THE NAME OF QUALITY

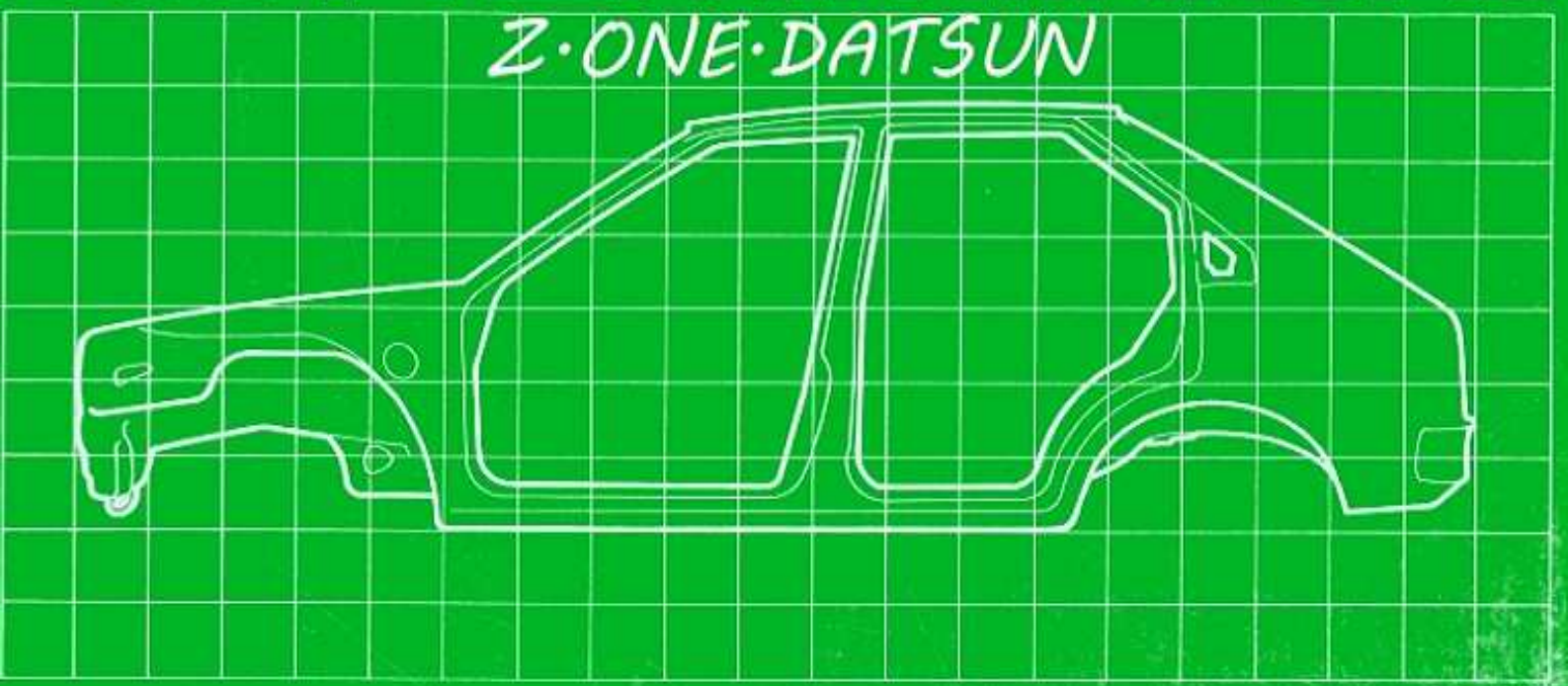
NISSAN

NISSAN MOTOR CO. LTD

NISSAN / DATSUN

MODEL N12 SERIES

BODY REPAIR MANUAL



FOREWORD

This Body Repair Manual contains information, instructions and procedures for repairing the body structure of the Model N12 (PULSAR). In order to achieve reliable repair work and ensure customer satisfaction, the technician should study this manual and familiarize himself with appropriate sections before starting repair and rebuilding work.

It is especially important that the section entitled PRECAUTIONS be read, understood and followed completely.

This Body Repair Manual is prepared for use by technicians who are assumed to have a high level of skill and experience in repairing collision-damaged vehicles and also use modern servicing tools and equipment. It is not recommended that persons unfamiliar with body repair techniques attempt to repair collision-damaged vehicles by using this manual.

Technicians are also required to read the N12 (PULSAR) Service Manual in order to ensure that the original, functions and quality of the vehicle can be maintained.

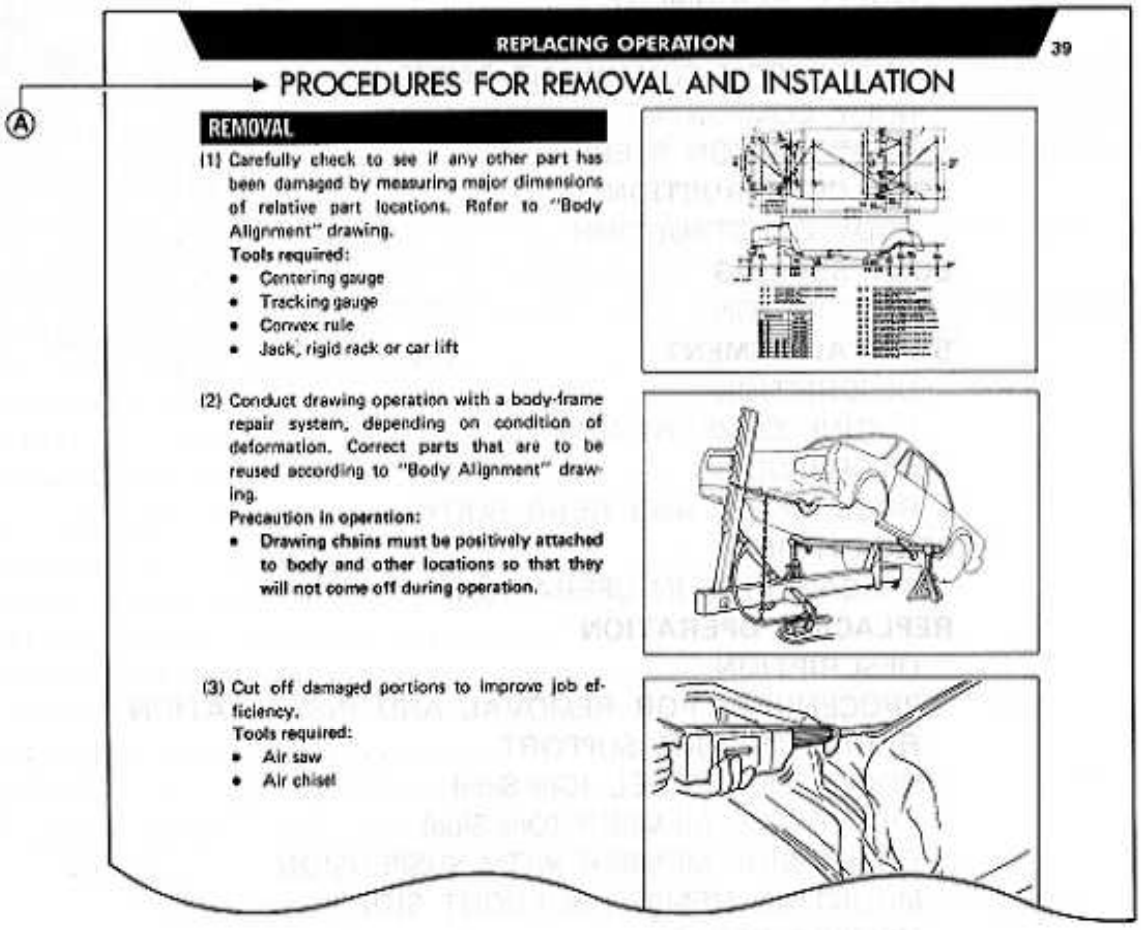
Please note that these manuals are prepared for worldwide usage, and as such, certain procedures might not apply in some regions or countries.

NISSAN MOTOR CO., LTD.

CONTENTS

HOW TO USE THIS MANUAL

In the "REPLACING OPERATION" section, service points and notes for performing proper body repair work for the damaged vehicles are described. Please read this very carefully in order to gain full understanding of the purpose, and then proceed with the body repair work.



REPLACING OPERATION 39

Ⓐ → PROCEDURES FOR REMOVAL AND INSTALLATION

REMOVAL

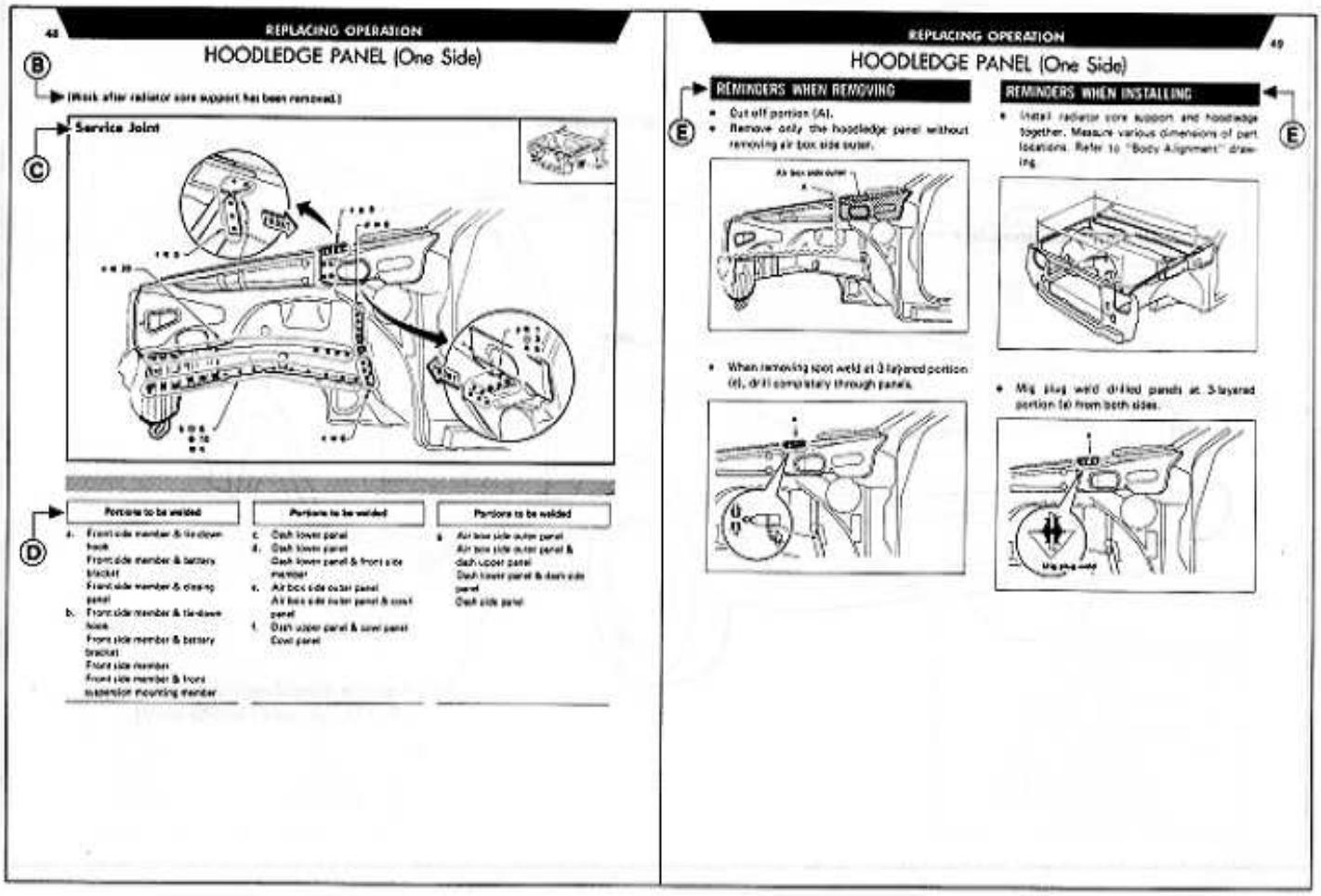
(1) Carefully check to see if any other part has been damaged by measuring major dimensions of relative part locations. Refer to "Body Alignment" drawing.
Tools required:
- Centering gauge
- Tracking gauge
- Convex rule
- Jack, rigid rack or car lift

(2) Conduct drawing operation with a body-frame repair system, depending on condition of deformation. Correct parts that are to be reused according to "Body Alignment" drawing.
Precaution in operation:
- Drawing chains must be positively attached to body and other locations so that they will not come off during operation.

(3) Cut off damaged portions to improve job efficiency.
Tools required:
- Air saw
- Air chisel

Ⓐ **PROCEDURES FOR REMOVAL AND INSTALLATION:**
In this section, service procedures and points for body repair work are explained in order. Service points and procedures that are almost the same for most replacing work are described.

HOW TO USE THIS MANUAL



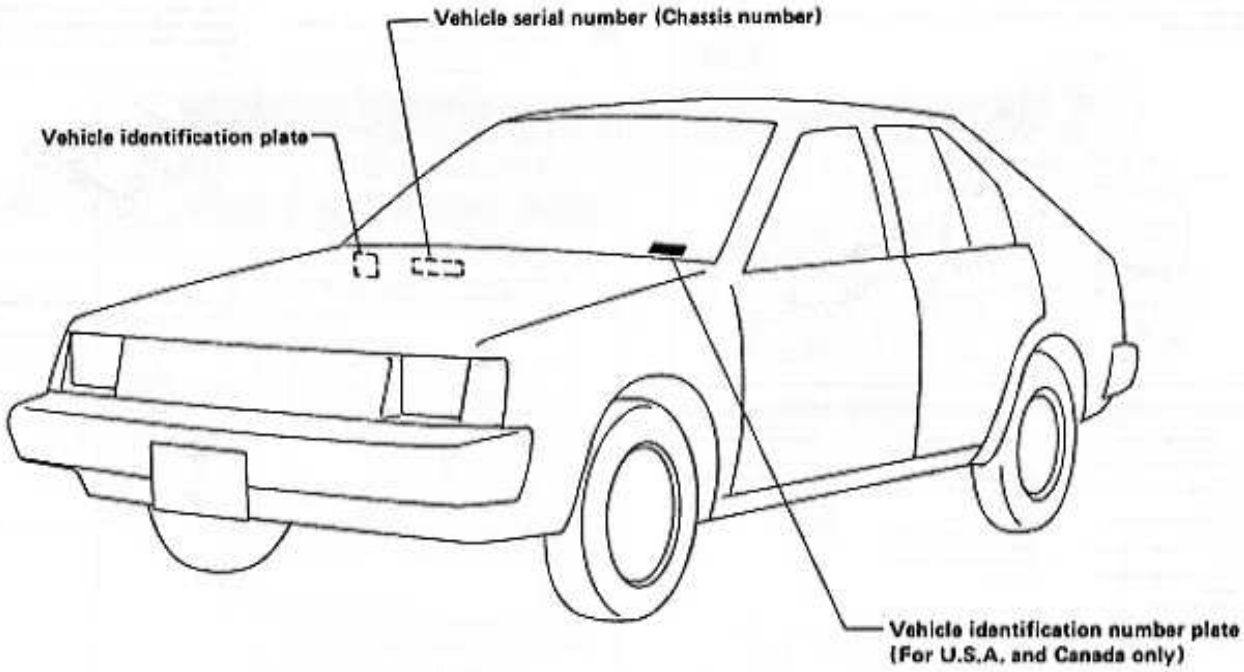
Ⓑ **(Work after RADIATOR CORE SUPPORT has been removed):**
The replacement operation of the hoodledge panel is shown here, beginning from the condition where the radiator core support have already been removed. If the radiator core support and the hoodledge reinforcement are installed on the car to be serviced, refer to "REPLACING RADIATOR CORE SUPPORT".

Ⓒ **SERVICE JOINT:**
Welding methods and No. of welding points are described when performing body repair work (replacement of body parts).
To maintain the function of the car body, work should be done, observing what is described here (particularly No. of welding points).
[Example] a ■ 20 — No. of welding points
└ Mig plug weld (See symbol mark on page 38.)
└ Portion

Ⓓ **PORTIONS TO BE WELDED:**
This section describes those portions to which the portion under the subtitle (ex. Hoodledge panel) will be welded. Portions to be welded are listed.

Ⓔ **REMINDERS WHEN REMOVING/INSTALLING**
Main service points and reminders when performing body repair work are described.

IDENTIFICATION NUMBERS



1 Vehicle Identification Plate

The vehicle identification plate is located on the cowl top panel in the engine compartment.

2 Vehicle Identification Number (Chassis Number)

The vehicle identification number is stamped on the cowl top panel in the engine compartment.

For Europe

Prefix and suffix designations

JN1 O R H *N12 U O XXXXXX

- Vehicle serial number
- O : Stopgap (no meaning)
- U : For Europe
- Model
- B : E10 engine
- P : E13 engine
- H : E15 engine
- R : Hatchback
- O : Stopgap (no meaning)
- JN1 : Nissan

*: The letter "L", which refers to left-hand drive, is not indicated here.

For U.S.A. and Canada

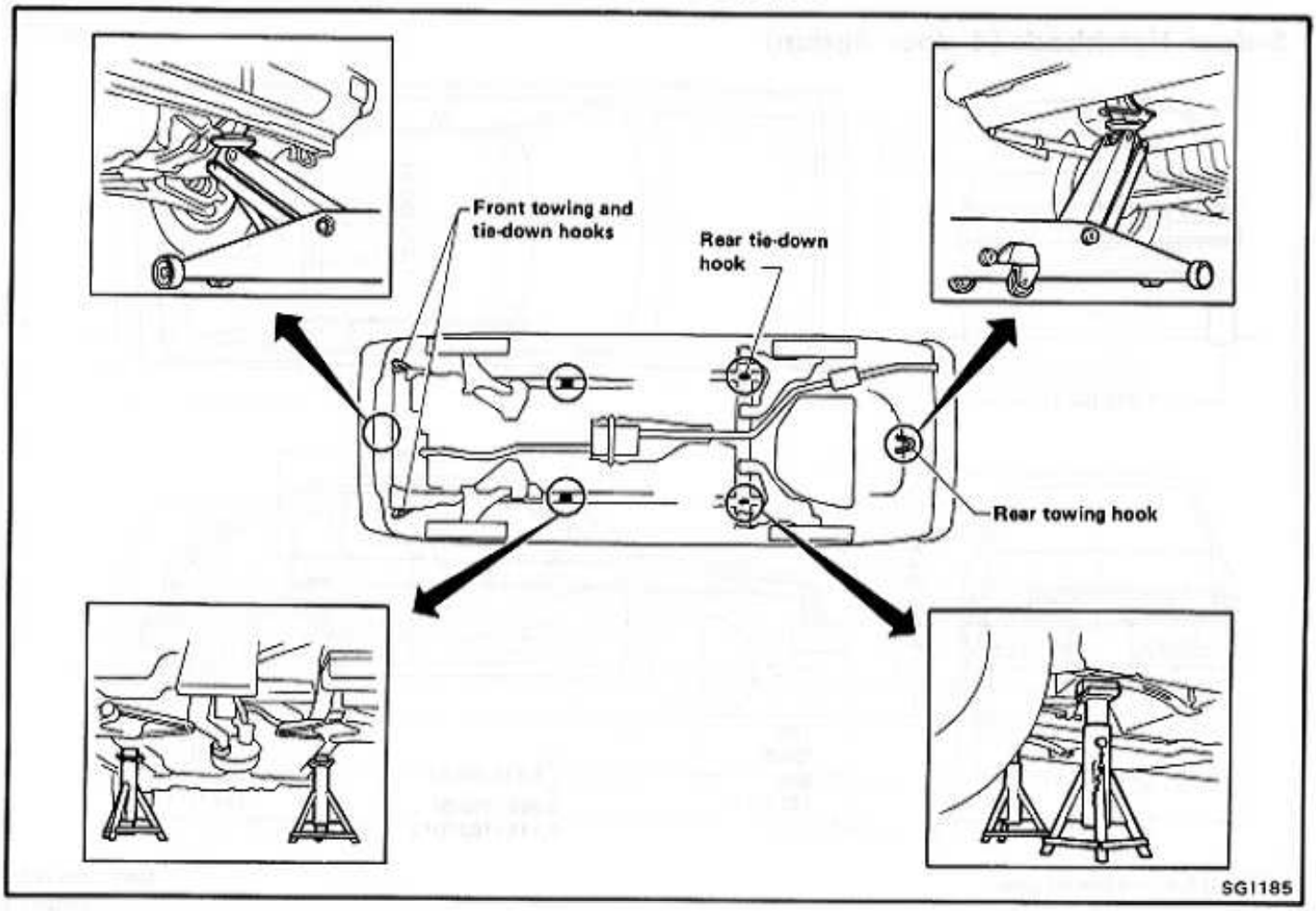
Prefix and suffix designations

R M L N12 L H F U

- U : Non-California models for U.S.A.
- V : California models
- N : Canada models
- F : 5-speed manual transaxle
- A : Automatic transaxle
- H : GX model
- Y : Deluxe model
- L : 4-door Sedan
- □ : Except 4-door Sedan
- L : L.H. drive
- M : E16 engine
- R : Sedan
- K : Coupe

Note: □ means no indication.

LIFTING POINTS



1 Pantograph Jack

Warning: a. **Never get under the car while it is supported only by the jack. Always use safety stands to support frame when you have to get under the car.**
b. **Place wheel chocks at both front and back of the wheel diagonally opposite the jack position.**

Apply the pantograph jack furnished with the car to the position indicated in the figure in a safe manner.

2 Garage Jack and Safety Stand

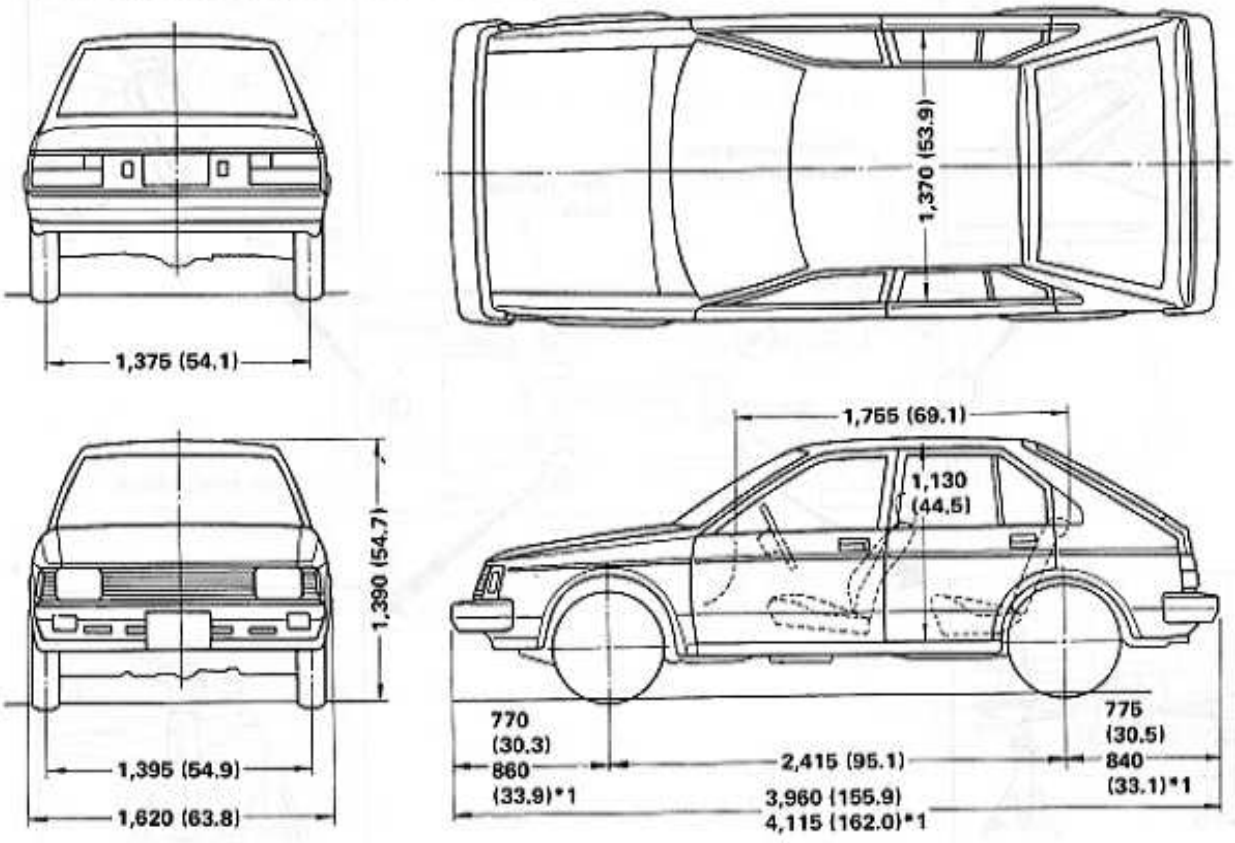
Warning: a. **When carrying out operations with the garage jack, be sure to support the car with safety stands.**
b. **When jacking up the rear (front) of the car, place the chocks at the front (rear) of the front (rear) wheels to hold them.**

Caution: Always place a wood block between safety stand and car body when supporting body with safety stand.

Apply the garage jack and safety stand to the position indicated in the figure in a safe manner.

GENERAL VIEWS

5-door Hatchback (4-door Sedan)

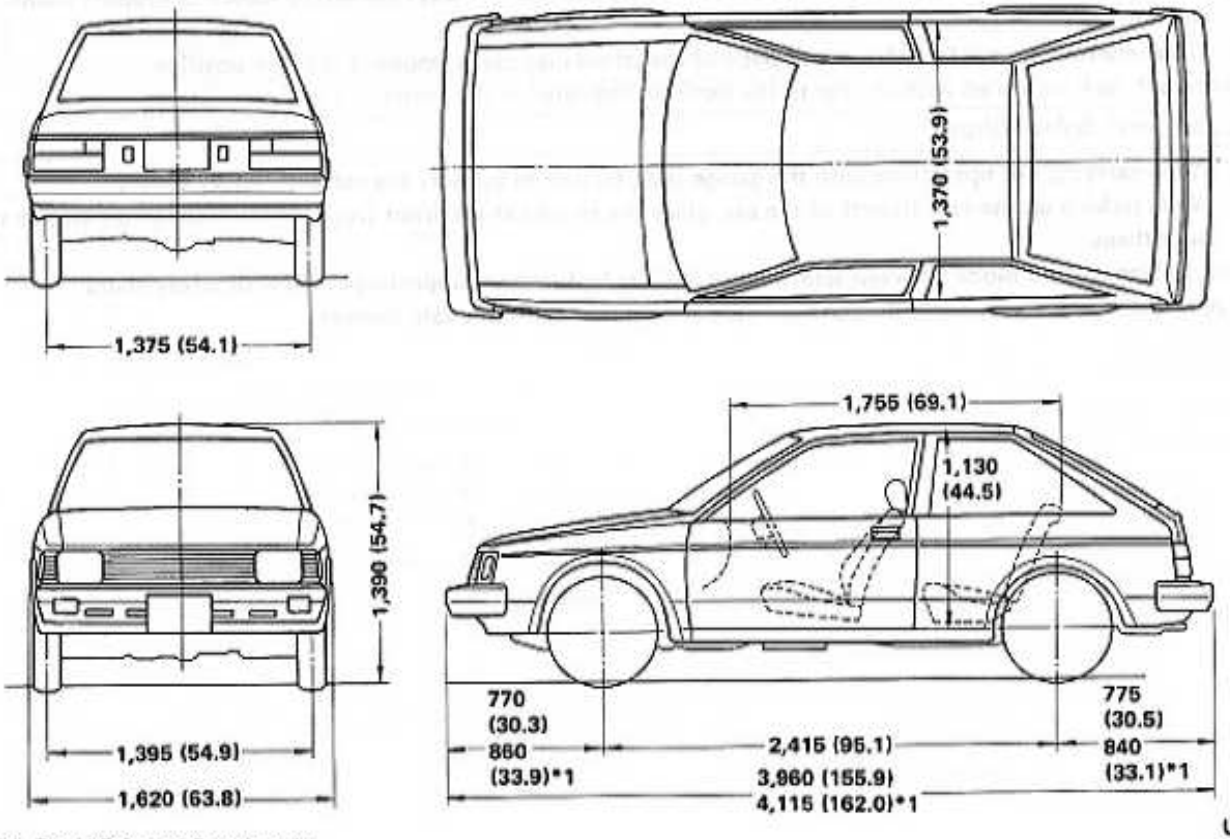


*1 For U.S.A. and Canada only

Unit: mm (in)

SGI209

3-door Hatchback (2-door Sedan)



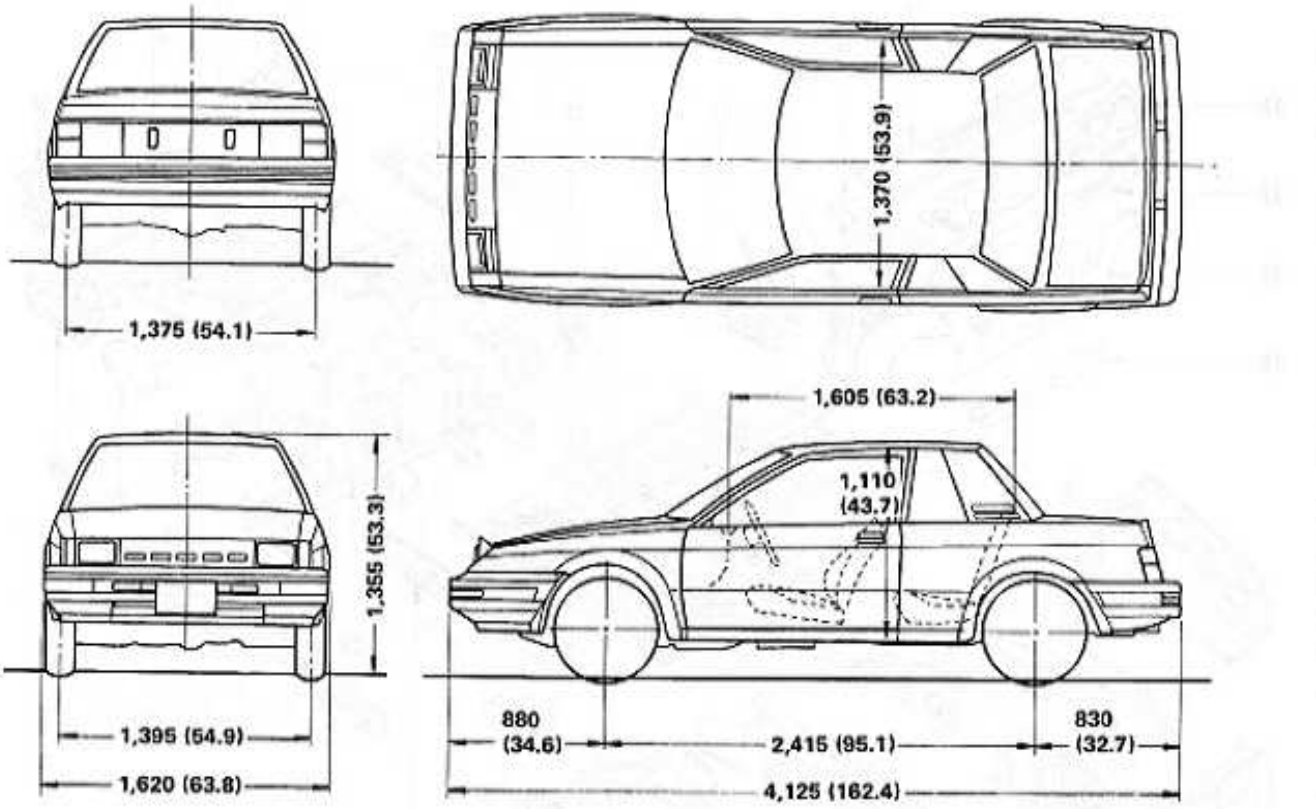
*1 For U.S.A. and Canada only

Unit: mm (in)

SGI210

GENERAL VIEWS

Coupe



Unit: mm (in)
SGI211

WHEEL ALIGNMENT

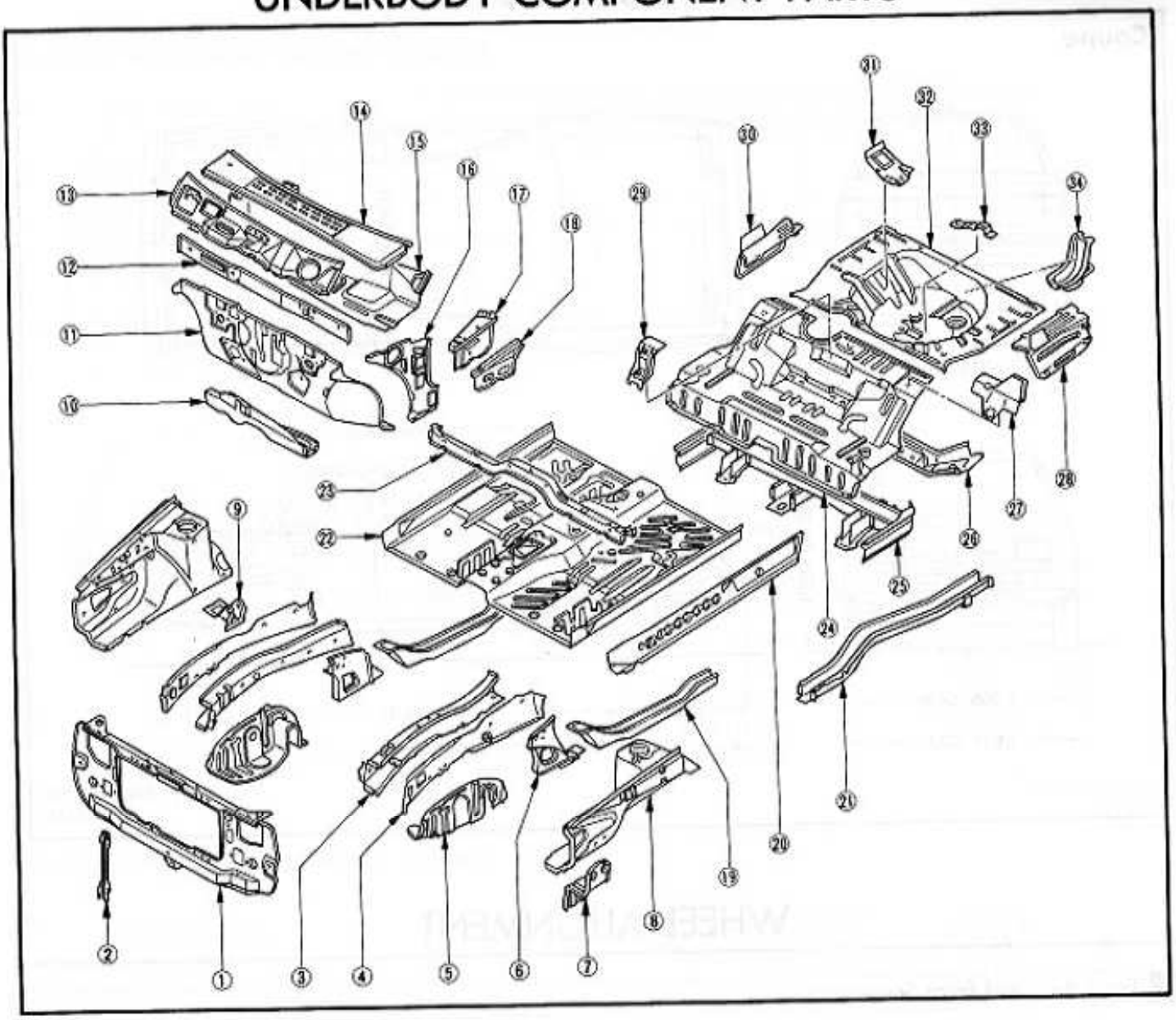
1 Front Axle and Front Suspension

Wheel alignment (Unladen*)		
Camber	**degree**	–35′ - 1°05′
Caster	**degree**	45′ - 2°15′
Kingpin inclination	**degree**	12°10′ - 13°40′
Toe-in	**mm (in)**	0 - 2 (0 - 0.08)
Side slip (Reference data)	**mm/m (in/ft)**	Out 3 - In 3 (Out 0.036 - In 0.036)

Standard side rod length	**mm (in)**	175.9 (6.93)
Front wheel turning angle		
Toe-out turns (Inside/Outside)	**degree**	20/17°30′
Full turn (Inside/Outside)	**degree**	40° - 44°/31° - 35°

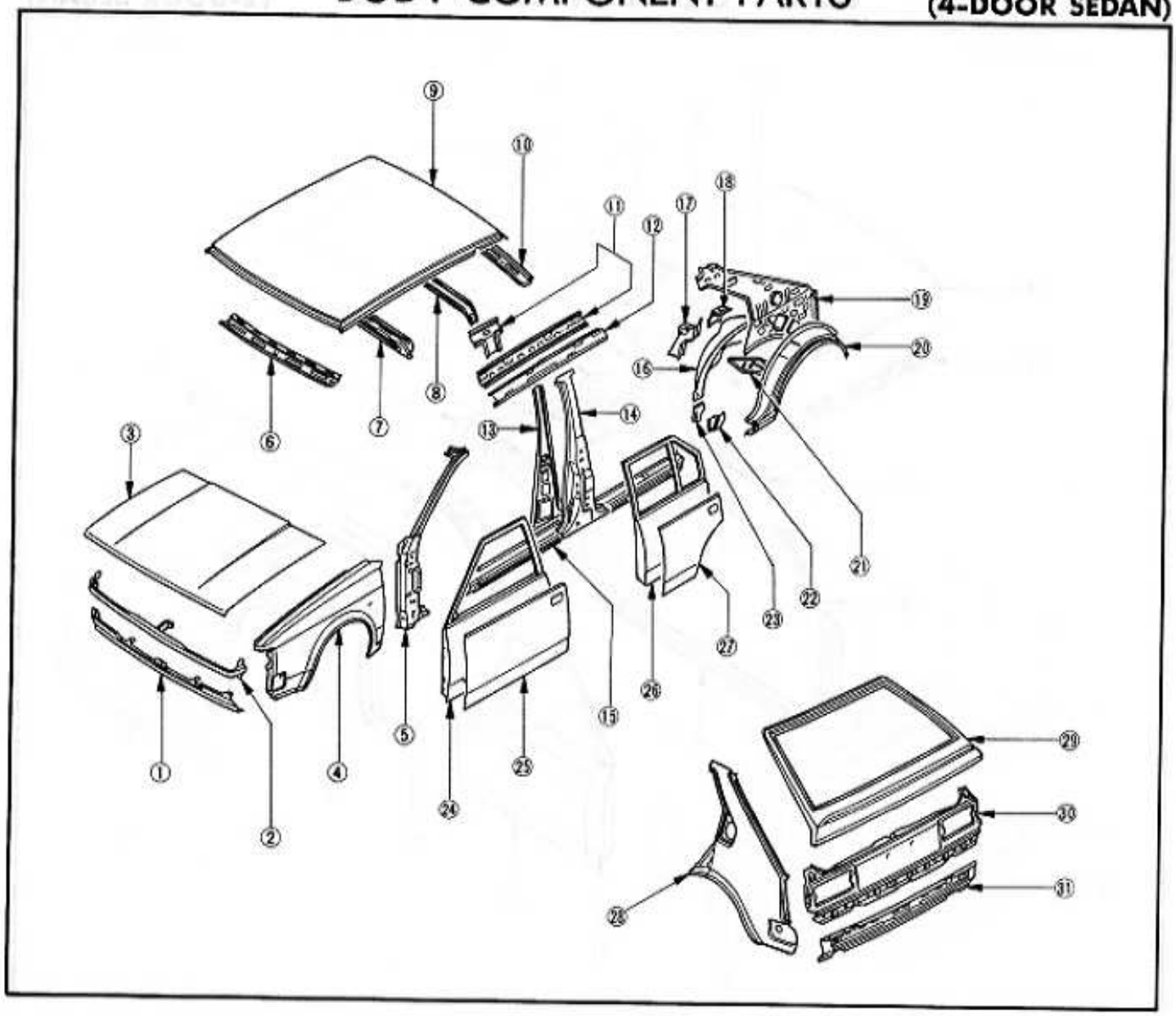
* Tankful of fuel, radiator coolant and engine oil full. Spare tire, jack, band tools, mats in designed position.

UNDERBODY COMPONENT PARTS



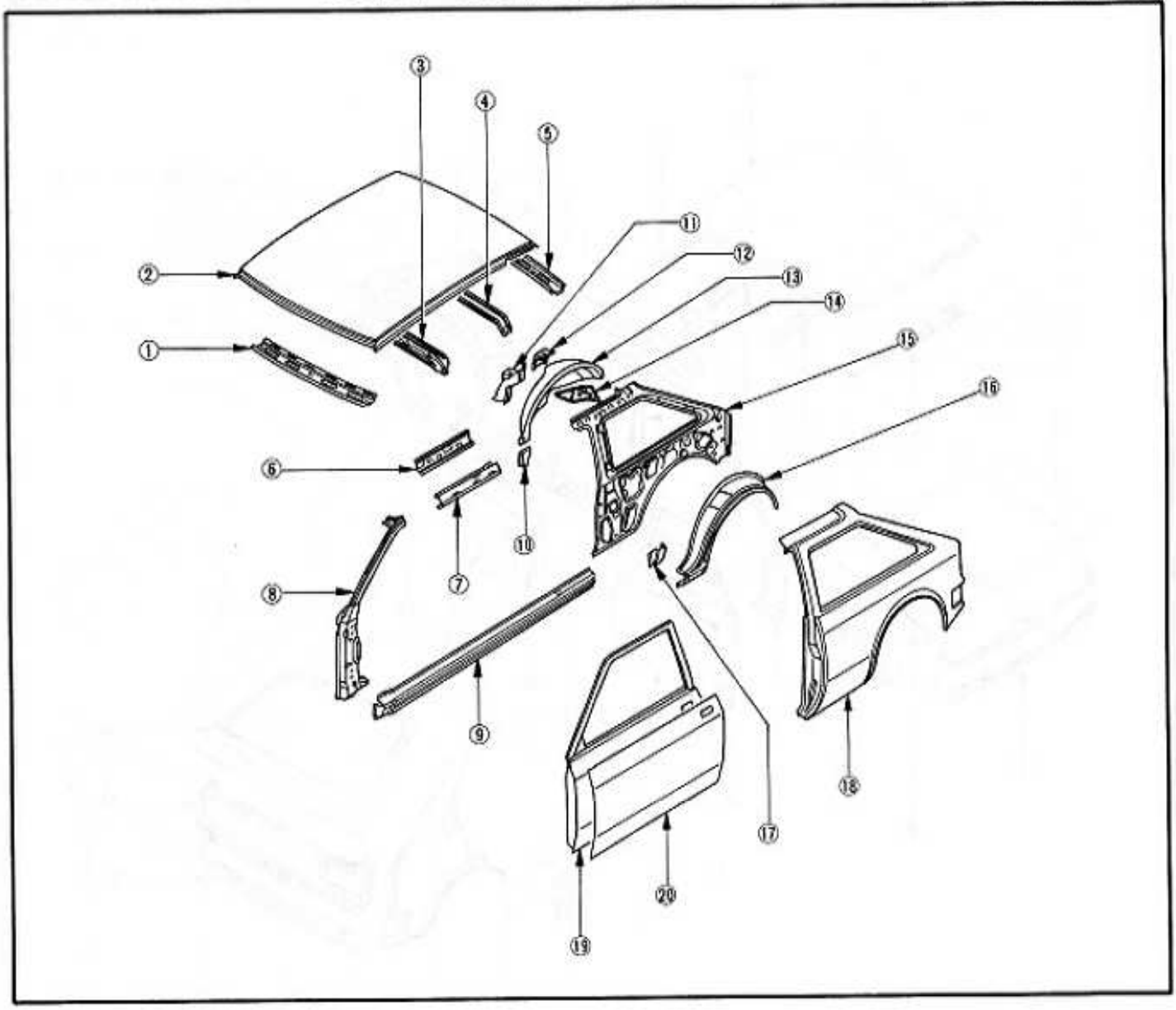
1 Radiator core support assembly
2 Hood lock stay assembly
3 Front side member assembly
4 Front side member closing assembly
5 Splash shield cover
6 Shock absorber member assembly
7 Battery & engine mounting reinforcement assembly
8 Hoodledge assembly
9 Engine mounting bracket
10 Front crossmember
11 Dash lower
12 Upper front dash assembly
13 Air box reinforcement assembly
14 Cowl top
15 Dash upper
16 Dash side
17 Air box side inner assembly
18 Air box assembly
19 Front side member extension assembly
20 Sill inner
21 Rear side member assembly
22 Front floor assembly
23 2nd crossmember assembly
24 Rear floor front
25 Rear crossmember
26 Fuel tank mounting member
27 Rear seat support bracket assembly
28 Trunk floor side
29 Rear seat brace assembly
30 Trunk floor side
31 Jack mounting bracket
32 Rear floor rear
33 Spare tire clamp bracket
34 Jack seat

BODY COMPONENT PARTS 5-DOOR HATCHBACK (4-DOOR SEDAN)



1 Front apron panel
2 Lower apron assembly
3 Hood assembly
4 Front fender assembly
5 Front pillar assembly
6 Roof front rail
7 Sub-roof bow
8 Center roof bow
9 Roof
10 Roof rear rail
11 Roof side inner rail assembly
12 Roof side outer rail
13 Center inner lower pillar
14 Center outer pillar assembly
15 Outer sill
16 Rear wheelhouse inner
17 Rear seatback side support assembly
18 Rear shock absorber mounting
19 Rear inner pillar assembly
20 Rear wheelhouse outer
21 Rear wheelhouse inner rear extension
22 Sill closing plate
23 Rear wheelhouse inner front extension
24 Front door assembly
25 Front door outer panel
26 Rear door assembly
27 Rear door outer panel
28 Rear fender
29 Back door assembly
30 Rear panel upper
31 Rear panel lower

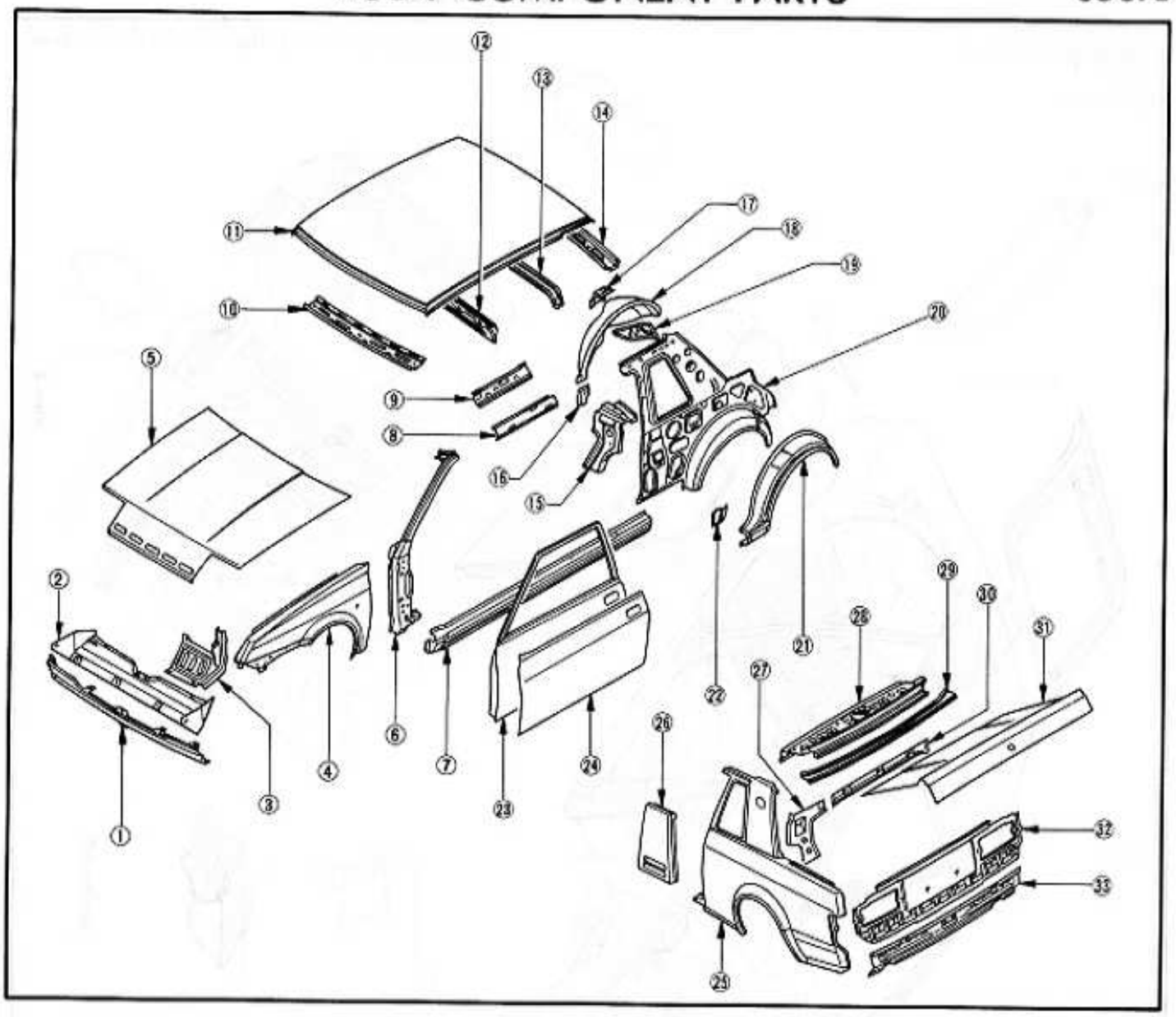
BODY COMPONENT PARTS 3-DOOR HATCHBACK (2-DOOR SEDAN)



1 Front roof rail
2 Roof
3 Sub-roof bow
4 Center roof bow
5 Rear roof rail
6 Roof side inner rail
7 Roof side outer rail
8 Front pillar assembly
9 Outer sill
10 Rear wheelhouse inner front extension
11 Rear seatback side support assembly
12 Rear shock absorber mounting
13 Rear wheelhouse inner
14 Rear wheelhouse inner rear extension
15 Rear inner pillar assembly
16 Rear wheelhouse outer
17 Sill closing plate
18 Rear fender
19 Front door assembly
20 Front door outer panel

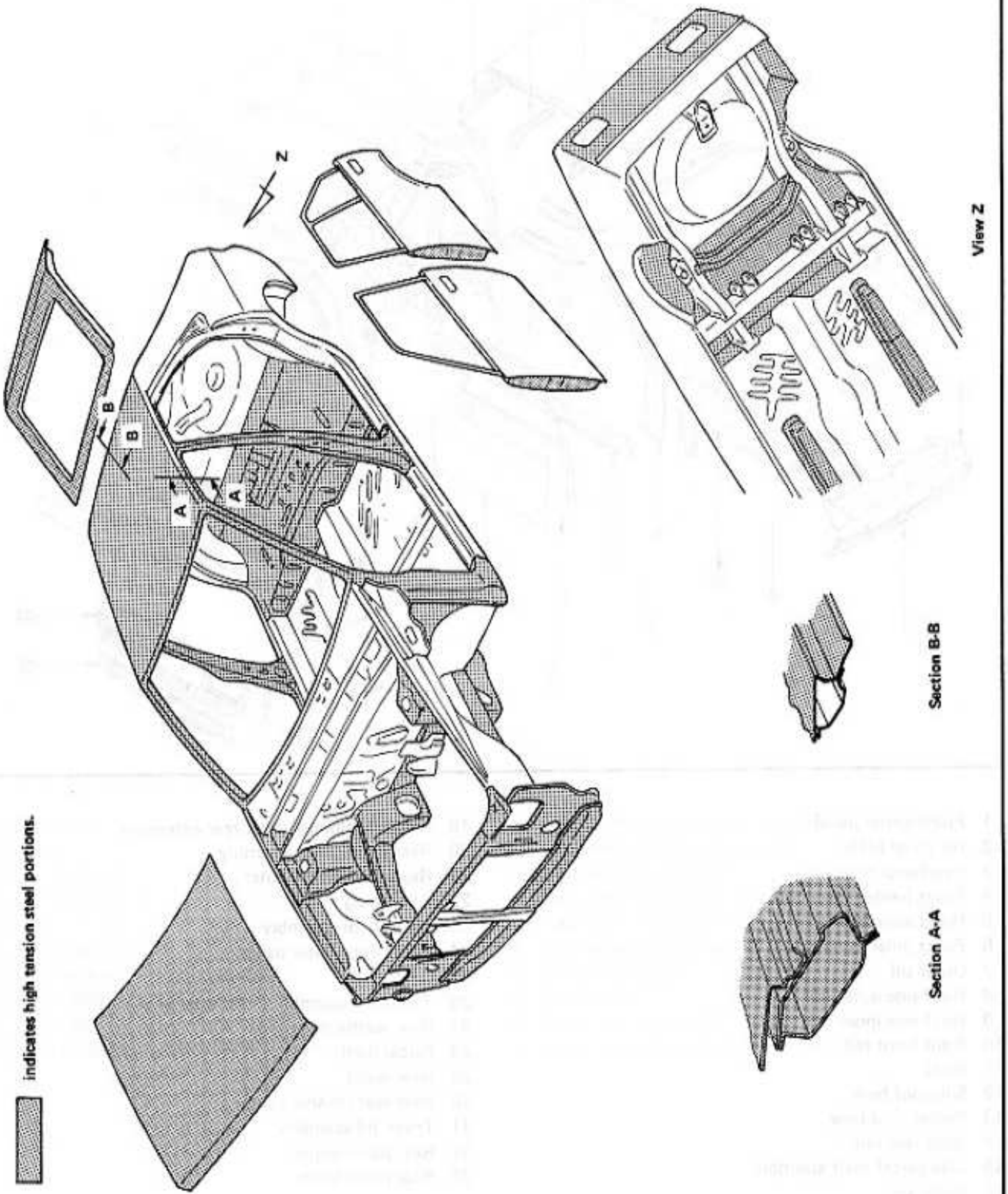
BODY COMPONENT PARTS

COUPE



1 Front apron panel
2 Air guide plate
3 Headlamp cover
4 Front fender assembly
5 Hood assembly
6 Front pillar assembly
7 Outer sill
8 Roof side outer rail
9 Roof side inner rail
10 Roof front rail
11 Roof
12 Sub-roof bow
13 Center roof bow
14 Roof rear rail
15 Side parcel shelf assembly
16 Outer sill
17 Rear shock absorber mounting
18 Rear wheelhouse inner
19 Rear wheelhouse inner rear extension
20 Rear inner pillar assembly
21 Rear wheelhouse outer
22 Sill closing
23 Front door assembly
24 Front door outer panel
25 Rear fender
26 Tail pillar assembly (Rear quarter panel)
27 Rear seatback finisher
28 Parcel shelf
29 Rear waist
30 Rear seat finisher center
31 Trunk lid assembly
32 Rear panel upper
33 Rear panel lower

