FOREWORD

This Body Repair Manual contains information, instructions and procedures for repairing the body structure of the INFINITI Q45 (G50) model. 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 PRECAUTIONS section 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 the manual.

Technicians are also required to read the INFINITI Q45 (G50) Service Manual and Body Repair Manual (Fundamentals) 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.

In the U.S.A., it is recommended that a M.I.G. welder be used by a trained technician to weld structural body parts.

All information in this manual is based on the latest product information at the time of publication. The right is reserved to make changes in specifications and methods at any time without notice.

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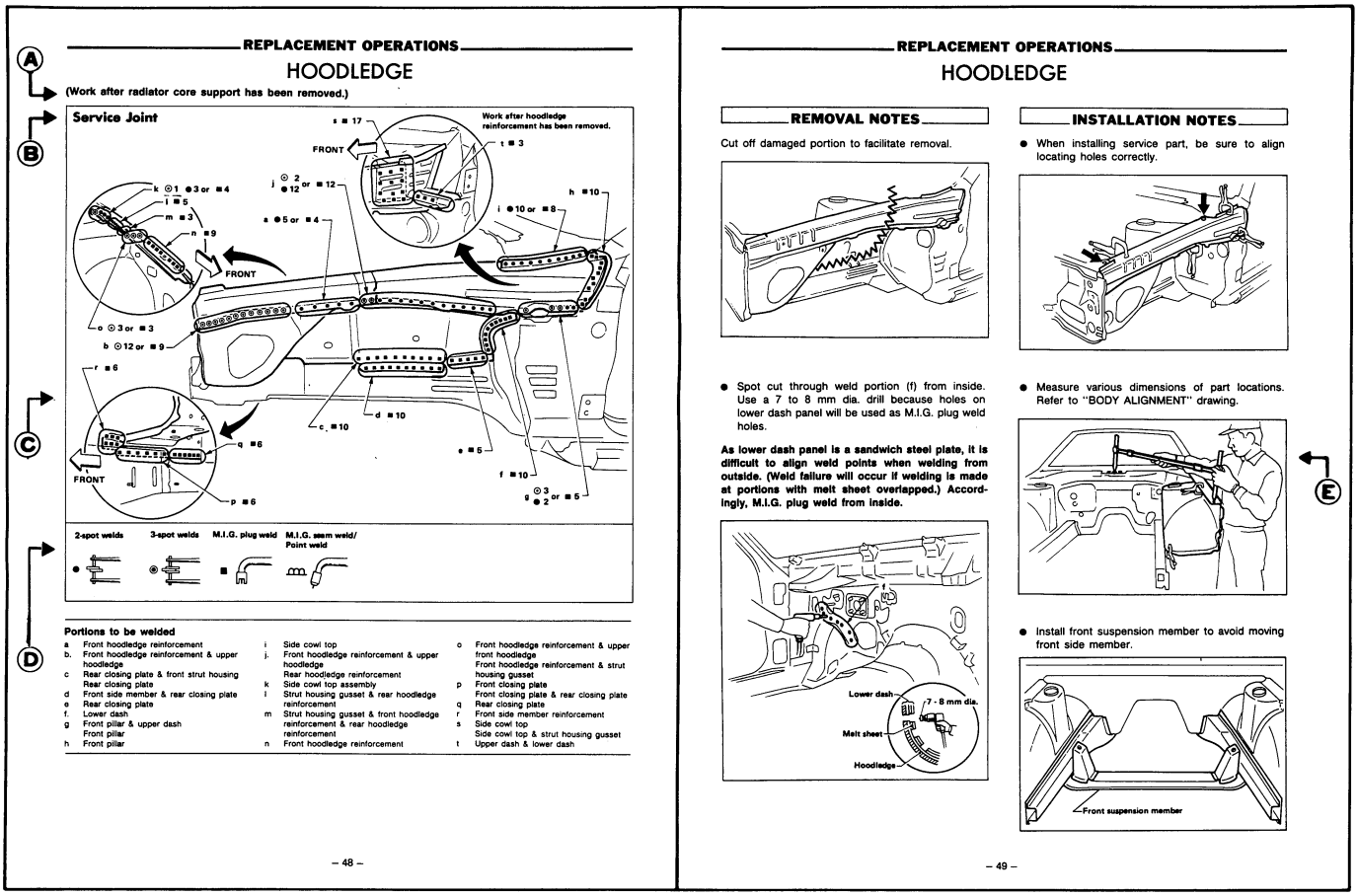
HOW TO USE THIS MANUAL



