSTALLATION

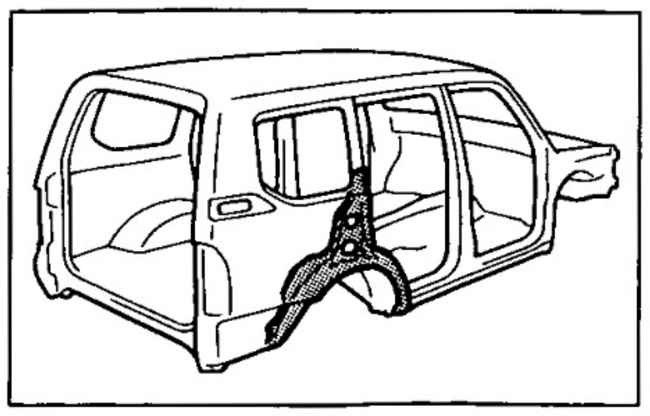




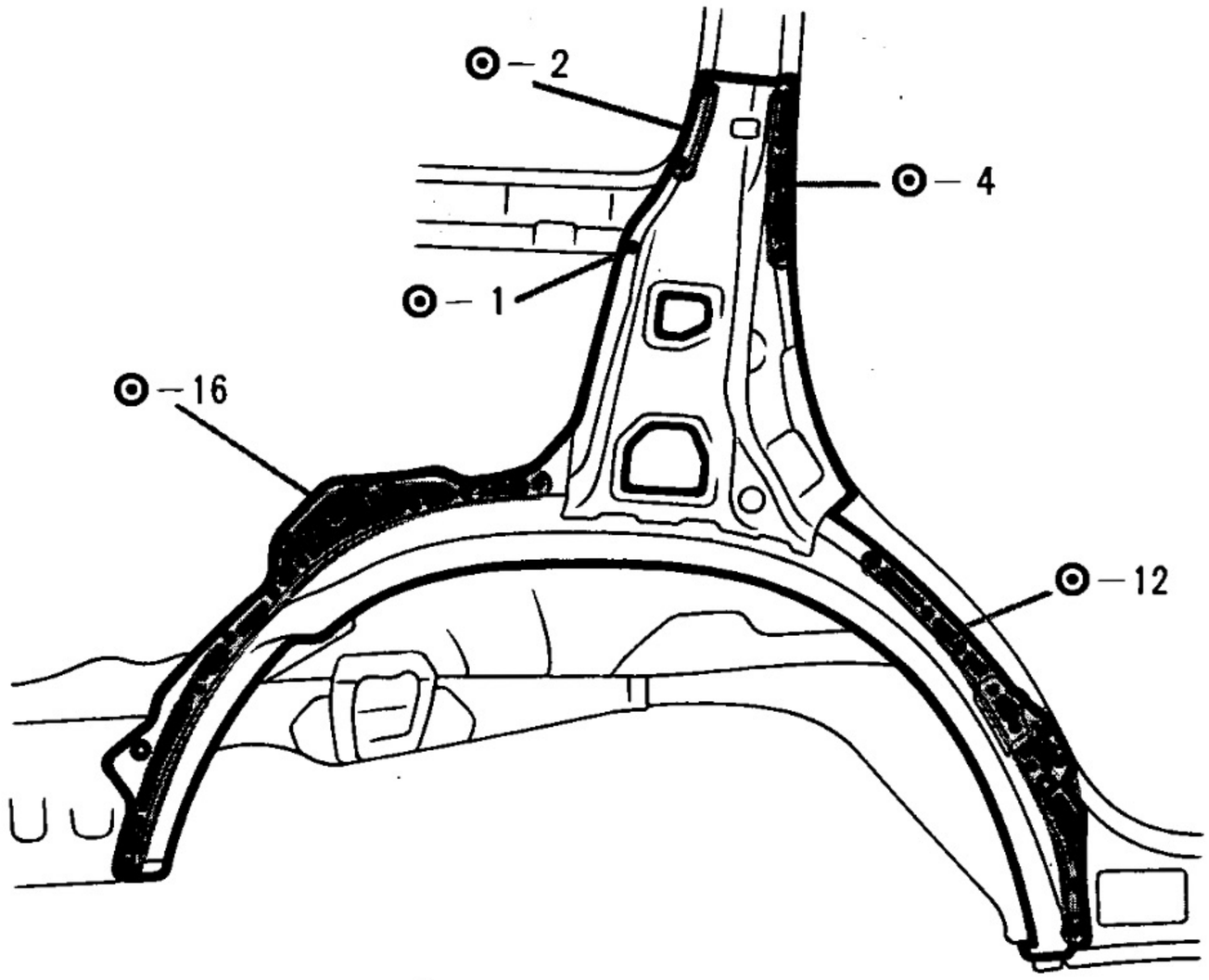


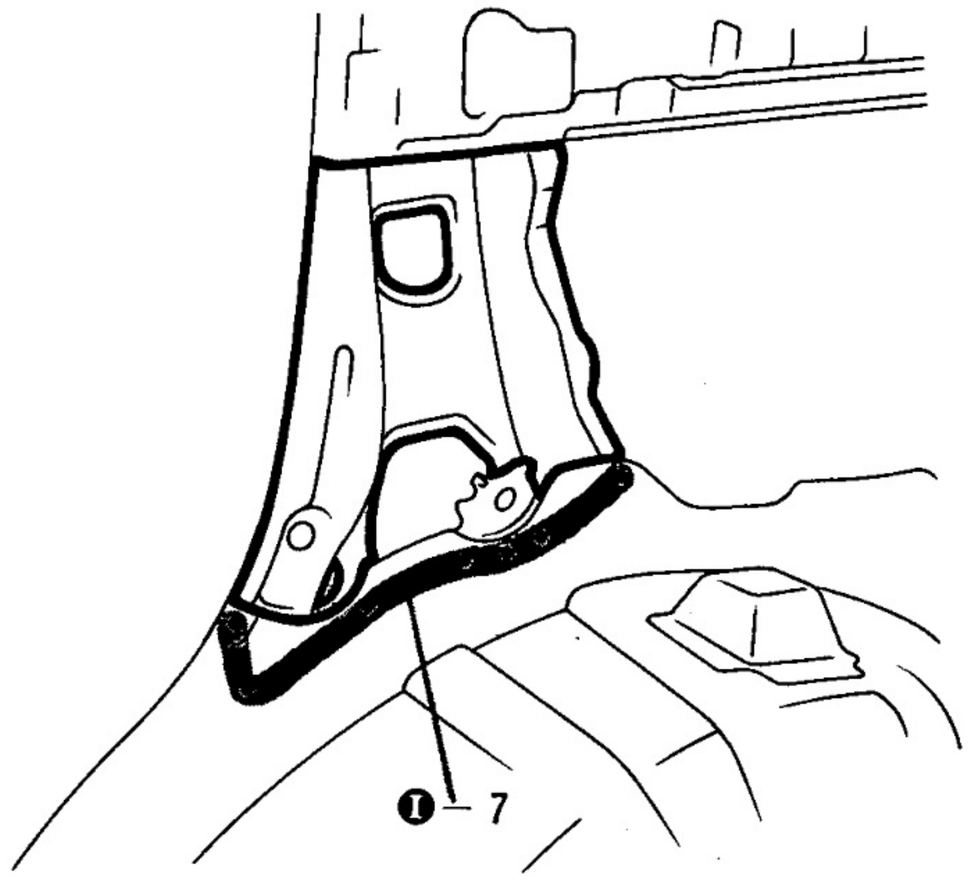
1. Determine the position of the new parts by the assembly marks of the inner and outer panels.
2. Before welding the new parts, temporarily install the quarter panel and check the fit.

QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 5-Door Right Side

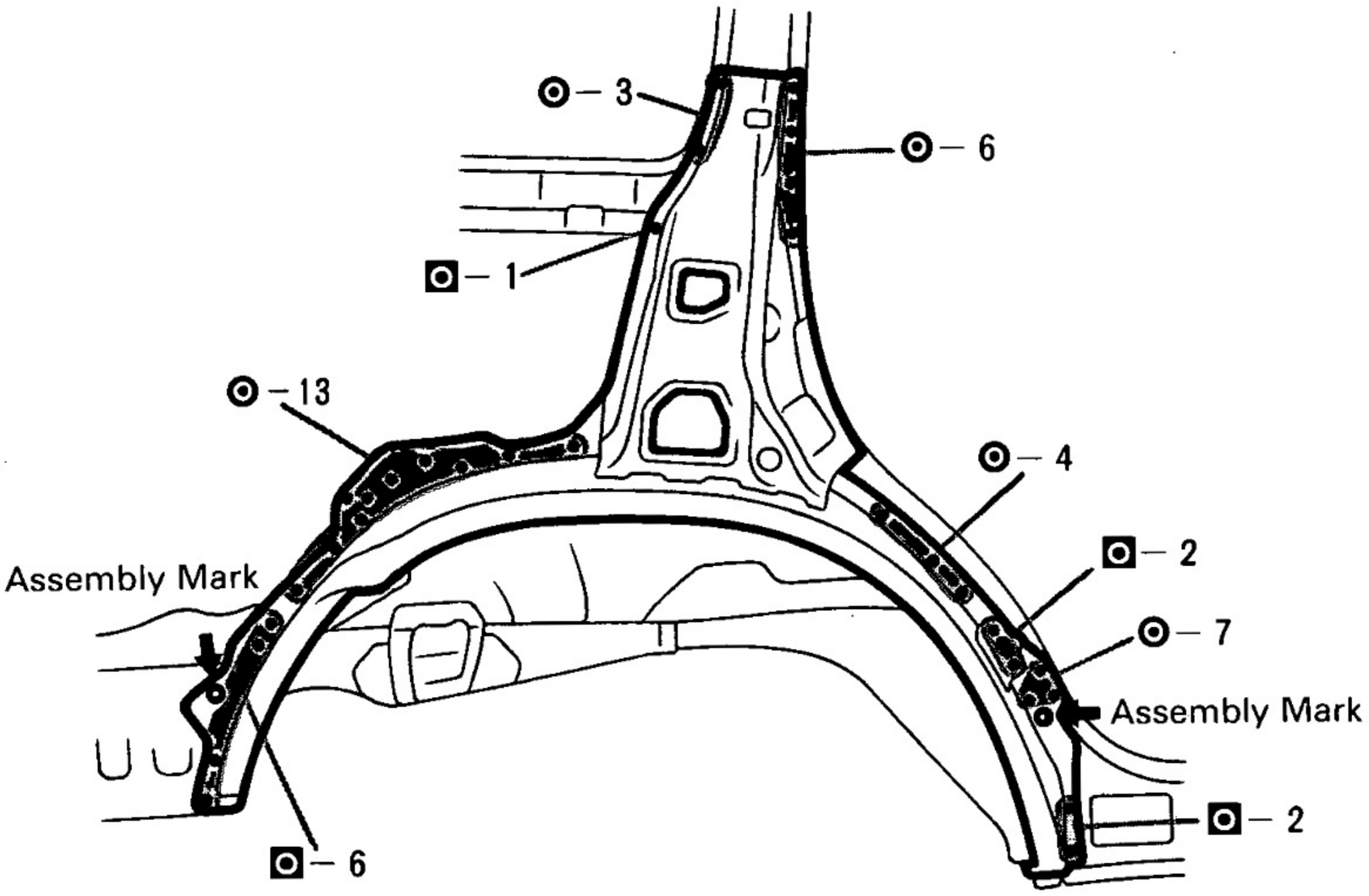


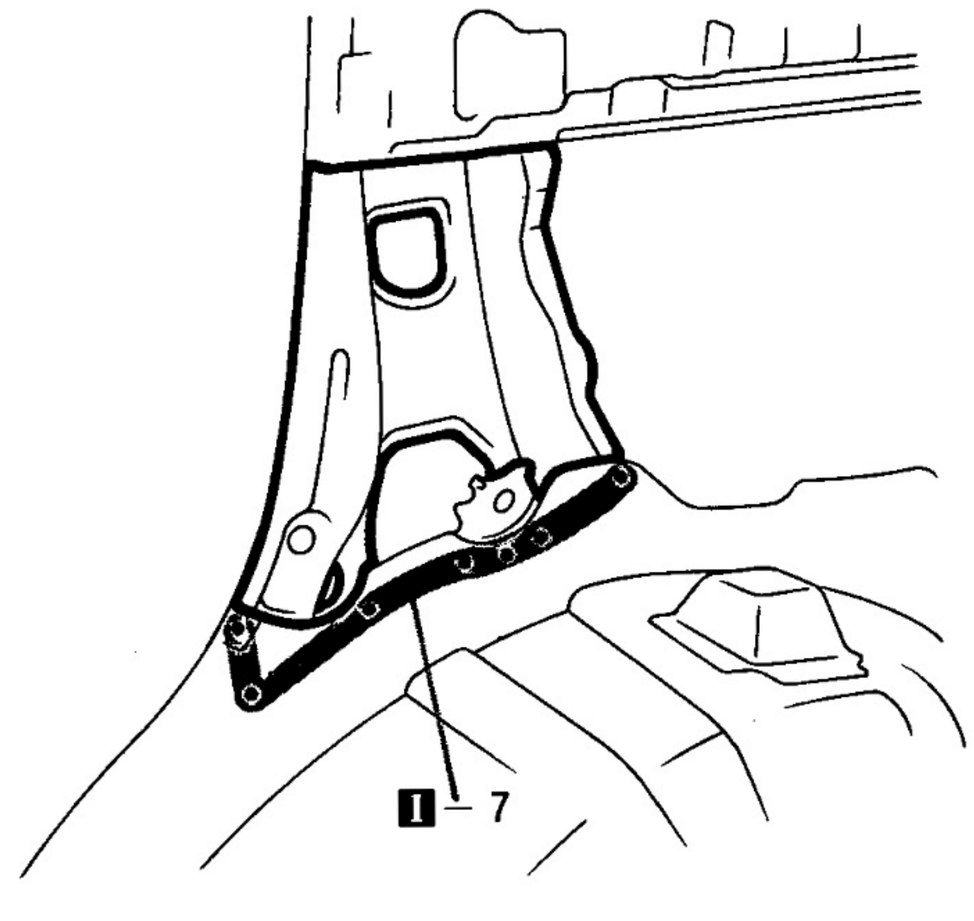
REMOVAL (With the quarter panel removed.)





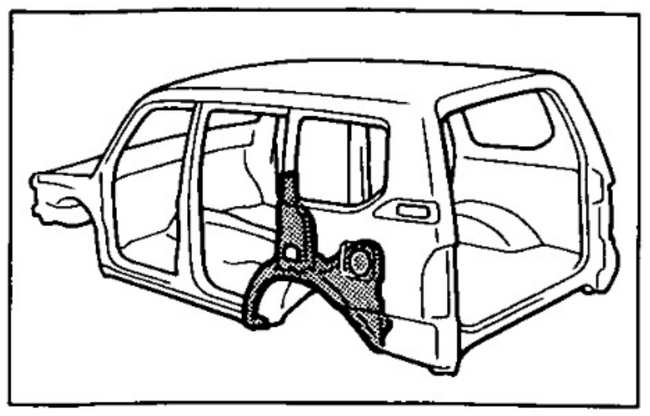
INSTALLATION



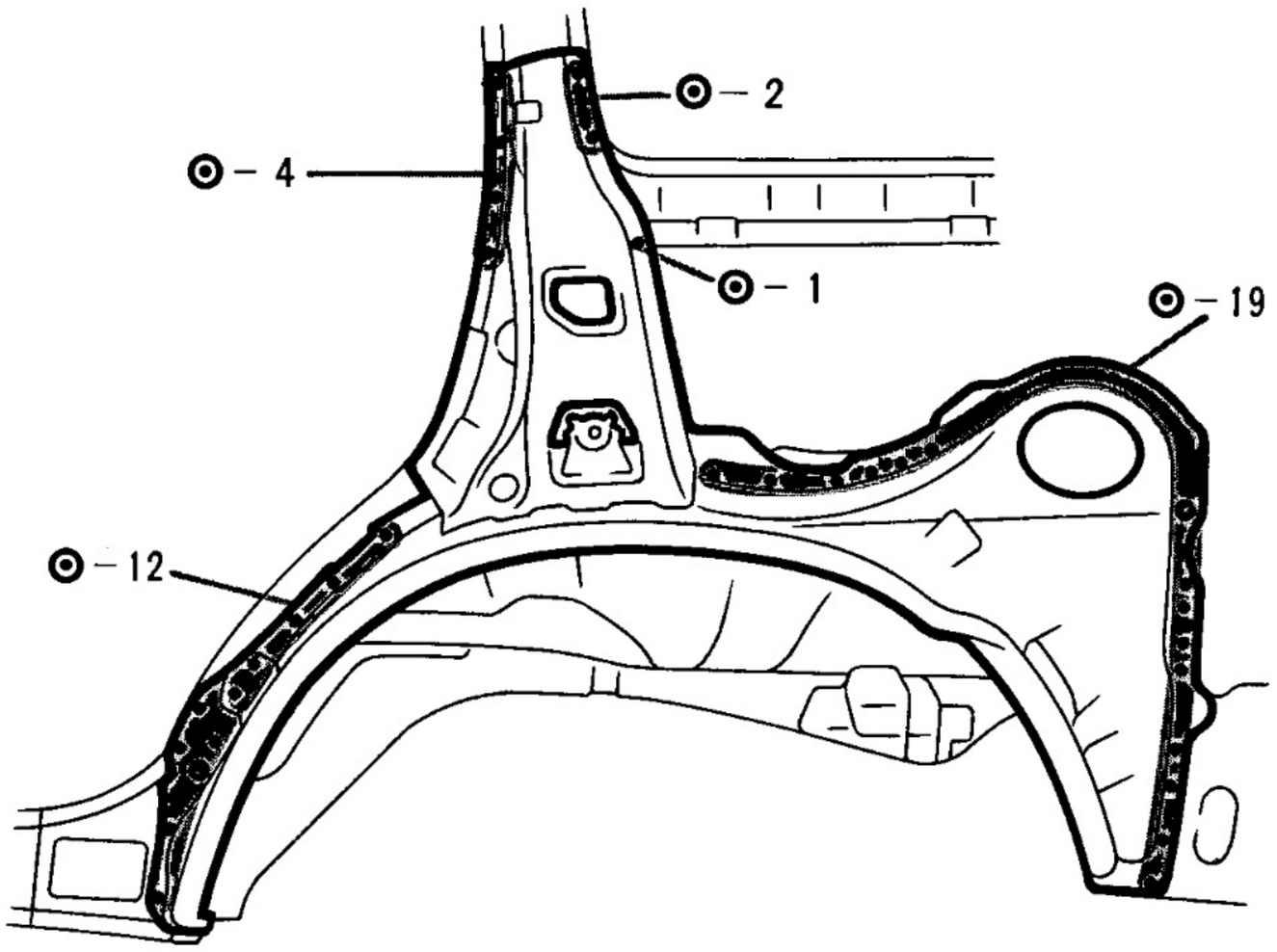


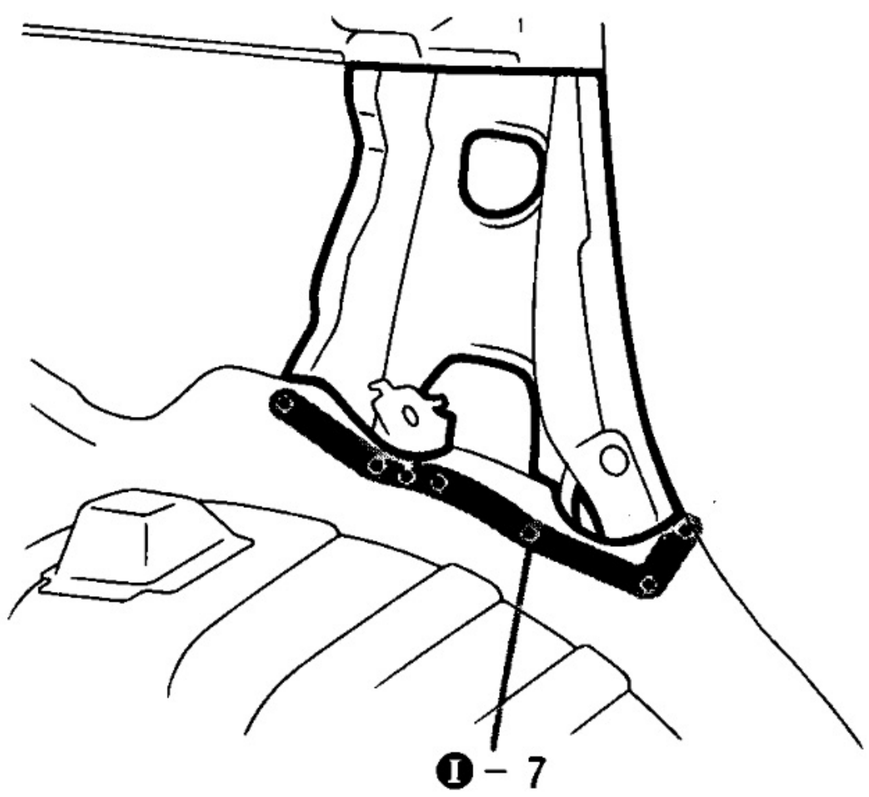
1. Determine the position of the new parts by the assembly marks of the inner and outer panels.
2. Before welding the new parts, temporarily install the quarter panel and check the fit.

QUARTER WHEEL HOUSING OUTER PANEL (ASSY): 5-Door Left Side

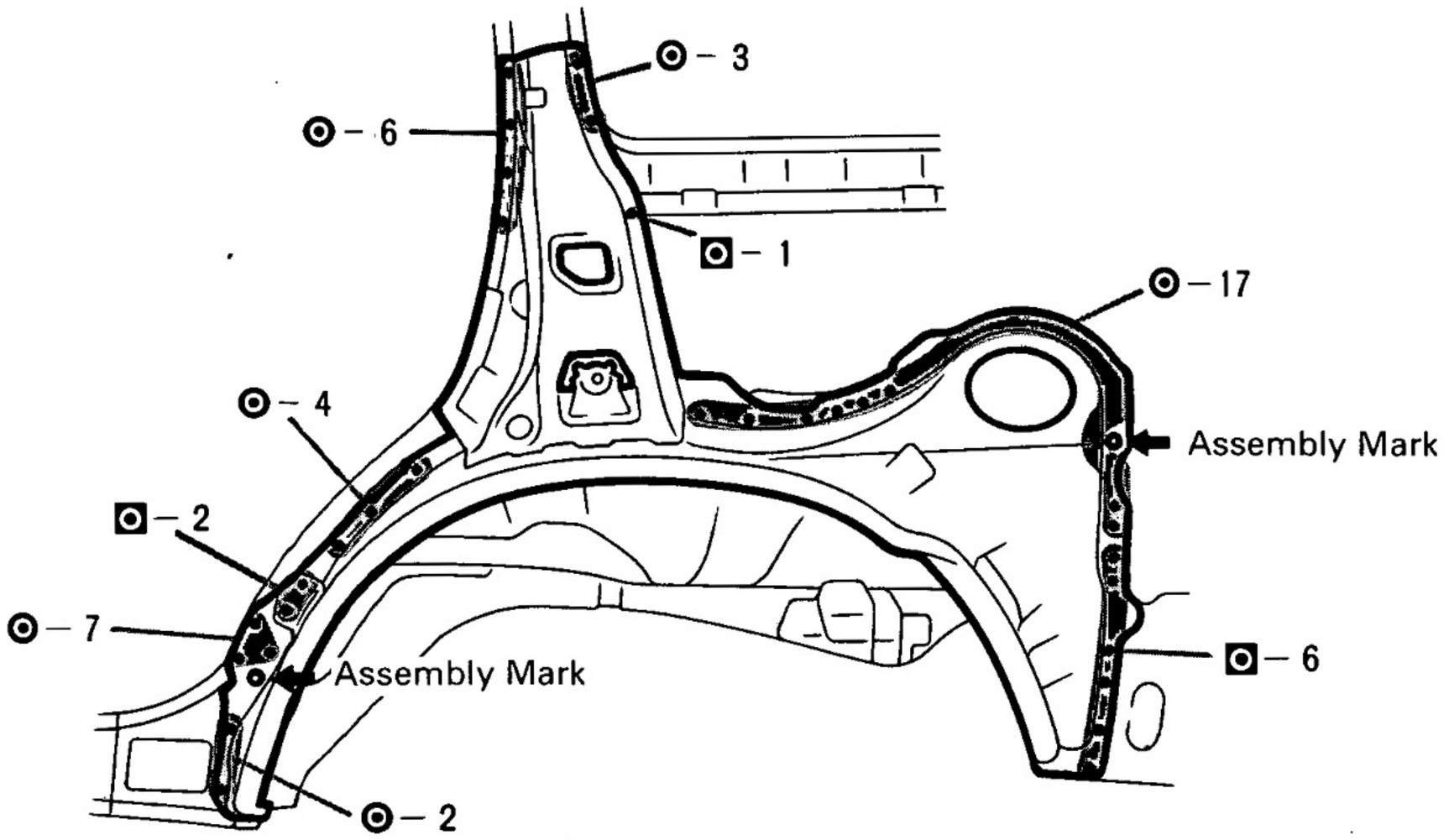


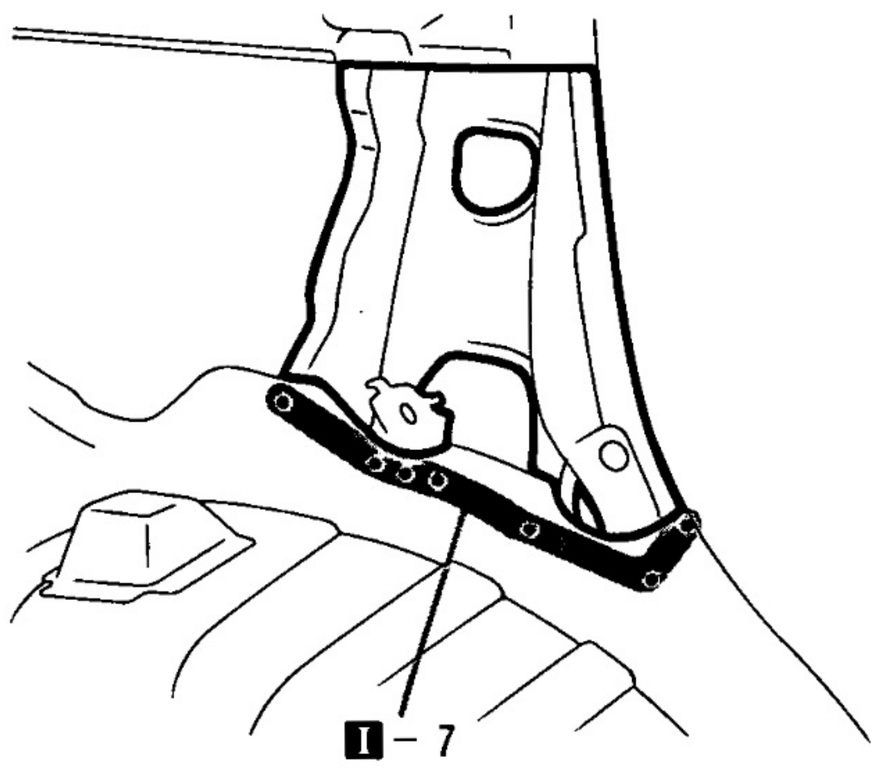
REMOVAL (With the quarter panel removed.)





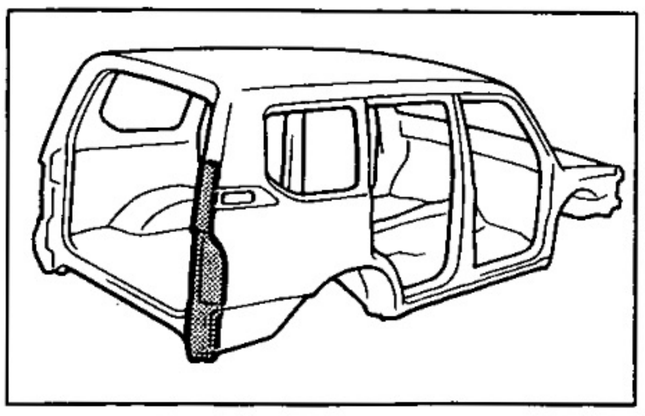
INSTALLATION



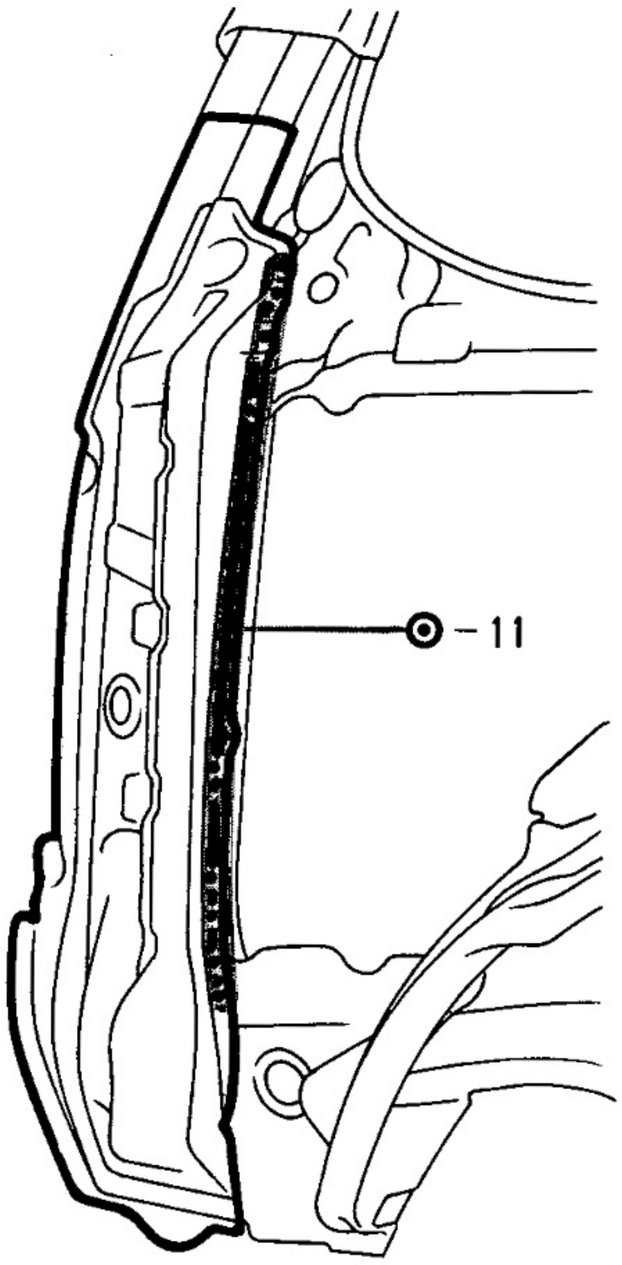


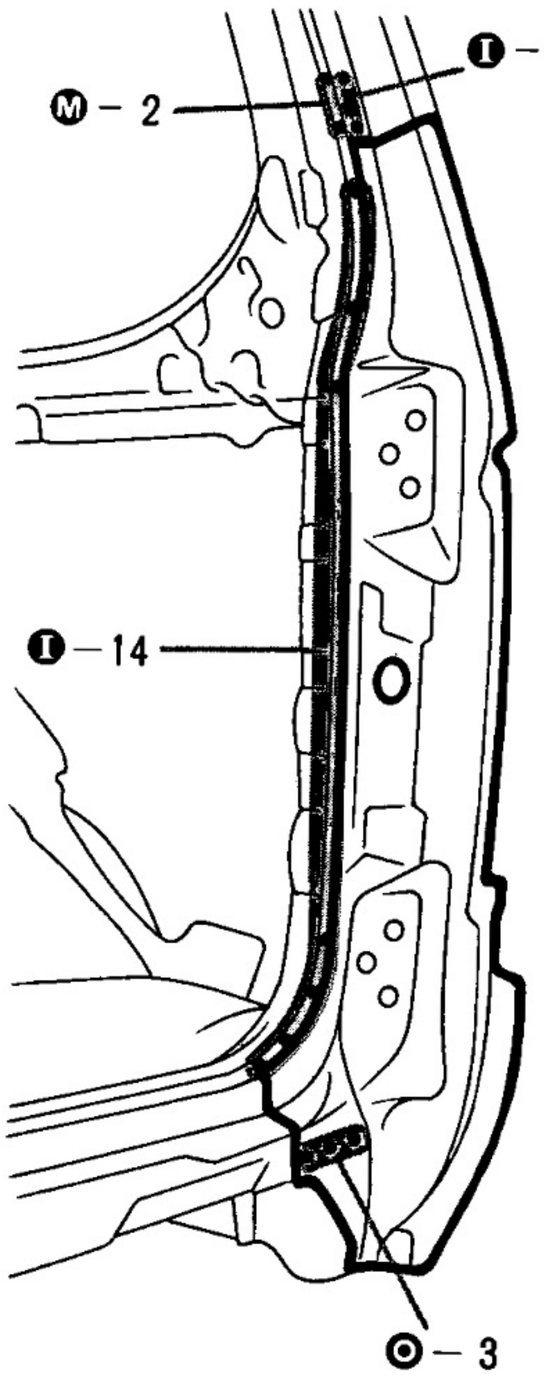
1. Determine the position of the new parts by the assembly marks of the inner and outer panels.
2. Before welding the new parts, temporarily install the quarter panel and check the fit.

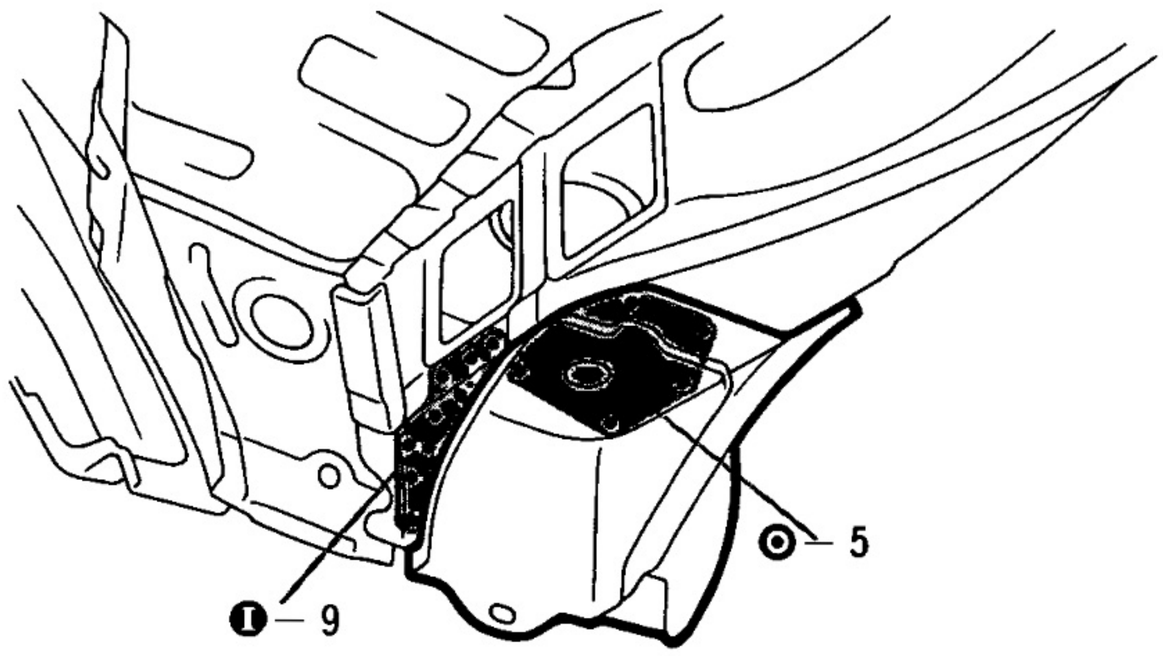
QUARTER PANEL REAR LOWER EXTENSION (ASSY)



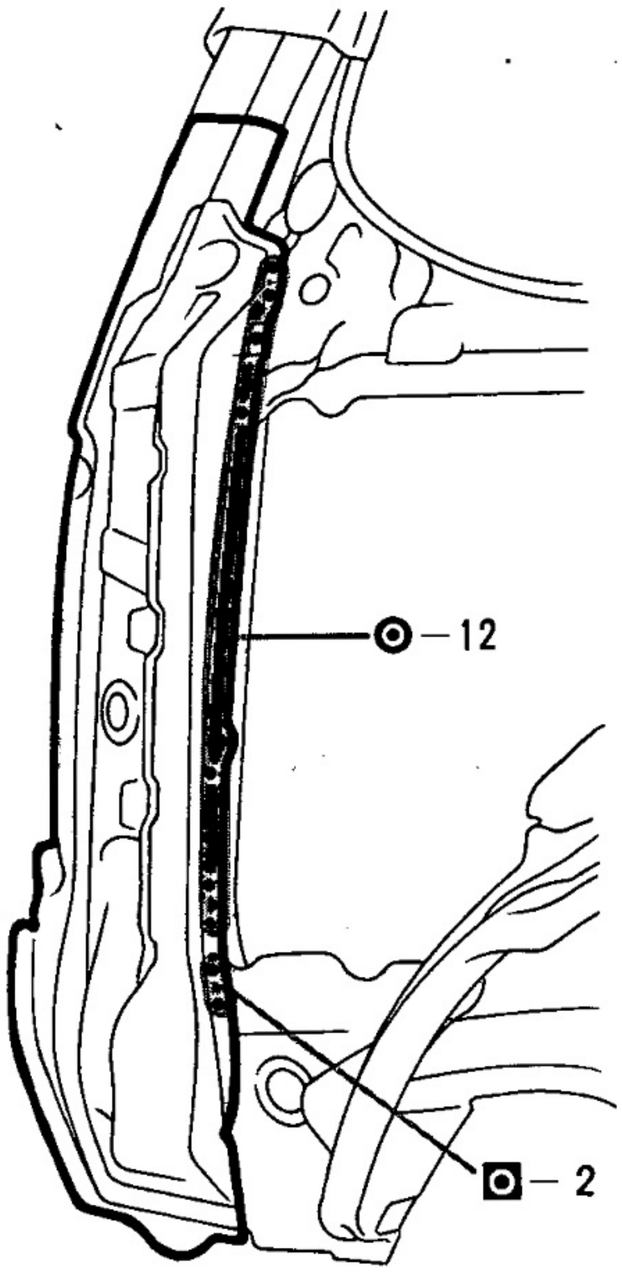
REMOVAL (With the quarter panel removed.)

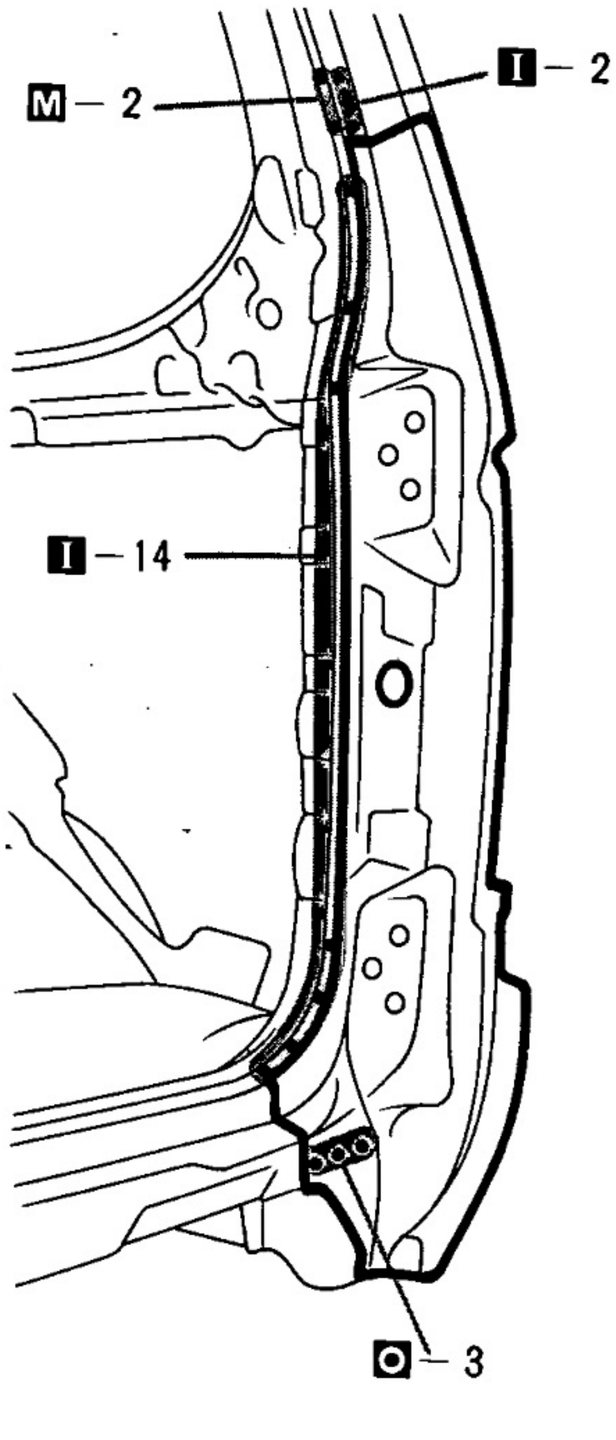


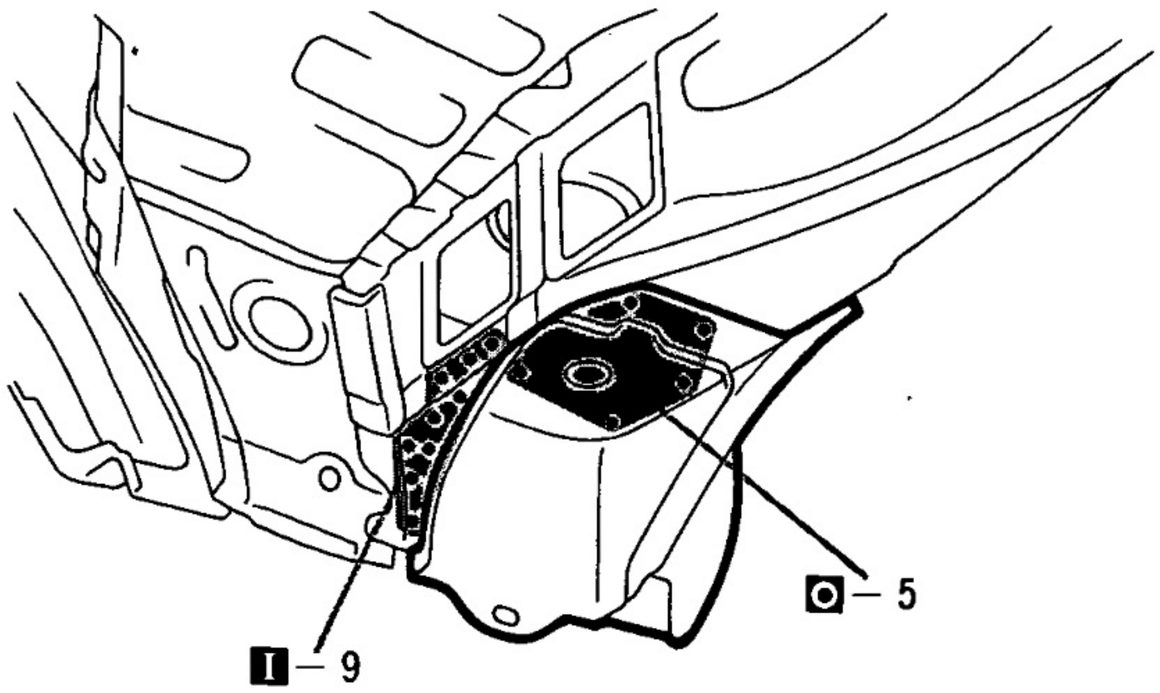




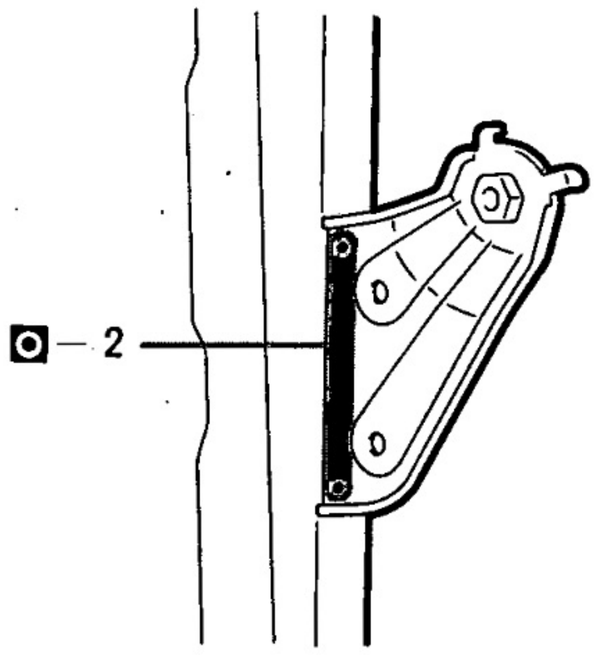
INSTALLATION



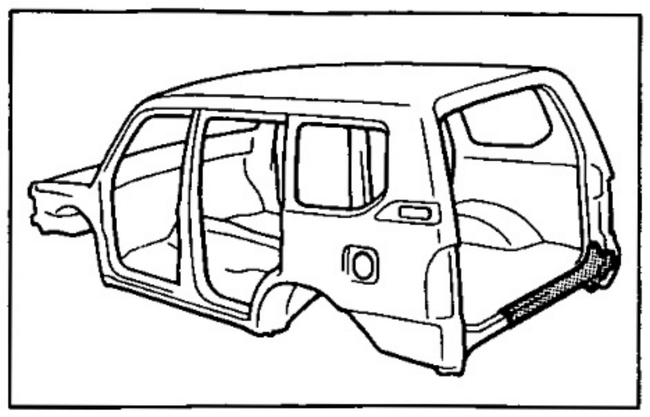




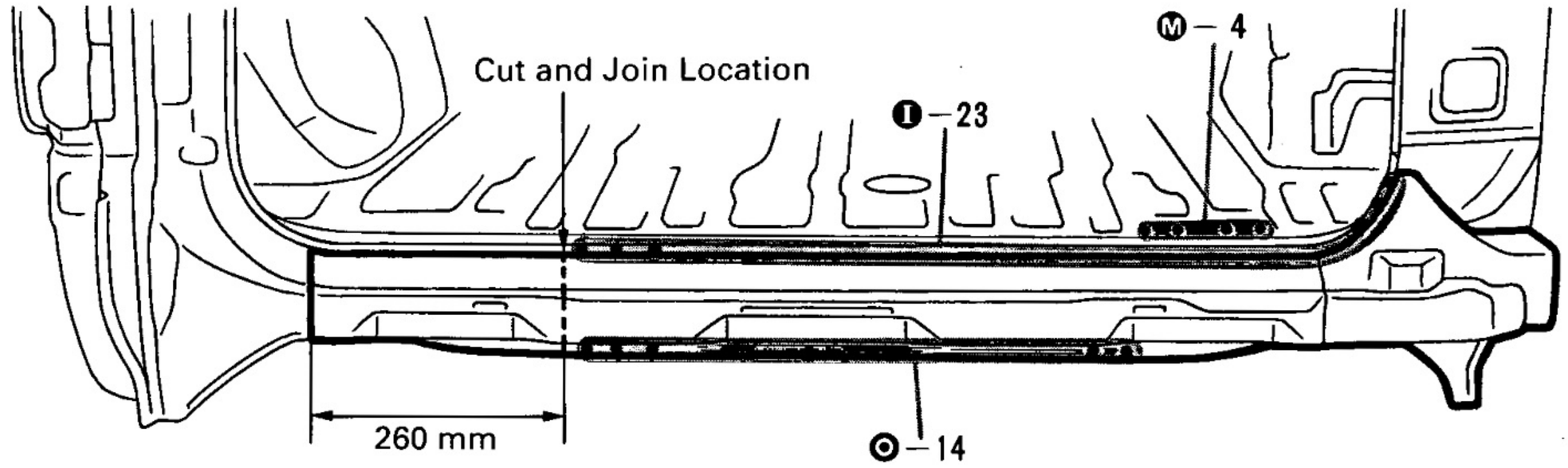
[No.2 Rear Seat Only]

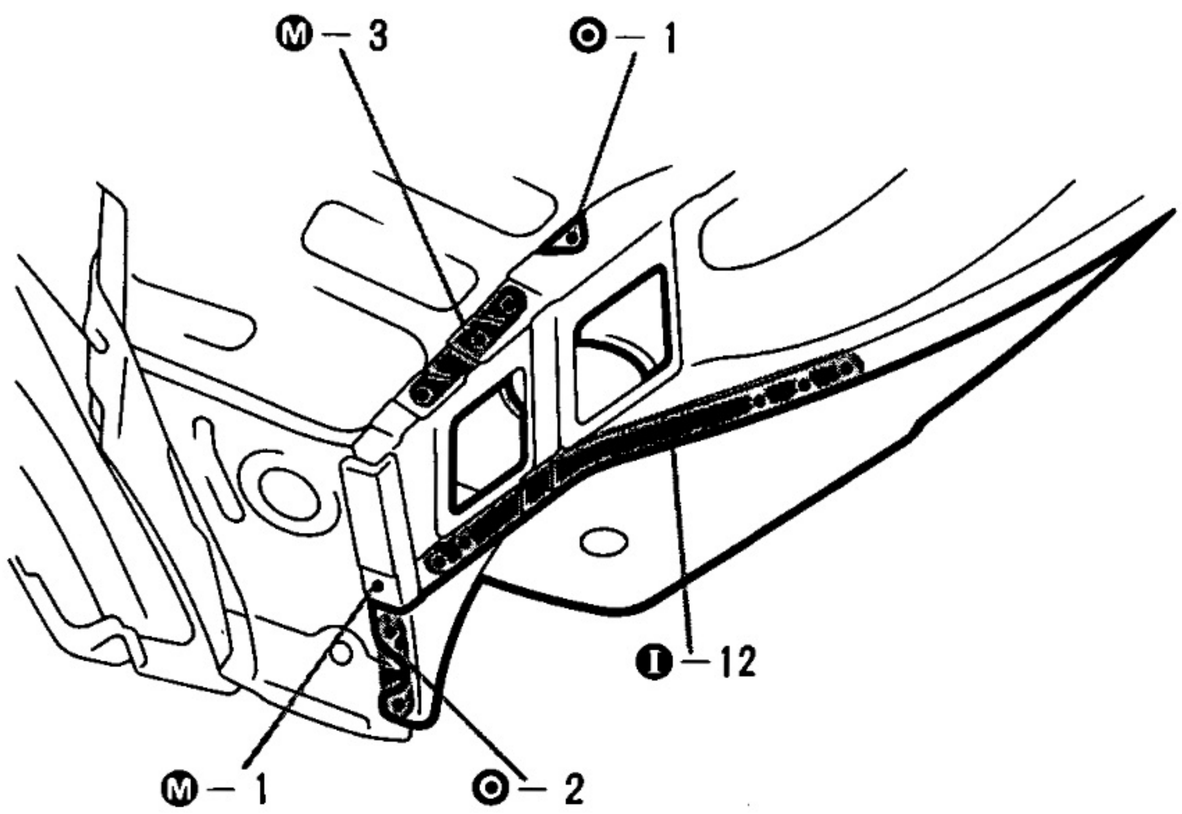


BODY LOWER BACK PANEL (CUT)



REMOVAL (With the quarter panel rear lower extension removed.)