HIGH TENSION STEEL



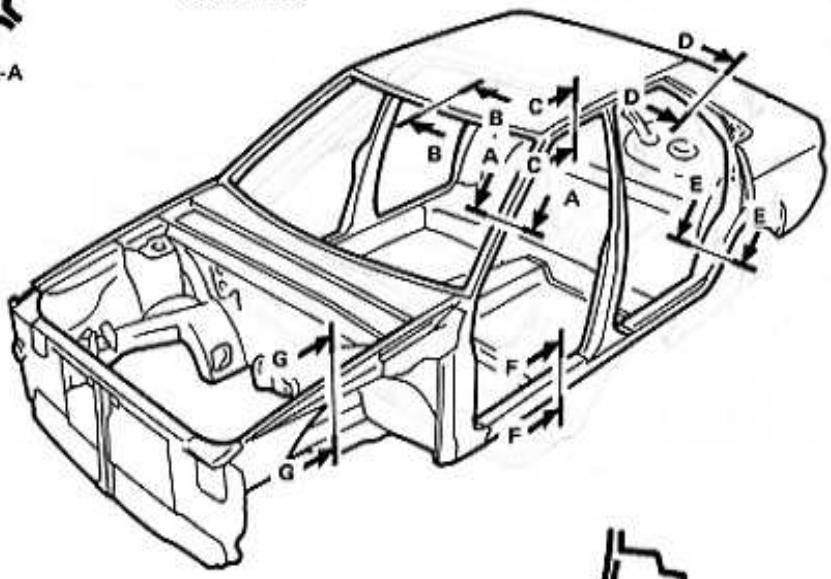
BODY CONSTRUCTION

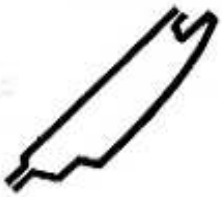
5-door Hatchback (4-door Sedan)

Section C-C

Section B-B

Section A-A

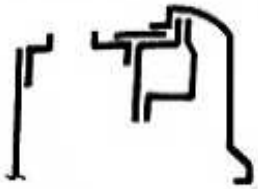




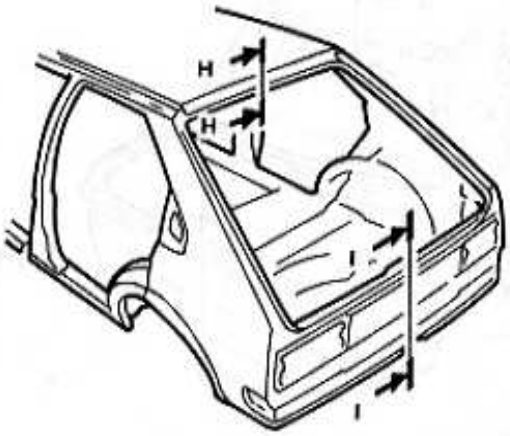
Section D-D

Section E-E

Section F-F



Section G-G

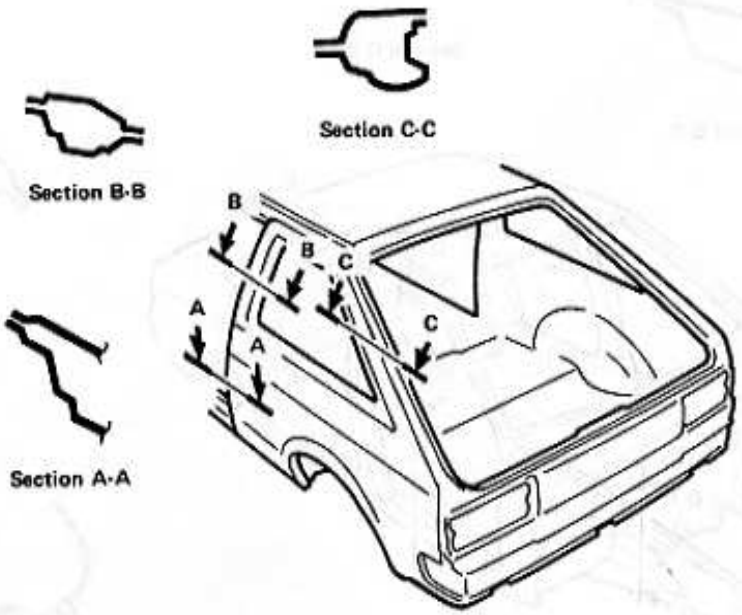


Section H-H

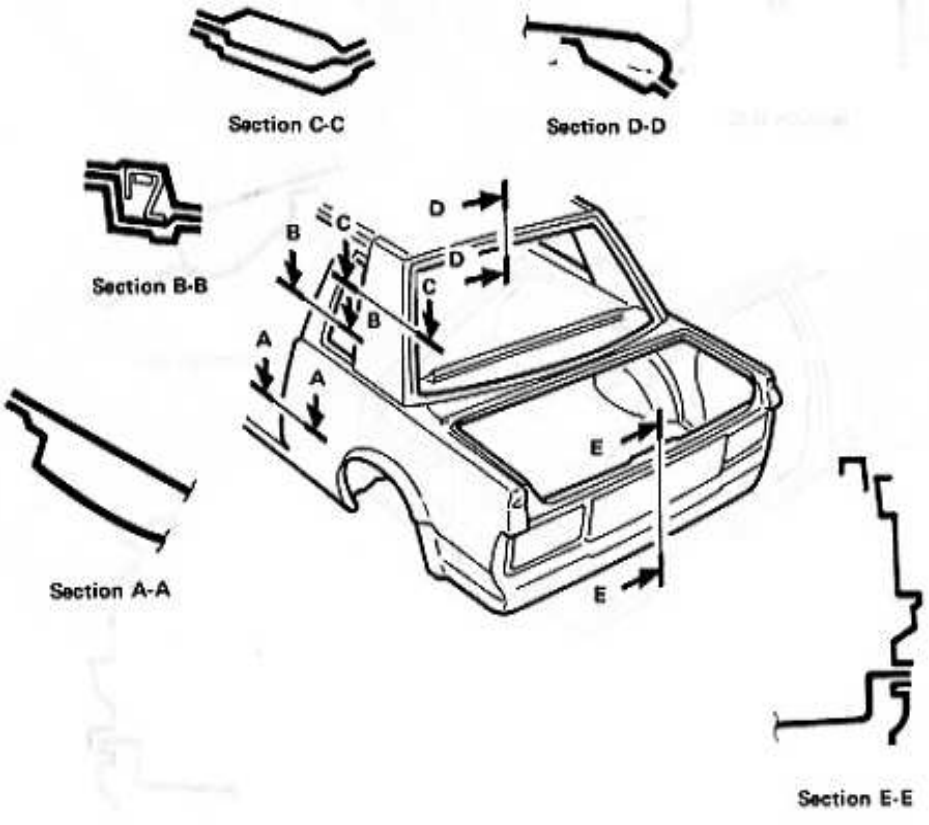
Section I-I

BODY CONSTRUCTION

3-door Hatchback (2-door Sedan)



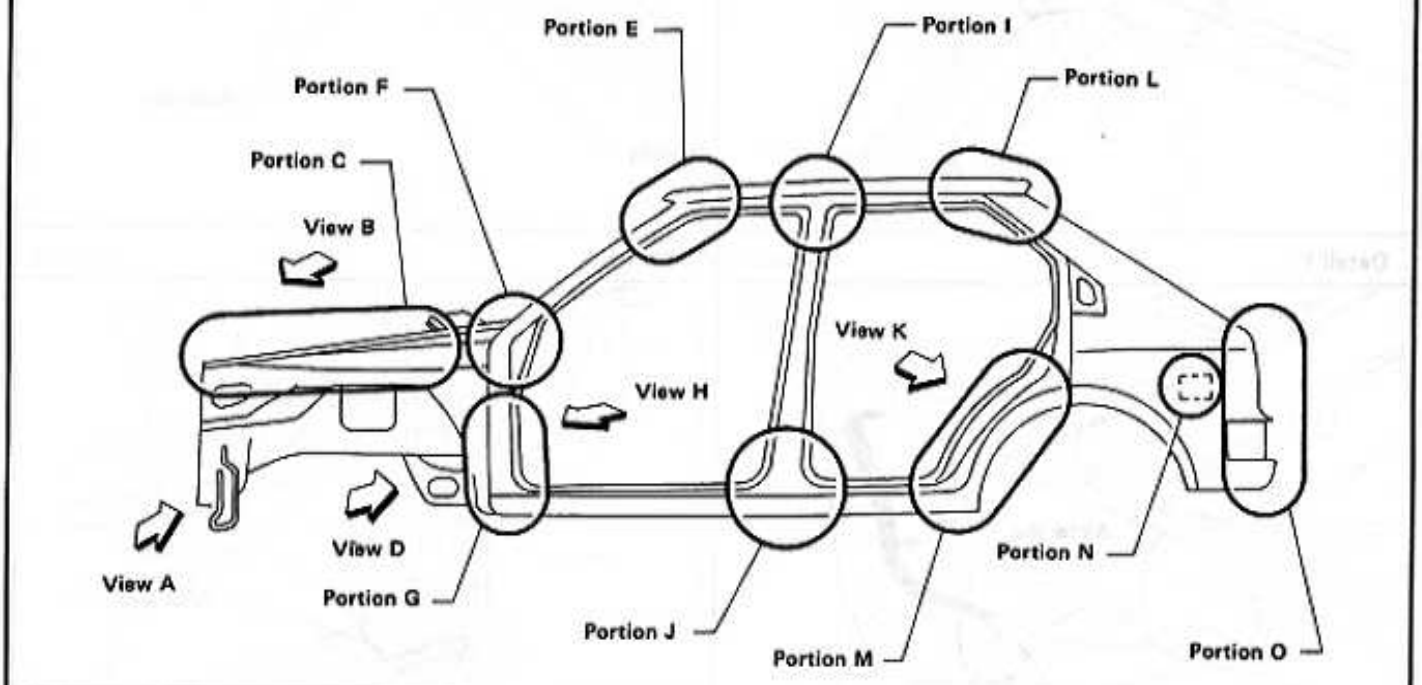
Coupe



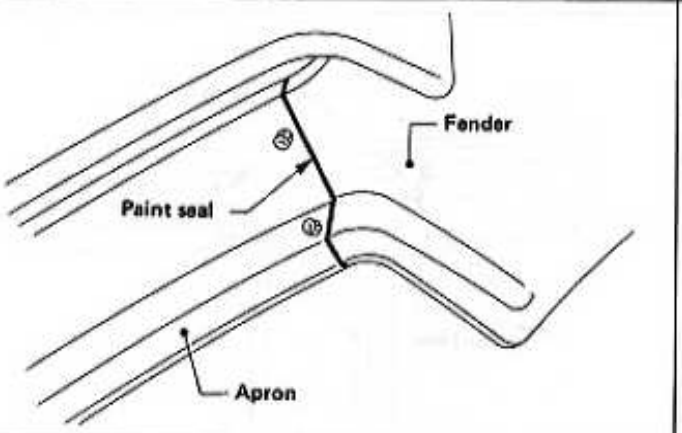
DESCRIPTION

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

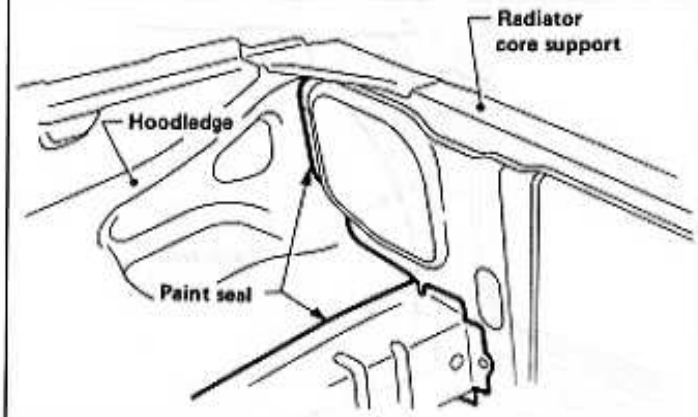
5-door Hatchback (4-door Sedan)



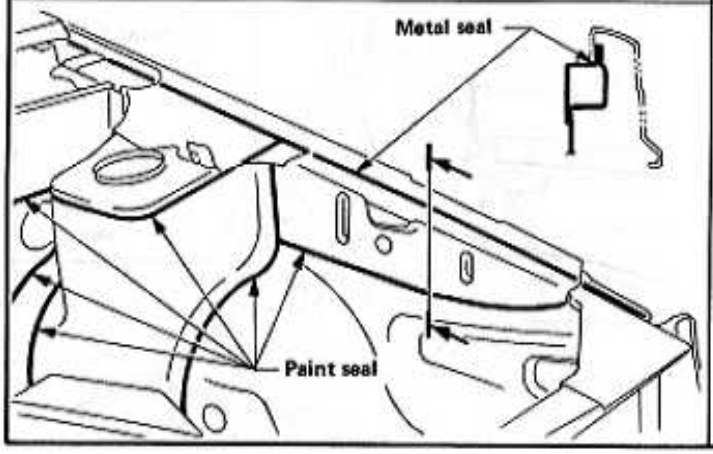
Detail A



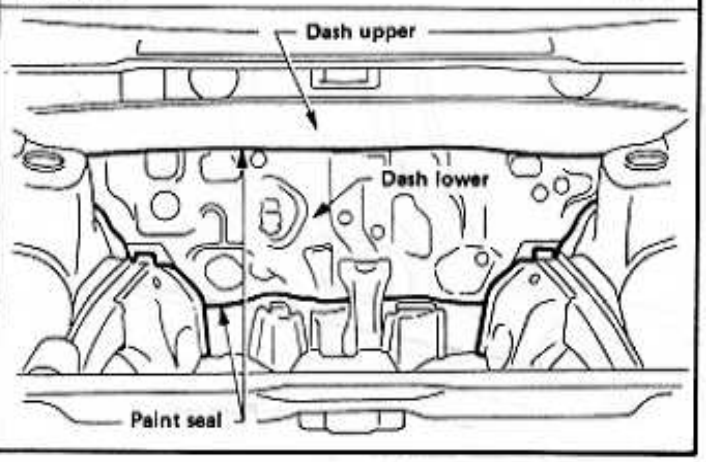
Detail B



Detail C

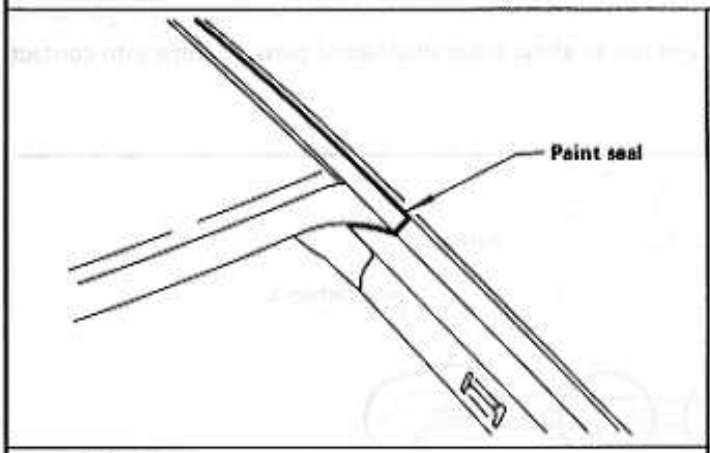


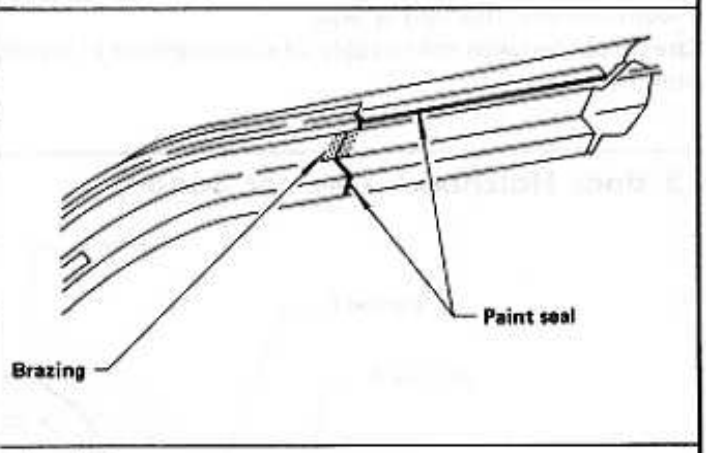
Detail D



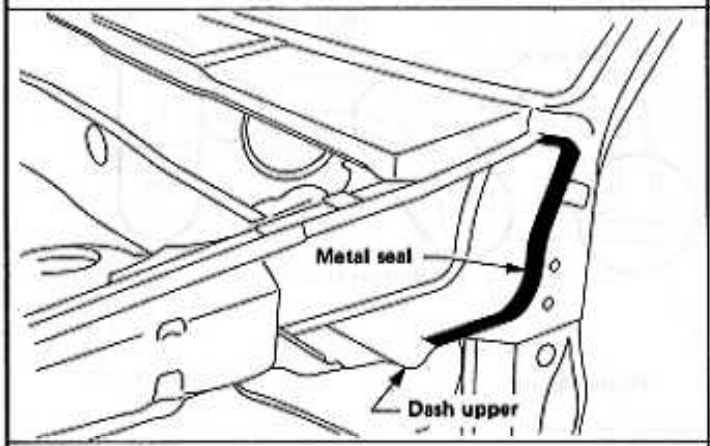
DESCRIPTION

Detail E

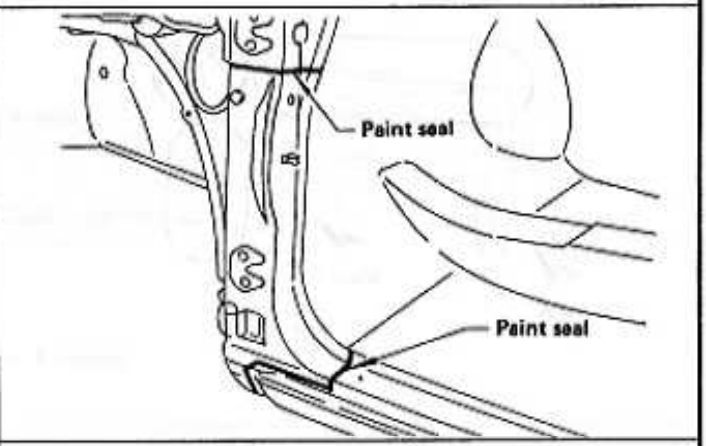




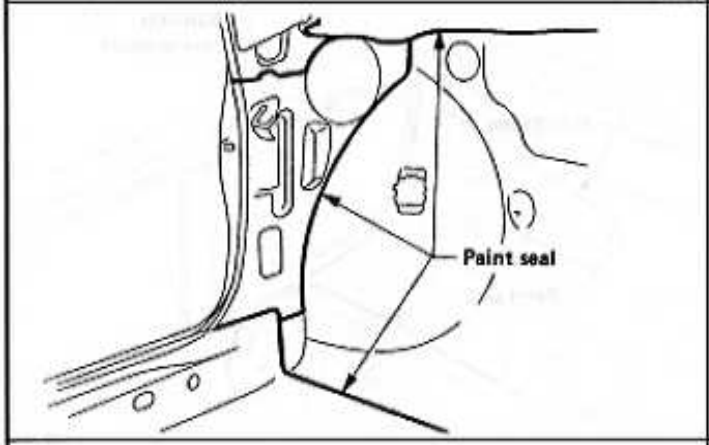
Detail F



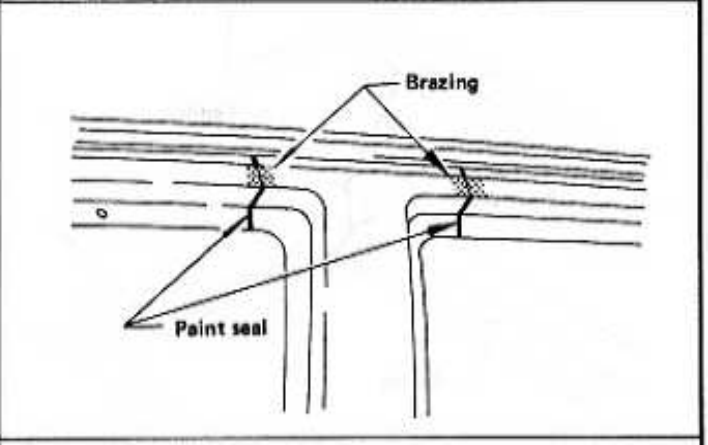
Detail G



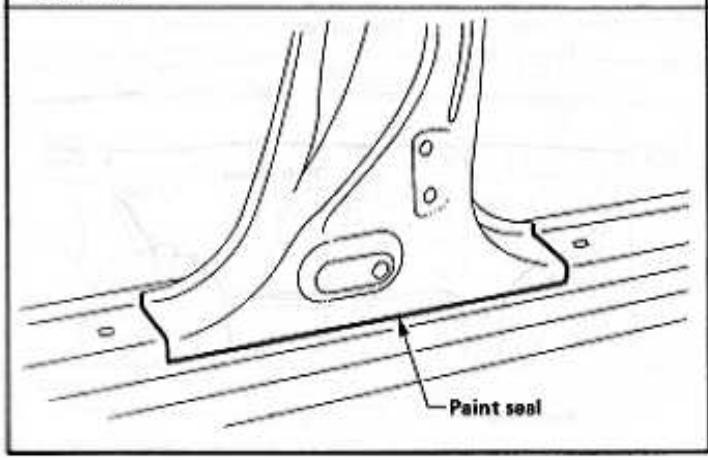
Detail H



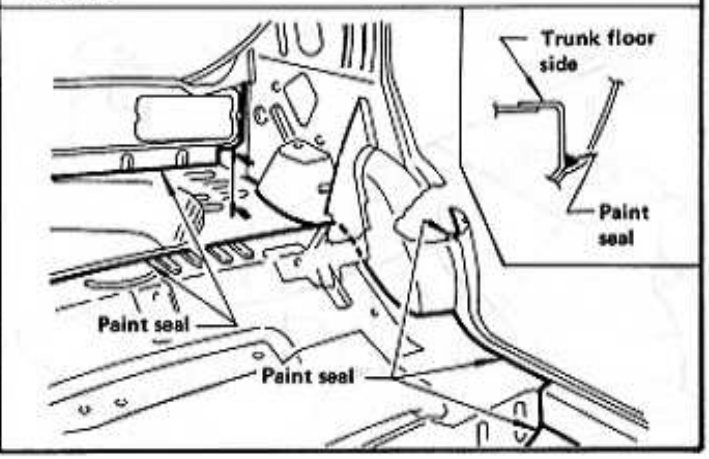
Detail I



Detail J

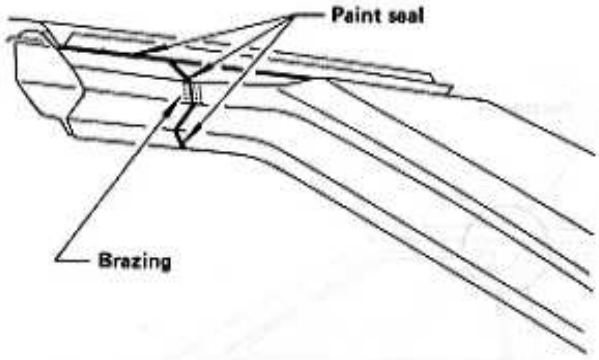


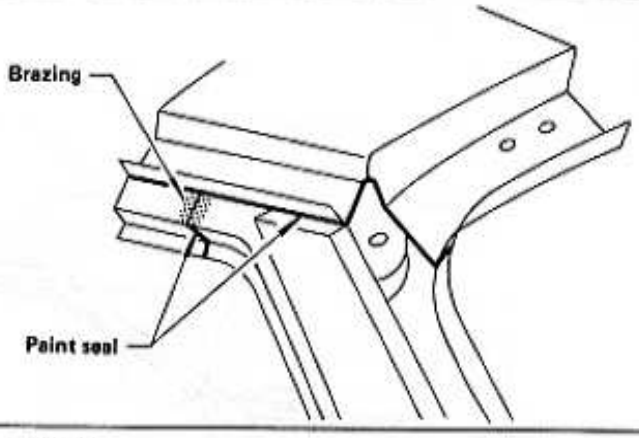
Detail K



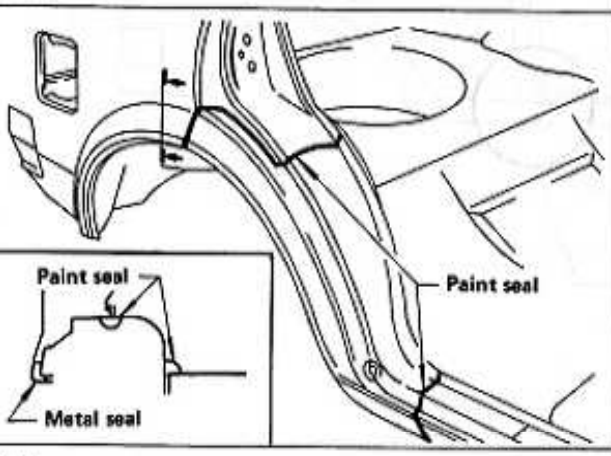
DESCRIPTION

Detail L

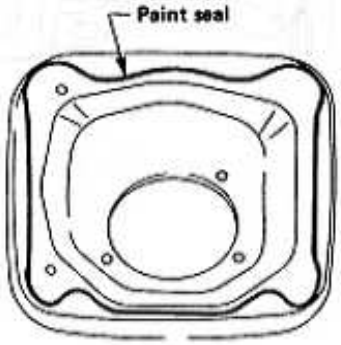




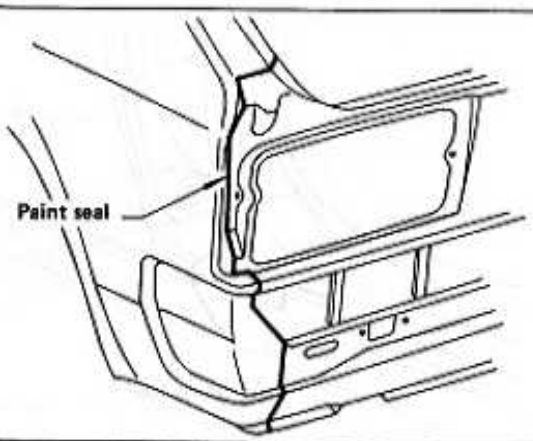
Detail M



Detail N

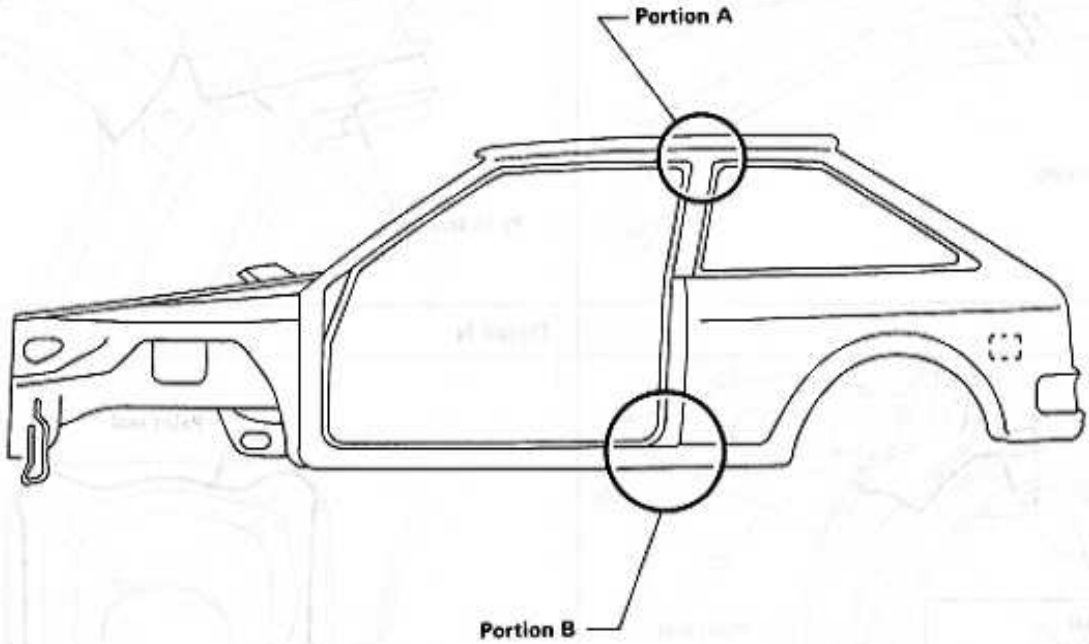


Detail O

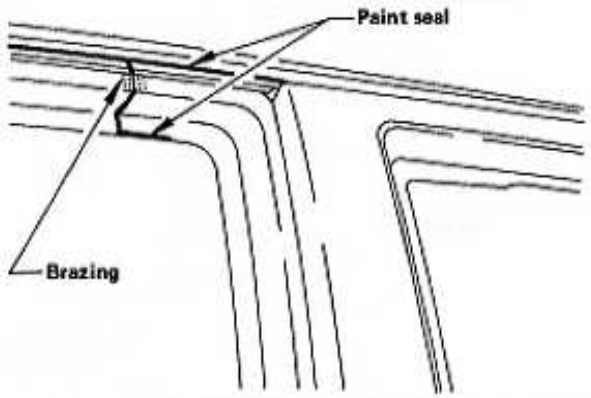


DESCRIPTION

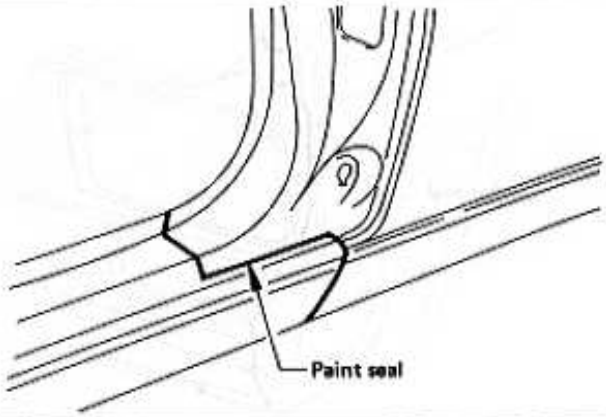
3-door Hatchback (2-door Sedan)



Detail A

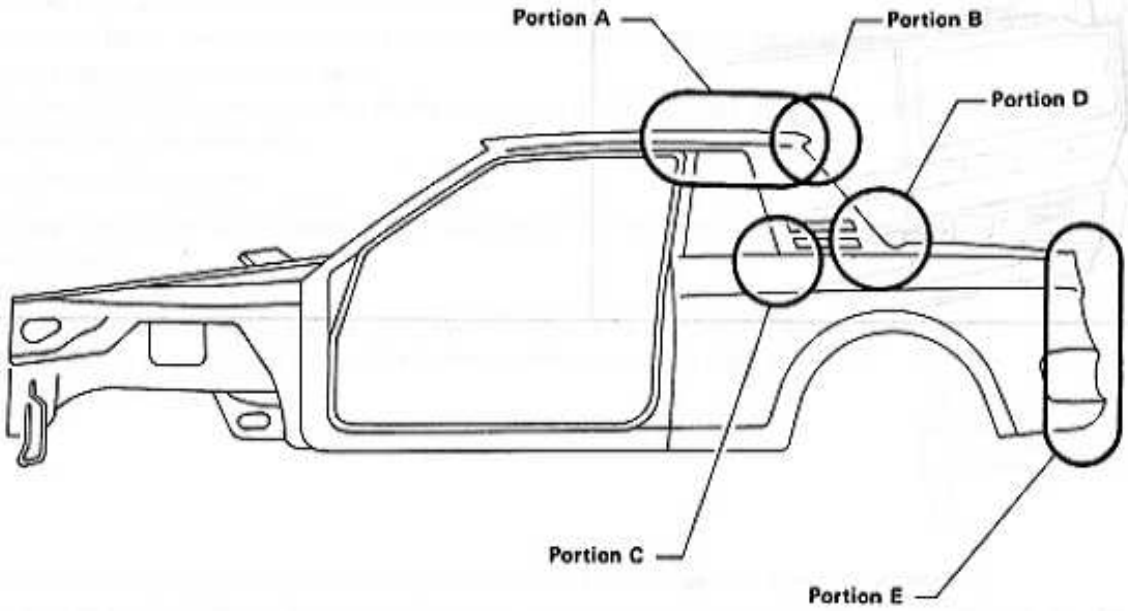


Detail B

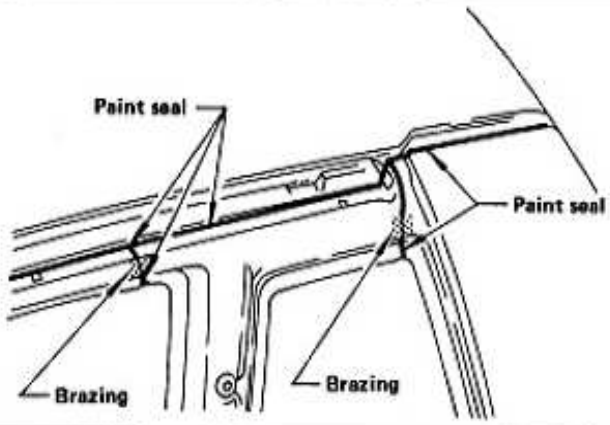


DESCRIPTION

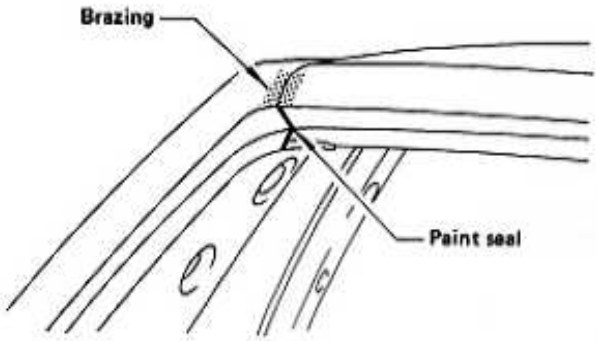
Coupe



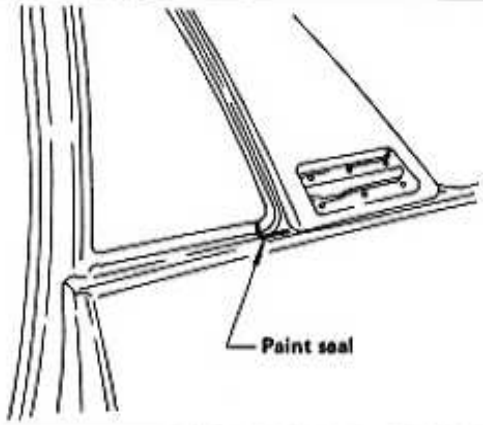
Detail A



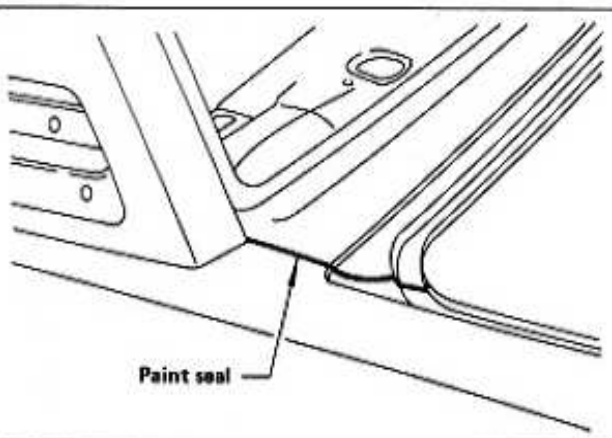
Detail B



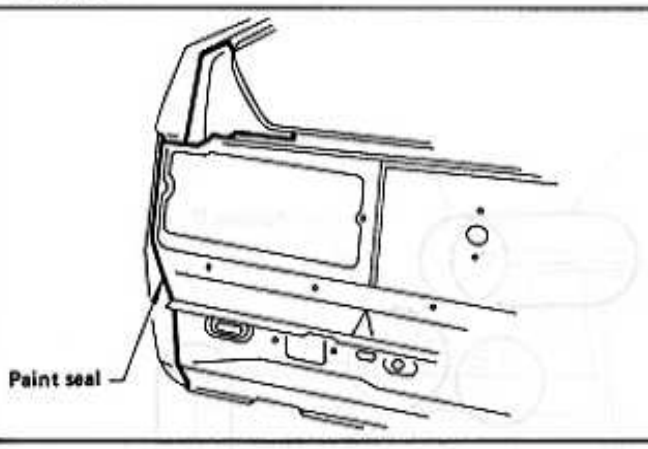
Detail C



Detail D



DESCRIPTION

Detail E	
	

DESCRIPTION

1 Dimension Lines

All dimensions indicated in the drawings/illustrations are the standard design values. These values, along with their dimension lines, are colored for easy identification.

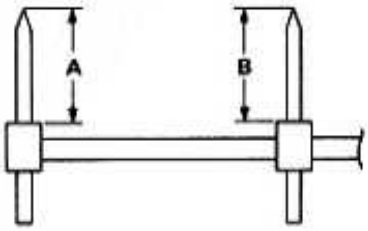
1. Black dimension line – Indicates a distance from a phantom line of the car body to a point to be measured and cannot be measured with a measuring tape or tram tracking gauge.
2. Red dimension line – Indicates a direct (or an actual) distance or length between two points and can be measured with a measuring tape or tram tracking gauge.

Note: An asterisk (*) following the value at the measuring point indicates that the measuring point on the other side is symmetrically the same value.

2 Measurement Operations

When car body measurements are taken in accordance with the red dimension line, careful consideration should be given to the following points.

1. Measurement method
   - When a tram tracking gauge is used, adjust pointers (A) and (B) to equal lengths as shown in the figure to the right. Check the pointers and gauge itself to make sure there is no free play.

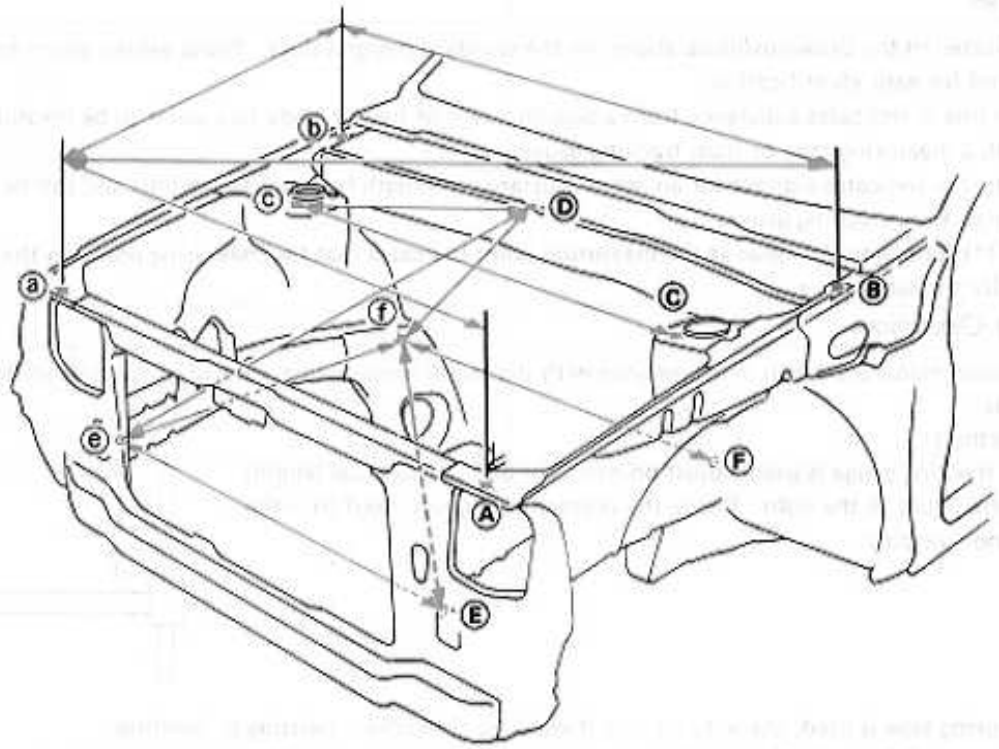


   - When a measuring tape is used, check to be sure there is no elongation, twisting or bending.

Note: If a part or parts of the car body interferes with measurement when using the measuring tape, you cannot measure the distance or length accurately.

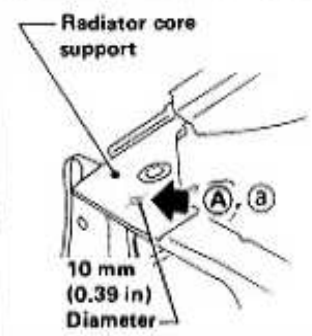
2. Measurement point
   Measurements should be taken at the center of mounting holes.

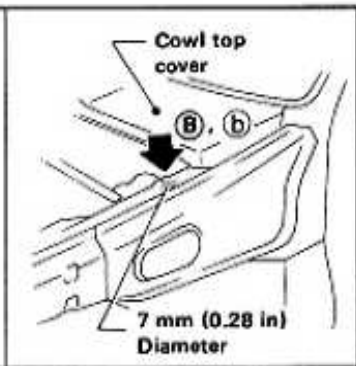
ENGINE COMPARTMENT

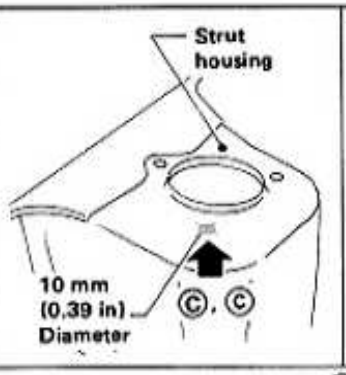


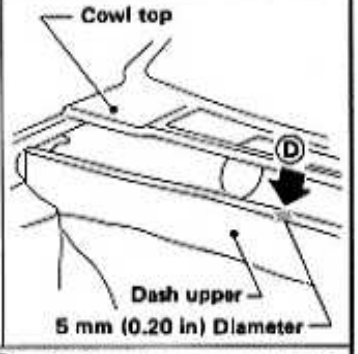
Measuring points	Measurement	
	mm	in
Ⓐ – ⓐ	1,120.0	44.09
ⓐ – Ⓑ	1,430.9	56.33
ⓐ – ⓑ	790.5	31.12
Ⓑ – ⓑ	1,270.0	50.00
Ⓒ – ⓒ	982.8	38.69
ⓒ – Ⓓ	523.8	20.62

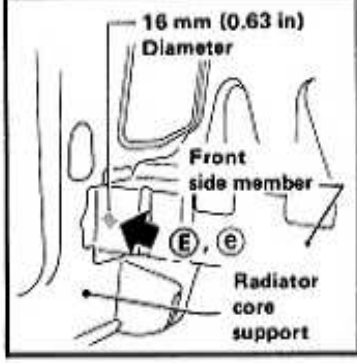
Measuring points	Measurement	
	mm	in
Ⓓ – ⓔ	905.5	35.65
Ⓓ – ⓕ	520.5	20.49
Ⓔ – ⓔ	884.2	34.81
ⓔ – ⓕ	668.9	26.33
Ⓕ – ⓕ	718.8	28.30
Ⓔ – ⓕ	1,040.7	40.97

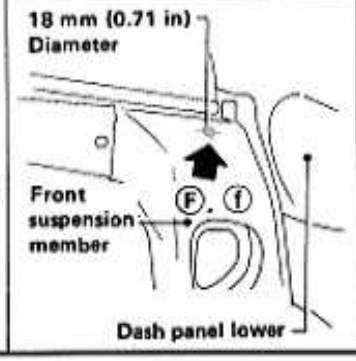






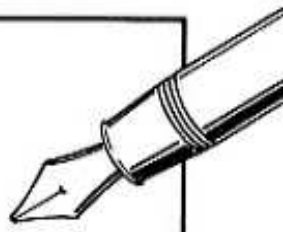




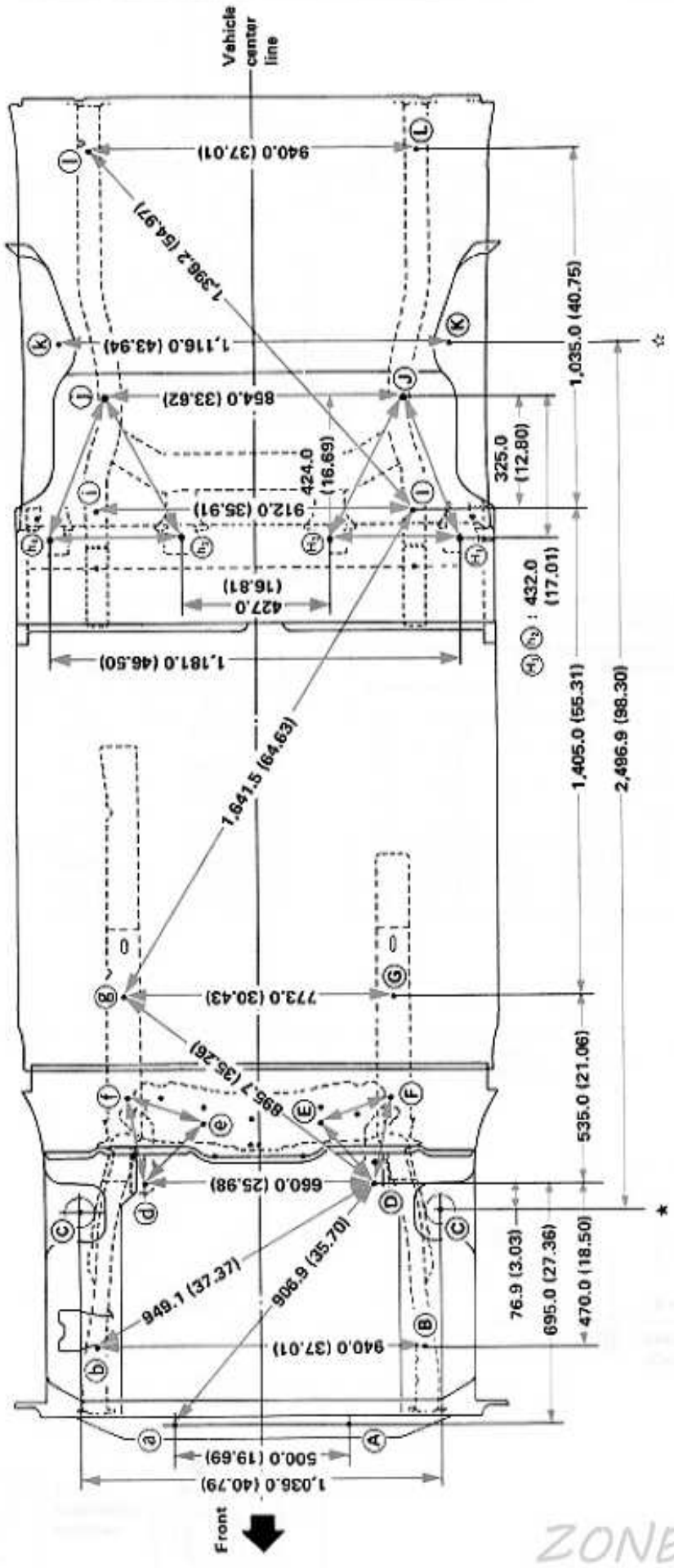


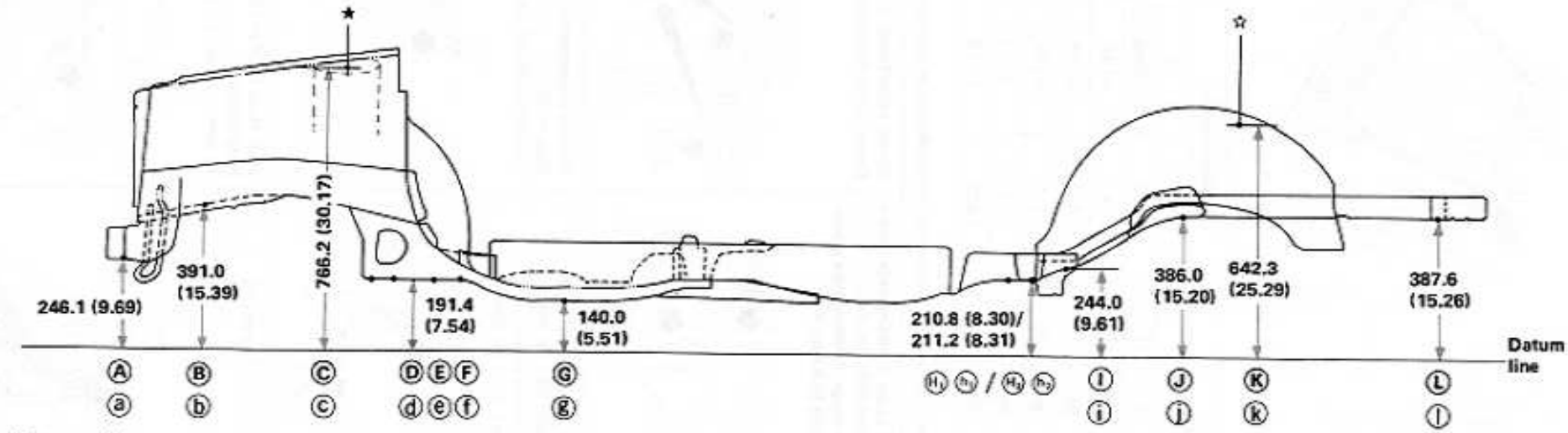
Ⓓ : Sealing rubber mounting hole (Center of dash upper panel)

Note



UNDERBODY





Unit: mm (in)

Ⓐ , ⓐ : Hole for locating at underside of member cross front [14 mm (0.55 in) dia.]

Ⓑ , ⓑ : Hole for locating at underside of member side front [16 mm (0.63 in) dia.]

Ⓒ , ⓒ : Front strut housing center

Measuring point	Measurement mm (in)
Ⓓ - Ⓔ	230.9 (9.09)
ⓓ - ⓔ	242.5 (9.55)
Ⓔ - Ⓕ	214.8 (8.46)
ⓔ - ⓕ	230.8 (9.09)
Ⓓ - Ⓕ , ⓓ - ⓕ	249.7 (9.83)
Ⓗ₁ - Ⓗ₂ , ⓗ₁ - ⓗ₂	377.1 (14.85)
Ⓗ₁ - Ⓙ , ⓗ₁ - ⓙ	494.0 (19.45)
Ⓗ₂ - Ⓙ , ⓗ₂ - ⓙ	505.9 (19.92)

Ⓓ , ⓓ : Hole for installing transverse link at underside of member front suspension mounting [16 mm (0.63 in) dia.]

Ⓔ , ⓔ : Hole for installing transverse link at underside of member cross dash lower [15 mm (0.59 in) dia.]

Ⓕ , ⓕ : Hole for installing transverse link at underside of extension front side member [14 mm (0.55 in) dia.]

Ⓖ , ⓖ : Hole for locating at underside of extension front side member [16 x 20 mm (0.63 x 0.79 in) dia.]

Ⓗ₁ , ⓗ₁ : Hole at underside of bracket rear suspension mounting outer [11 mm (0.43 in) dia.]

Ⓗ₂ , ⓗ₂ : Hole at underside of bracket rear suspension mounting inner [16 mm (0.63 in) dia.]

Ⓘ , ⓘ : Hole for locating at front end of member side rear [16 mm (0.63 in) dia.]

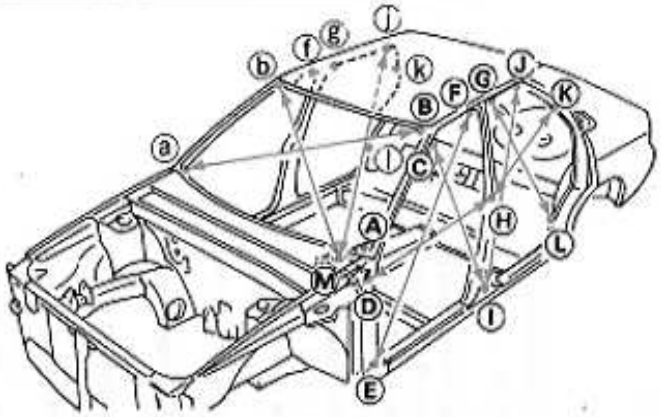
Ⓙ , ⓙ : Hole for locating at underside of member side rear [14 mm (0.55 in) dia.]

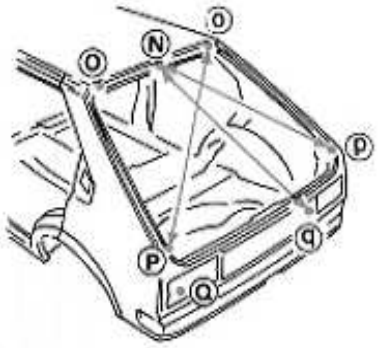
Ⓚ , ⓚ : Upperside rear shock absorber mounting center [14 mm (0.55 in) dia.]

Ⓛ , ⓛ : Hole for locating at rear end of member side rear [13 mm (0.51 in) dia.]

ROOM SPACE AND REAR BODY

5-DOOR HATCHBACK (4-DOOR SEDAN)



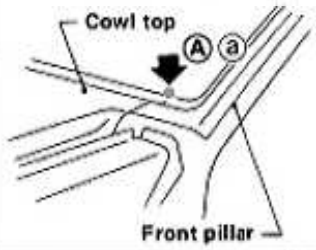


Measuring points	Measurement	
	mm	in
Ⓑ – ⓐ	1,349	53.11
Ⓒ – Ⓘ	978	38.50
Ⓓ – Ⓗ	1,021	40.20
Ⓔ – Ⓕ	1,363	53.66
Ⓖ – Ⓛ	924	36.38
Ⓗ – Ⓚ	906	35.67

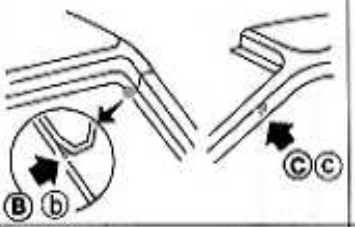
Measuring points	Measurement	
	mm	in
Ⓘ – ⓘ	1,083	42.64
Ⓜ – ⓑ	1,043	41.06
Ⓜ – ⓙ	1,467	57.76
Ⓝ – Ⓟ	1,115	43.90
Ⓝ – ⓠ	1,225	48.23
Ⓟ – ⓞ	1,408	55.43

Figures given in the measurement tables should be used as reference.

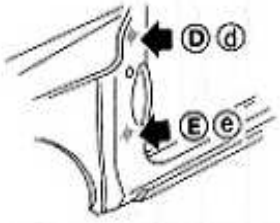
Cow top flange end



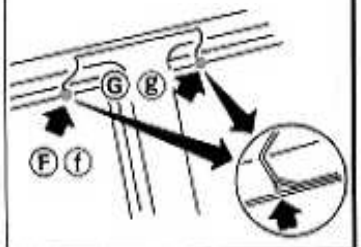
Roof flange end
Front pillar outer standard hole [6 mm (0.24 in) dia.]



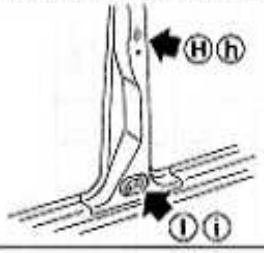
Door hinge installing hole center [14 mm (0.55 in) dia.]
Door hinge installing hole center [16 mm (0.63 in) dia.]



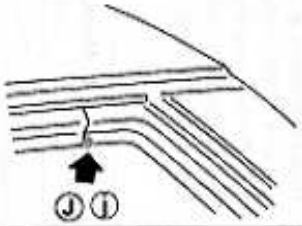
Center pillar flange end front
Center pillar flange end (rear)



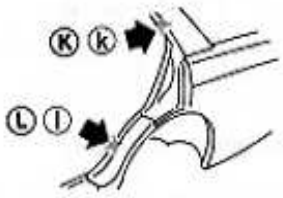
Door hinge installing hole center [16 mm (0.63 in) dia.]
Door switch installing hole center [14 mm (0.55 in) dia.]



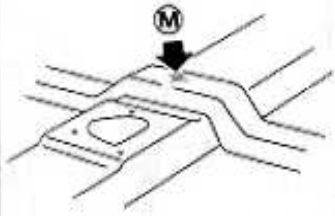
Rear fender flange end



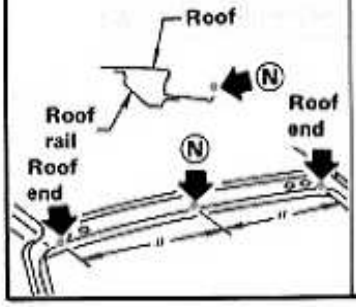
Rear pillar outer [6 mm (0.24 in) dia.]
Rear wheel outer [6 mm (0.24 in) dia.]



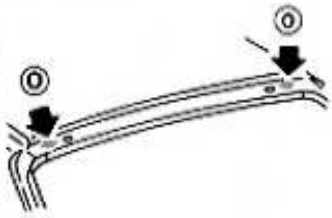
Second crossmember central hole center [10 mm (0.39 in) dia.]



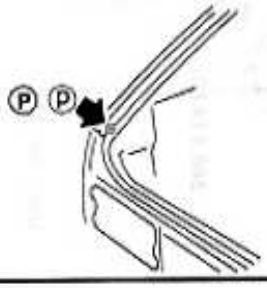
Roof center flange end



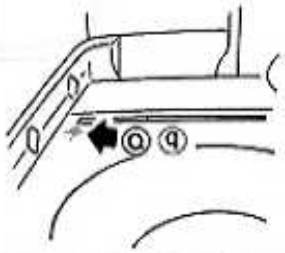
Back door installing hole center [10 mm (0.39 in) dia.]



Rear fender flange end

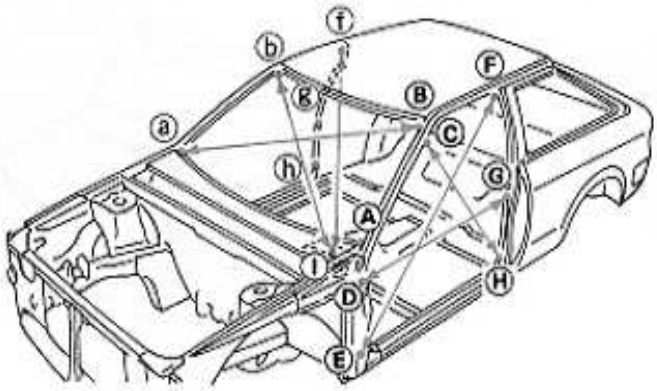


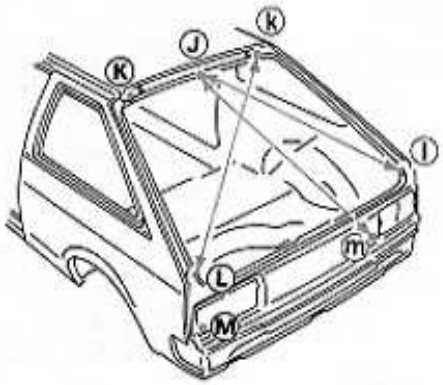
Rear floor finisher installing hole center [5 mm (0.20 in) dia.]



ROOM SPACE AND REAR BODY

3-DOOR HATCHBACK (2-DOOR SEDAN)



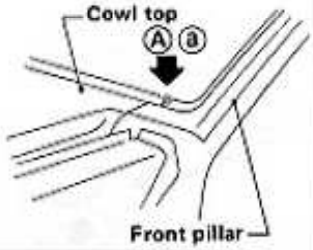


Measuring points	Measurement	
	mm	in
Ⓑ – ⓐ	1,349	53.11
Ⓒ – Ⓗ	952	37.48
Ⓓ – Ⓖ	1,179	46.42
Ⓔ – Ⓕ	1,476	58.11
Ⓘ – ⓑ	1,043	41.06

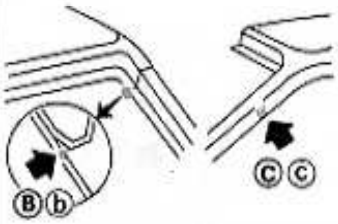
Measuring points	Measurement	
	mm	in
Ⓘ – ⓕ	1,217	47.91
Ⓙ – Ⓛ	1,095	43.11
Ⓙ – ⓜ	1,225	48.23
Ⓛ – ⓚ	1,408	55.43

Figures given in the measurement tables should be used as reference.

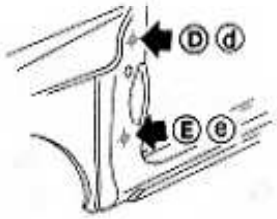
Cowl top flange end



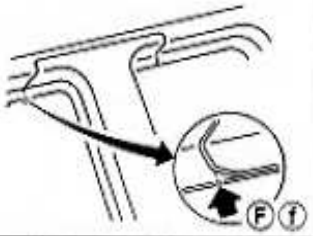
Roof flange end
Front pillar outer standard hole center [6 mm (0.24 in) dia.]



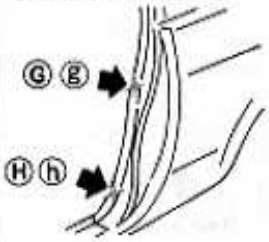
Door hinge installing hole center [14 mm (0.55 in) dia.]
Door hinge installing hole center [16 mm (0.63 in) dia.]



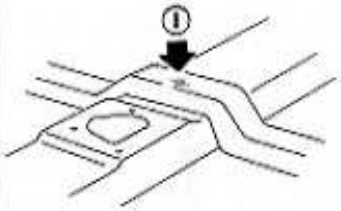
Rear pillar flange end



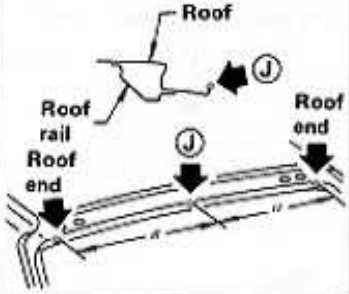
Rear fender standard hole center [6 mm (0.24 in) dia.]
Inner panel standard hole center [6 mm (0.24 in) dia.]



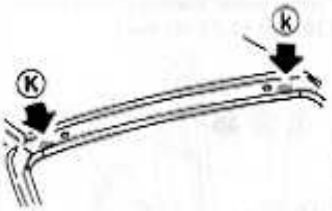
Second crossmember central hole center [10 mm (0.39 in) dia.]



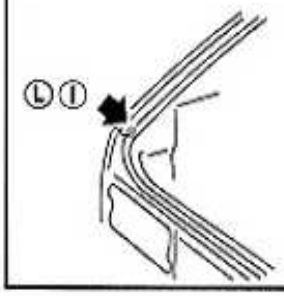
Roof center flange end



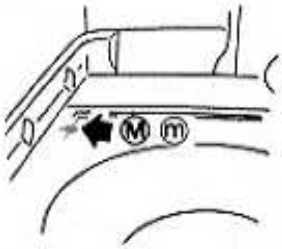
Back door installing hole center [10 mm (0.39 in) dia.]



Rear fender flange end

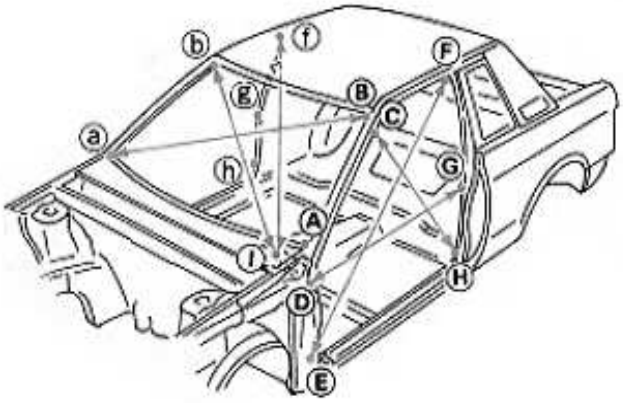


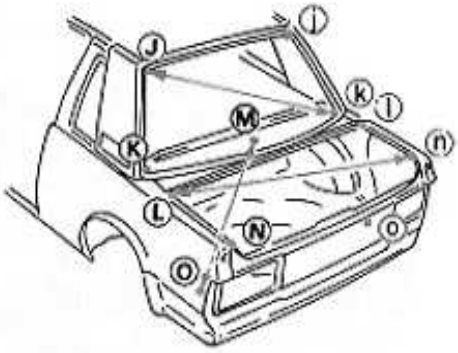
Rear floor finisher installing hole center [5 mm (0.20 in) dia.]



ROOM SPACE AND REAR BODY

COUPE



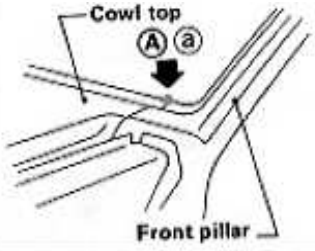


Measuring points	Measurement	
	mm	in
B – a	1,369	53.90
C – H	940	37.01
D – G	1,179	46.42
E – F	1,458	57.40
I – b	1,034	40.71
I – f	1,196	47.09

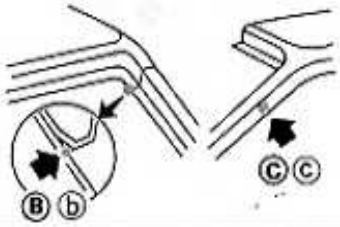
Measuring points	Measurement	
	mm	in
J – k	1,193	46.97
L – n	1,336	52.60
M – O	981	38.62

Figures given in the measurement tables should be used as reference.

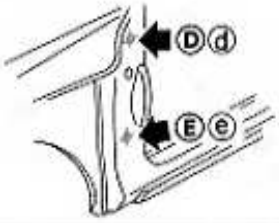
Cowl top flange end



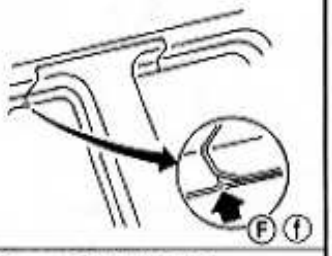
Roof flange end
Front pillar outer standard hole center [6 mm (0.24 in) dia.]



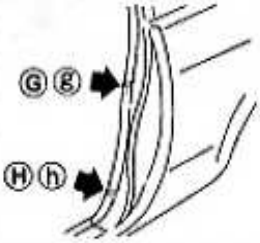
Door hinge installing hole center [14 mm (0.55 in) dia.]
Door hinge installing hole center [16 mm (0.63 in) dia.]



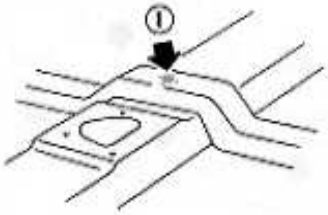
Rear pillar flange end



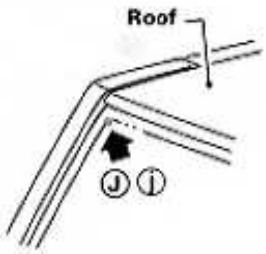
Rear fender standard hole center [6 mm (0.24 in) dia.]
Inner panel standard hole center [6 mm (0.24 in) dia.]



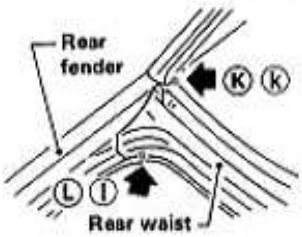
Second crossmember central hole center [10 mm (0.39 in) dia.]



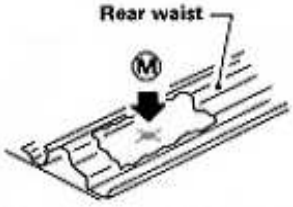
Roof rail flange end



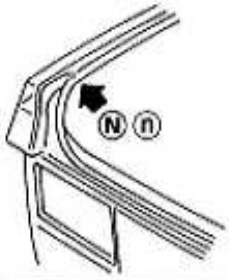
Rear waist flange end
Rear fender flange end



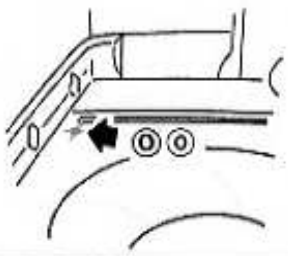
Central hole of rear waist reverse side



Rear fender flange end



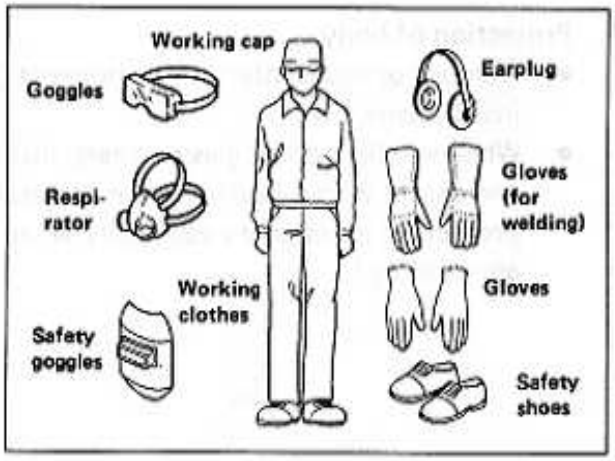
Rear floor finisher installing hole center [5 mm (0.20 in) dia.]



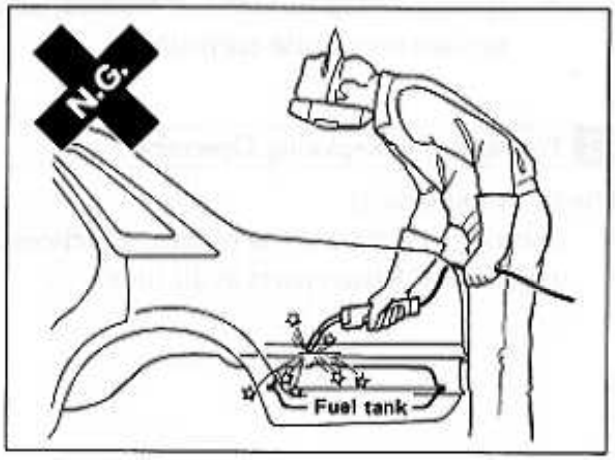
PRECAUTIONS IN OPERATION

1 Safety Precautions

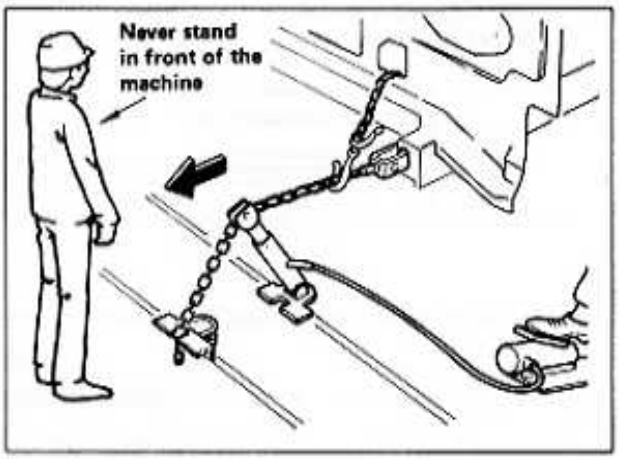
1. Wear protectors
   - Be sure to wear goggles, earplugs, respirator, gloves and so forth depending on the work to be performed. Working clothes, safety shoes, and working cap must be worn as usual.



2. Safety stand
   - After jacking up a vehicle body, be sure to support it with the safety stand. For the supporting positions, refer to "Lifting Points".
3. Inflammables
   - Before starting repair work, be sure to disconnect the negative terminal of the battery.
   - When welding parts near the fuel tank fuel filler, be sure to remove the fuel tank. Plug the filler port of the tank.
   - Plug the fuel pipe and brake pipes to avoid leakage when removing connectors from the pipes.



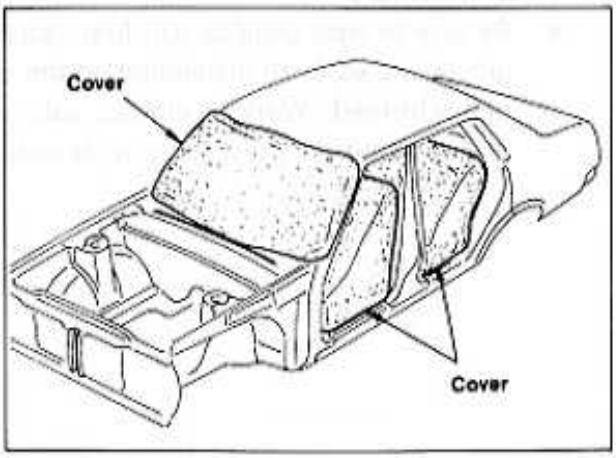
4. Working environment
   - Pay attention to the ventilation and the health of operators.
   - Paint and sealant may generate poisonous gases when heated by fire. To prevent this, do not use a gas welder for cutting off damaged portions. Use an air saw or an air chisel.
   - Use a belt sander or rotary wire brush for removing paint from the panel.
5. Vehicle body straightener
   - Be sure to use correctly according to the instruction manual prepared by the manufacturer of the straightner. When straightening a damaged portion, never stand in front of the machine in the direction that the body is to be straightened.



PRECAUTIONS IN OPERATION

2 Protection of Body and Externally Attached Parts

1. Protection of body
   - Remove or cover interior components (seats, instruments, carpet).
   - When welding, cover glasses, seats, instruments and carpet with a heat-resistant material. (This protection is necessary especially when CO_2 arc welding.)



2. Protection of exterior parts
   - When removing external parts (mouldings and finishers) attached to the body, apply cloth or protection tape to the body to prevent scratching.
   - If the painted surface is scratched, be sure to repair that portion: even a small flaw in the painted surface may cause corrosion.

3 Precautions in Replacing Operation

Use of genuine parts

- In order to maintain the original functions and high quality of the vehicle, it is recommended that you use genuine Nissan parts at all times.

PRECAUTIONS IN OPERATION

4 Welding Precautions

Spot welding

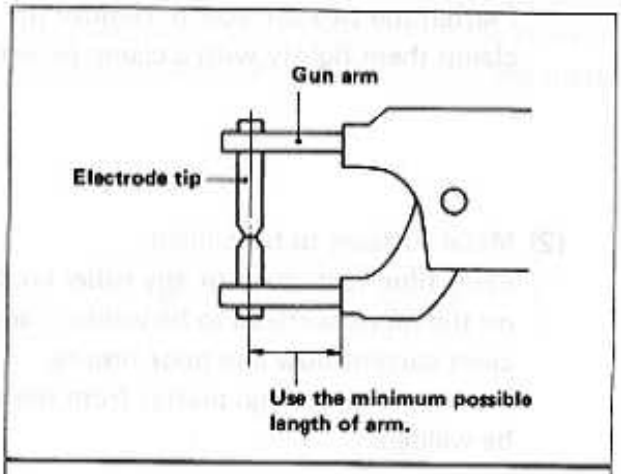
1. Spot welder

To obtain sufficient strength at the spot welded portions, perform the following checks and adjustment on the spot welding machine before starting operation.

(1) Adjustment of arm

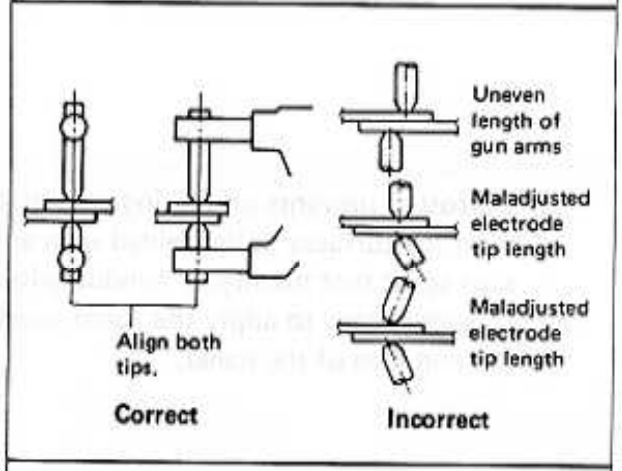
a. Keep the gun arm as short as possible to obtain the maximum pressure for welding.

b. Securely tighten the gun arm and tips so that they will not become loose during operation.



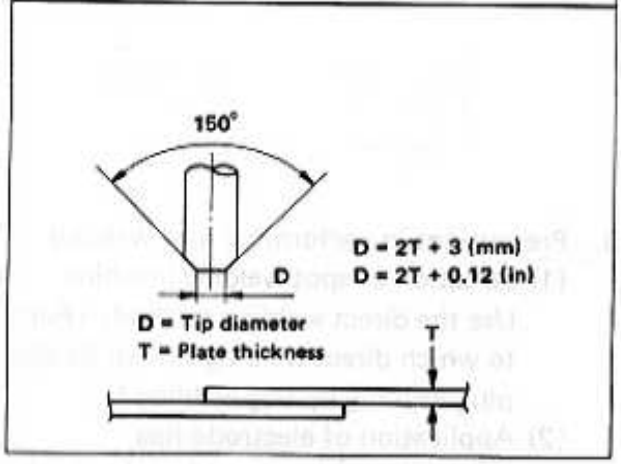
(2) Alignment of electrode tips

Align the upper and lower electrode tips on the same axis. Poor alignment of the tips causes insufficient pressurizing, and this results in insufficient current density and insufficient strength at the welded portions.



(3) Diameter of electrode tip

The tip diameter must be properly controlled to obtain the desired welding strength. Before starting operation, make sure that the tip diameter (D) is kept the proper size, and file it cleanly to remove burnt or foreign matter from the surface of the tip.



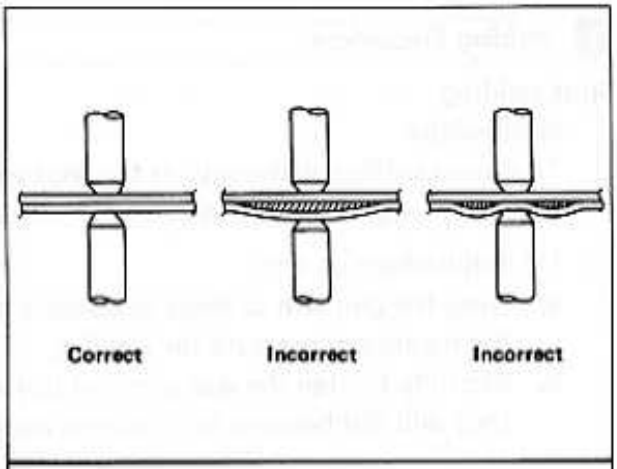
2. Condition of the panel

Presence of a gap, paint film, rust, or dust on the surface of the panel causes poor current flow and reduction is spot area and these lead to unsuccessful welding.

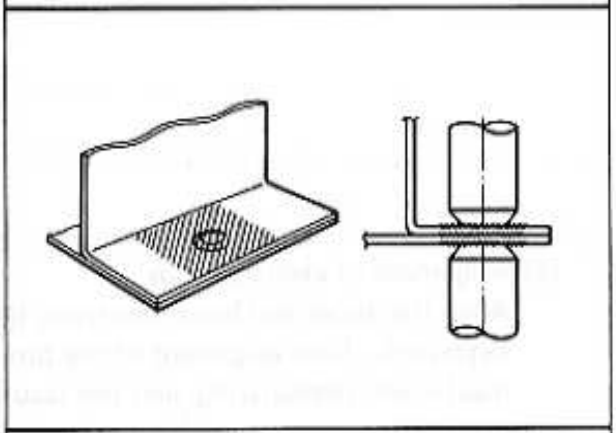
Before beginning, it is necessary to thoroughly check the condition of the panel, and make any necessary corrections.

PRECAUTIONS IN OPERATION

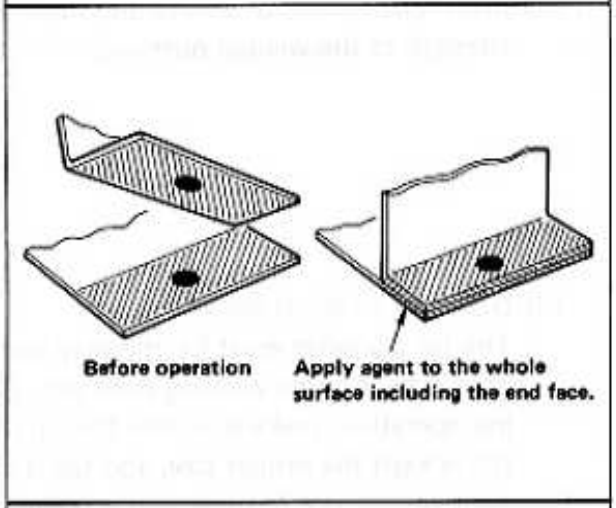
(1) Clearance between welding surfaces
Any clearance between the surfaces to be welded causes poor current flow. Even if welding can be made without removing such gap, the welded area would become smaller, resulting in insufficient strength.
Flatten the two surfaces to remove the gaps, and clamp them tightly with a clamp before welding.



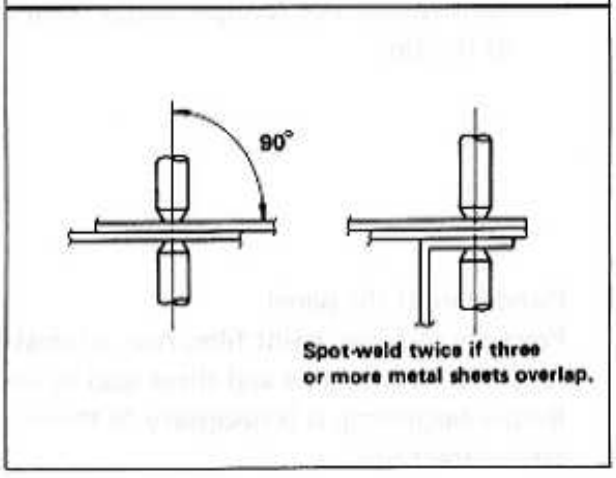
(2) Metal surfaces to be welded
Paint film, rust, dust, or any other contamination on the metal surfaces to be welded cause insufficient current flow and poor results.
Remove such foreign matter from the surfaces to be welded.



(3) Corrosion prevents processing on metal surface
Coat the surfaces to be welded witn an anti-corrosion agent that has higher conductivity.
It is important to apply the agent evenly even to the end face of the panel.



3. Precautions in performing spot welding
(1) Selection of spot welding machine
Use the direct welding method. (For the portions to which direct welding cannot be applied, use plug welding by mig welding.)
(2) Application of electrode tips
Apply electrodes at right angle to the panel. If the electrodes are not applied at right angle, the current density will be low resulting in insufficient welding strength.
(3) Lap welding of more than three metal sheets
For the portion where three or more metal sheets are overlapping, spot welding should be done twice.



PRECAUTIONS IN OPERATION

(4) No. of points of spot-welding

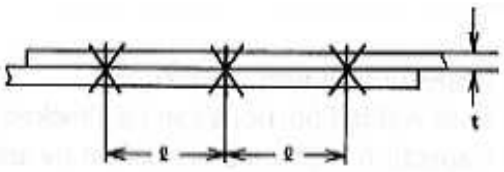
Generally, the capacity of spot welding machines available in a repair shop is smaller than that of welding machines at the factory. Accordingly, the number of points of spot-welding should be increased by 20 to 30% in a service shop compared to spot-welding in the factory.

(5) Minimum welding pitch

The minimum welding pitch varies with the thickness of plates to be welded. In general, the values given in the following table must be observed. Note that excessively small pitch allows the current to flow through surrounding portions, and this results in insufficient welding strength of the metal.

Unit: mm (in)

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

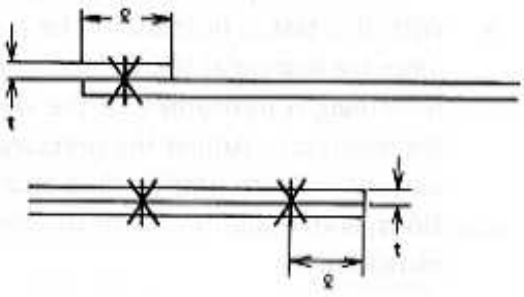


(6) Position of welding spot from the end of panel

When welding near the end of panel, observe the following values for the distance from the end of panel. If the distance is too small, it results in insufficient strength and also in a strained panel.

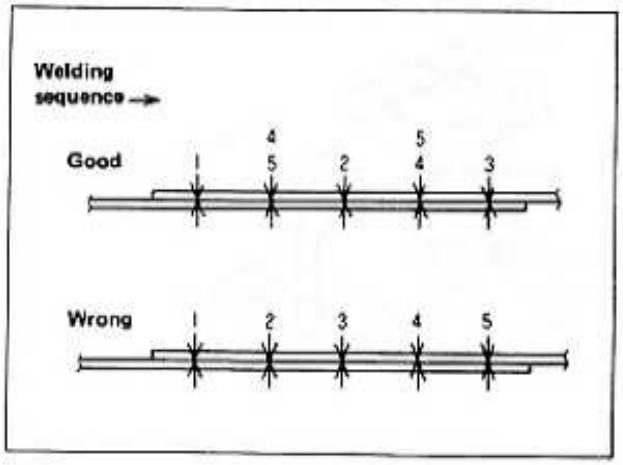
Unit: mm (in)

Thickness (t)	Minimum pitch (ℓ)
0.6 (0.024)	11 (0.43) or over
0.8 (0.031)	11 (0.43) or over
1.0 (0.039)	12 (0.47) or over
1.2 (0.047)	14 (0.55) or over
1.6 (0.063)	16 (0.63) or over
1.8 (0.071)	17 (0.67) or over



(7) Spotting sequence

Do not spot continuously in one direction only. This method provides weak welding due to the shunt effect of the current. If the welding tips become hot and change their color, stop welding and allow the tips to cool.



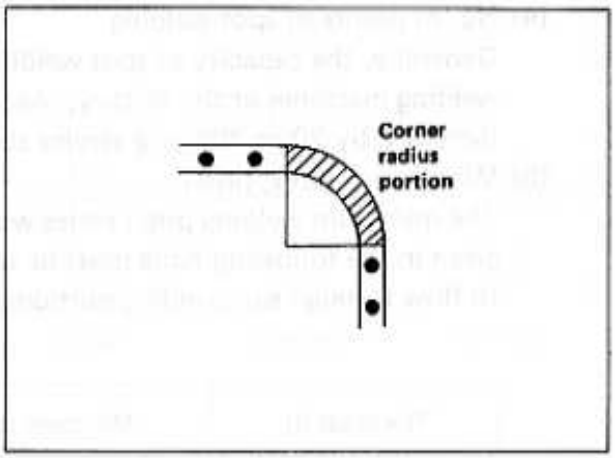
PRECAUTIONS IN OPERATION

(8) Welding corners

Do not weld the corner radius portion. Welding this portion results in stress concentration of stress which leads to cracks.

Examples

- Upper corner of front and center pillars
- Front upper portion of rear fender
- Corner portion of front and rear windows



4. Inspection of welded portion

Spot-welded portions can be checked by visual inspection and destructive inspection. The destructive inspection explained below can be adopted easily at the time of welding. Before and after welding, be sure to perform this destructive inspection to check the strength of the welded portions.

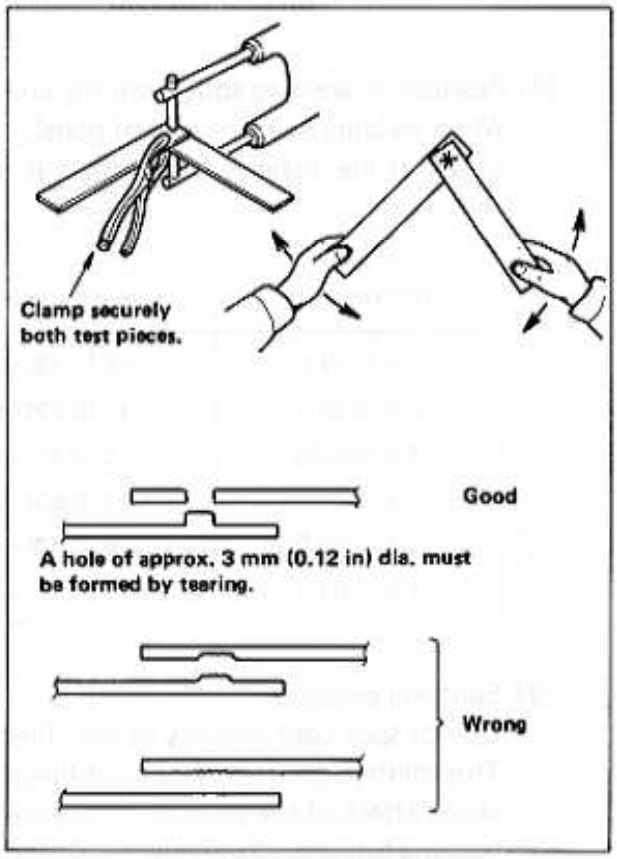
The welding spots should be spaced equally and arranged at the center of the flange to be welded.

(1) Check by using test piece (Confirmation before operation)

- Prepare test pieces having the same thickness as the panel to be welded and weld them together. Break the welded portion by twisting and examine the condition of the ruptured portion.

Note: Clamp both test pieces together so that they will not slip or move during welding.

- With this test, a hole should be made on one test piece by tearing at the welded portion. If no hole is formed, it indicates that the welding conditions are incorrect. Adjust the pressure, welding current, current passing time and other conditions, and repeat test until the best result is obtained.



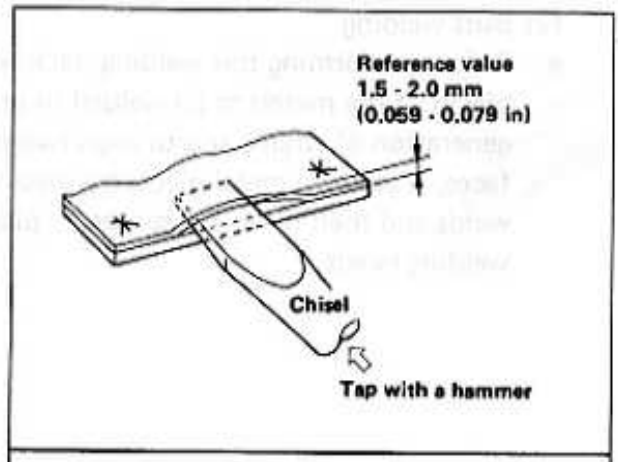
PRECAUTIONS IN OPERATION

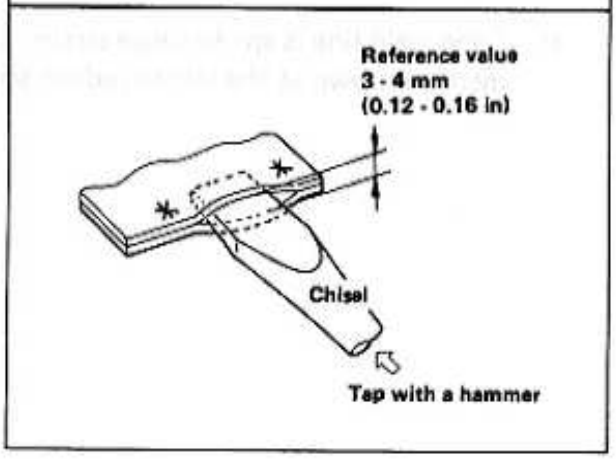
(2) Check by using chisel and hammer (Confirmation after welding)

- Insert the tip of a chisel between the welded plates, and tap the end of the chisel until the clearance of 3 to 4 mm (0.12 to 0.16 in) [when the plate thickness is 0.8 to 1.0 mm (0.031 to 0.039 in)] is formed between the plates. If the welded portions remain normal, it indicates that the welding has been done properly.

Note: This clearance varies with the location of the welded spots, length of the flange, plate thickness, welding pitch, and other factors. Note that the value shown above is only a reference value.

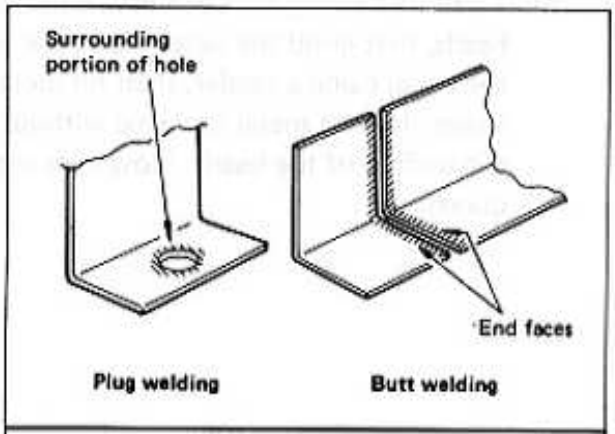
- If the thickness of the plates is not equal, the clearance between the plates must be limited to 1.5 to 2.0 mm (0.059 to 0.079 in). Note that further opening of the plates can become a destructive test.
- Be sure to repair the deformed portion of the panel after inspection.



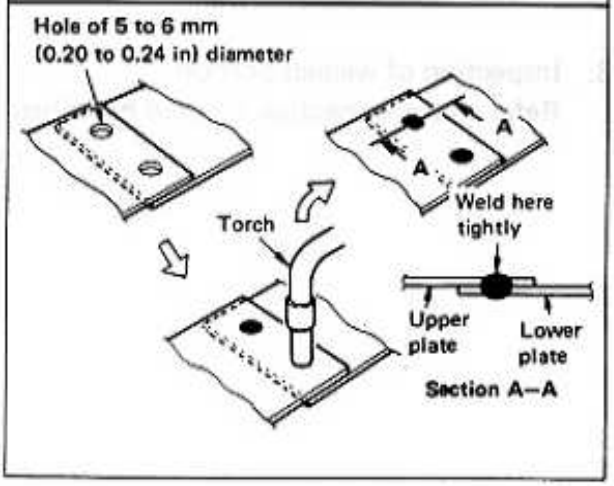


Mig Welding

1. Condition of panel to be welded
   Paint film, rust, or oils attached to the surface of the panel reduces the welding conditions, causing blowholes and spatter. Thoroughly remove any foreign matter from the surface to be welded by using a belt sander or wire brush.



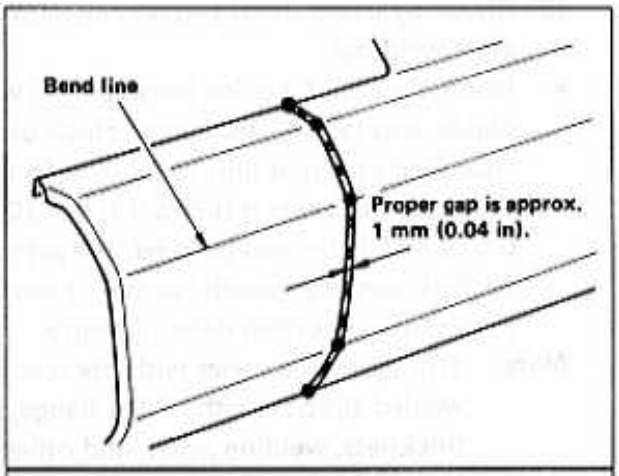
2. Precautions in welding
   (1) Plug welding
   a. Open a hole of 5 to 6 mm (0.20 to 0.24 in) diameter on one of the two metal plates to be welded and keep the upper plate and lower plate in tight contact.
   b. Apply the torch at right angle to the plate and fill metal into the hole at a stretch. Note that intermittent welding leads to the generation of oxide film on the surface and this causes blowholes. If this occurs remove the oxide film with a wire brush.
   c. Make sure that the upper and lower plates are welded together tightly.



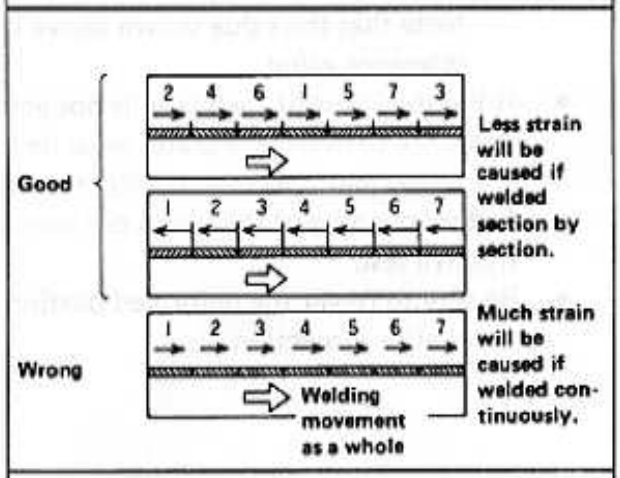
PRECAUTIONS IN OPERATION

(2) Butt welding

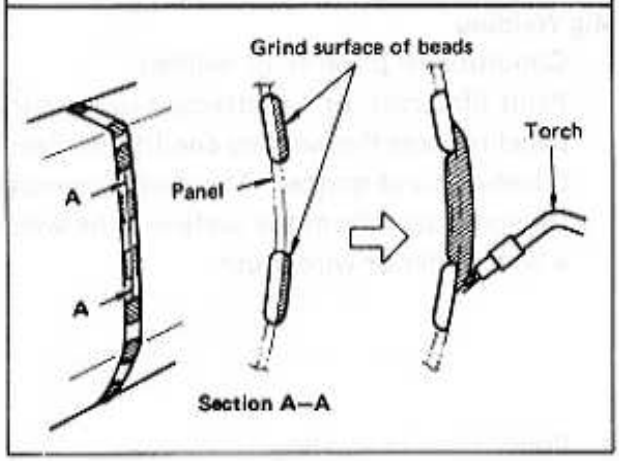
a. Before performing this welding, tack-weld two pieces of the metals to be welded to prevent generation of strains and to align two metal surfaces. Tack two metal pieces by placing point welds and then fill in the spaces by placing short welding beads.



b. Long weld line is apt to cause strain. Use the method shown at the left to reduce strain.



c. To fill the spaces between intermittently placed beads, first grind the beads along the surface of the panel using a sander, then fill metal into the space. If weld metal is placed without grinding the surface of the beads, blowholes may be produced.

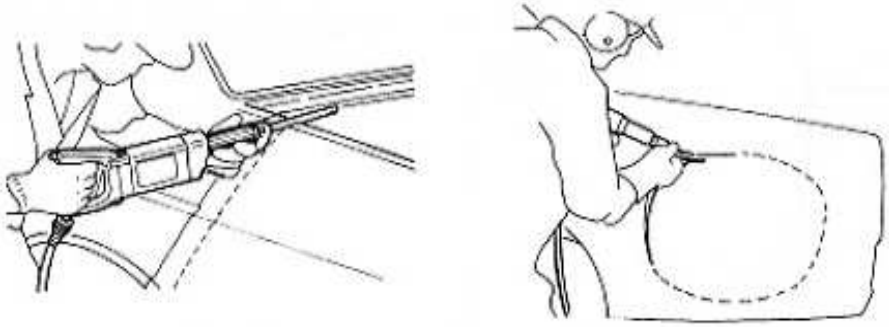
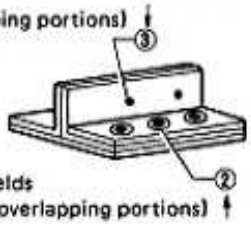
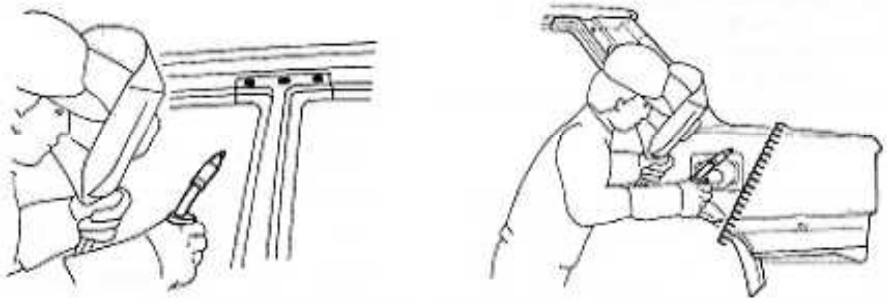
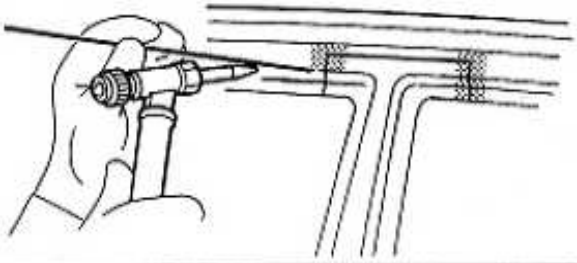
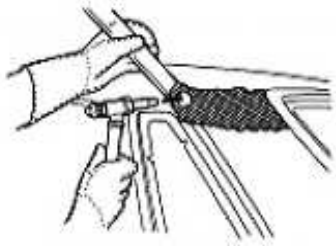
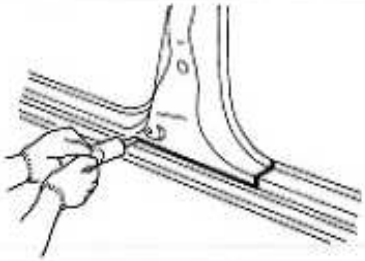


3. Inspection of welded portion
Refer to the inspection method described for spot welding.

Note

DESCRIPTION SYMBOLS FOR CUTTING AND WELDING/BRAZING OPERATIONS

The identification of the cutting and the welding/brazing symbols used throughout this guide is given in the following pages.

Saw cut or air chisel cut		
Spot weld	2-spot welds	2-spot welds (2-panel overlapping portions)  3-spot welds (3-panel overlapping portions)  **Note: The value in parentheses ( ) indicates the number of spot welds.**
	3-spot welds	
Mig plug weld		
Mig seam weld/ Point weld		
Brazing		
Soldering		
Sealing		

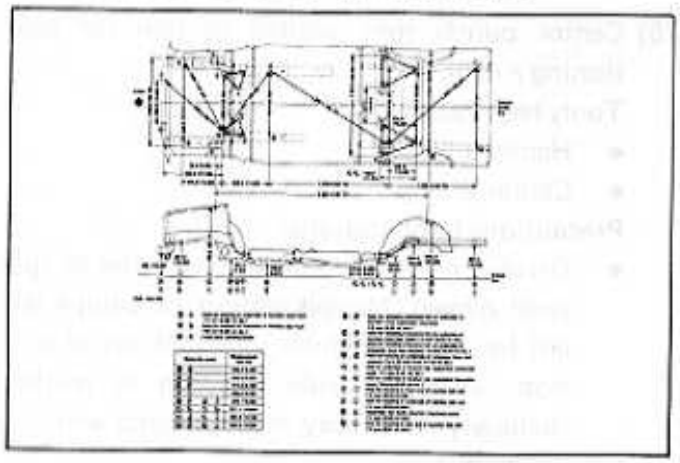
PROCEDURES FOR REMOVAL AND INSTALLATION

REMOVAL

(1) Carefully check to see if any other part has been damaged by measuring major dimensions of relative part locations. Refer to "Body Alignment" drawing.

Tools required:

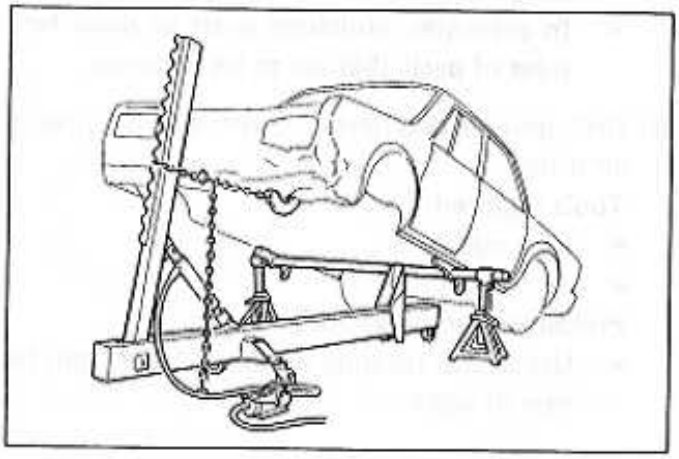
- Centering gauge
- Tracking gauge
- Convex rule
- Jack, rigid rack or car lift



(2) Conduct drawing operation with a body-frame repair system, depending on condition of deformation. Correct parts that are to be reused according to "Body Alignment" drawing.

Precaution in operation:

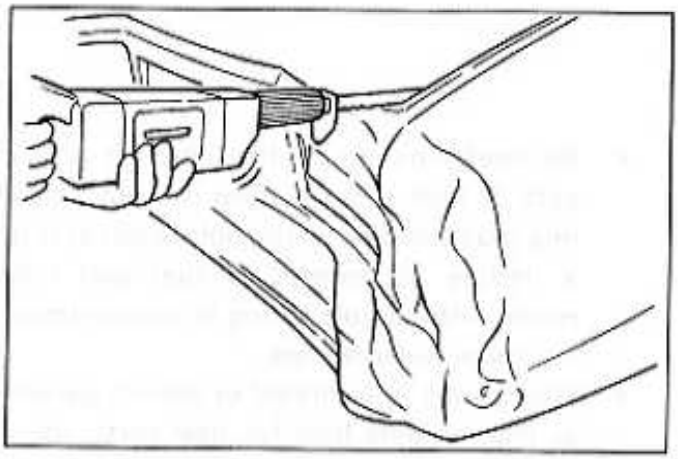
- **Drawing chains must be positively attached to body and other locations so that they will not come off during operation.**



(3) Cut off damaged portions to improve job efficiency.

Tools required:

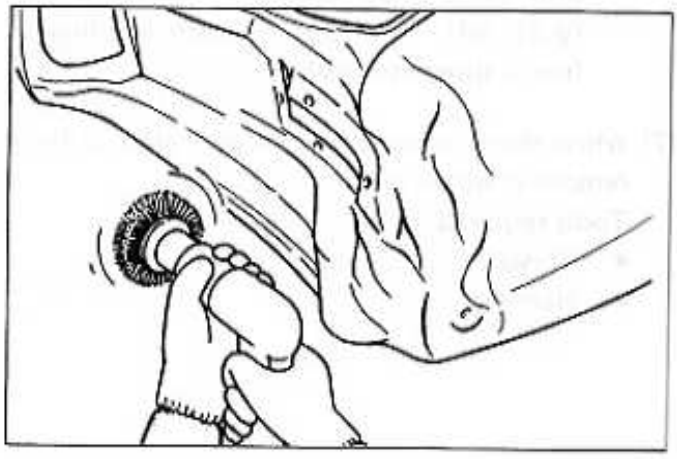
- Air saw
- Air chisel



(4) When spot welded portions are not apparent, remove paint with a rotary wire brush.

Tools required:

- Rotary wire brush



PROCEDURES FOR REMOVAL AND INSTALLATION

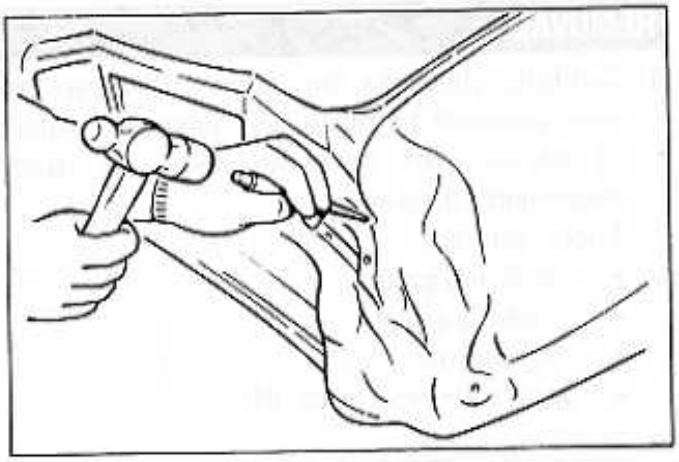
(5) Center punch spot welded portion for positioning a drill.

Tools required:

- Hammer
- Center punch

Precautions in operations:

- Drive center punch deeply in center of spot weld nugget. Nugget cannot be completely cut by a drill if center punched out of position. Also, if hole location is marked shallowly, drill may move around which is dangerous.
- In principle, punching must be done from sides of parts that are to be removed.



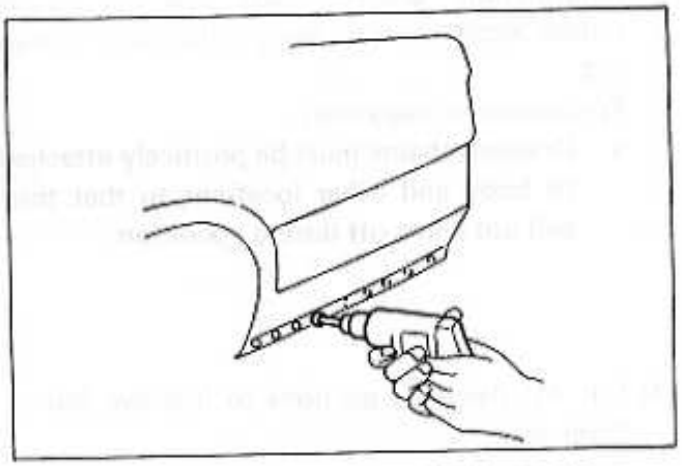
(6) Drill spot welded portions with a spot cutter or air drill.

Tools required:

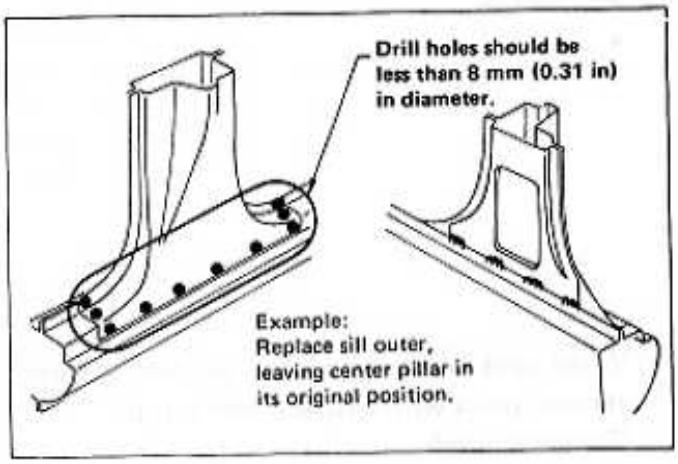
- Spot cutter
- Air drill

Precautions in operations:

- Use a drill running at about 1,000 rpm for ease of work.