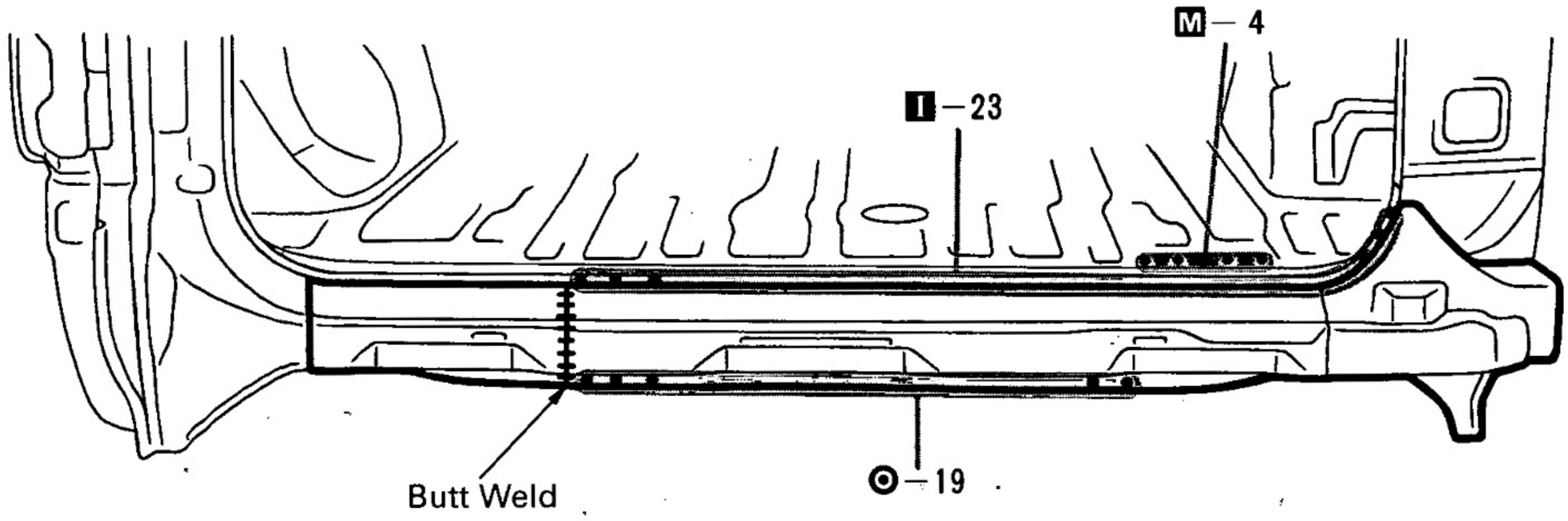


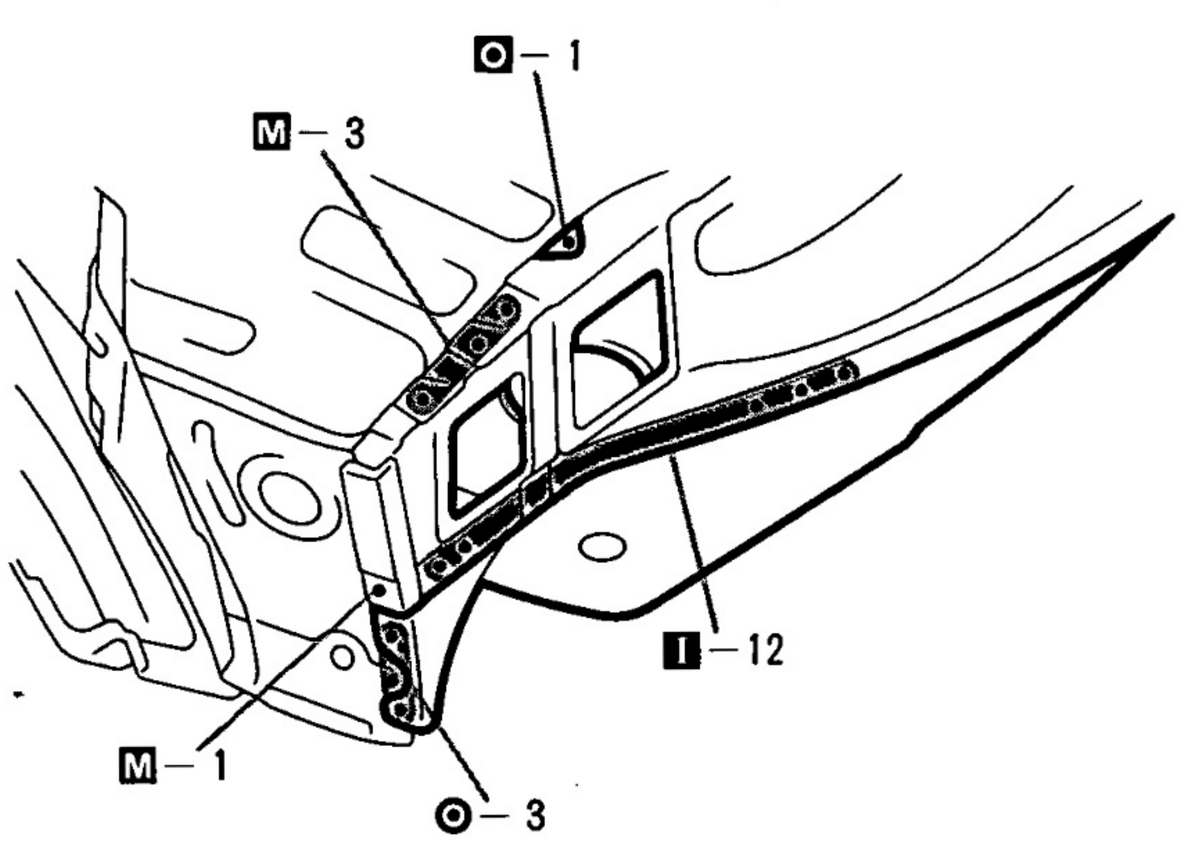


1. Cut and join the parts at the location as shown above.

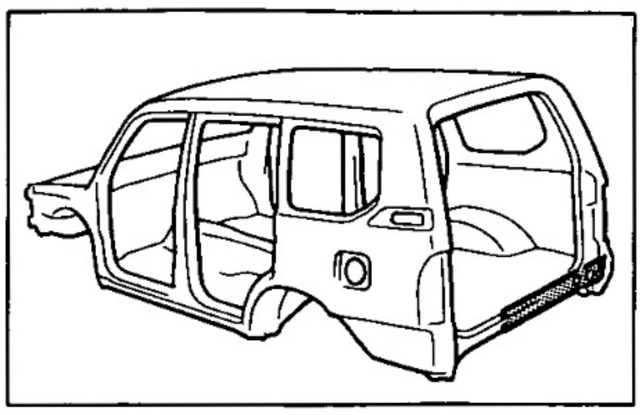
mm	in.
260	10.24

INSTALLATION

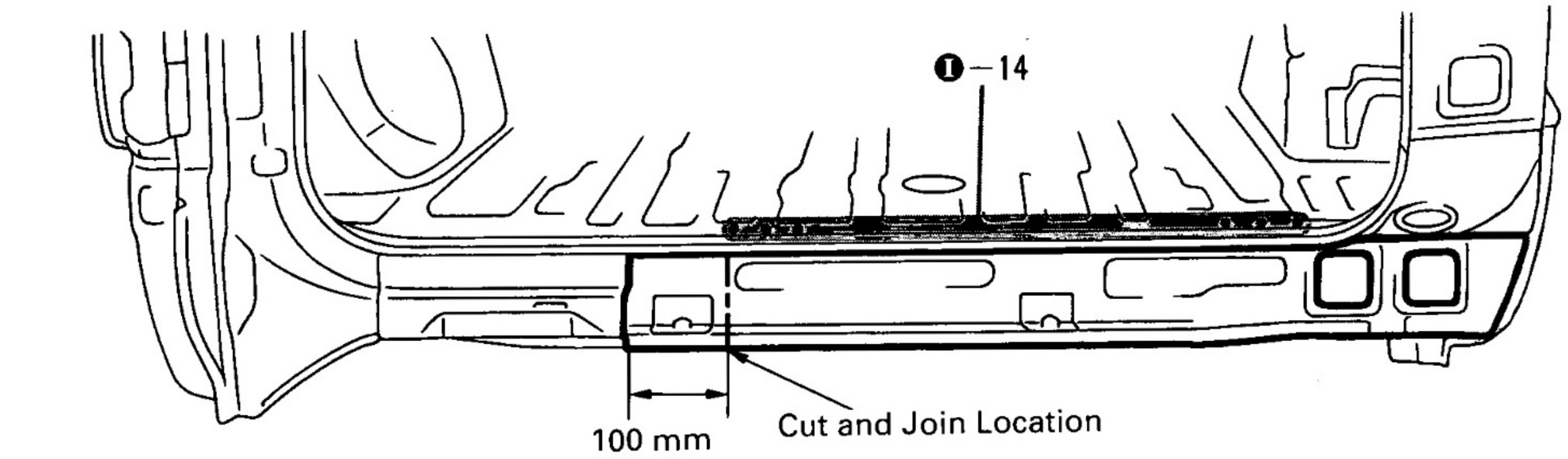


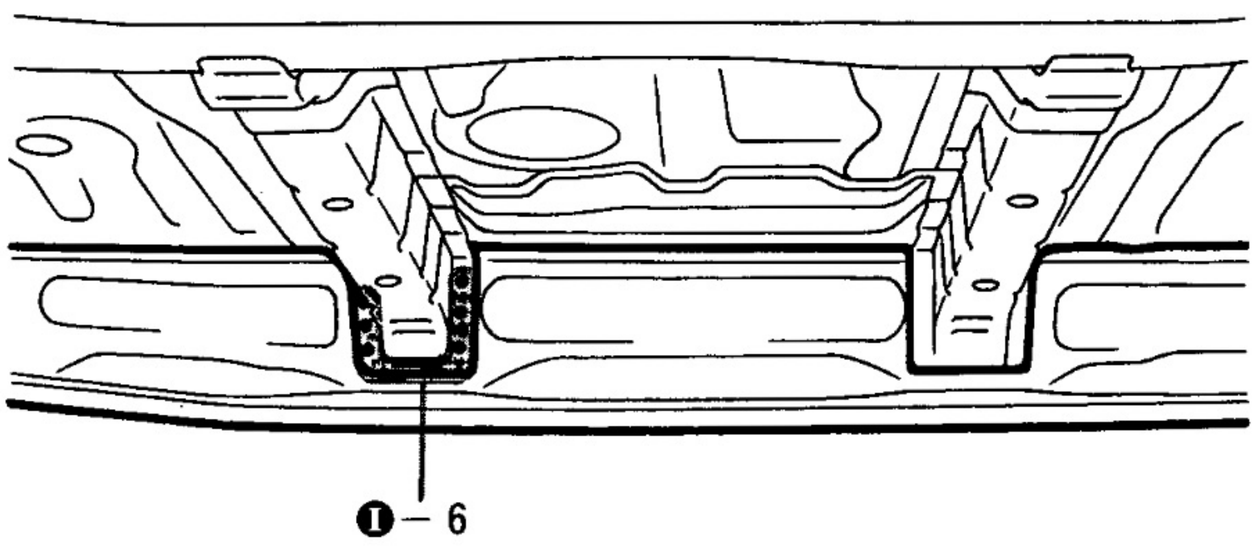


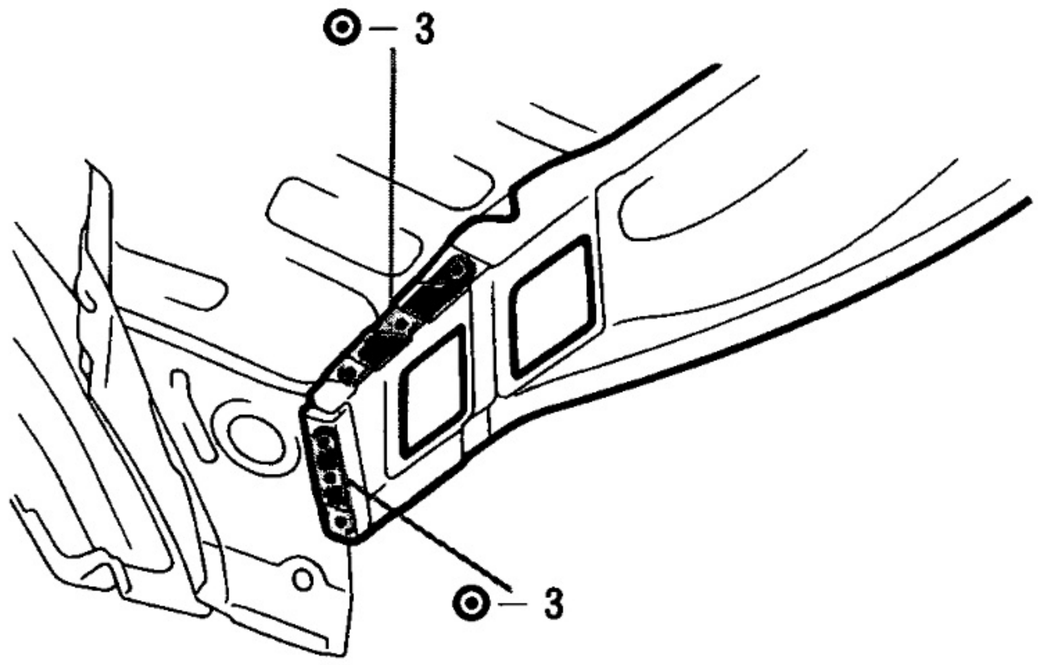
REAR FLOOR INNER CROSSMEMBER (CUT)



REMOVAL (With the body lower back panel removed.)



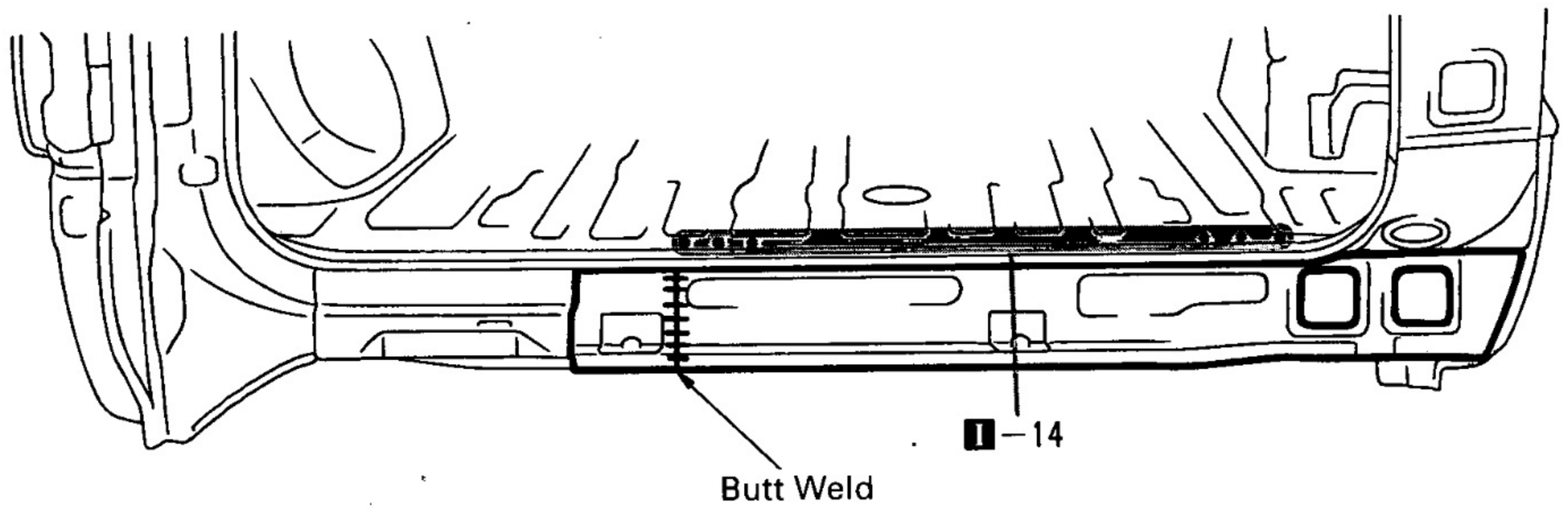


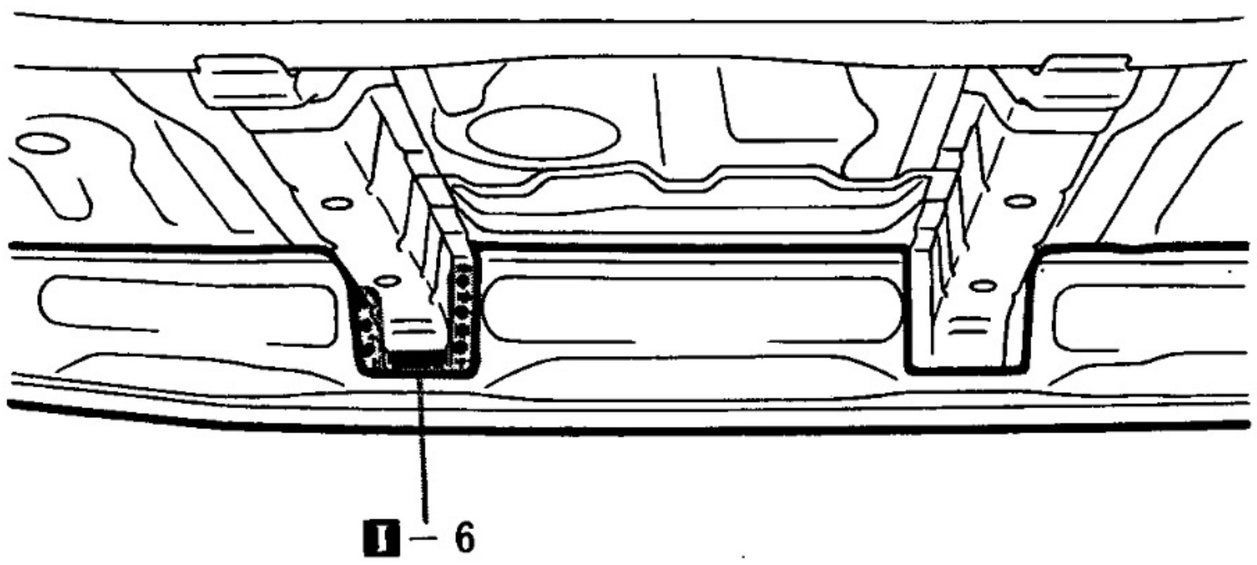


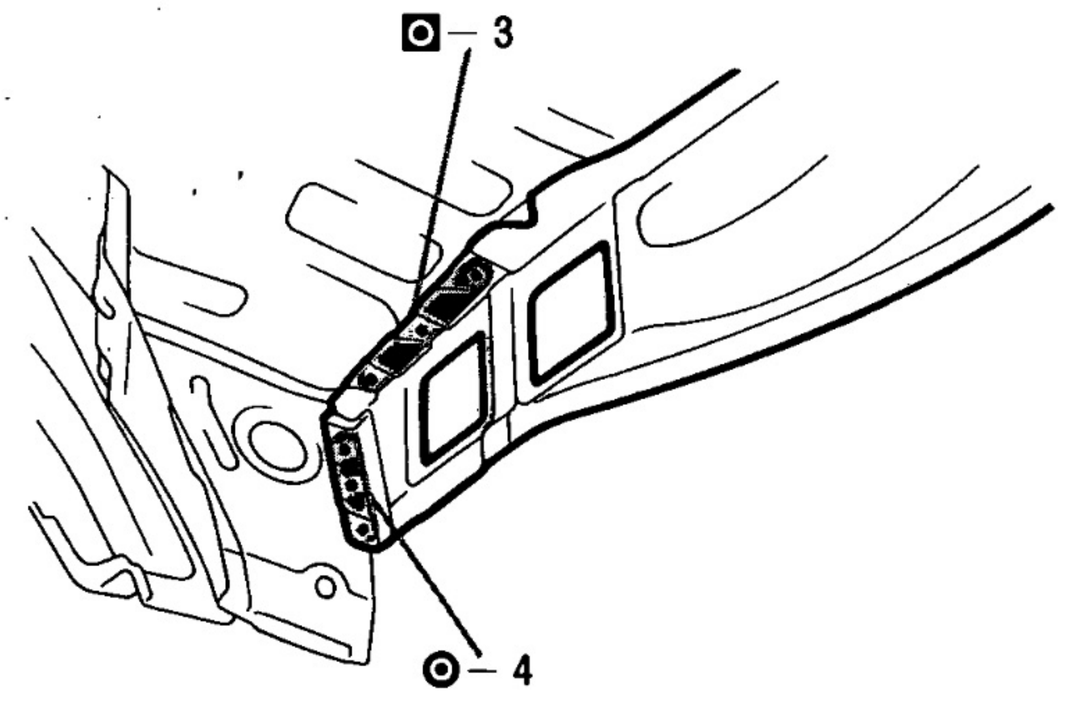
1. Cut and join the parts at the location as shown above.

mm	in.
100	3.94

INSTALLATION

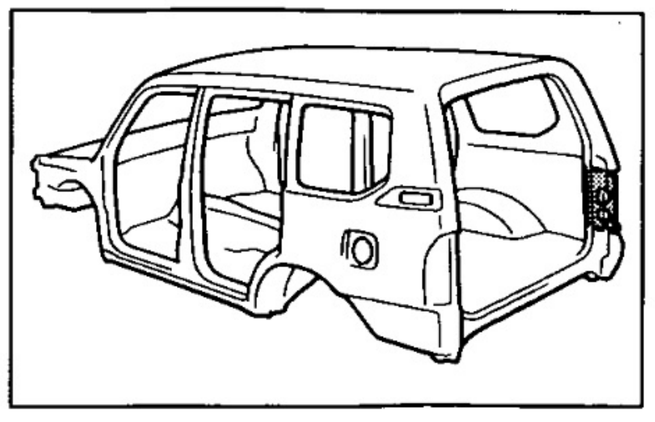




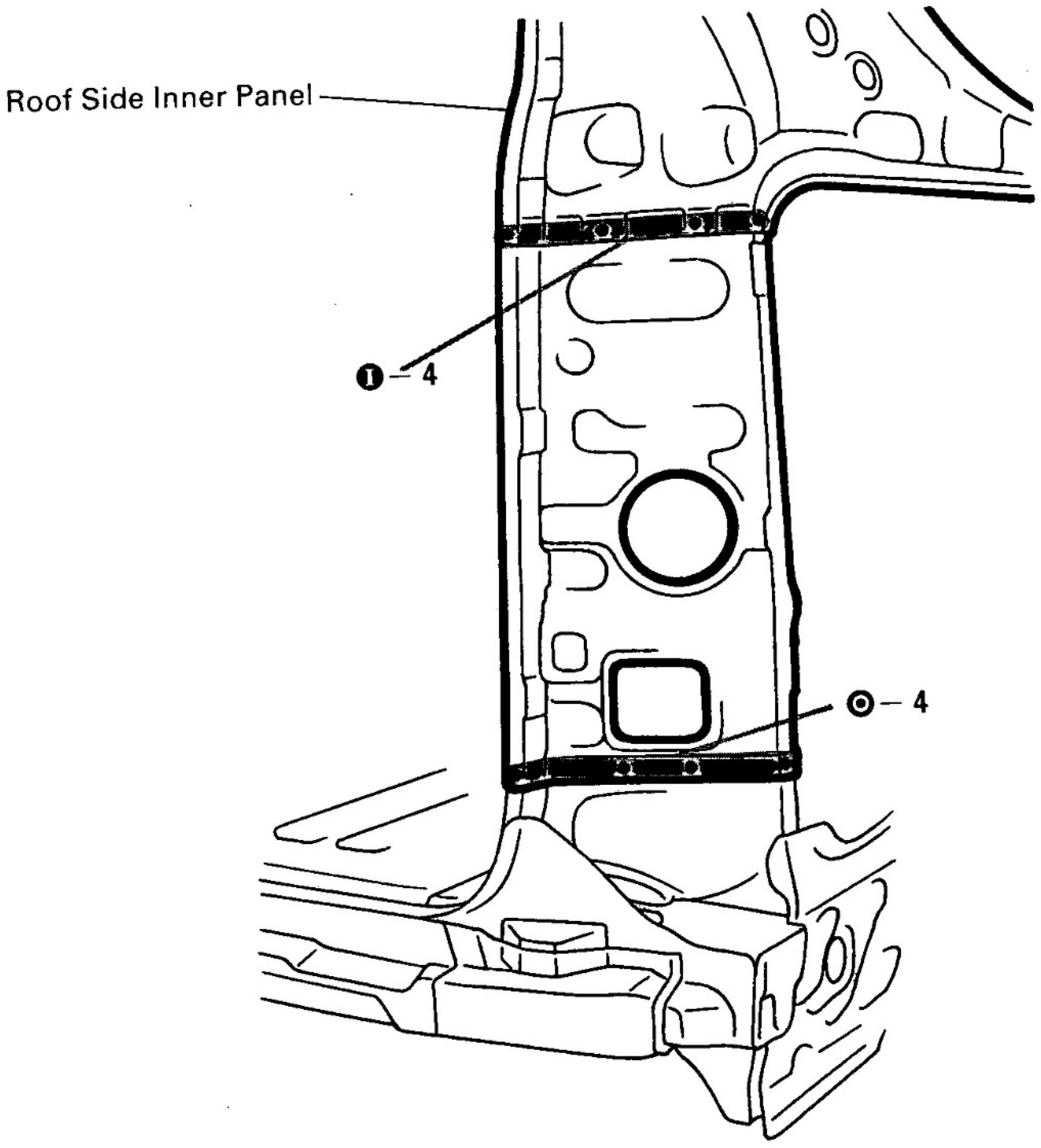


1. Before welding the new parts, temporarily install the body lower back panel and check the fit.

ROOF SIDE INNER REAR PANEL (ASSY)

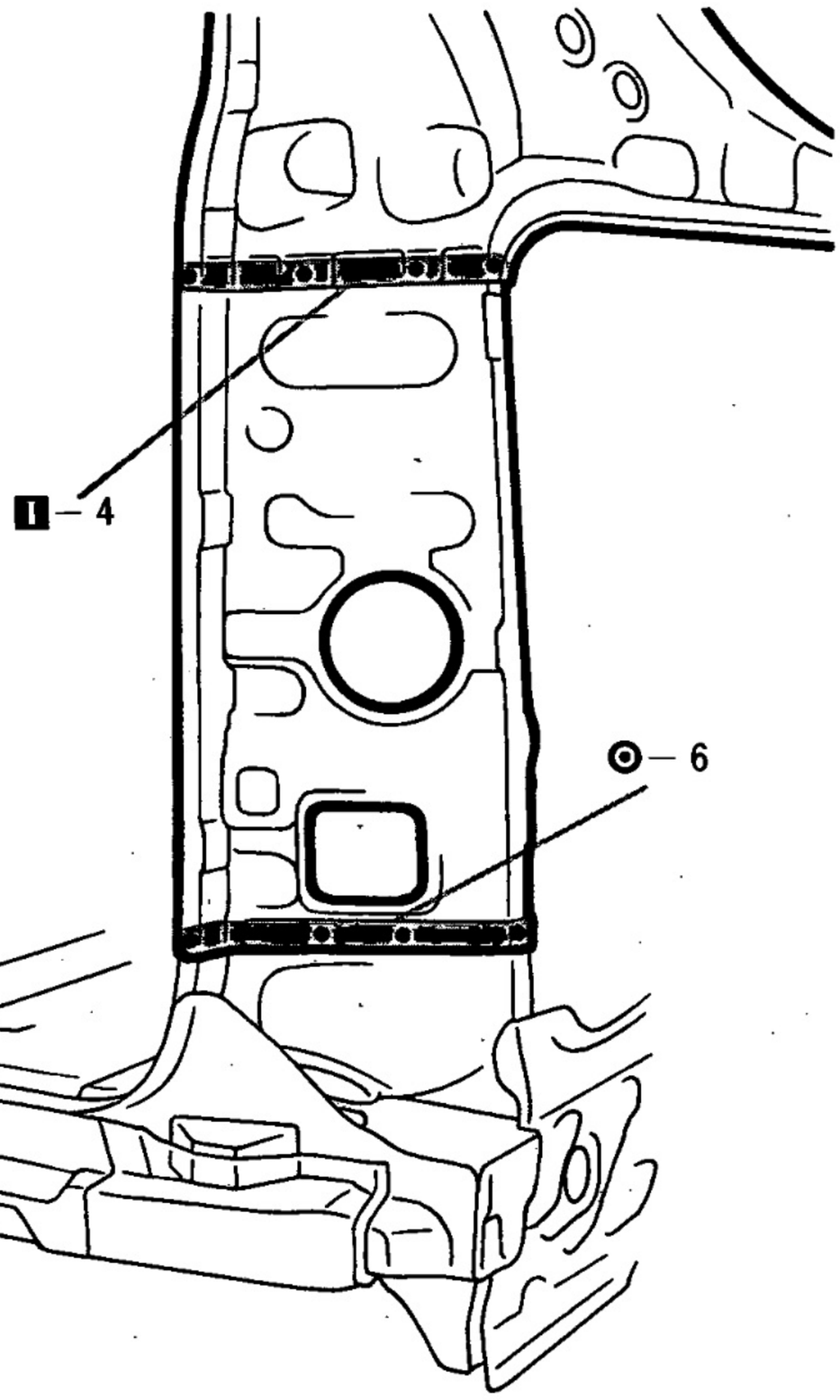


REMOVAL (With the quarter panel rear lower extension removed.)

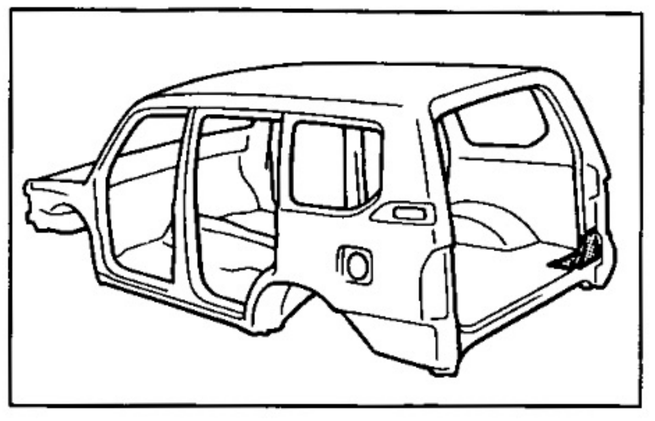


1. Leave the roof side inner panel to the vehicle side and remove the roof side inner rear panel.

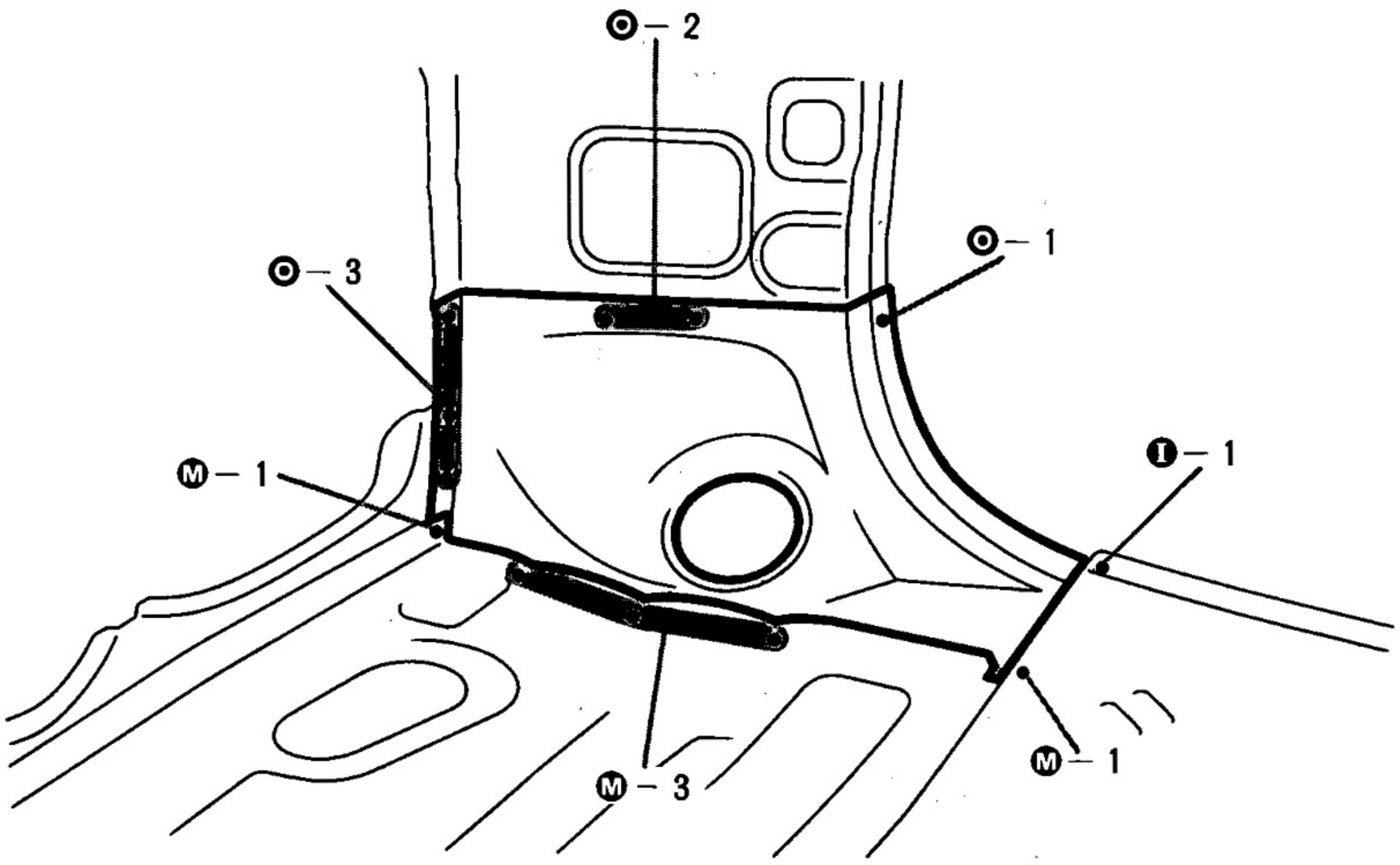
INSTALLATION



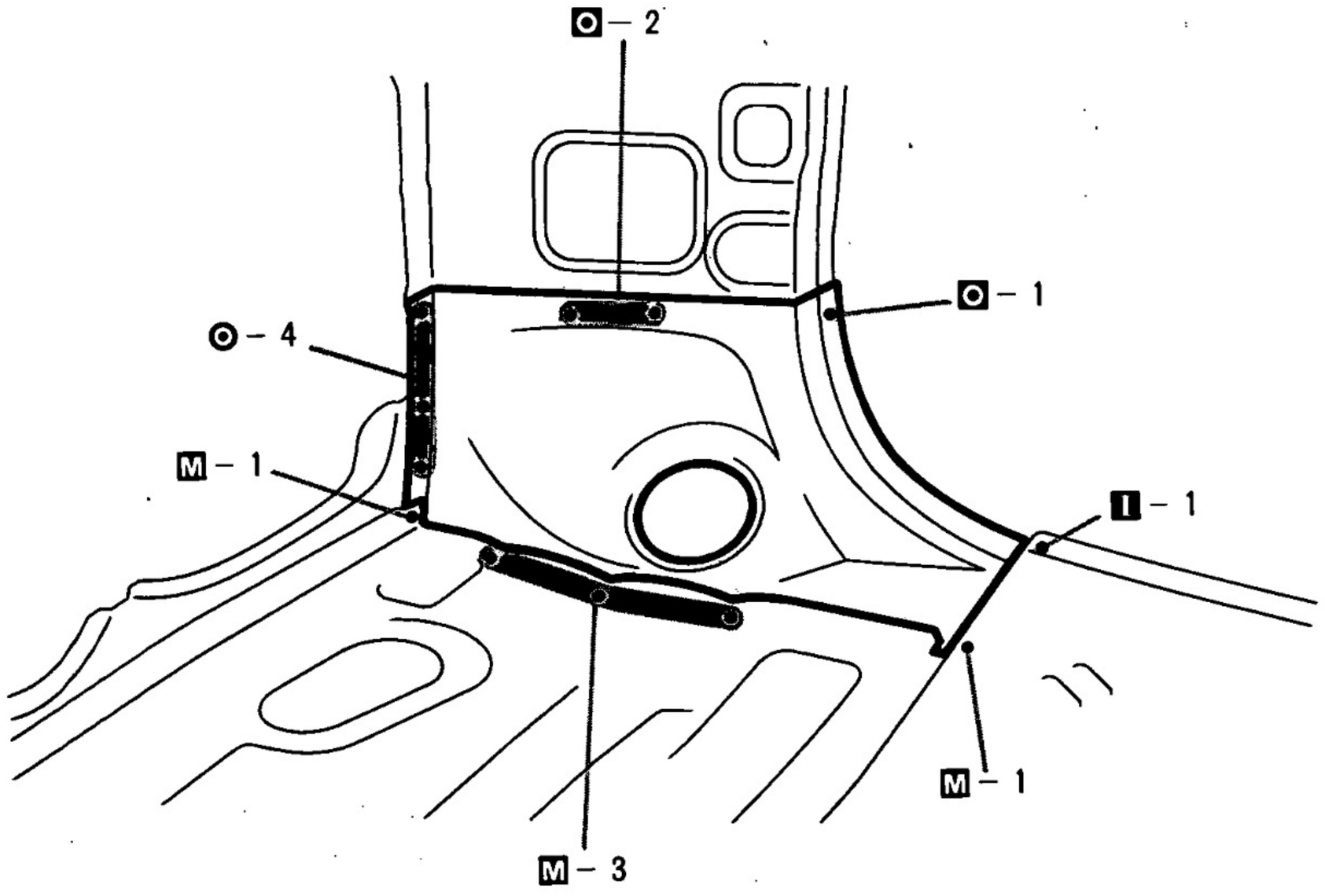
LOWER BACK UPPER GUSSET (ASSY)



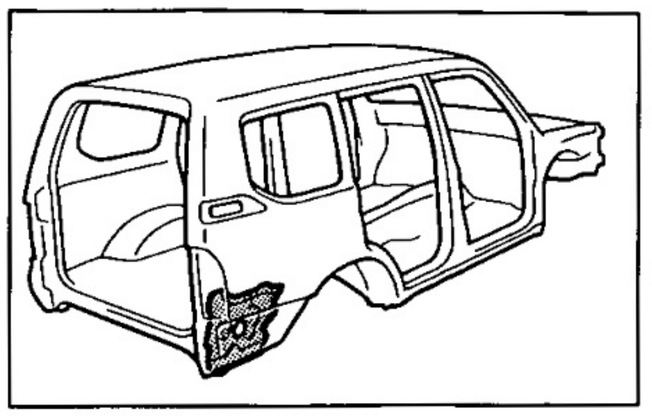
REMOVAL (With the quarter panel rear lower extension removed.)



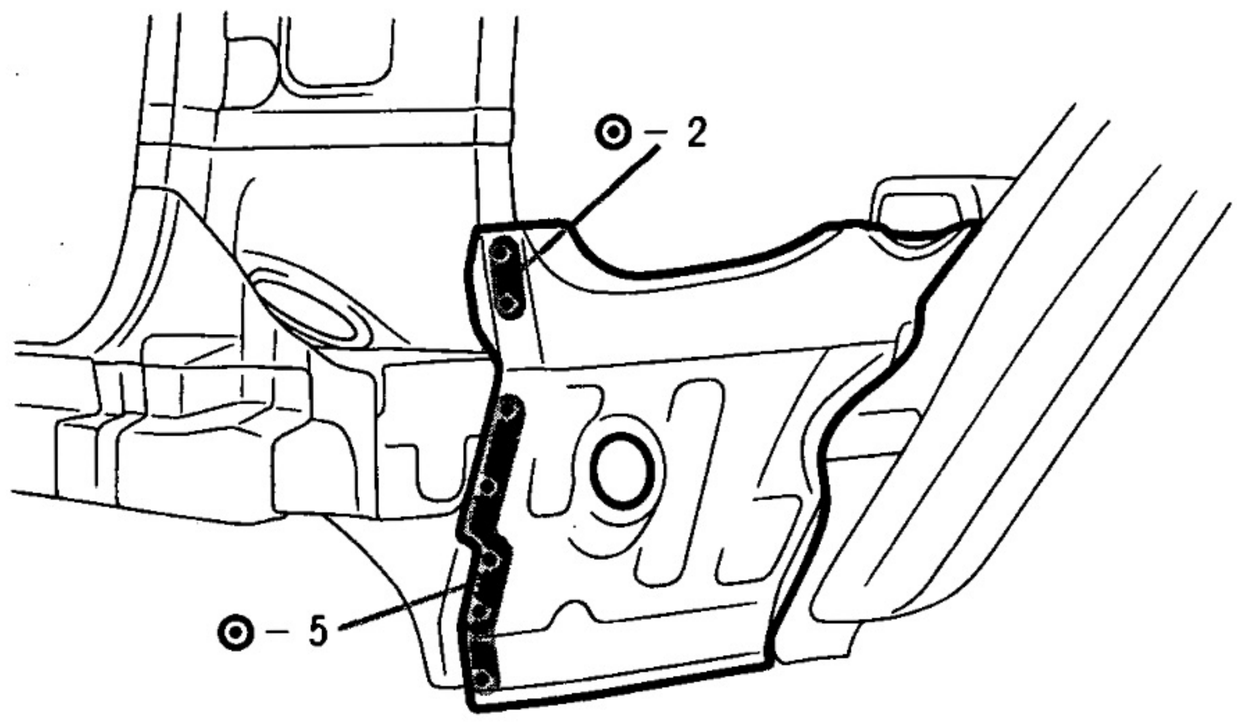
INSTALLATION

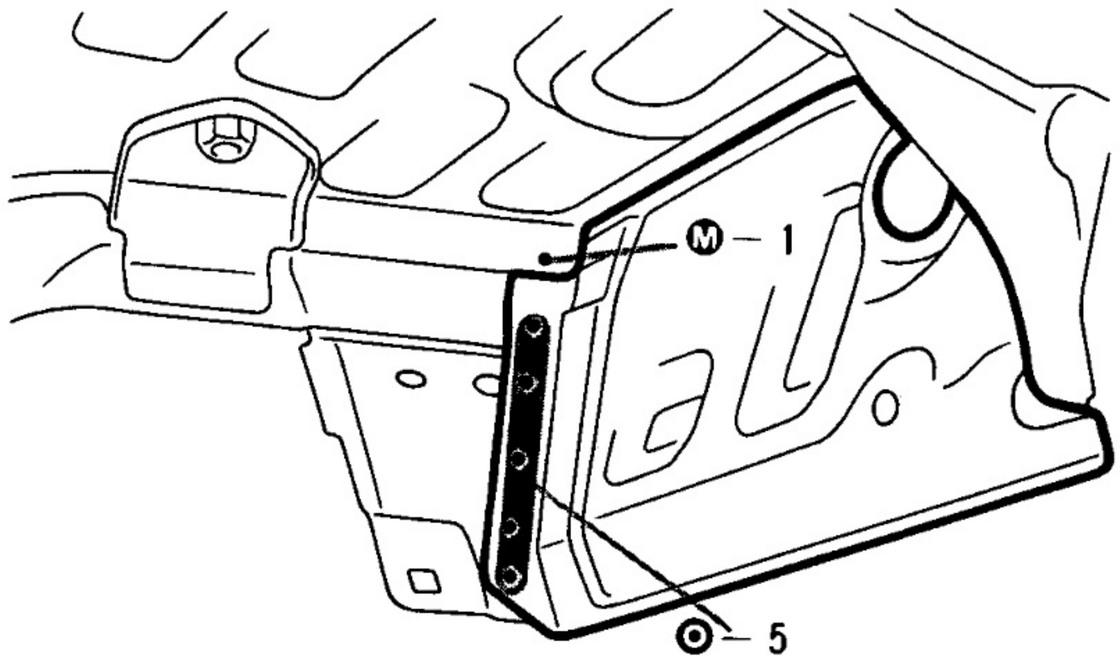


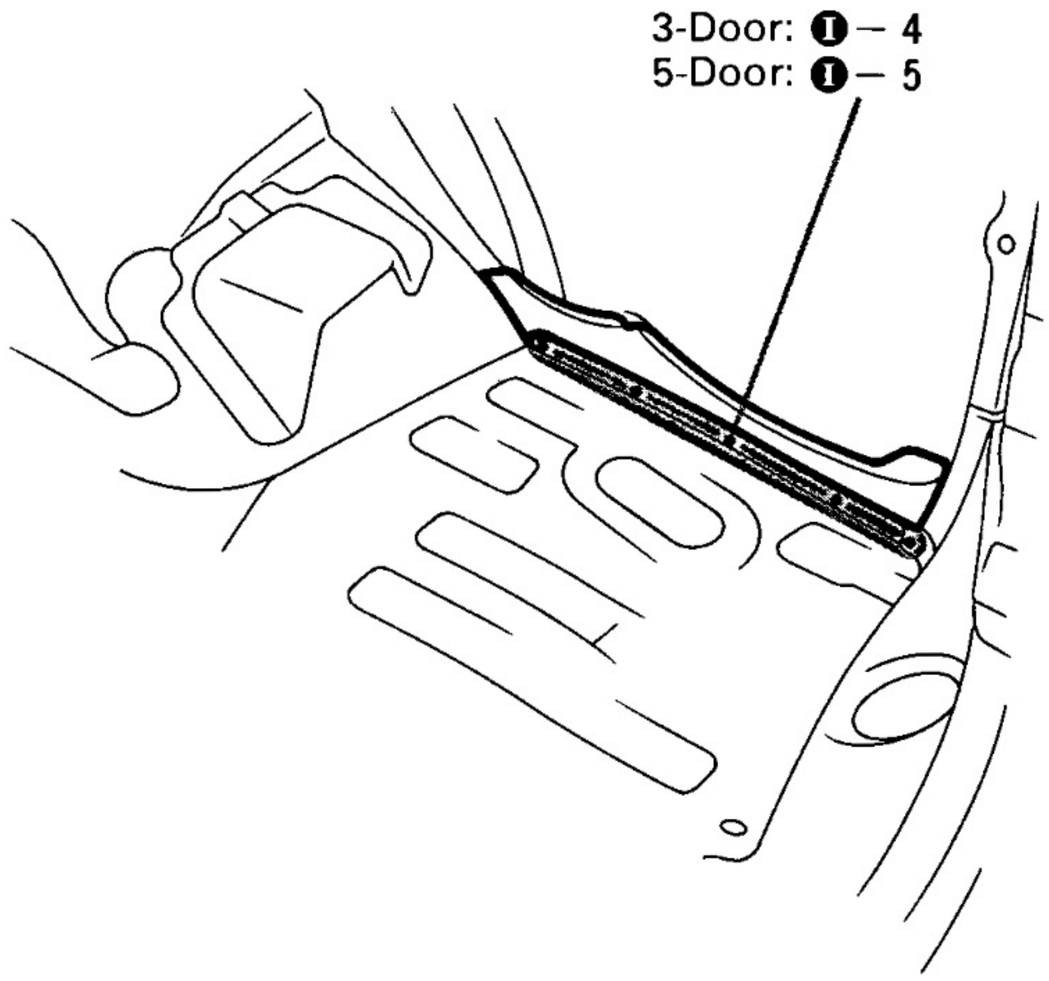
REAR FLOOR SIDE PANEL EXTENSION (ASSY): Right Side



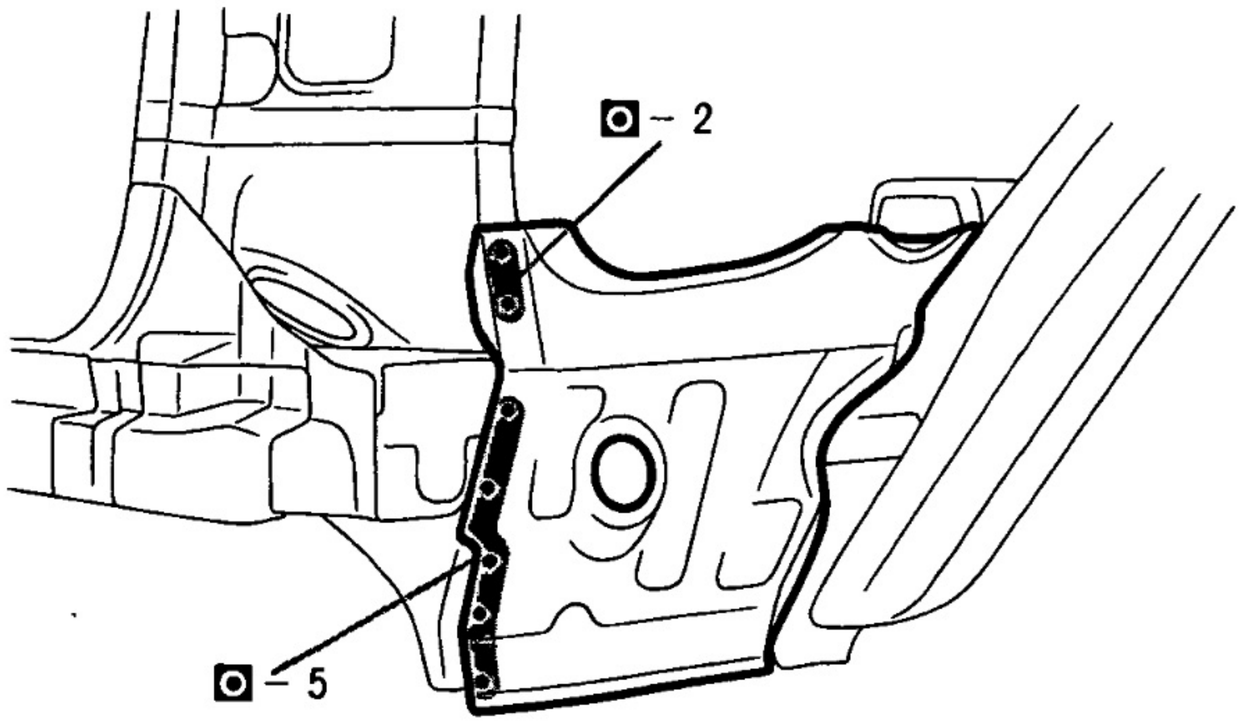
REMOVAL (With the quarter panel rear lower extension removed.)