- Be careful not to cut hole through mating part. If hole is made, stop it up by gas or mig plug welding. If the hole is left as it is, a decline in strength of that part may result. Also, a hole facing to compartment can cause water leakage.
- When using hole drilled in welded portion as plug welding hole for new parts, use a drill of a small diameter [below 8 mm (0.31 in)], and try to finish welding as few at times as possible.



(7) When there remains welded part after drilling, remove it with a chisel.

Tools required:

- Chisel
- Hammer

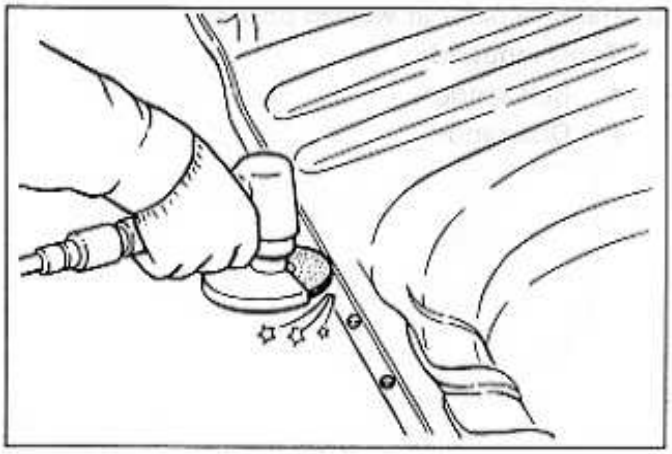
PROCEDURES FOR REMOVAL AND INSTALLATION

PREPARATION FOR INSTALLING MATING PARTS

(1) Dress weld nuggets on base metal with a sander.

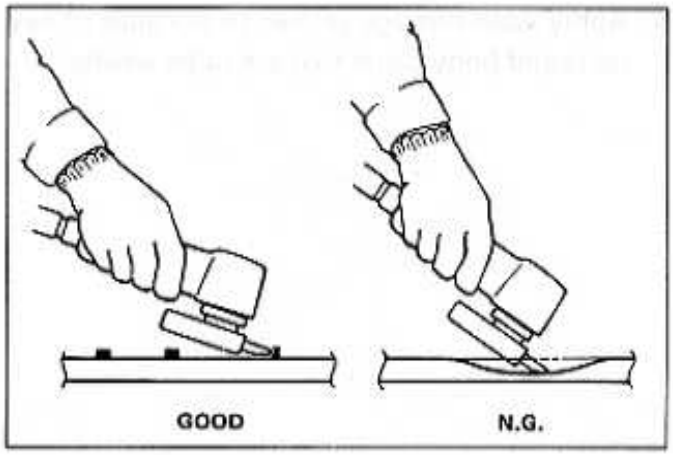
Tools required:

- Air sander
- Disc sander

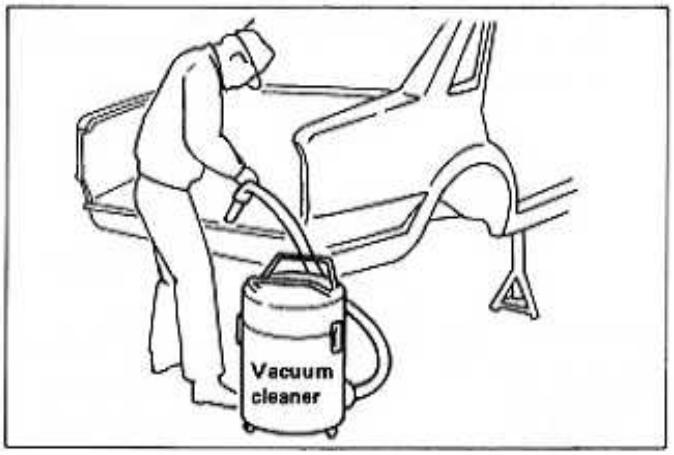


Precautions in operations:

- **Be careful not to cut base metal too much. This will result in a decrease in plate thickness and therefore in strength.**



- **Clean dressed surface and its vicinity to remove iron powder. Iron powder, if left, can corrode, penetrating into base metal.**



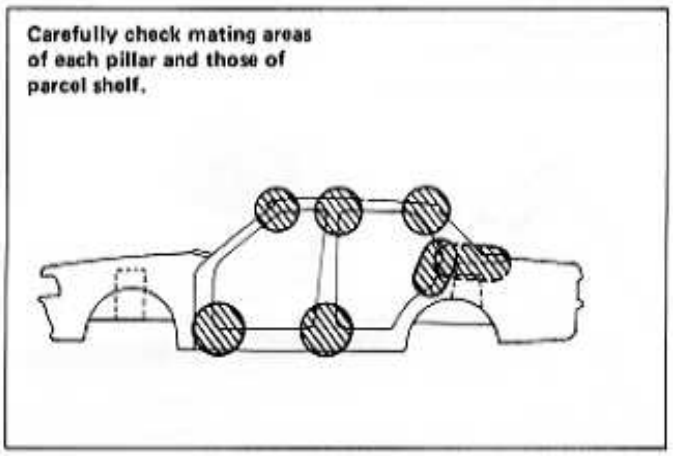
(2) Correct deformed area with a hammer and dolly.

Tools required:

- Hammer
- Dolly

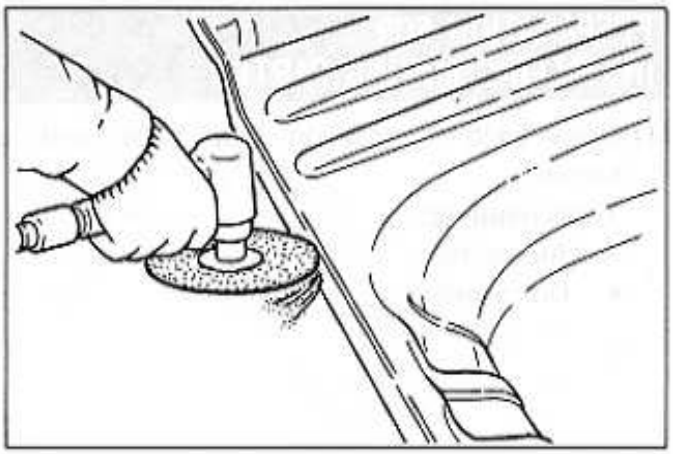
Precaution in operation:

- **Carefully check for damage of inner panels that are hard to find, and be sure to repair the smallest deformity. A deformed part, if left, will cause a decrease in strength due to stress concentration there.**

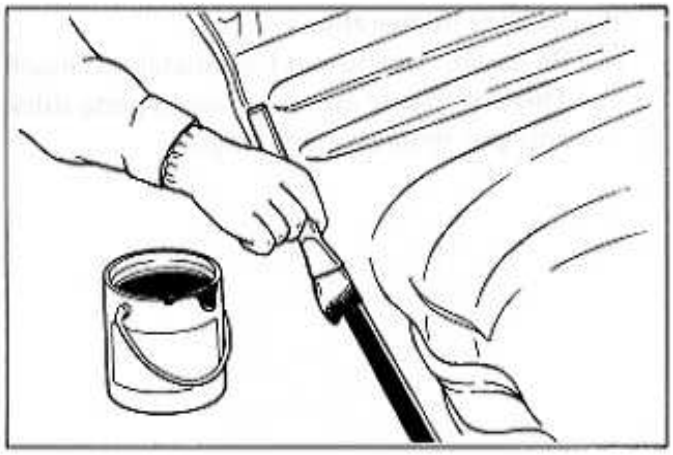


PROCEDURES FOR REMOVAL AND INSTALLATION

(3) Remove paint at welded portions.
Tools required:
- Belt sander
- Disc sander



(4) Apply weld-through primer to portions of new parts and body panel that are to be welded.



PROCEDURES FOR REMOVAL AND INSTALLATION

PREPARATION FOR INSTALLING NEW PARTS

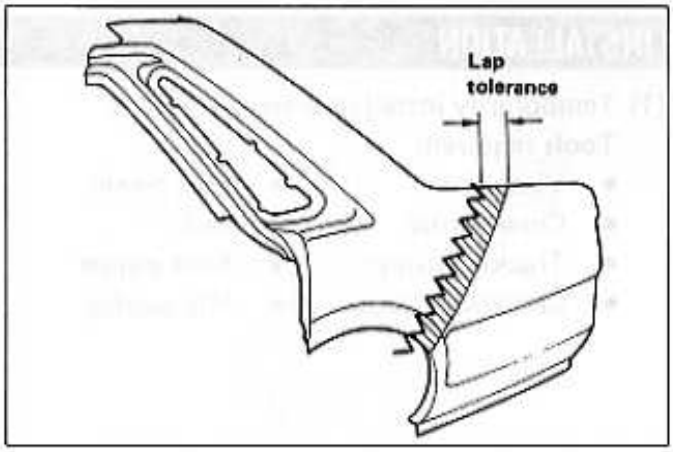
(1) When partial replacement by grafting is intended, cut off service parts with allowance [Approx. 50 mm (1.97 in)] for lapping mating part.

Tools required:

- Air saw
- Scriber
- Hacksaw
- Convex rule (or equivalent)

Note:

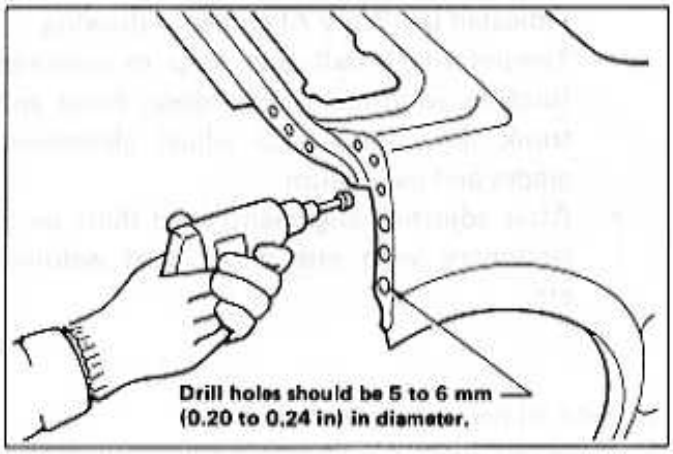
In order to maintain the original functions and high quality of the vehicle, it is recommended that you use genuine Nissan parts at all times.



(2) Mig plug weld portions beyond reach of a spot welder. To do this, drill 5 or 6 mm (0.20 or 0.24 in) mig plug weld holes.

Tools required:

- Puncher
- Air drill



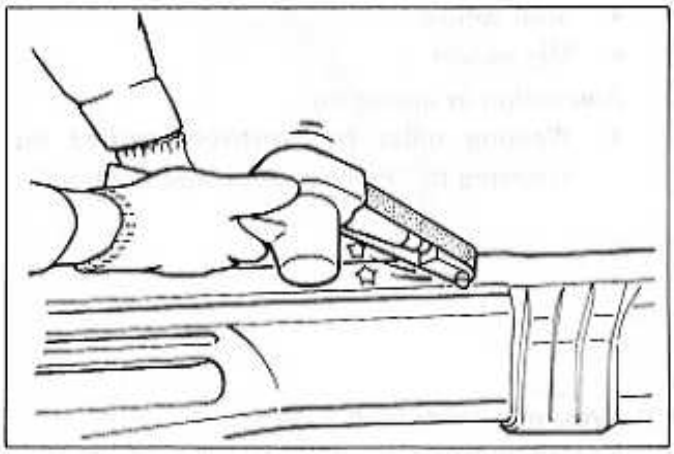
(3) Remove paint from portions to be welded.

Tools required:

- Belt sander
- Disc sander

Precaution in operation:

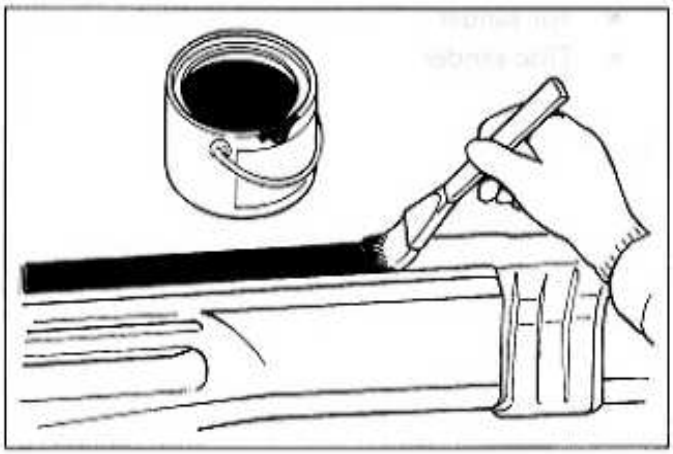
- **Remove paint from both sides of all portions that are to be welded, such as surfaces to be spot welded, peripheries of mig plug weld holes, and end faces to be butt welded. Remaining paint will result in reduced strength of spot welds due to insufficient electrification and produce blow holes in mig plug welding.**



(4) Remove paint from and apply weld-through primer to portions of service parts and body panel that are spot welded.

Tools required:

- Brush



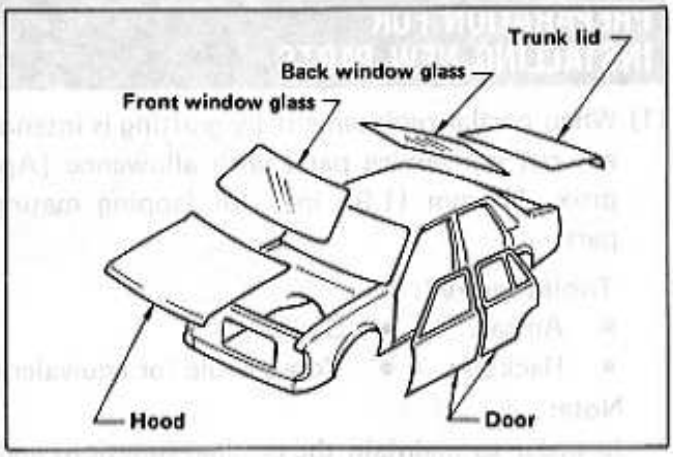
PROCEDURES FOR REMOVAL AND INSTALLATION

INSTALLATION

(1) Temporarily install new service parts.

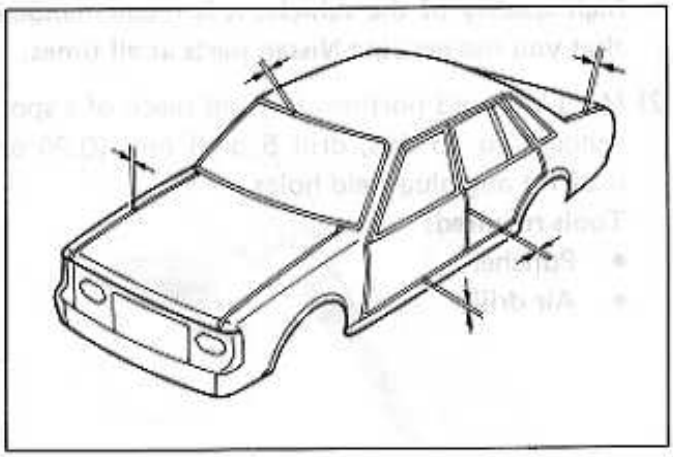
Tools required:

- Vise pliers
- Convex rule
- Tracking gauge
- Centering gauge
- Port power
- Jack
- Spot welder
- Mig welder



Precautions in operations:

- **Service parts must be located in place as indicated in "Body Alignment" drawing.**
- **Temporarily install new parts to openings (such as windshield glass, door, hood and trunk lid). Check and adjust clearances, grades and parallelism.**
- **After adjusting alignment, hold these parts stationary with vise pliers, spot welding, etc.**



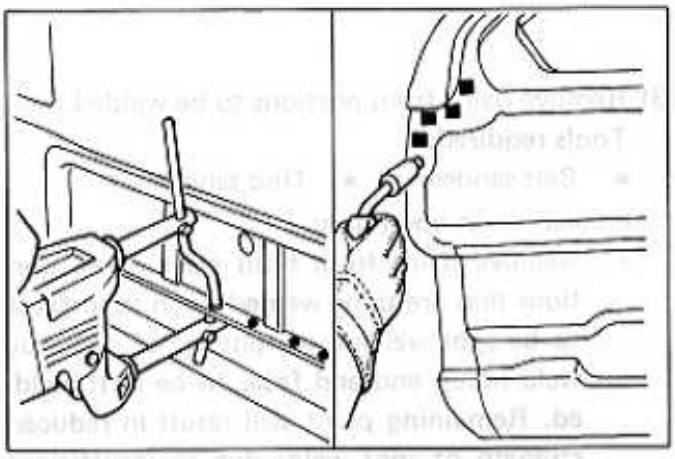
(2) Weld all necessary portions.

Tools required:

- Spot welder
- Mig welder

Precaution in operation:

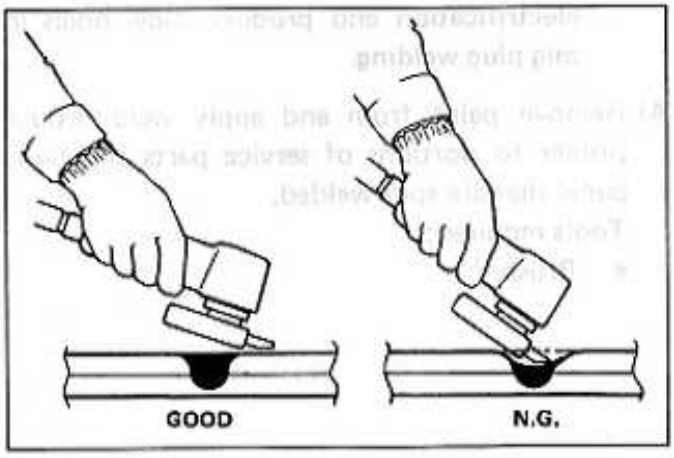
- **Welding must be positively carried out, referring to "Precautions when welding".**



(3) Dress mig welds with a sander.

Tools required:

- Air sander
- Disc sander

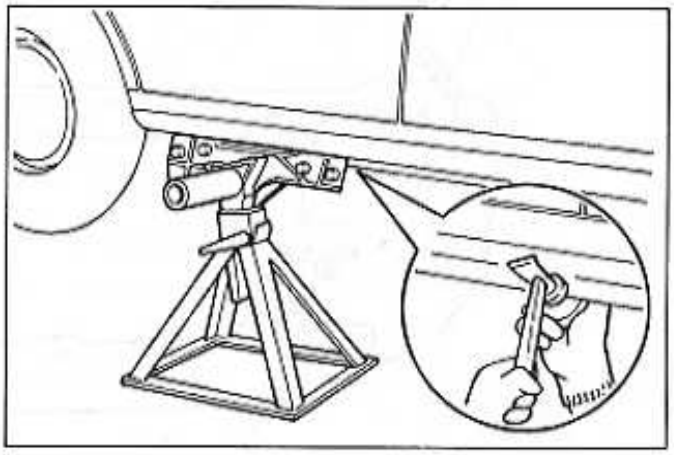


PROCEDURES FOR REMOVAL AND INSTALLATION

Precautions in operations:

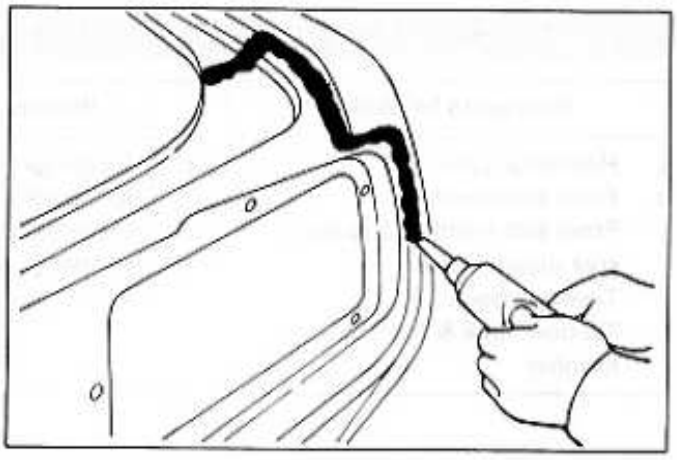
- **Be careful not to cut welded portions too much. Otherwise, thickness of panel will decrease and therefore strength decline.**
- **Remove iron powder from dressed surfaces and their vicinity. Iron powder will corrode, penetrating into base metal.**

(4) If a body-frame repair system is used, be sure to repair portions of body panel that have been clamped.

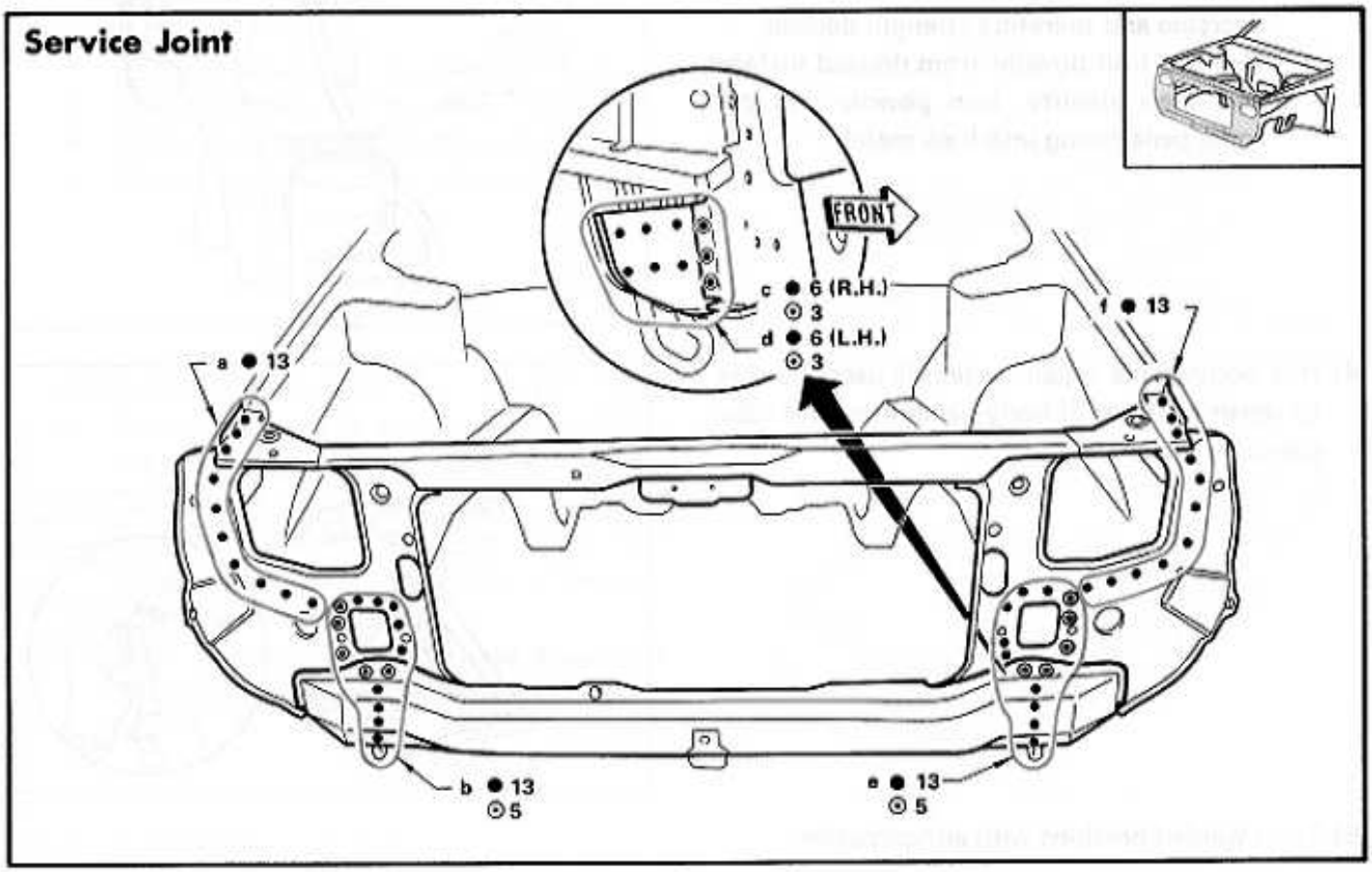


(5) Treat welded portions with anticorrosive.

(6) Apply sealer to joints of service parts. Refer to "Body Sealing" drawings.



RADIATOR CORE SUPPORT

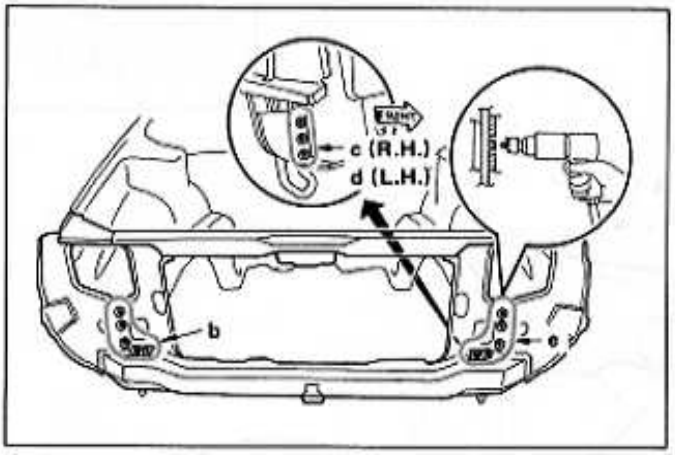


Portions to be welded	Portions to be welded	Portions to be welded
a. Hoodledge panel b. Front side member Front side member & radiator core support lower Tie-down hook Tie-dow hook & front side member	c. Hoodledge panel Hoodledge panel & tie-down hook d. Hoodledge panel Hoodledge panel & tie-down hook	e. Front side member Front side member & radiator core support lower Tie-down hook Tie-down hook & front side member f. Hoodledge panel

RADIATOR CORE SUPPORT

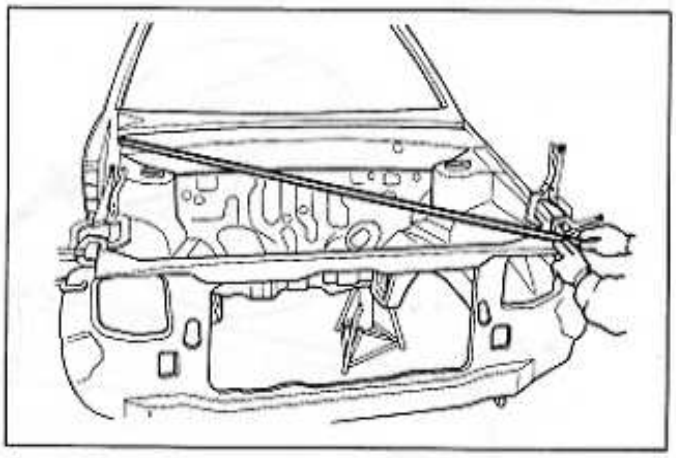
REMINDER WHEN REMOVING

- Spot cut only top panel at 3-layered portions (b), (c), (d) and (e).

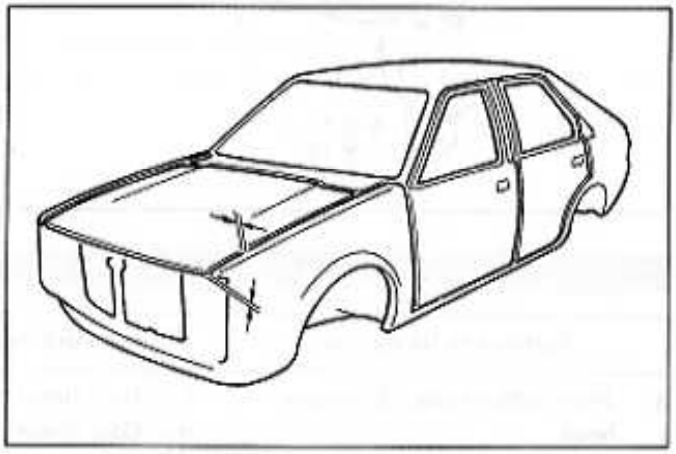


REMINDERS WHEN INSTALLING

- Measure dimensions of engine compartment. For details, refer to page 22.



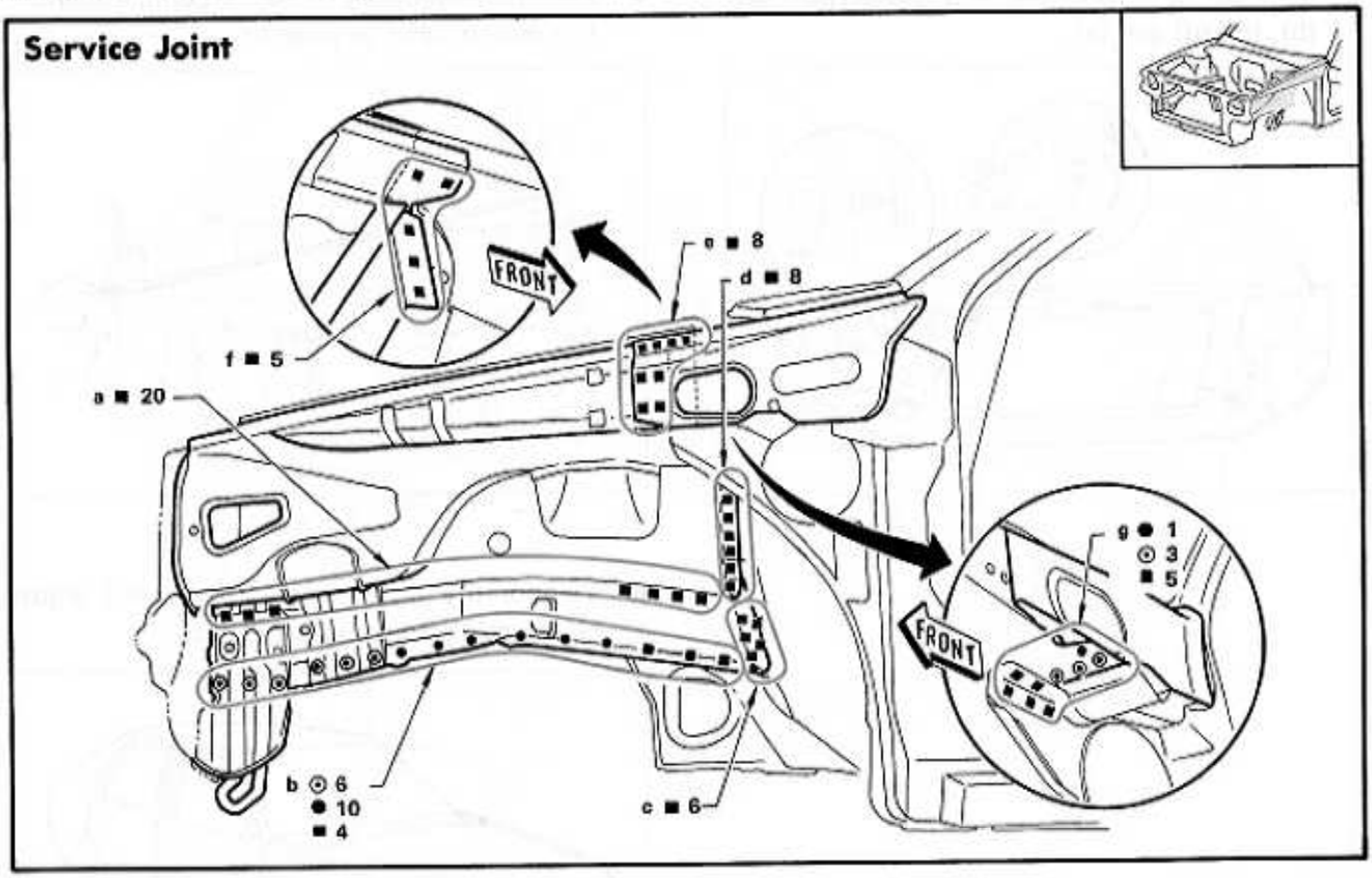
- Temporarily install parts. Check and adjust clearances, grades and parallelism.



HOODLEDGE PANEL (One Side)

(Work after radiator core support has been removed.)

Service Joint

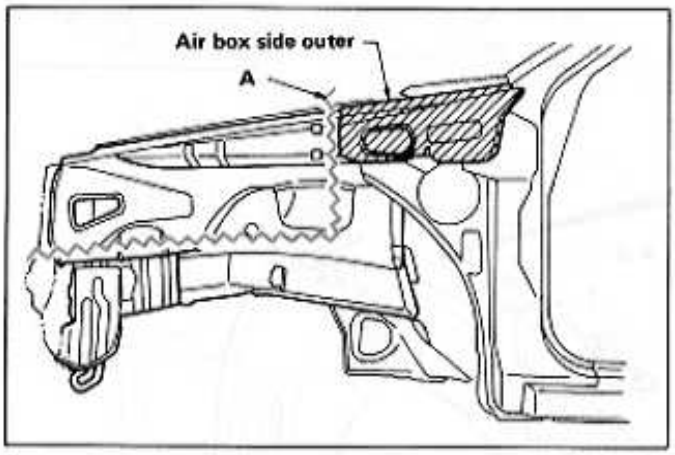


Portions to be welded	Portions to be welded	Portions to be welded
a. Front side member & tie-down hook Front side member & battery bracket Front side member & closing panel	c. Dash lower panel	g. Air box side outer panel Air box side outer panel & dash upper panel Dash lower panel & dash side panel Dash side panel
b. Front side member & tie-down hook Front side member & battery bracket Front side member Front side member & front suspension mounting member	d. Dash lower panel Dash lower panel & front side member	
	e. Air box side outer panel Air box side outer panel & cowl panel	
	f. Dash upper panel & cowl panel Cowl panel	

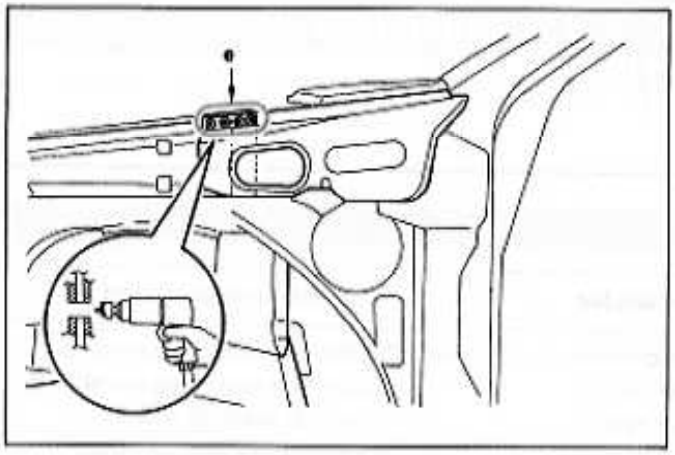
HOODLEDGE PANEL (One Side)

REMINDERS WHEN REMOVING

- Cut off portion (A).
- Remove only the hoodledge panel without removing air box side outer.

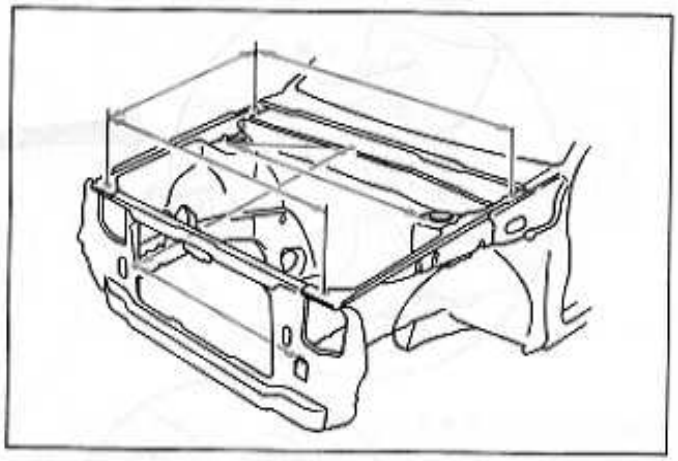


- When removing spot weld at 3-layered portion (e), drill completely through panels.

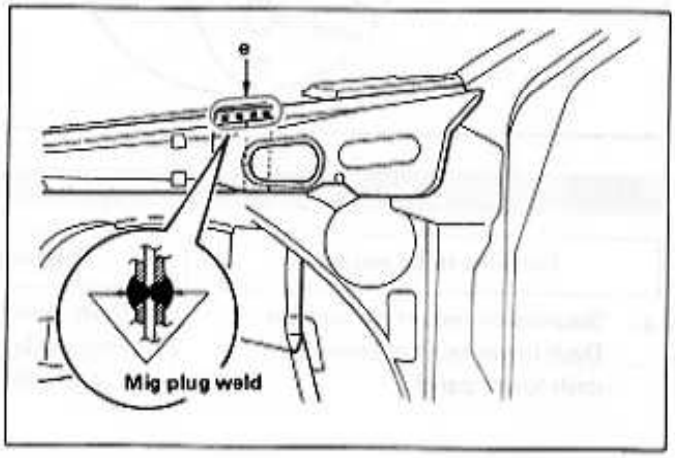


REMINDERS WHEN INSTALLING

- Install radiator core support and hoodledge together. Measure various dimensions of part locations. Refer to "Body Alignment" drawing.

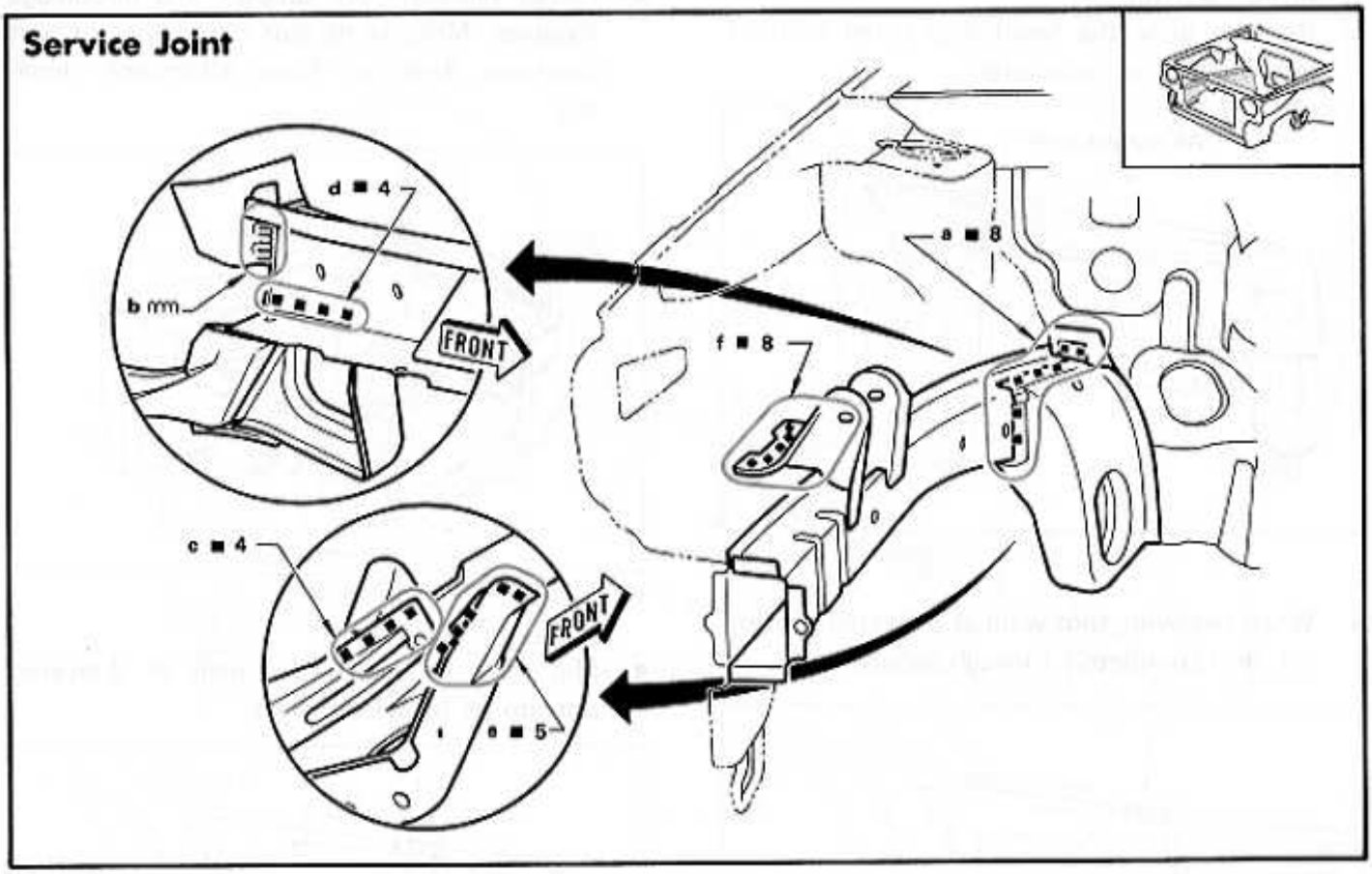


- Mig plug weld drilled panels at 3-layered portion (e) from both sides.



FRONT SIDE MEMBER (One Side)

(Work after radiator core support and hoodledge panel have been removed.)

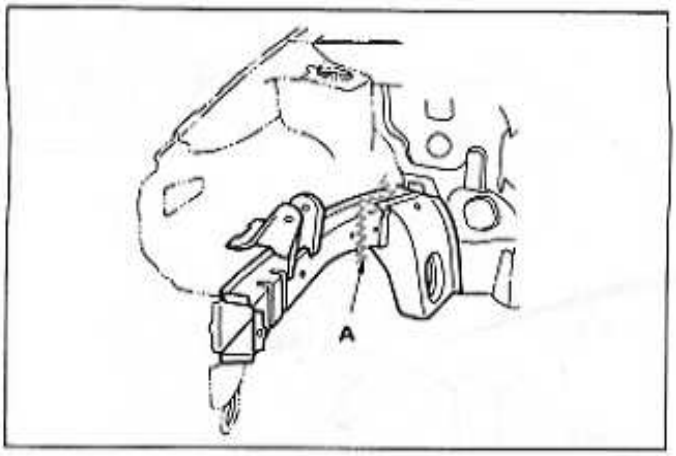


Portions to be welded	Portions to be welded	Portions to be welded
a. Suspension mounting member Dash lower reinforcement & dash lower panel	b. Dash lower reinforcement c. Front side member rear d. Front side member rear	e. Suspension mounting member Suspension mounting member & front side member rear f. Hoodledge panel (right side)

FRONT SIDE MEMBER (One Side)

REMINDERS WHEN REMOVING

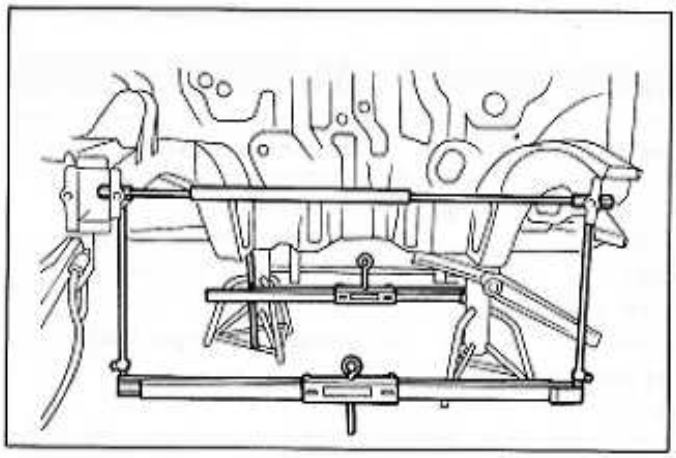
- Cut off portion (A).



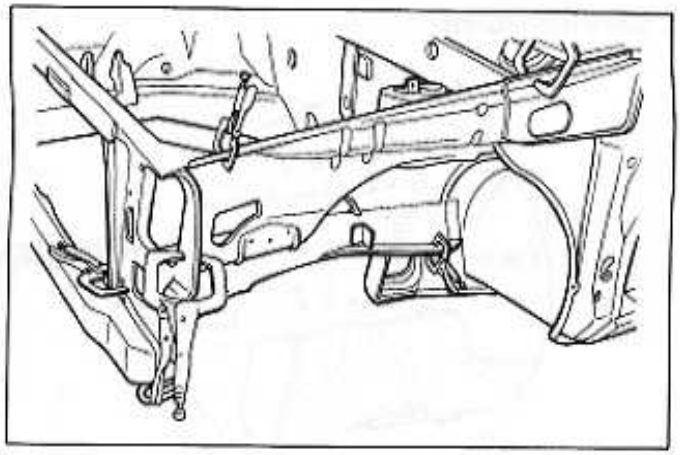
- To mig plug weld later, use a spot cutter 8 mm (0.31 in) or smaller in diameter.

REMINDERS WHEN INSTALLING

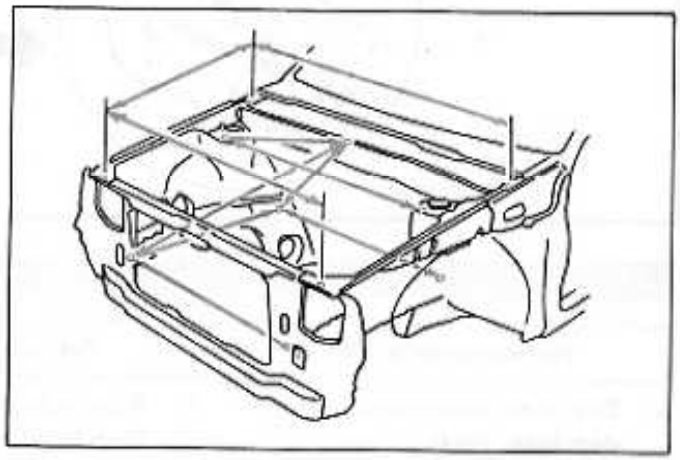
- Adjust upper and lower positions (dimensions) with a centering gauge.



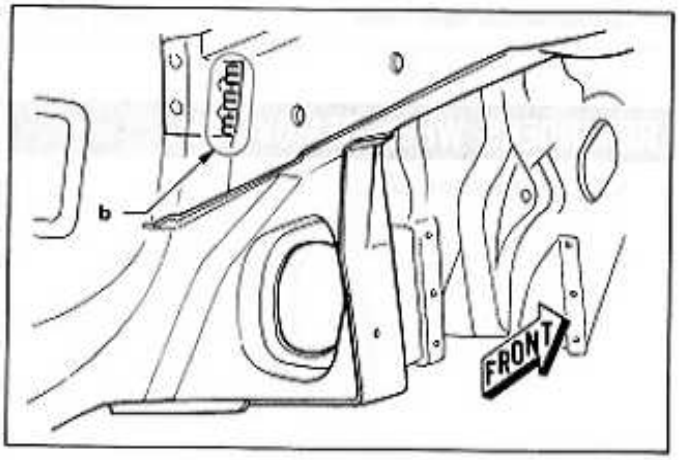
- Temporarily install radiator core support and hoodledge panel in place with vise clamps.



- Check various dimensions of engine compartment with a centering gauge and a tracking gauge. For details, refer to page 22.

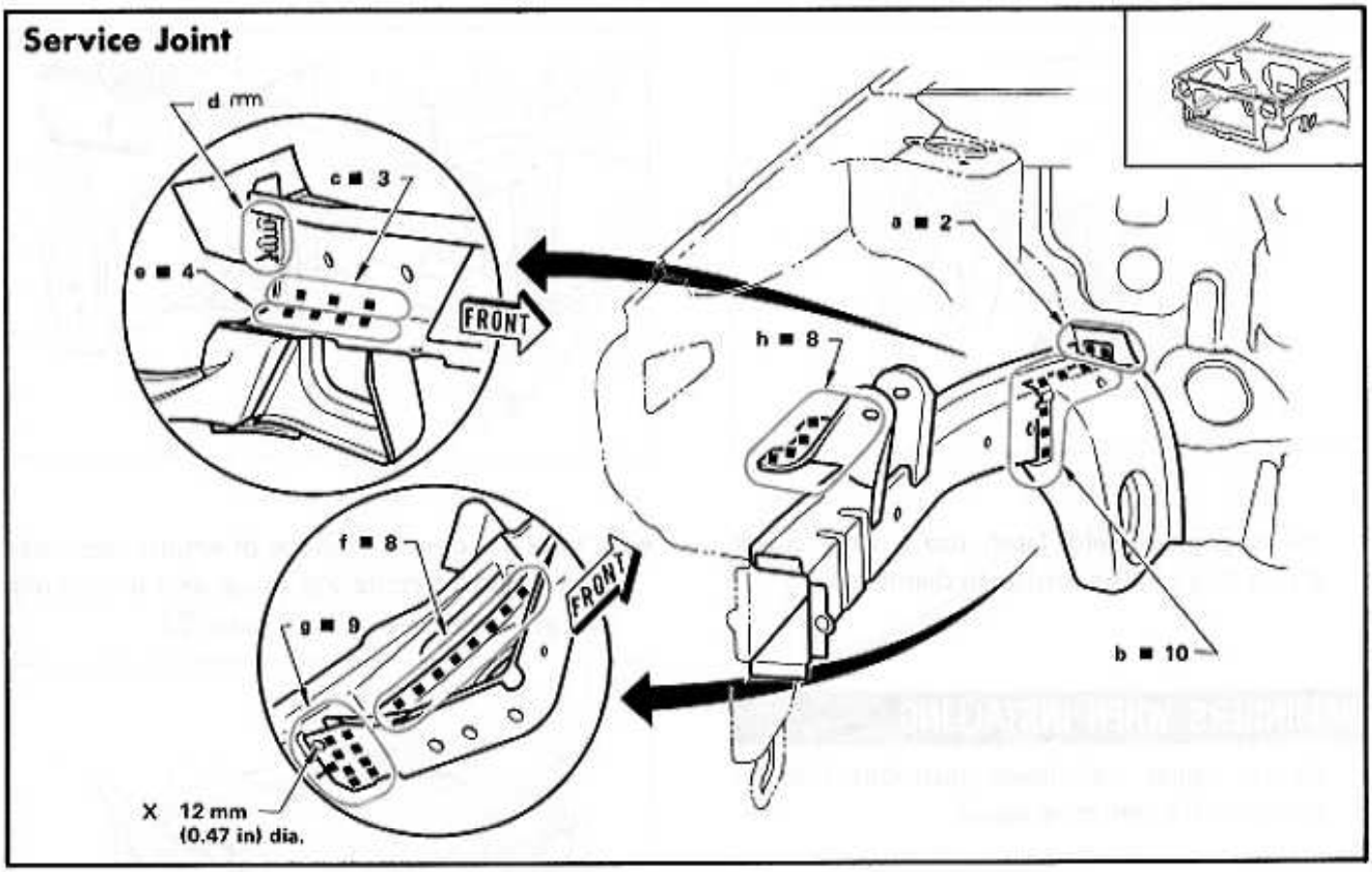


- Mig spot weld portion (b).



FRONT SIDE MEMBER WITH SUSPENSION MOUNTING MEMBER & FRONT SIDE MEMBER FRONT

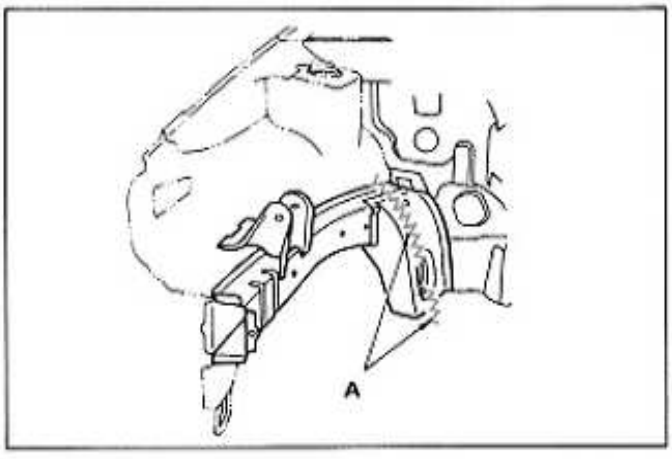
(Work after radiator core support and hoodledge panel have been removed.)



Portions to be welded	Portions to be welded	Portions to be welded
a. Dash lower reinforcement & dash lower panel b. Dash lower panel Dash lower panel & dash lower reinforcement Dash lower panel & crossmember dash lower	c. Front side member rear d. Dash lower reinforcement e. Front side member rear f. Front side member rear Front side member rear, suspension mounting member & front side member front	g. Front side member Suspension mounting member, reinforcement & front side member rear h. Hoodledge panel (right side)

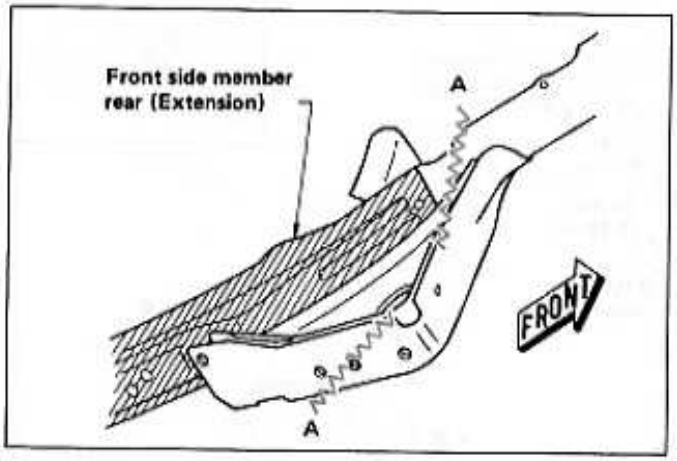
REMINDERS WHEN REMOVING

- Cut off portion (A).



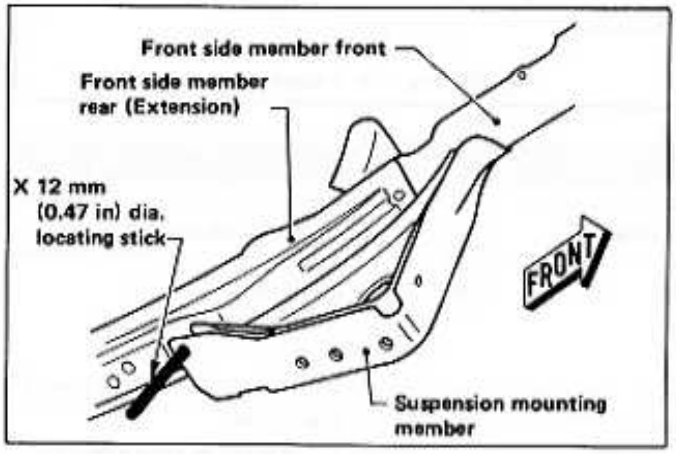
FRONT SIDE MEMBER WITH SUSPENSION MOUNTING MEMBER & FRONT SIDE MEMBER FRONT

Note: Be careful not to cut through to front side member rear (extension).

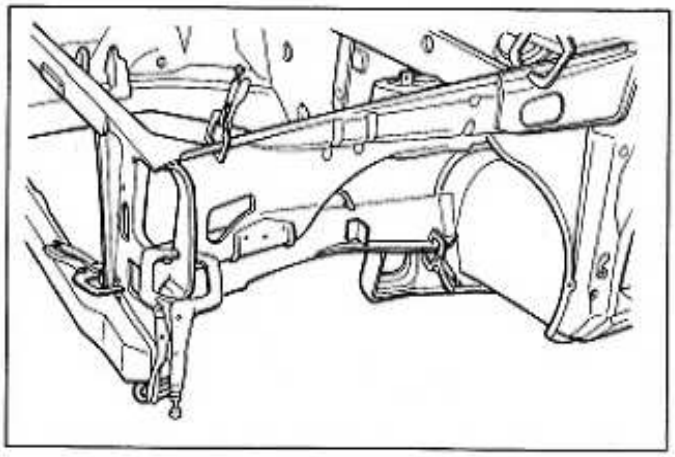


REMINDERS WHEN INSTALLING

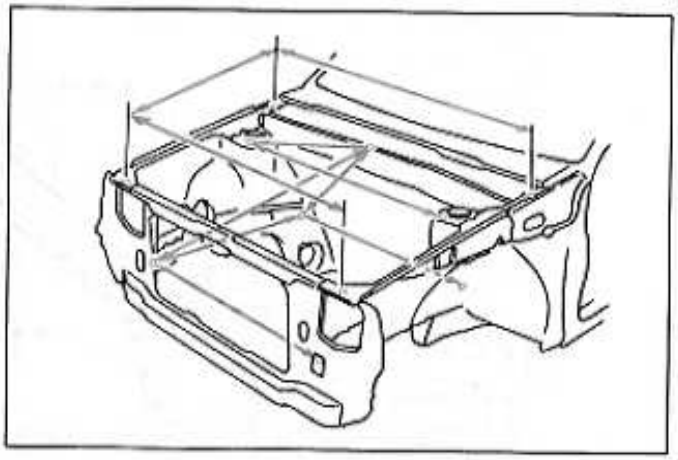
- Properly align locating hole (X) of suspension mounting member and front side member rear (extension).



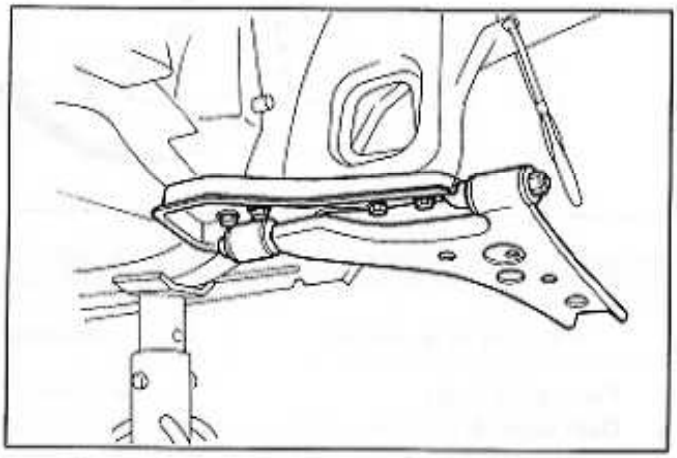
- Temporarily install front side member front, hoodledge panel and radiator core support in place with vise clamps.



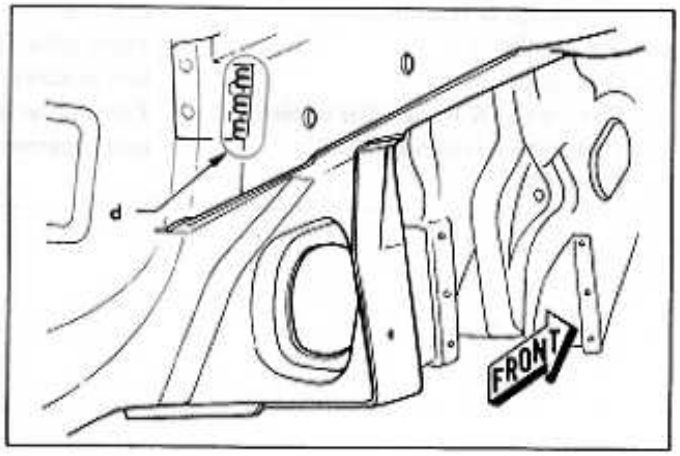
- Check various dimensions of engine compartment with a centering gauge and a tracking gauge. For details, refer to page 22.



- To confirm alignment of front side member, install suspension lower arm.



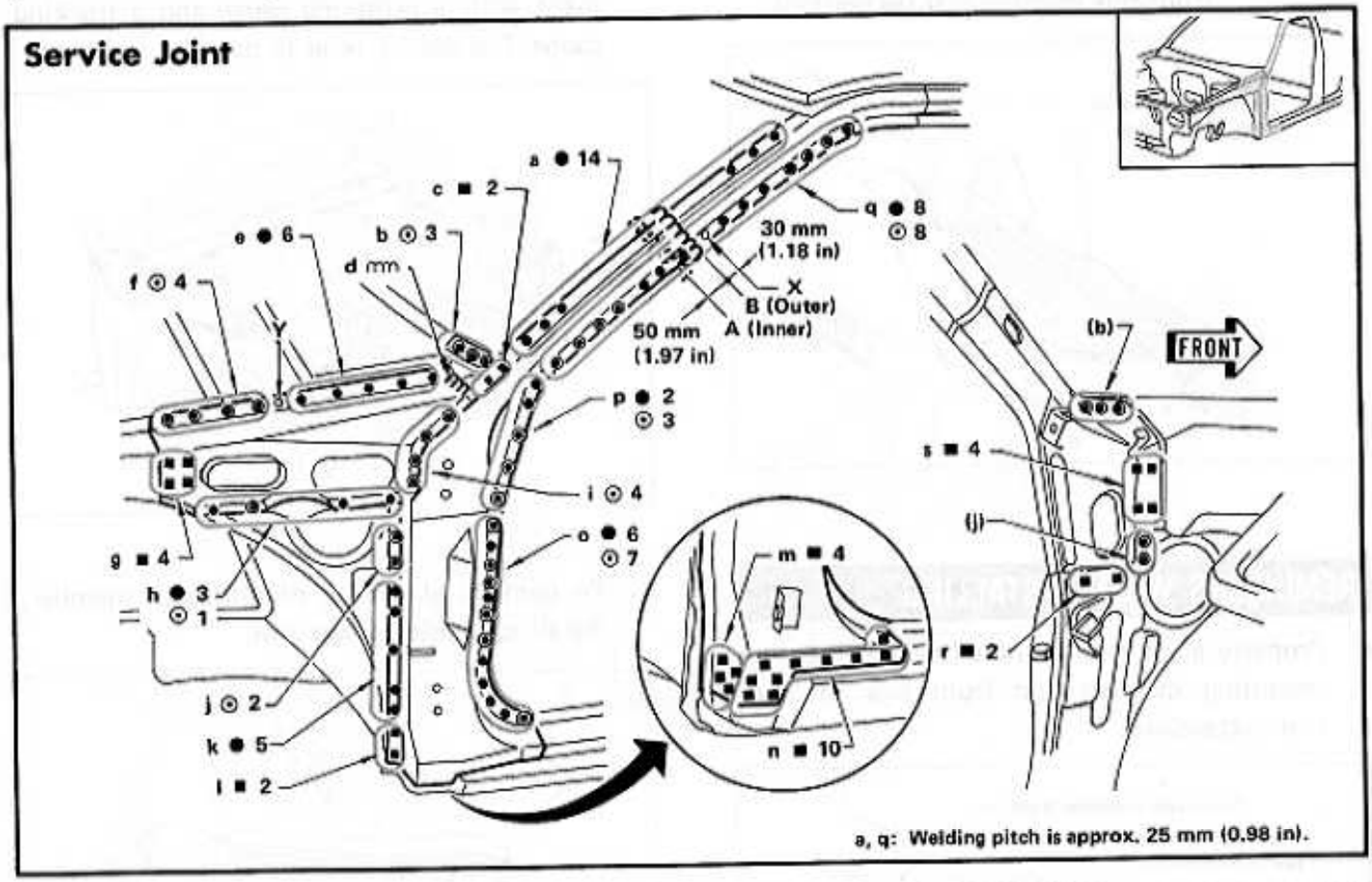
- Mig spot weld portion (d).



FRONT PILLAR

(Work after hoodledge reinforcement has been removed.)

Service Joint



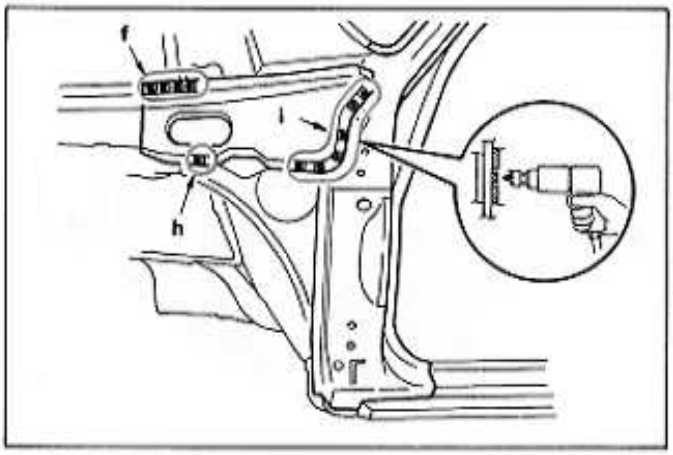
a, q: Welding pitch is approx. 25 mm (0.98 in).

Portions to be welded	Portions to be welded	Portions to be welded
a. Front pillar inner	l. Dash side & sill outer	p. Front pillar outer upper & reinforcement Reinforcement
b. Dash upper & cowl top panel	m. Sill outer panel	q. Front pillar inner & reinforcement Front pillar inner Front pillar inner & roof side rail
c. Front pillar inner & dash upper	n. Sill outer panel	r. Dash side
d. Dash upper	o. Sill outer & front floor Front pillar inner lower Front pillar inner lower & hinge bracket Front pillar inner lower & check link bracket Front pillar inner lower & reinforcement	s. Dash upper panel
e. Dash upper		
f. Dash upper & hoodledge panel Hoodledge & reinforcement		
g. Hoodledge		
h. Dash upper		
i. Dash upper & front pillar outer		
j Dash side & reinforcement		
k. Dash side		

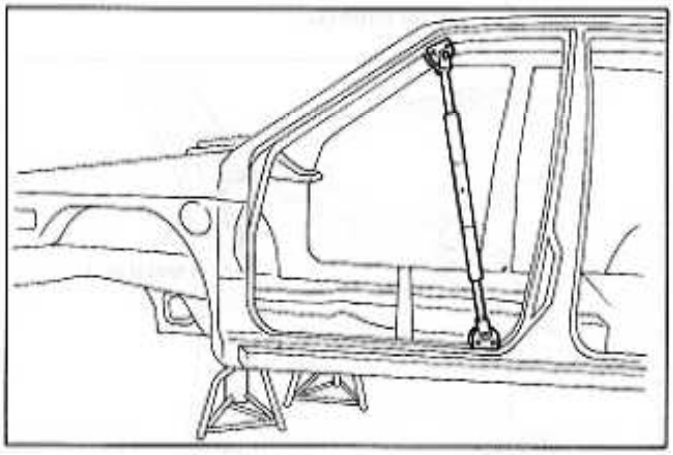
FRONT PILLAR

REMINDERS WHEN REMOVING

- Cut only top panel of spot welded, 3-layered part of air box side outer with a spot cutter. Then remove parts.

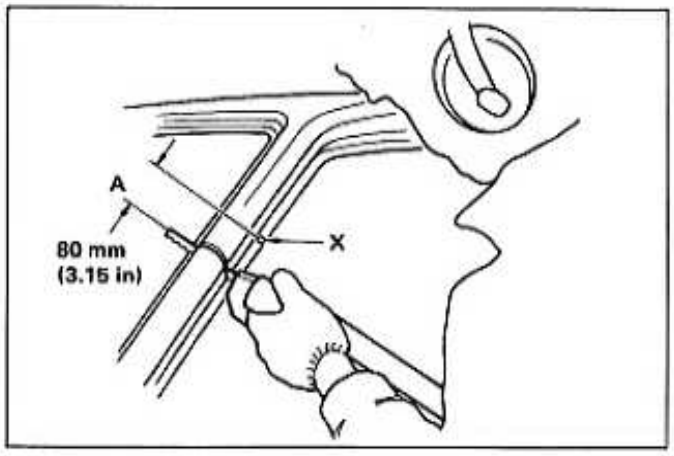


- (First of all) To prevent roof from coming down, fix flanged parts of roof side and sill body with an astro-clamp.



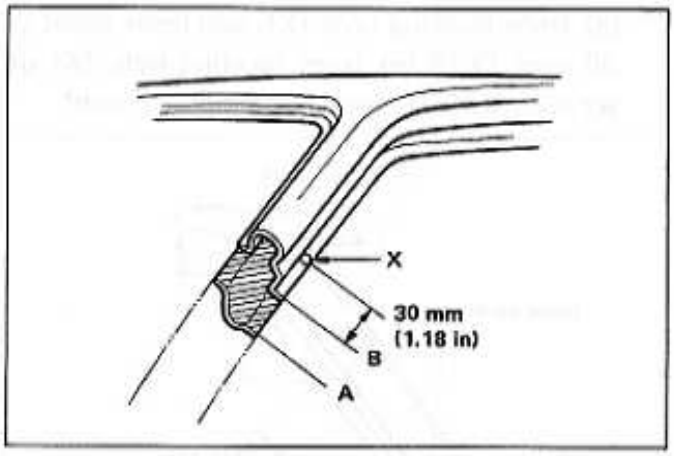
- Cut off front pillar outer and inner at portion (A).

  Note: Cut off at 80 mm (3.15 in) from locating hole (X).

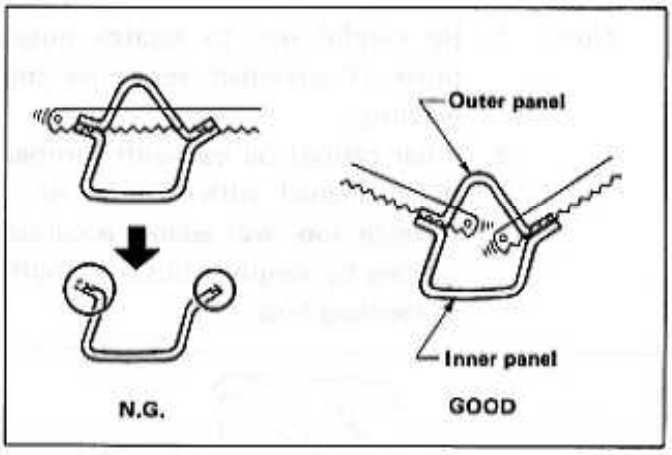


- Cut only pillar outer at portion (B).

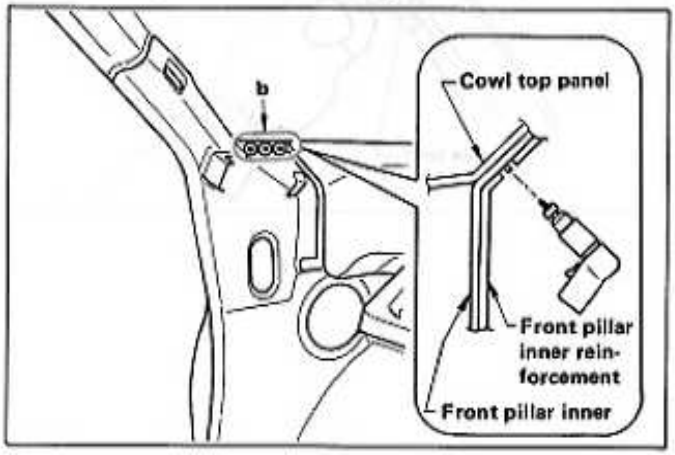
  Note: 1. Cut at 30 mm (1.18 in) from locating hole (X).



2. Be careful not to damage pillar inner. If damaged, repair it by mig welding.



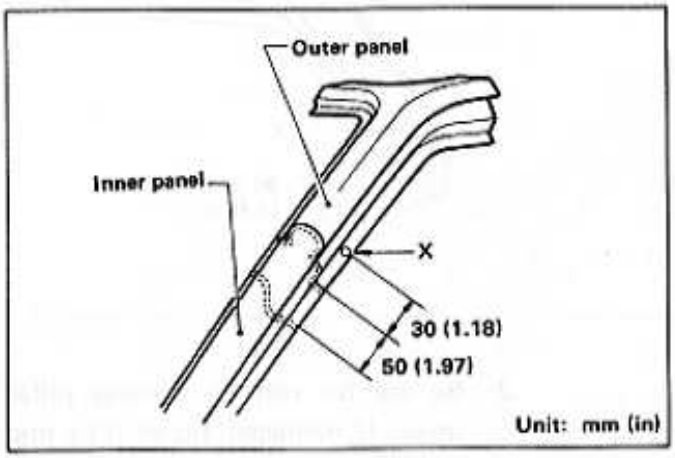
- Remove spot weld at portion (b) from inside of compartment with a spot cutter.



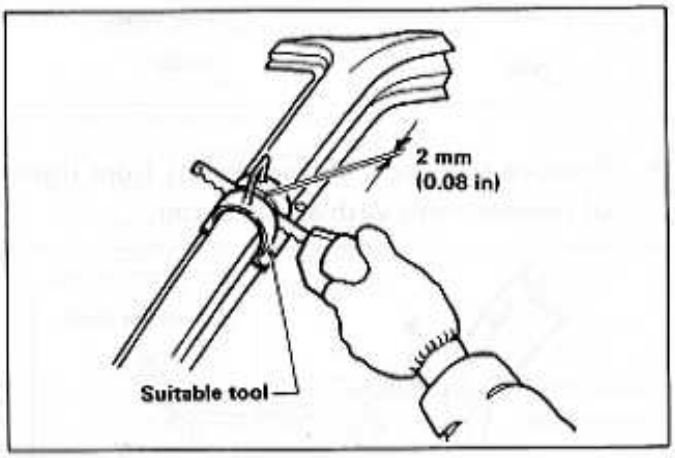
FRONT PILLAR

REMINDERS WHEN INSTALLING

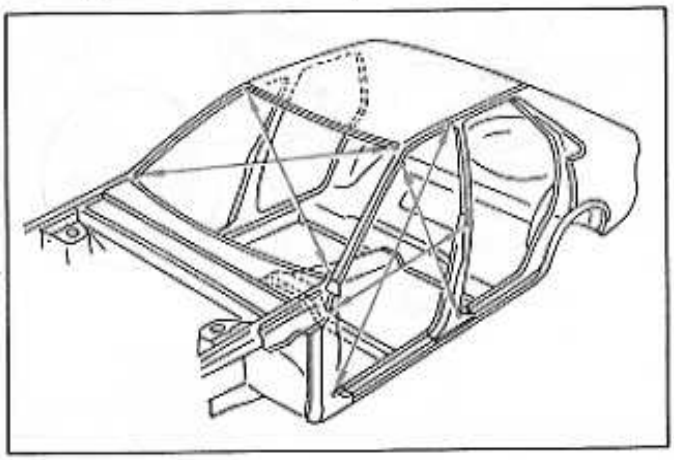
- Put marking on outer panel at 30 mm (1.18 in) from locating hole (X), and inner panel at 80 mm (3.15 in) from locating hole (X) of service panel. Then cut each marked point.



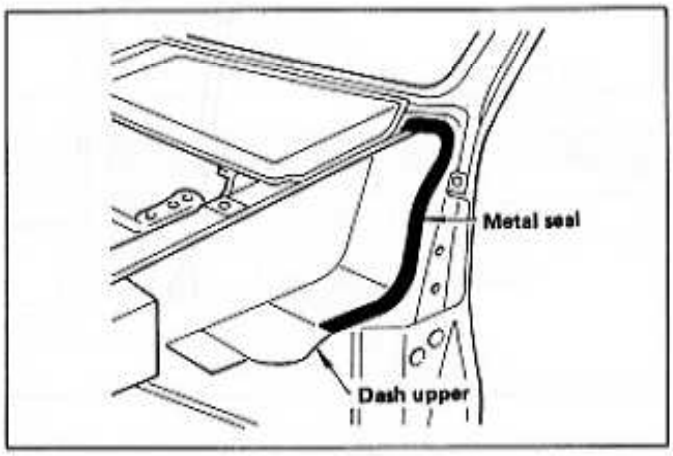
Note: 1. Be careful not to scratch outer pillar. If scratched, repair by mig welding.
2. Pillar cannot be cut with another pillar aligned with it. Use of a suitable tool will enable accurate cutting by simply adjusting length of locating hole.



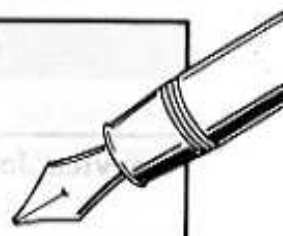
- Temporarily install front pillar and measure various dimensions of part locations. Then install related parts such as windshield glass, front fender and front door, and check their alignment. For details, refer to page 26.



- Apply sealer. To prevent rain leakage, (exactly) seal contact surface between upper and lower dashes that is connected directly to inside of compartment.



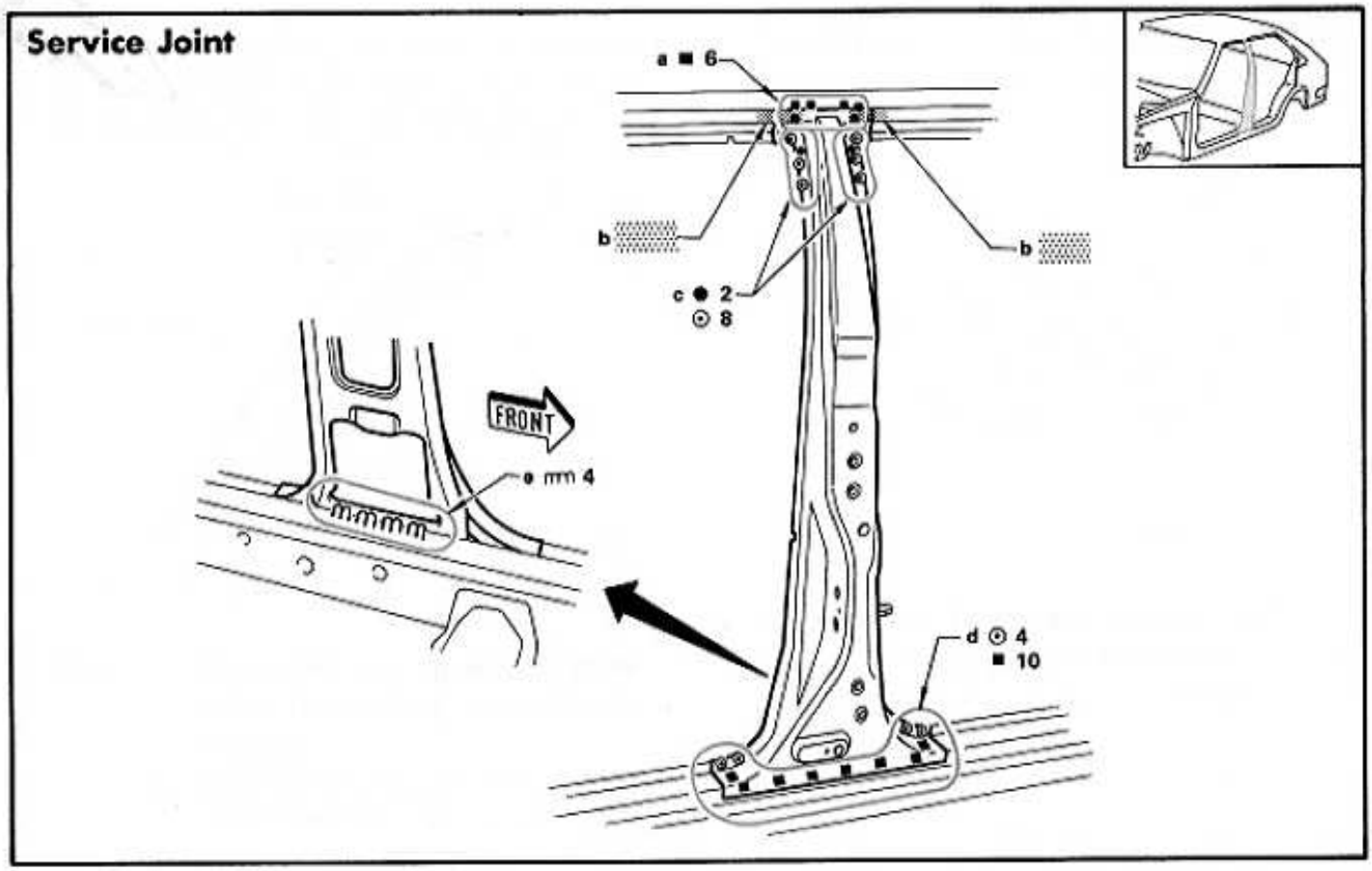
Note



CENTER PILLAR

5-DOOR HATCHBACK (4-DOOR SEDAN)

Service Joint



Portions to be welded	Portions to be welded	Portions to be welded
a. Roof side outer rail b. Roof side outer rail	c. Roof side inner rail & roof side outer rail Roof side inner rail Roof side inner rail, center pillar outer & inner	d. Sill outer panel Sill outer panel & sill inner panel e. Sill inner panel & sill outer panel

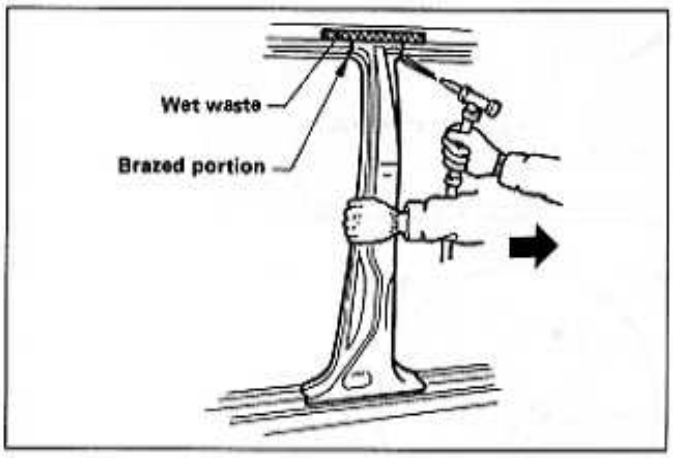
CENTER PILLAR

5-DOOR HATCHBACK (4-DOOR SEDAN)

REMINDERS WHEN REMOVING

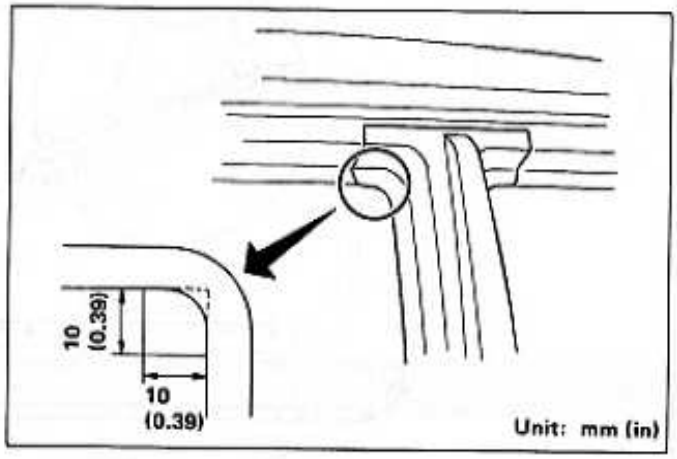
- Remove outer sill (d) first, and then pillar by heating brazed portion (b) with a burner.

  Note: 1. When heating brazed portion (b) with a burner, cool roof with wet waste for protection.
  2. Be careful not to deform roof side rail when removing portions (a) and (b).

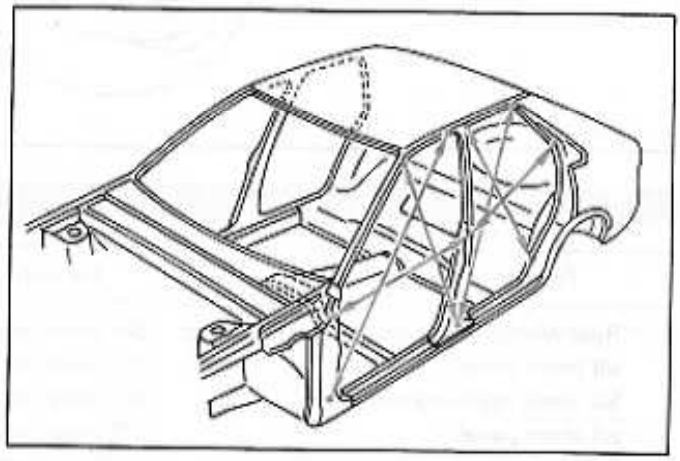


REMINDERS WHEN INSTALLING

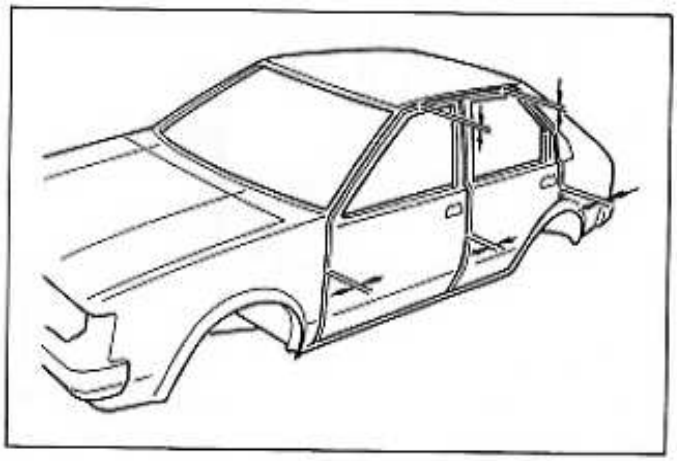
- When spot welding portion (c), do not weld areas within 10 mm (0.39 in) from corner because there is stress concentration there.



- Temporarily install center pillar with vise clamp. Measure various dimensions of part locations. For details, refer to page 26.



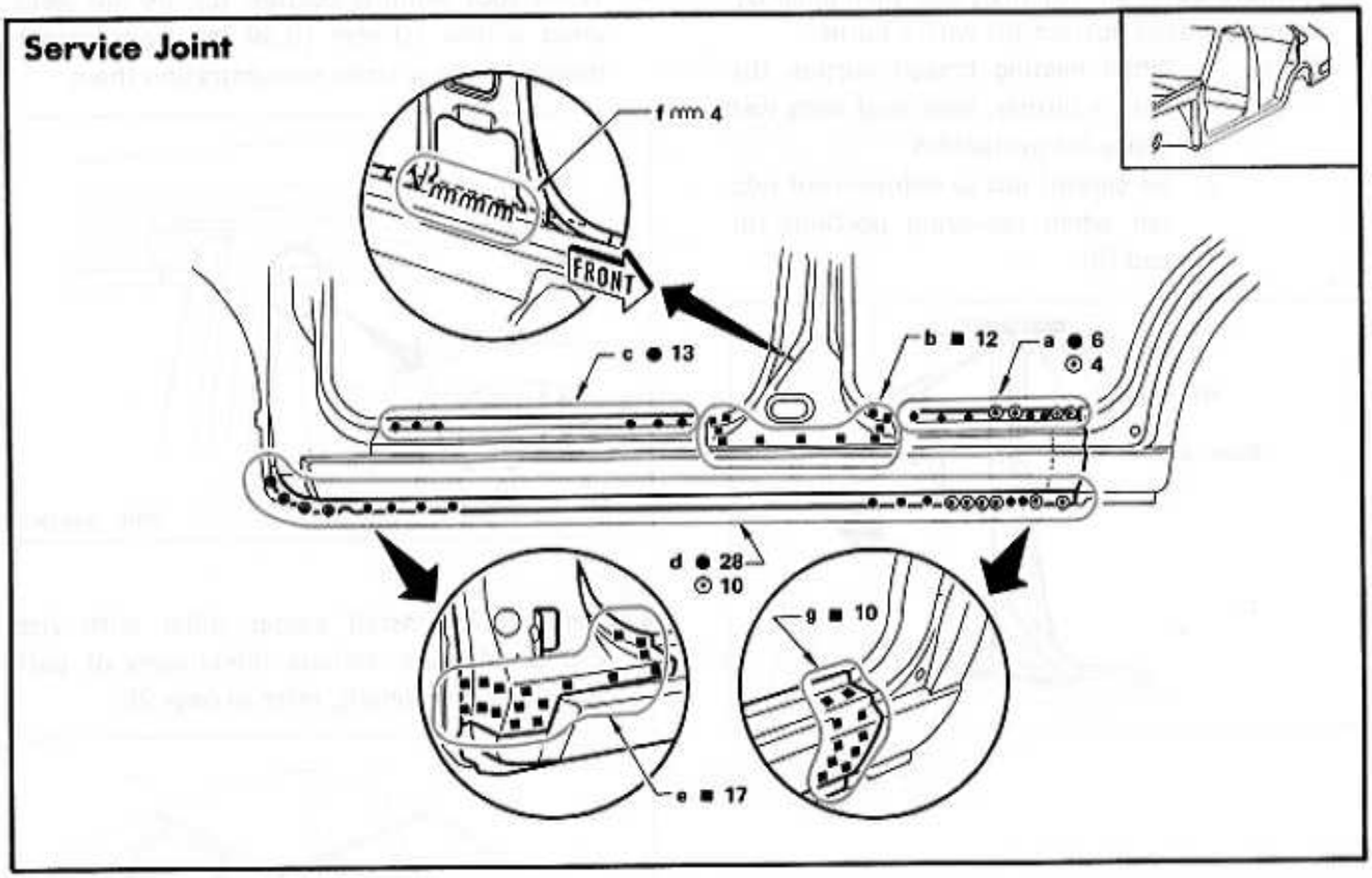
- Temporarily install front and rear doors. Check and adjust clearances, grades and parallelism.



SILL OUTER PANEL

5-DOOR HATCHBACK (4-DOOR SEDAN)

Service Joint



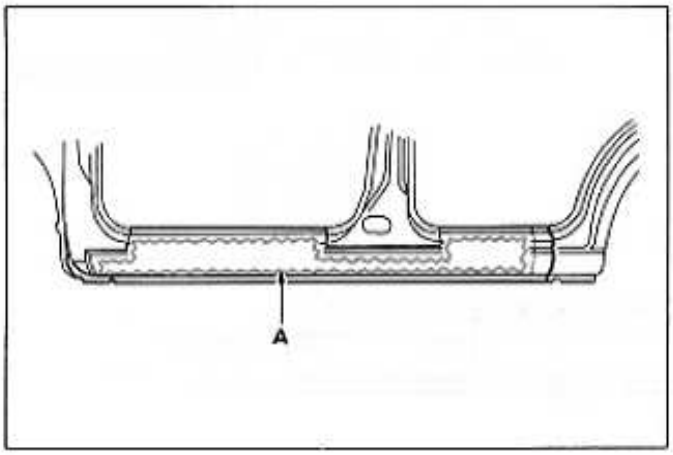
Portions to be welded	Portions to be welded	Portions to be welded
a. Rear wheelhouse outer & sill inner panel Sill inner reinforcement & sill inner panel Sill inner panel b. Center pillar Center pillar & sill inner panel	c. Sill inner panel d. Sill inner panel & dash side panel Sill inner panel Sill inner panel & sill inner reinforcement Sill inner panel & rear wheelhouse outer	e. Front pillar & sill inner panel Front pillar & dash side panel Front pillar f. Center pillar inner & sill inner panel g. Rear wheelhouse outer

SILL OUTER PANEL

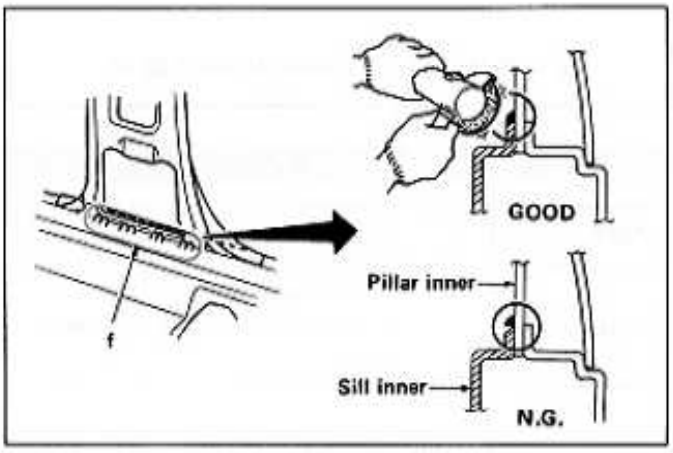
5-DOOR HATCHBACK (4-DOOR SEDAN)

REMINDERS WHEN REMOVING

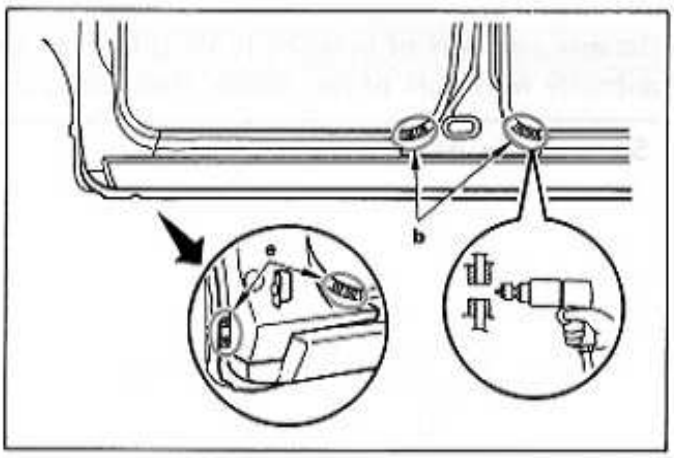
- Cut off portion (A).
  Note: **Be careful not to cut wheelhouse outer ar portion (g).**



- When dressing mig welded part at portion (f), be careful not to grind sill inner too much. (Grinding it too much will reduce its strength.)

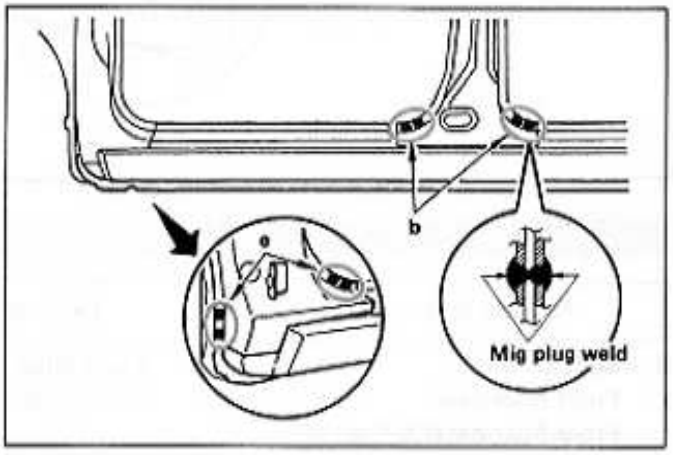


- Spot cut completely through 3-layered parts at portions (b) and (e).
  Note: **This is necessary because sill outer is interposed between sill inner and pillar.**

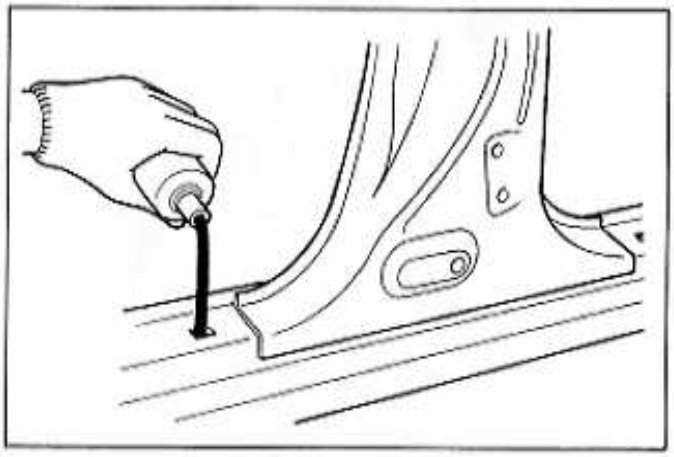


REMINDERS WHEN INSTALLING

- Mig plug weld 3-layered parts at portions (b) and (e) from both sides.
  Note: **This is necessary because there are through holes there.**



- Be sure to treat inside of outer sill (inside of box) with an anticorrosive.



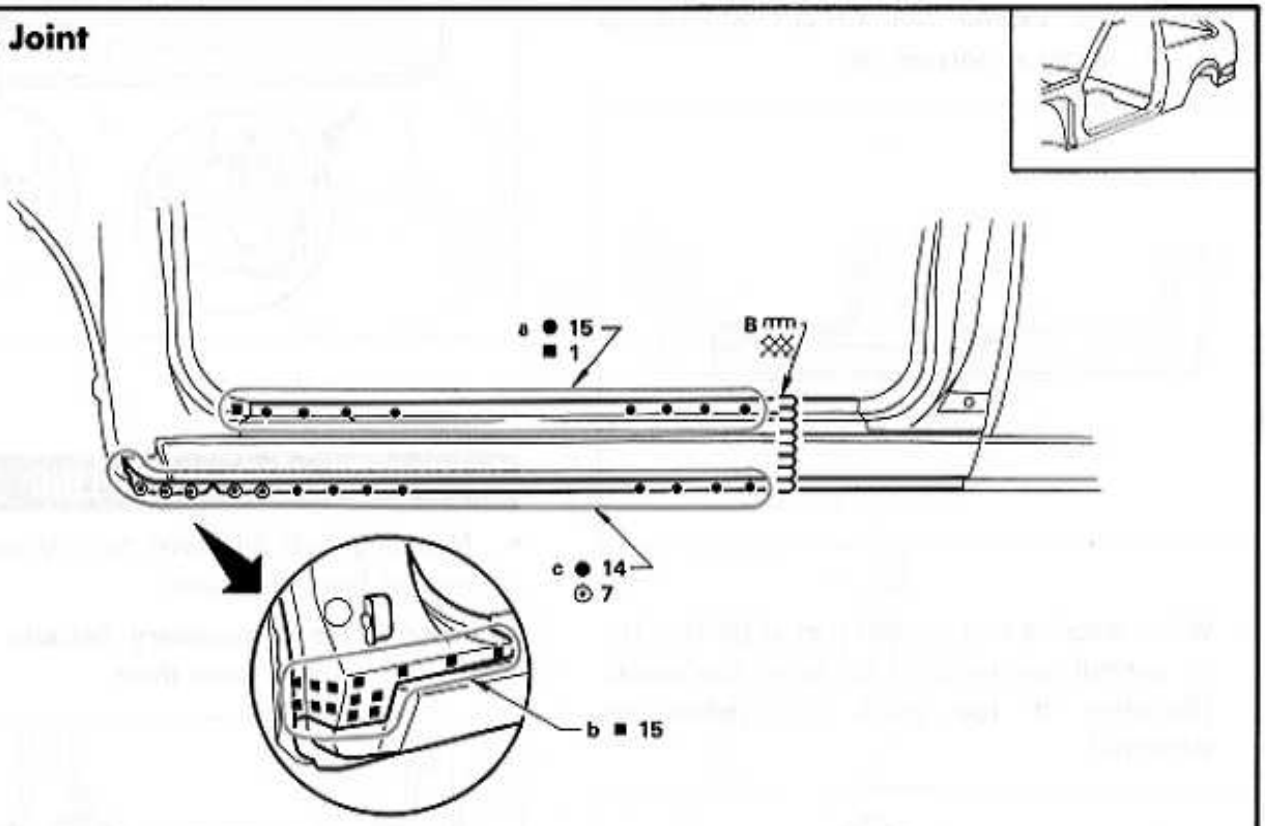
- Apply sealer to portions indicated in "Body Sealing" drawing.
  For details, refer to page 15.

BODY SILL OUTER PANEL

3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

(Because rear part of outer body sill is hard to remove, assembly replacement must be performed simultaneously with work of rear fender. Here only partial replacement is described, except rear part.)

Service Joint



a, c: Welding pitch is approx. 25 mm (0.98 in).

Portions to be welded	Portions to be welded	Portions to be welded
B. Body sill outer	b. Front pillar	c. Sill inner panel
a. Front floor panel	Front pillar & sill inner panel	Sill inner panel & dash side panel
Front floor panel & front pillar		

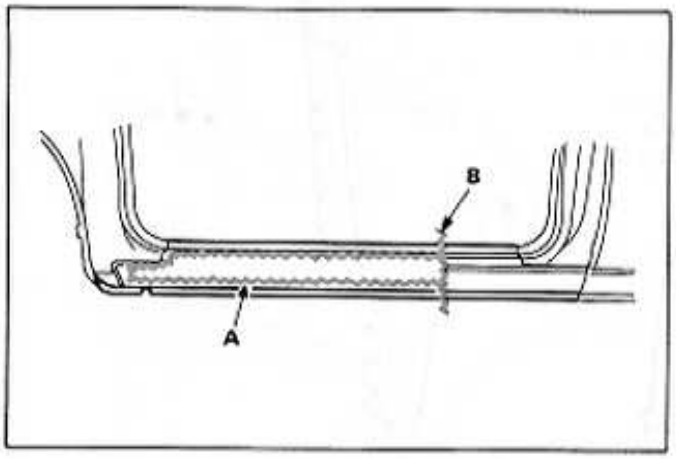
BODY SILL OUTER PANEL

3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

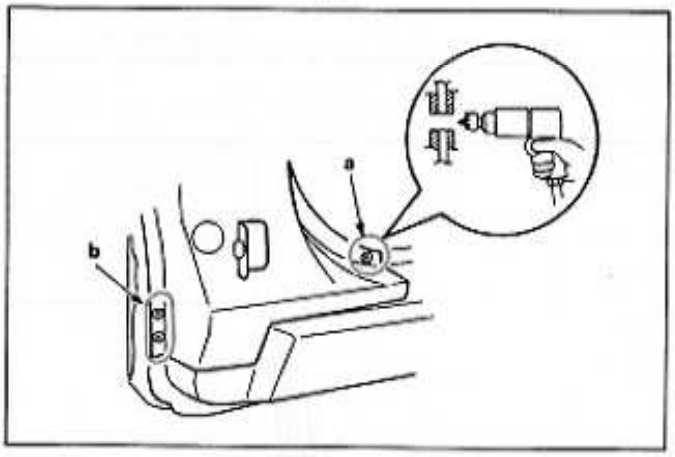
REMINDERS WHEN REMOVING

- Cut off portions (A) and (B). Portion (B) may be cut off at desired position.

  Note: To improve job efficiency, cut off greatly damaged portions or portions beyond reach of a spot cutter.

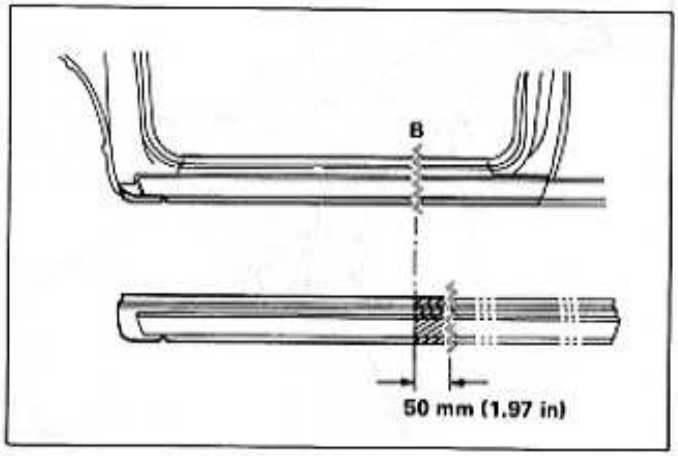


- Spot cut completely through 3-layered parts at portions (a) and (b).

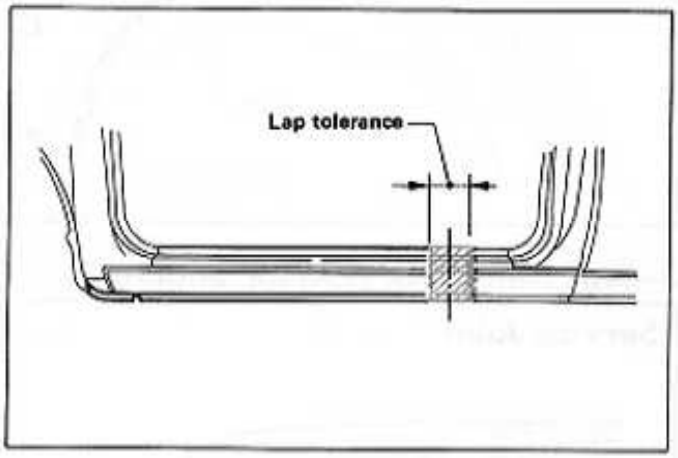


REMINDERS WHEN INSTALLING

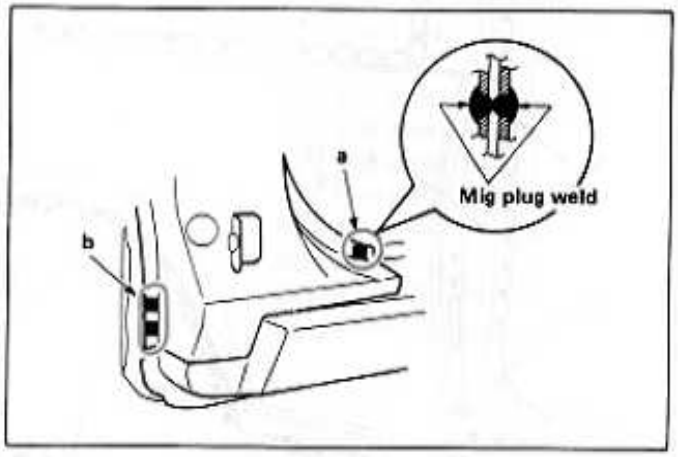
- Cut off service parts 50 mm (1.97 in) longer than portion (B).



- Install sill outer panel and cut in center of lap.



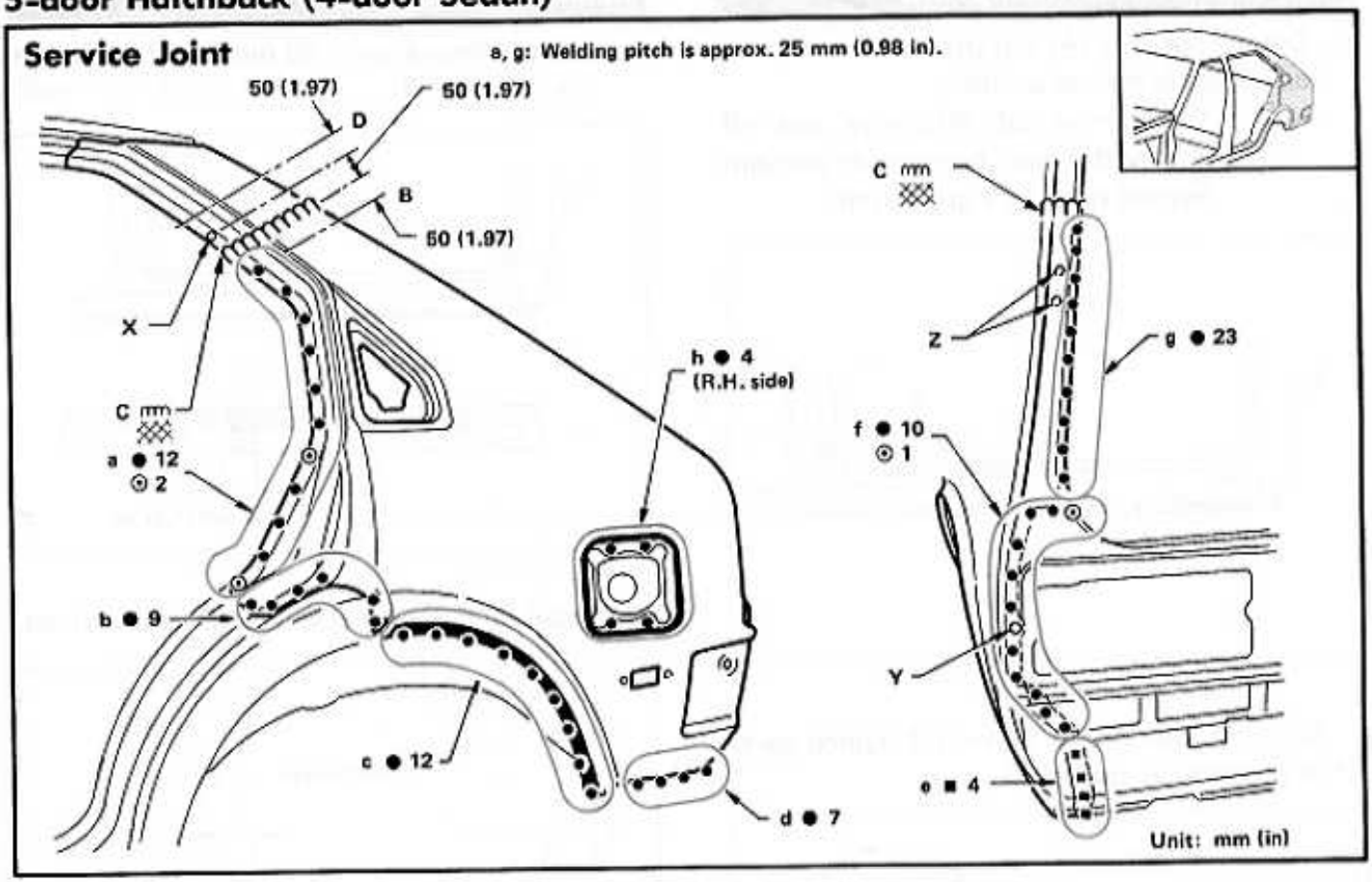
- Mig plug weld 3-layered parts at portions (a) and (b) from both sides.