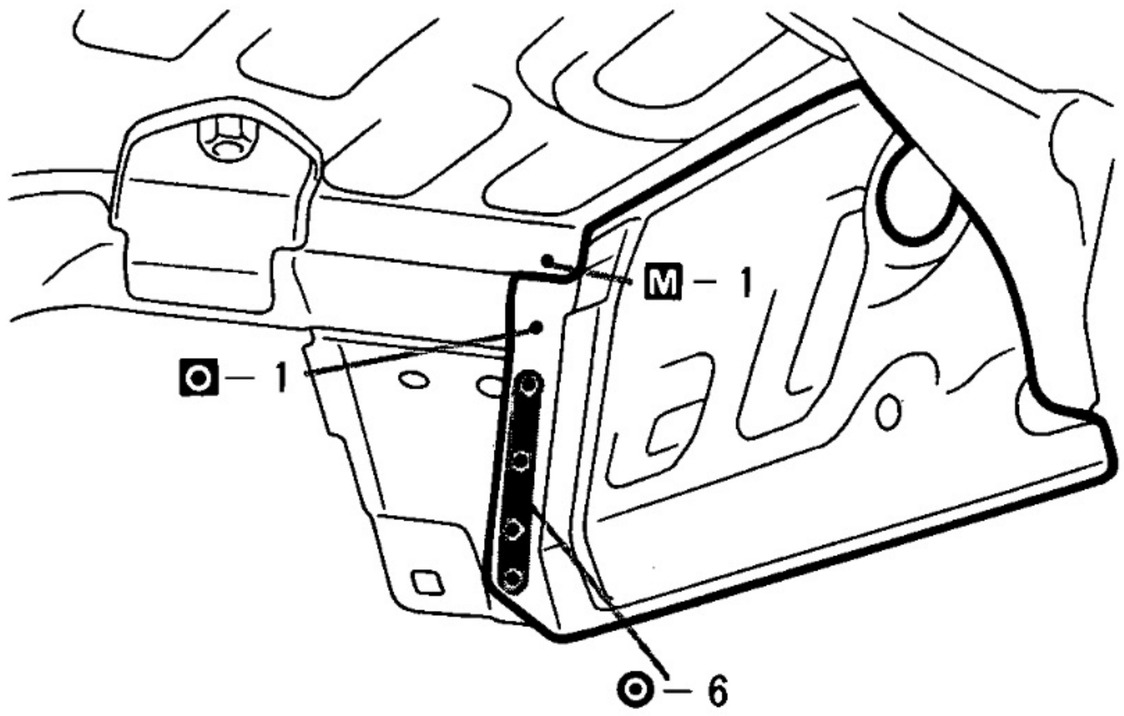


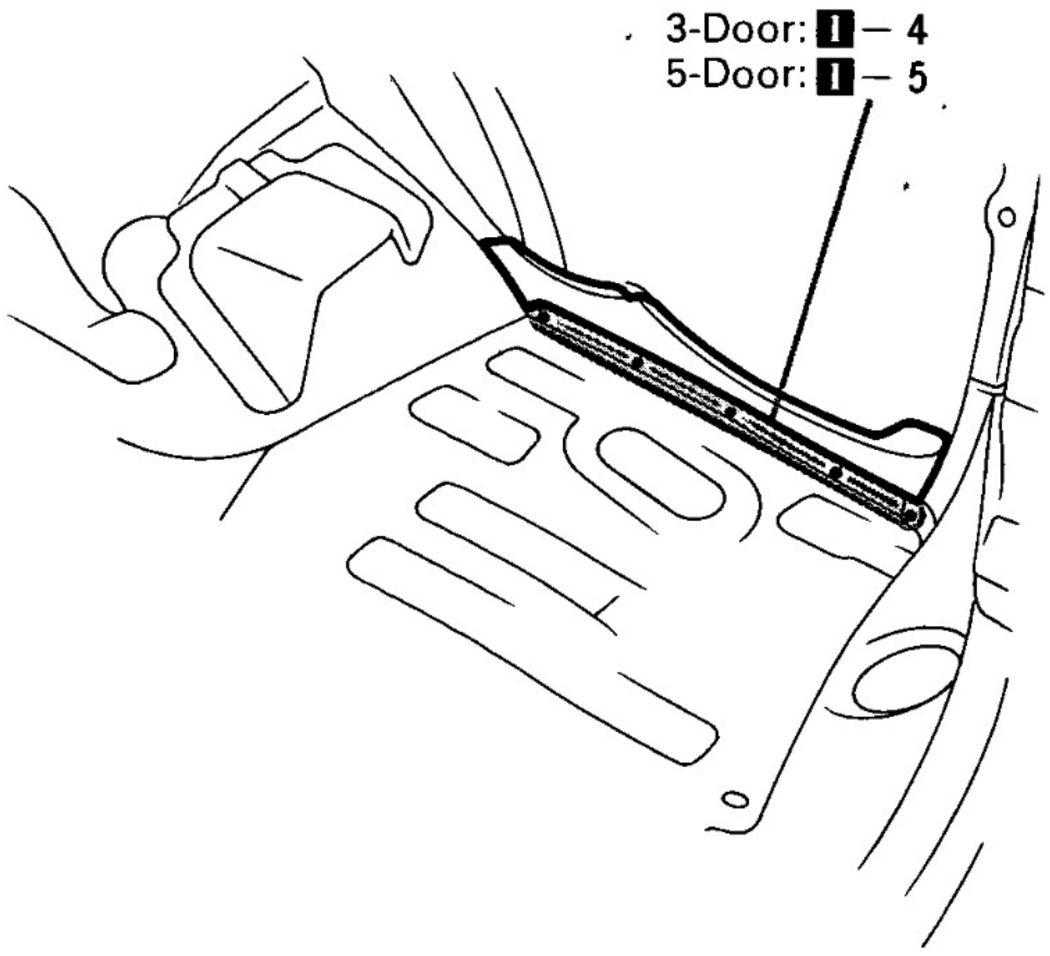




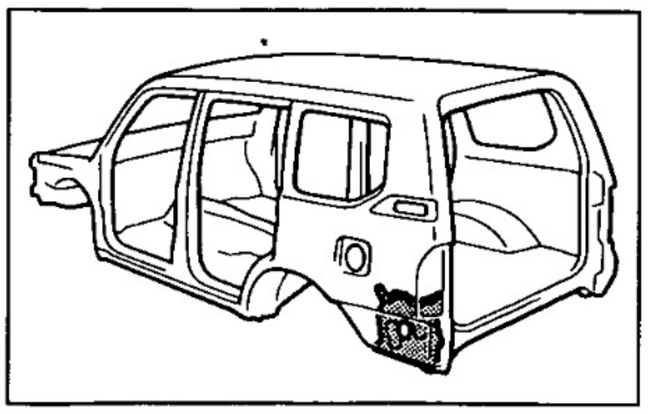
INSTALLATION



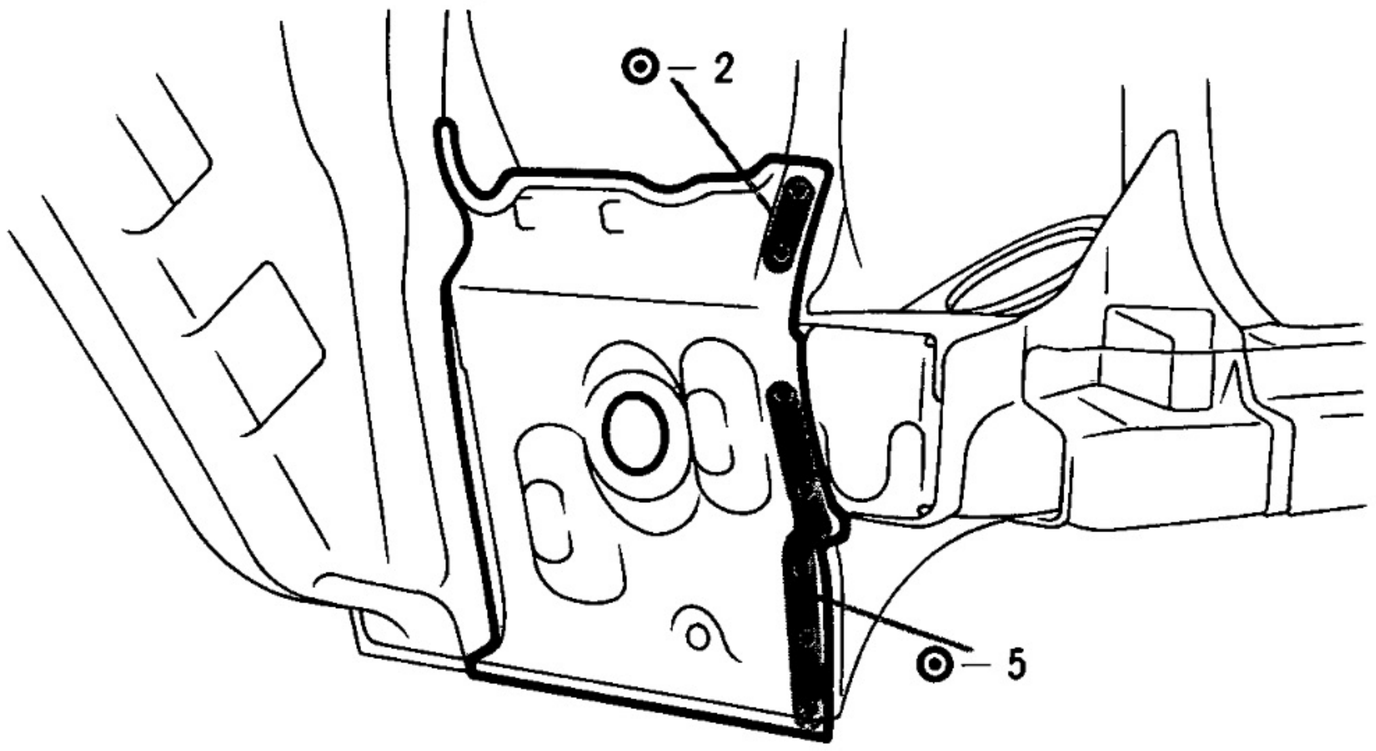


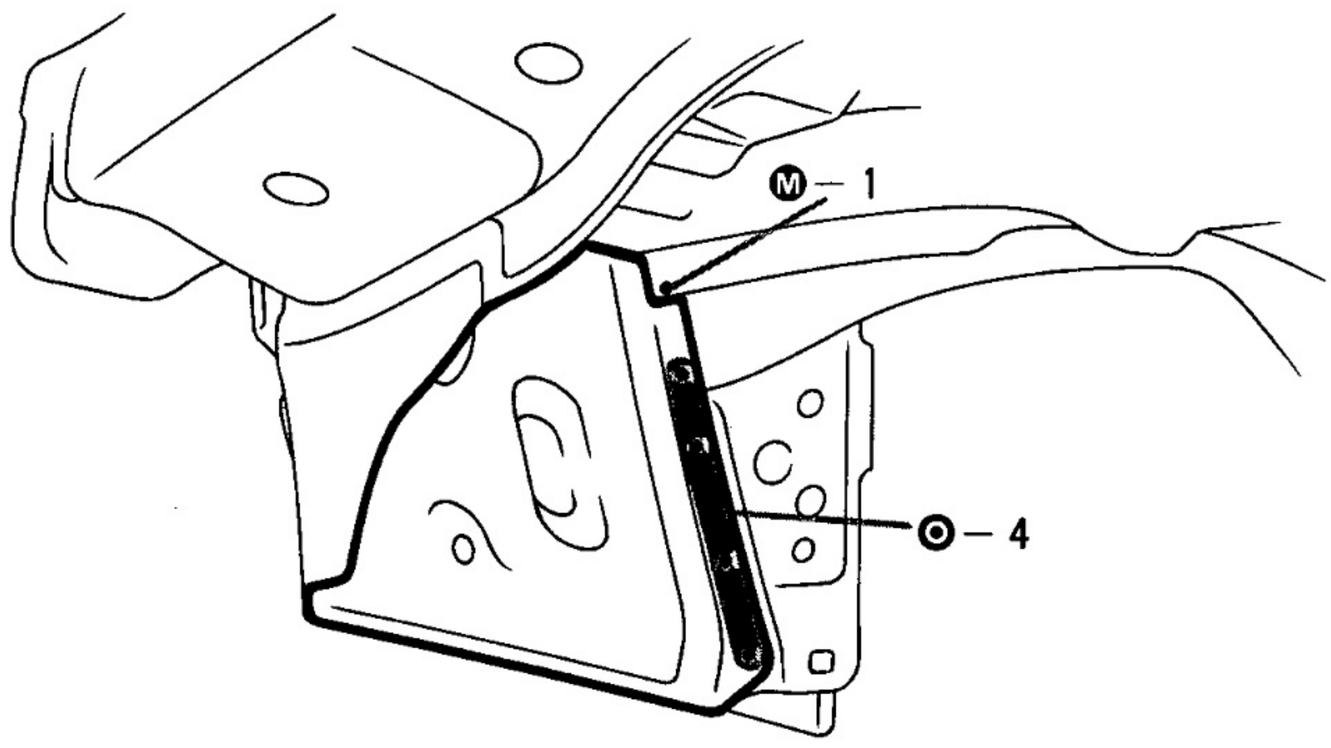


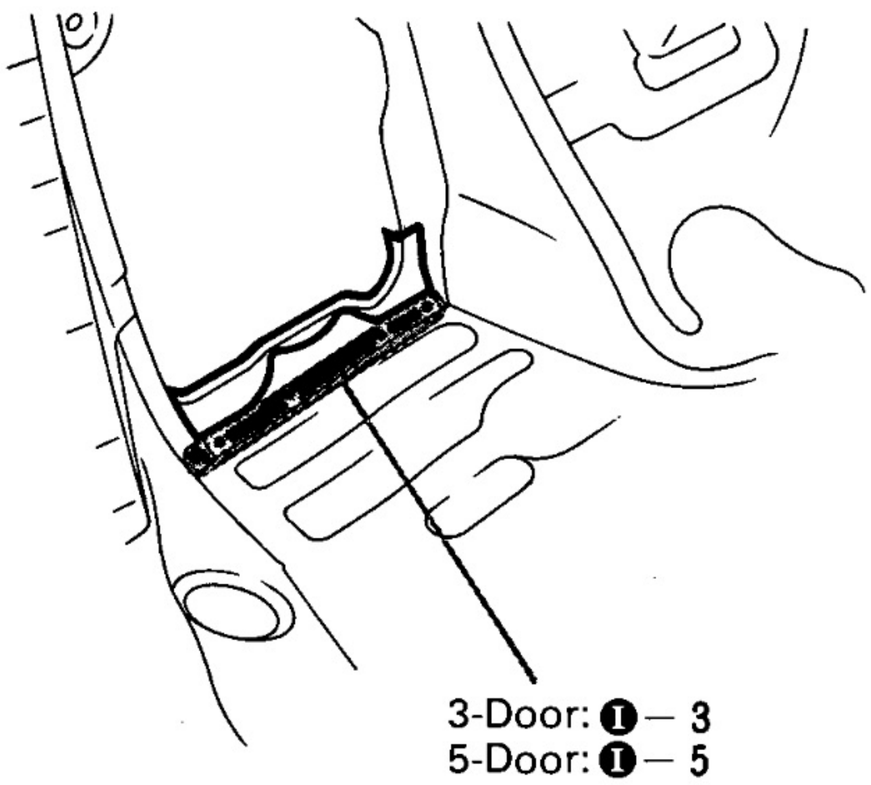
REAR FLOOR SIDE PANEL EXTENSION (ASSY): Left Side



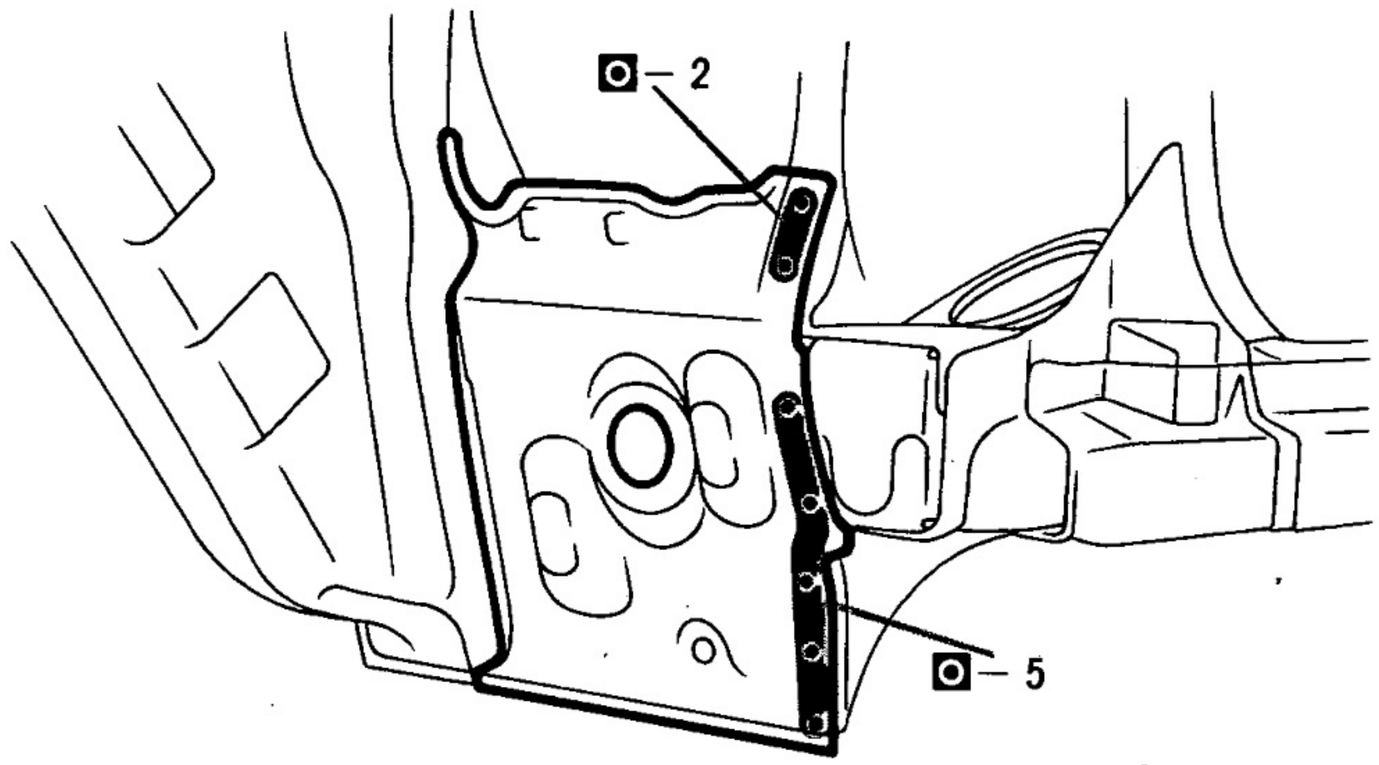
REMOVAL (With the quarter panel rear lower extension removed.)

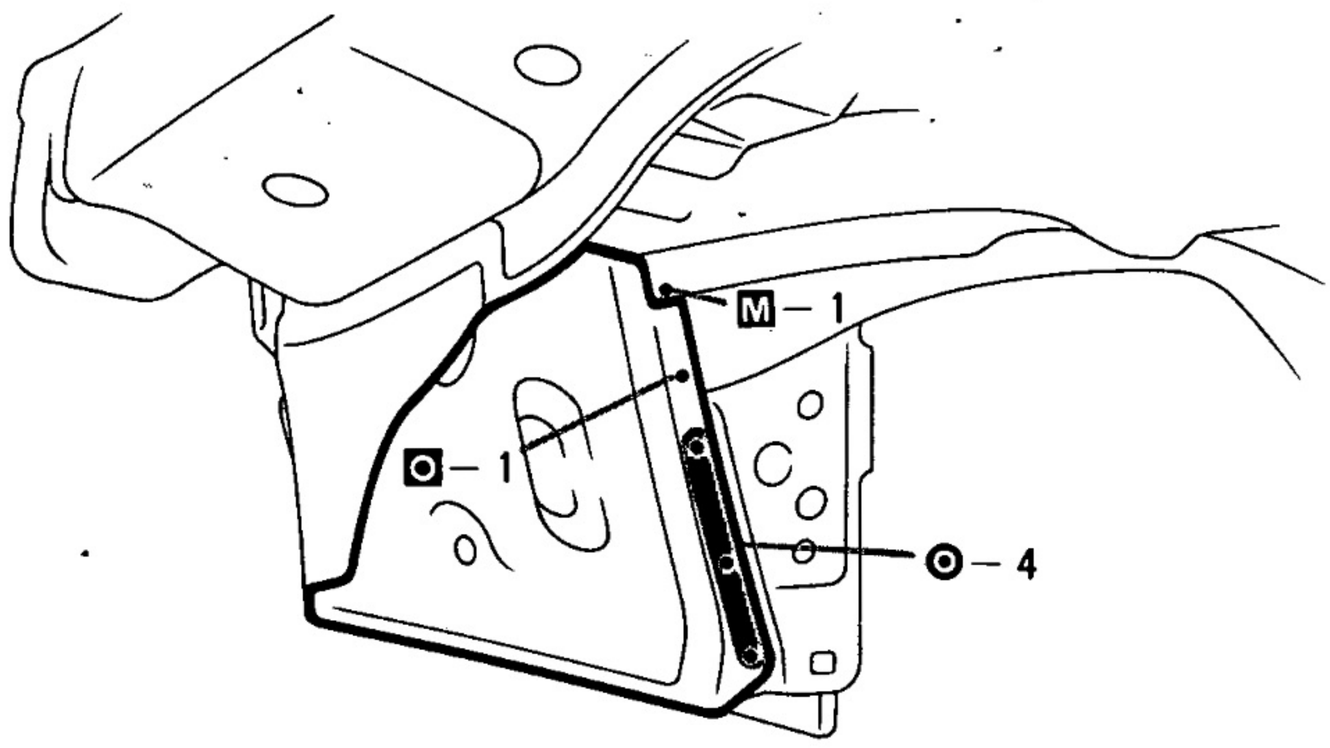


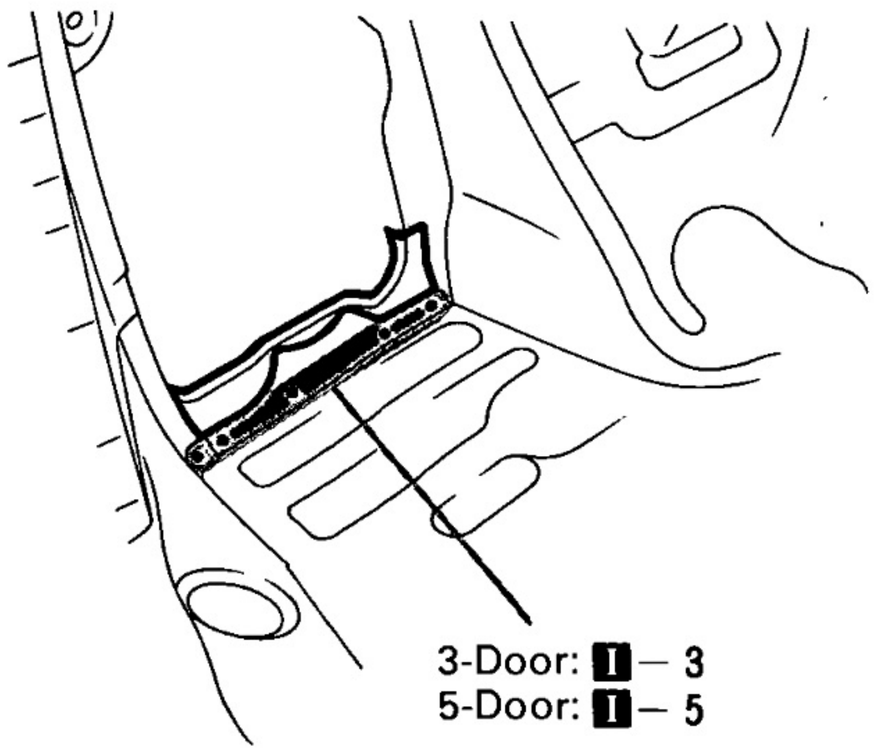




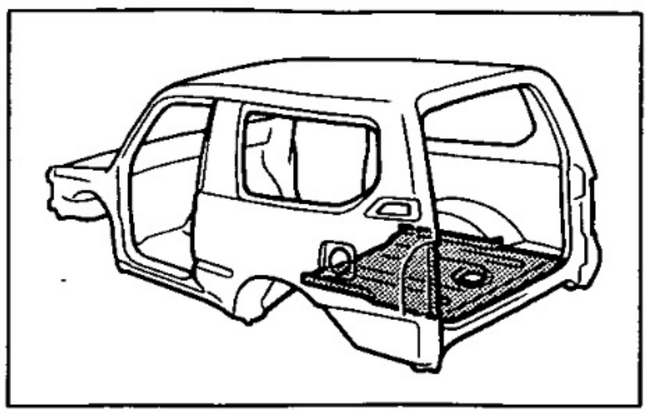
INSTALLATION



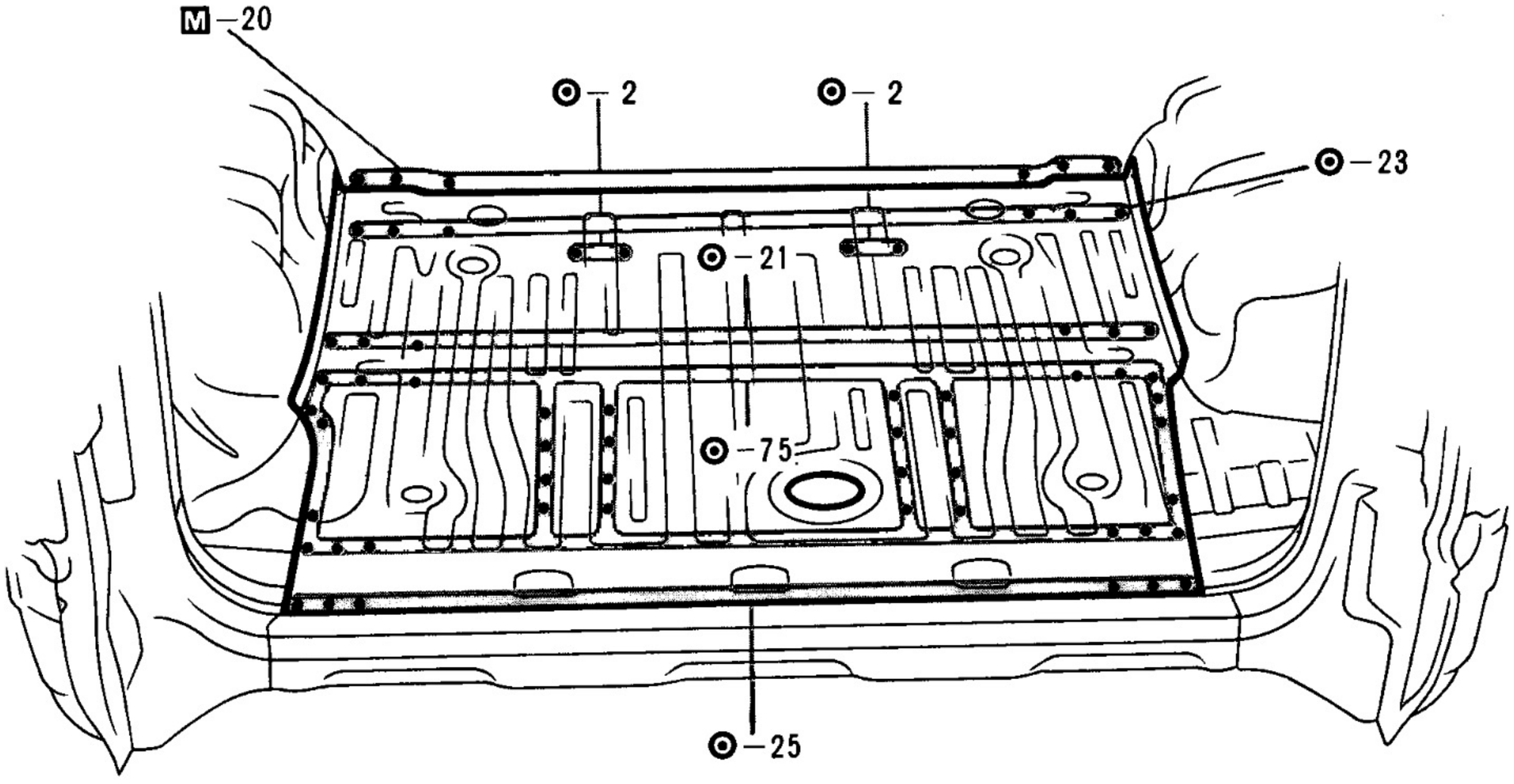


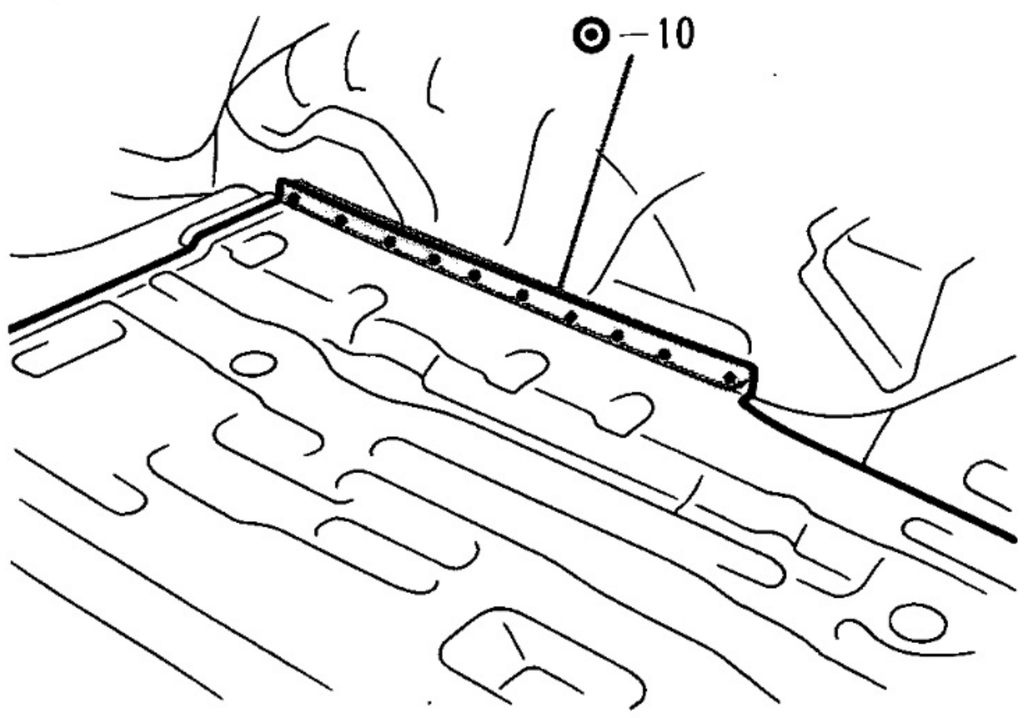


REAR FLOOR PAN (ASSY): 3-Door

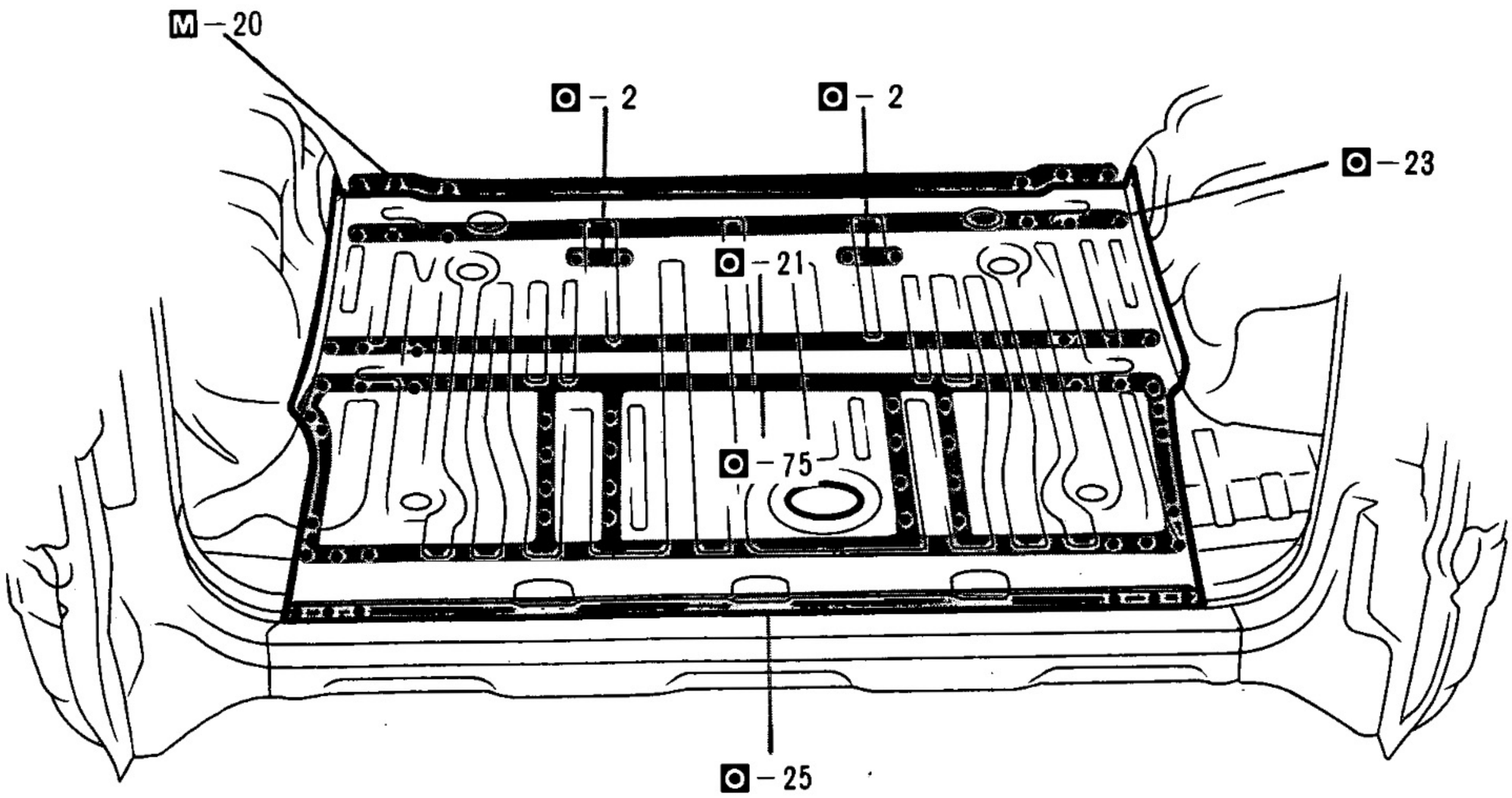


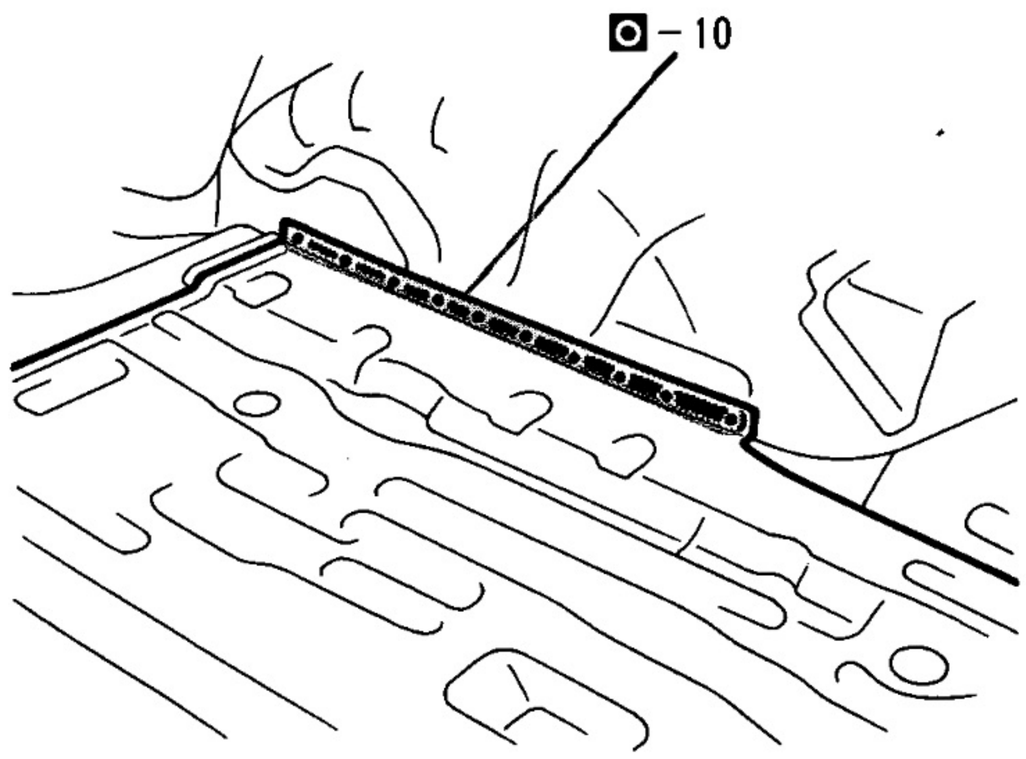
REMOVAL



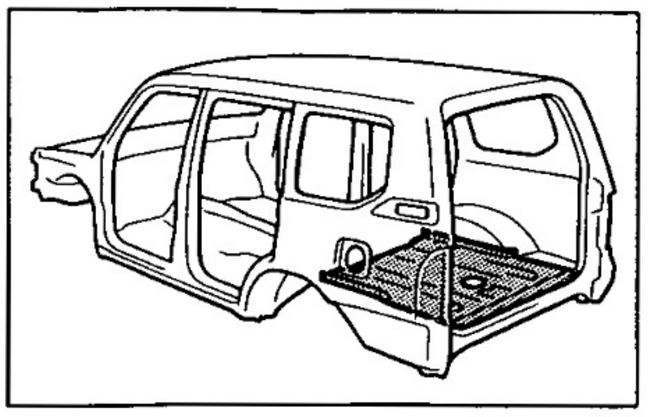


INSTALLATION

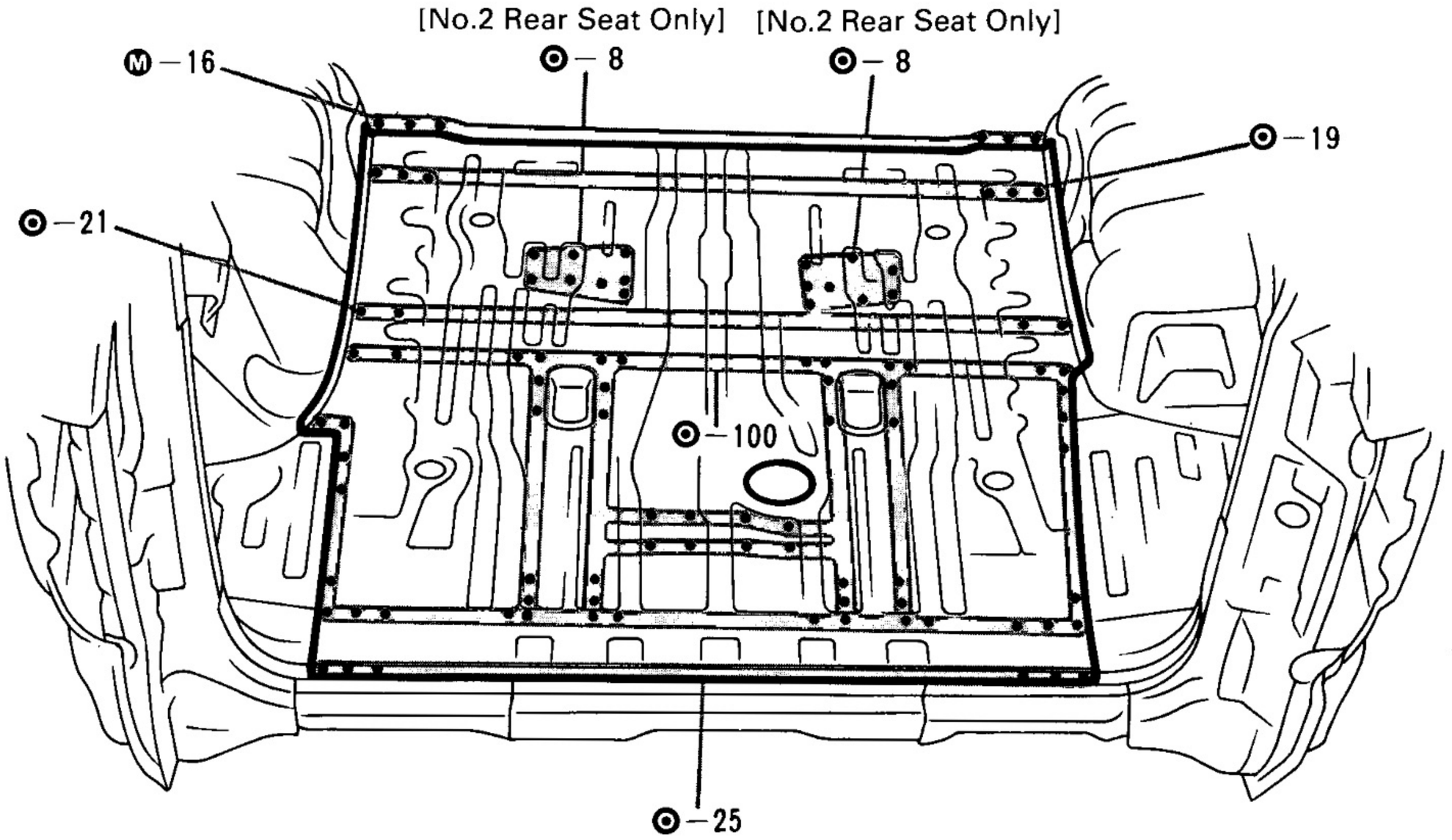


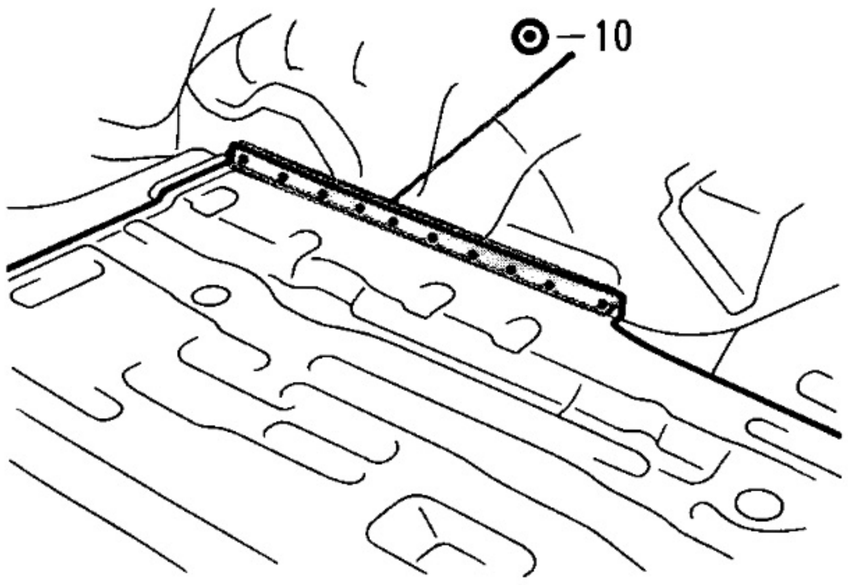


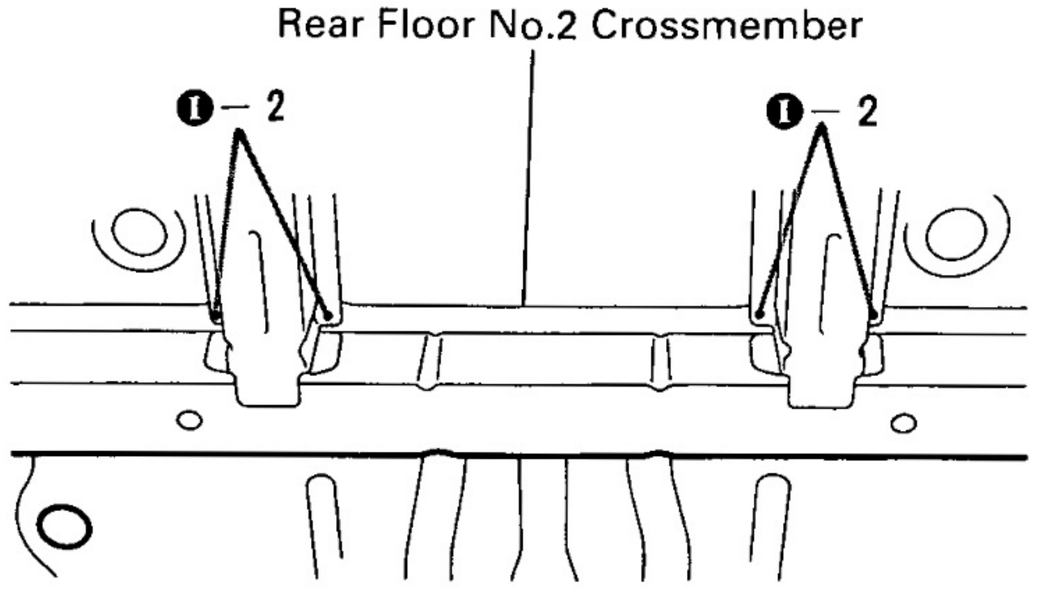
REAR FLOOR PAN (ASSY): 5-Door



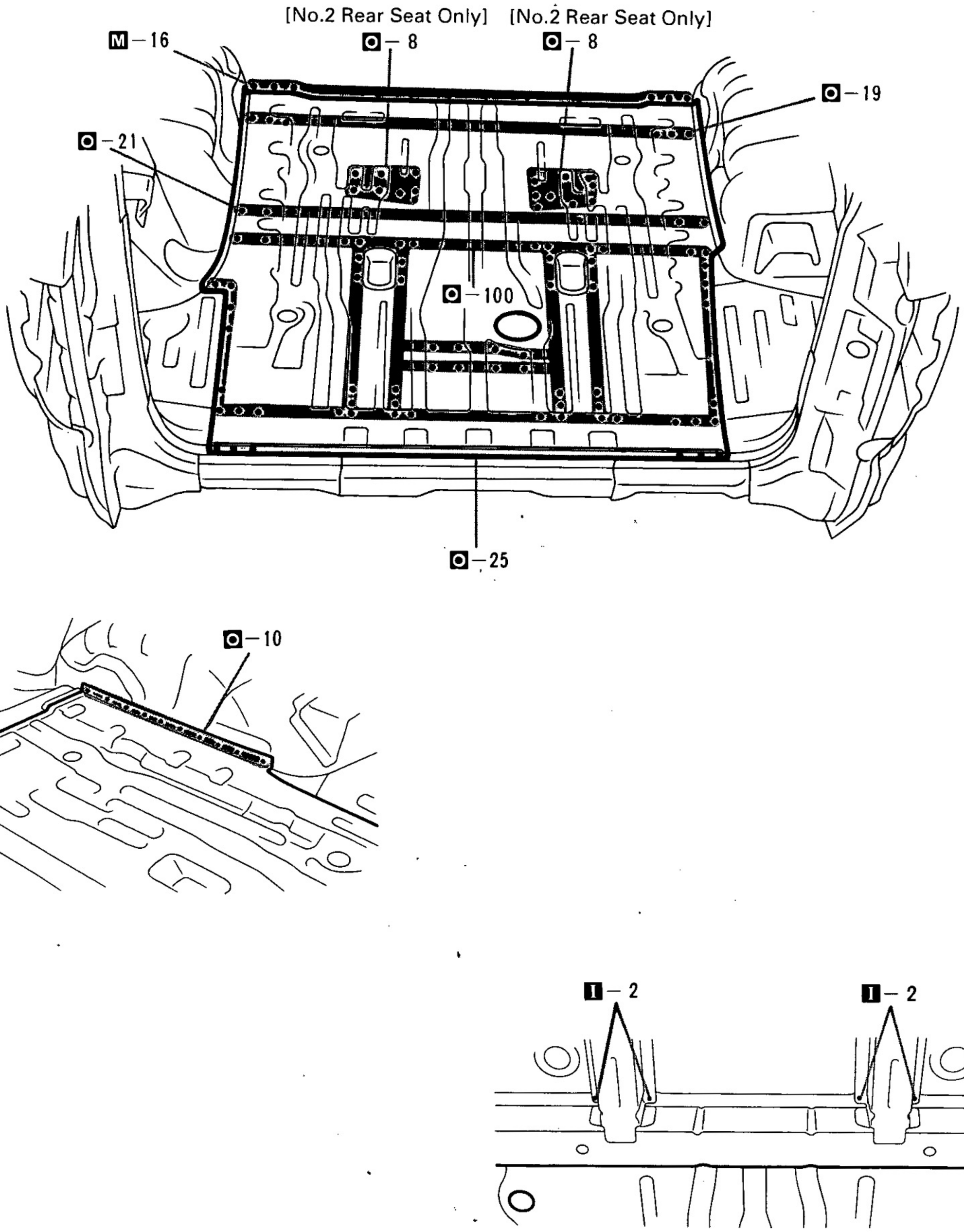
REMOVAL



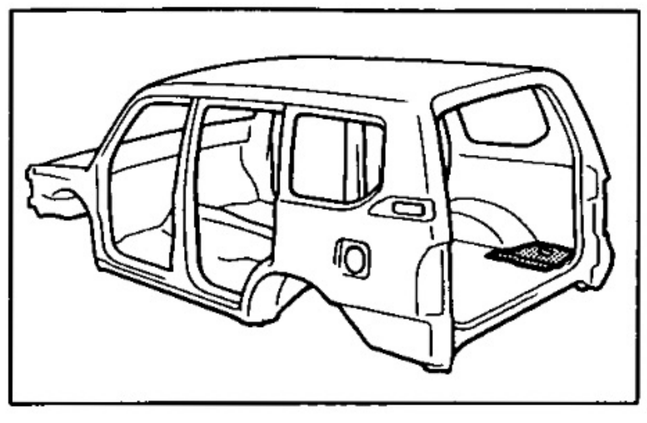




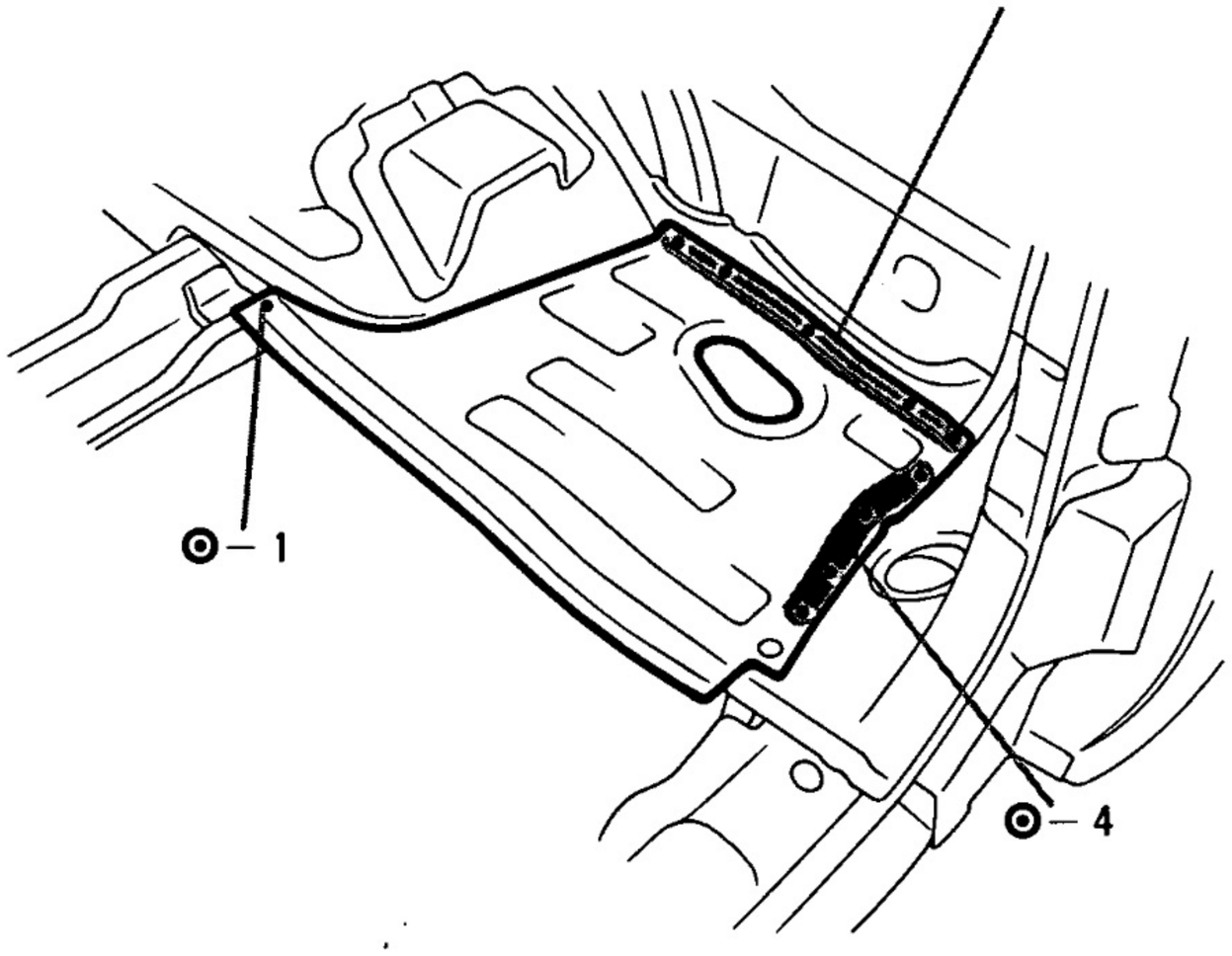
INSTALLATION

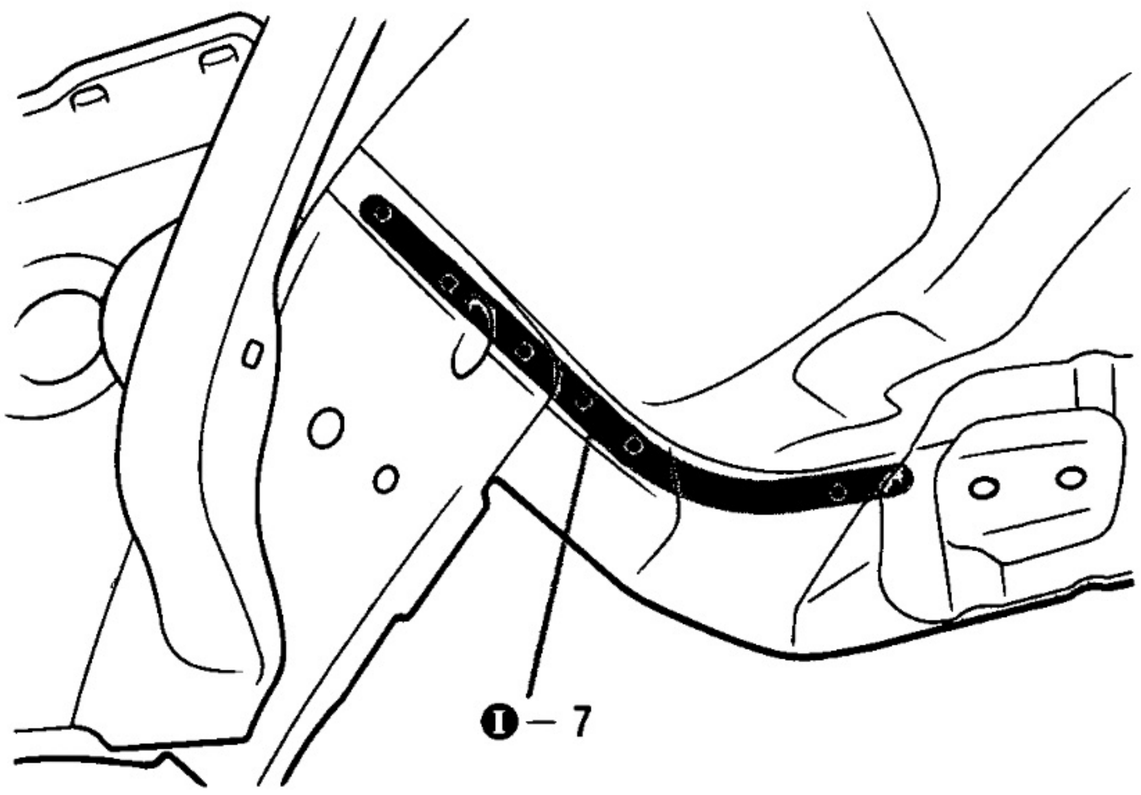


REAR FLOOR SIDE PANEL (ASSY): Right Side

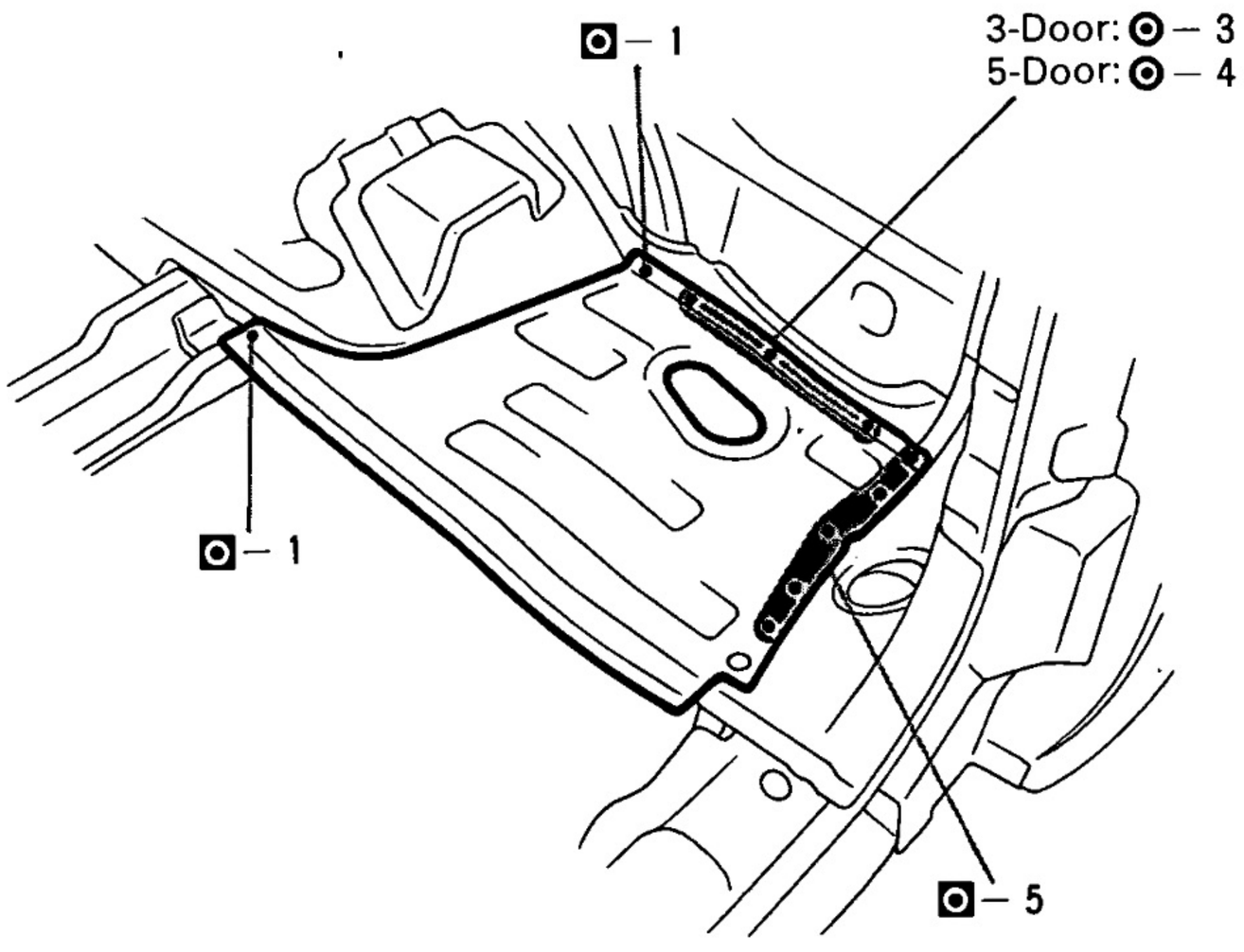


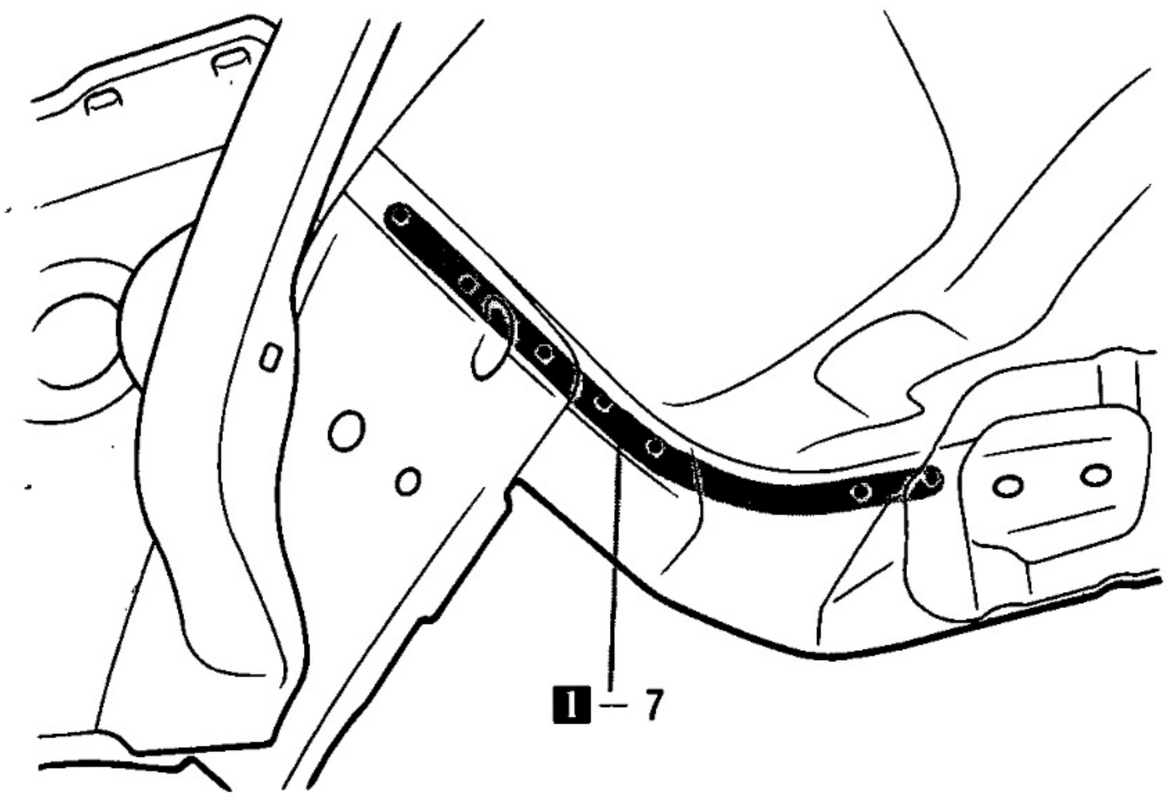
REMOVAL (With the rear floor pan removed.)



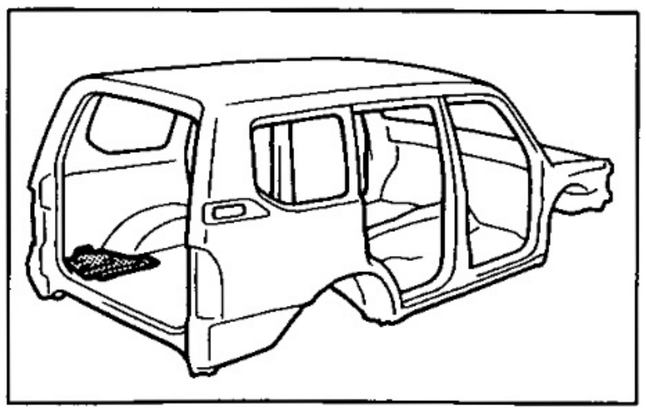


INSTALLATION

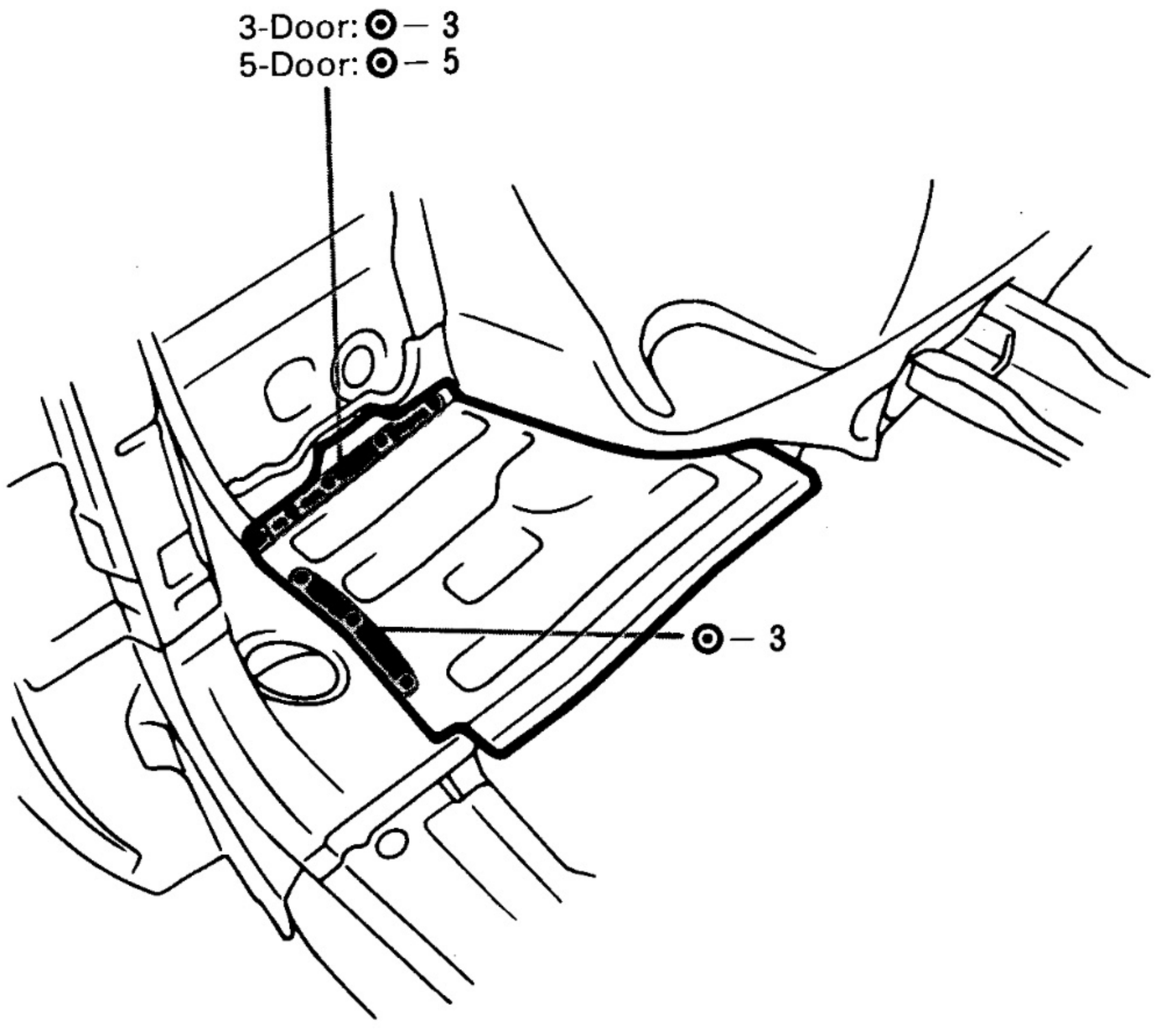


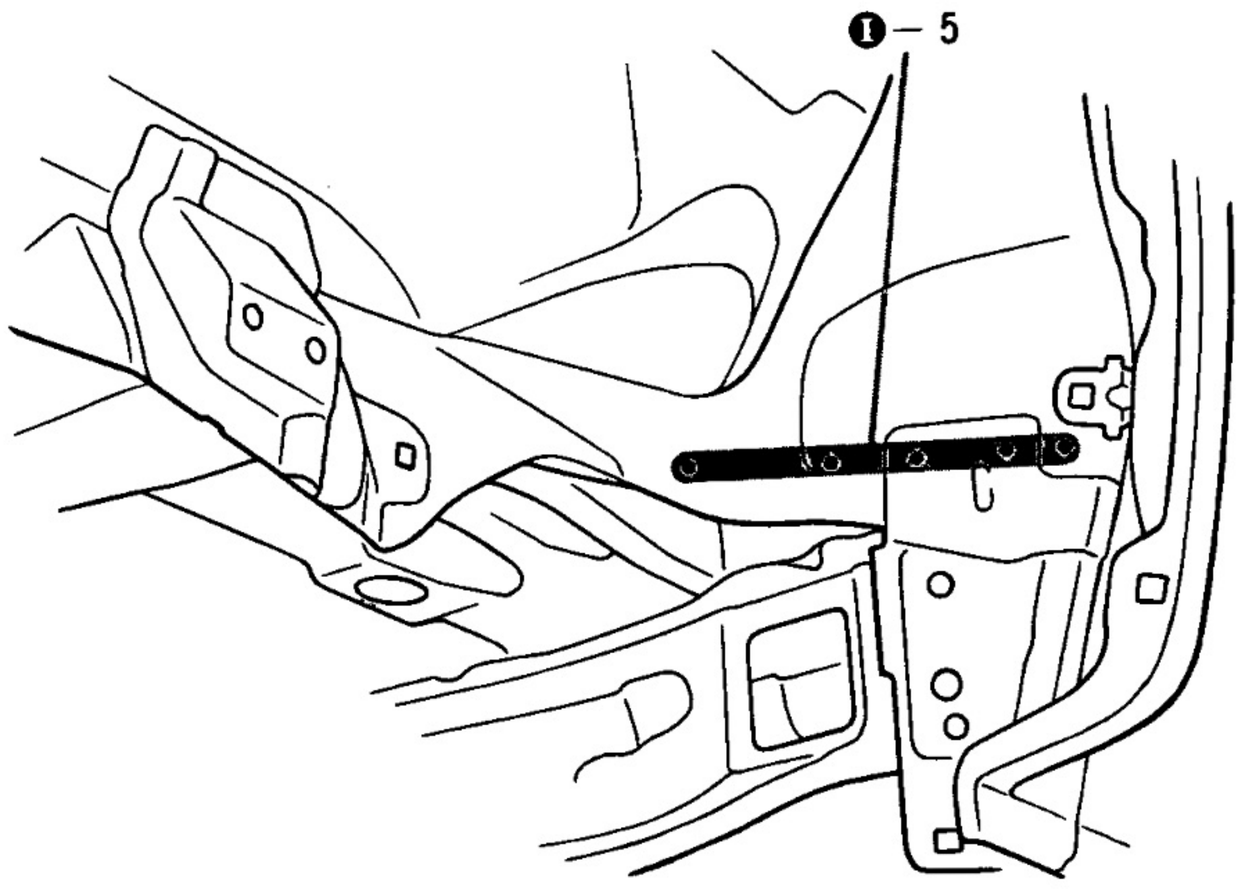


REAR FLOOR SIDE PANEL (ASSY): Left Side

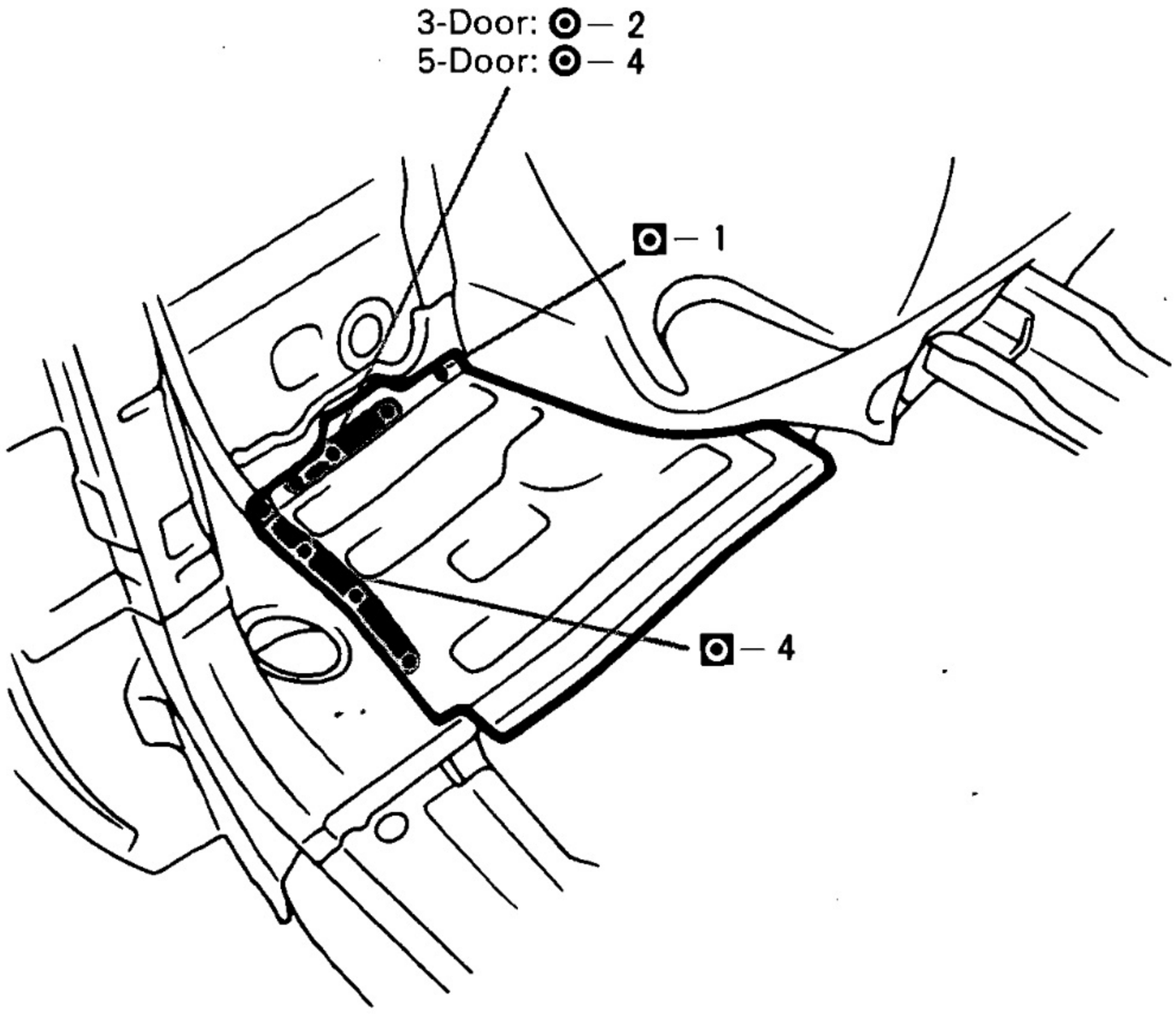


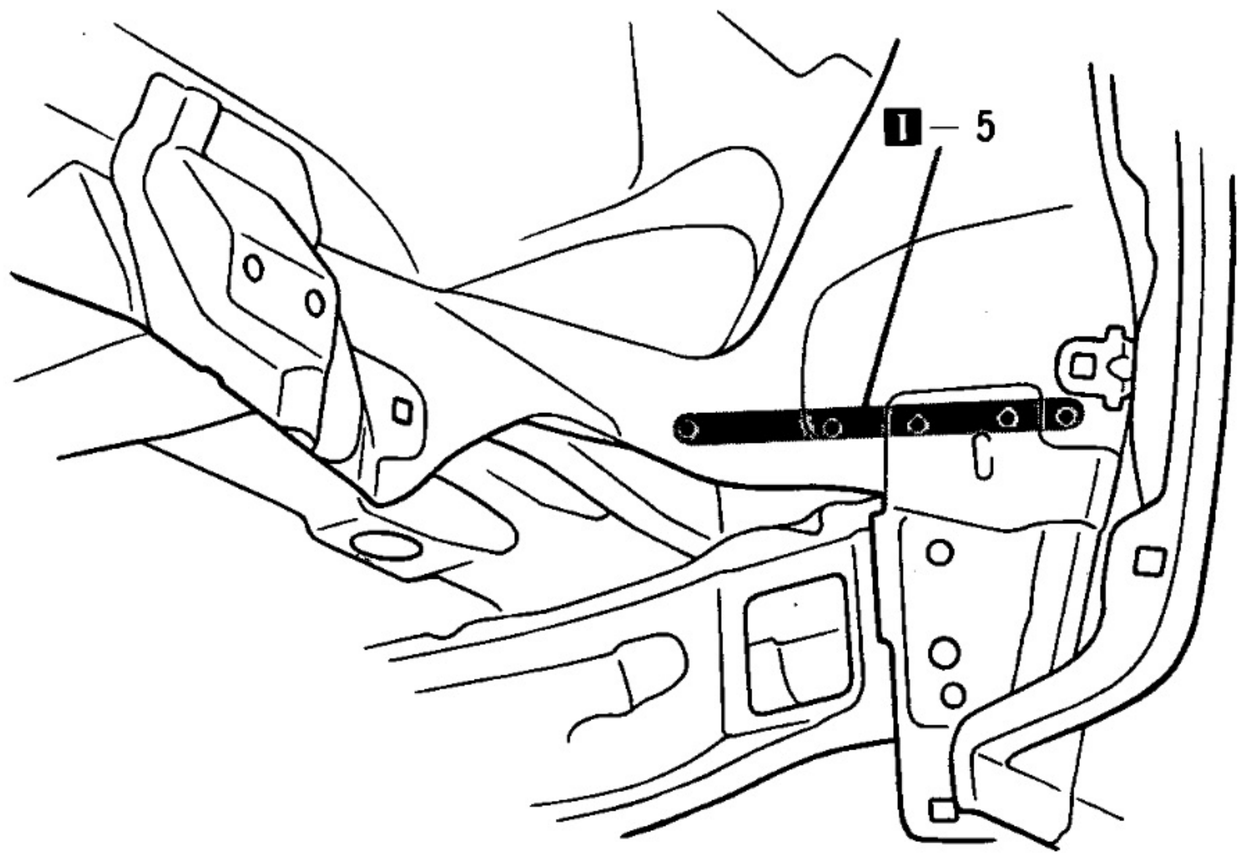
REMOVAL (With the rear floor pan removed.)



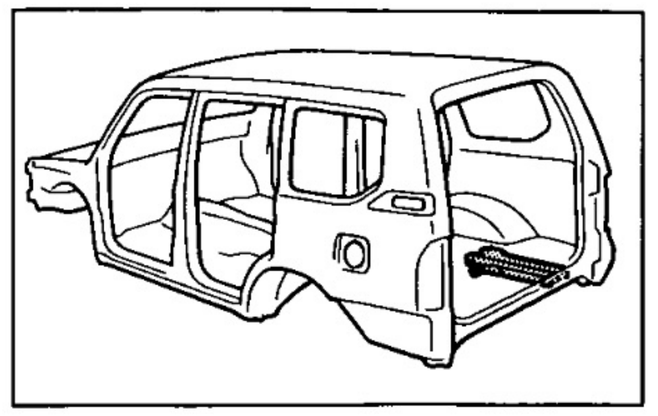


INSTALLATION

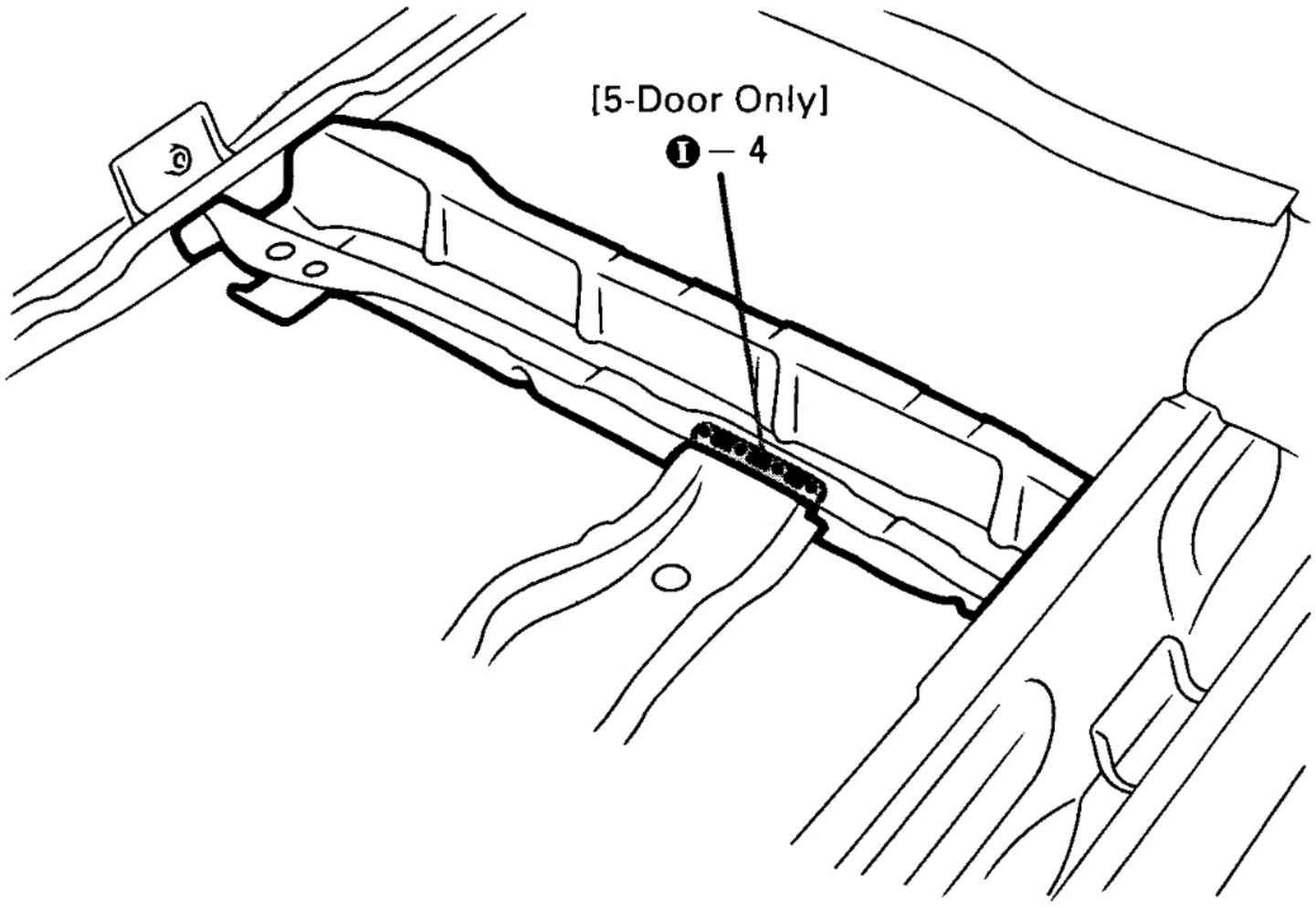


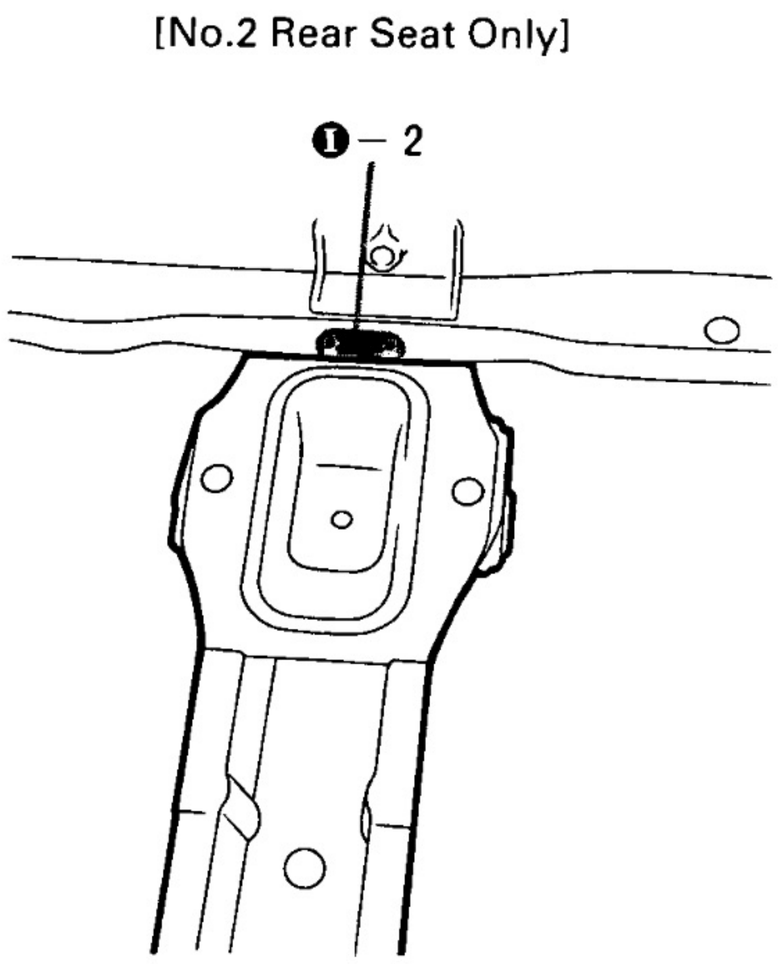


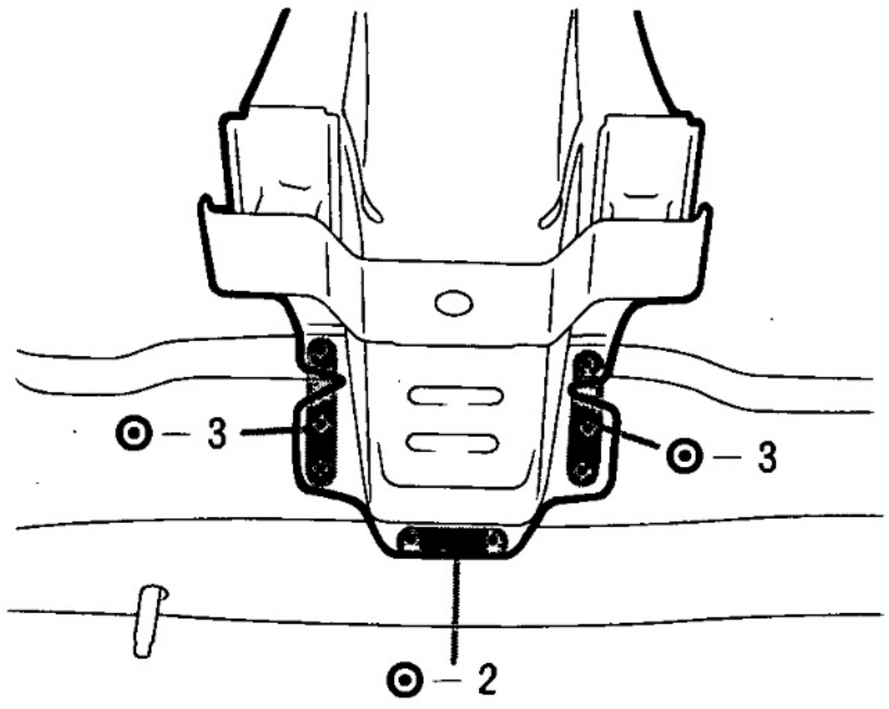
REAR FLOOR SIDE MEMBER (ASSY)

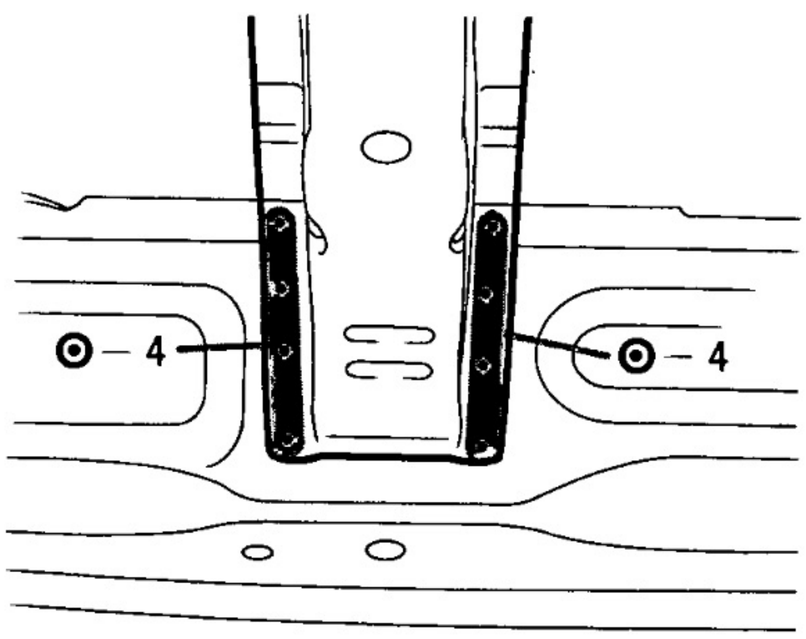


REMOVAL (With the rear floor pan removed.)

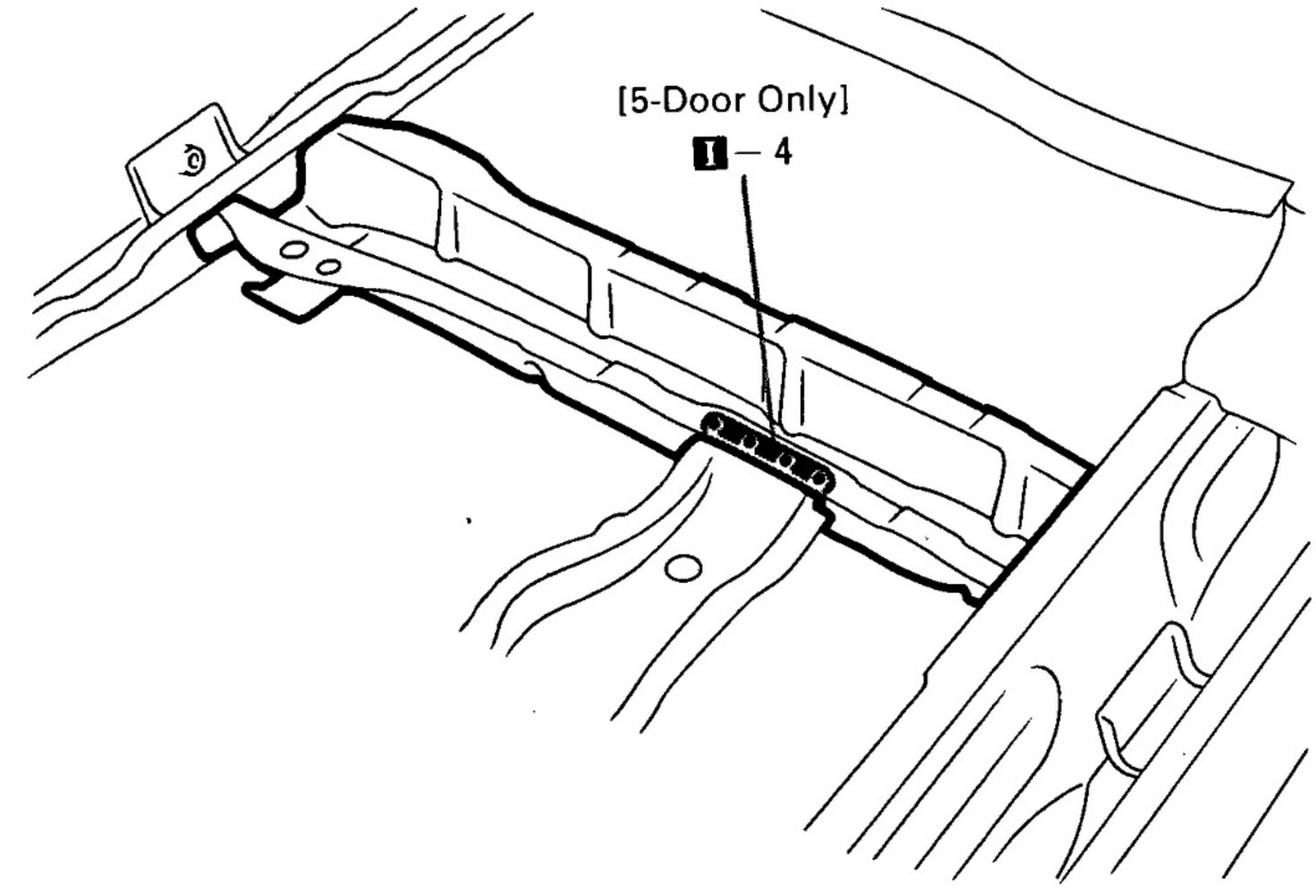


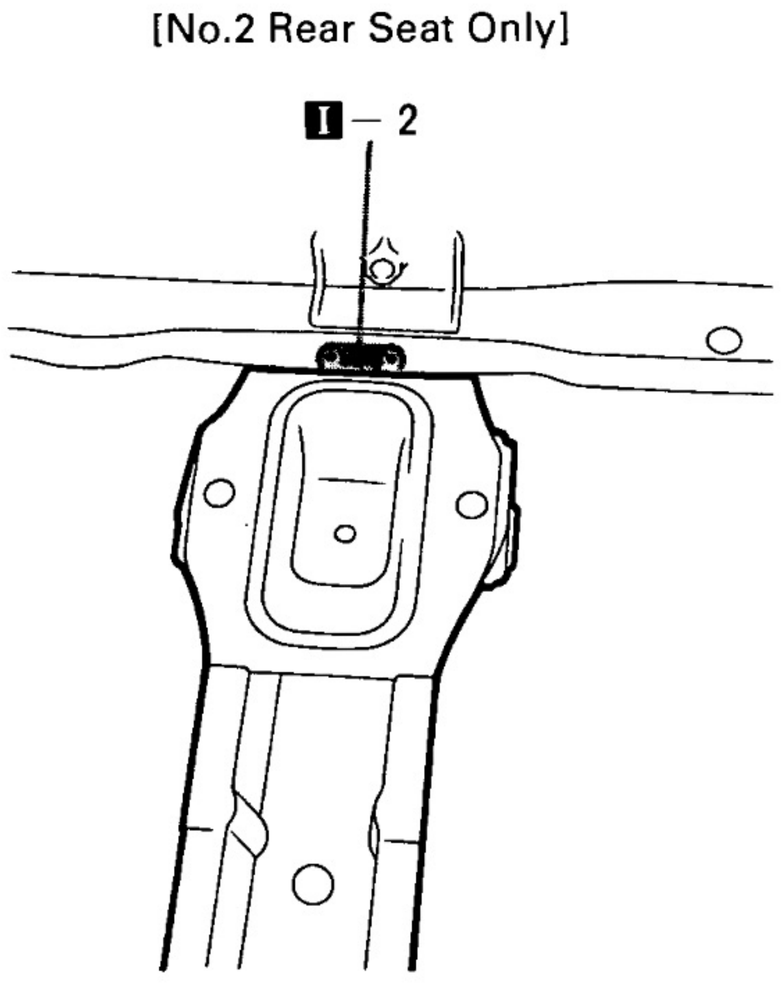


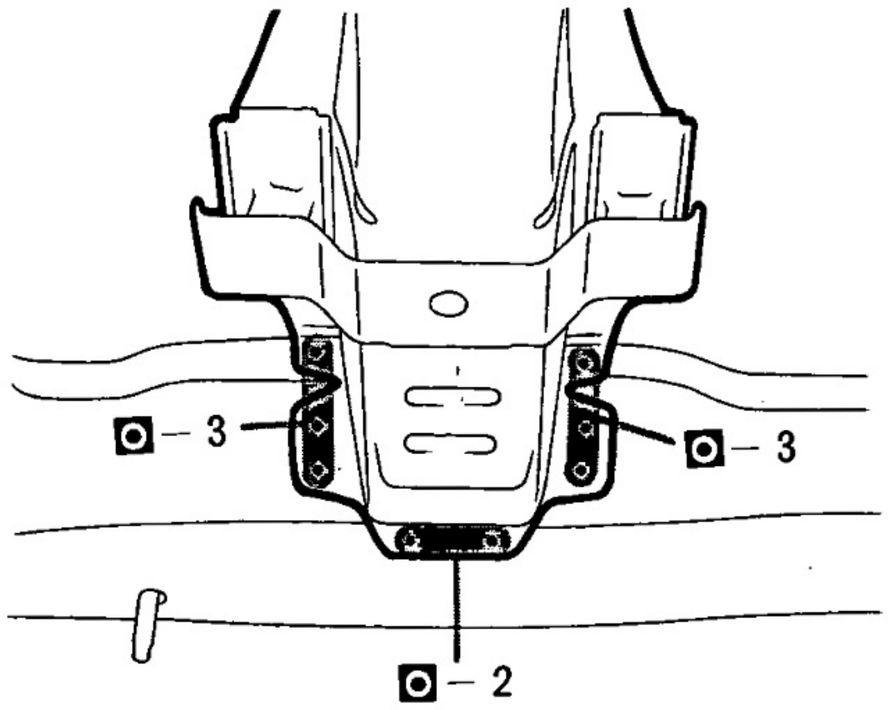


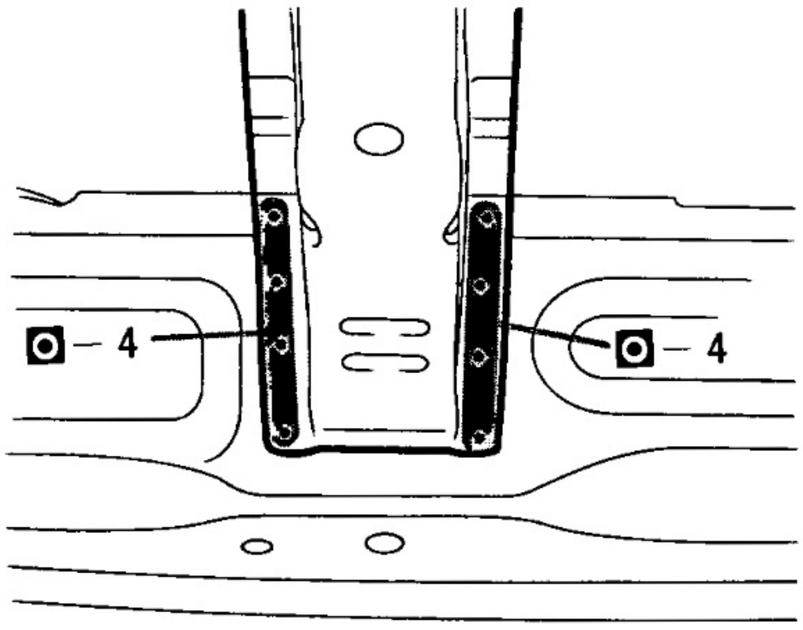


INSTALLATION

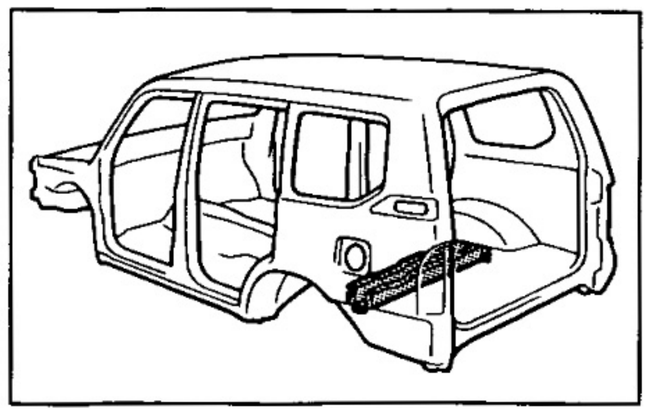




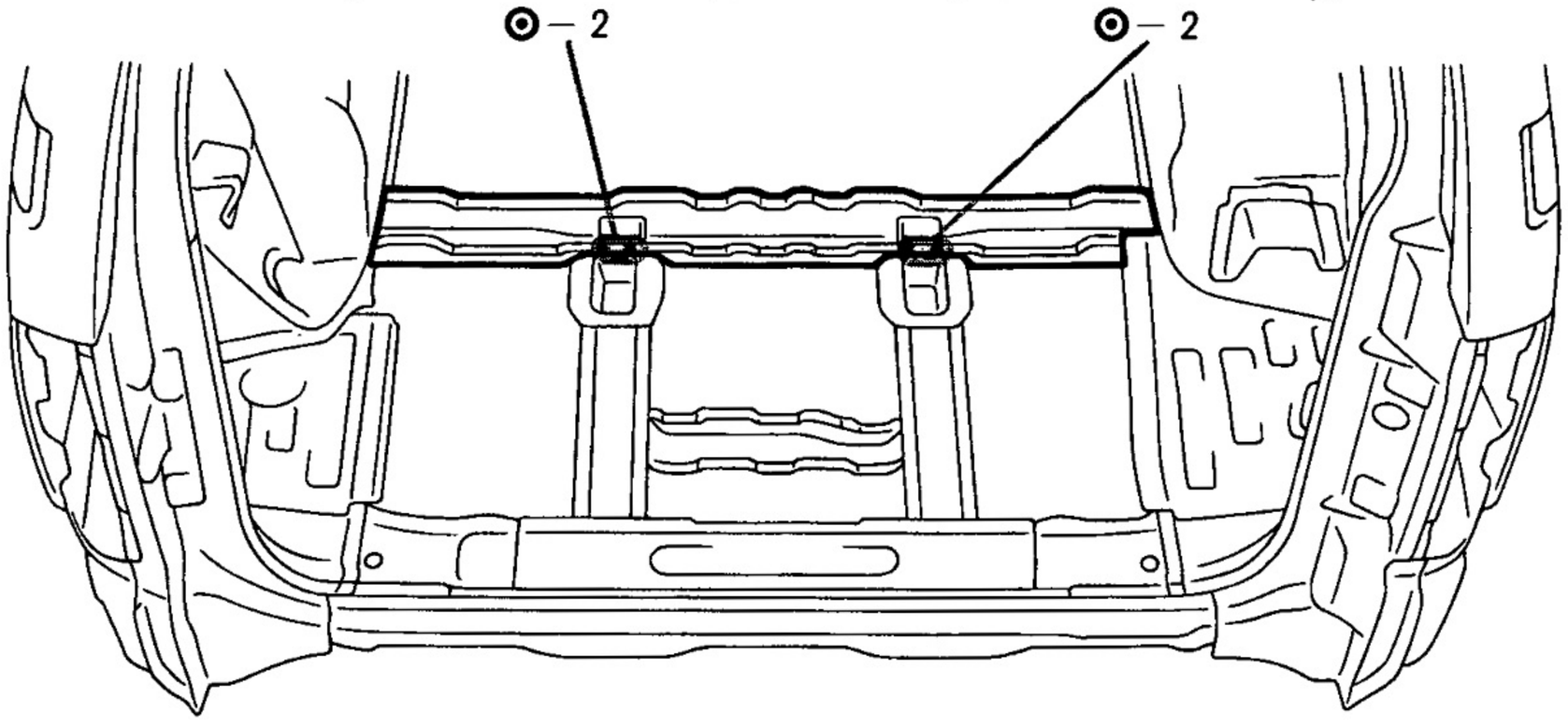


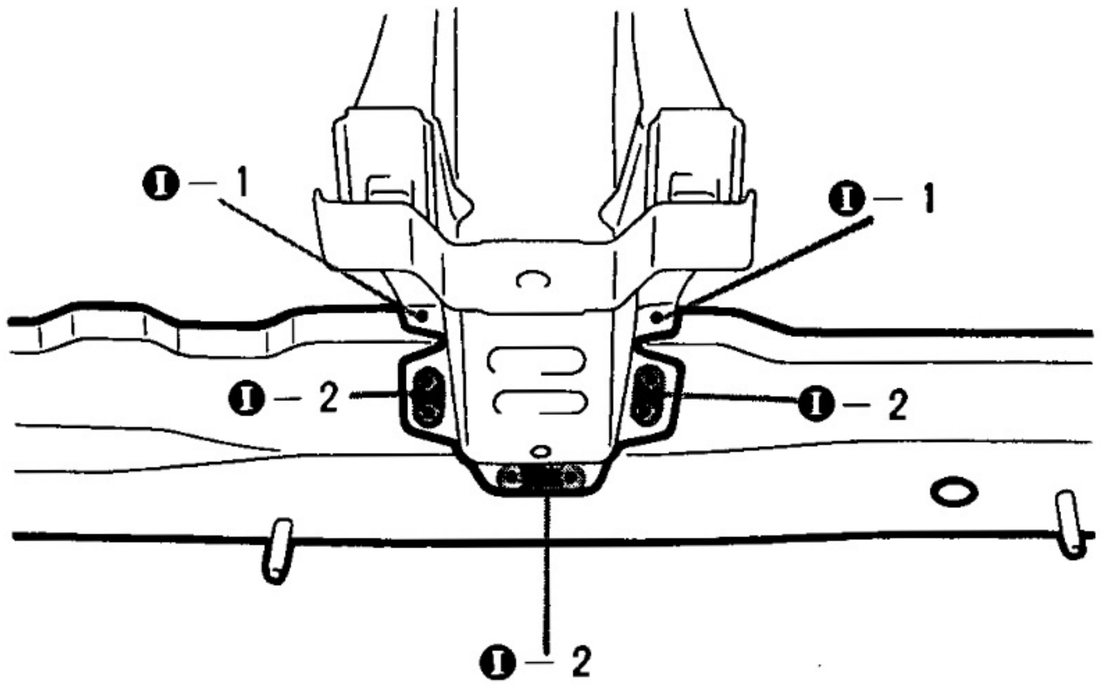


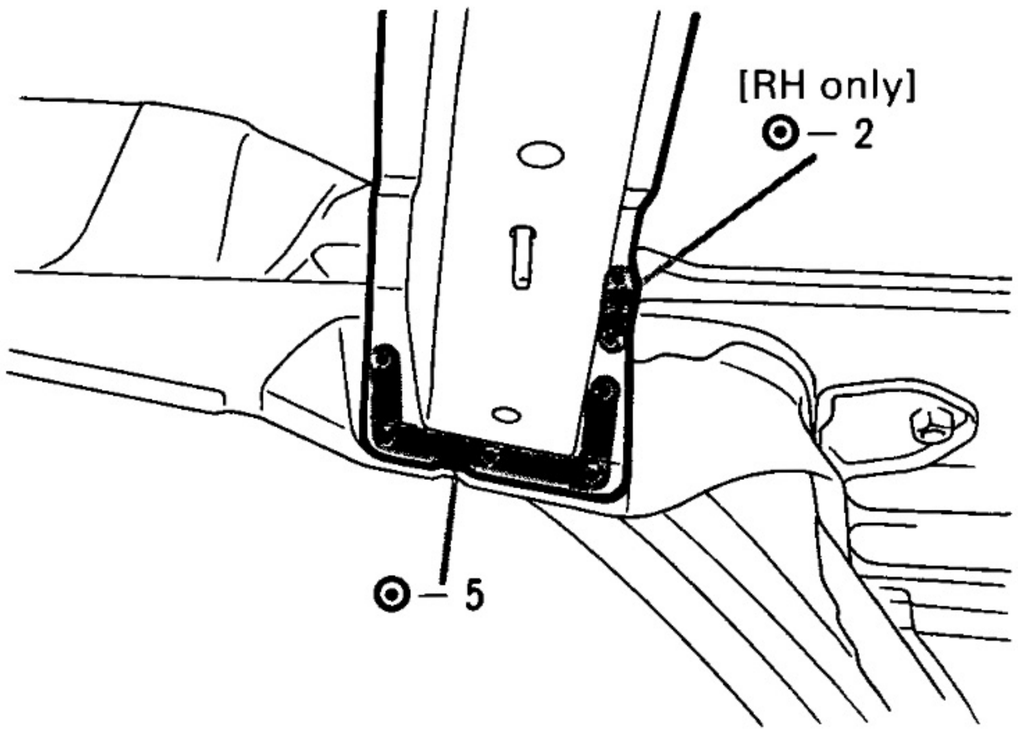
REAR FLOOR No.2 CROSSMEMBER (ASSY)



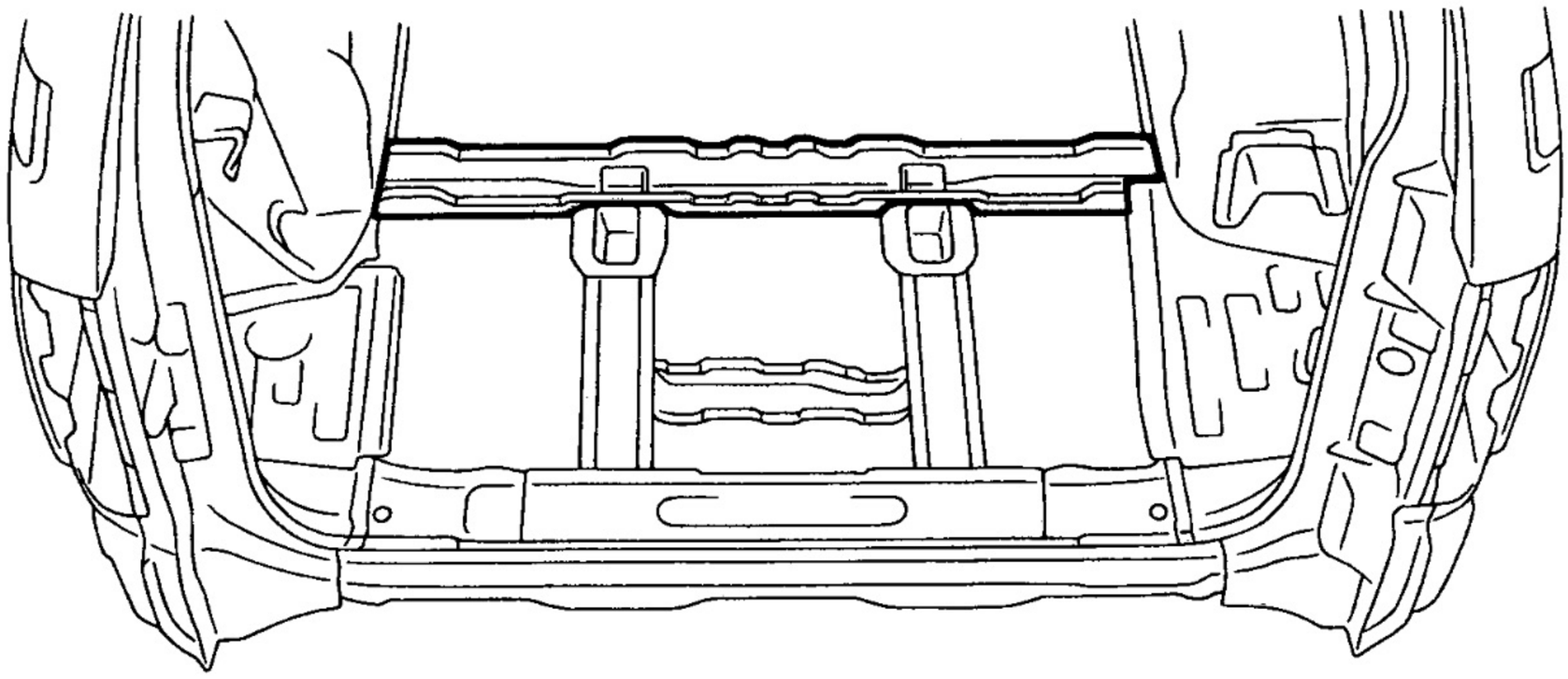
REMOVAL (With the rear floor pan removed.)