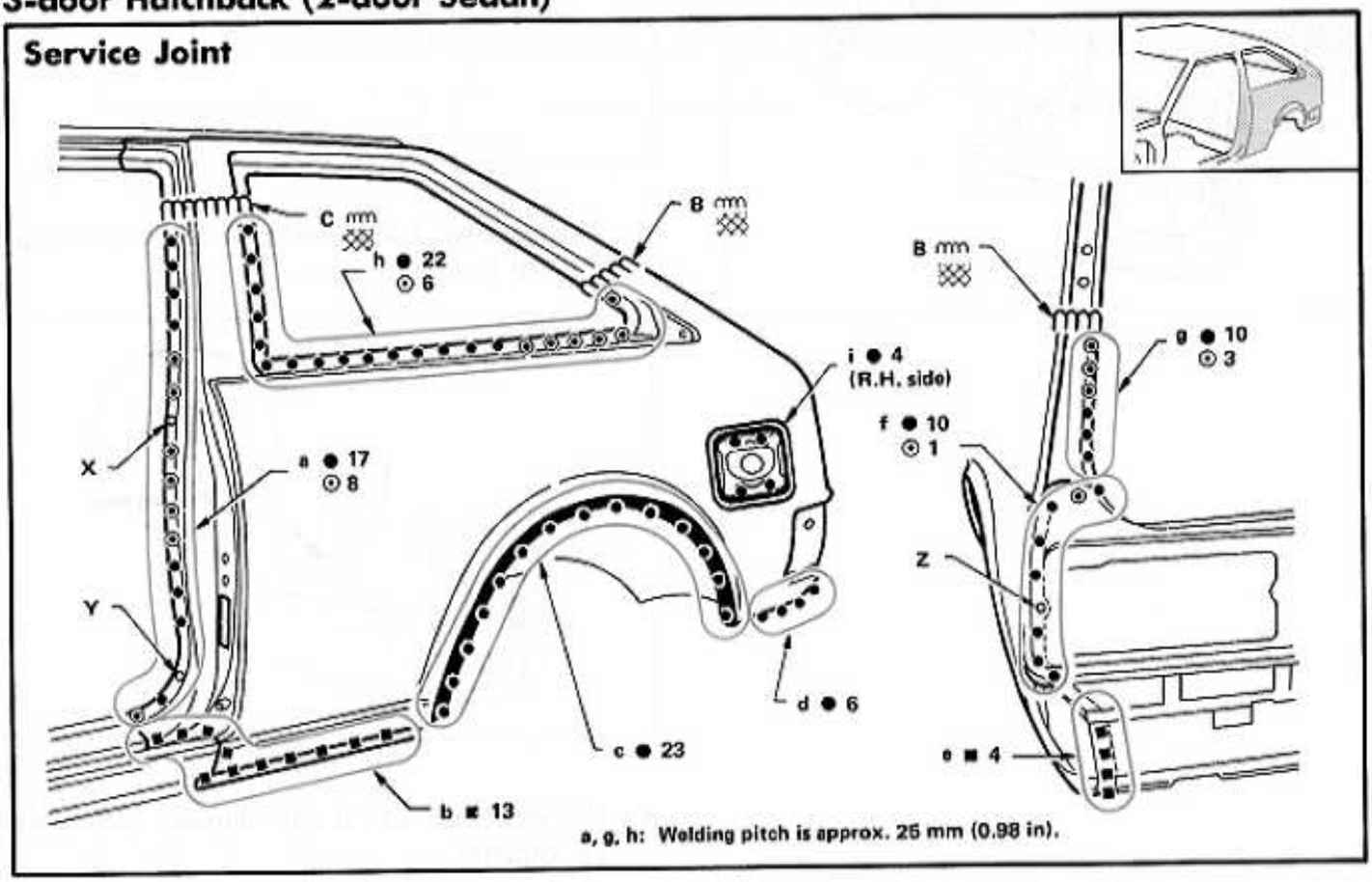
- Mig weld portion (B) continuously and finish by soldering.

REAR FENDER

5-door Hatchback (4-door Sedan)

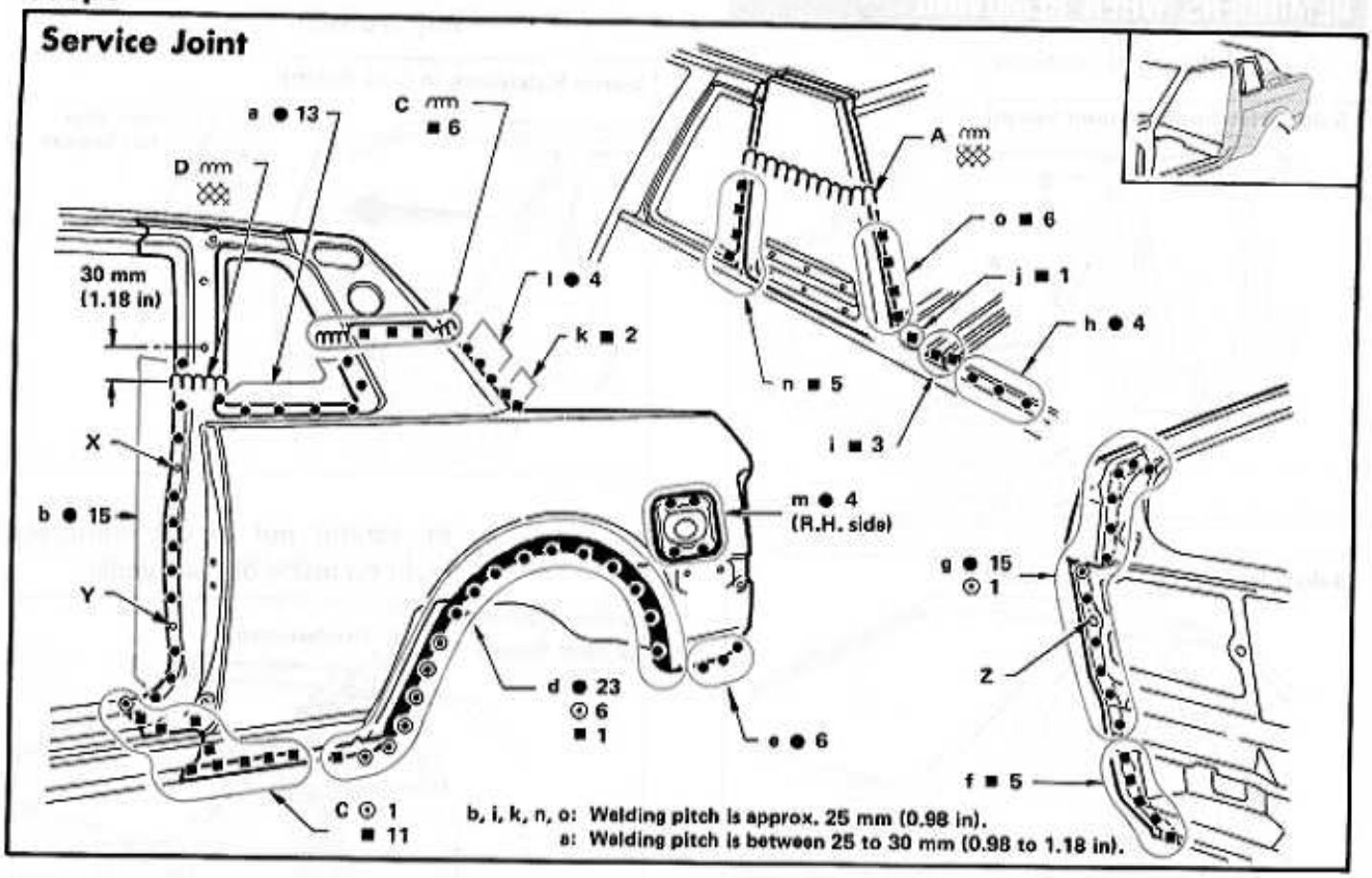


3-door Hatchback (2-door Sedan)



REAR FENDER

Coupe



Portions to be welded
5-door Hatchback (4-door Sedan)
C. Rear fender
a. Rear pillar inner Rear pillar inner & rear wheelhouse outer
b. Rear wheelhouse outer
c. Rear wheelhouse outer
d. Rear floor side
e. Rear floor side & rear lower panel
f. Rear upper panel
g. Rear fender inner
h. Fuel filler base (R.H. side)
3-door Hatchback (2-door Sedan)
B. Rear fender
C. Rear fender
a. Rear side panel Rear side panel & reinforcement Sill outer & inner

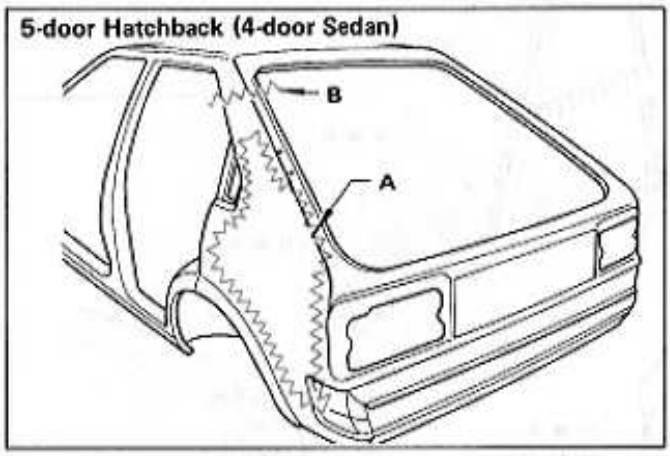
Portions to be welded
b. Sill outer panel
c. Wheelhouse inner
d. Rear floor side
e. Rear floor side & rear lower panel
f. Rear upper panel Rear upper panel & corner panel
g. Rear side panel Rear side panel & rear pillar reinforcement
h. Rear side panel Rear side panel & reinforcement
i. Fuel filler base (R.H. side)
Coupe
A. Rear quarter panel
C. Rear fender
D. Rear fender
a. Side panel
b. Rear fender

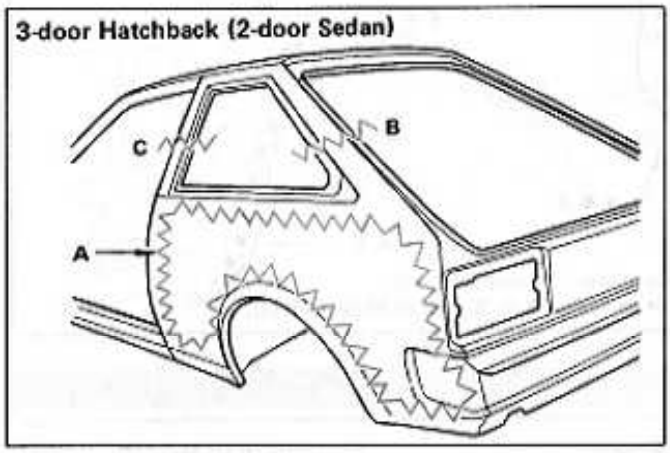
Portions to be welded
c. Sill outer & sill inner Sill outer
d. Wheelhouse & sill closing panel Wheelhouse
e. Rear floor side
f. Rear lower panel & rear floor side
g. Rear upper & corner panel
h. Rear side panel
i. Waist panel
j. Rear side panel
k. Rear side panel
l. Rear side panel
m. Fuel filler base (R.H. side)
n. Rear fender & side panel Rear fender
o. Rear fender & side panel Rear fender & waist panel

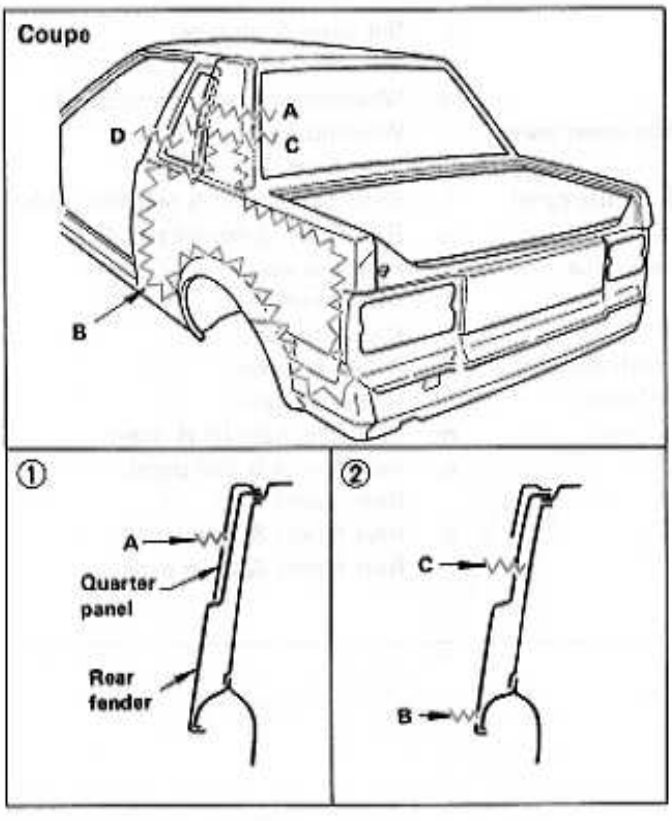
REAR FENDER

REMINDERS WHEN REMOVING

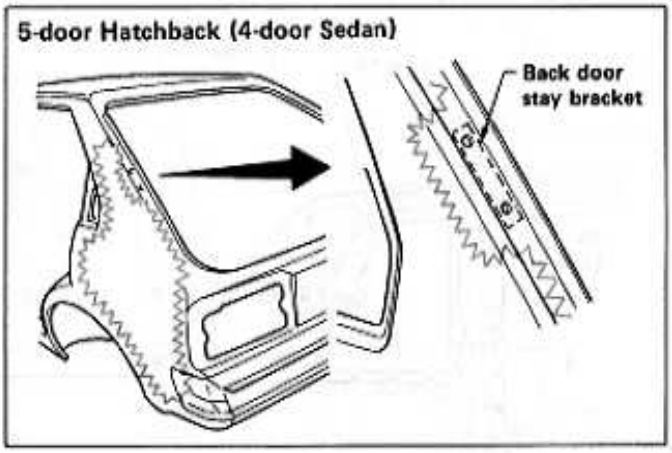
- Cut off damaged portions.



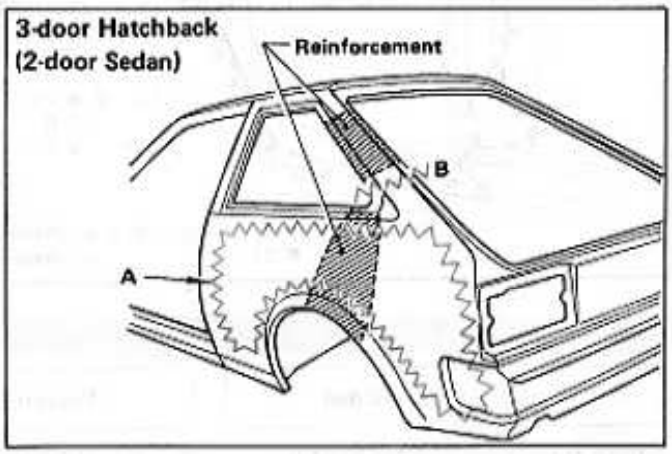




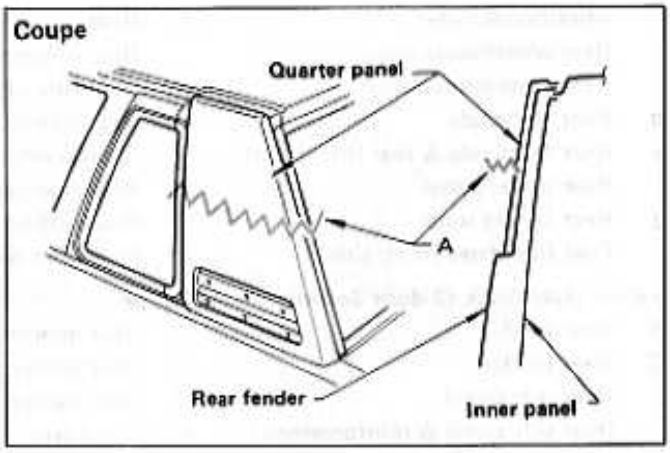
Note: 1. Be careful not to cut back door stay bracket.



2. Be careful not to cut reinforcement on inside of rear fender.

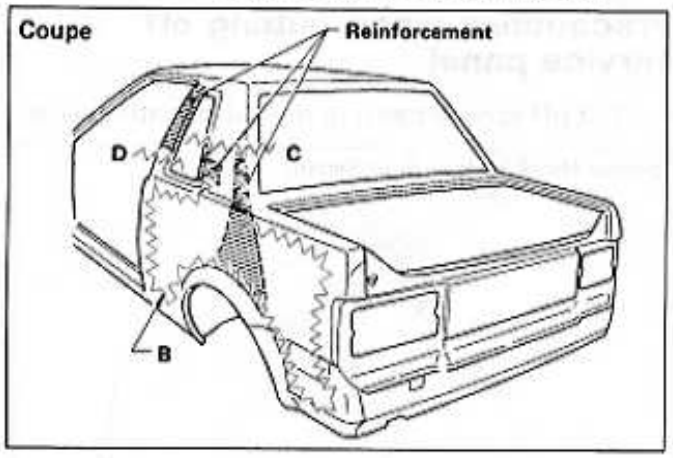


3. Be careful not to cut rear fender on inside of rear quarter panel.



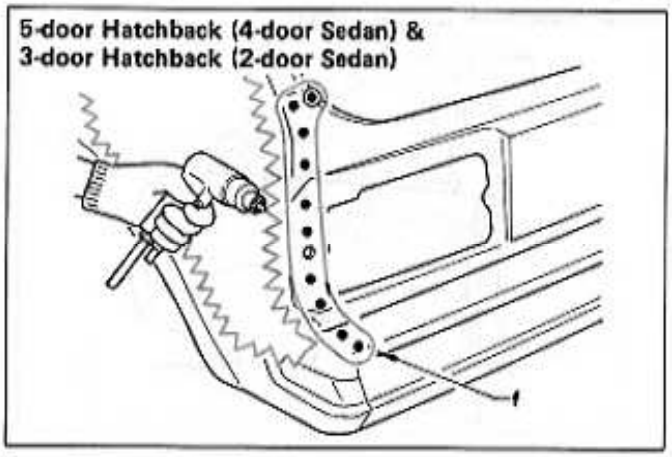
REAR FENDER

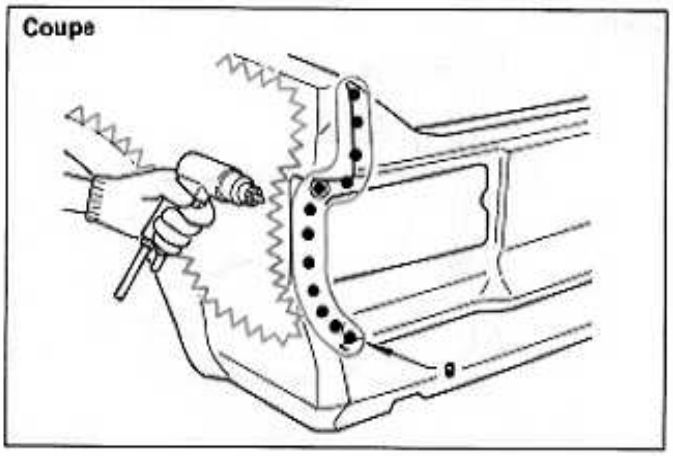
Note: 4. Be careful not to cut reinforcement on inside of rear fender.



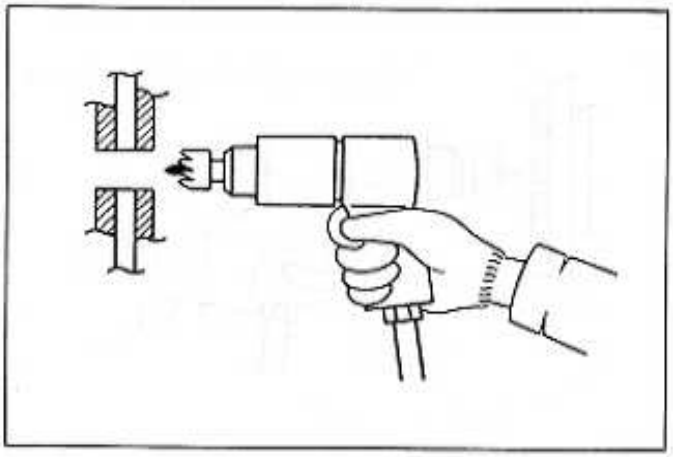
Precautions when spot cutting

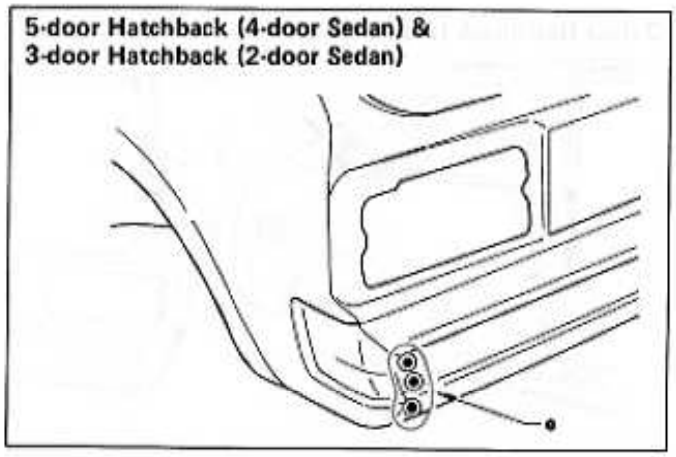
- Spot cut portions from inside the trunk room.

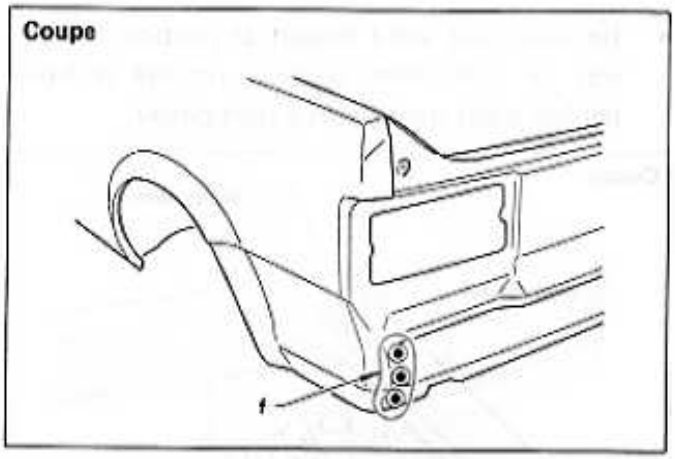




- Cut completely through 3-layered parts with a spot cutter.

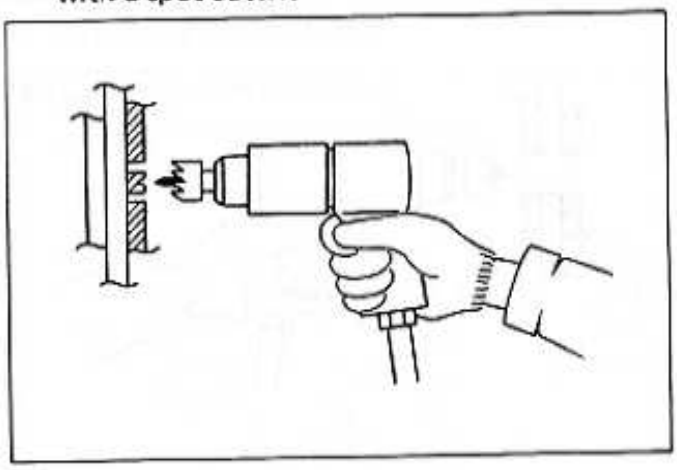


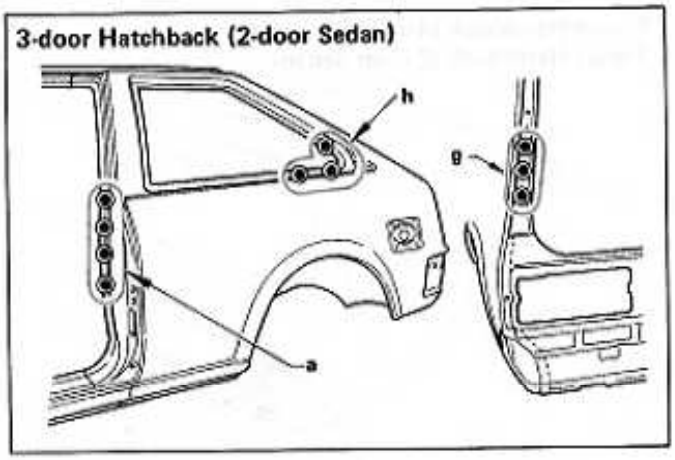




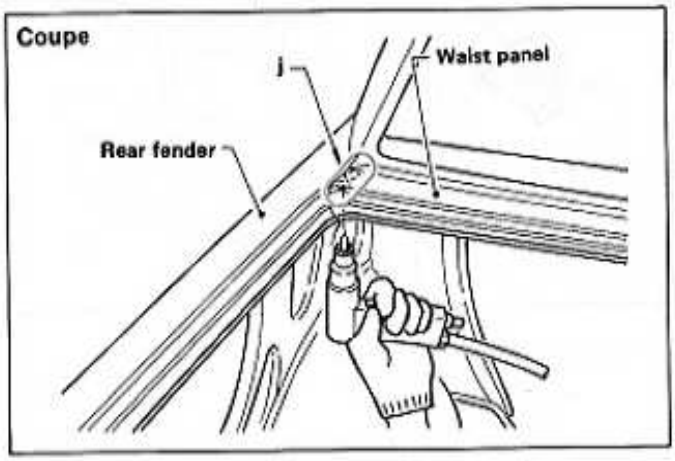
REAR FENDER

- Cut only rear fender panel at 3-layered parts with a spot cutter.





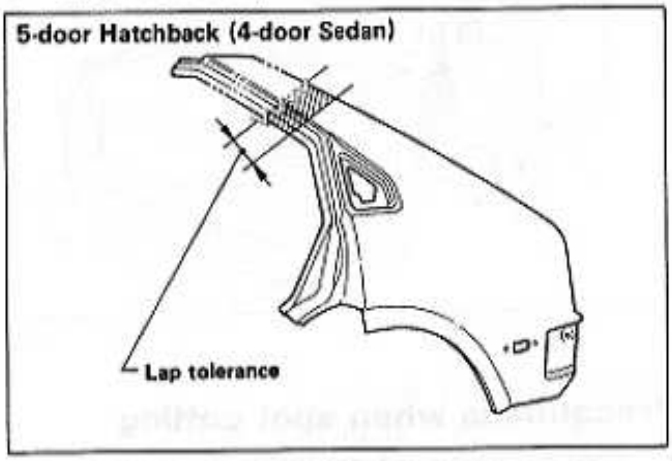
- Because spot weld nugget at portion (j) cannot be seen from outside, remove it from behind waist panel with a spot cutter.

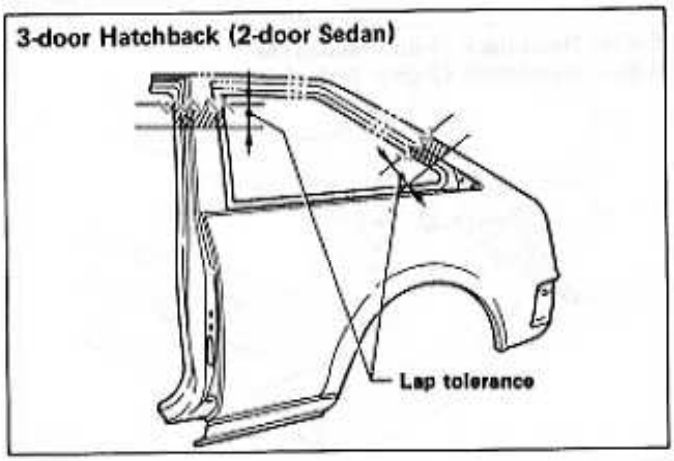


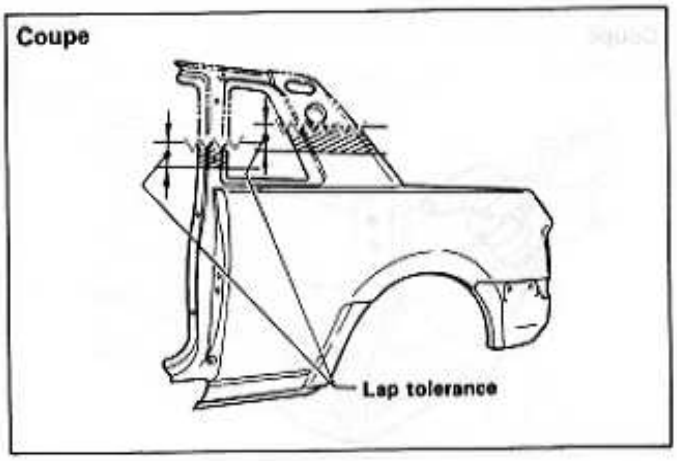
REMINDERS WHEN INSTALLING

Precautions when cutting off service panel

- Cut off service panel in line with mating parts.





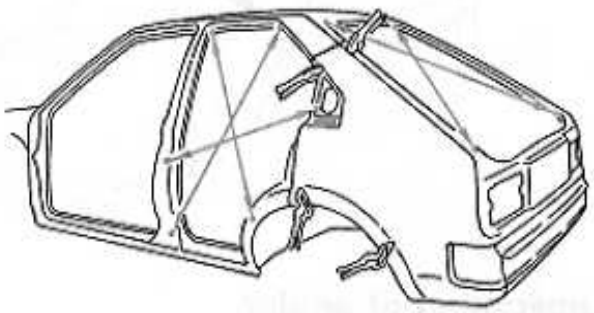


REAR FENDER

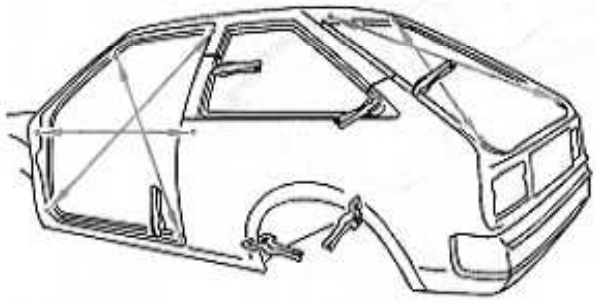
Dimension measurements and temporary installation of related parts

- Temporarily install rear fender with a vise clamp. Check various dimensions of part locations according to "Body Alignment" drawing.
  For details, refer to page 26.

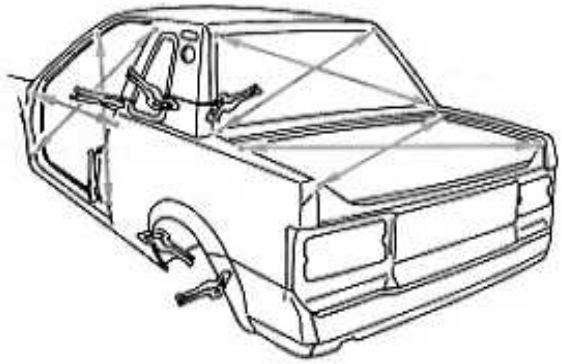
5-door Hatchback (4-door Sedan)



3-door Hatchback (2-door Sedan)

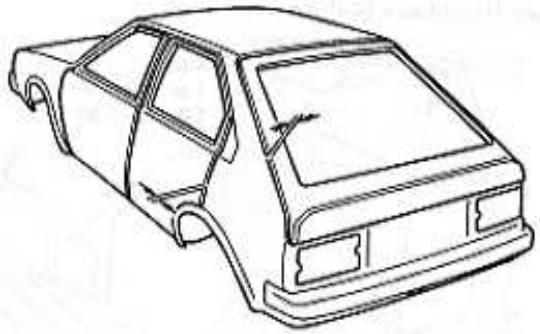


Coupe

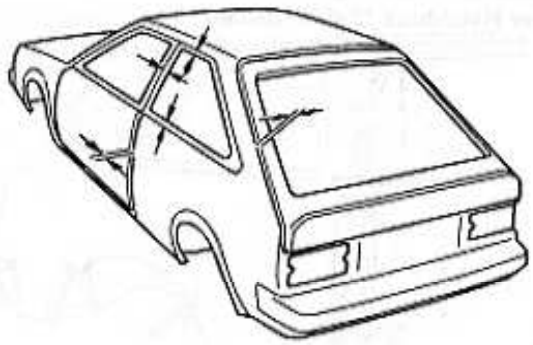


- Temporarily install related parts such as door, rear gate trunk lid, glass, etc. Check clearances, grades and parallelism.

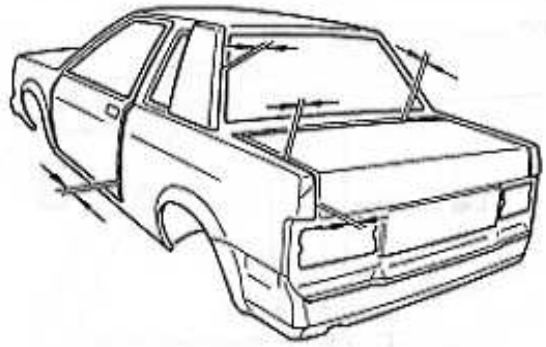
5-door Hatchback (4-door Sedan)



3-door Hatchback (2-door Sedan)



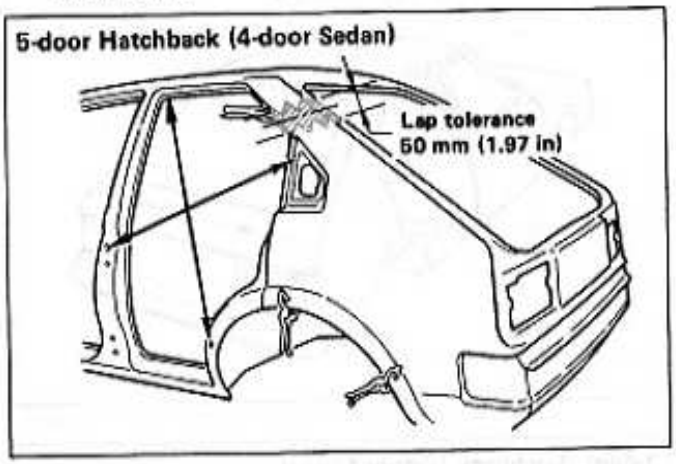
Coupe

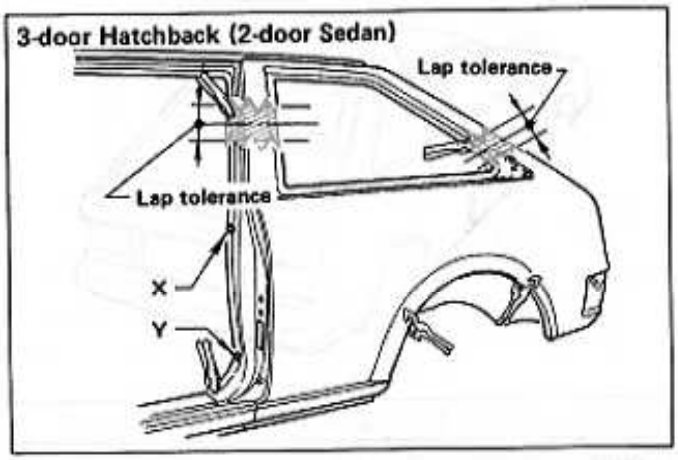


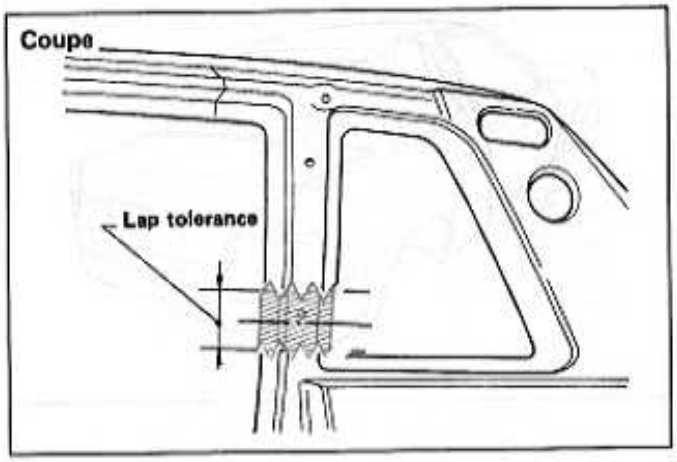
REAR FENDER

Precaution when cutting service panel

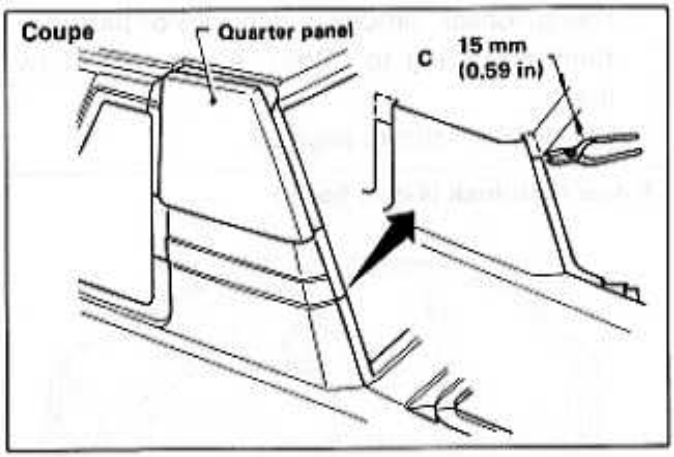
- Cut service panel in middle of lapped part to be welded.





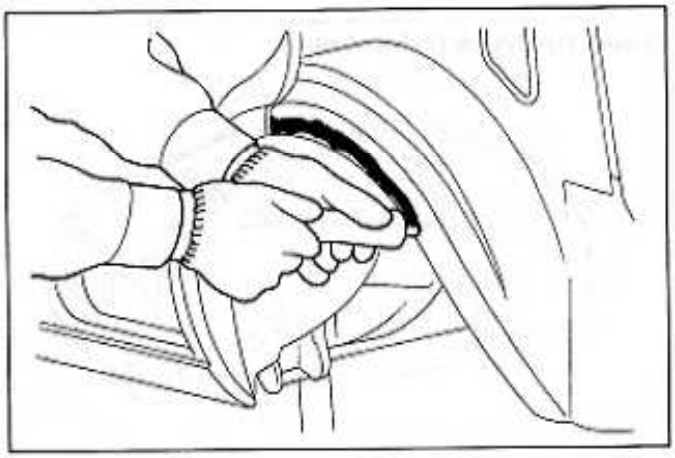


Note: Lap portion (C) about 15 mm (0.59 in) wide to lap weld later. However, cut flange with tinman's shears for butt welding.



Application of sealer

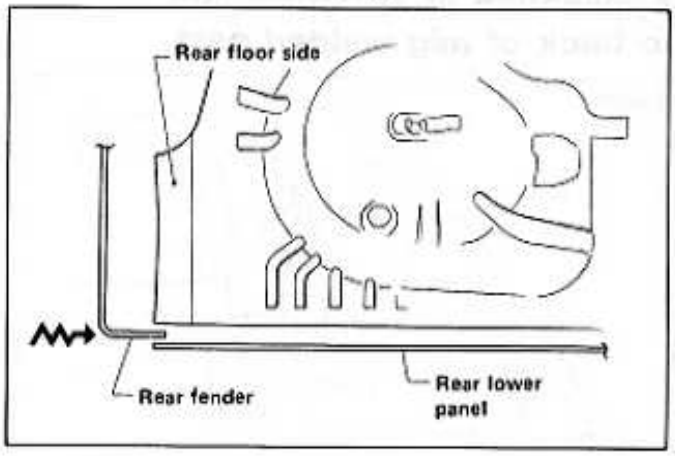
- Apply sealer to wheel opening area.



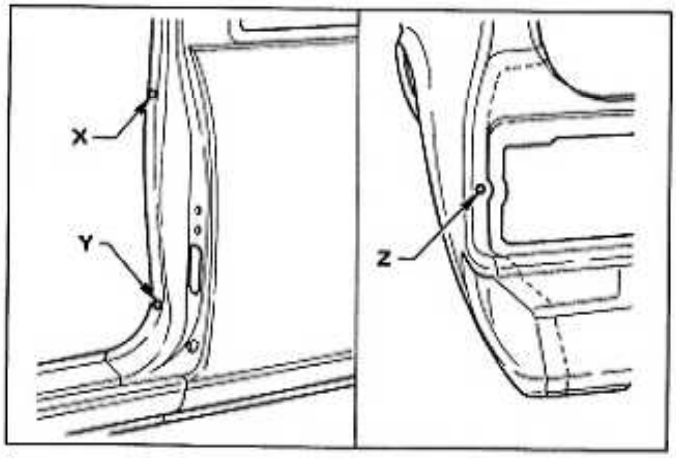
REAR FENDER

Precautions when installing rear fender

- When installing rear fender temporarily, first put rear lower end of fender in between lower rear panel and rear floor side, and then install whole for efficient work.



Note: To facilitate adjustment of part locations, install with locating holes aligned accurately.

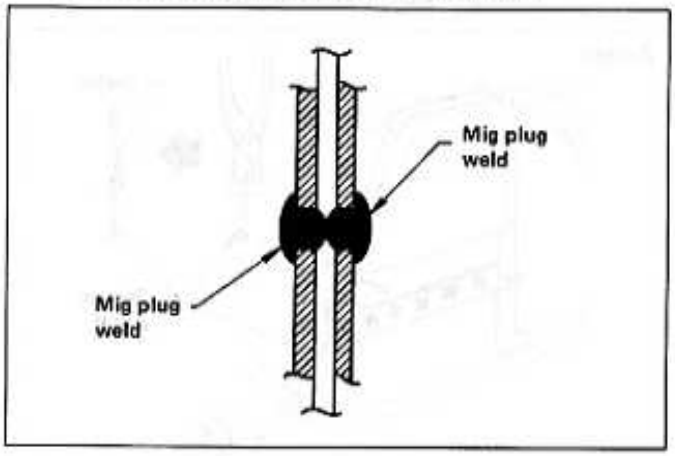


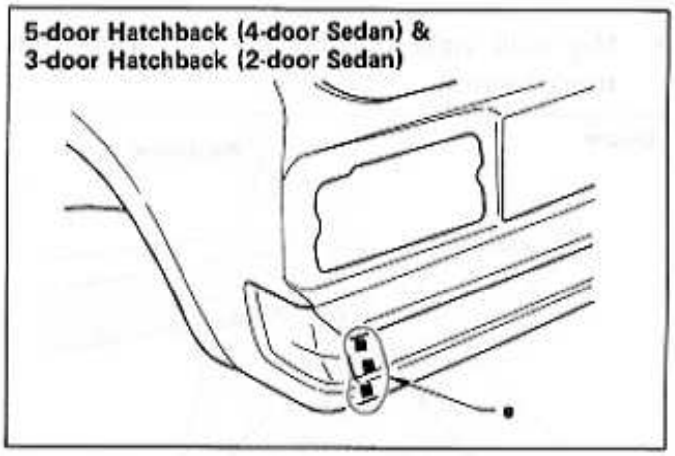
Dimension measurements and temporary installation of related parts (Again)

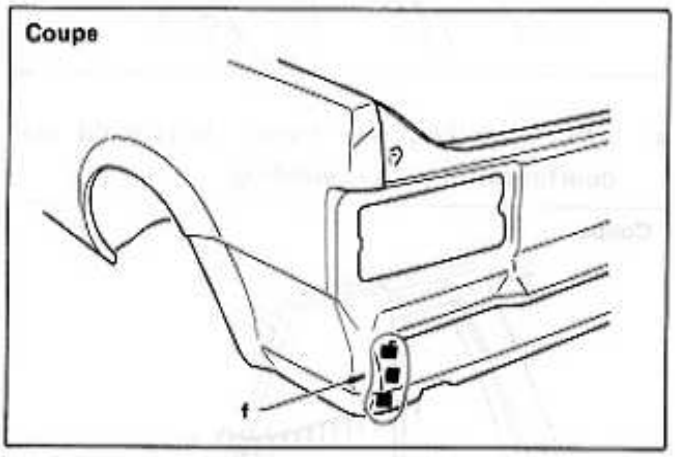
- For details, refer to page 69.

Precaution when welding

- From both sides (inside and outside), mig plug weld portion of 3-layered panel that has been cut through with a spot cutter.

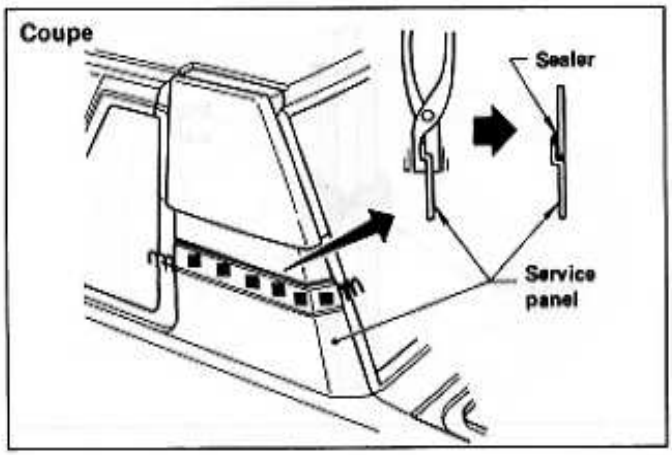




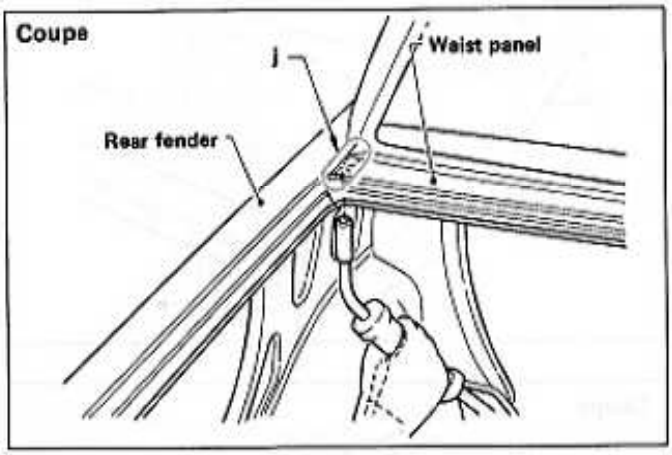


REAR FENDER

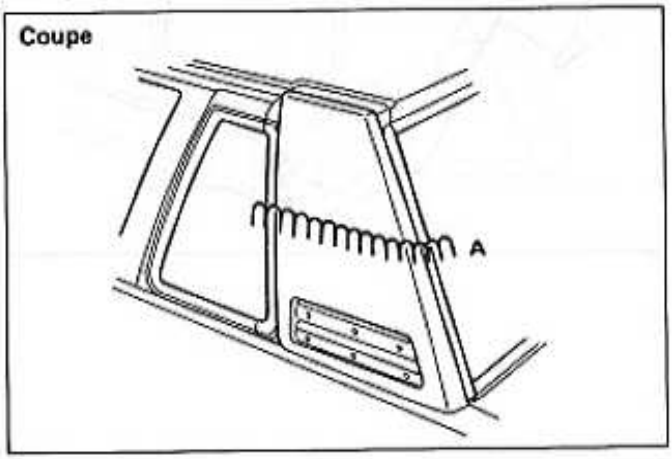
- To install portion (C), bend up and mig plug weld lapped part of service panel. Also, butt and mig weld flanges on both sides.
  Note: To prevent rain leakage, apply sealer to portion (C) after welding.



- Mig plug weld portion (j) from inside the trunk room.



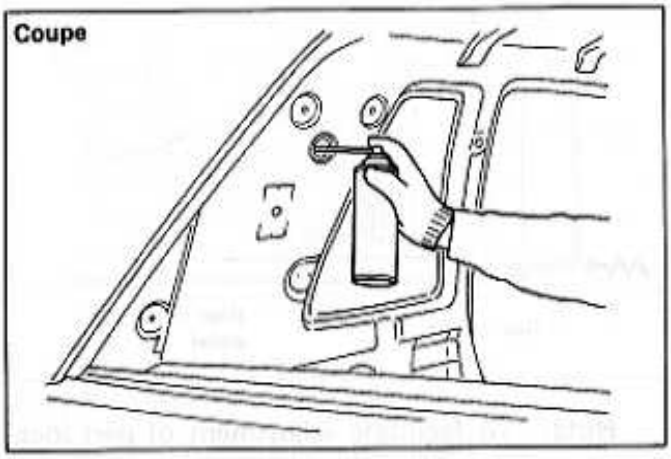
- After installing rear fender, butt weld rear quarter panel by mig welding.



Application of sealer

- Apply sealer to portions indicated in "Body Sealing" drawing.
  For details, refer to page 15.

Application of anticorrosive to back of mig welded part

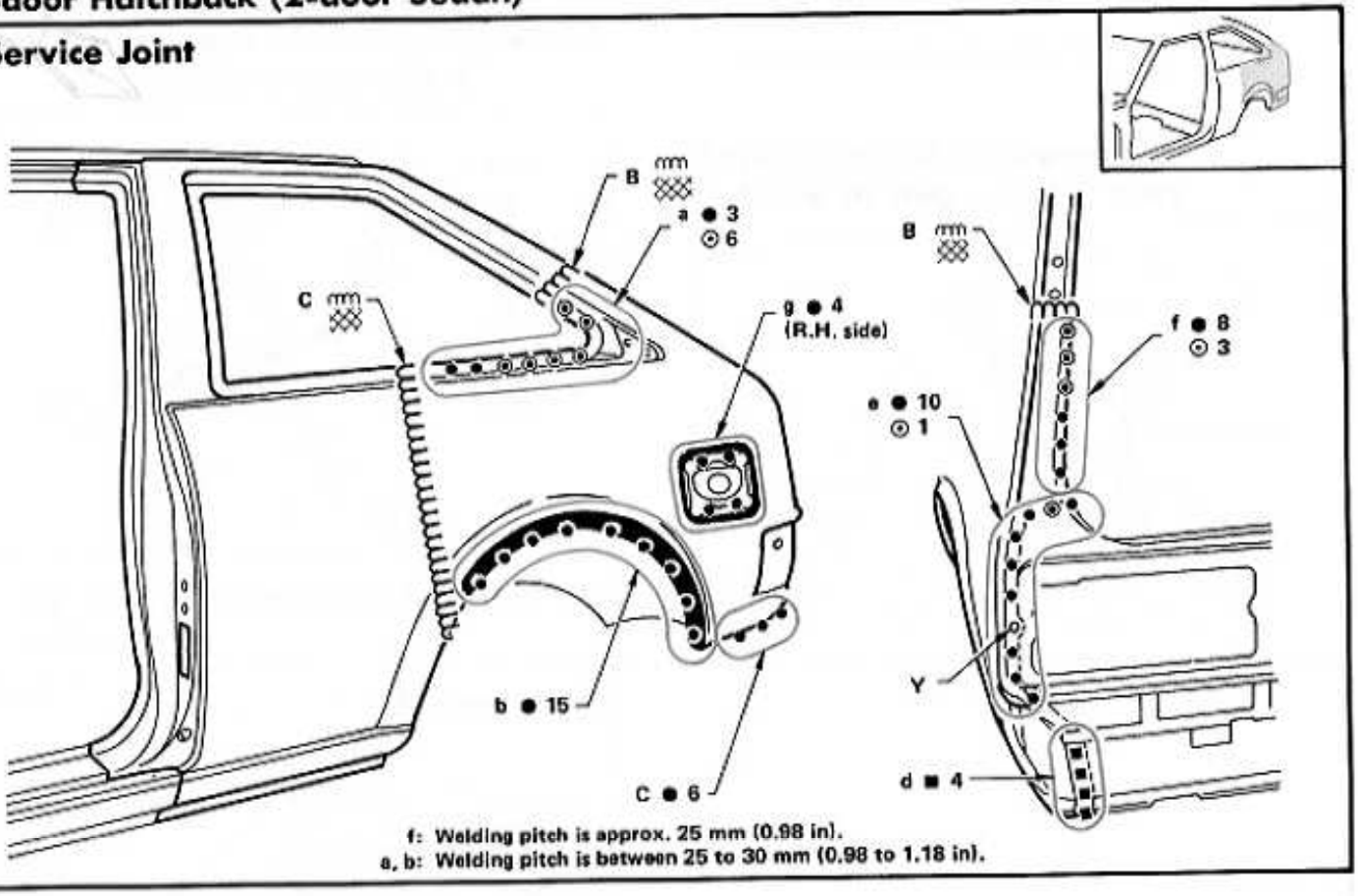


REAR FENDER
(Partial Replacement of Rear Side)

3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

3-door Hatchback (2-door Sedan)

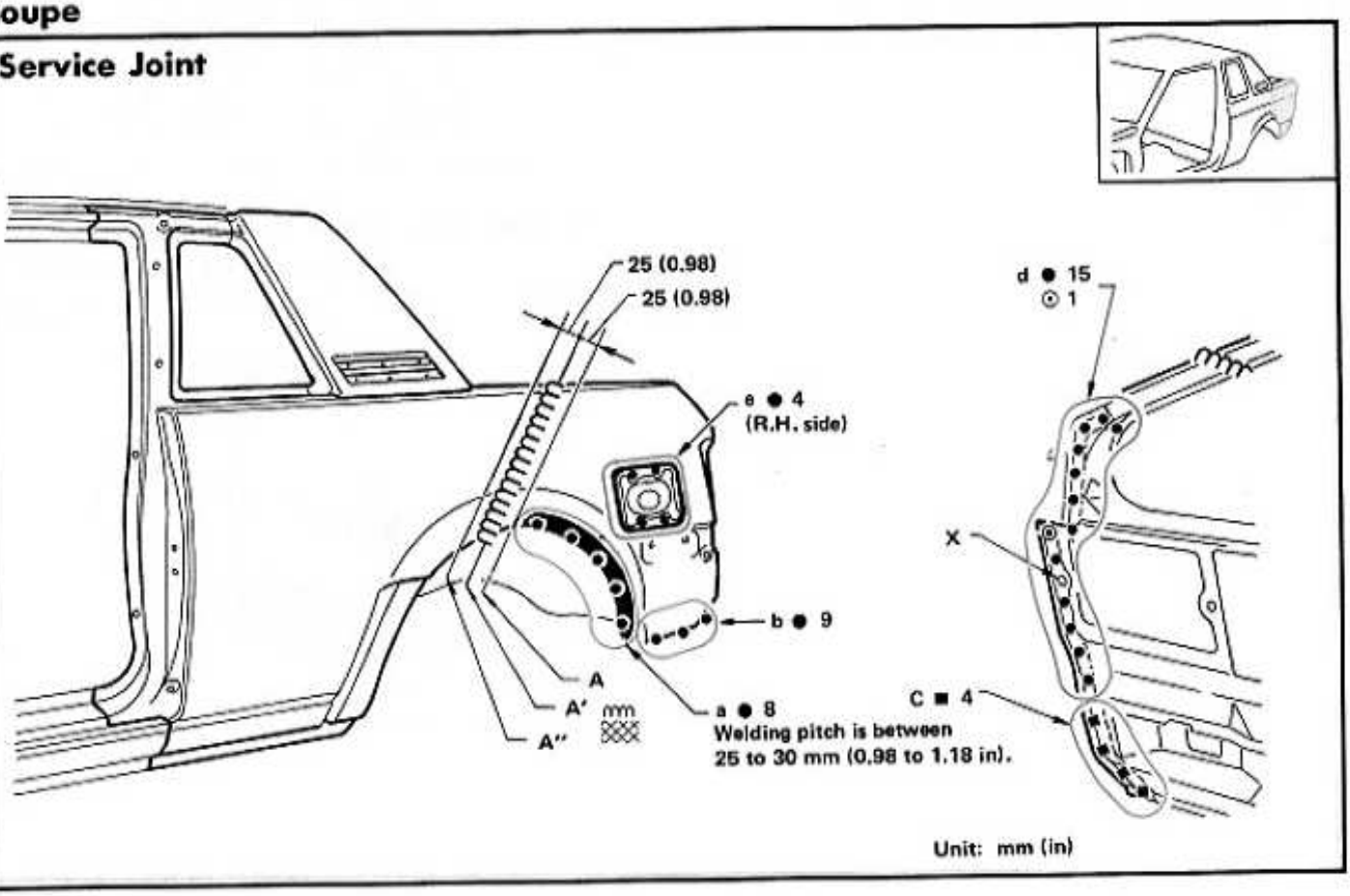
Service Joint



f: Welding pitch is approx. 25 mm (0.98 in).
a, b: Welding pitch is between 25 to 30 mm (0.98 to 1.18 in).