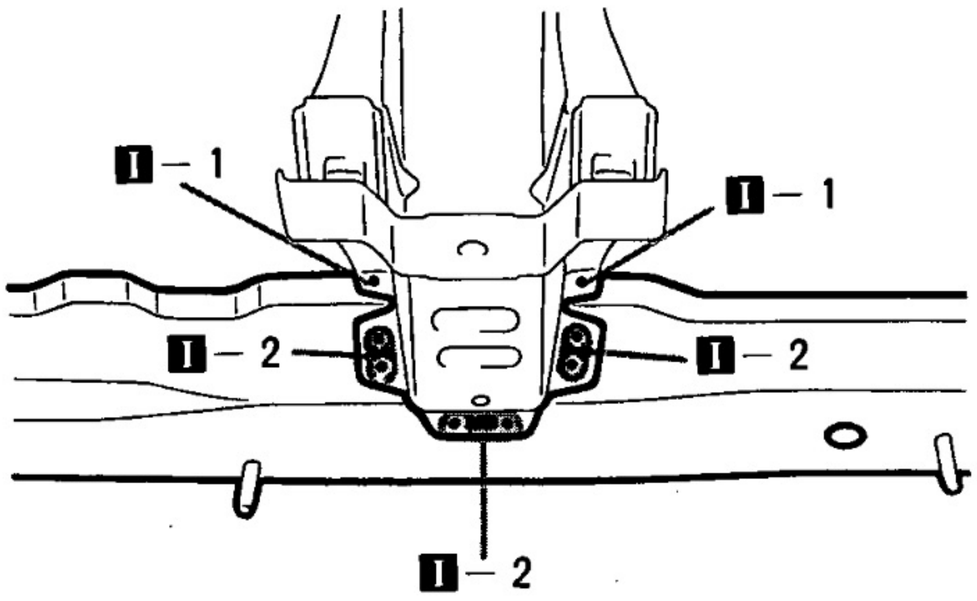


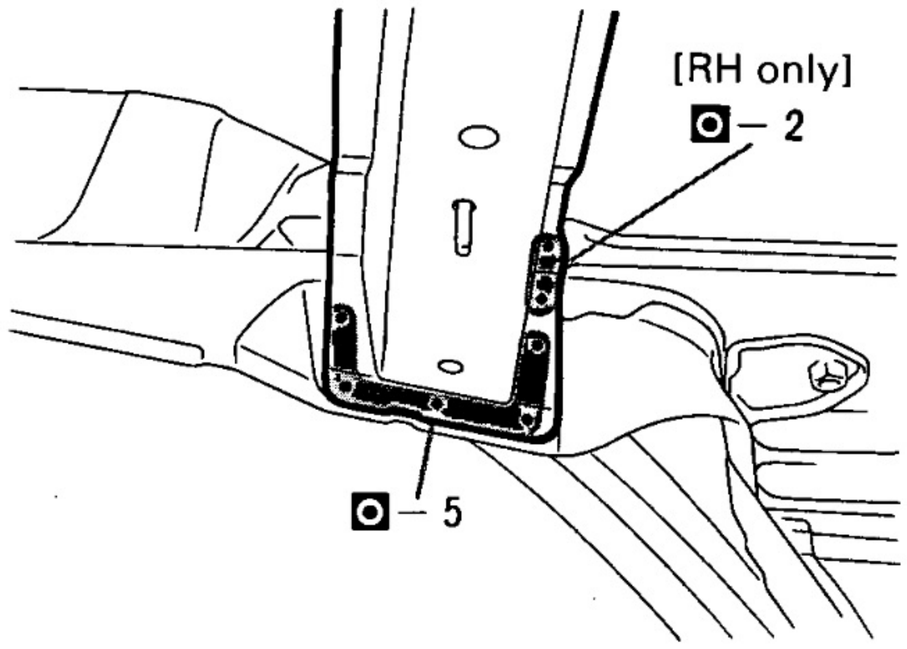


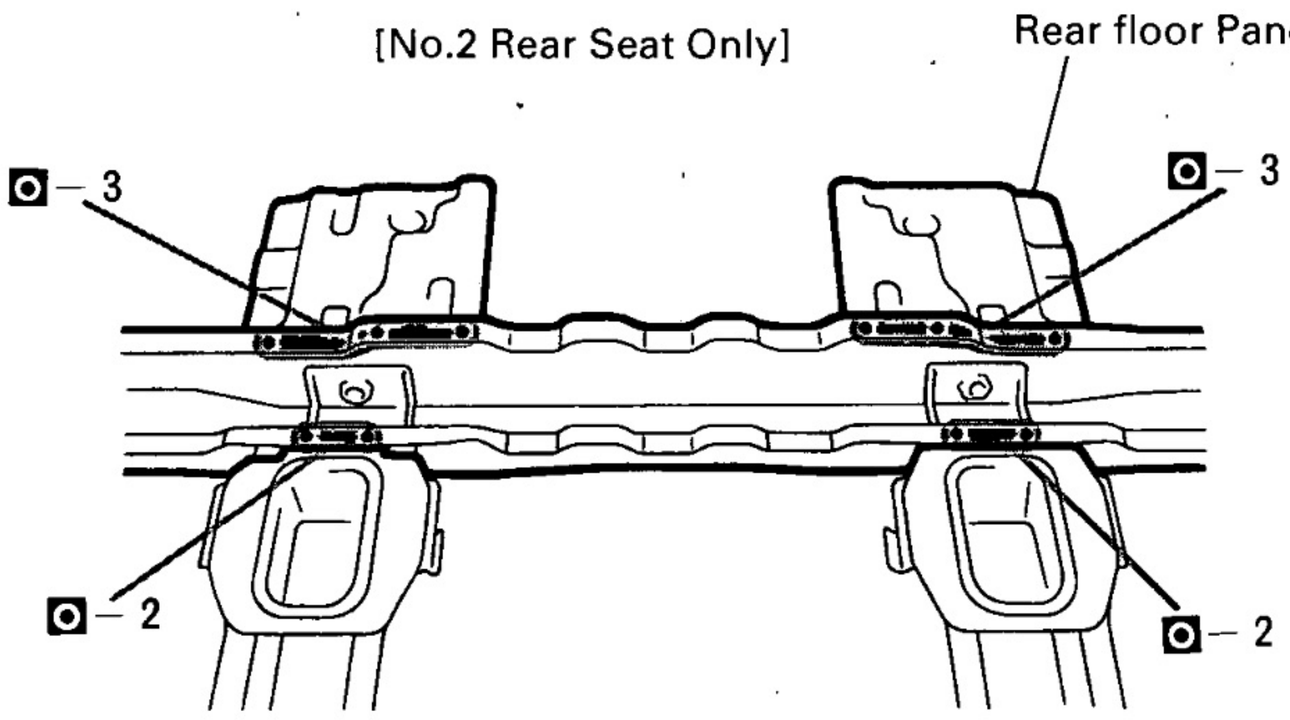


INSTALLATION

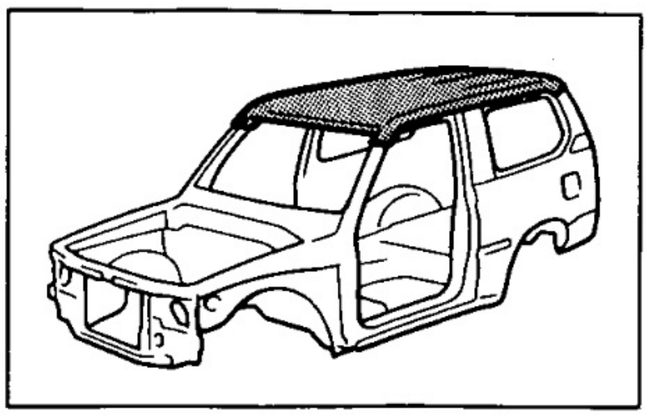




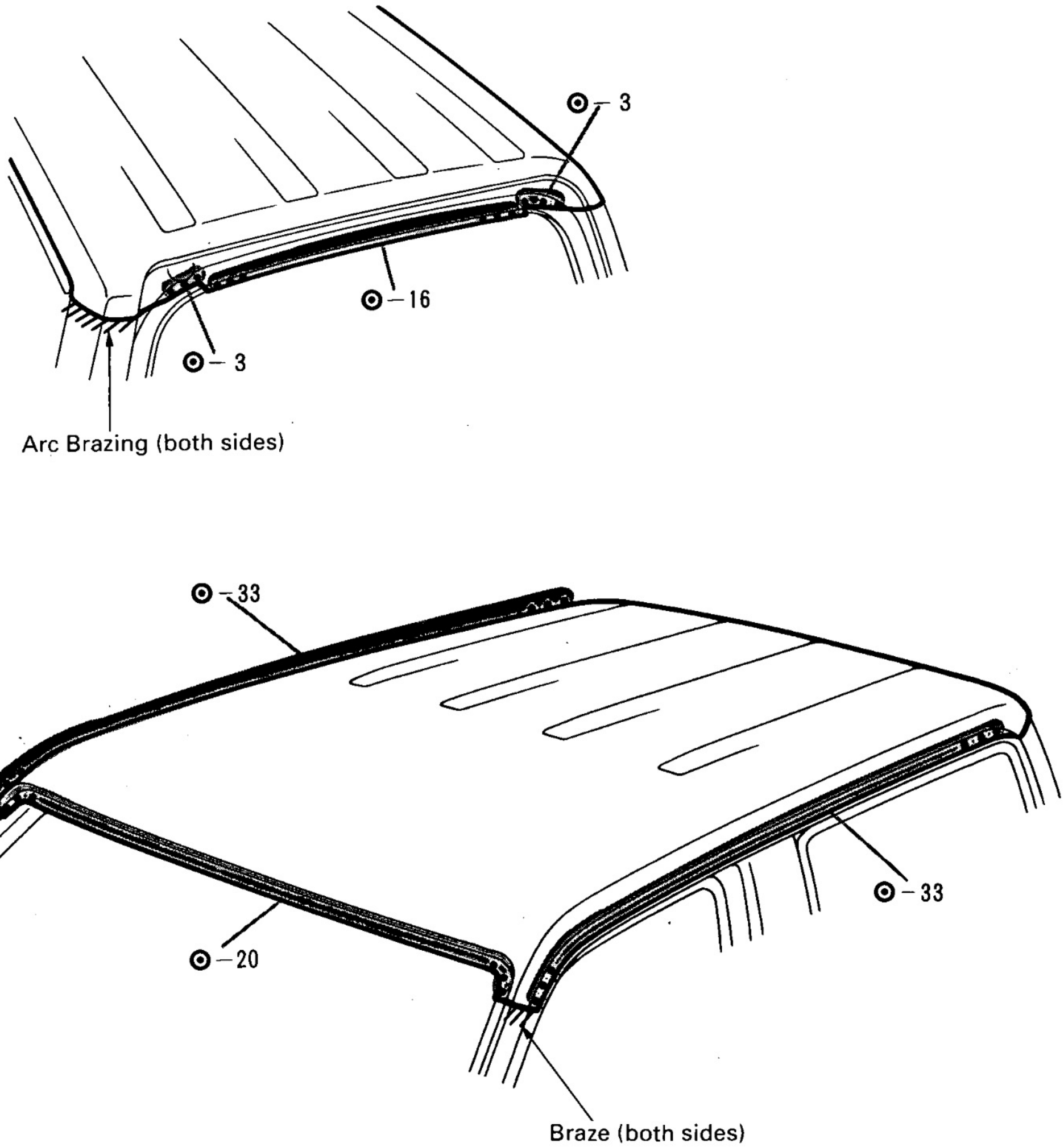




ROOF PANEL (ASSY): 3-Door w/o sunroof



REMOVAL

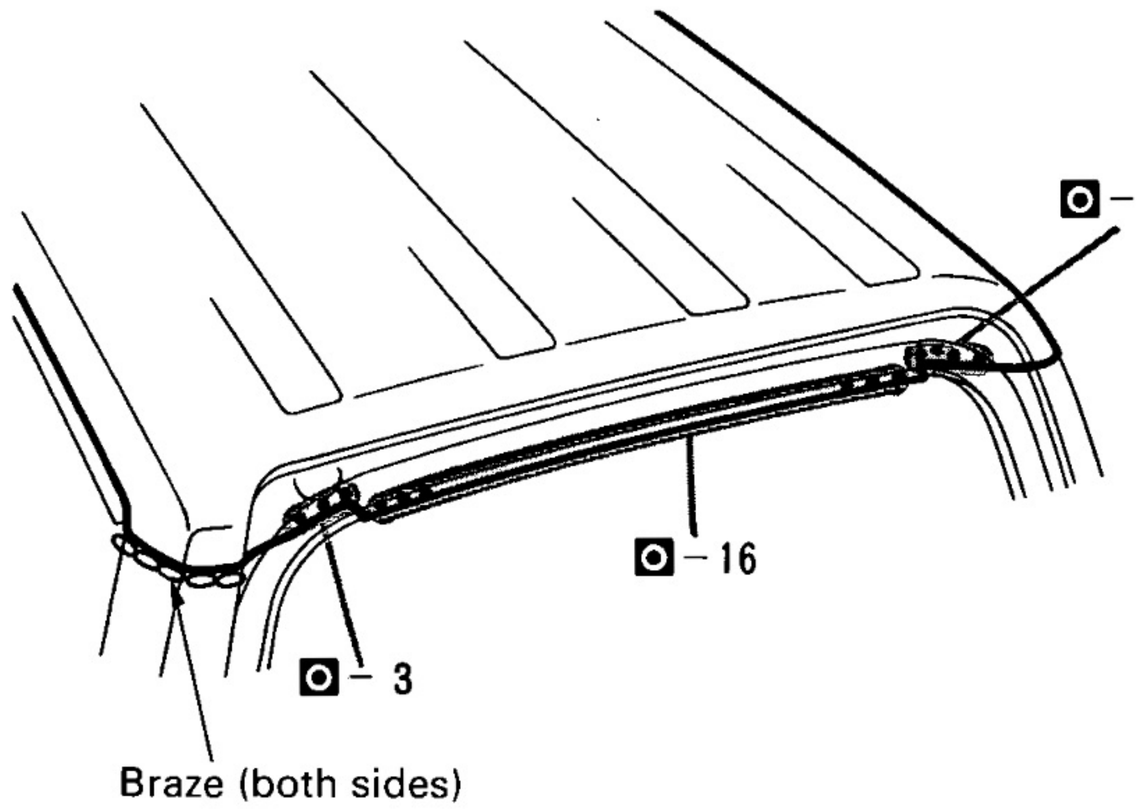


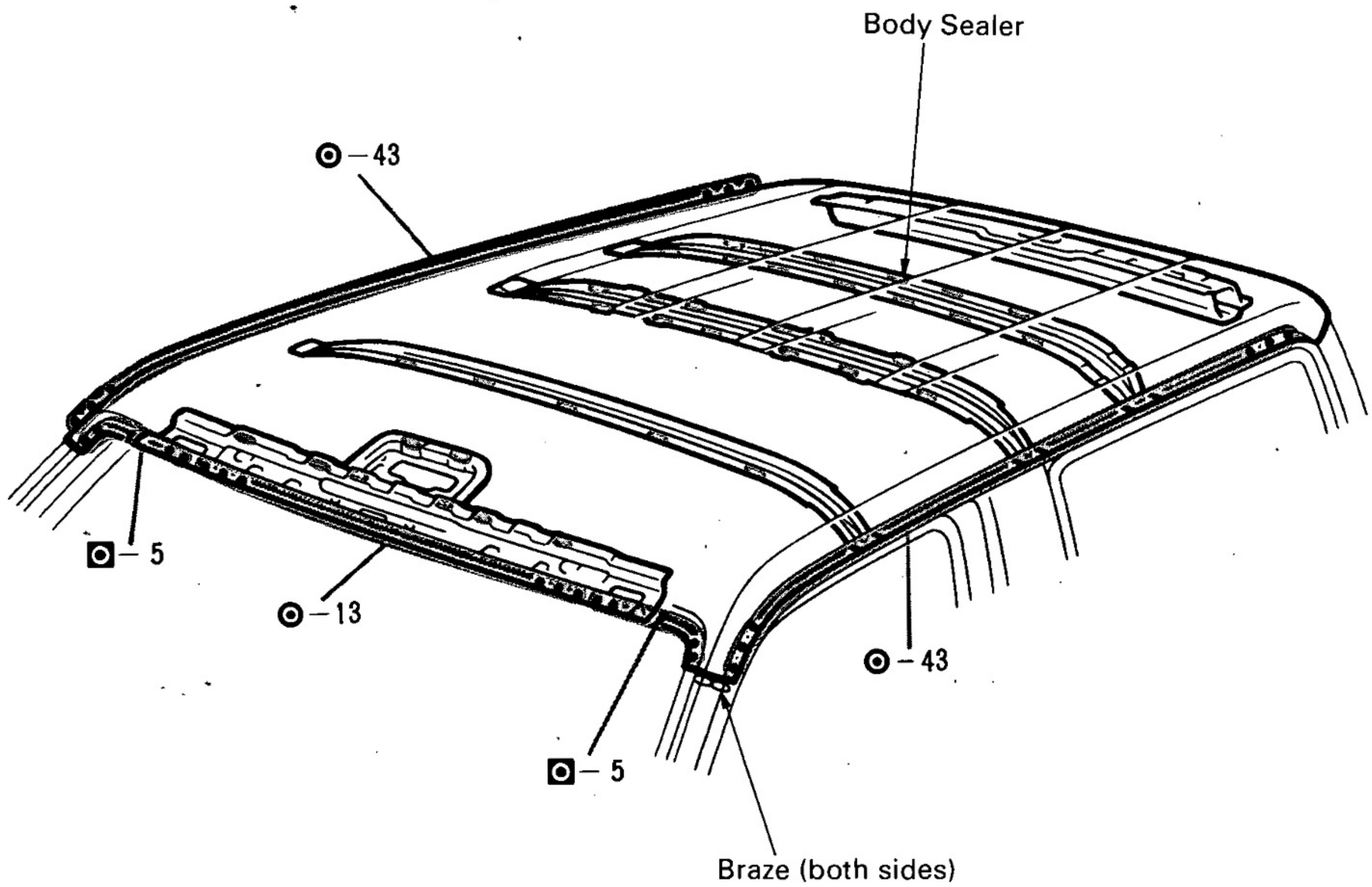
1. Heat the brazed area of the front body pillar, and scrape off the brazing with a wire brush.

HINT: Be careful not to overheat the front body pillar.

2. Grind off the roof panel tip at the quarter panel arc brazing connection with a cut grinder.

INSTALLATION





1. Before temporarily installing the new parts, apply body sealer to the windshield header panel, roof panel reinforcement and back window frame.

HINT:

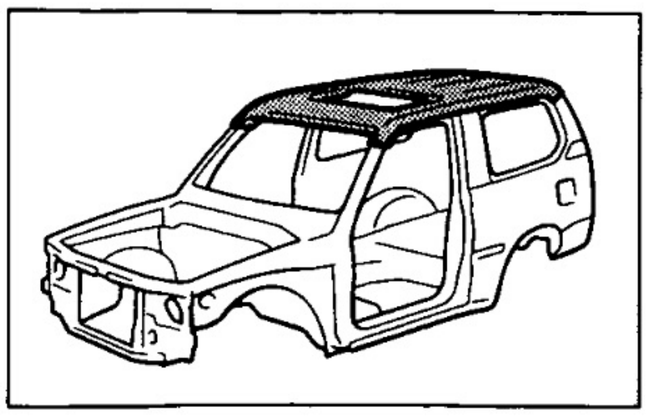
1) Apply just enough sealer for the new parts to make contact.

2) For other sealing points, refer to Section AR.

2. Braze the front body pillar and quarter panel connection.

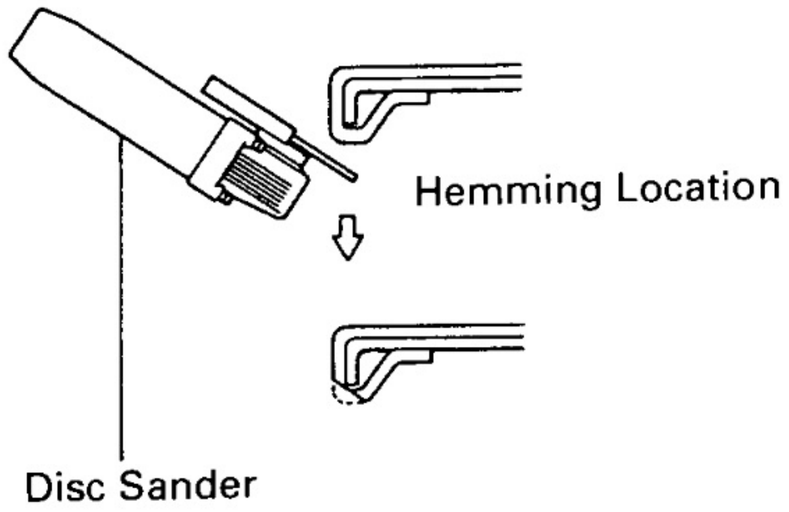
HINT: Before performing these operations, place a wet rag on the roof panel to protect it from damage.

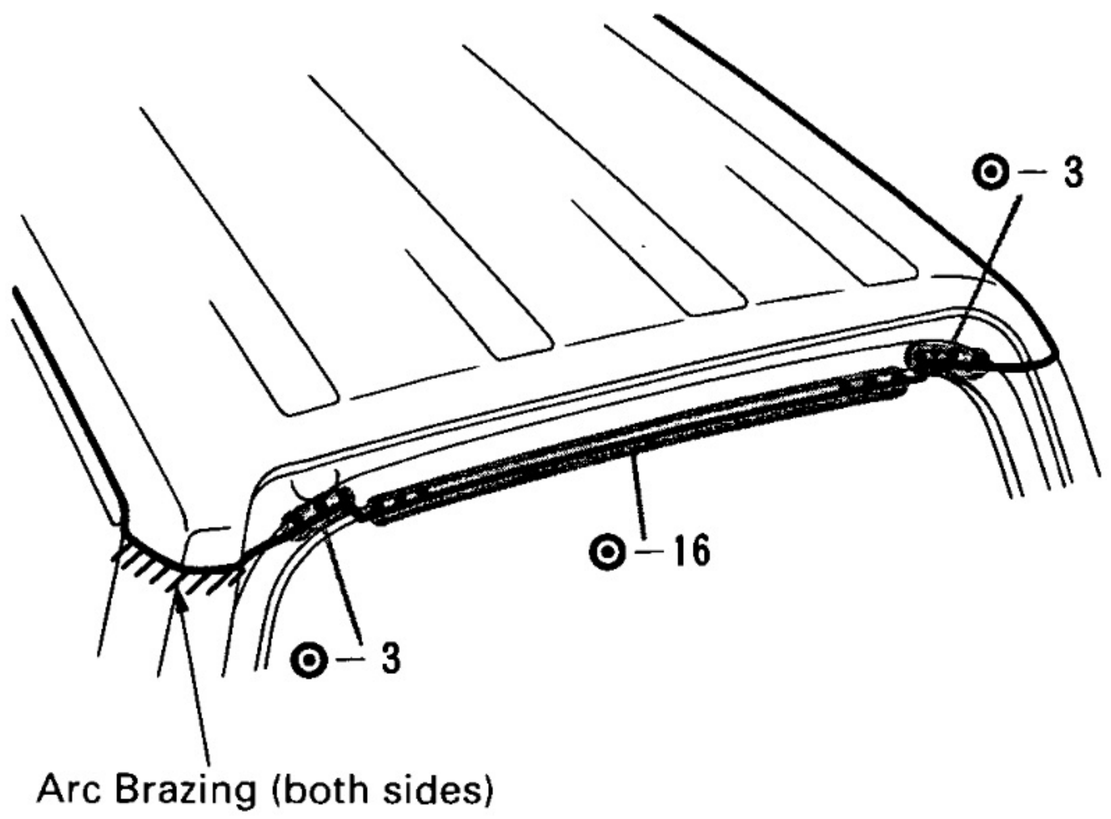
ROOF PANEL (ASSY): 3-Door w/ sunroof

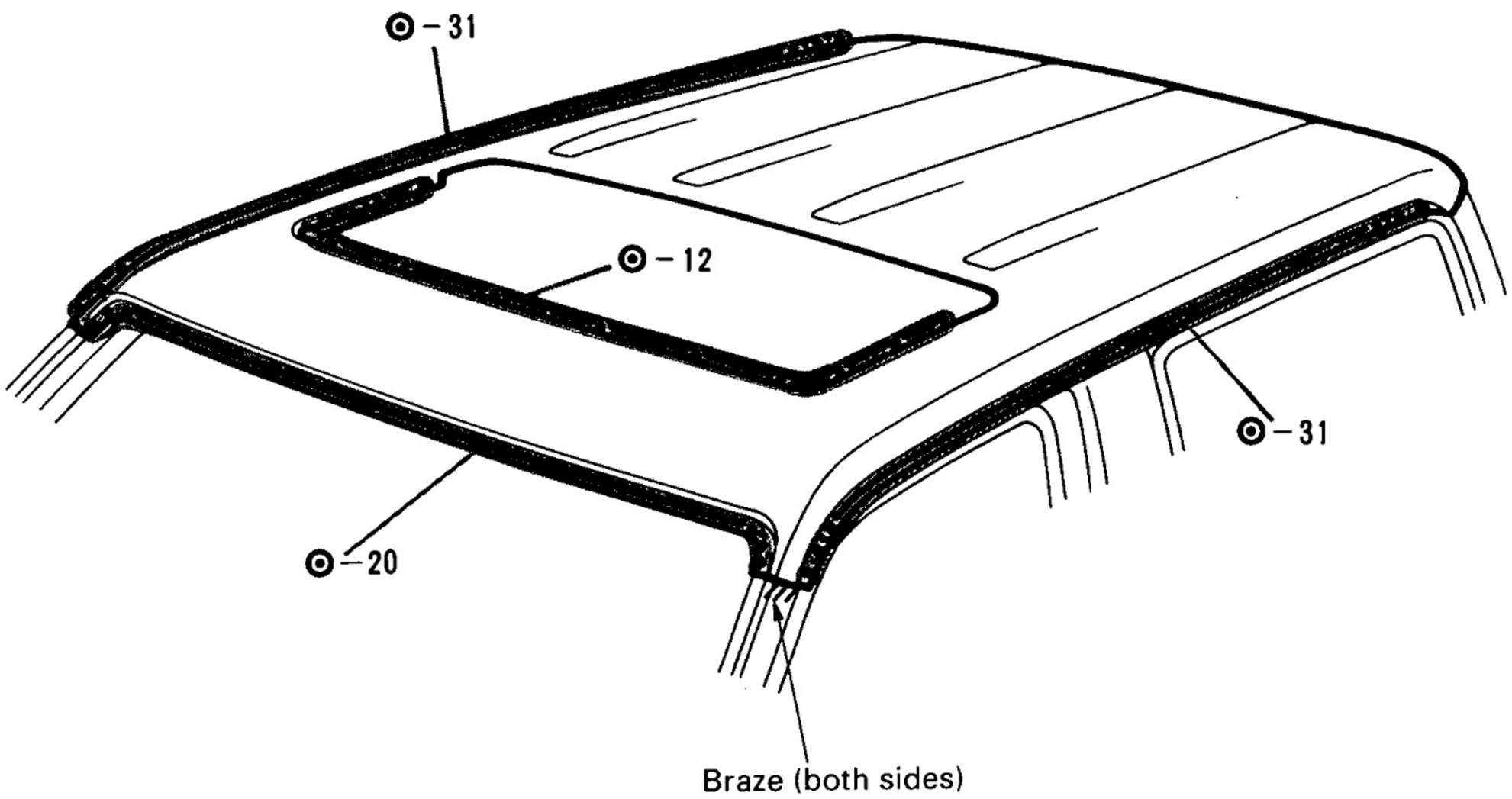


REMOVAL

[If resusing the roof panel reinforcement]





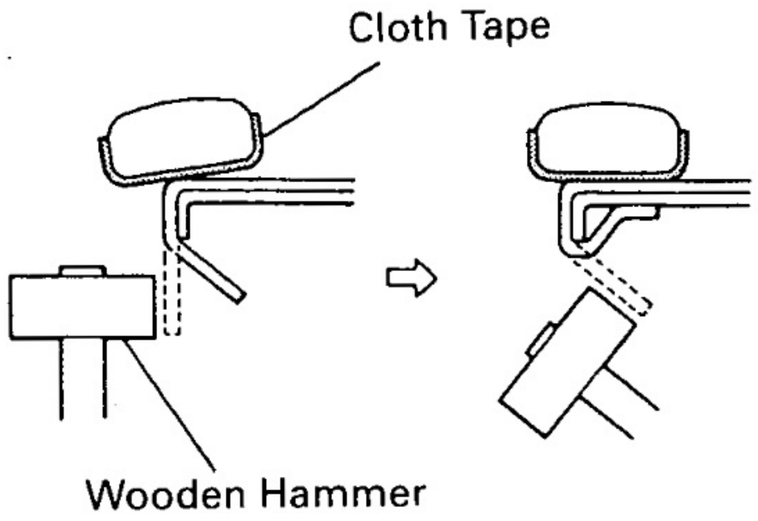


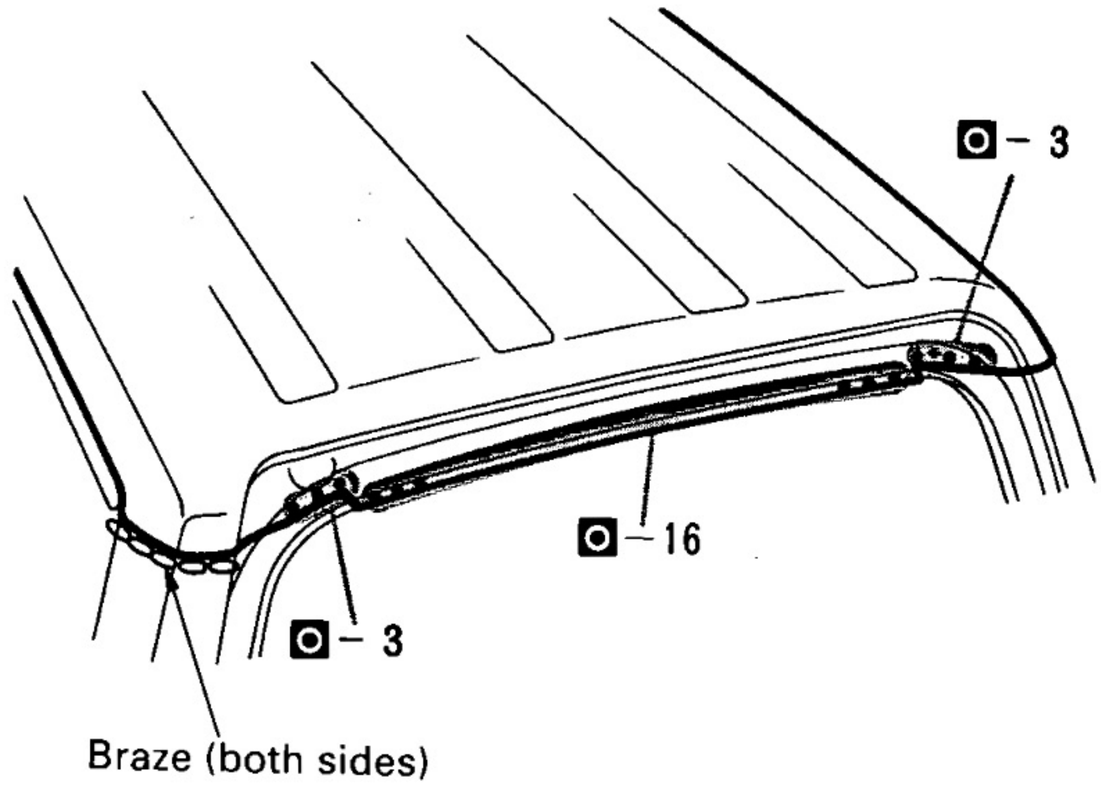
1. Heat the brazed area of the front body pillar, and scrape off the brazing with a wire brush.

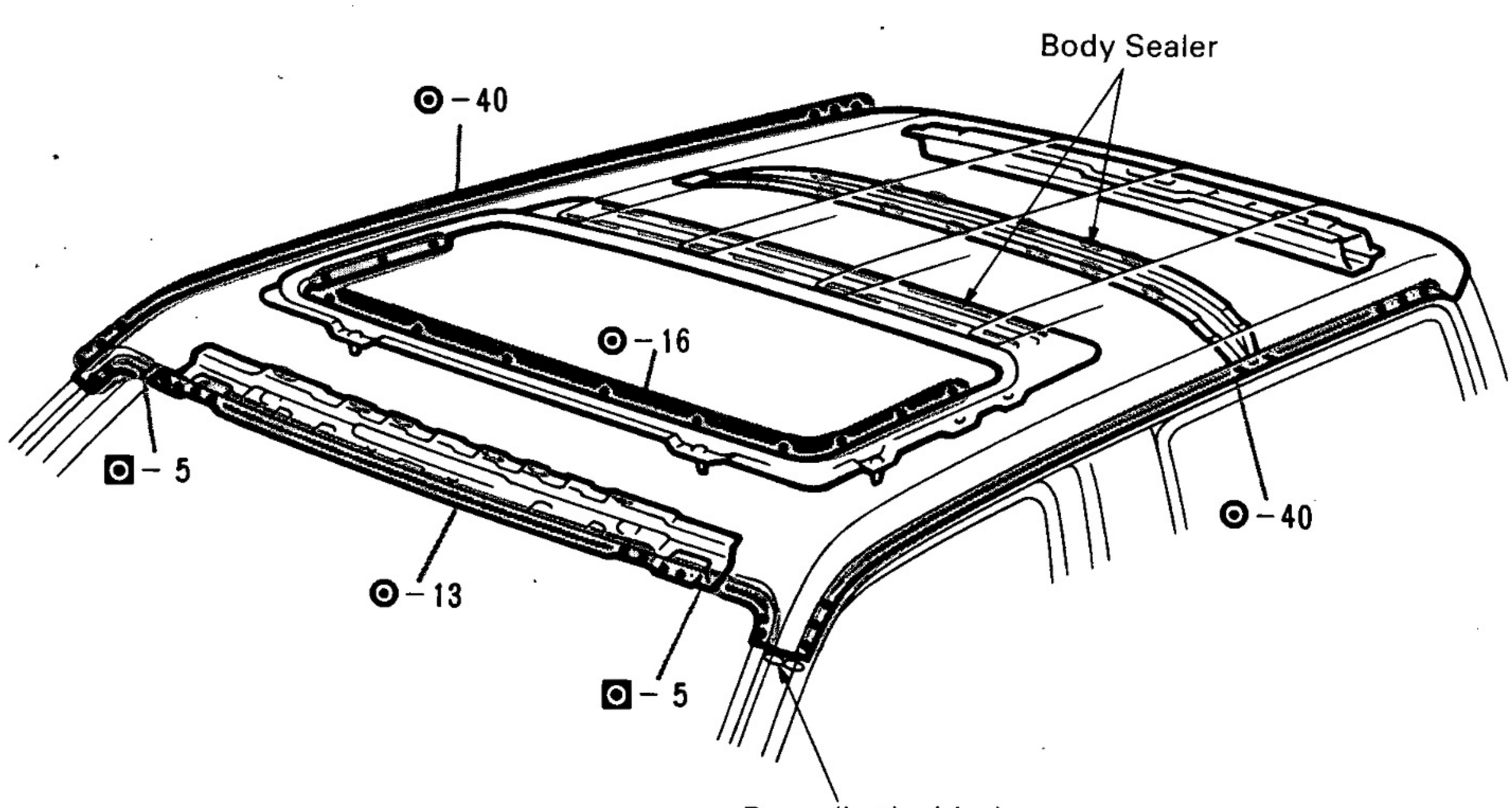
HINT: Be careful not to overheat the front body pillar.

2. Grind off the roof panel tip at the quarter panel arc brazing connection with a cut grinder.

INSTALLATION







1. Before temporarily installing the new parts, apply body sealer to the windshield header panel, roof panel reinforcement and back window frame.

HINT:

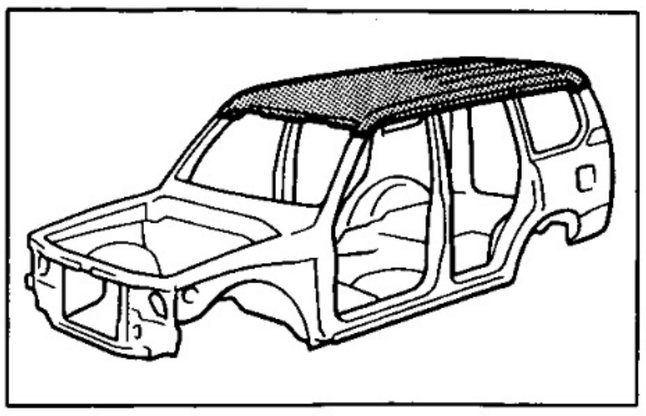
1) Apply just enough sealer for the new parts to make contact.

2) For other sealing points, refer to Section AR.

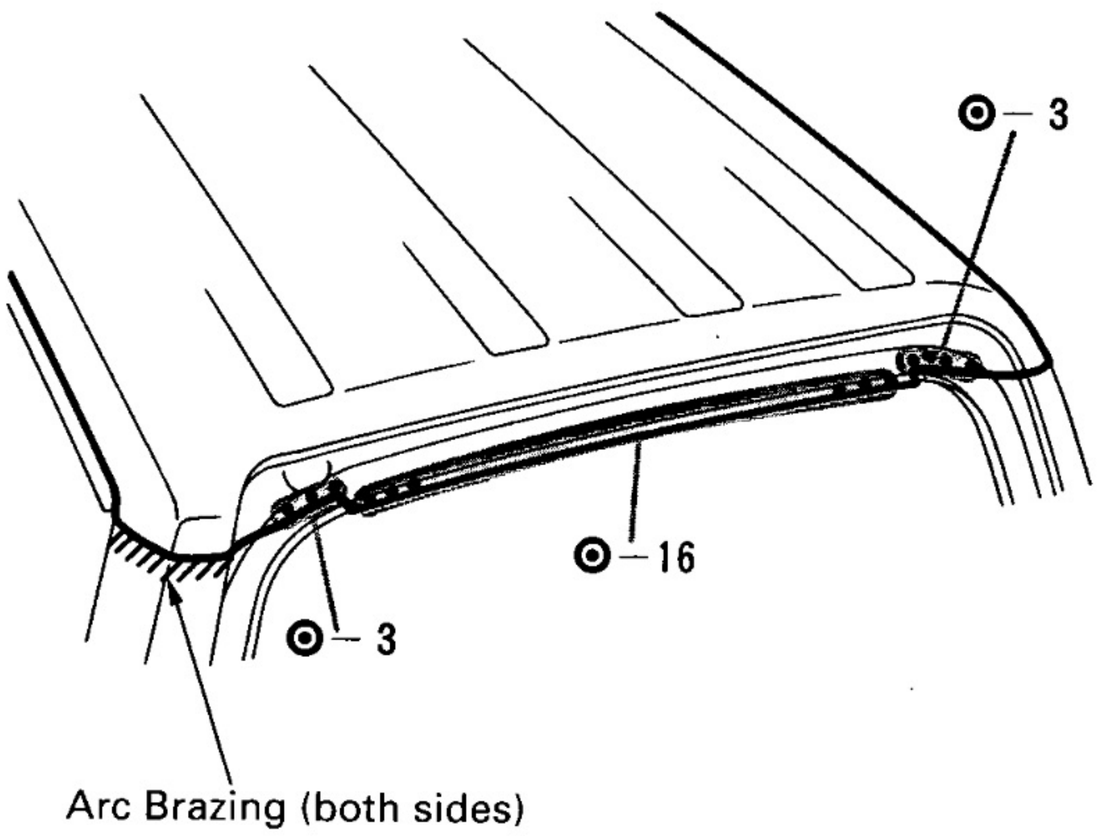
2. Bend the flange hem with a wooden hammer and dolly.

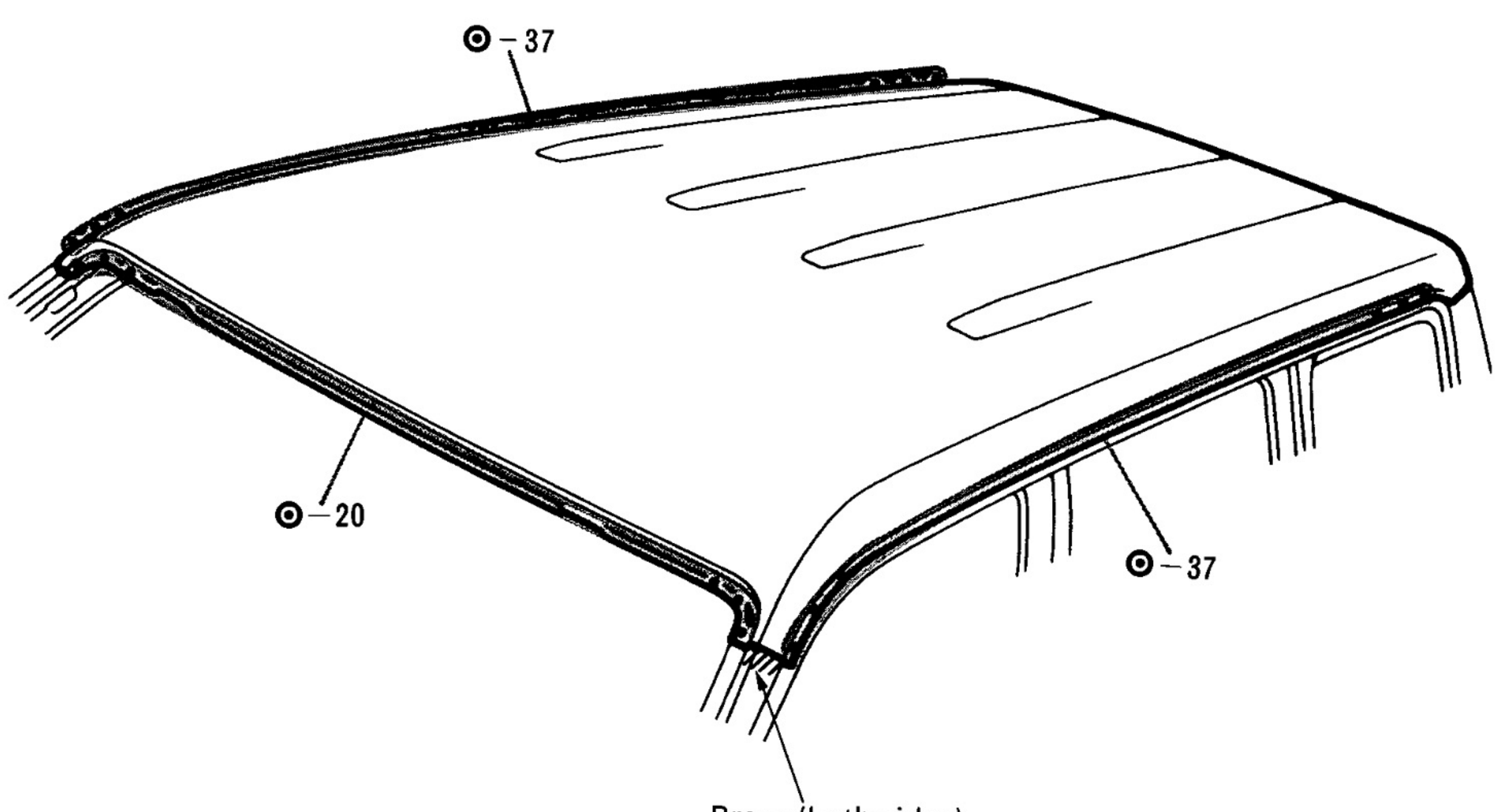
HINT: Perform hemming three steps, being careful not to warp the panel.

ROOF PANEL (ASSY): 5-Door w/o sunroof



REMOVAL



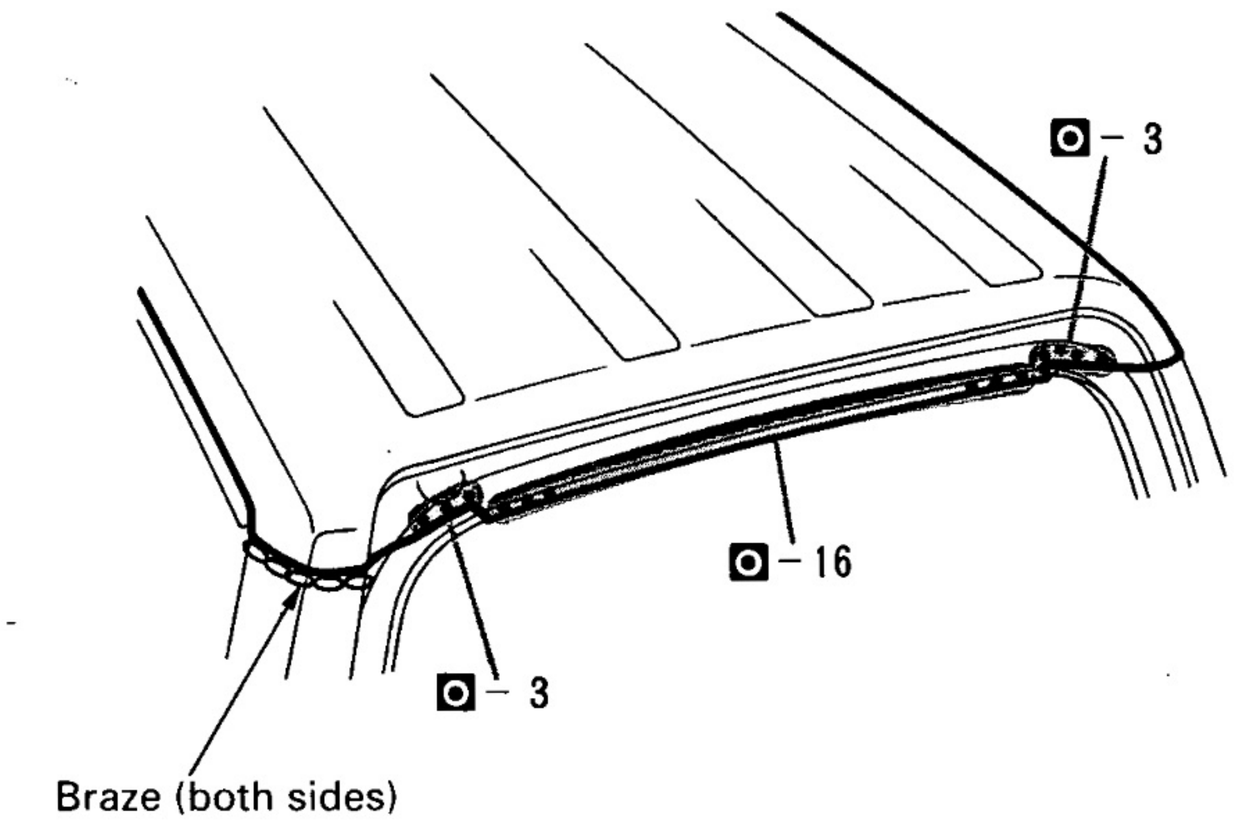


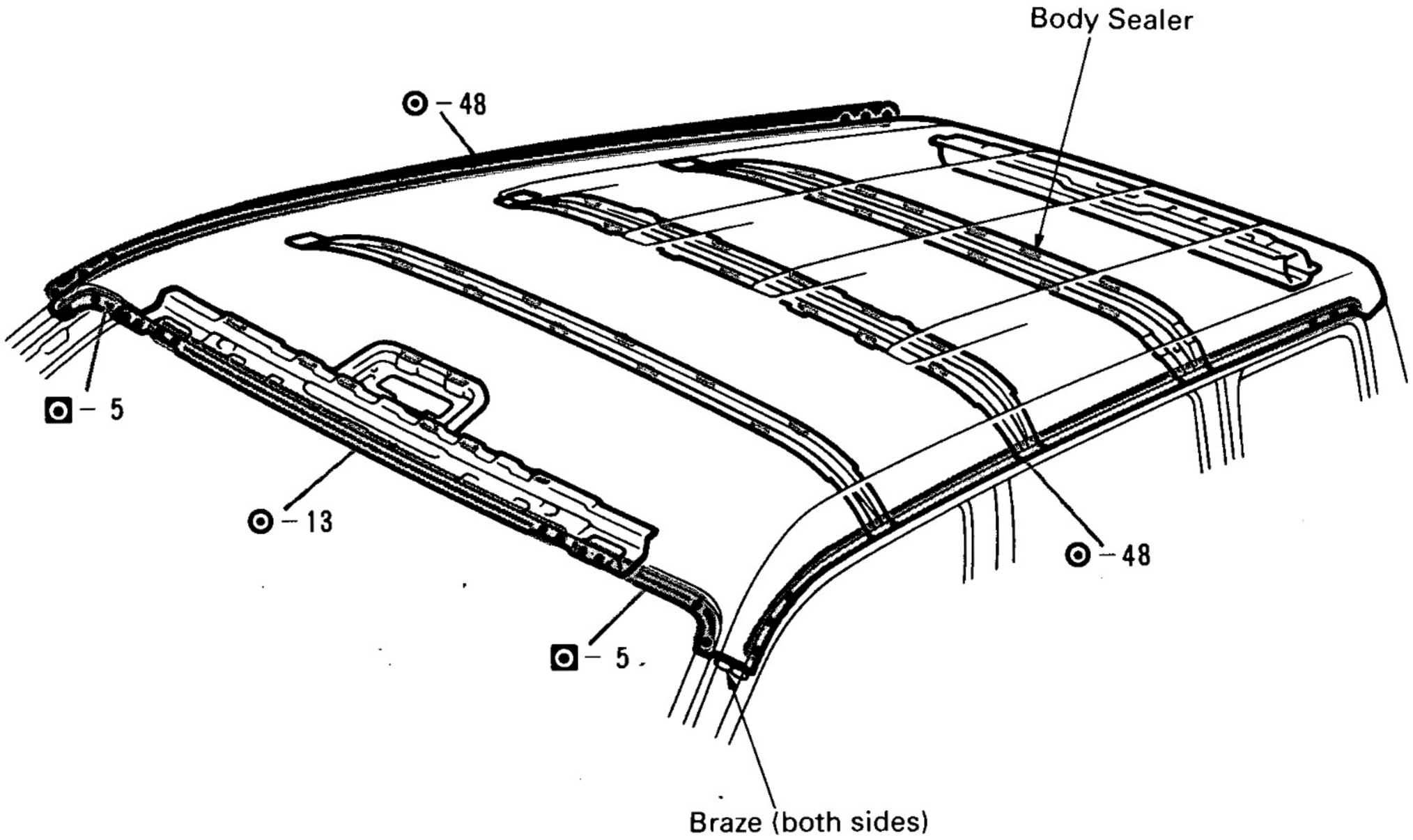
1. Heat the brazed area of the front body pillar, and scrape off the brazing with a wire brush.

HINT: Be careful not to overheat the front body pillar.

2. Grind off the roof panel tip at the quarter panel arc brazing connection with a cut grinder.

INSTALLATION





1. Before temporarily installing the new parts, apply body sealer to the windshield header panel, roof panel reinforcement and back window frame.

HINT:

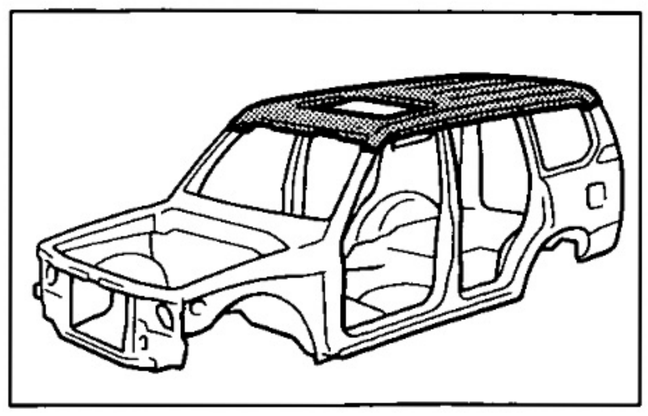
1) Apply just enough sealer for the new parts to make contact.

2) For other sealing points, refer to Section AR.

2. Braze the front body pillar and quarter panel connection.

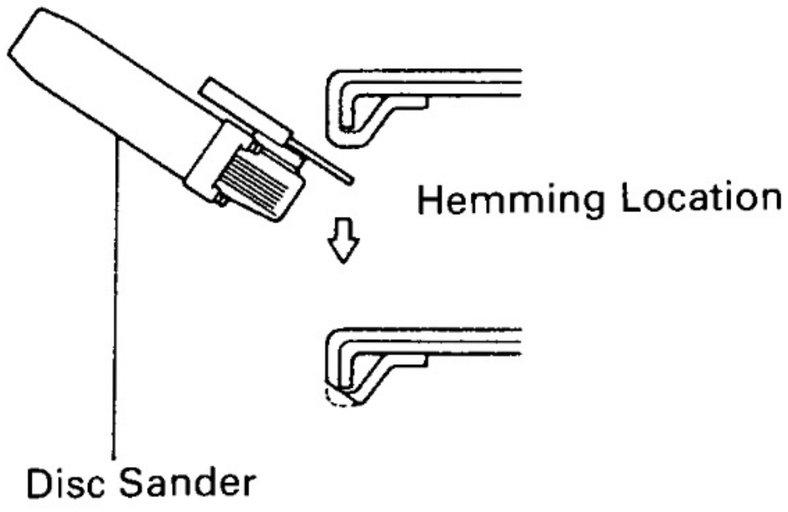
HINT: Before performing these operations, place a wet rag on the roof panel to protect it from damage.