Coupe

Service Joint



Unit: mm (in)

REAR FENDER (Partial Replacement of Rear Side)

3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

Portions to be welded
3-door Hatchback (2-door Sedan)
B. Rear fender
C. Rear fender
a. Side panel
Side panel & side panel reinforcement
b. Rear wheelhouse inner
c. Rear floor side
d. Rear lower panel & rear floor side

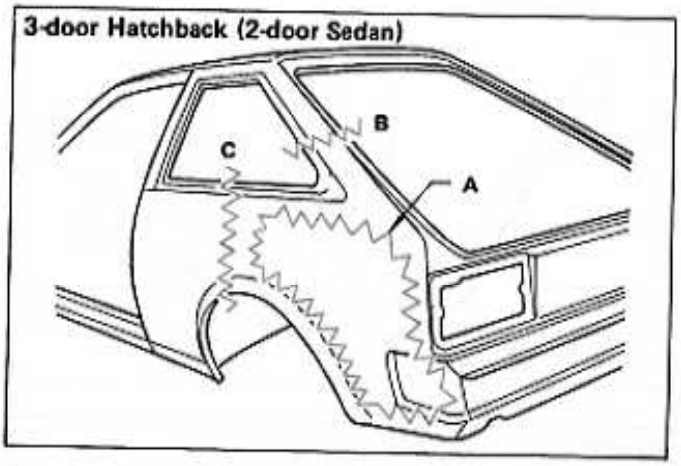
Portions to be welded
e. Rear panel upper
Rear panel upper & corner panel
f. Rear side panel
Rear side panel & rear pillar reinforcement
g. Fuel filler base (R.H. side)
Coupe
A'. Rear fender

Portions to be welded
a. Wheelhouse outer
b. Rear floor side
c. Rear floor side & rear lower panel
d. Rear upper panel
Rear upper panel & corner panel
Corner panel
e. Fuel filler base (R.H. side)

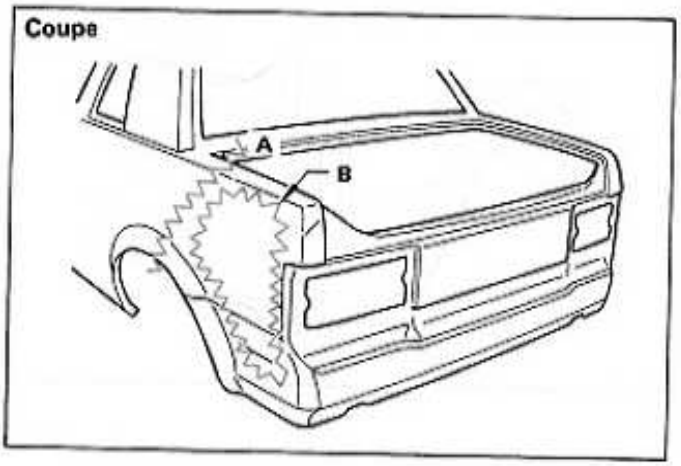
REMINDERS WHEN REMOVING

- Cut off damaged portion.

3-door Hatchback (2-door Sedan)

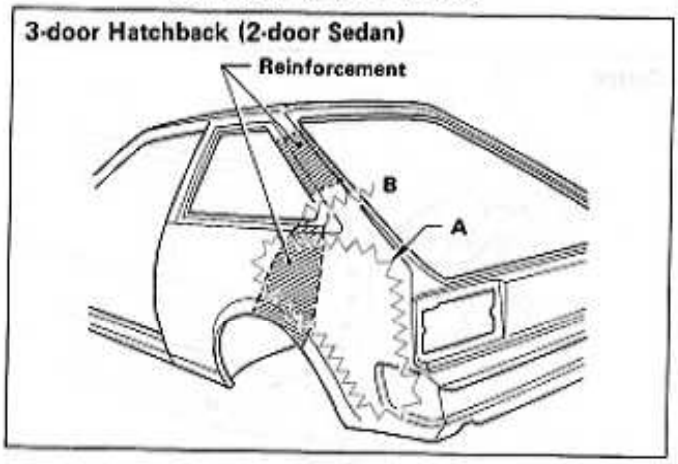


Coupe

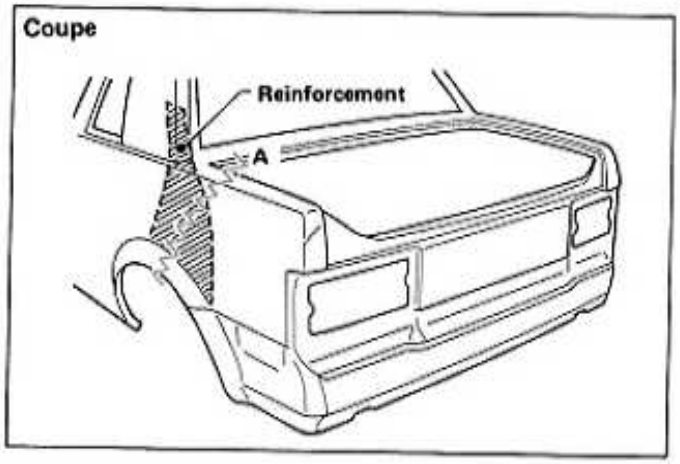


Note: Be careful not to cut reinforcement on inside of rear fender.

3-door Hatchback (2-door Sedan)



Coupe



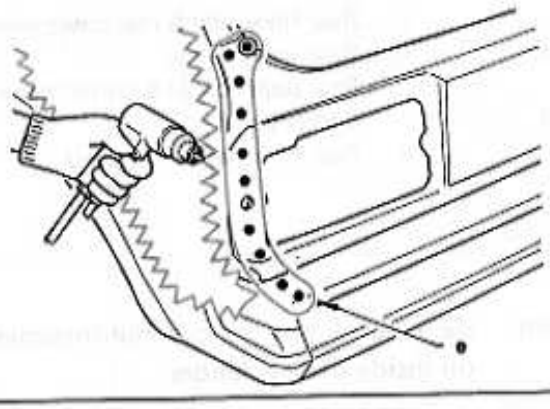
REAR FENDER (Partial Replacement of Rear Side)

3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

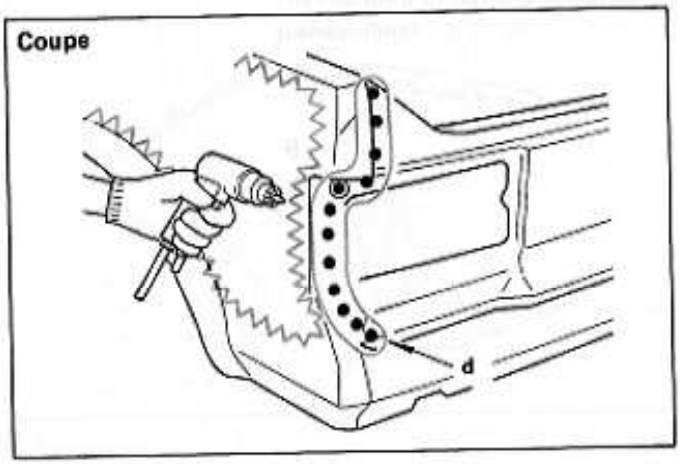
Precautions when spot cutting

- Cut portions from inside the trunk room with a spot cutter.

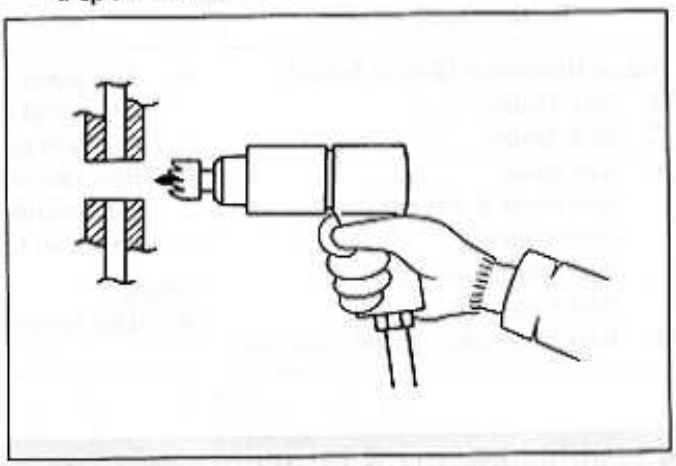
3-door Hatchback (2-door Sedan)



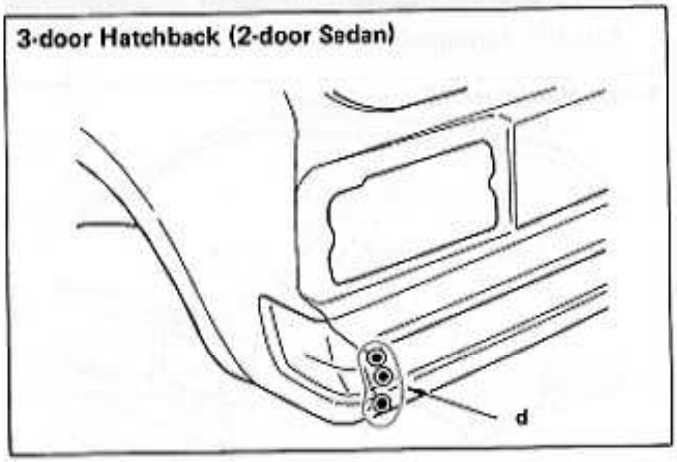
Coupe



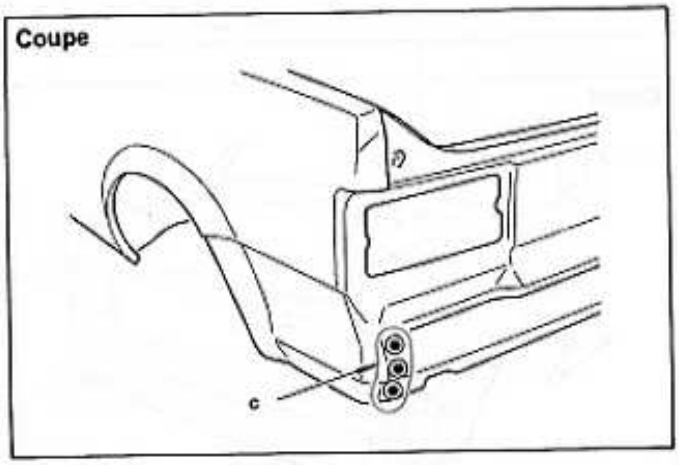
- Cut completely through 3-layered parts with a spot cutter.



3-door Hatchback (2-door Sedan)



Coupe



REAR FENDER (Partial Replacement of Rear Side)

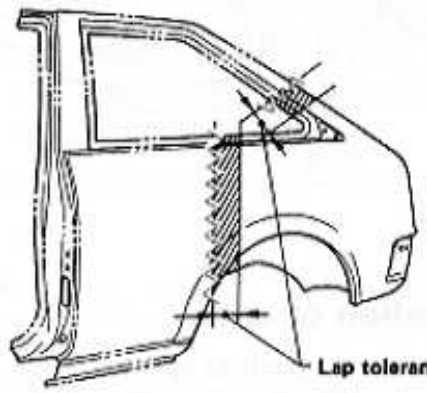
3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

REMINDERS WHEN INSTALLING

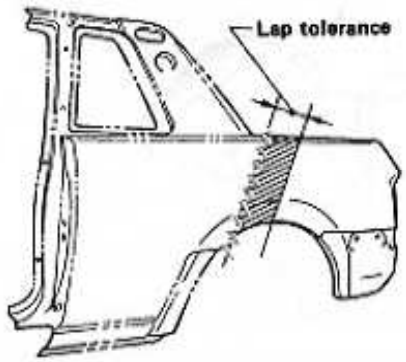
Precaution when cutting off service panel

- Cut off service panel in line with mating parts.

3-door Hatchback (2-door Sedan)



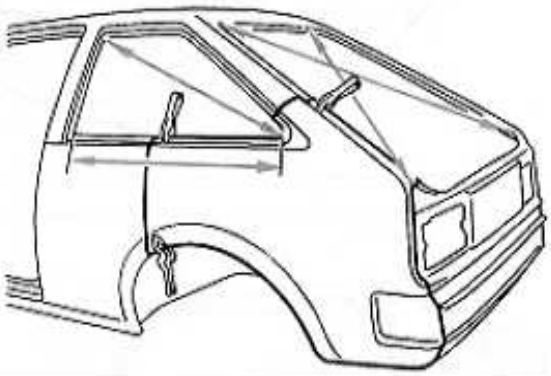
Coupe



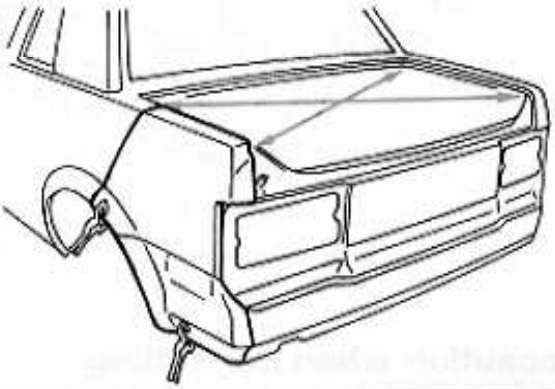
Dimension measurements and temporary installation of related parts

- Temporarily install rear fender with a vise clamp. Check various dimensions of part locations according to "Body Alignment" drawing.
  For details, refer to page 26.

3-door Hatchback (2-door Sedan)

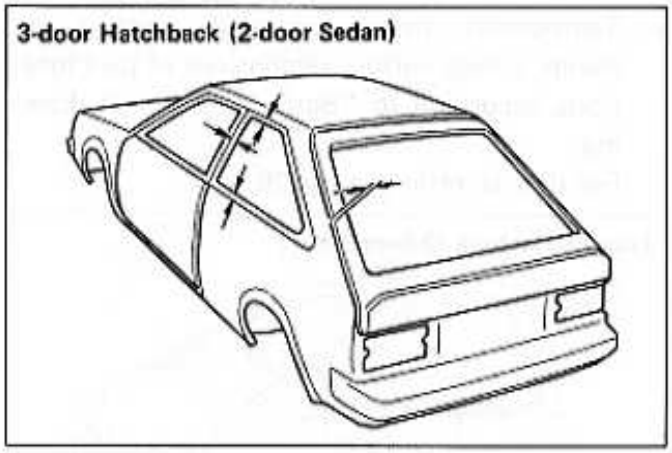


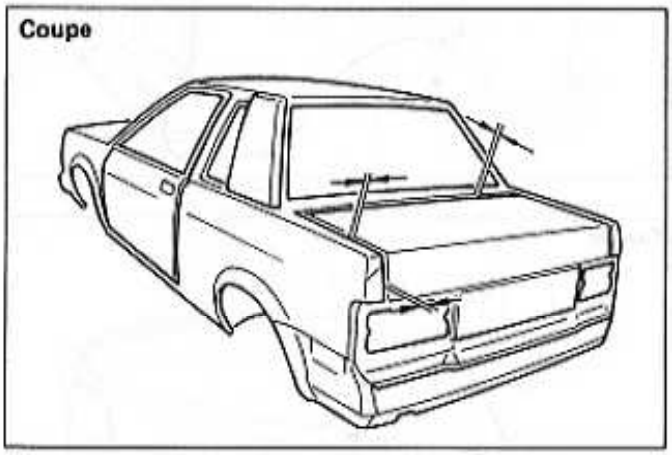
Coupe



REAR FENDER (Partial Replacement of Rear Side)

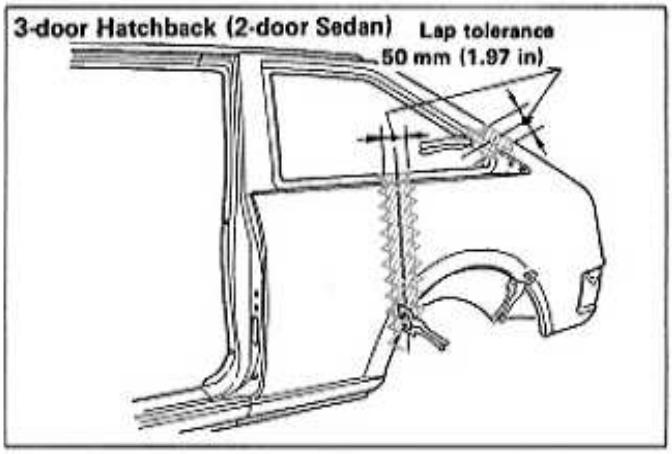
- Temporarily install related parts such as trunk lid, rear gate, window glass, etc. Check clearances, grades and parallelism.

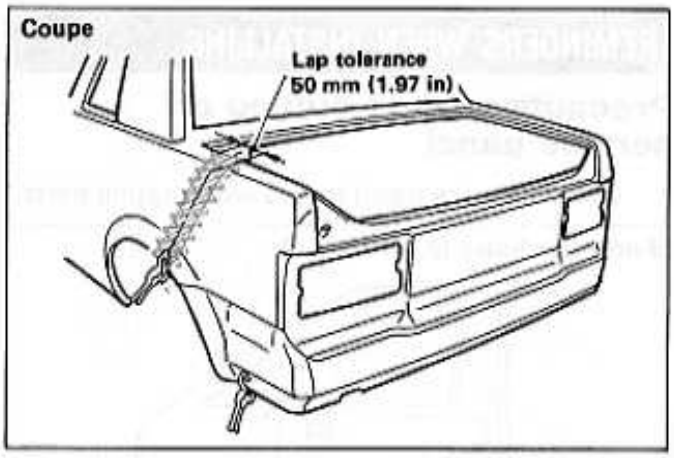




Precaution when lap-cutting service panel

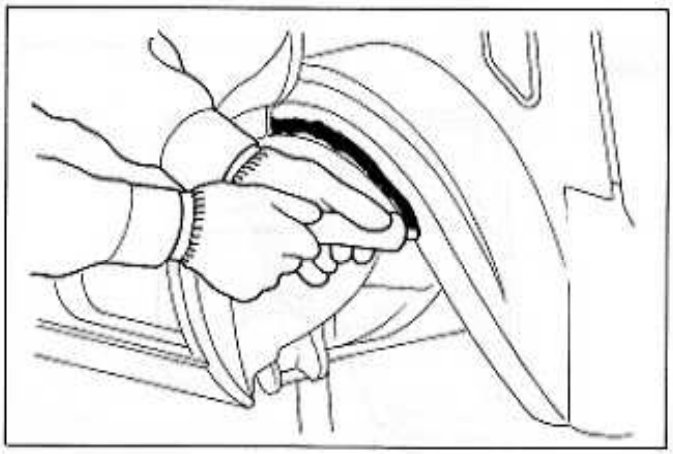
- Cut off in middle of lapped part of service panel to be installed.





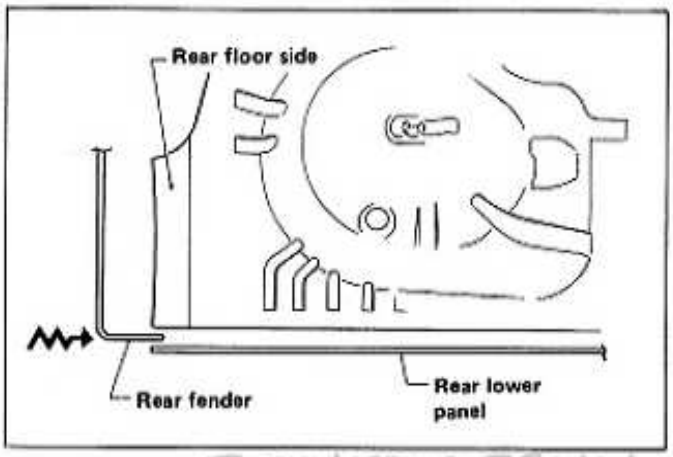
Application of sealer

- Apply sealer to wheel opening area.



Precautions when installing rear fender

- When installing fender temporarily, first put rear lower end of fender in between rear lower panel and rear floor side, and then install whole for efficient work.



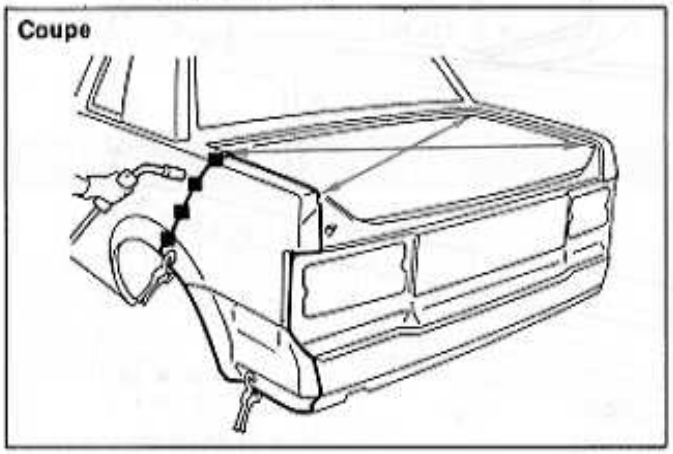
REAR FENDER (Partial Replacement of Rear Side)

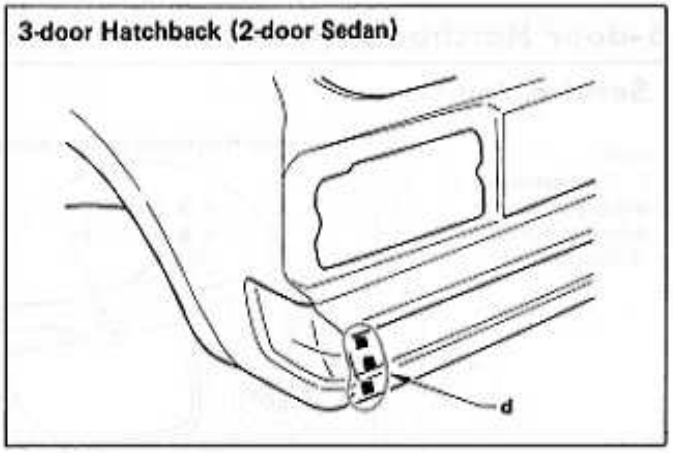
3-DOOR HATCHBACK (2-DOOR SEDAN) & COUPE

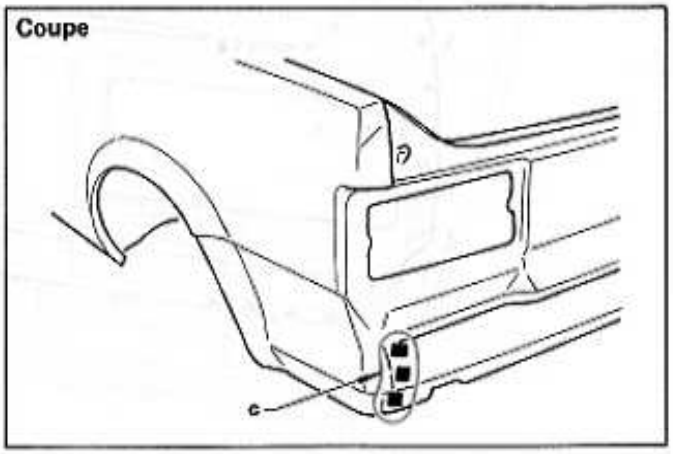
Dimension measurements and temporary installation of related parts (Again)

- For details, refer to page 77.

  Note: If dimensions of part locations are in order, temporarily mig weld portions of body and service panel that are to be welded at several points. This will make it easy to confirm installation of related parts.

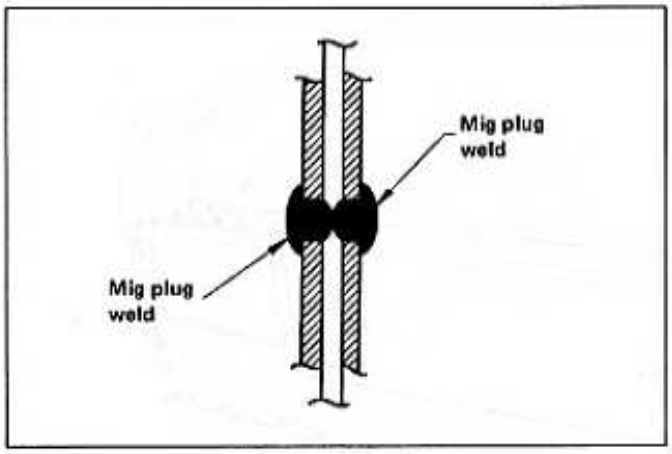




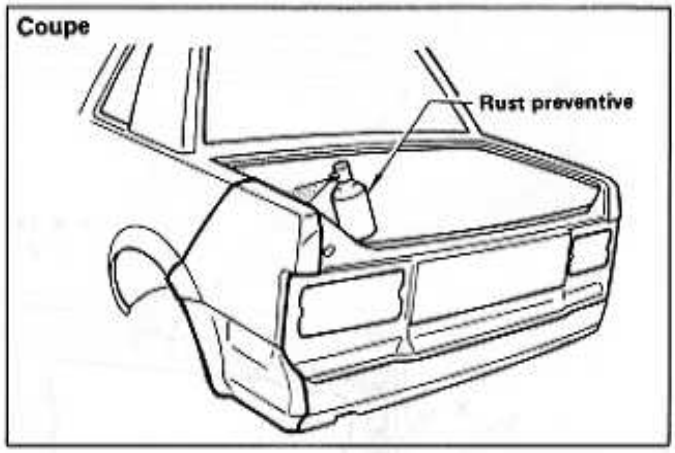


Precaution when welding

- Mig plug weld from both sides the portion of 3-layered panel that has been cut through with a spot cutter during removal.



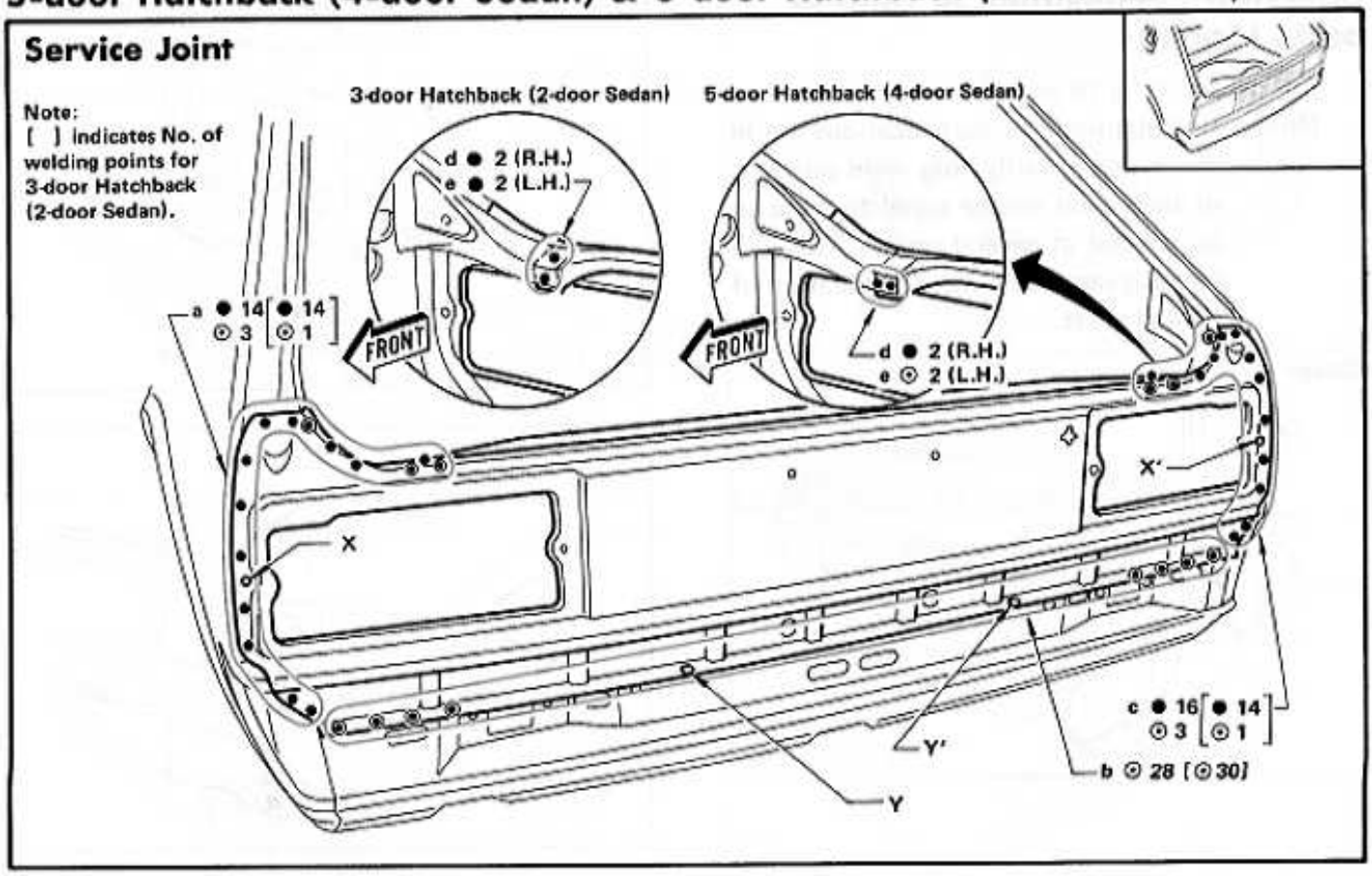
Application of anticorrosive to back of mig welded part



REAR PANEL UPPER

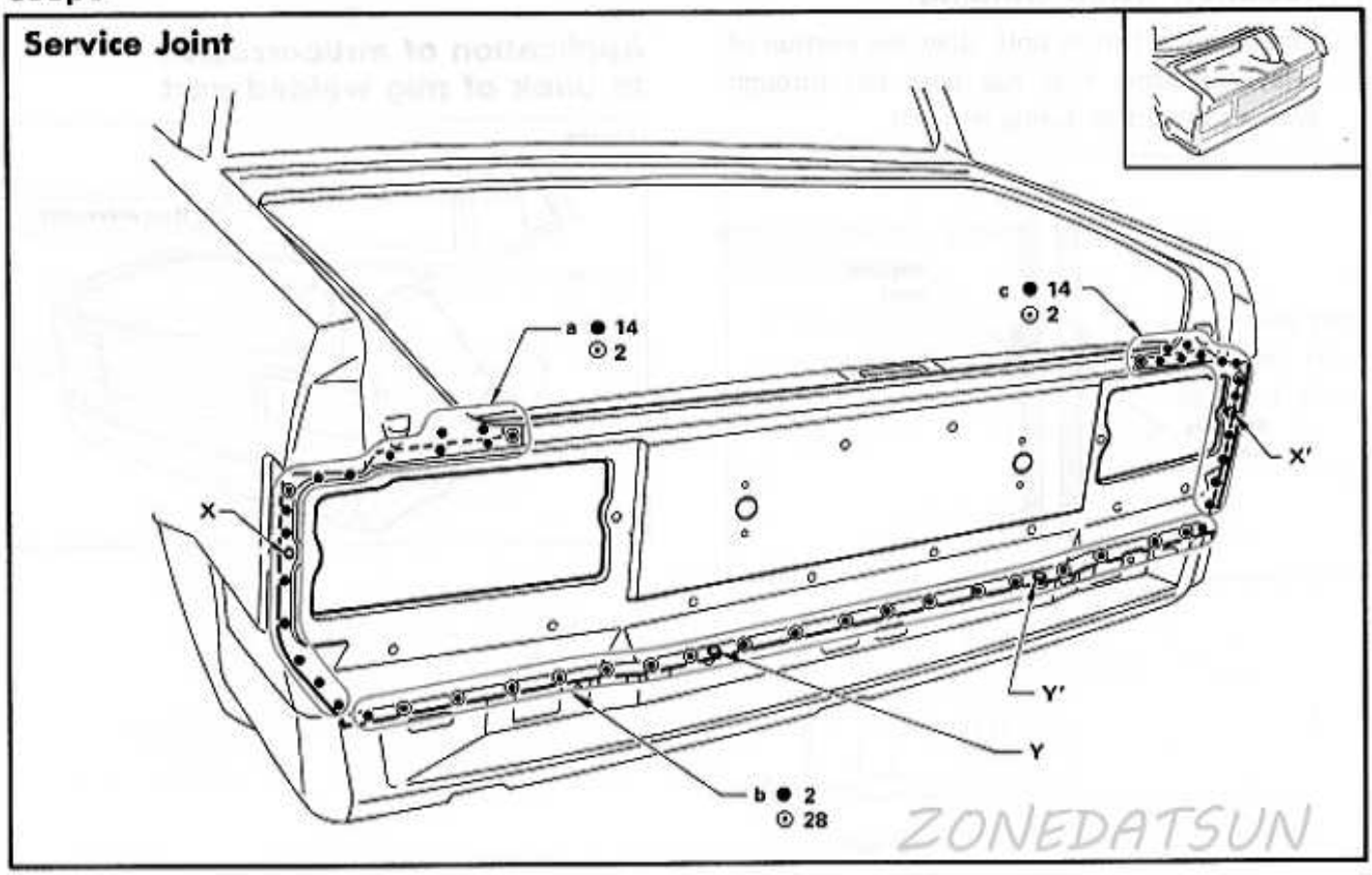
5-door Hatchback (4-door Sedan) & 3-door Hatchback (2-door Sedan)

Service Joint



Coupe

Service Joint

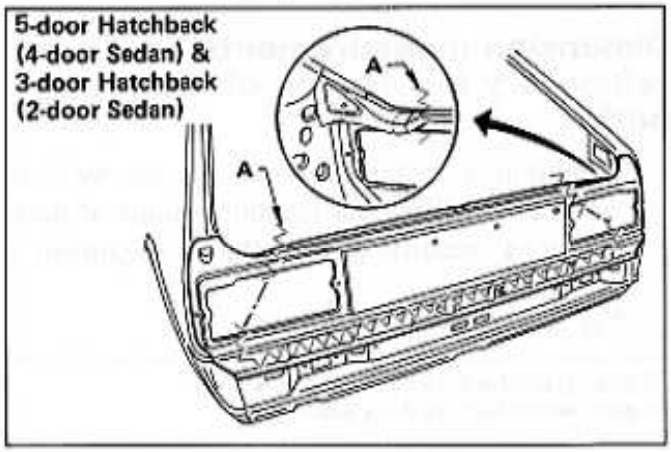


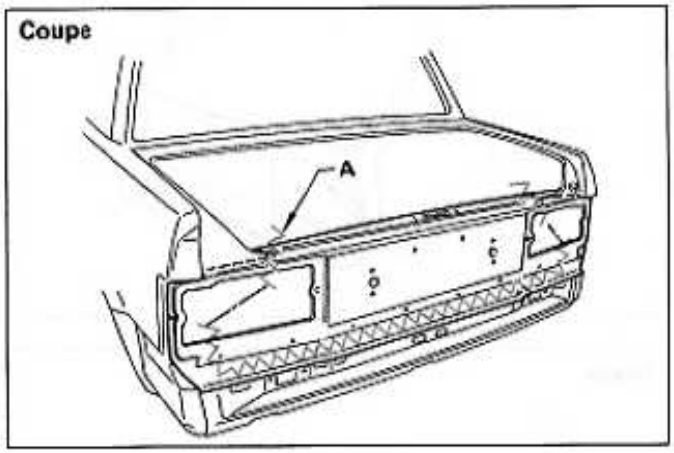
REAR PANEL UPPER

Portions to be welded	Portions to be welded	Portions to be welded
5-door Hatchback (4-door Sedan)	**3-door Hatchback (2-door Sedan)**	**Coupe**
a. Rear fender Rear side panel & corner panel Corner panel	a. Rear fender Rear side panel & corner panel Corner panel	a. Rear fender Rear fender inner & corner panel
b. Rear floor rear & rear panel lower Rear floor side & rear panel lower	b. Rear floor rear & rear panel lower	b. Rear floor side Rear floor side & rear lower panel Rear floor rear & rear lower panel
c. Rear fender Rear fender inner & corner panel Corner panel	c. Rear fender Rear side panel & corner panel Corner panel	c. Rear fender Rear fender inner & corner panel
d. Corner panel	d. Corner panel	
e. Corner panel	e. Corner panel	

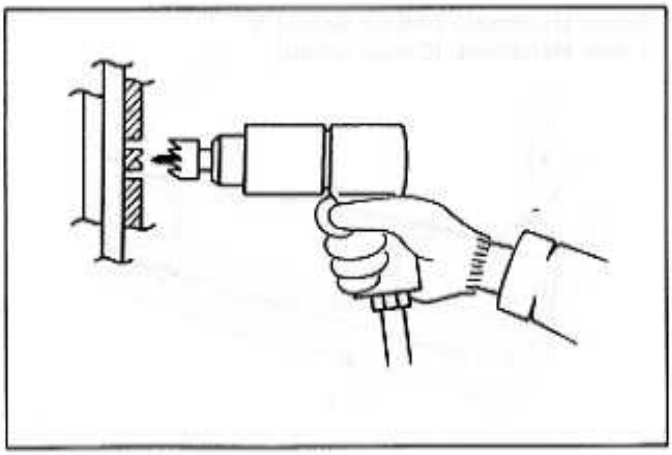
REMINDERS WHEN REMOVING

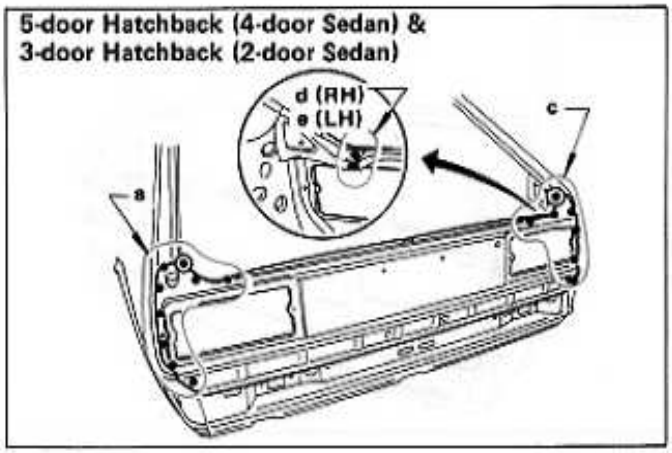
- Cut off damaged portion.

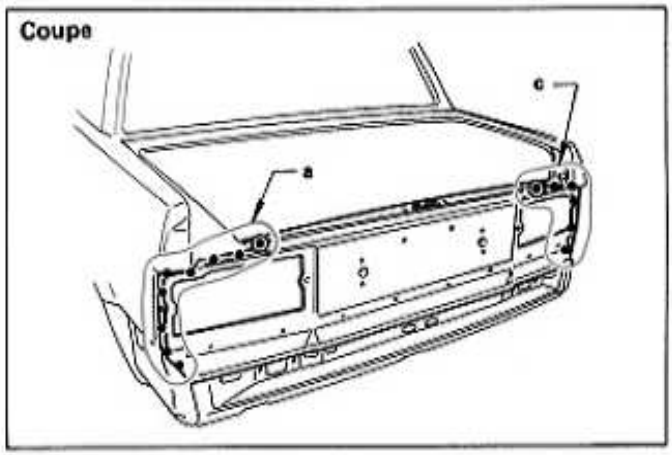




- Spot cut portions before cutting away damaged portion so that it is easy to work with.



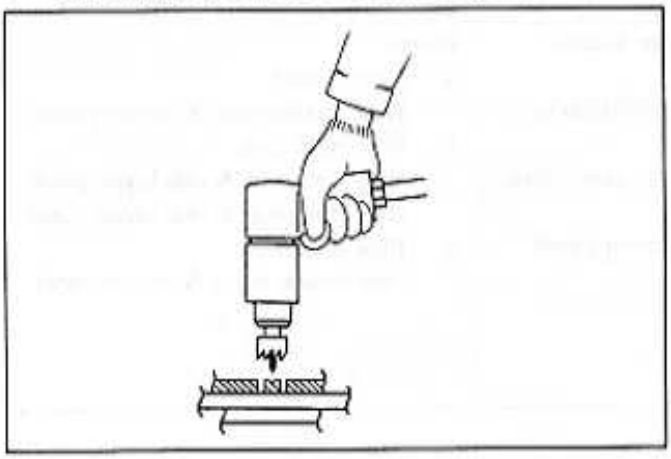




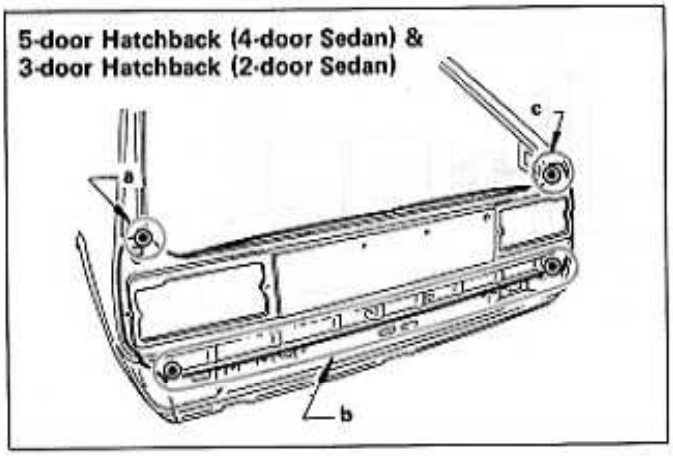
REAR PANEL UPPER

Precaution when spot cutting

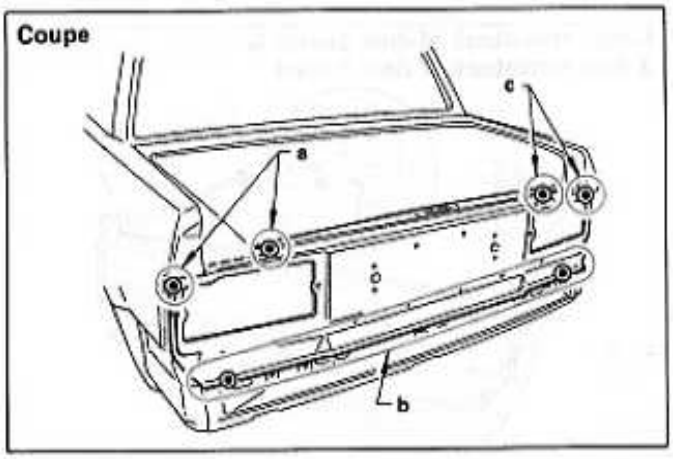
- Cut only top panel of 3-layered part.



5-door Hatchback (4-door Sedan) &
3-door Hatchback (2-door Sedan)

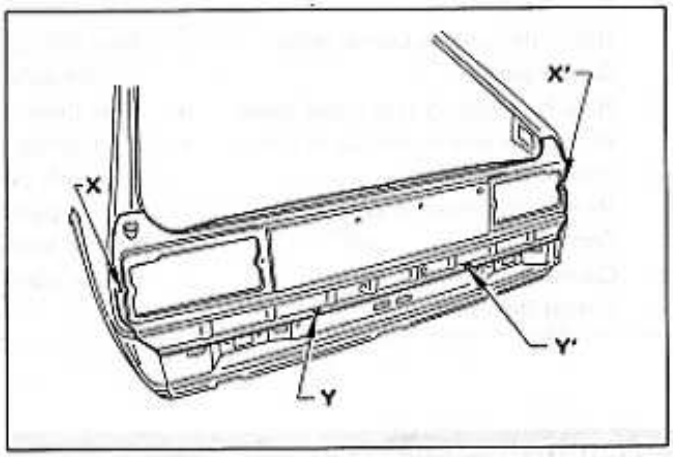


Coupe



REMINDERS WHEN INSTALLING

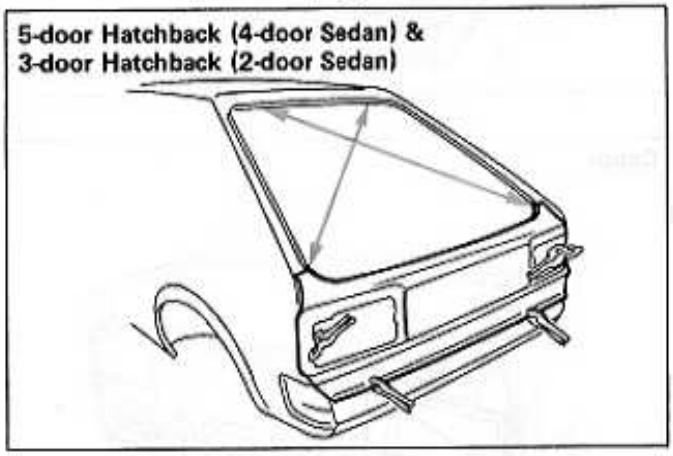
- Temporarily install service panel with locating holes accurately aligned.



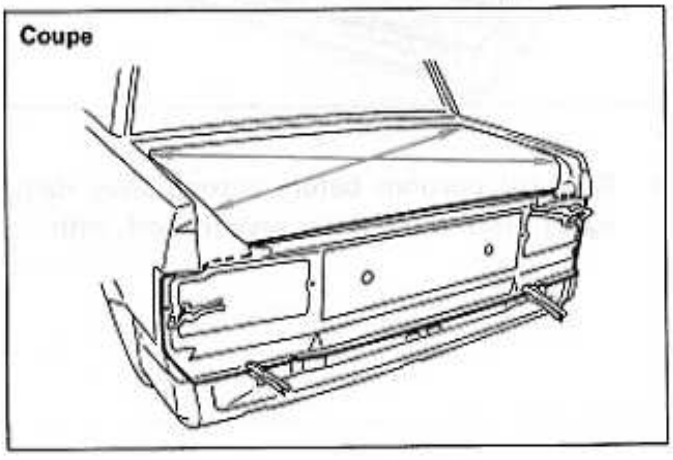
Dimension measurements and temporary installation of related parts

- Temporarily install rear panel upper with a vise clamp. Check various dimensions of part locations according to "Body Alignment" drawing.
  For details, refer to page 26.

5-door Hatchback (4-door Sedan) &
3-door Hatchback (2-door Sedan)



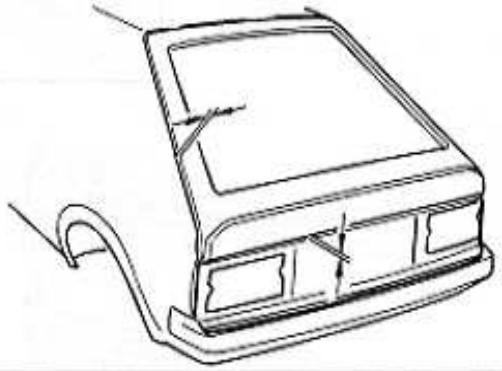
Coupe



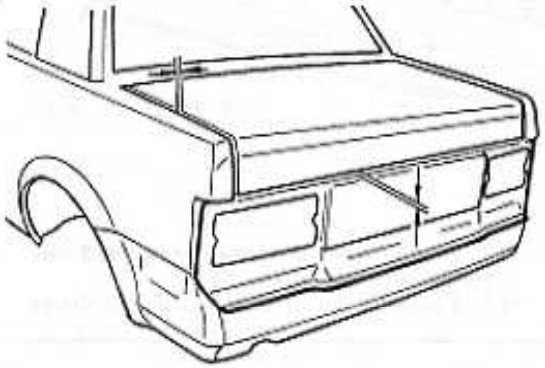
REAR PANEL UPPER

- Temporarily install related parts such as rear gate, trunk lid, etc. Check clearances, grades and parallelism.

5-door Hatchback (4-door Sedan) &
3-door Hatchback (2-door Sedan)

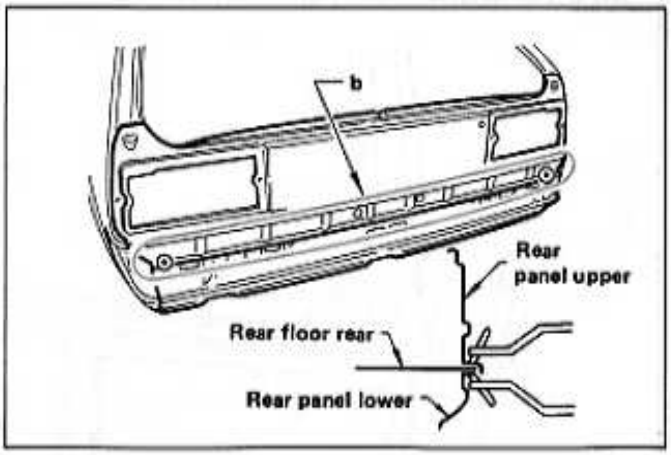


Coupe



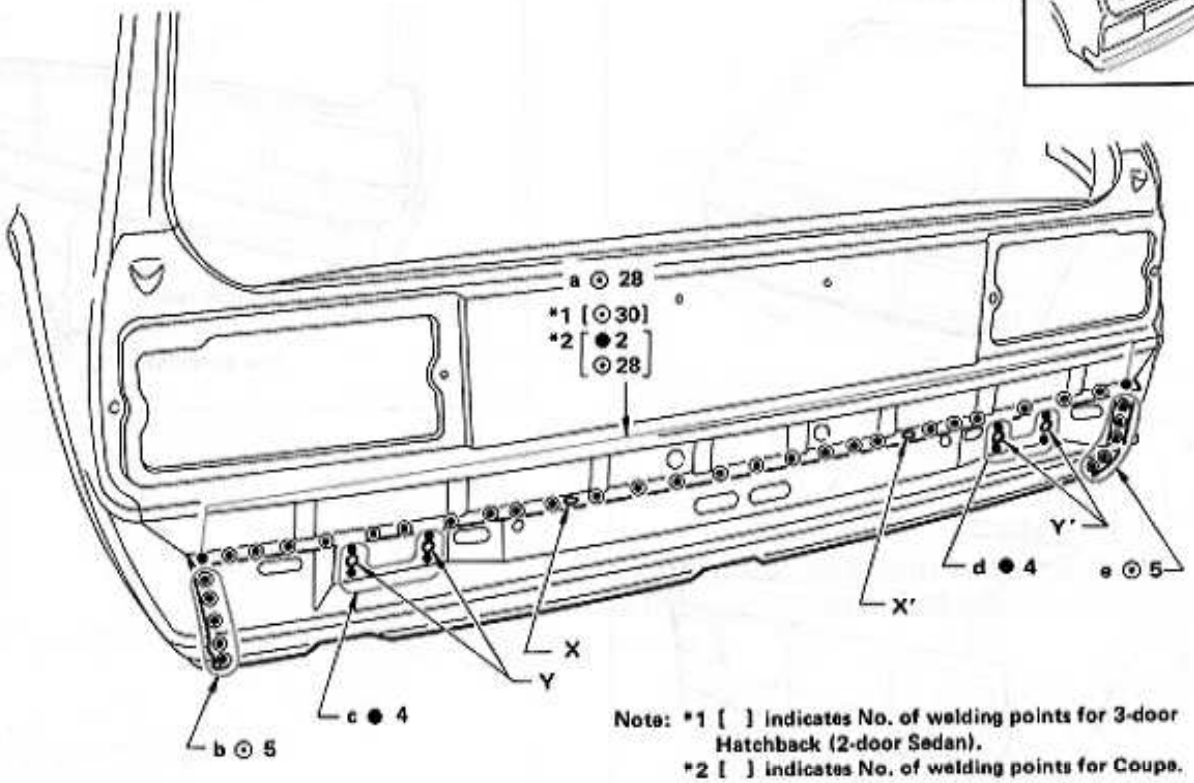
Precaution when welding

- Use an offset arm to prevent interference of welder tip with panel when spot welding.



REAR PANEL LOWER

Service Joint



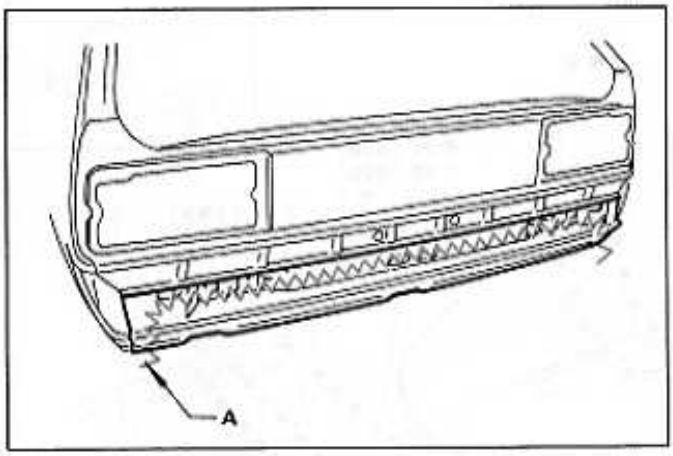
Note: *1 [ ] indicates No. of welding points for 3-door Hatchback (2-door Sedan).
*2 [ ] indicates No. of welding points for Coupe.

Portions to be welded	Portions to be welded	Portions to be welded
a. Rear panel upper & rear floor rear	c. Rear side member	e. Rear fender & rear floor side
b. Rear fender & rear floor side	d. Rear side member	

REAR PANEL LOWER

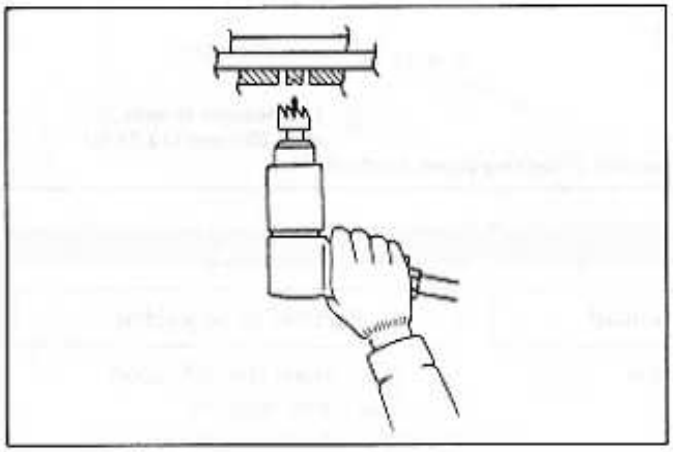
REMINDERS WHEN REMOVING

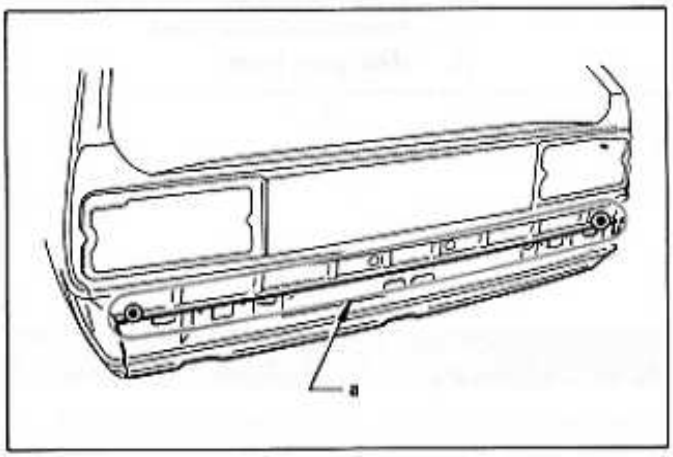
- Cut off damaged portion.