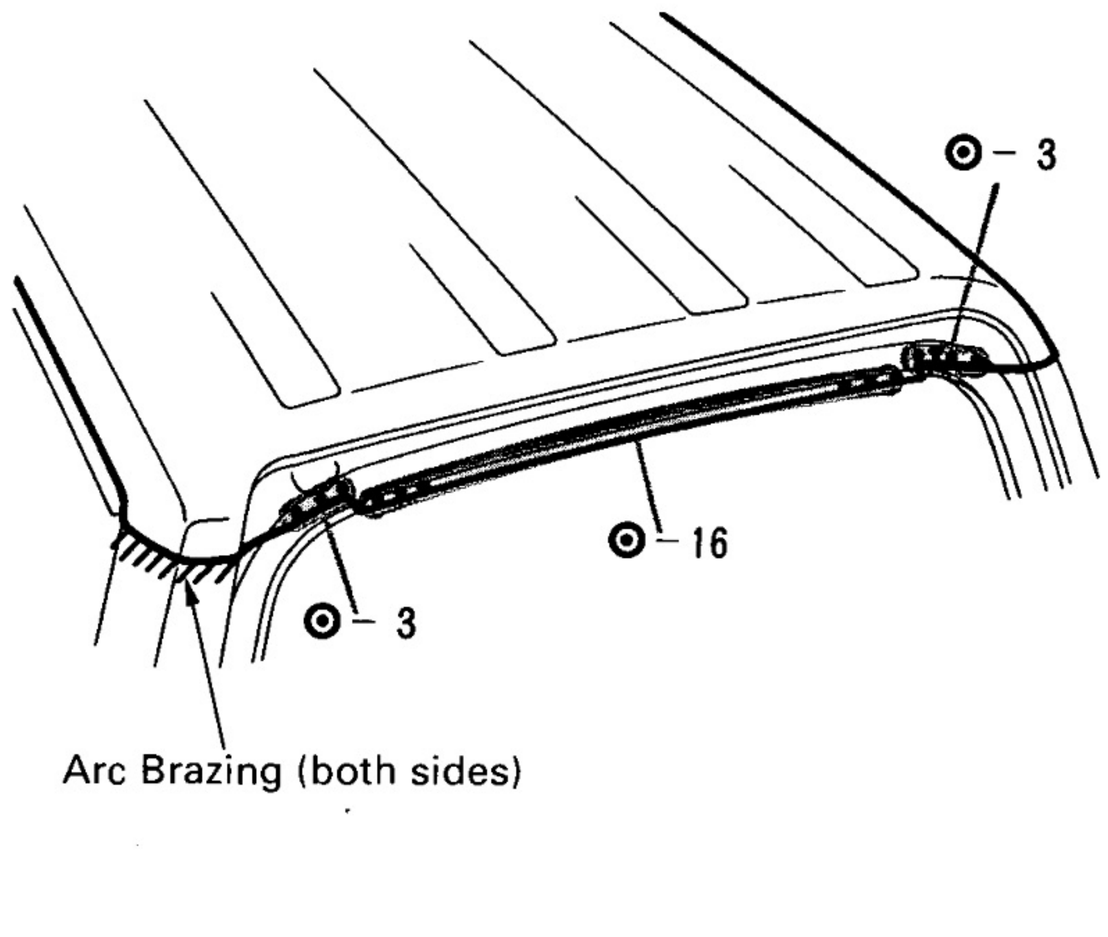
ROOF PANEL (ASSY): 5-Door w/sunroof

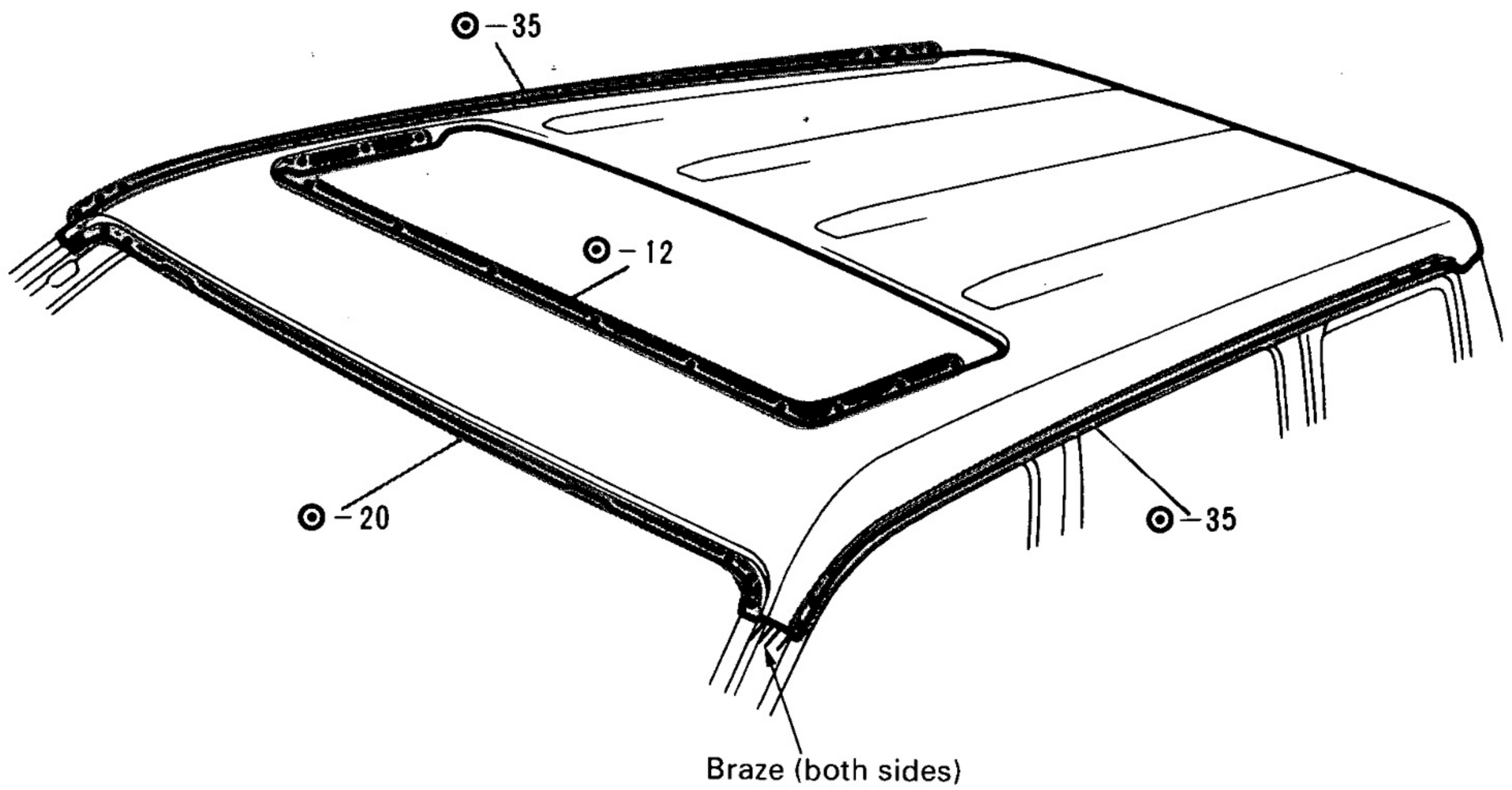


REMOVAL

[If reusing the roof panel reinforcement]





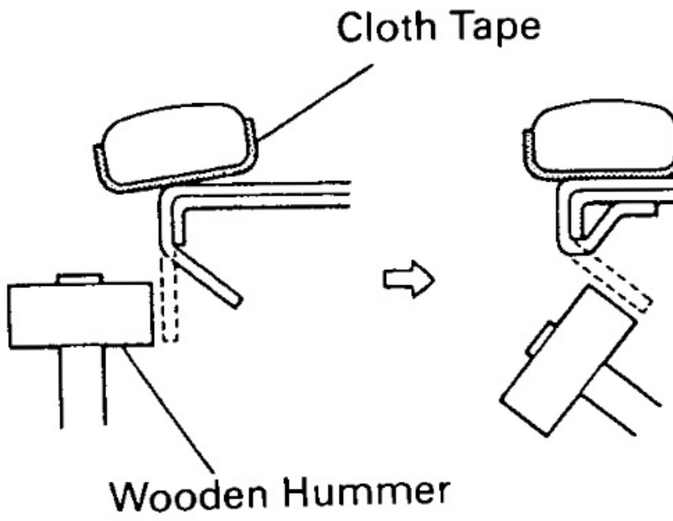


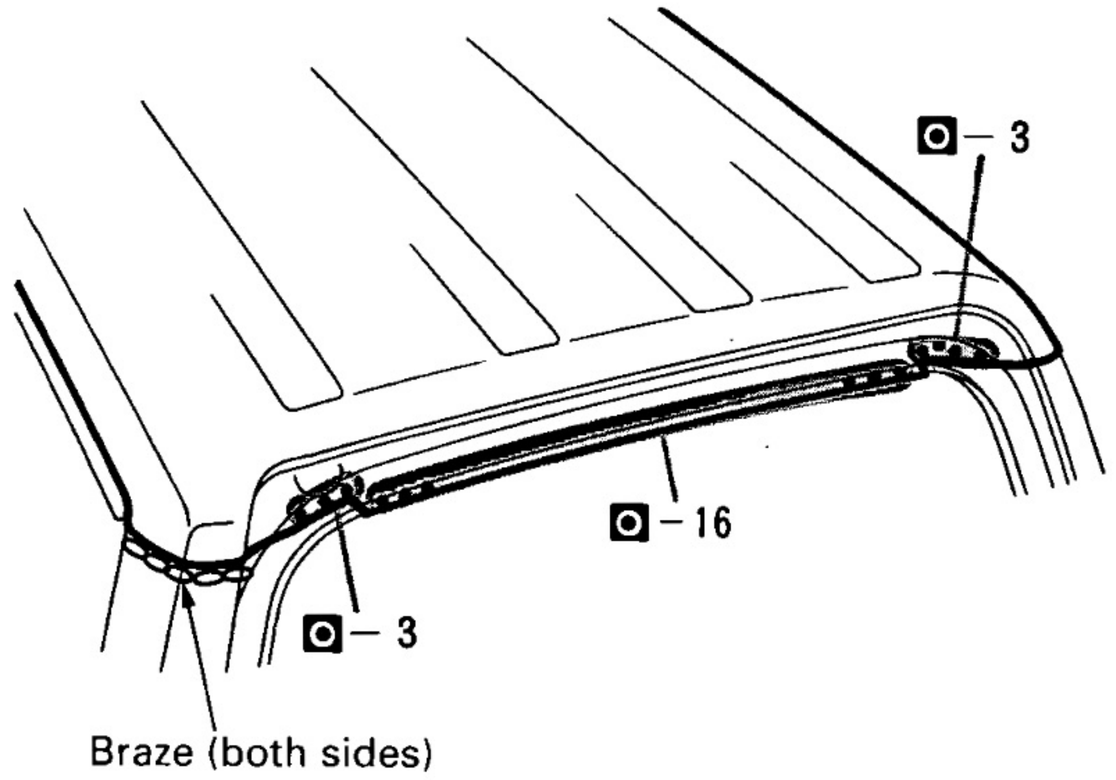
1. Heat the brazed area of the front body pillar, and scrape off the brazing with a wire brush.

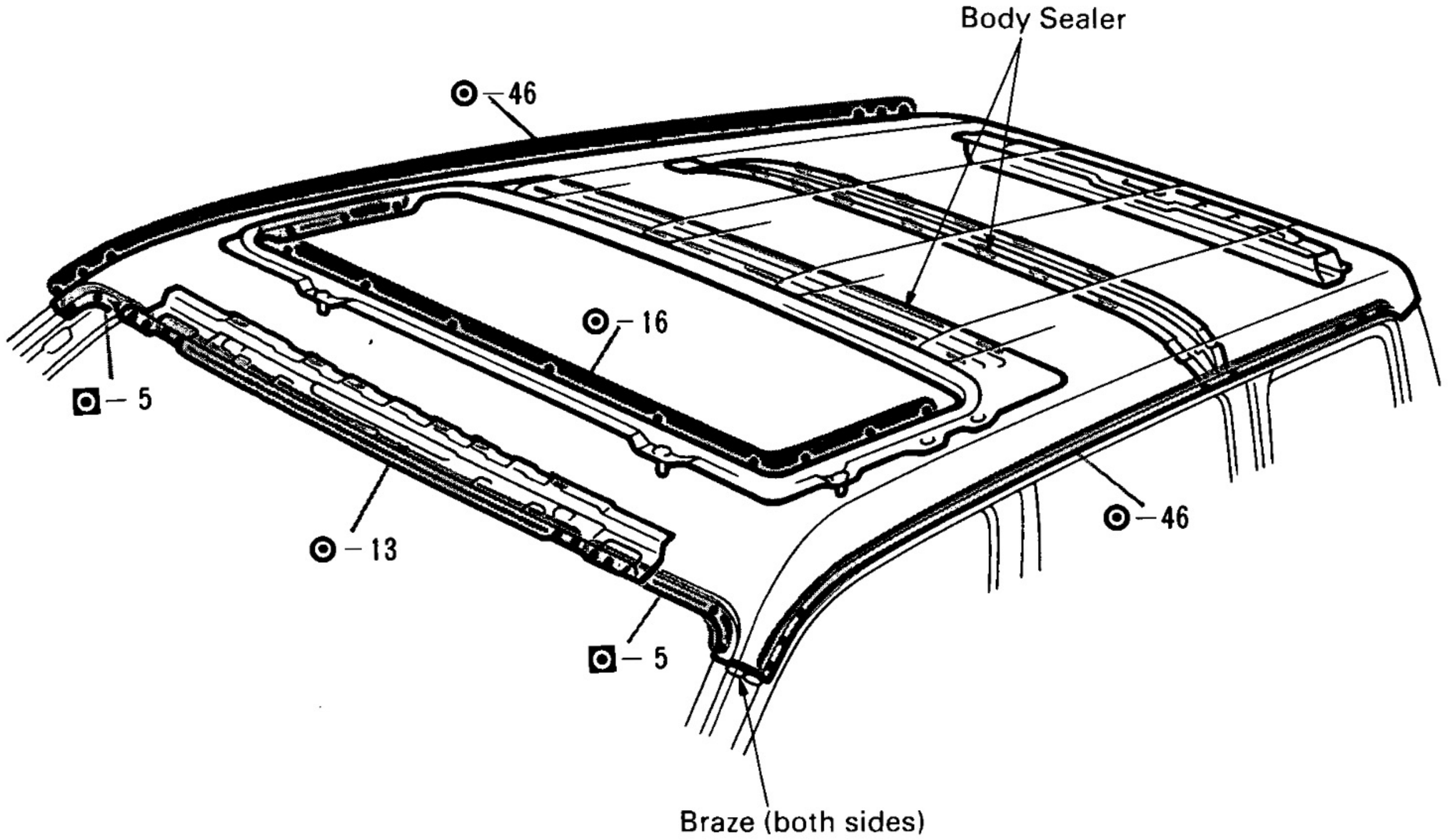
HINT: Be careful not to overheat the front body pillar.

2. Grind off the roof panel tip at the quarter panel arc brazing connection with a cut grinder.

INSTALLATION







1. Before temporarily installing the new parts, apply body sealer to the windshield header panel, roof panel reinforcement and back window frame.

HINT:

1) Apply just enough sealer for the new parts to make contact.

2) For other sealing points, refer to Section AR.

2. Bend the flange hem with a wooden hammer and dolly.

HINT: Perform hemming three steps, being careful not to warp the panel.

BODY PANEL CONSTRUCTION

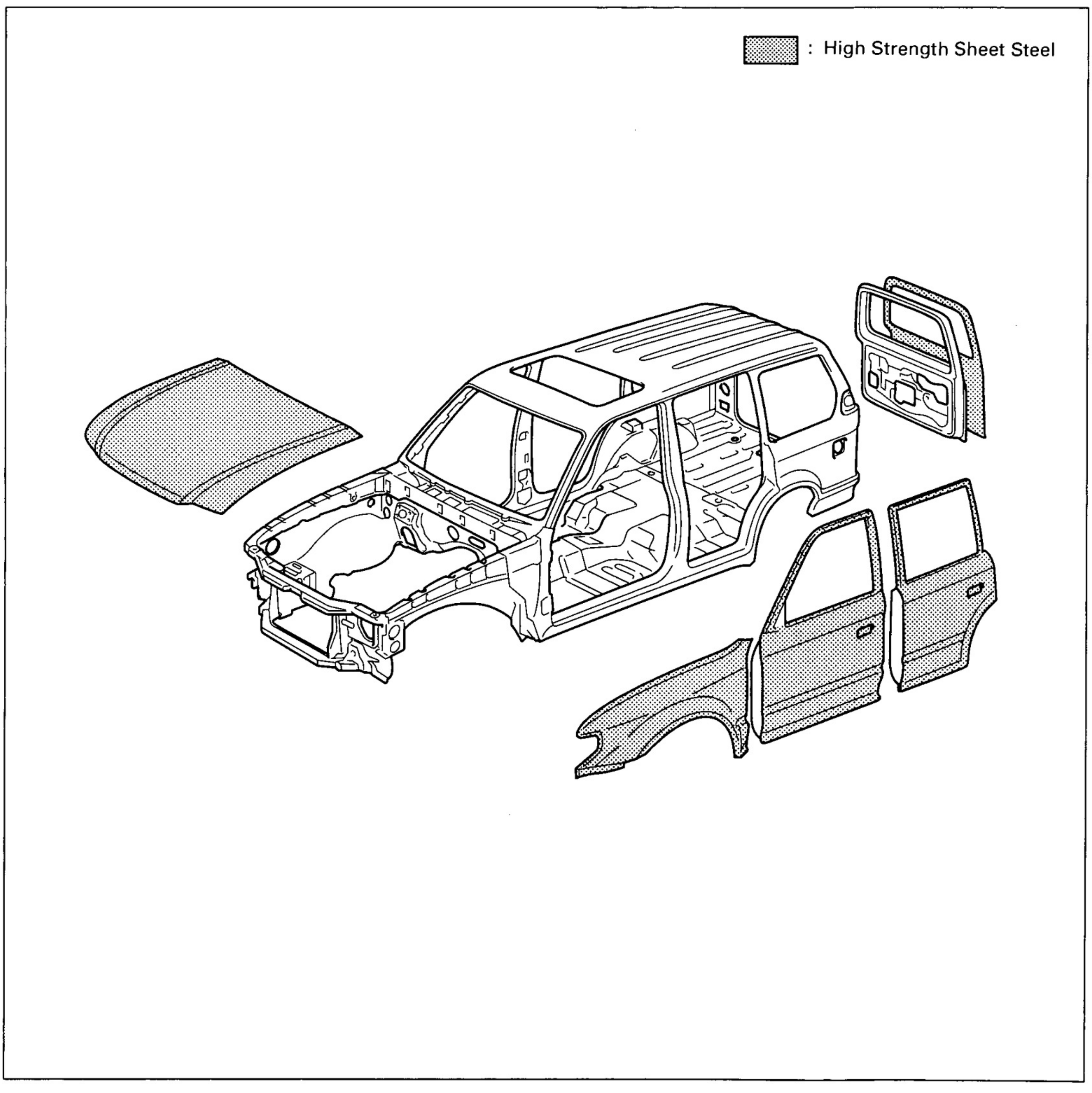
	Page
HIGH-STRENGTH STEEL (HSS) PARTS	CN-2
RUST-RESISTANT SHEET STEEL PARTS	CN-3

HIGH-STRENGTH STEEL (HSS) PARTS

Generally, High-Strength Steel (HSS) is that which has an intensity value of at 35 kgf/mm² (343 MPa), and distinguished from mild steel.

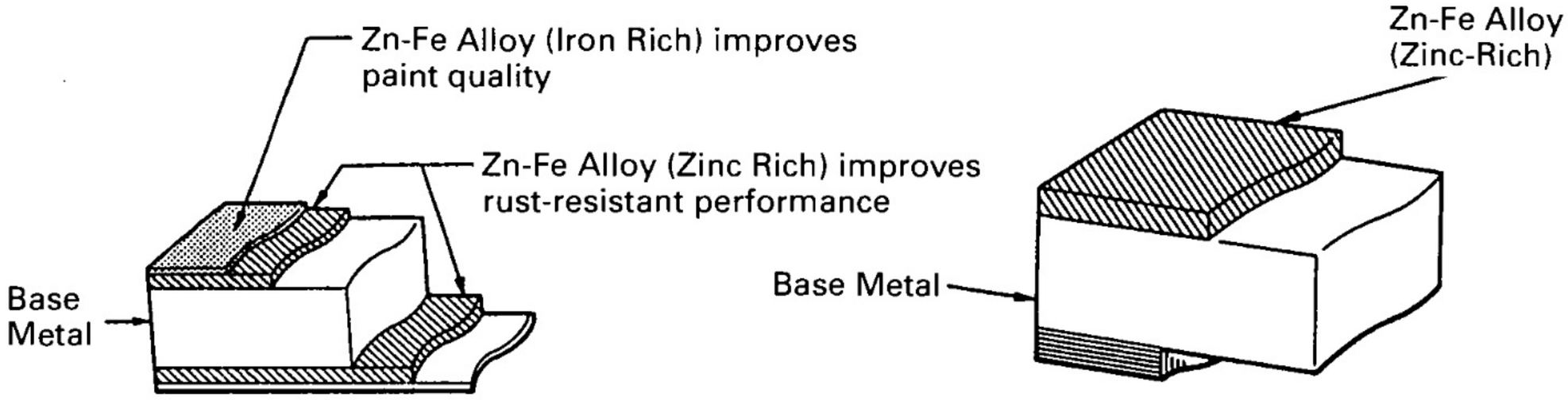
The handling of HSS is the same as for mild steel, but the following should be observed.

1. Panel Hammering: Because HSS is thinner than mild steel, care should be taken to avoid warping during hammering operations.
2. Removing Spot Welds: Because HSS is tougher than mild steel, damage will occur more easily to a regular drill. Therefore, an HSS Spot Cutter is recommended.
   Also, use a high-torque drill at low speed, and supply grinding oil to the drill during use.
3. Panel Welding: Panel welding procedures for HSS are exactly the same as for mild steel. Plug welding should be done with MIG (Metal Inert Gas) welder. Do not gas weld or braze panels at areas other than specified.



RUST-RESISTANT SHEET STEEL PARTS

Rust-Resistant Sheet Steel have zinc, tin or aluminum etc, plating over the base metal surface in order to improve the corrosion resistance of the sheet metal. For the vehicle's body panels, galvannealed sheet steel is widely used.
Body panel on TOYOTA models are made of two different galvannealed sheet steel. The ordinary galvannealed sheet steel has a zinc-iron alloy plating over the base metal surface. Zinc-iron alloy double-layer galvannealed sheet steel has zinc-iron alloy plating on both the outside and the back surface, plus a further iron-rich zinc-iron alloy plating which has good paint adhesion. These two galvannealed sheet steels are used selectively according to need.

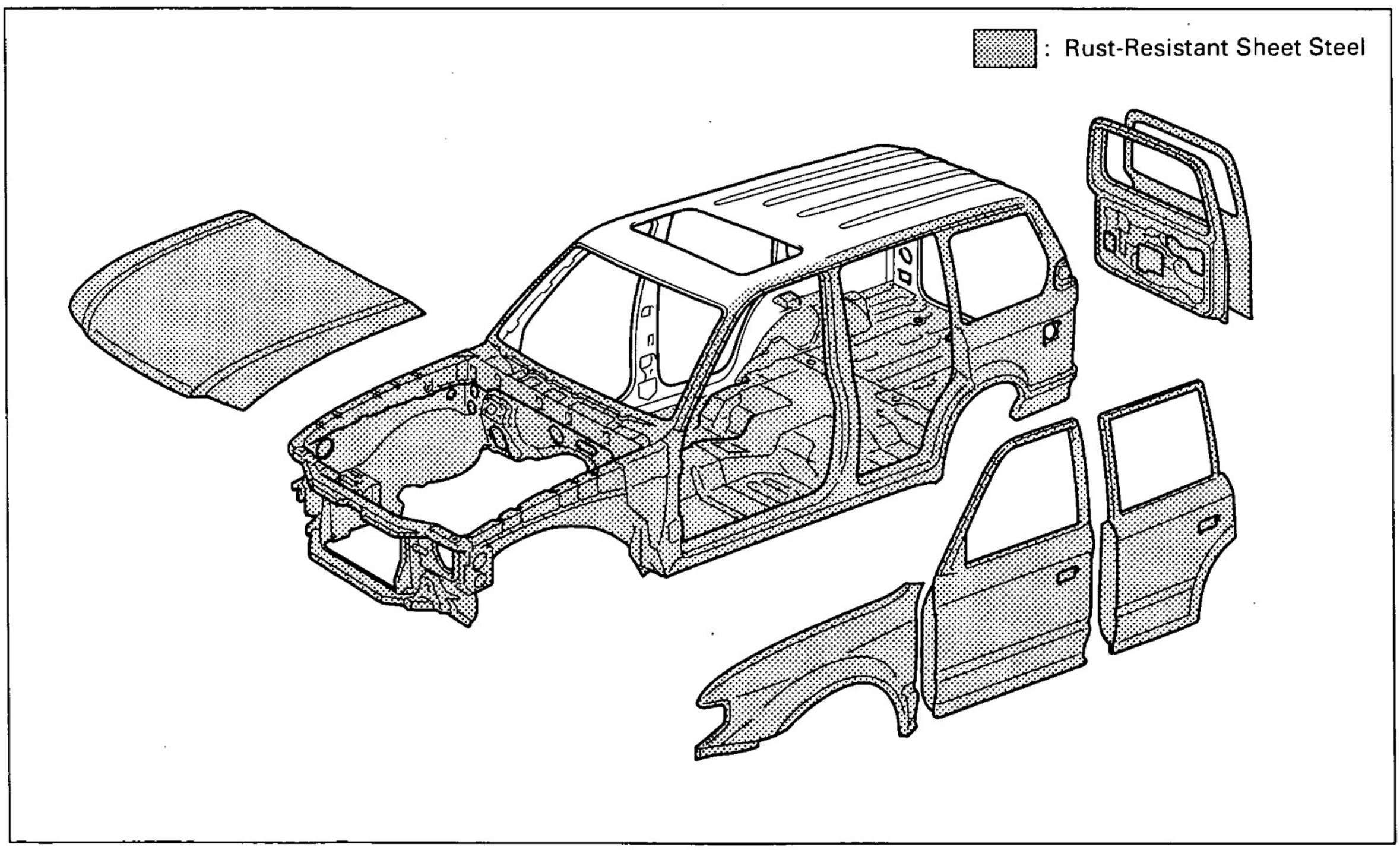


Excelite II

Galvannealed Sheet Steel

The handling of Rust-Resistant Sheet Steel is the same as for ordinary sheet steel, but the following should be observed.

1. Panel Welding: The paint as well as the zinc portion must be removed completely from the welding area to guarantee good welding integrity.
2. Anti-Rust Treatment: Since the zinc plating is lost after welding, anti-rust treatment of the welded area must be thoroughly performed (refer to section AR).



PLASTIC BODY PARTS

	Page
HANDLING PRECAUTIONS	PP-2
LOCATION OF PLASTIC BODY PARTS	PP-4

HANDLING PRECAUTIONS

1. The repair procedure for plastic body parts must conform with the type of plastic material.
2. Plastic body parts are identified by the codes in the following chart.
3. When repairing metal body parts adjoining plastic body parts (by brazing, frame cutting, welding, painting etc.), consideration must given to the property of the plastic.

Code	Material name	*Heat resistant temperature limit °C (°F)	Resistance to alcohol or gasoline	Notes
AAS	Acrylonitrile Acrylic Styrene	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic or aromatic solvents.
ABS	Acrylonitrile Butadiene Styrene	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic or aromatic solvents.
AES	Acrylonitrile Ethylene Styrene	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic or aromatic solvents.
ASA	Acrylonitrile Styrene Acrylate	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic or aromatic solvents.
CAB	Cellulose Acetate	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic or aromatic solvents.
EPDM	Ethylene Propylene	100 (212)	Alcohol is harmless. Gasoline is harmless if applied only for short time in small amounts.	Most solvents are harmless but avoid dipping in gasoline, solvents, etc.
FRP	Fiber Reinforced Plastics	180 (356)	Alcohol and gasoline are harmless.	Avoid alkali.
EVA	Ethylene Acetate	70 (158)	Alcohol is harmless if applid only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid gasoline and organic oraromatic solvents.
PA	Polyamide (Nylon)	80 (176)	Alcohol and gasoline are harmless.	Avoid battery acid.
PBT	Polybutylene Terephthalate	160 (320)	Alcohol and gasoline are harmless.	Most solvents are harmless.
PC	Polycarbonate	120 (248)	Alcohol is harmless.	Avoid gasoline brake fluid, wax, wax removers and organic solvents. Avoid alkali.

*Temperatures higher than those listed here may result in material deformation during repair.

Code	Material name	*Heat resistant temperature limit °C (°F)	Resistance to alcohol or gasoline	Notes
PE	Polyethylene	80 (176)	Alcohol and gasoline are harmless.	Most solvents are harmless.
PET	Polyethylene Terephthalate	75 (167)	Alcohol and gasoline are harmless.	Avoid dipping in water.
PMMA	Polymethyl Methacrylate	80 (176)	Alcohol is harmless if applied only for short time in small amounts.	Avoid dipping or immersing in alcohol, gasoline, solvents, etc.
POM	Polyoxymethylene (Polyacetal)	100 (212)	Alcohol and gasoline are harmless.	Most solvents are harmless.
PP	Polypropylene	80 (176)	Alcohol and gasoline are harmless.	Most solvents are harmless.
PPO	Modified Polyphenylene Oxide	100 (212)	Alcohol is harmless.	Gasoline is harmless if applied only for quick wiping to remove grease.
PS	Polystyrene	60 (140)	Alcohol and gasoline are harmless if applied only for short time in small amounts.	Avoid dipping or immersing in alcohol, gasoline, solvents, etc.
PUR	Polyurethane	80 (176)	Alcohol is harmless if applied only for very short time in small amounts (e.g., quick wiping to remove grease).	Avoid dipping or immersing in alcohol, gasoline, solvents, etc.
PVC	Polyvinylchloride (Vinyl)	80 (176)	Alcohol and gasoline are harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid dipping or immersing in alcohol, gasoline, solvents, etc.
SAN	Styrene Acrylonitrile	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid dipping or immersing in alcohol, gasoline, solvents etc.
TPO	Thermoplastic Olefine	80 (176)	Alcohol is harmless. Gasoline is harmless if applied only for short time in small amounts.	Most solvents are harmless but avoid dipping in gasoline, solvents, etc.
TPU	Thermoplastic Polyurethane	80 (176)	Alcohol is harmless if applied only for short time in small amounts (e.g., quick wiping to remove grease).	Avoid dipping or immersing in alcohol, gasoline, solvents, etc.
TSOP	TOYOTA Super Olefine Polymer	80 (176)	Alcohol and gasoline are harmless.	Most solvents are harmless.
UP	Unsaturated Polyester	110 (233)	Alcohol and gasoline are harmless.	Avoid alkali.

*Temperatures higher than those listed here may result in material deformation during repair.

LOCATION OF PLASTIC BODY PARTS

Parts Name	Code
Radiator Grille	ABS·AES
Front Bumper Cover	TSOP
Front Turn Signal Light	PMMA/PP
Front Fender Outside Moulding	PP/TSOP·PVC
Front Fender Mudguard	TPO
Outer Rear View Mirror (Electromotion)	PP/PA/ABS·PP/PA/AAS
Outer Rear View Mirror (Working by hand)	PP/PA/AAS
Front Door Outside Handle	PC
Front Door Outside Moulding	PP/TSOP
Rear Door Outside Handle	PC
Rear Door Outside Moulding	PP/TSOP·PVC
Side Door Step Plate Cover	PP
Rocker Panel Moulding	PP/TSOP
Quarter Outside Moulding	PP/TSOP·PVC
Rear Bumper Extension	PP/TSOP
Quarter Panel Mudguard	TPO
Back Door Outside Garnish	PP/TSOP·PVC
Rear License Plate Bracket Lower Stay	TSOP
Rear Combination Upper Light	PMMA/PP
Rear Combination Lower Light	PMMA/PC
License Plate Light	PC/PA/ASA
Back Door Outside Handle	PC
Rear Bumber Cover	TSOP
Roof Rack Leg Front & Rear Cover	ASA
Roof Rack Center Cover	PA

HINT:

- *Resin material differs with model.*
- */ Made up of 2 or more kinds of materials.*

ANTI-RUST TREATMENT

	Page
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BODY PANEL SEALING AREAS	AR-4
BODY PANEL UNDERCOATING AREAS	AR-8
BODY PANEL ANTI-RUST AGENT APPLICATION AREAS	AR-9
BODY PANEL ANTI-CHIPPING PAINT APPLICATION AREAS	AR-10

GENERAL INFORMATION

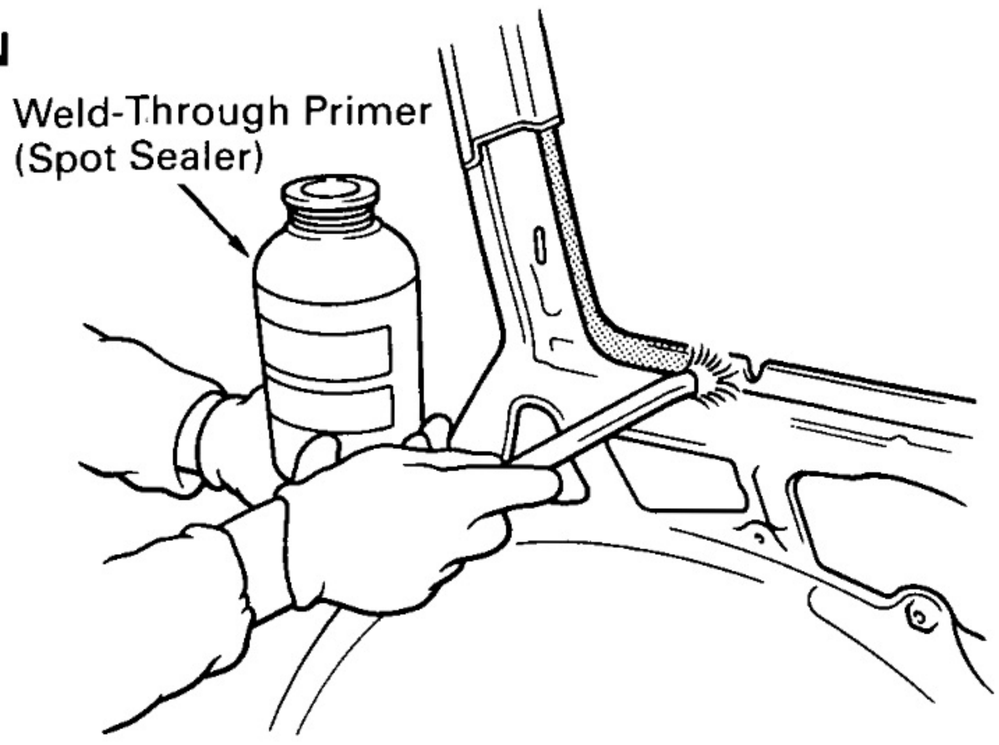
Anti-rust treatment is necessary before welding and before and after the painting process.

ANTI-RUST TREATMENT BEFORE WELDING

1. WELD-THROUGH PRIMER (SPOT SEALER)APPLICATION

For anti-corrosion measures, always apply the weld-through primer (spot sealer) to welding surfaces where the paint film has been removed.

HINT: Apply the weld-through primer (spot sealer) so that it does not ooze out from the joining surfaces.

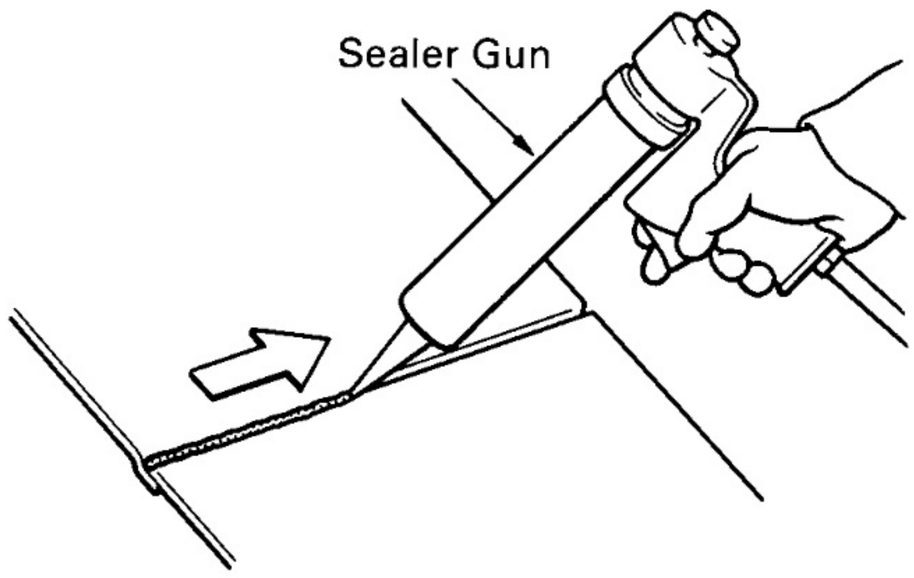


WELD-THROUGH PRIMER (SPOT SEALER) APPLICATION

ANTI-RUST TREATMENT BEFORE PAINTING PROCESS

1. BODY SEALER APPLICATION

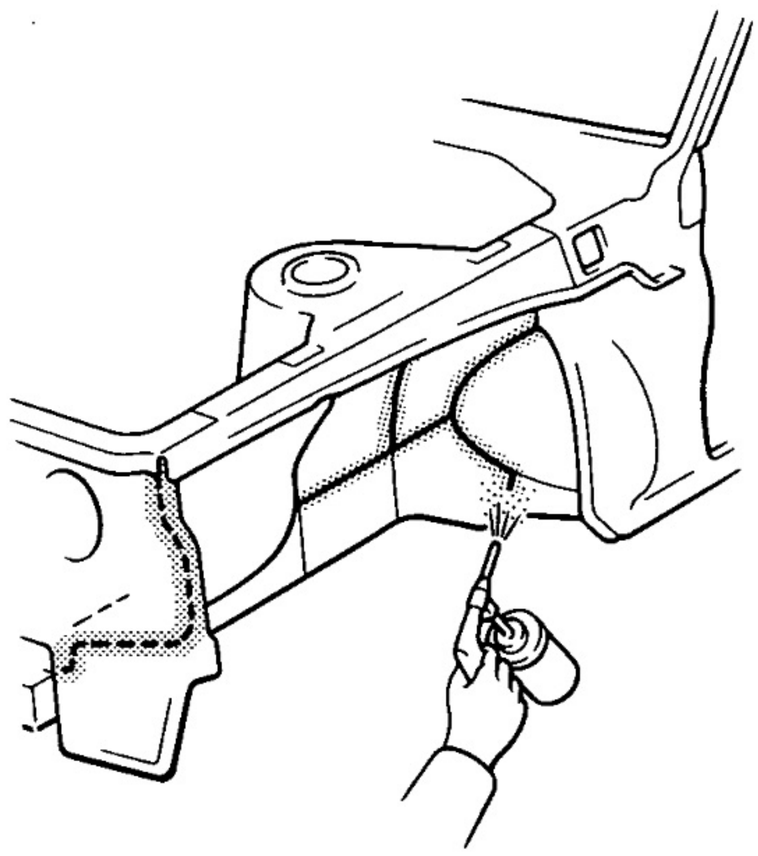
For water-proofing and anti-corrosion measures, always apply the body sealer to the body panel seams and hems of the doors, hoods, etc.



BODY SEALER APPLICATION

2. UNDERCOAT APPLICATION

To prevent corrosion and protect the body from damage by flying stones, always apply sufficient undercoat to the bottom surface of the under body and inside of the wheel housings.

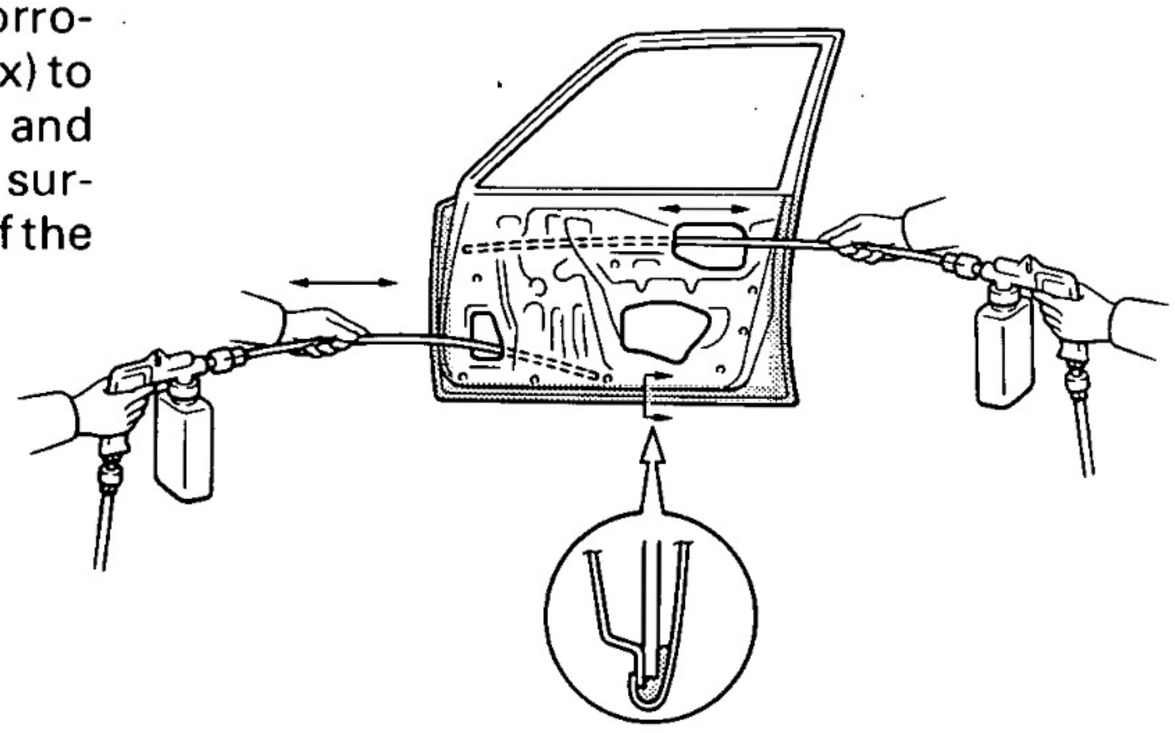


UNDERCOAT APPLICATION

ANTI-RUST TREATMENT AFTER PAINTING PROCESS

1. ANTI-RUST AGENT (WAX) APPLICATION

To preserve impossible to paint areas from corrosion, always apply sufficient anti-rust agent (wax) to the inside of the hemming areas of the doors and hoods, and around the hinges, or the welded surfaces inside the boxed cross-section structure of the side member, body pillar, etc.



ANTI-RUST AGENT (WAX) APPLICATION

REFERENCE: ANTI-RUST TREATMENT BY PAINTING

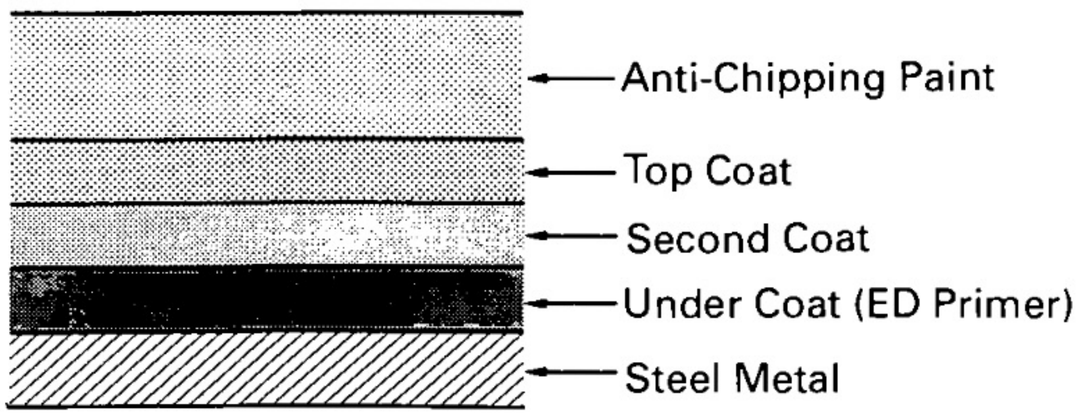
Painting prevents corrosion and protects the sheet metal from damage. In this section, anti-chipping paint only for anti-corrosion purpose is described.

1. ANTI-CHIPPING PAINT

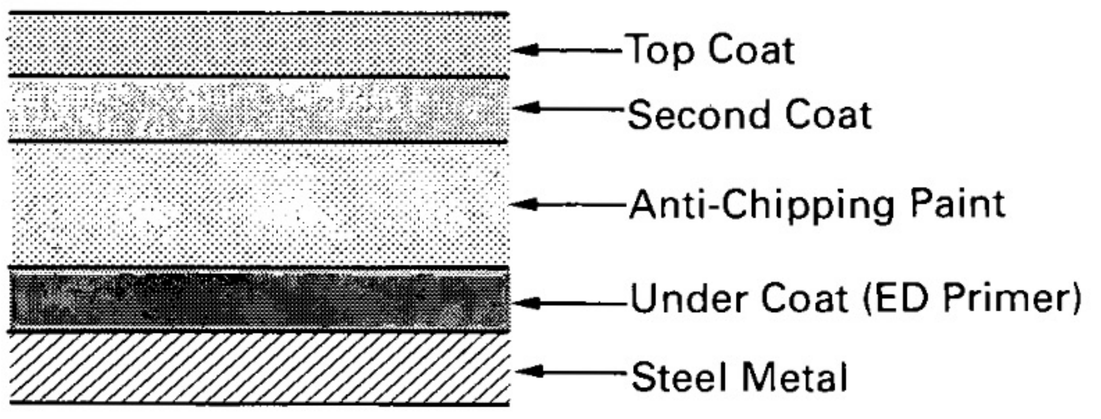
To prevent corrosion and protect the body from damage by flying stones, etc., apply anti-chipping paint to the rocker panel, wheel arch areas, valance panel, etc.

HINT:
Depending on the model or the application area, there are cases where the application of anti-chipping paint is necessary before the second coat or after the top coat.

- Apply the anti-chipping paint after the top coat.



- Apply the anti-chipping paint before the second coat.

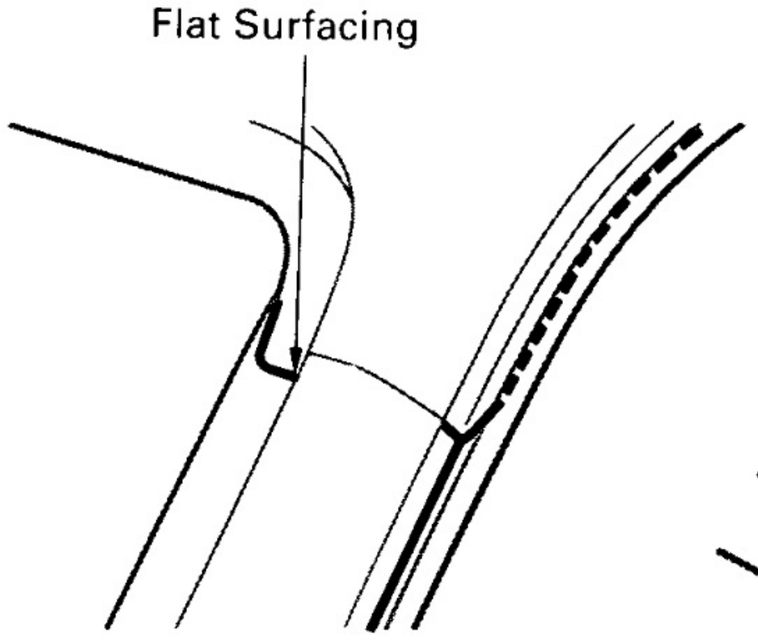


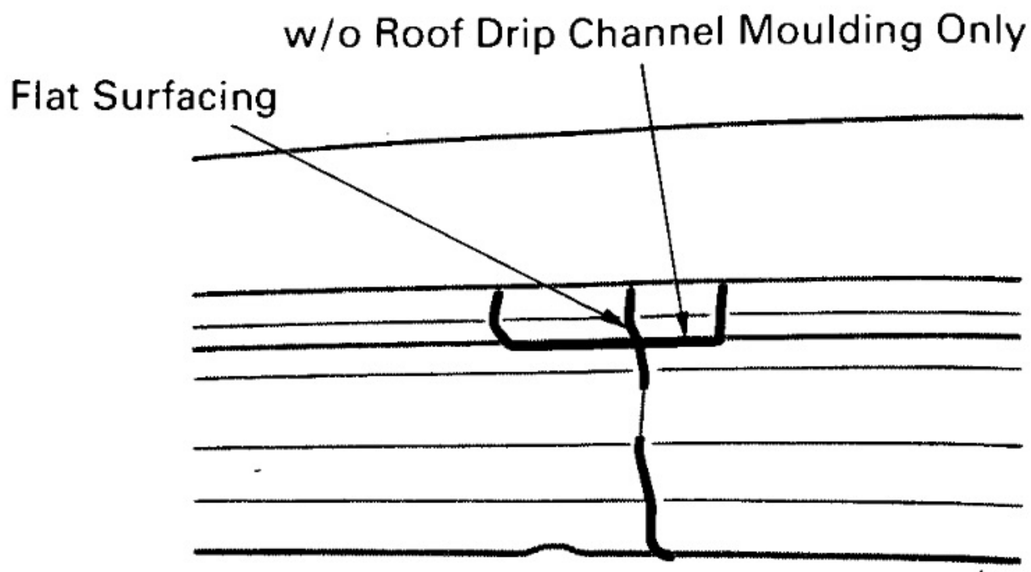
BODY PANEL SEALING AREAS

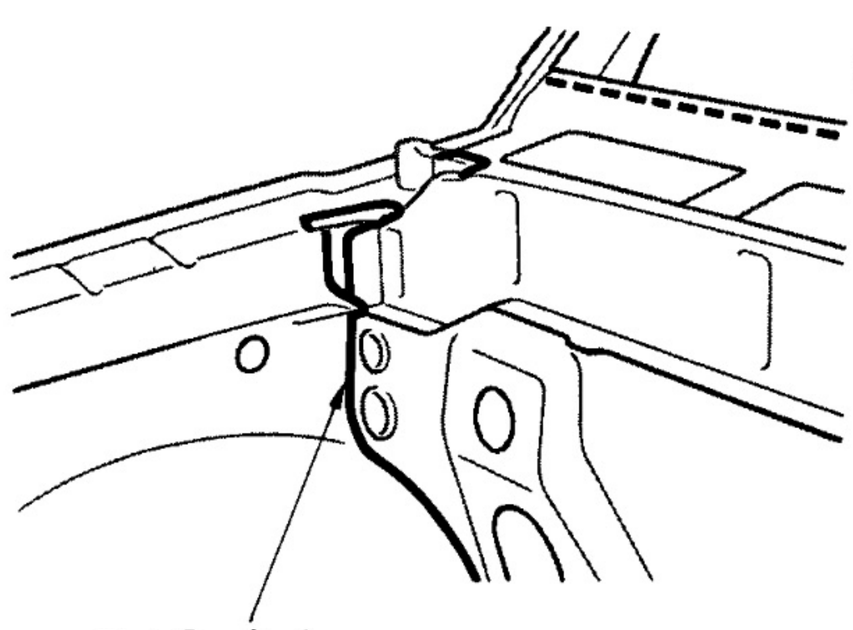
HINT:

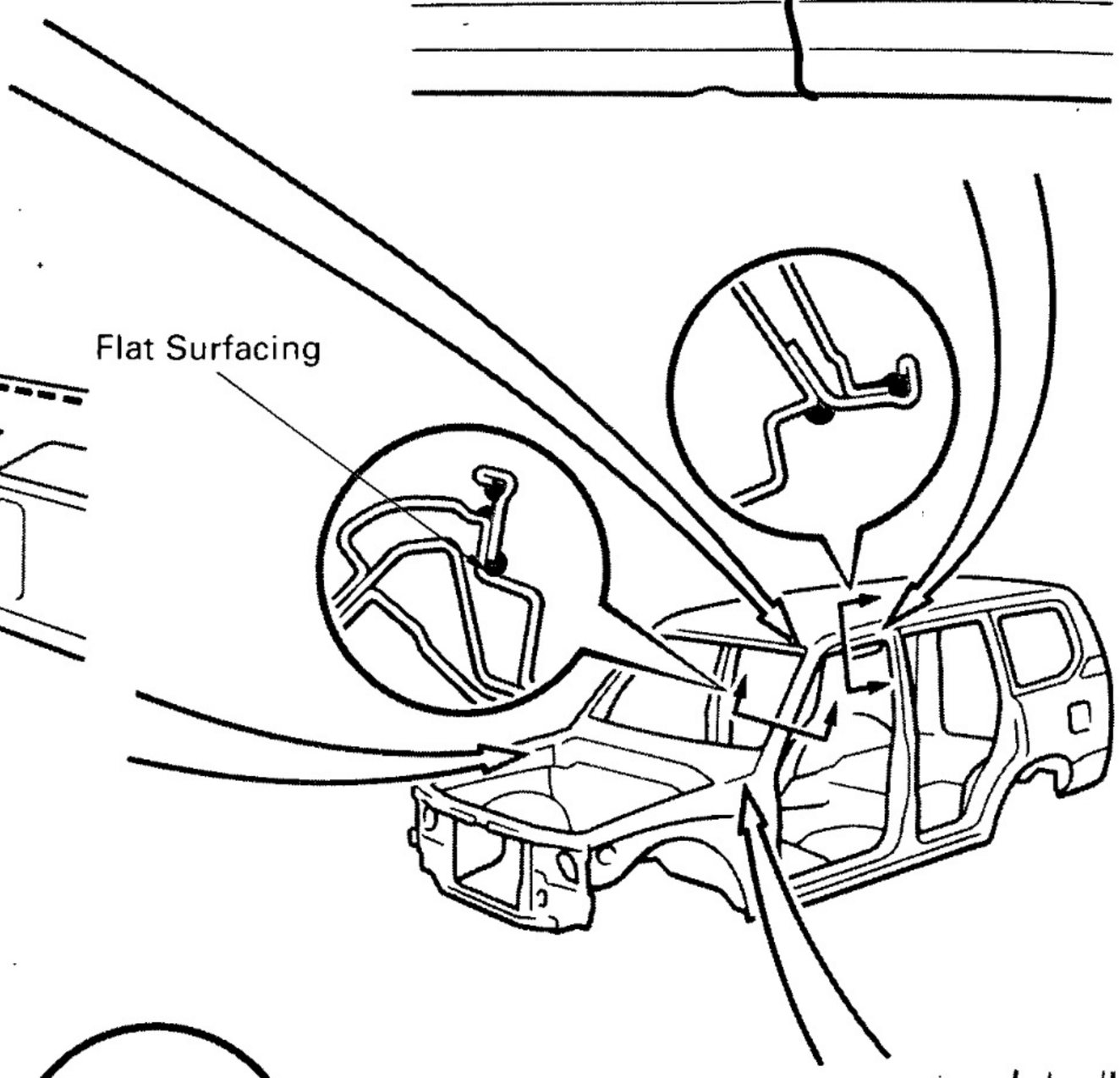
1. *Prior to applying body sealer, clean the area with a rag soaked in a grease, wax and silicone remover.*
2. *If weld-through primer was used, first wipe off any excess and coat with anti-corrosion primer before applying body sealer.*
3. *Wipe off excess body sealer with a rag soaked in a grease, wax and silicone remover.*
4. *If body sealer is damaged by peeling, cracks, etc., be sure to repair as necessary.*

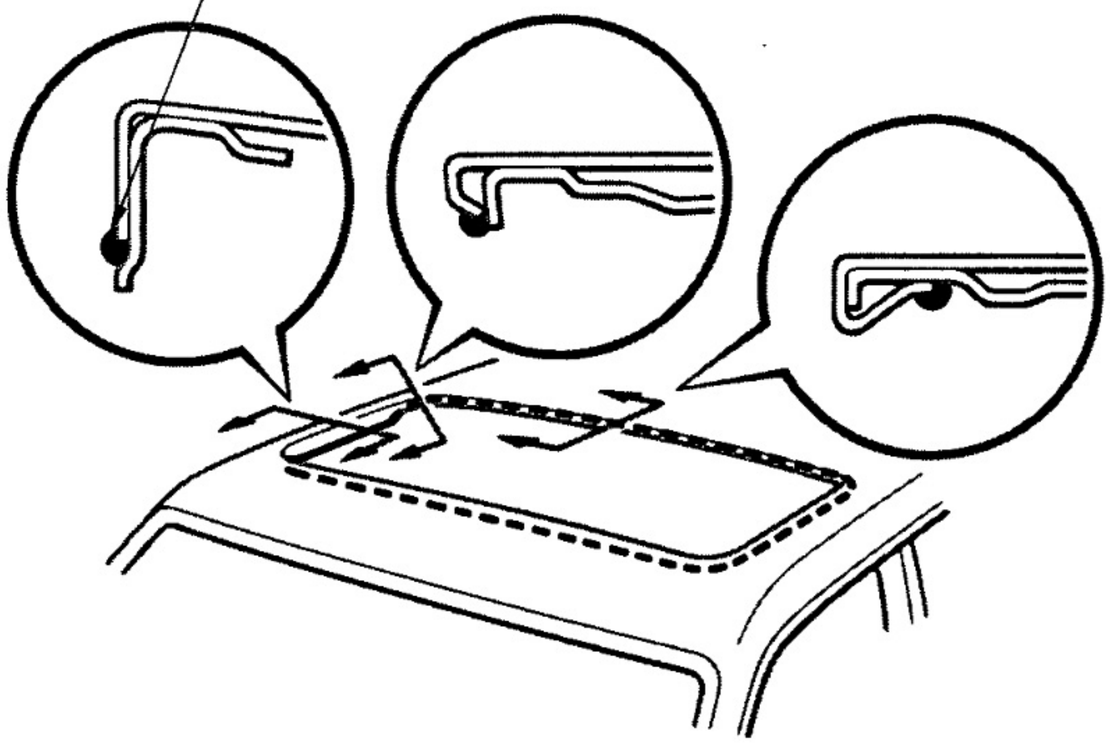
ALL

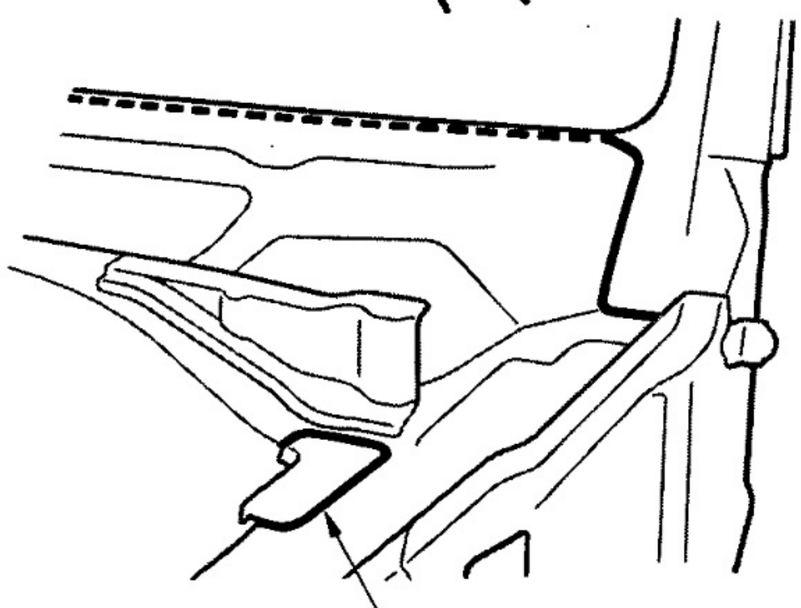




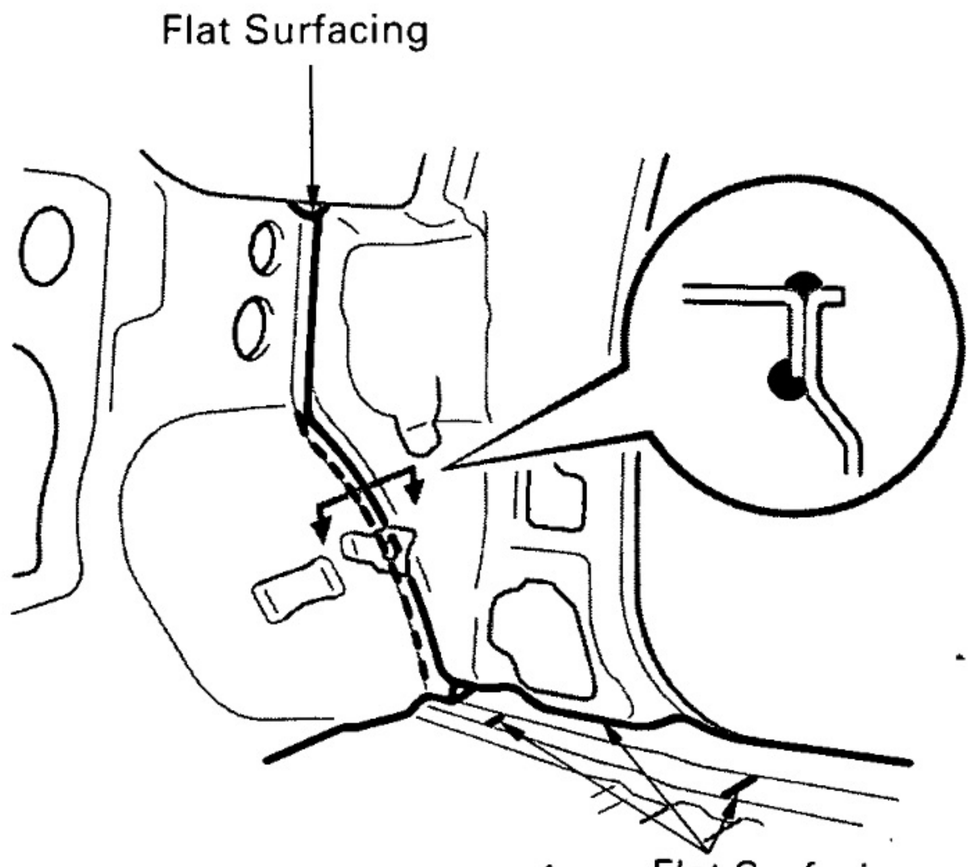


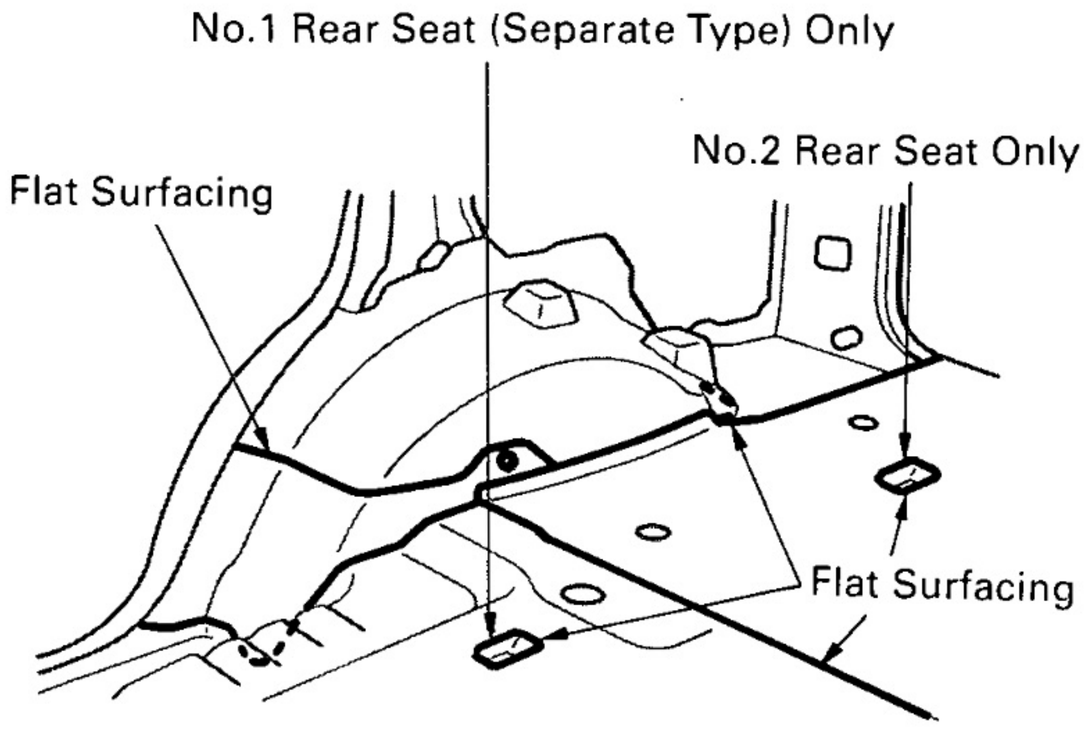


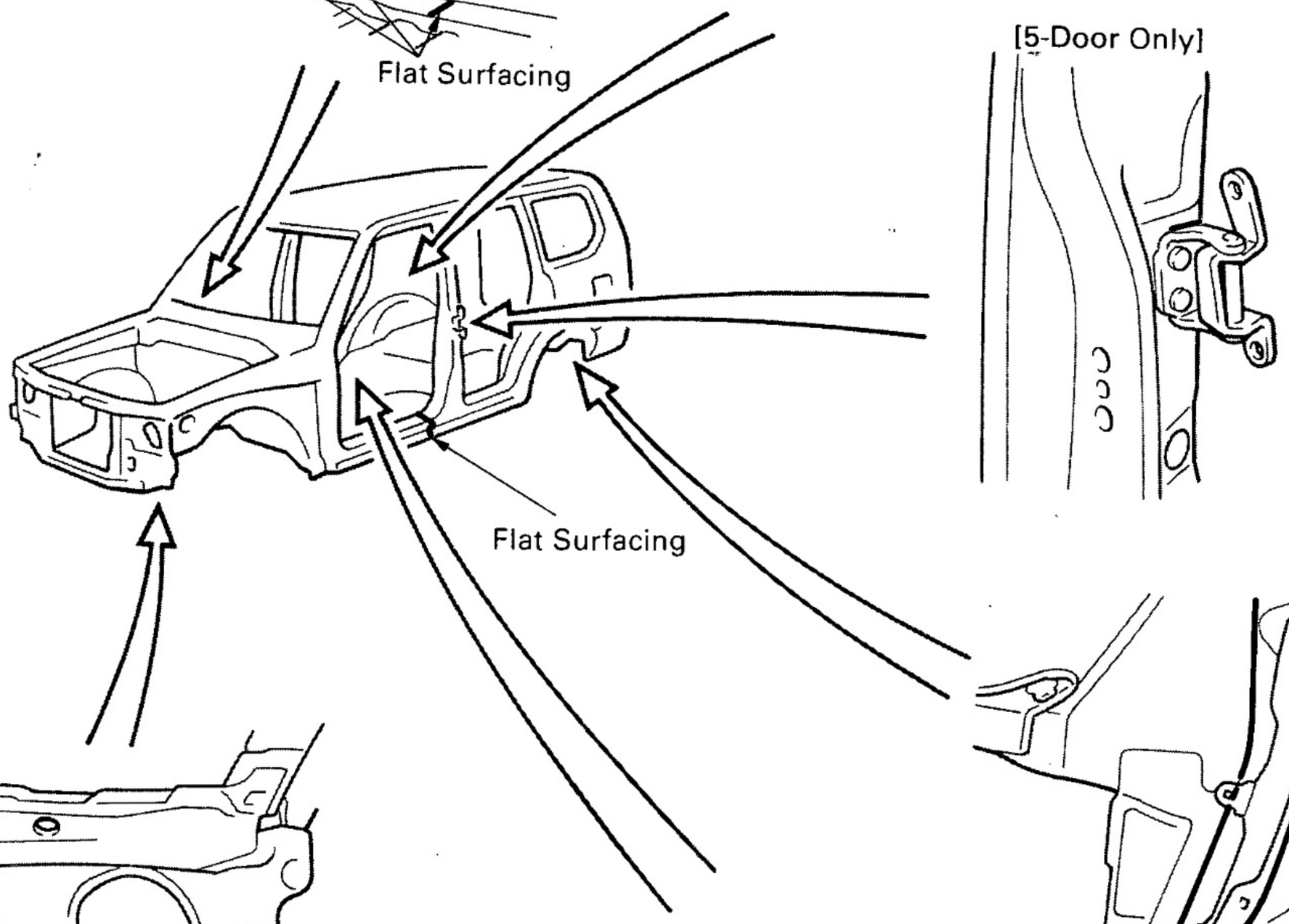


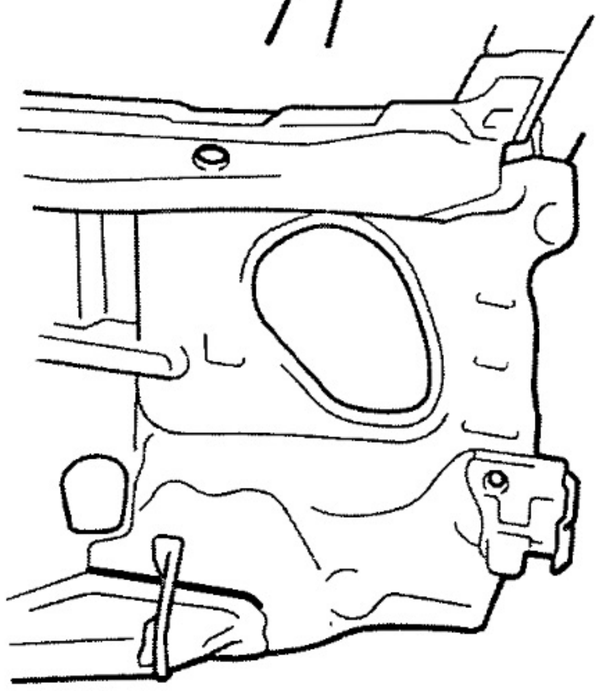


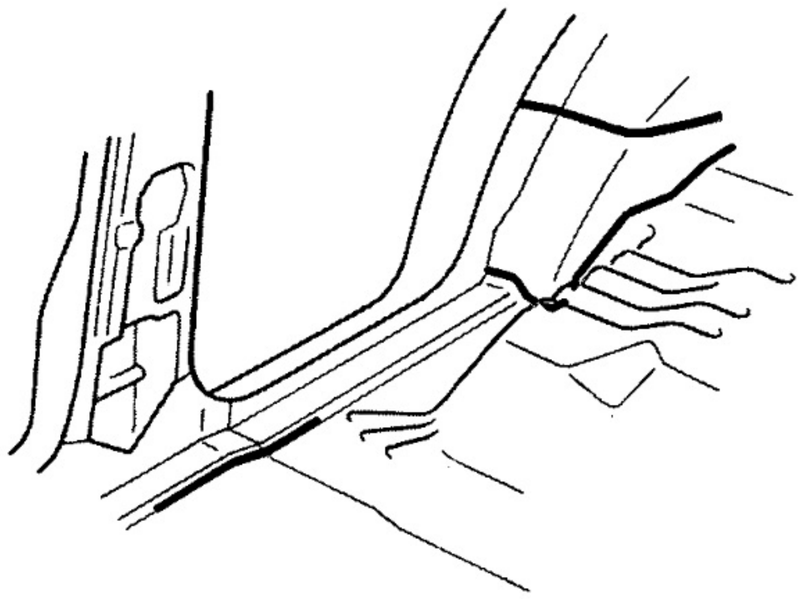
ALL


Flat Surfacing
Flat Surfacing

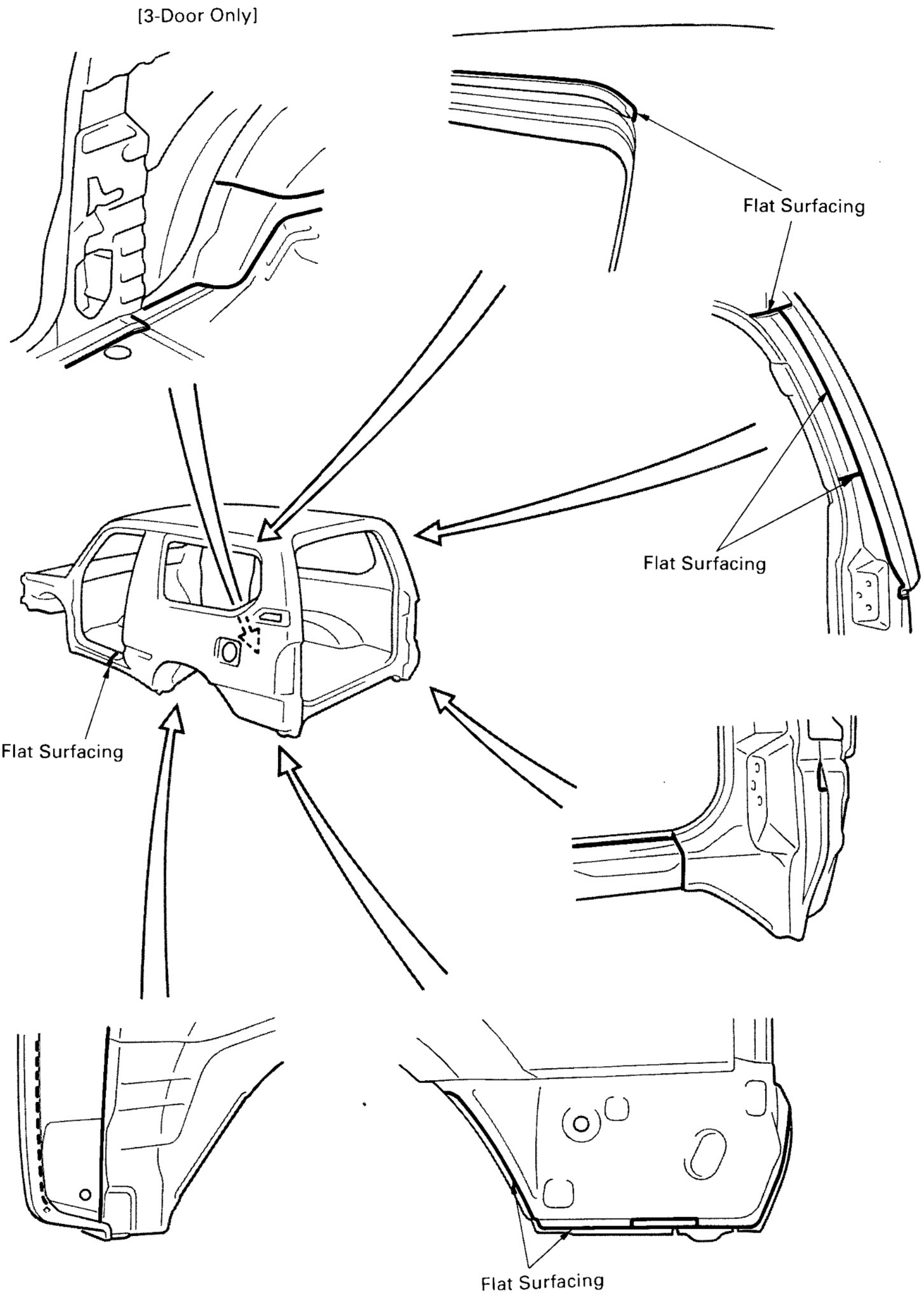

No.1 Rear Seat (Separate Type) Only
No.2 Rear Seat Only
Flat Surfacing
Flat Surfacing

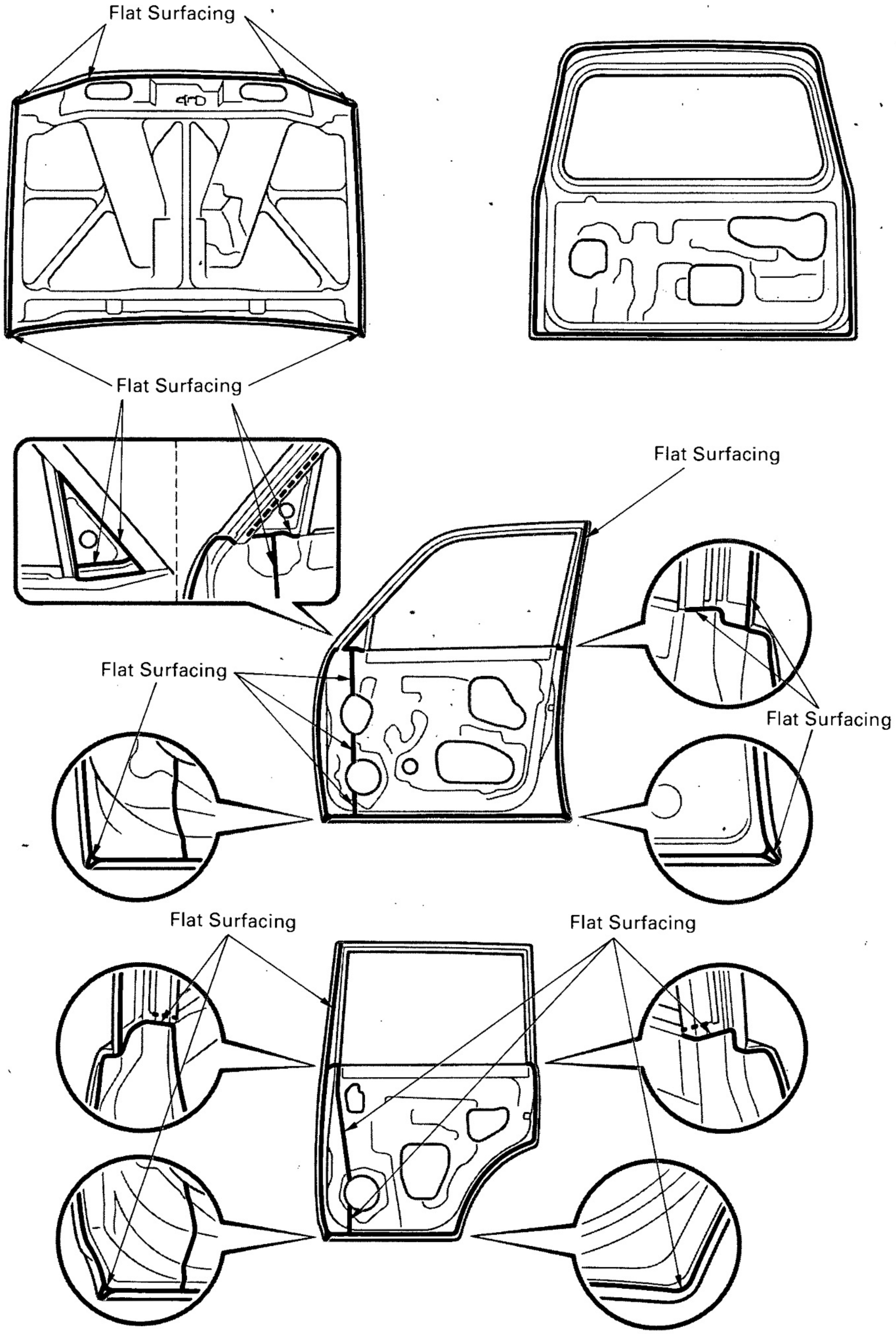

[5-Door Only]
Flat Surfacing
[5-Door Only]





ALL


[3-Door Only]
Flat Surfacing
Flat Surfacing
Flat Surfacing
Flat Surfacing


Flat Surfacing
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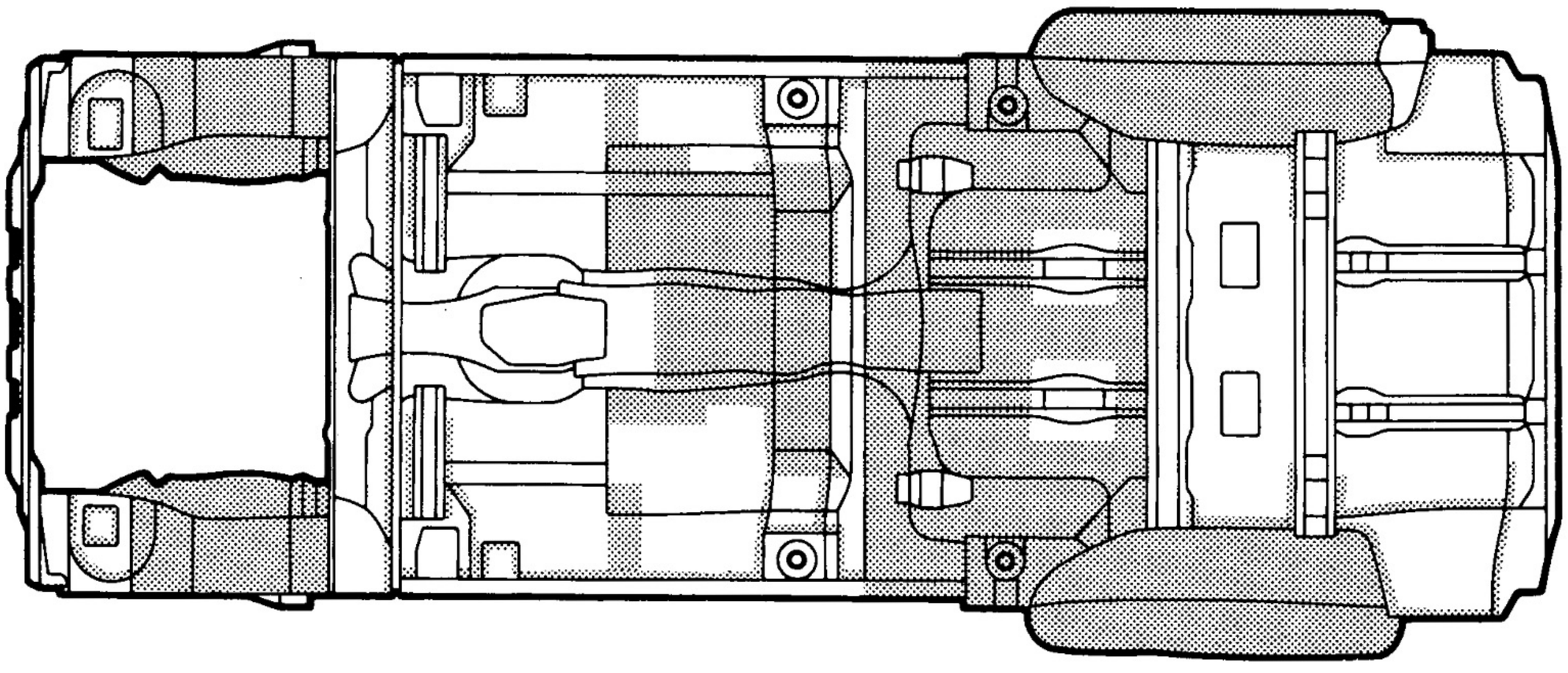
Flat Surfacing

BODY PANEL UNDERCOATING AREAS

HINT:

1. *First wipe off any dirt, grease or oil with a rag soaked in a grease, wax and silicone remover.*
2. *Cover the surrounding areas with masking paper to avoid coating unnecessary areas. If other areas are accidently coated, wipe off the coating immediately.*
3. *Apply the first coating of undercoat to all welded areas and panel joints, then apply a second coat over the entire area.*
4. *Do not coat parts which become hot, such as the tailpipe, or moving parts, such as the propeller shaft.*
5. *Besides the locations described below, apply undercoating to all weld points under the body to insure corrosion prevention.*
6. *Be sure to seal the edge of the flange of the member and bracket with undercoating.*
7. *If undercoat is damaged by peeling, cracks, etc., be sure to repair as necessary.*
8. *Before the undercoat apply sealer allowing rust prevention to be attained.*

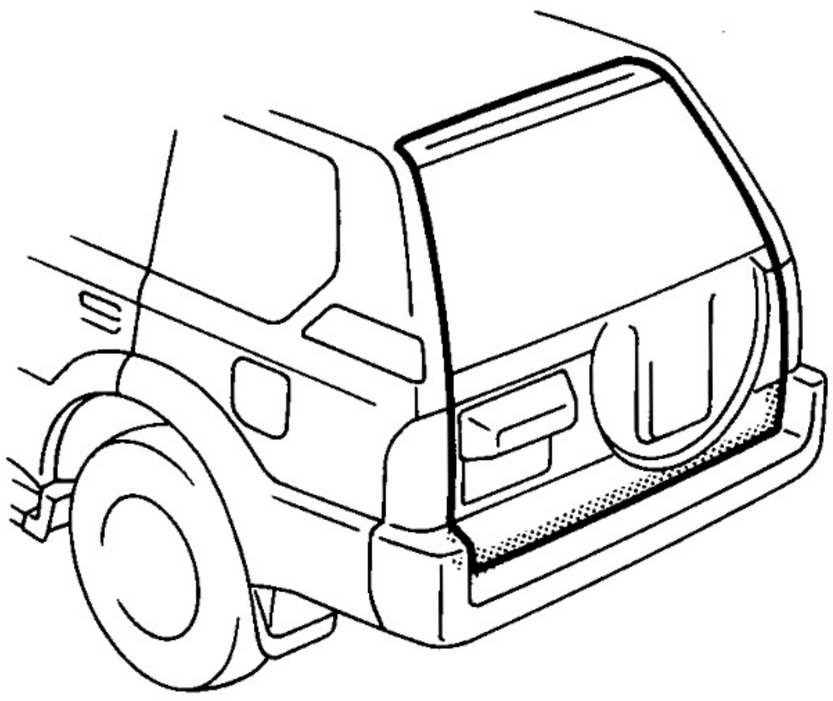


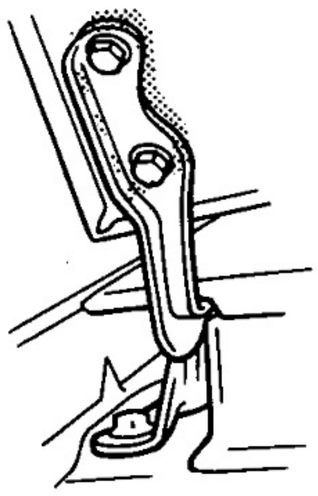
REFERENCE: Referring to the notes above, undercoating should be applied according to the specifications for your country.

BODY PANEL ANTI-RUST AGENT (WAX) APPLICATION AREAS

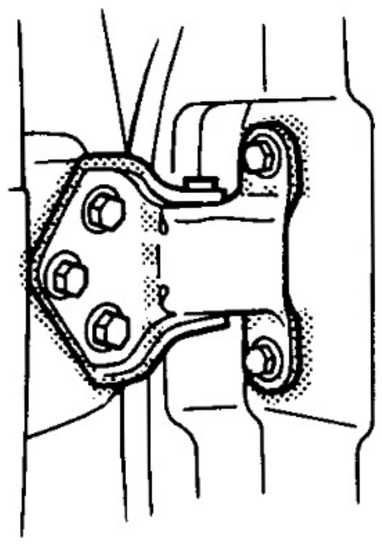
HINT:

1. *Whenever adjusting the doors and hoods, apply anti-rust agent (wax) around the hinges.*
2. *Even if partially repairing a part, apply anti-rust agent (wax) over the entire application area of the part.*
3. *Wipe off the anti-rust agent immediately with a rag soaked in a grease, wax and silicone remover, if accidently applied to other areas.*

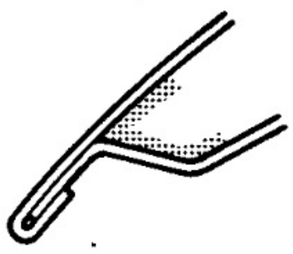




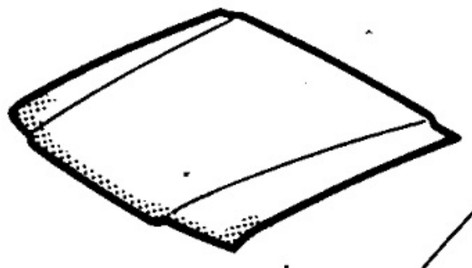
Hood Hinge

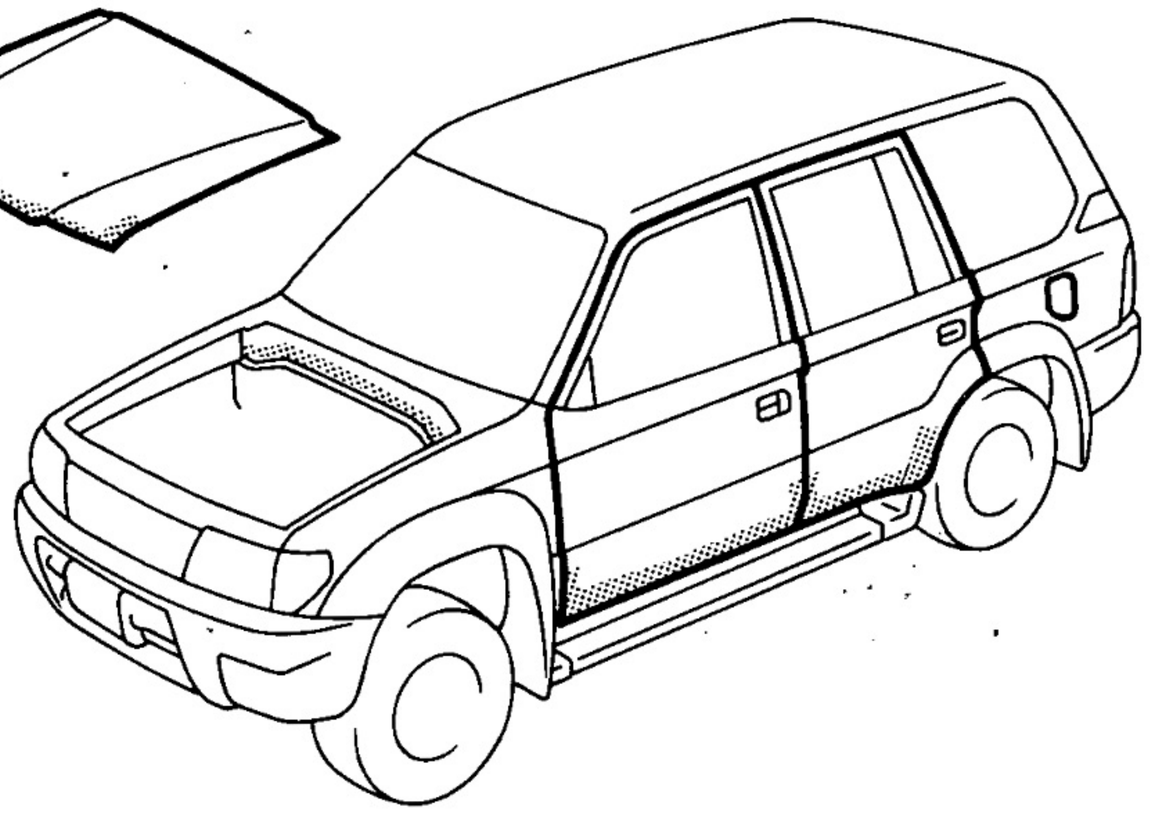


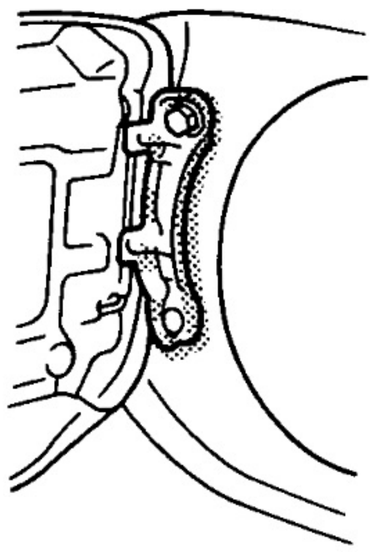
Back Door Hinge



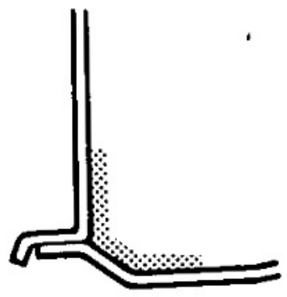
Hood



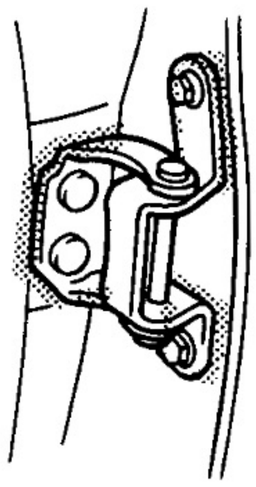




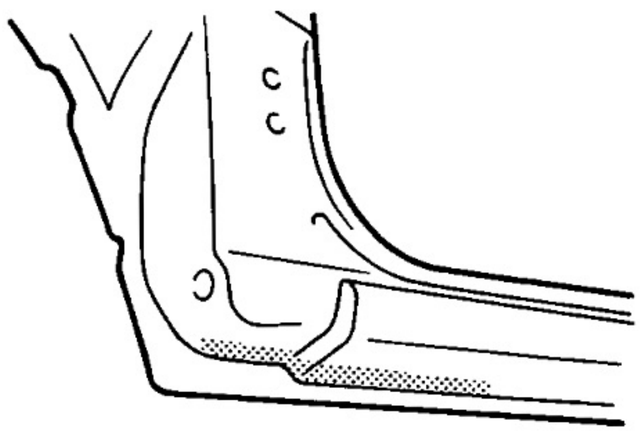
Fuel Opening Lid



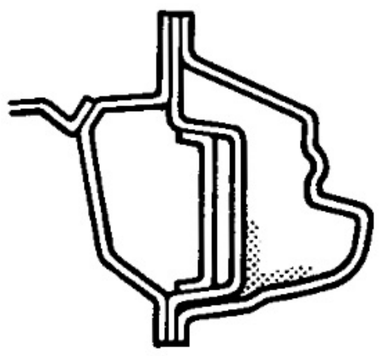
Cowl Panel



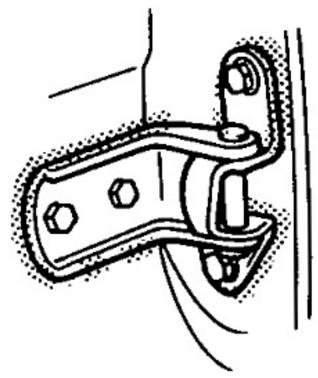
Door Hinge



Door



Front Pillar



Door Hinge
[5-Door Rear Lower Only]

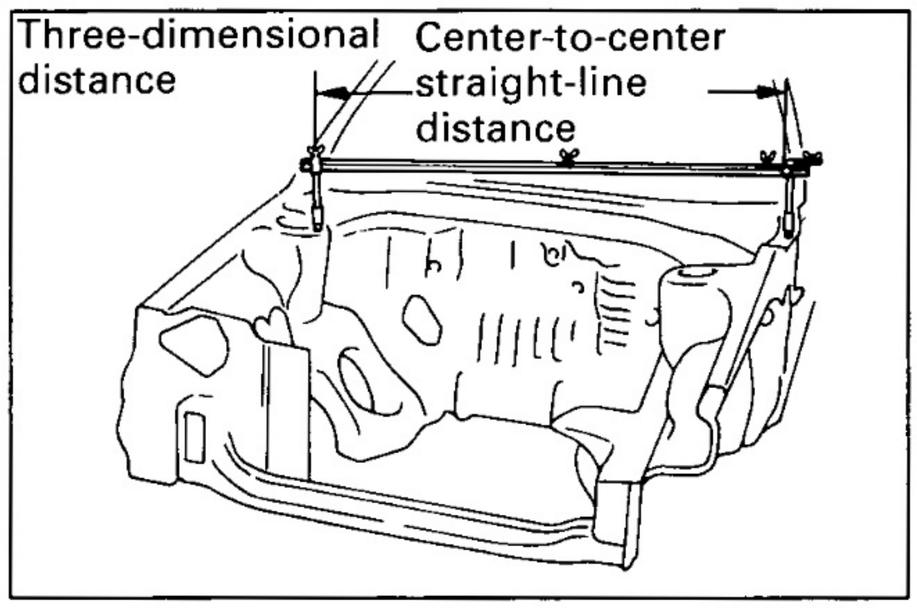
BODY PANEL ANTI-CHIPPING PAINT APPLICATION AREAS

HINT:

1. *Anti-chipping paint should be applied to some areas before the second coat and to others after the top coat.*
2. *If other areas are accidentally coated. Wipe of the paint immediately with a rag soaked in a grease, wax and silicone remover.*

BODY DIMENSIONS

	Page
GENERAL INFORMATION	DI-2
BODY DIMENSION DRAWINGS	DI-3



GENERAL INFORMATION

1. BASIC DIMENSIONS

(a) There are two types of dimensions in the diagram. (Three-dimensional distance)

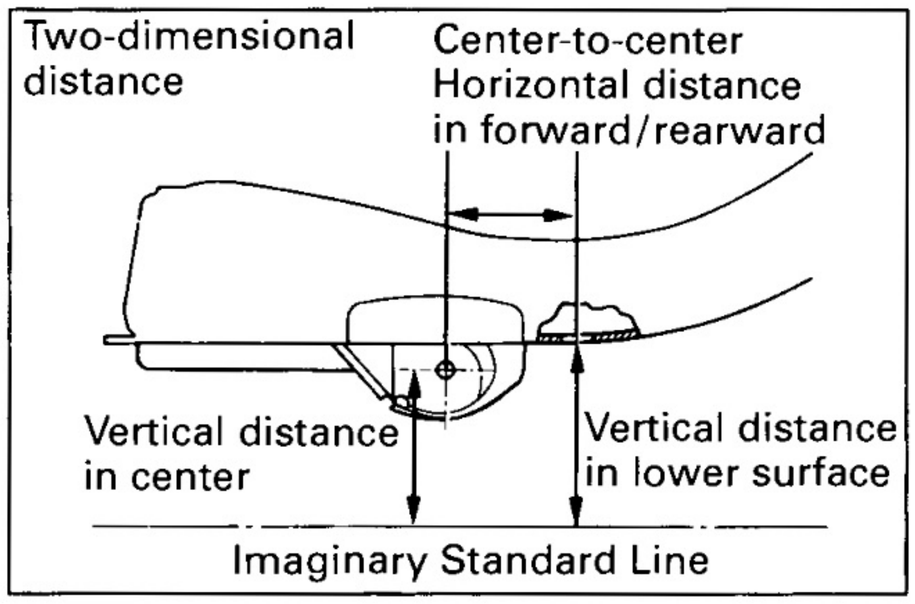
- Straight-line distance between the centers of two measuring points.

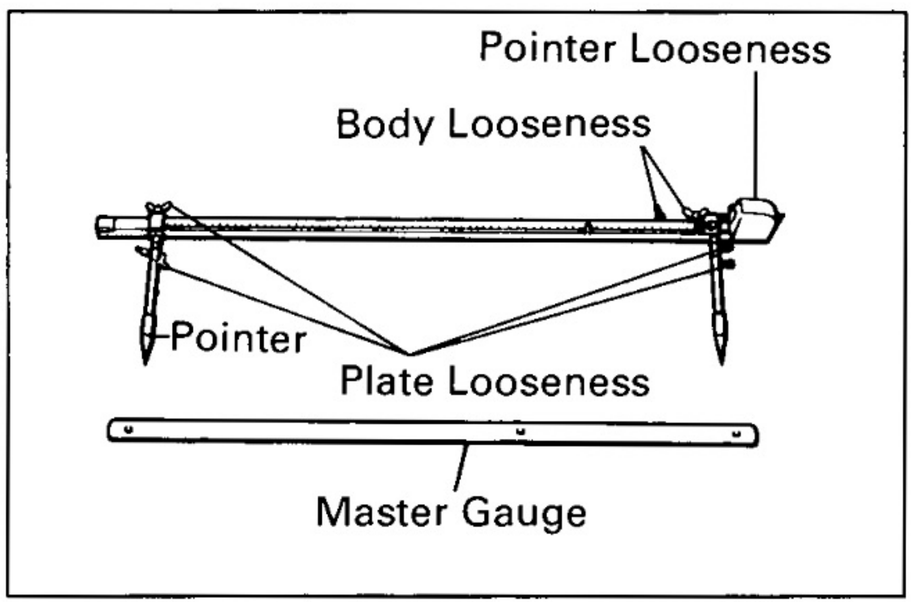
(Two-dimensional distance)

- Horizontal distance in forward/rearward between the centers of two measuring points.
- The height from an imaginary standard line.

(b) Incases in which only one dimension is given, left and right are symmetrical.

(c) The dimensions in the following drawing indicate actual distance. Therefore, please use the dimensions as a reference.

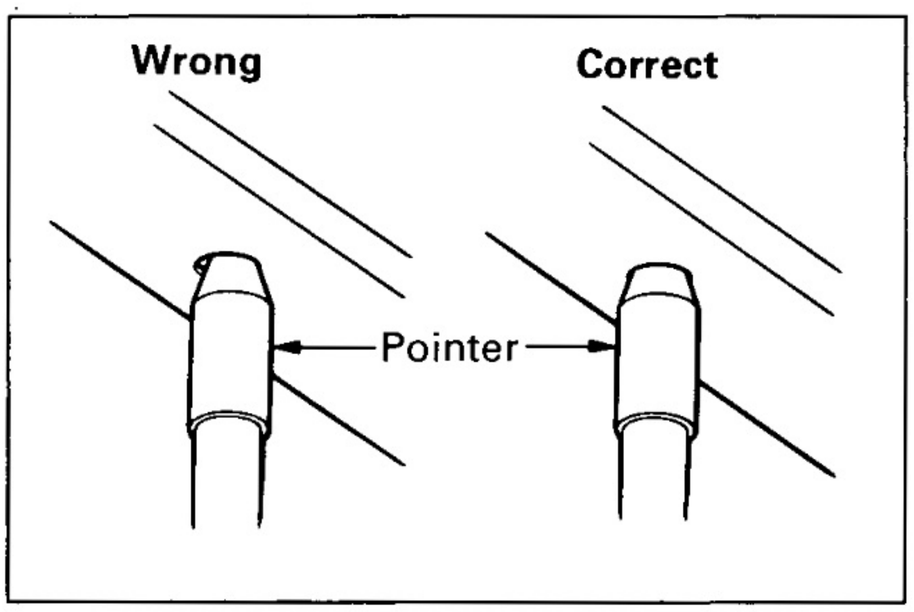




2. MEASURING

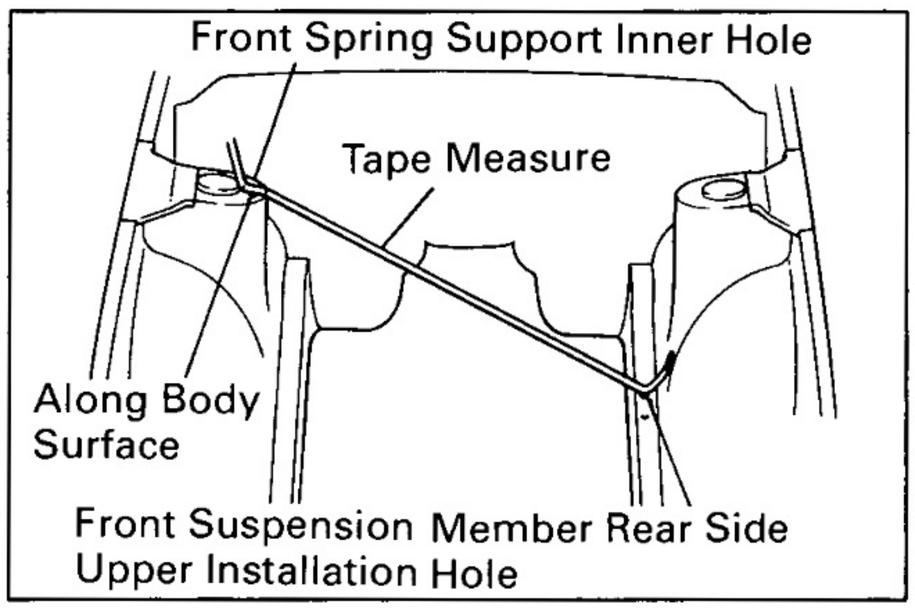
(a) Basically, all measurements are to be done with a tracking gauge. For portions where it is not possible to use a tracking gauge, a tape measure should be used.

(b) Use only a tracking gauge that has no looseness in the body, measuring plate, or pointers.



HINT:

1. *The height of the left and right pointers must be equal.*
2. *Always calibrate the tracking gauge before measuring or after adjusting the pointer height.*
3. *Take care not to drjp the tracking gauge or otherwise shock it.*
4. *Confirm that the pointers are securely in the holes.*



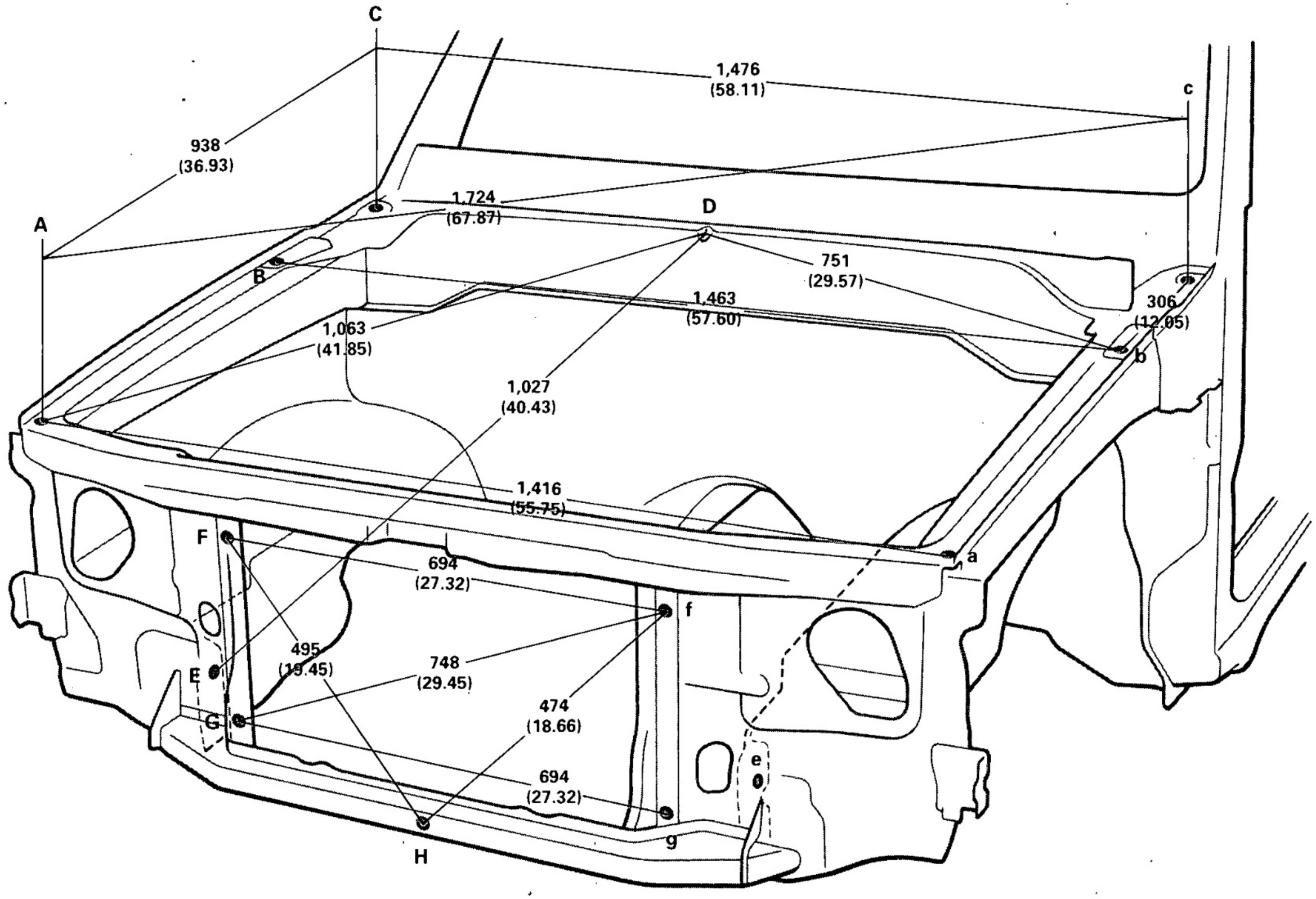
(c) When using a tape measure, avoid twists and bends in the tape.

(d) When tracking a diagonal measurement from the front spring support inner hole to the suspension member upper rear installation hole, measure along the front spring support panel surface.

BODY DIMENSION DRAWINGS

ENGINE COMPARTMENT (ALL)

(Three-Dimensional Distance)



HINT: For symbols, capital letters indicate right side of vehicle, small letters indicate left side of vehicle (Seen from rear).

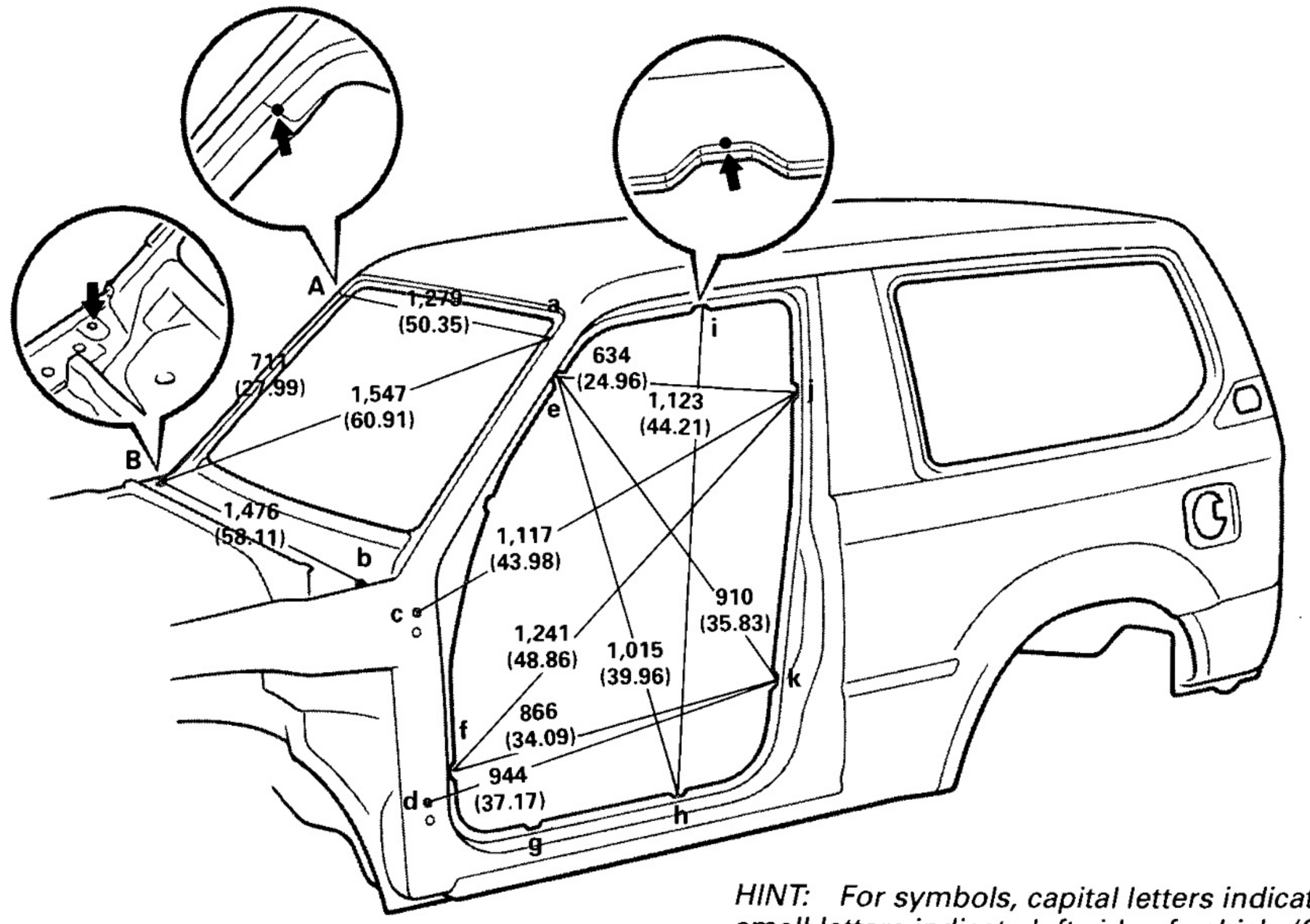
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Front fender installation nut	6 (0.24) nut	F	Radiator installation hole	13x10 (0.51x0.39)
B, b	Front fender installation nut	6 (0.24) nut	f	Radiator installation hole	10 (0.39)
C, c	Front fender installation nut	6 (0.24) nut	G	Radiator installation hole	13 (0.51)
D	Cowl top panel vehicle center mark	—	g	Radiator installation hole	11 (0.43)
E, e	Front fender apron standard hole	10 (0.39)	H	Hood lock support installation nut	6 (0.24) nut

BODY OPENING AREAS

(Side View: 3-door)

(Three-Dimensional Distance)



HINT: For symbols, capital letters indicate right side of vehicle, small letters indicate left side of vehicle (Seen from rear).