Precaution when spot cutting

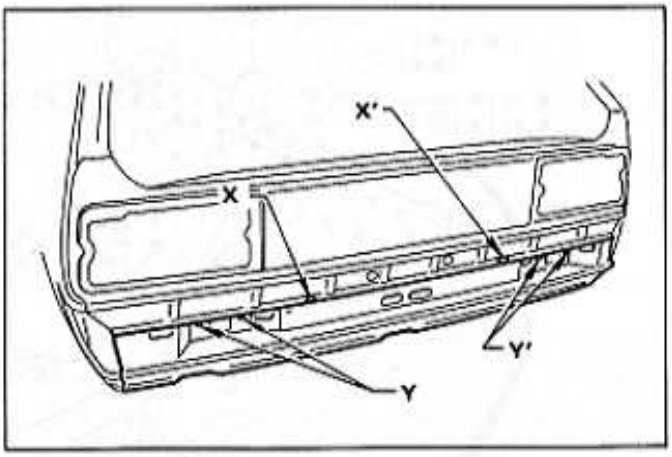
- Cut only bottom panel of 3-layered part with a spot cutter.





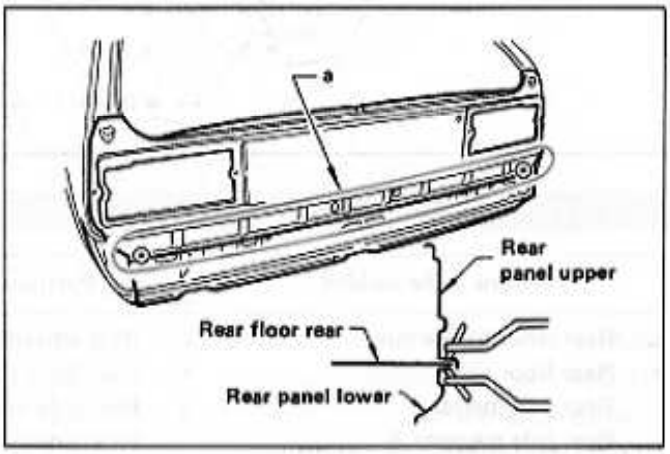
REMINDERS WHEN INSTALLING

- Align locating holes and rear bumper mounting holes accurately, and install service panel.



Precaution when welding

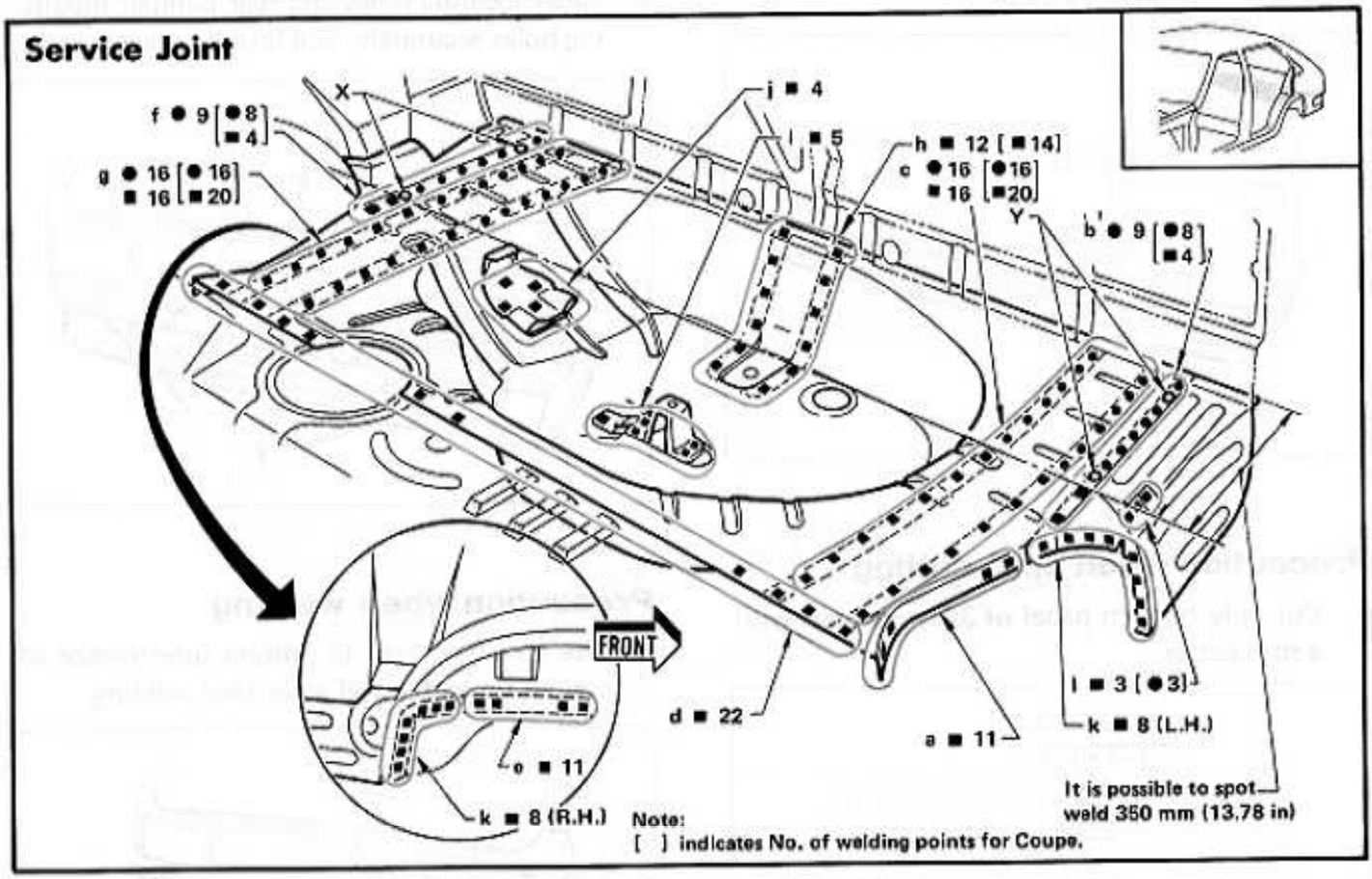
- Use an offset arm to prevent interference of welder tip with panel when spot welding.



REAR FLOOR REAR AND FLOOR SIDE

(Work after rear fender and rear panel upper and lower have been removed.)

Service Joint



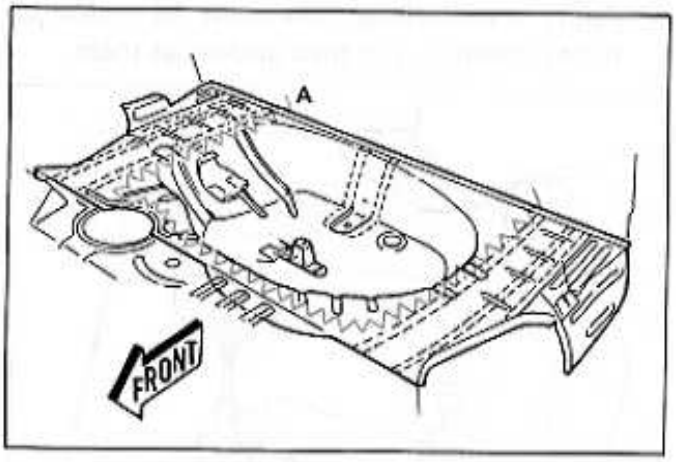
Note:
[ ] indicates No. of welding points for Coupe.

Portions to be welded	Portions to be welded	Portions to be welded
a. Rear wheelhouse inner	e. Rear wheelhouse inner	i. Spare wheel clamp bracket
b. Rear floor side	f. Rear floor side	j. Jack clamp bracket
c. Rear side member Rear side member & rear floor front	g. Rear side member Rear side member & rear floor front	k. Rear wheelhouse inner Rear wheelhouse inner & outer Rear wheelhouse outer
d. Rear floor front	h. Towing hook	l. Rear pillar inner

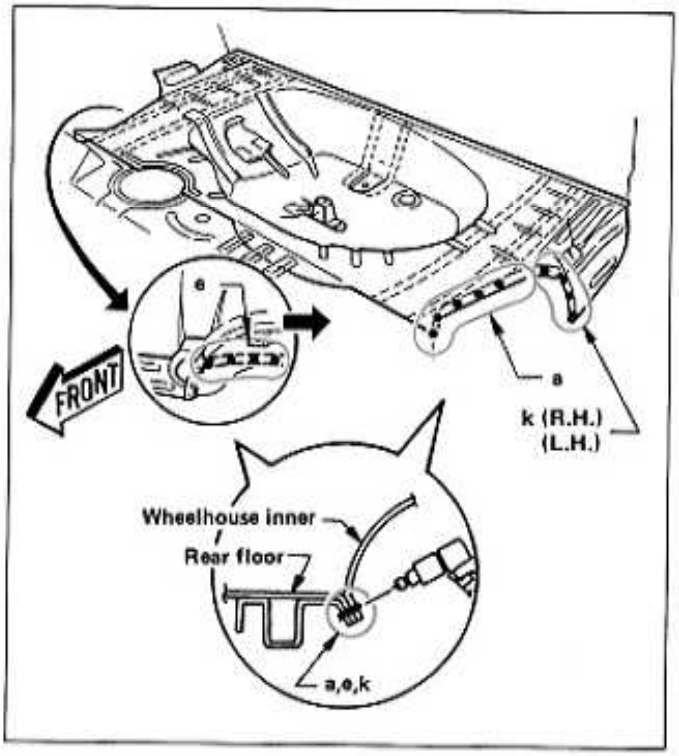
REAR FLOOR REAR AND FLOOR SIDE

REMINDERS WHEN REMOVING

- Cut off portion (A).

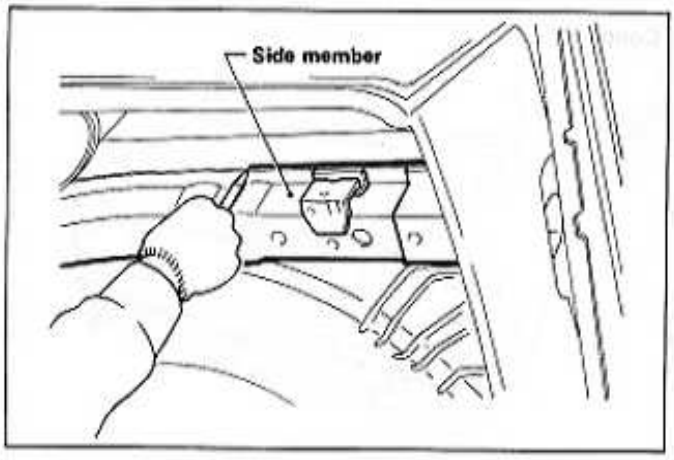


- For improved job efficiency, cut completely through spot welds at portions (a), (e) and (k) from side of wheelhouse.

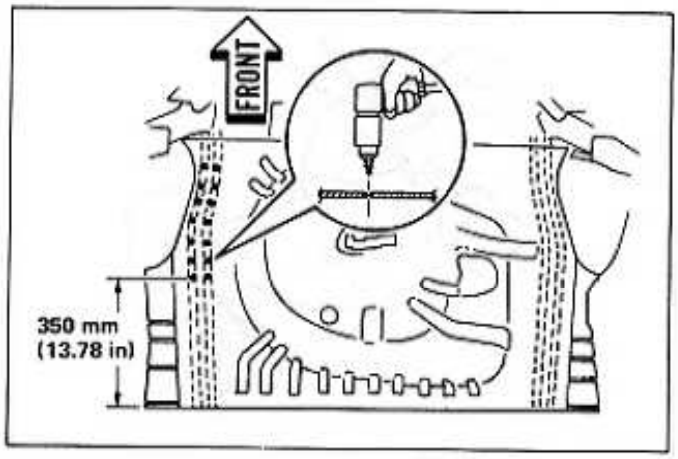


REMINDERS WHEN INSTALLING

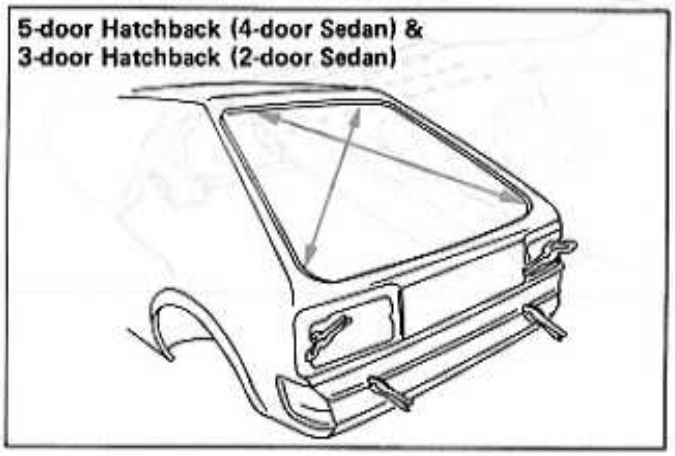
- Temporarily install rear floor and scribe along side member and crossmember from below floor. This makes it easy to drill mig plug weld holes.



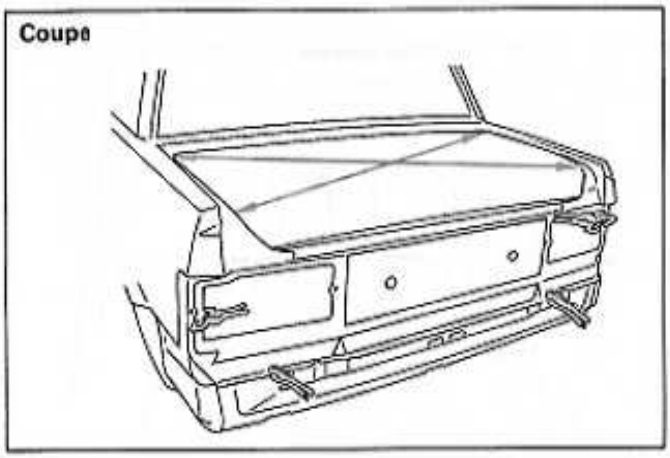
- Drill mig plug weld holes in rear floor beyond reach of a spot welder. To achieve efficient welding, a spot welder should be used as far as it can reach.



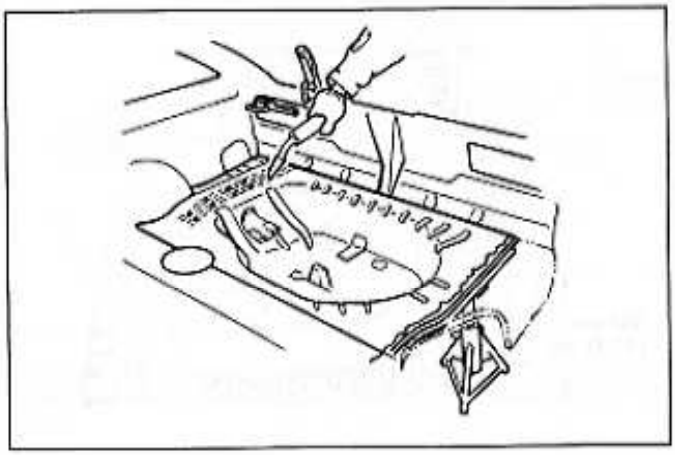
- When installing rear floor, temporarily install rear fender and rear panel that are related parts simultaneously. Check various dimensions of part locations according to "Body Alignment" drawing.
For details, refer to page 26.



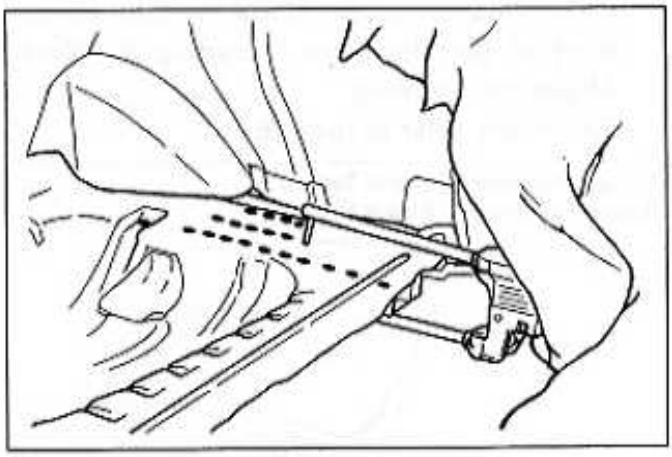
REAR FLOOR REAR AND FLOOR SIDE



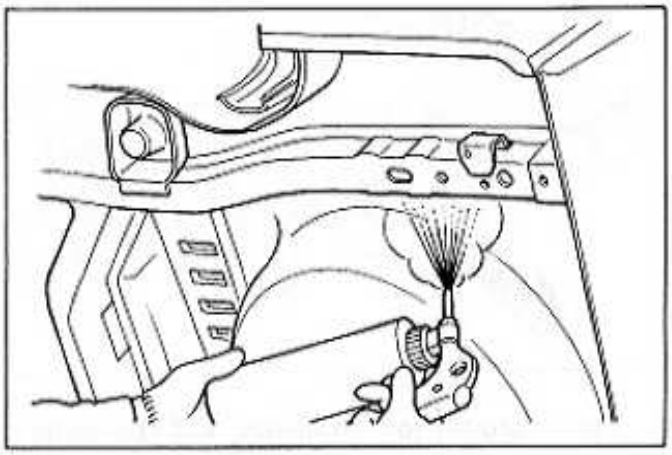
- With related parts installed temporarily, temporarily mig plug weld rear floor at several points.



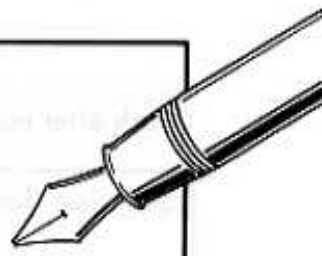
- Remove rear panel and spot weld points that can be spot welded.



- Apply sealer to rear wheel opening and floor side according to "Body Sealing" drawing. For details, refer to page 15.
- Apply anticorrosive treatment to welds at floor underside, and then undercoat them.



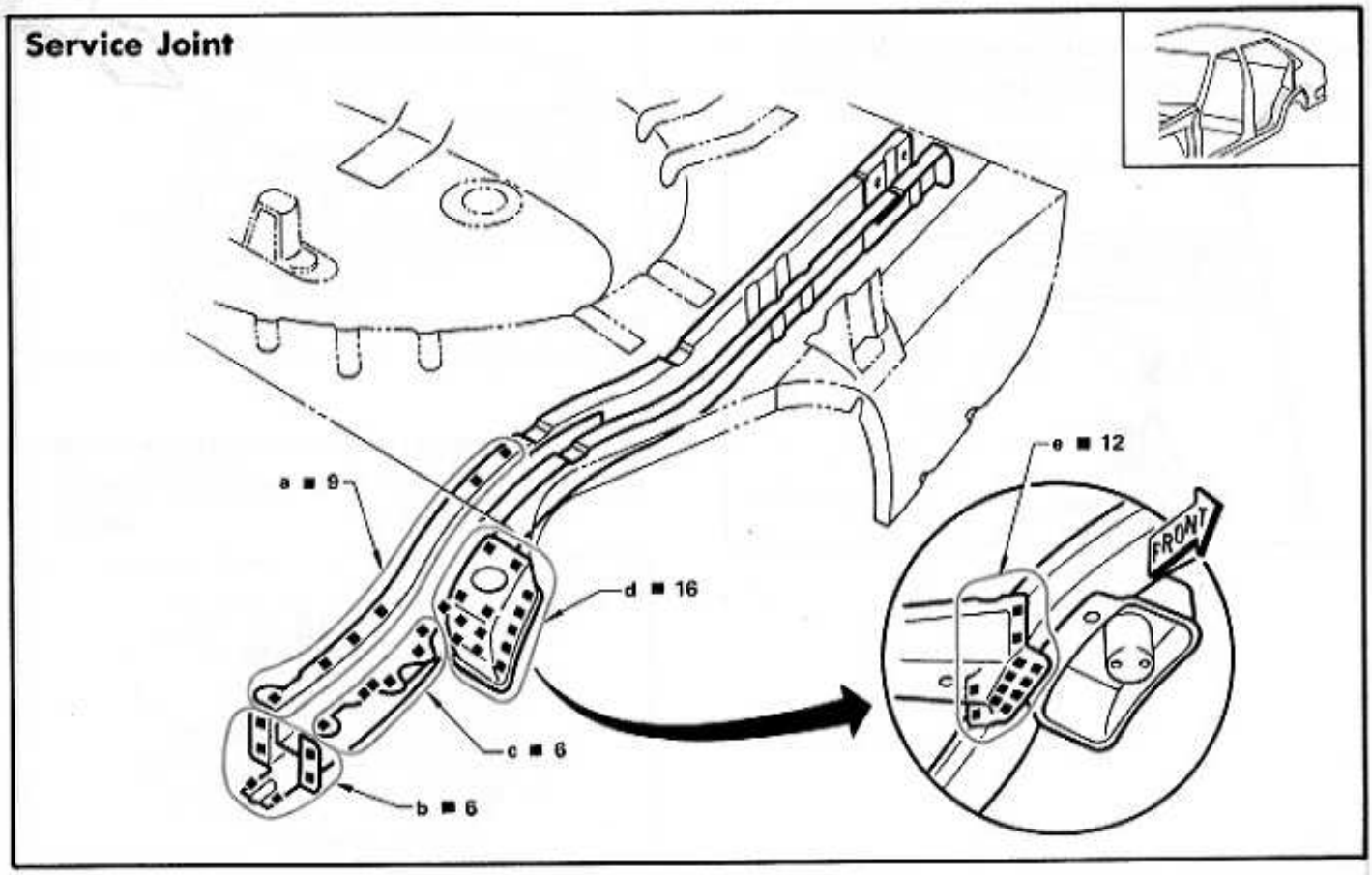
Note



REAR SIDE MEMBER (One Side)

(Work after rear panel upper and lower and rear floor rear have been removed.)

Service Joint

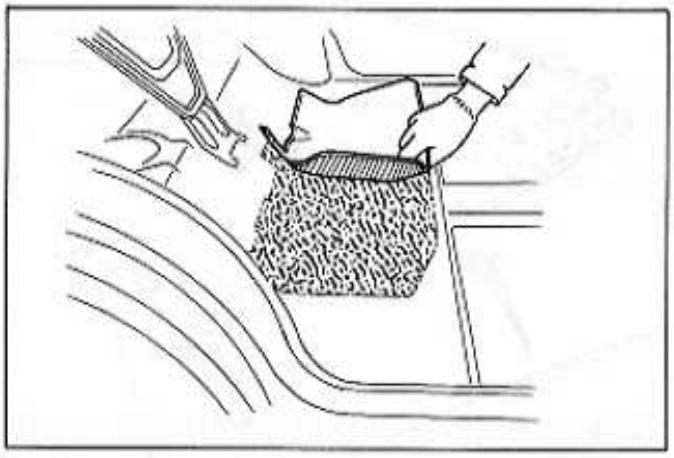


Portions to be welded	Portions to be welded	Portions to be welded
a. Rear floor front & crossmember Rear floor front b. Rear floor front & crossmember Crossmember c Rear floor front & retainer Rear floor front	d. Rear floor front & wheelhouse inner Rear floor front & spring mounting bracket Rear floor front	e. Crossmember Crossmember & spring mounting bracket

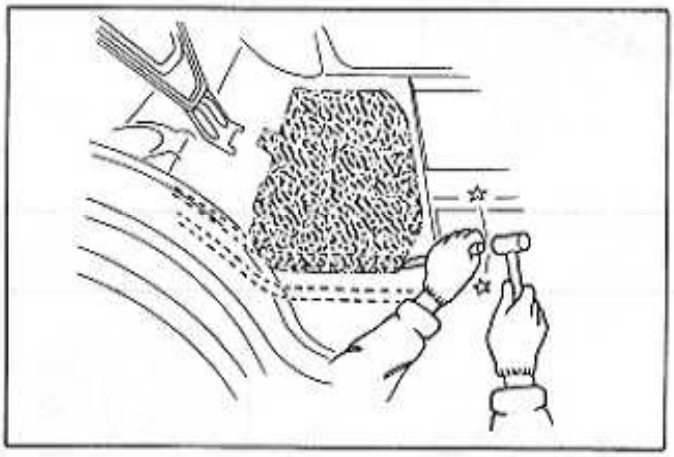
REAR SIDE MEMBER (One Side)

REMINDERS WHEN REMOVING

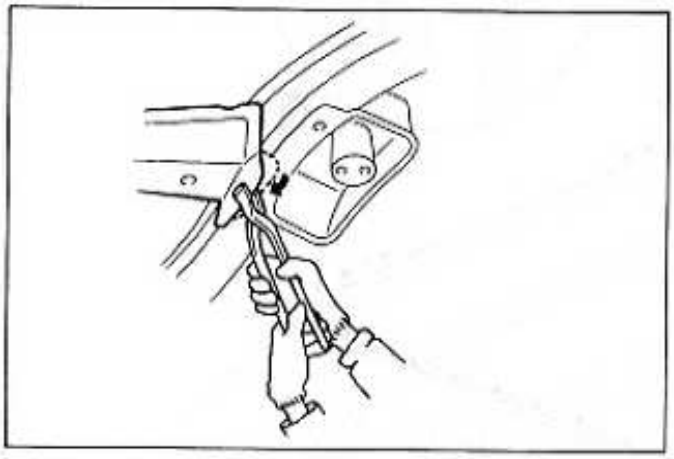
- Remove vibration-proof sandwich steel plate of rear floor front.



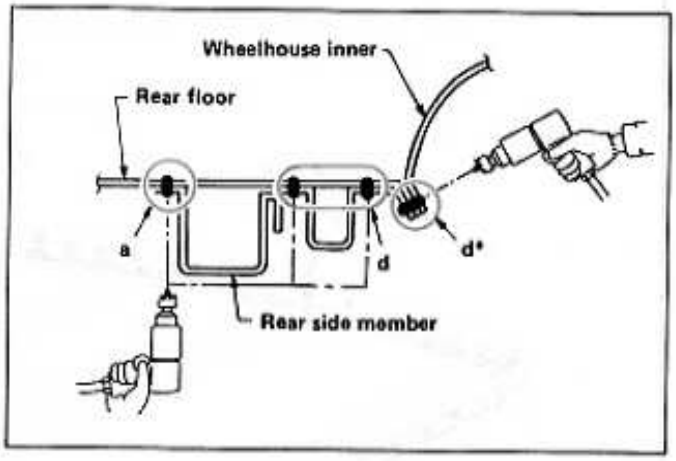
- Remove asphalt sheet on rear floor front with a chisel.



- Bend portion (e) of crossmember after removing spot weld. Then remove side member.

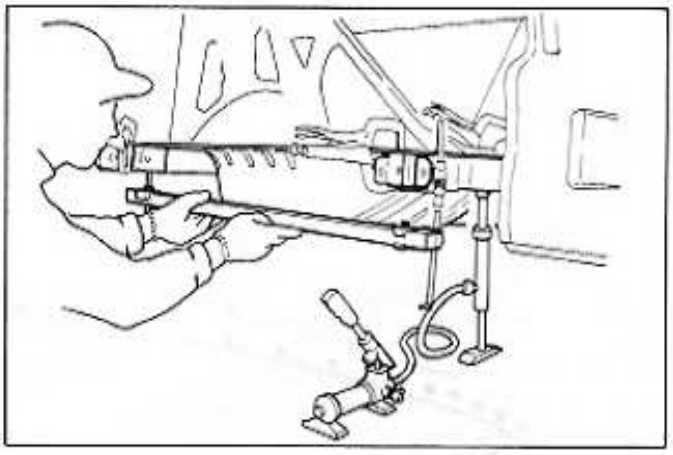


- Some spot welds at portions (a) and (d) can be easily removed by spot cutting from below floor. Also, weld at asterisked (*) part of portion (d) is easy to remove if spot cut from side of wheelhouse.



REMINDER WHEN INSTALLING

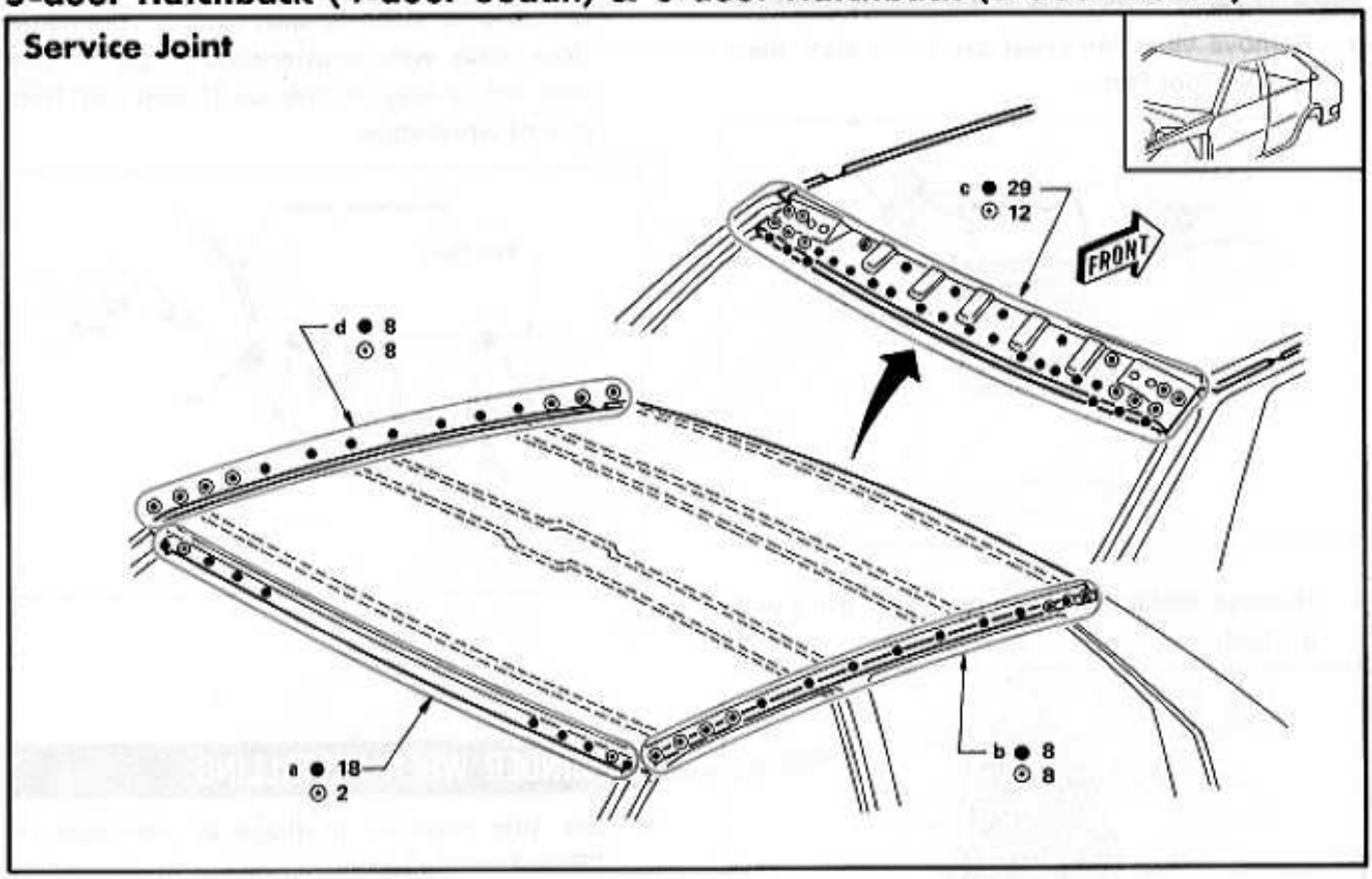
- Set side member in place as indicated in "Side Member" drawing. Accurate dimension measurements can be achieved by temporarily installing rear floor rear together with side member. Further, use a port power and stand to adjust height and width.



ROOF PANEL

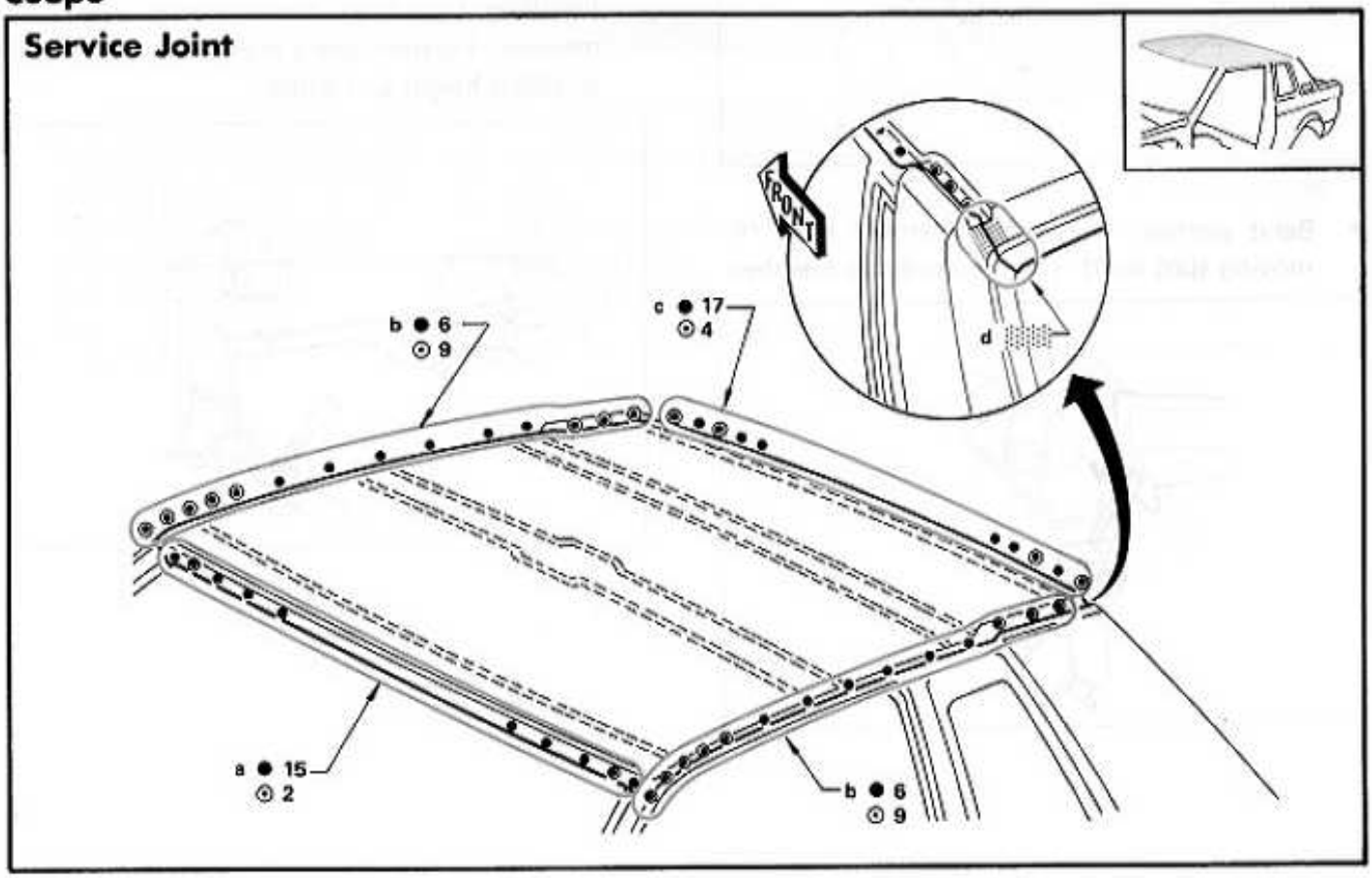
5-door Hatchback (4-door Sedan) & 3-door Hatchback (2-door Sedan)

Service Joint



Coupe

Service Joint

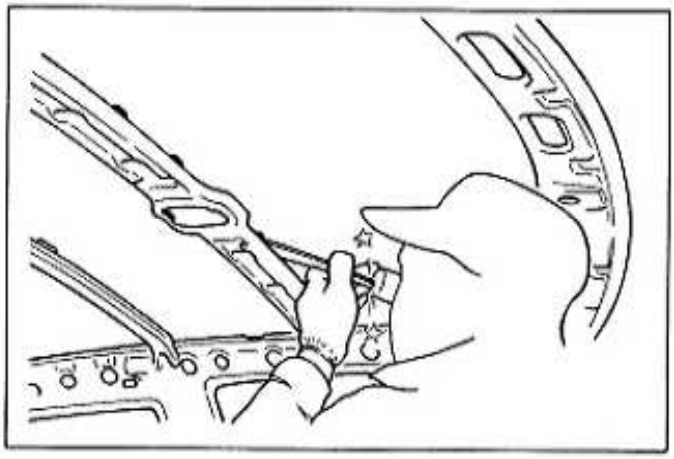


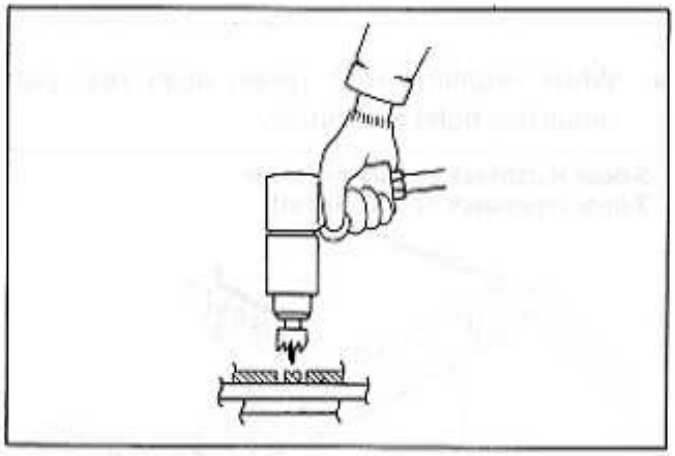
ROOF PANEL

Portions to be welded	Portions to be welded	Portions to be welded
5-door Hatchback (4-door Sedan) & 3-door Hatchback (2-door Sedan) a. Front pillar outer & front roof rail Front roof rail b. Front pillar outer & front pillar inner Rear fender outer & reinforcement Roof side rail outer	c. Rear roof rail & rear fender Rear roof rail **Coupe** a. Front roof rail & roof side inner Front roof rail b. Rear fender & rear quarter panel Side roof rail	c. Rear roof rail & rear fender inner Rear quarter panel & rear fender inner Rear fender inner Rear roof rail

REMINDERS WHEN REMOVING

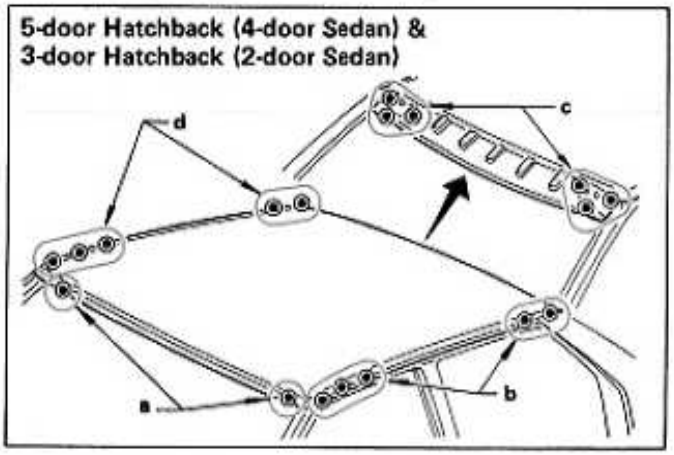
- Remove adhesive between roof panel and roof bow with a scraper and cutter knife.



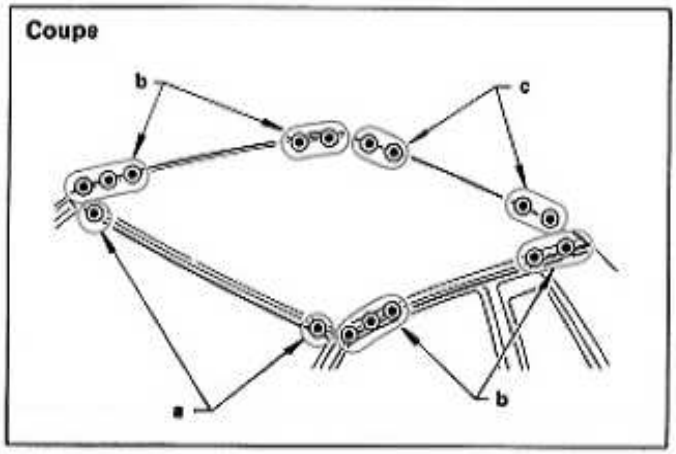


- Remove spot weld only at top panel of 3-layered spot welded part.

5-door Hatchback (4-door Sedan) & 3-door Hatchback (2-door Sedan)



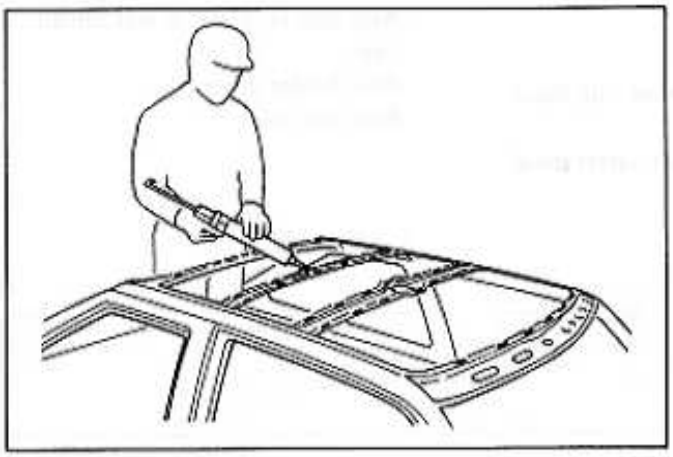
Coupe



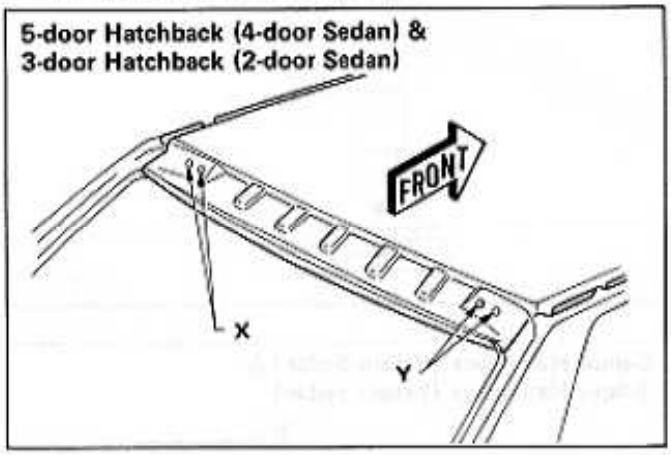
ROOF PANEL

REMINDERS WHEN INSTALLING

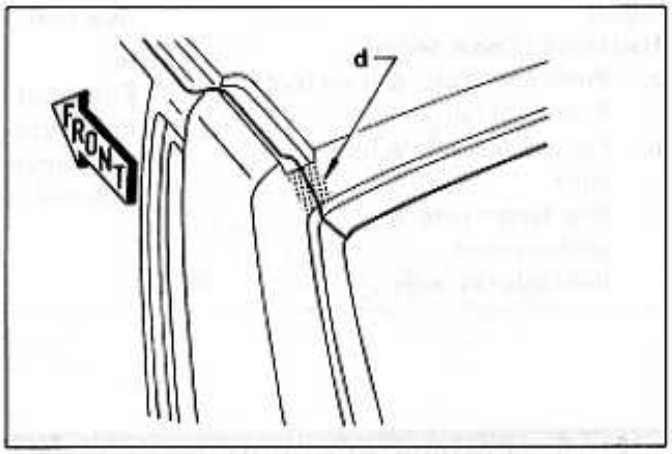
- Apply adhesive to joints of roof panel with roof bow before welding.



- When installing roof panel, align rear gate mounting holes accurately.

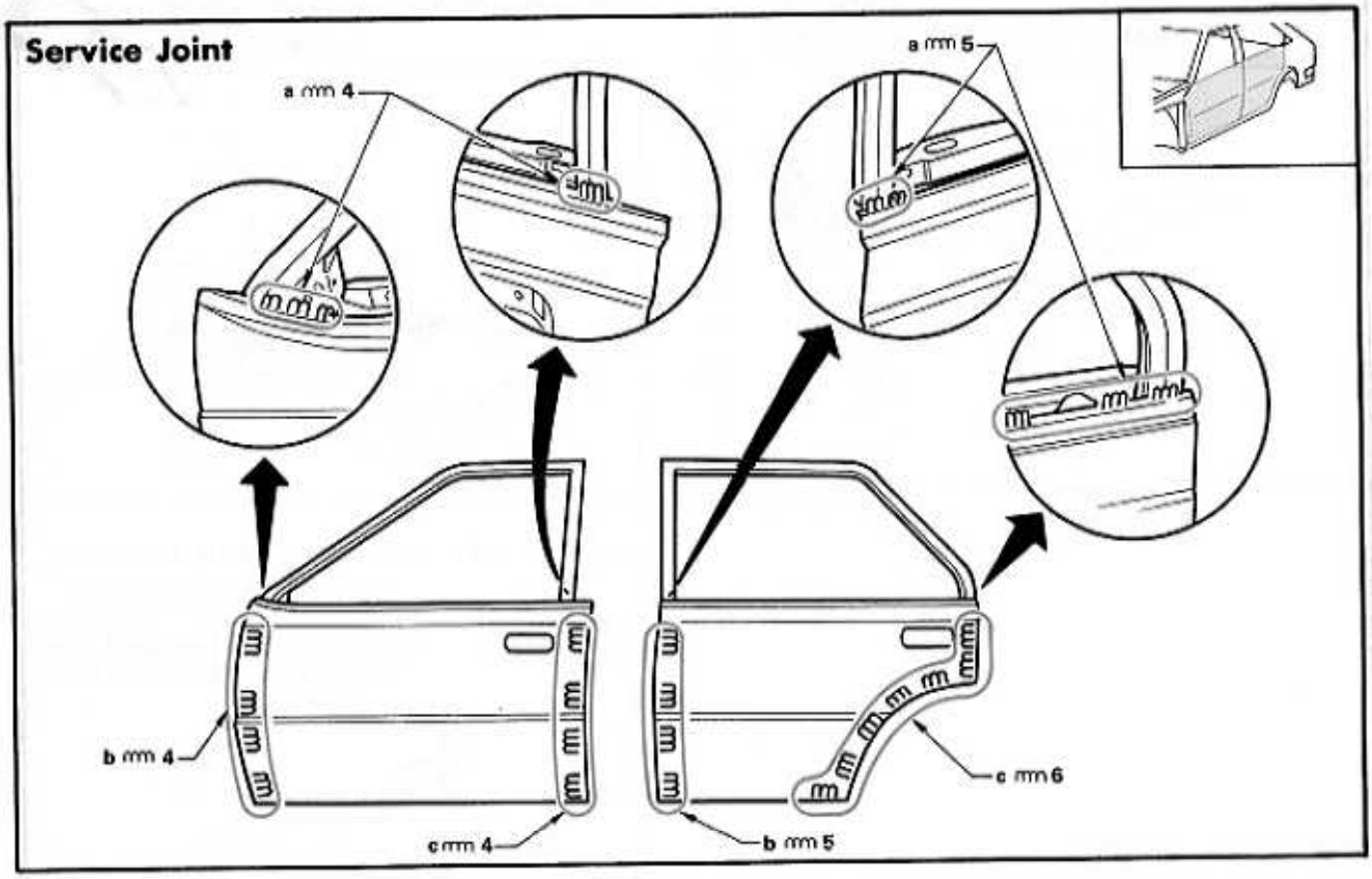


- Apply sealer to portions indicated in "Body Sealing" drawing.
  For details, refer to page 15.
- Remove paint and finish surface by brazing.



Note

DOOR OUTER PANEL

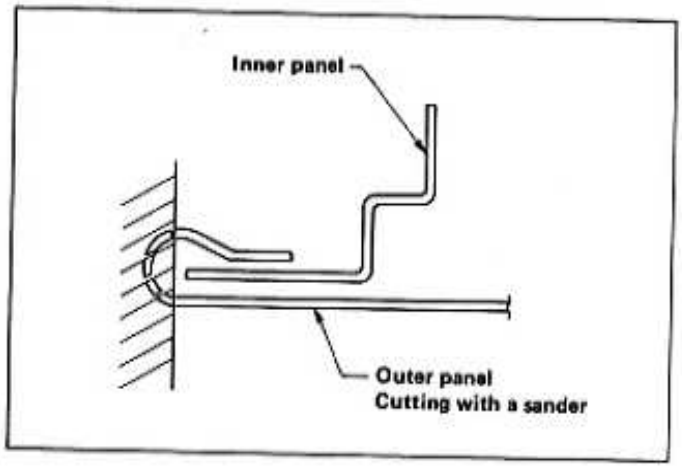


Portions to be welded	Portions to be welded	Portions to be welded
FRONT DOOR a. Door sash b. Inner panel c. Inner panel	**REAR DOOR** **[5-door Hatchback (4-door Sedan)]** a. Door sash Inner panel	b. Inner panel Inner panel & inner panel c. Inner panel

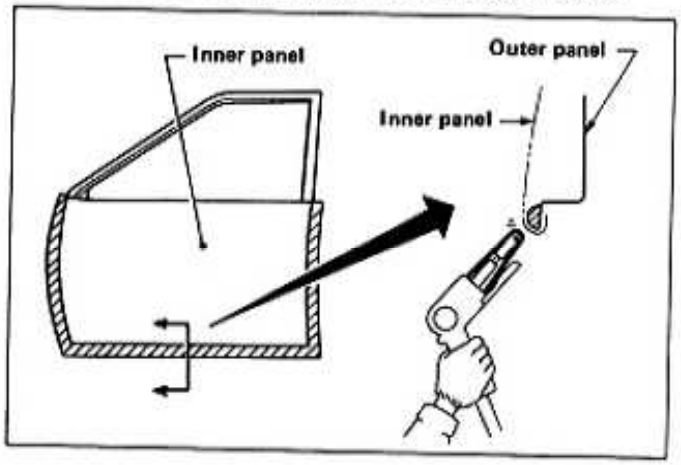
DOOR OUTER PANEL

REMINDERS WHEN REMOVING

- Cut door outer panel hem with a sander.

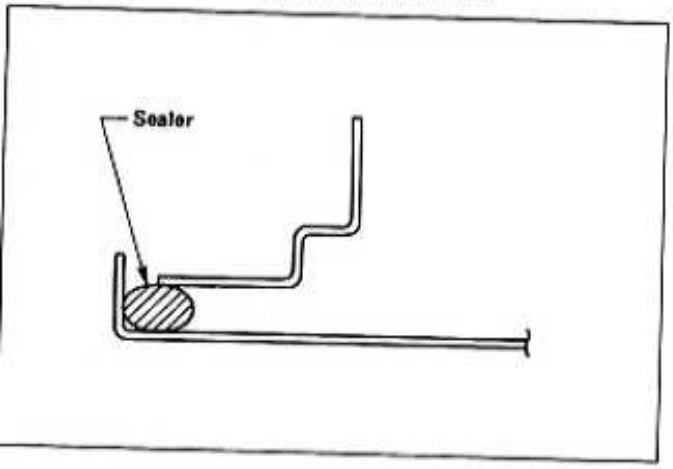


- After removing outer panel, dress rusty part with a sander and treat with anticorrosive.



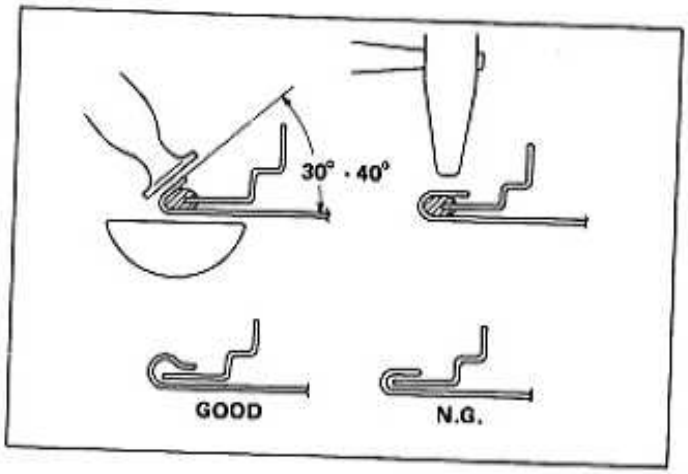
REMINDERS WHEN INSTALLING

- Apply sealer to outer panel hem.

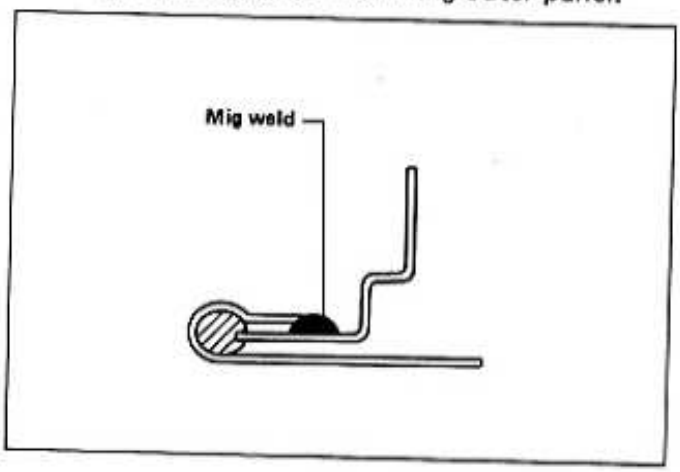


- Hemming work of outer panel should be carried out in two steps.

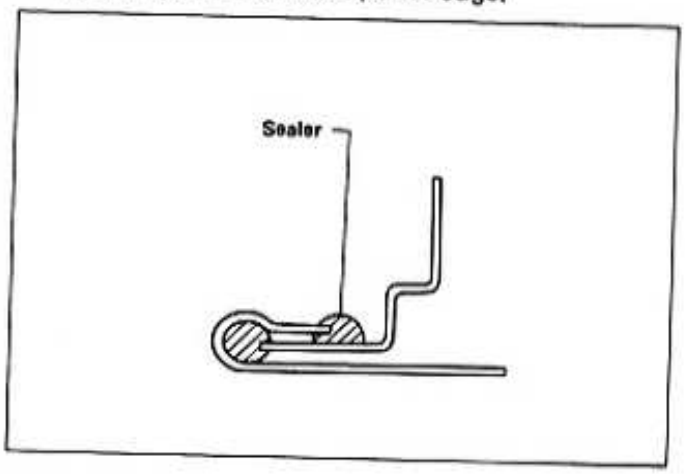
  Note: Bend panel edge round.



- Mig weld edge after hemming outer panel.



- Apply sealer to whole panel edge.



ZONDATSUN

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