Vehicle Dimensions Left ↔ Right

E-e	F-f	G-g	H-h	I-i	J-j	K-k
1,298 (51.10)	1,440 (56.69)	1,445 (56.89)	1,449 (57.05)	1,208 (47.56)	1,328 (52.28)	1,446 (56.93)

E-f or e-F	E-h or e-H	E-i or e-I	E-j or e-J	F-j or f-J	F-k or f-K	G-h or g-H	H-i or h-I	H-j or h-J	J-k or j-K
1,627 (64.06)	1,706 (67.17)	1,324 (52.13)	1,458 (57.40)	1,858 (73.15)	1,683 (66.26)	1,510 (59.45)	1,735 (68.31)	1,706 (67.17)	1,557 (61.30)

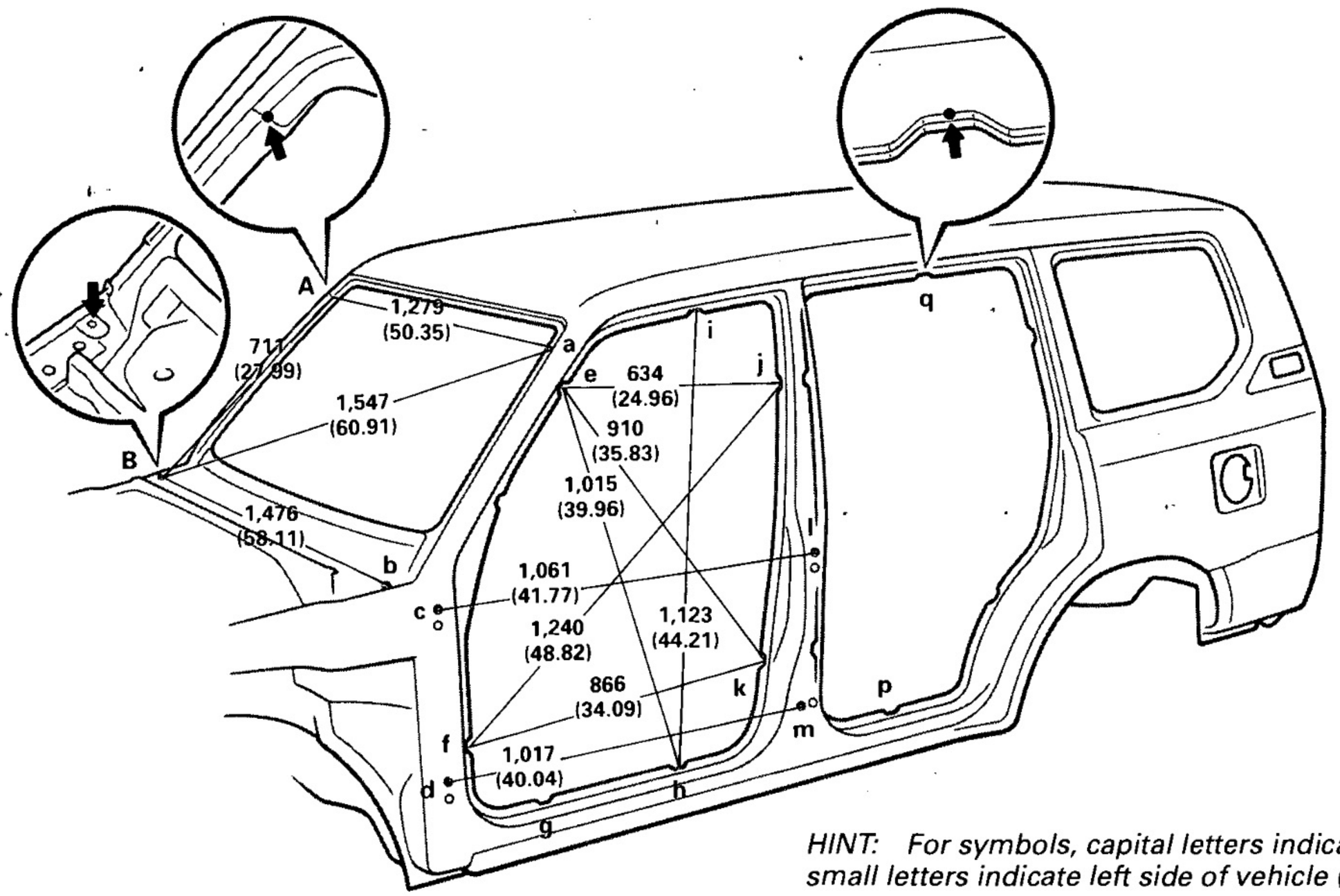
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Roof panel / Front body pillar adjoining portion	—	G, g	Rocker panel assembly mark	—
B, b	Front fender installation nut	6 (0.24) nut	H, h	Rocker panel assembly mark	—
C, c	Front door hinge installation nut	8 (0.31) nut	I, i	Roof side rail assembly mark	—
D, d	Front door hinge installation nut	8 (0.31) nut	J, j	Quarter panel assembly mark	—
E, e	Front body pillar assembly mark	—	K, k	Quarter panel assembly mark	—
F, f	Front body pillar assembly mark	—	—	—	—

BODY OPENING AREAS

(Side View: 5-door-Front)

(Three-Dimensional Distance)



HINT: For symbols, capital letters indicate right side of vehicle, small letters indicate left side of vehicle (Seen from rear).

Vehicle Dimensions Left ↔ Right

E-e	F-f	G-g	H-h	I-i	J-j	K-k
1,298 (51.10)	1,440 (56.69)	1,445 (56.89)	1,449 (57.05)	1,208 (47.56)	1,328 (52.28)	1,446 (56.93)

E-f or e-F	E-h or e-H	E-j or e-J	F-j or f-J	F-k or f-K	G-p or g-P	H-i or h-I	I-q or i-Q	J-k or j-K
1,627 (64.06)	1,706 (67.17)	1,458 (57.40)	1,858 (73.15)	1,683 (66.26)	1,818 (71.57)	1,735 (68.31)	1,413 (55.63)	1,556 (61.26)

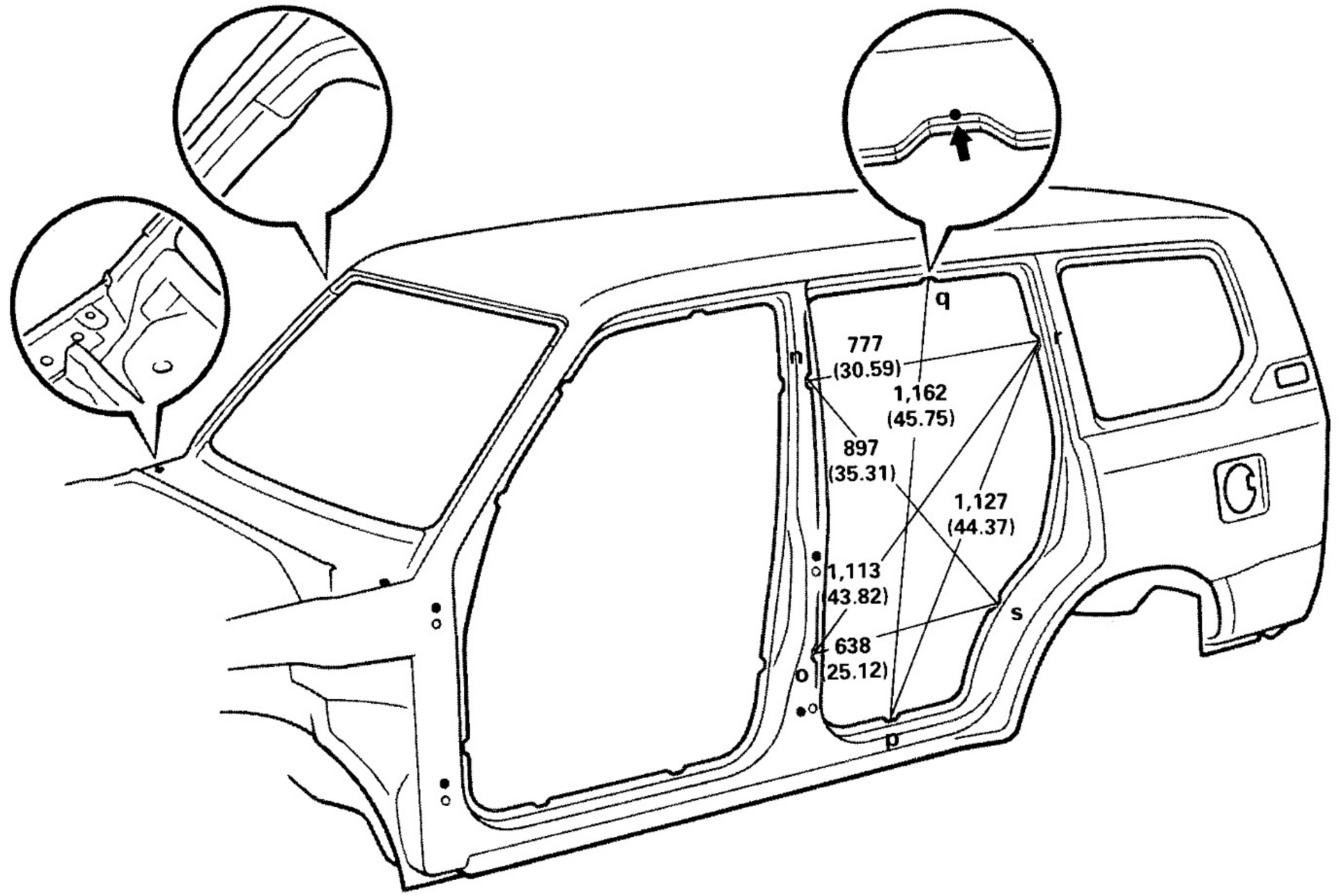
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Roof panel / Front body pillar adjoining portion	—	I, i	Roof side rail assembly mark	—
B, b	Front fender installation nut	6 (0.24) nut	J, j	Center body pillar assembly mark	—
C, c	Front door hinge installation nut	8 (0.31) nut	K, k	Center body pillar assembly mark	—
D, d	Front door hinge installation nut	8 (0.31) nut	L, l	Rear door hinge installation hole	13 (0.51)
E, e	Front body pillar assembly mark	—	M, m	Rear door hinge installation hole	13 (0.51)
F, f	Front body pillar assembly mark	—	P, p	Rocker panel assembly mark	—
G, g	Rocker panel assembly mark	—	Q, q	Roof side rail assembly mark	—
H, h	Rocker panel assembly mark	—	—	—	—

BODY OPENING AREAS

(Side View: 5-door-Rear)

(Three-Dimensional Distance)



HINT: For symbols, capital letters indicate right side of vehicle, small letters indicate left side of vehicle (Seen from rear).

Vehicle Dimensions Left ↔ Right

N-n	O-o	P-p	Q-q	R-r	S-s
1,327 (52.24)	1,447 (56.97)	1,449 (57.05)	1,185 (46.65)	1,289 (50.75)	1,440 (56.69)

N-r or n-R	N-s or n-S	O-s or o-S	P-q or p-Q	R-s or r-S
1,521 (59.88)	1,648 (64.88)	1,578 (62.13)	1,751 (68.94)	1,554 (61.81)

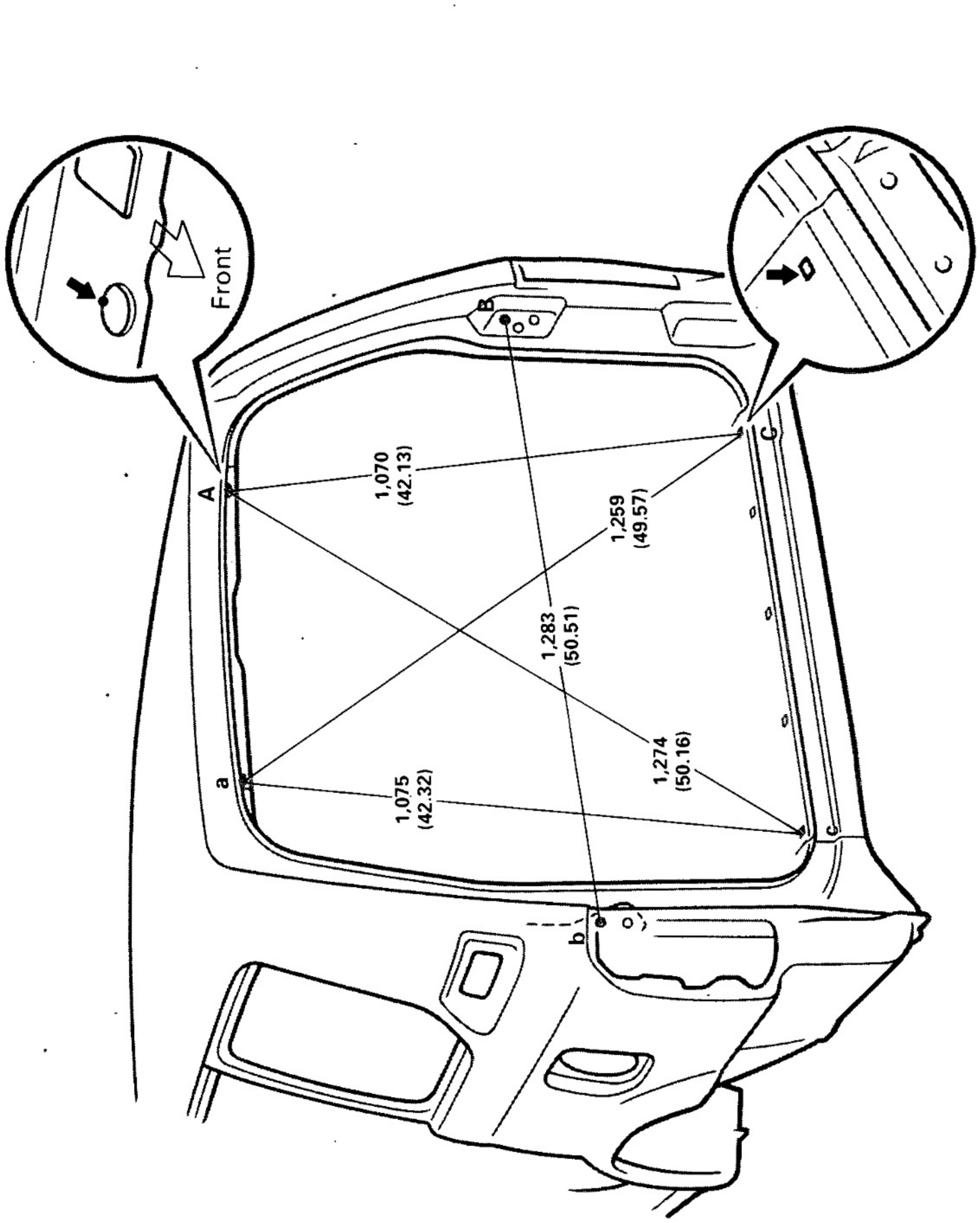
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
N, n	Center body pillar assembly mark	—	Q, q	Roof side rail assembly mark	—
O, o	Center body pillar assembly mark	—	R, r	Quarter panel assembly mark	—
P, p	Rocker panel assembly mark	—	S, s	Quarter panel assembly mark	—

BODY OPENING AREAS

(Rear View: ALL)

(Three-Dimensional Distance)



mm (in.)

Name	Hole dia.	8 (0.31) nut	12.5x8.5 (0.492x0.335)
Back door lock striler installation nut			
Rear floor finish plate installation hole			

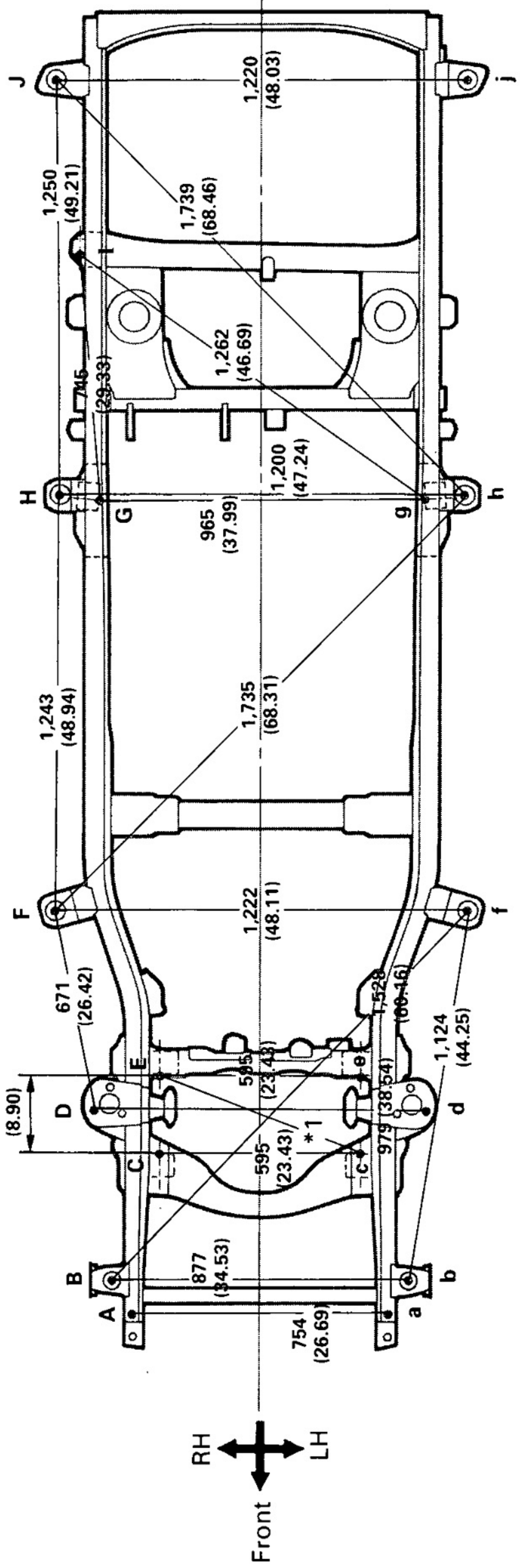
HINT: For symbols, capital letters indicate right side of vehicle, small letters indicate left side of vehicle (Seen from rear).

Symbol	Name	Hole dia.	Symbol
A, a	Back door opening frame standard hole	15 (0.59)	b
B	Back door hinge installation hole	13 (0.51)	C, c

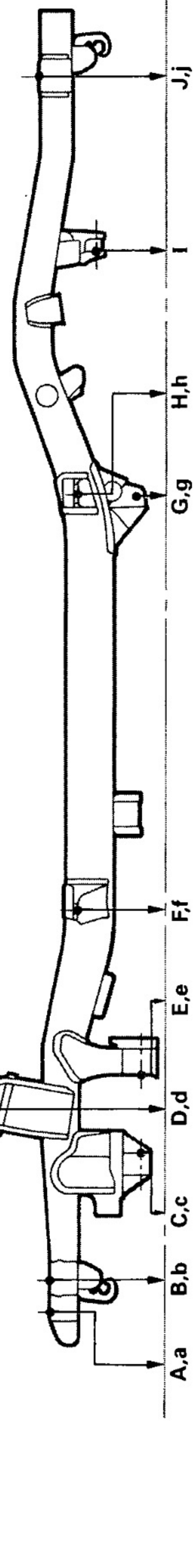
FRAME DIMENSION

(3-door)

(Three-Dimensional Distance)



*1 . . . 637 (25.08)



mm (in.)

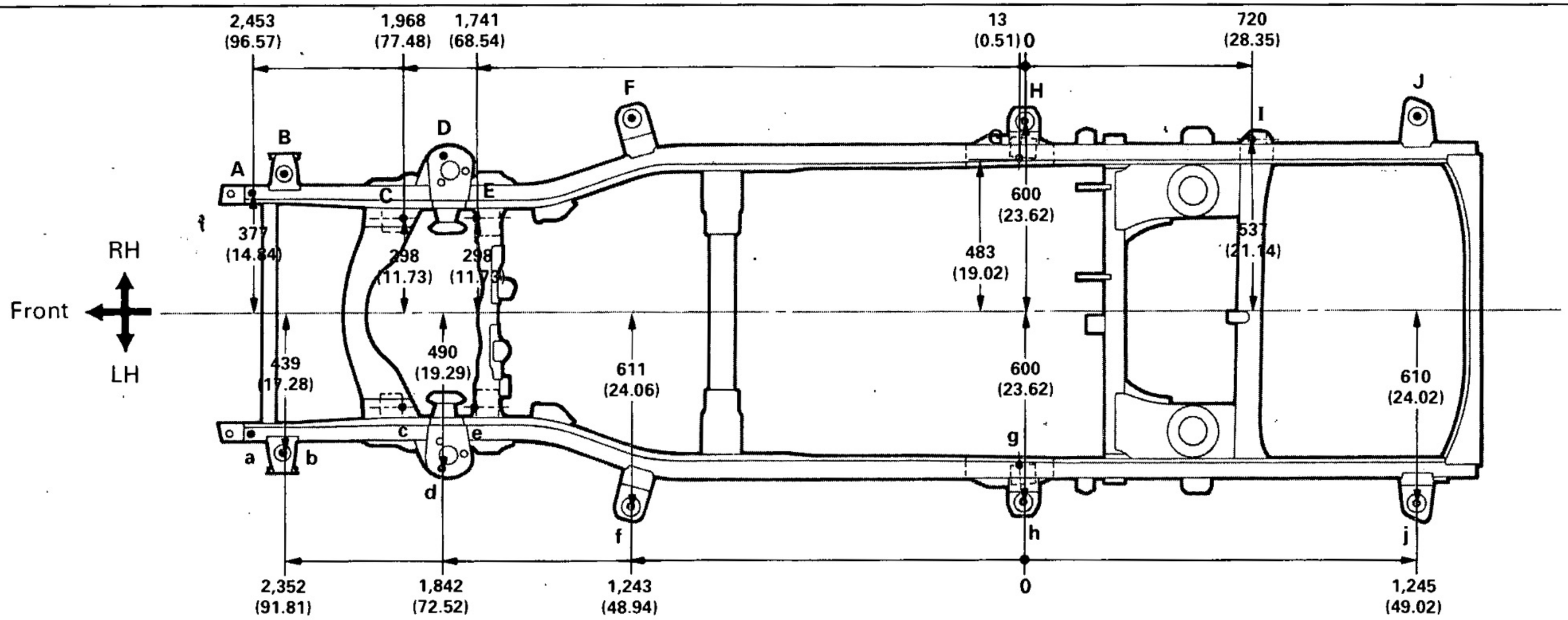
Symbol	Name	Hole dia.
F, f	Body mounting hole	24 (0.94)
G, g	Suspension lower arm installation hole – inner	14.2 (0.559)
H, h	Body mounting hole	24 (0.94)
I	Lateral rod installation hole – front	12.2 (0.480)
J, j	Body mounting hole	60 (2.36)

Symbol	Name	Hole dia.
A, a	Winch installation hole	15 (0.59)
B, b	Body mounting hole	24 (0.94)
C, c	Suspension lower arm installation hole – front = rear	38x20 (1.50x0.79)
D, d	Front spring support hole – outer	11.5 (0.453)
E, e	Suspension lower arm installation hole – rear = front	38x20 (1.50x0.79)

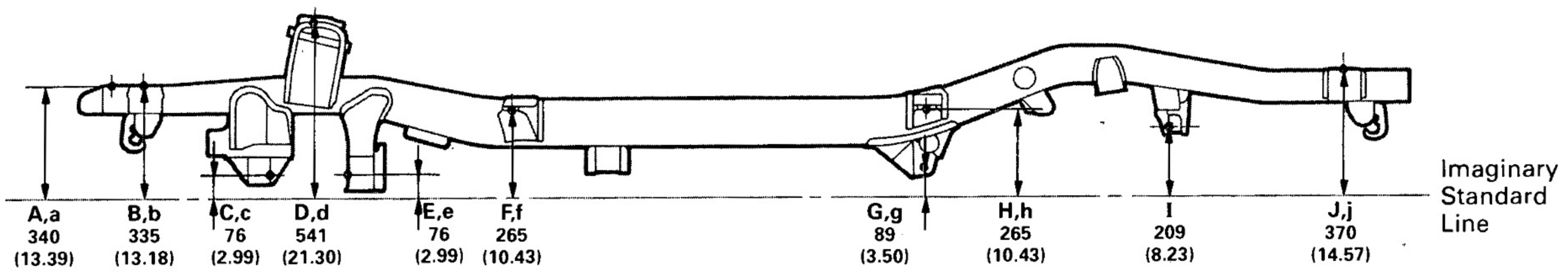
FRAME DIMENSION

(3-door)

(Two-Dimensional Distance)



Wheel base	2,370 (93.31)



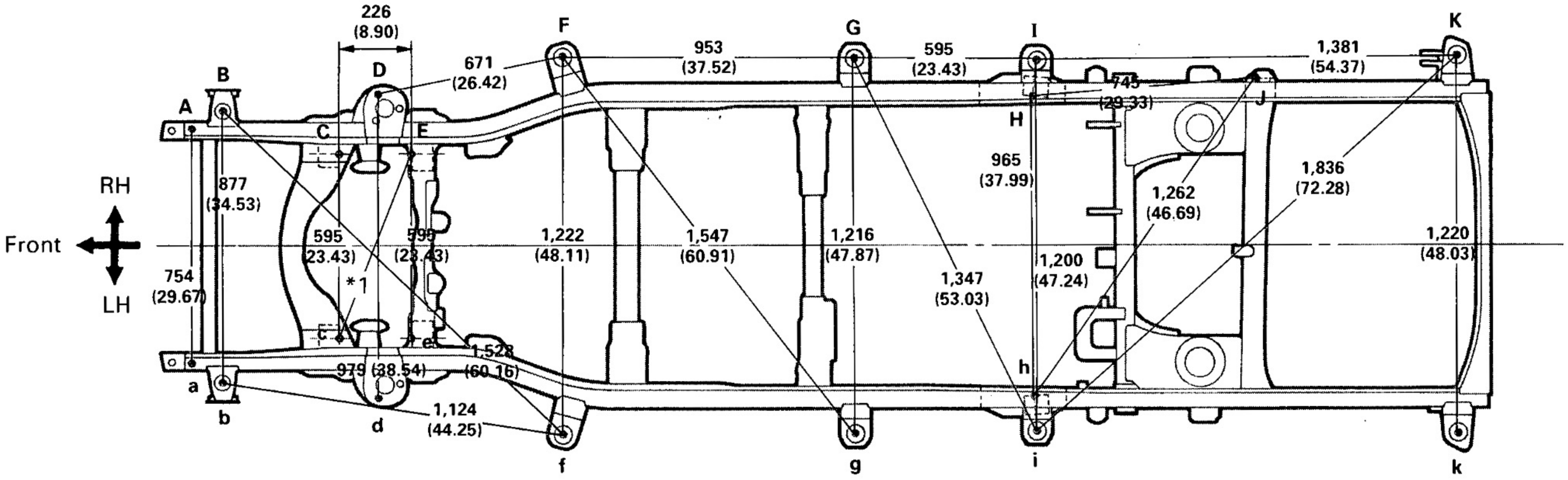
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Winch installation hole	15 (0.59)	F, f	Body mounting hole	24 (0.94)
B, b	Body mounting hole	24 (0.94)	G, g	Suspension lower arm installation hole – inner	14.2 (0.559)
C, c	Suspension lower arm installation hole – front = rear	38x20 (1.50x0.79)	H, h	Body mounting hole	24 (0.94)
D, d	Front spring support hole – outer	11.5 (0.453)	I	Lateral rod installation hole – front	12.2 (0.480)
E, e	Suspension lower arm installation hole – rear = front	38x20 (1.50x0.79)	J, j	Body mounting hole	60 (2.36)

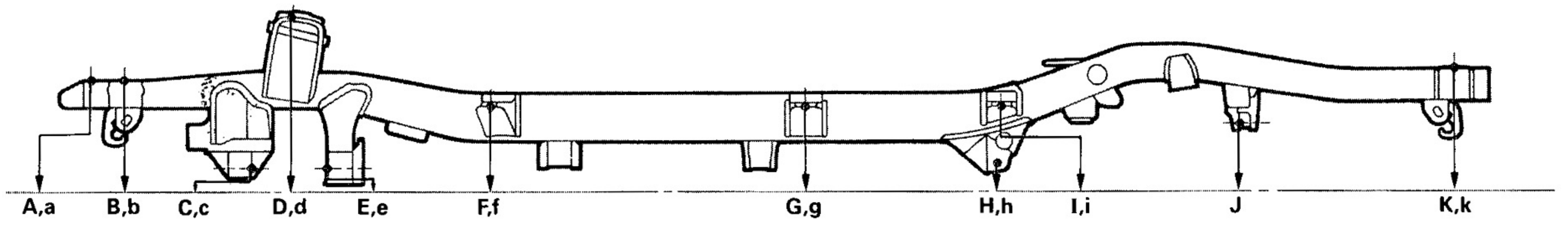
FRAME DIMENSION

(5-door)

(Three-Dimensional Distance)



*1 . . . 637 (25.08)



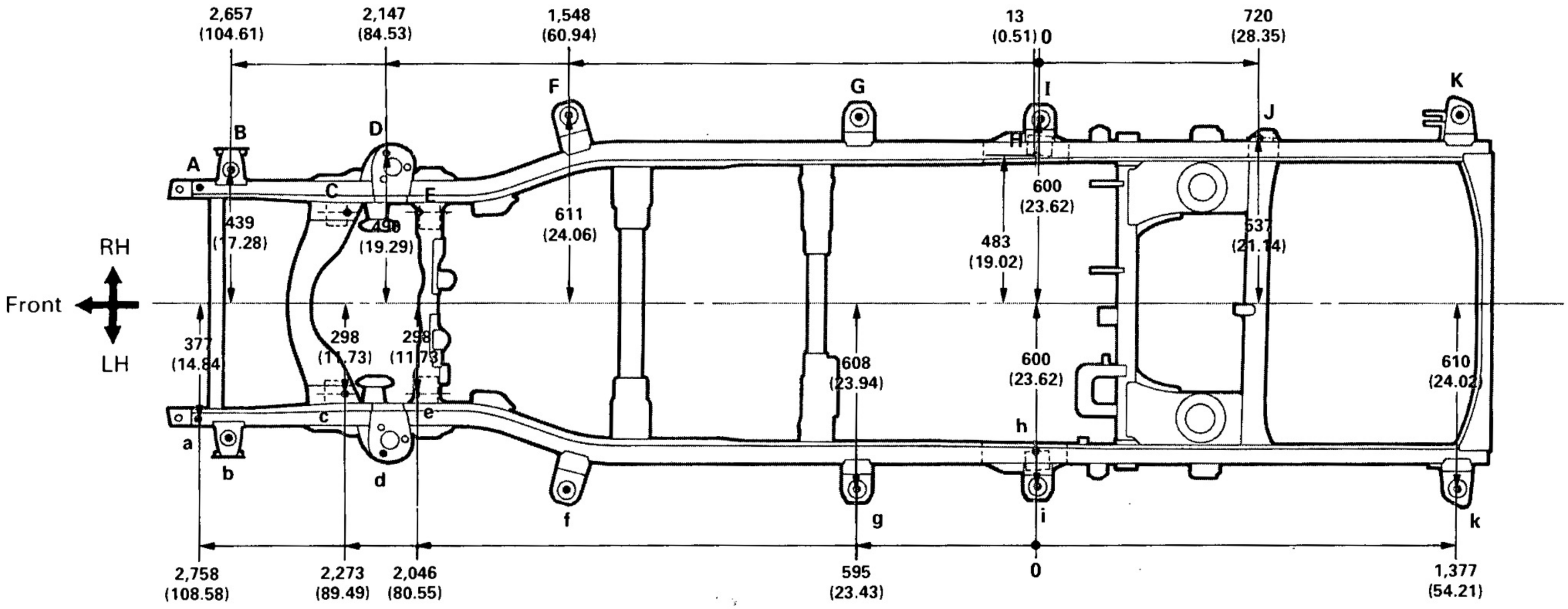
mm (in.)

Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Winch installation hole	15 (0.59)	G, g	Body mounting hole	24 (0.94)
B, b	Body mounting hole	24 (0.94)	H, h	Suspension lower arm installation hole – inner	14.2 (0.559)
C, c	Suspension lower arm installation hole – front = rear	38x20 (1.50x0.79)	I , i	Body mounting hole	24 (0.94)
D, d	Front spring support hole – outer	11.5 (0.453)	J	Lateral rod installation hole – front	12.2 (0.480)
E, e	Suspension lower arm installation hole – rear = front	38x20 (1.50x0.79)	K, k	Body mounting hole	60 (2.36)
F, f	Body mounting hole	24 (0.94)	—	—	—

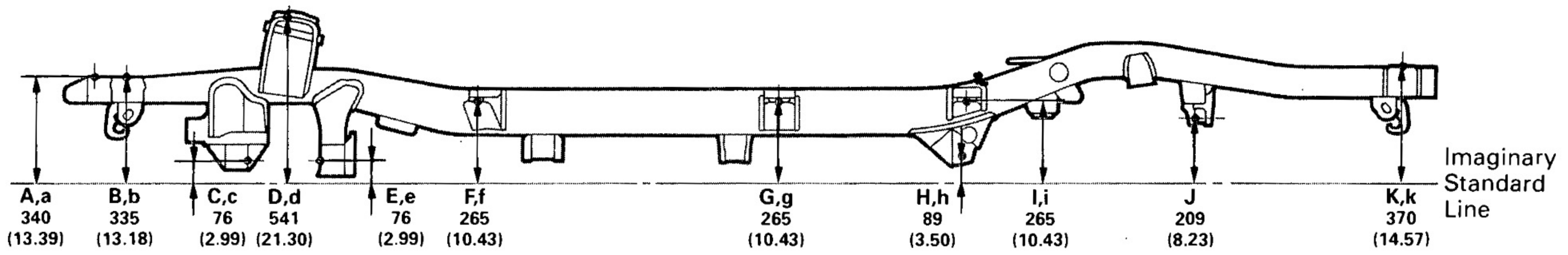
FRAME DIMENSION

(5-door)

(Two-Dimensional Distance)



Wheel base	2,675 (105.31)



mm (in.)

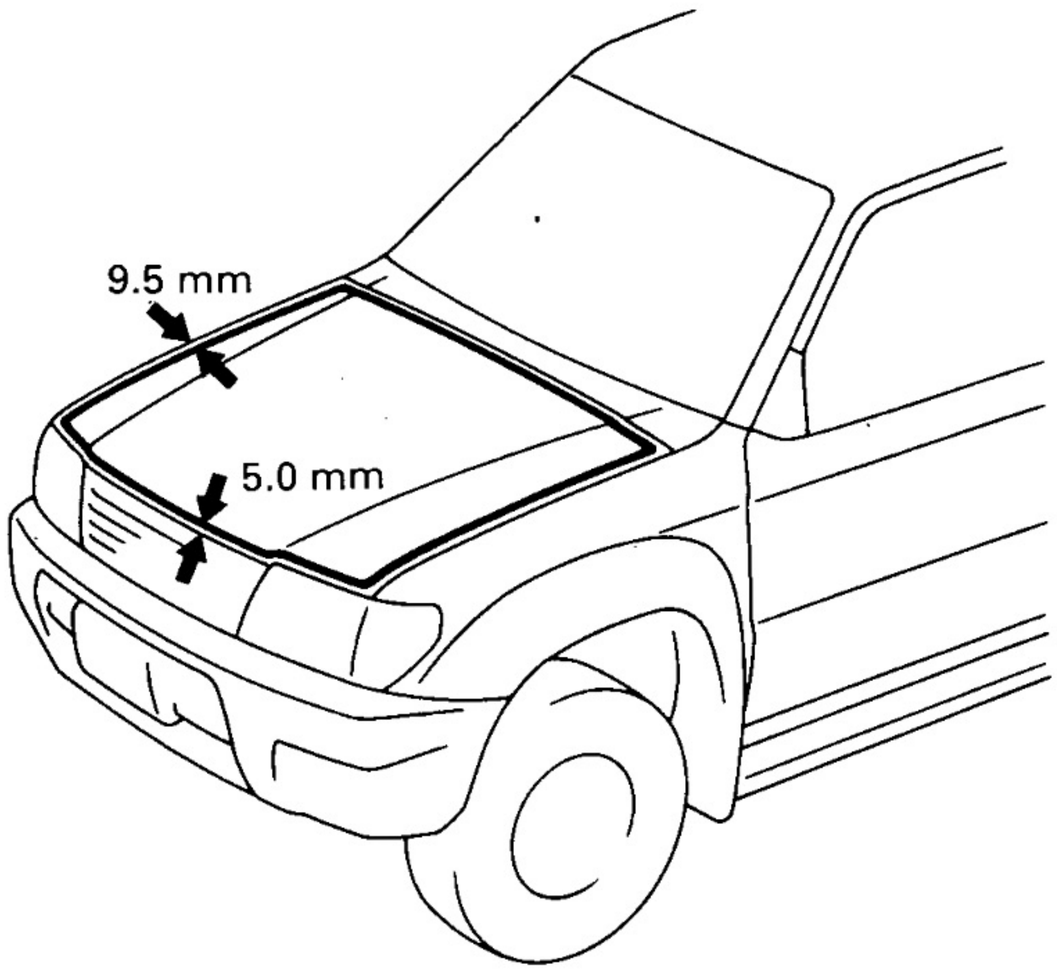
Symbol	Name	Hole dia.	Symbol	Name	Hole dia.
A, a	Winch installation hole	15 (0.59)	G, g	Body mounting hole	24 (0.94)
B, b	Body mounting hole	24 (0.94)	H, h	Suspension lower arm installation hole – inner	14.2 (0.559)
C, c	Suspension lower arm installation hole – front = rear	38x20 (1.50x0.79)	I, i	Body mounting hole	24 (0.94)
D, d	Front spring support hole – outer	11.5 (0.453)	J	Lateral rod installation hole – front	12.2 (0.480)
E, e	Suspension lower arm installation hole – rear = front	38x20 (1.50x0.79)	K, k	Body mounting hole	60 (2.36)
F, f	Body mounting hole	24 (0.94)	—	—	—

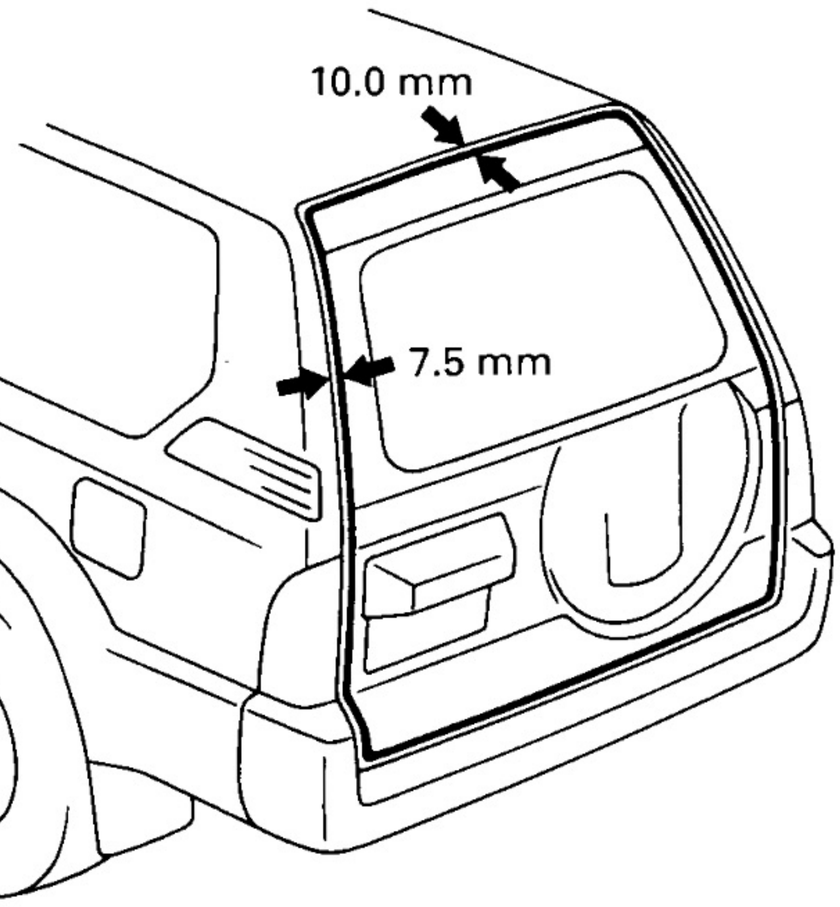
APPENDIX

	Page
FIT STANDARDS	AP-2
SILENCER SHEET INSTALLATION AREAS	AP-3

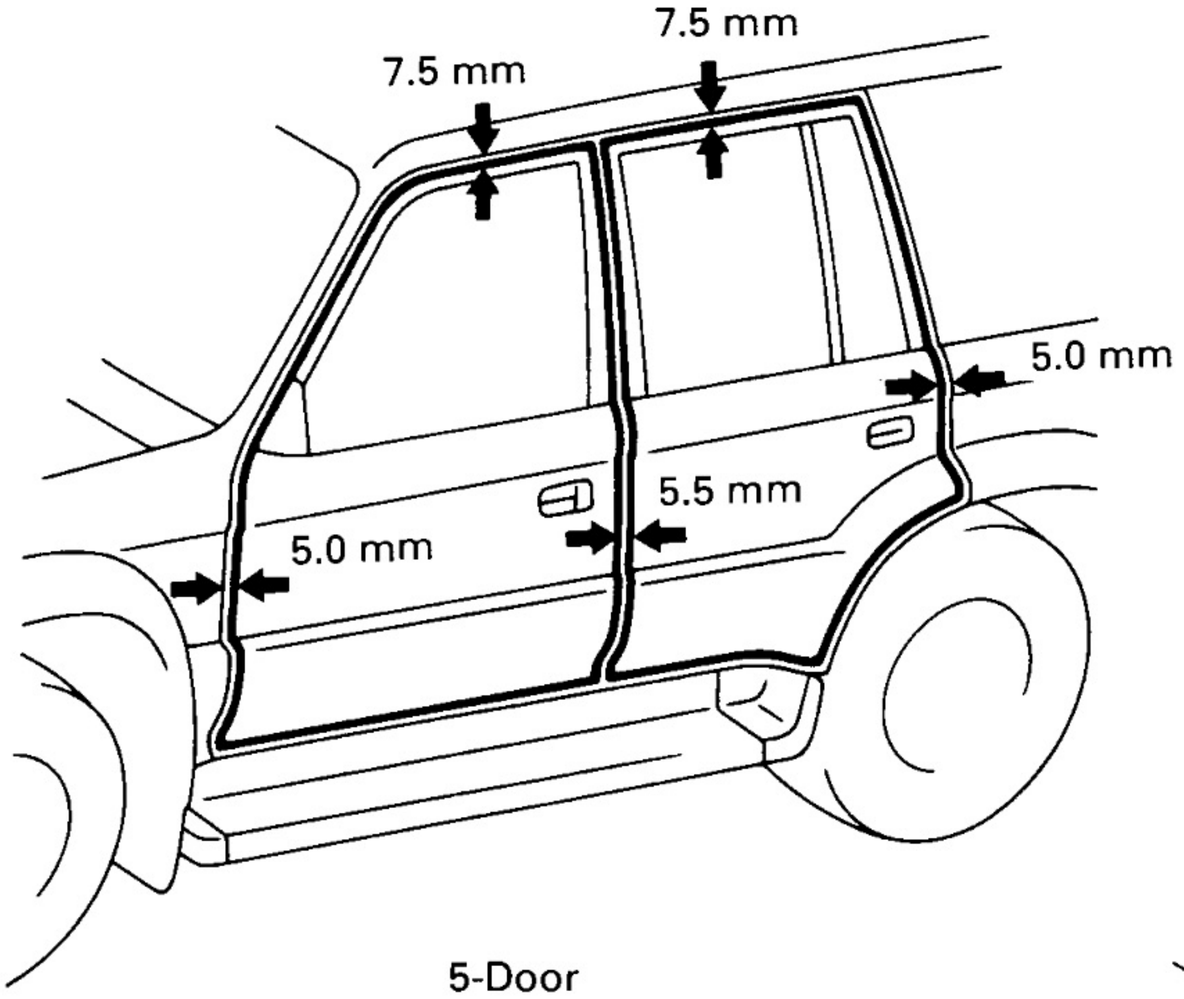
FIT STANDARDS

After doors and the engine hood are installed, be sure to perform fit adjustment to prevent abnormal wind noise and ensure a good appearance.

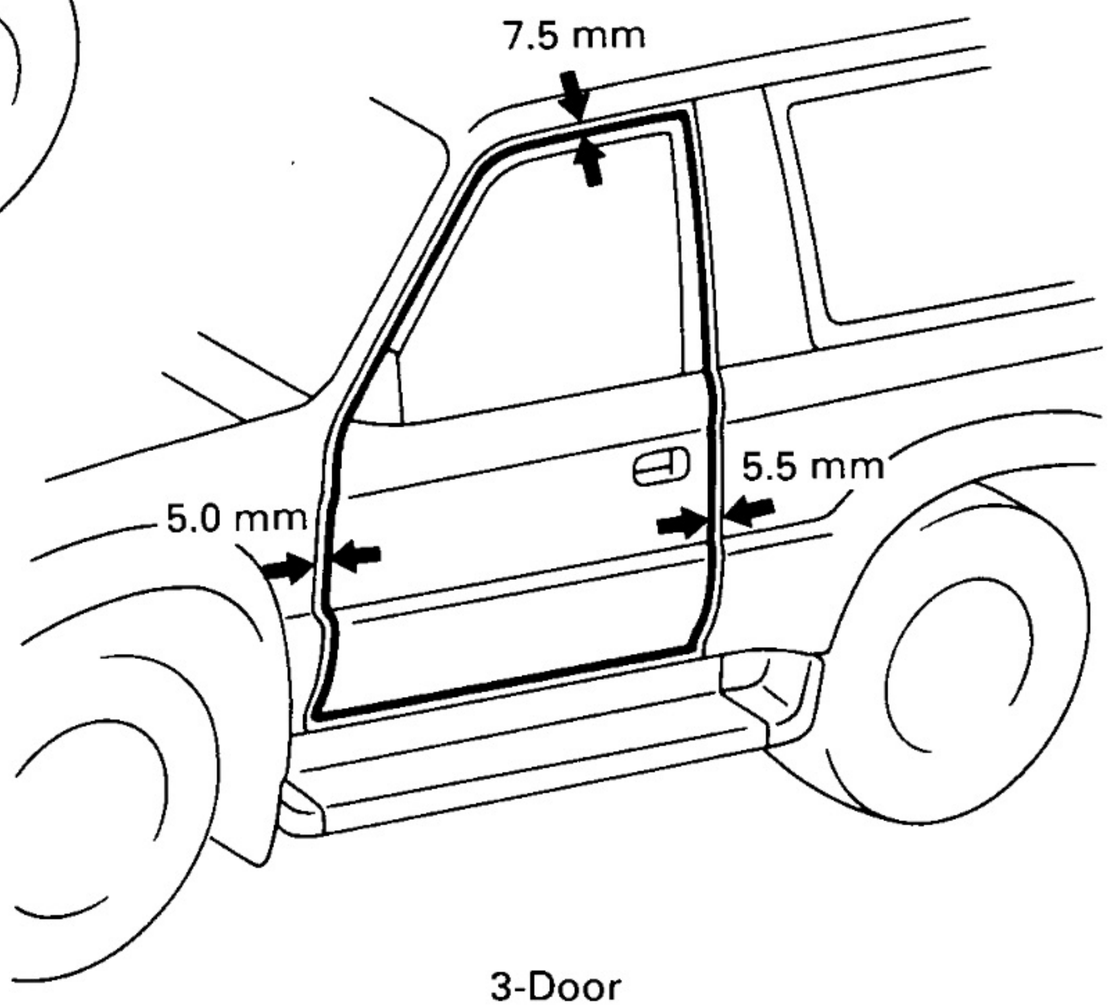




mm	in.
5.0	0.197
5.5	0.217
7.5	0.295
9.5	0.374
10.0	0.394



5-Door



3-Door

SILENCER SHEET INSTALLATION AREAS

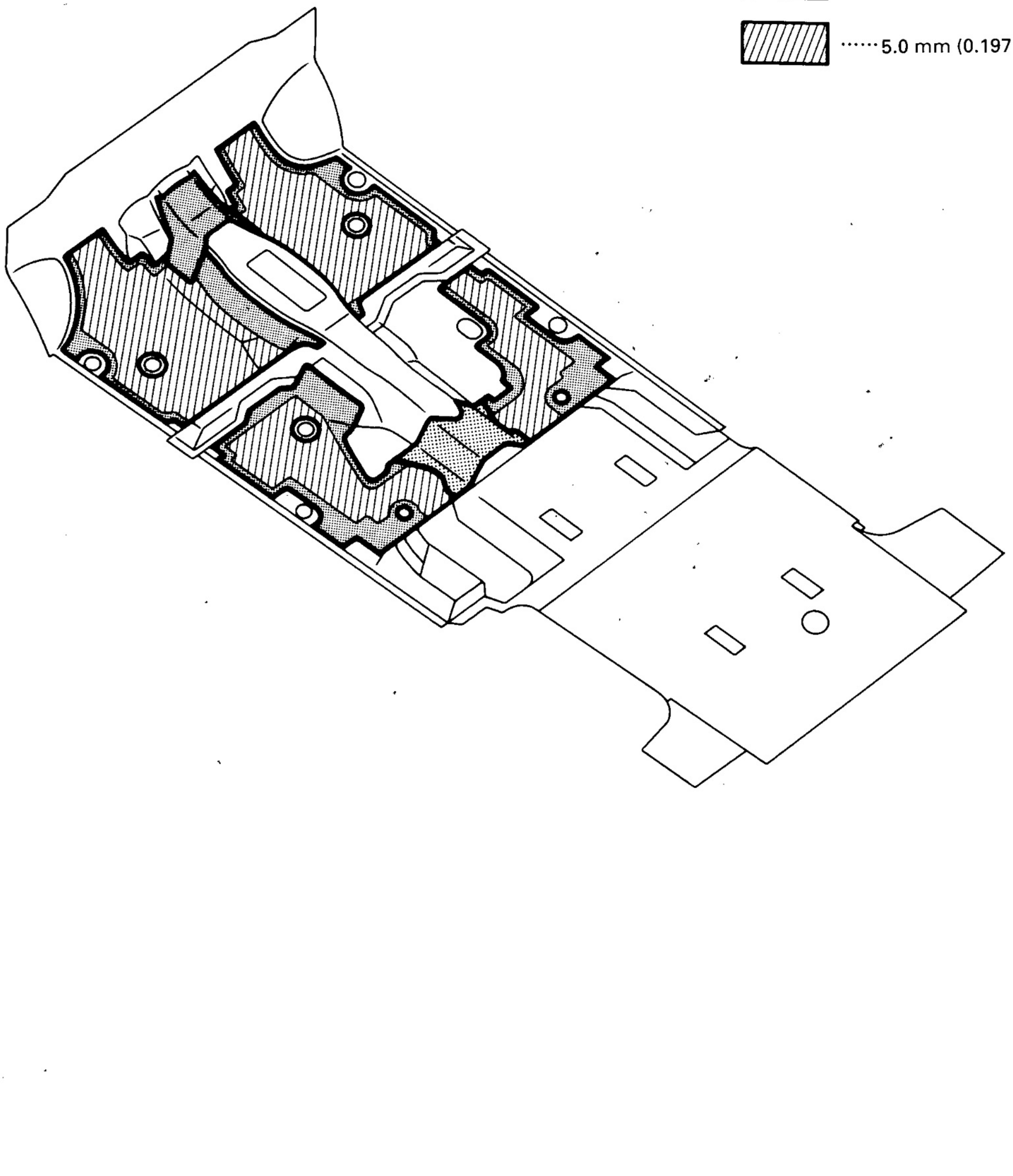
VZJ series
RZJ series
LJ series

Thickness of Asphalt Sheet

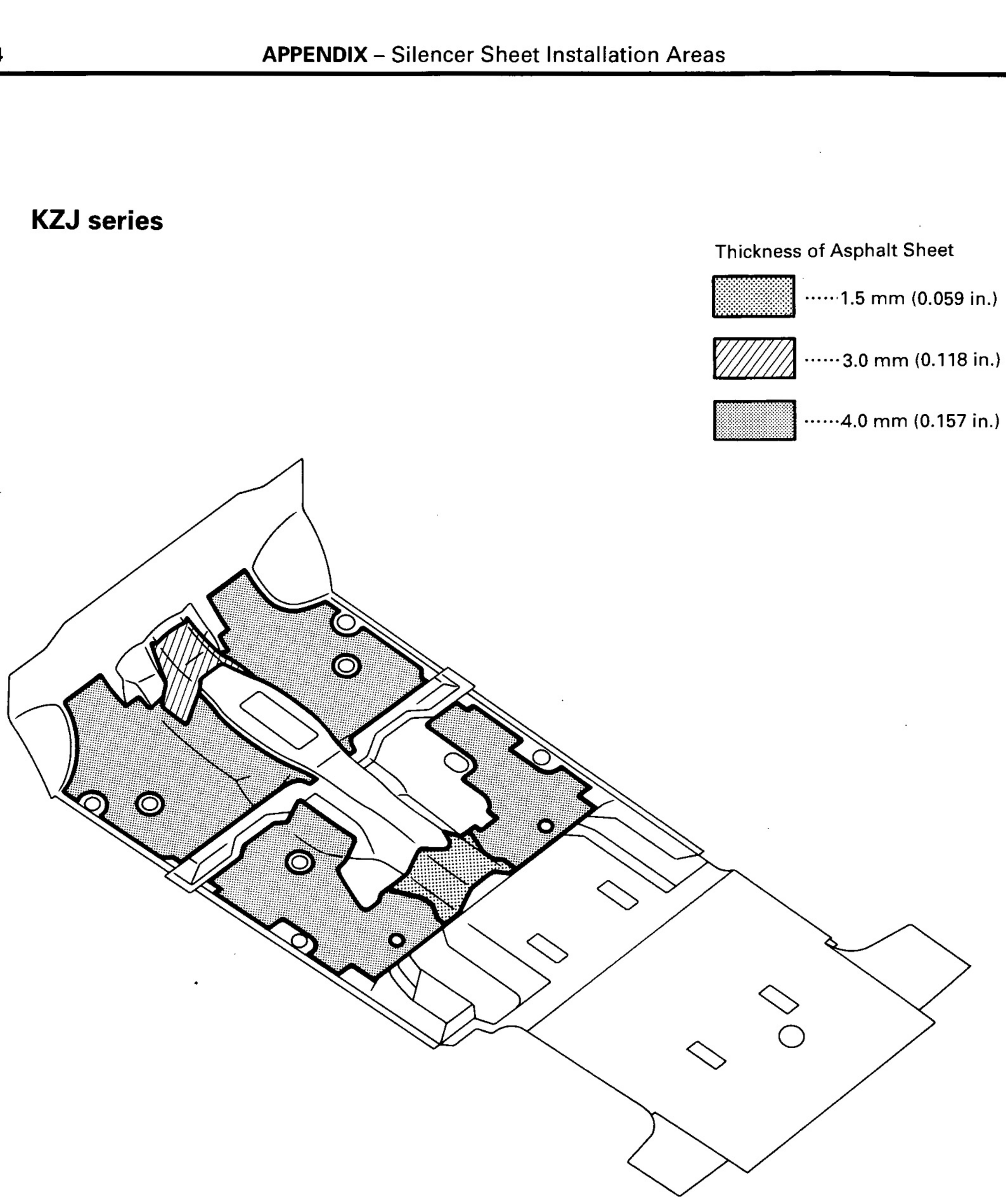
····· 1.5 mm (0.059 in.)

····· 3.0 mm (0.118 in.)

····· 5.0 mm (0.197 in.)



KZJ series


Thickness of Asphalt Sheet
1.5 mm (0.059 in.)
3.0 mm (0.118 in.)
4.0 mm (0.157 in.)