REPLACEMENT OPERATIONS
HOODLEDGE
(Work after radiator core support has been removed.)
Service Joint
Work after hoodledge reinforcement has been removed.
FRONT
2-spot welds
3-spot welds
M.I.G. plug weld
M.I.G. seam weld/ Point weld
Portions to be welded
a Front hoodledge reinforcement
b. Front hoodledge reinforcement & upper hoodledge
c Rear closing plate & front strut housing
Rear closing plate
d Front side member & rear closing plate
e Rear closing plate
f. Lower dash
g Front pillar & upper dash
Front pillar
h Front pillar
i Side cowl top
j. Front hoodledge reinforcement & upper hoodledge
Rear hoodledge reinforcement
k Side cowl top assembly
l Strut housing gusset & rear hoodledge reinforcement
m Strut housing gusset & front hoodledge reinforcement & rear hoodledge reinforcement
n Front hoodledge reinforcement
o Front hoodledge reinforcement & upper front hoodledge
Front hoodledge reinforcement & strut housing gusset
p Front closing plate
Front closing plate & rear closing plate
q Rear closing plate
r Front side member reinforcement
s Side cowl top
Side cowl top & strut housing gusset
t Upper dash & lower dash
– 48 –
REPLACEMENT OPERATIONS
HOODLEDGE
REMOVAL NOTES
Cut off damaged portion to facilitate removal.
Spot cut through weld portion (f) from inside. Use a 7 to 8 mm dia. drill because holes on lower dash panel will be used as M.I.G. plug weld holes.
As lower dash panel is a sandwich steel plate, it is difficult to align weld points when welding from outside. (Weld failure will occur if welding is made at portions with melt sheet overlapped.) Accordingly, M.I.G. plug weld from inside.
Lower dash
7 - 8 mm dia.
Melt sheet
Hoodledge
INSTALLATION NOTES
When installing service part, be sure to align locating holes correctly.
Measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing.
Install front suspension member to avoid moving front side member.
Front suspension member
– 49 –

Ⓐ **(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 has already been removed. If the radiator core support and the hoodledge reinforcement are installed on the vehicle to be serviced, refer to "RADIATOR CORE SUPPORT" in REPLACEMENT OPERATIONS.

Ⓑ **SERVICE JOINT:**
Welding methods and No. of welding points for performing body repair work are described (replacement of body parts).
To maintain the integrity of the vehicle body, work should be done, observing the instructions described here (particularly No. of welding points).
[Example]

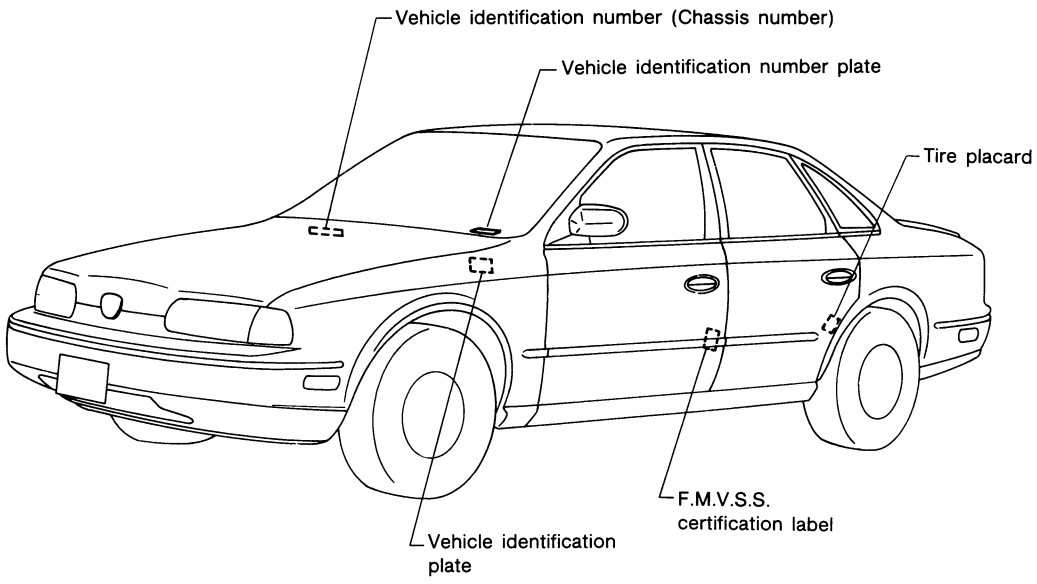
a ■ 4
Portion — No. of welding points
MIG plug weld (See symbol mark on page 43.)

Ⓒ Symbols are used in illustrations to clearly identify welding methods. (See symbol mark on page 43.)

Ⓓ **PORTIONS TO BE WELDED:**
Portions to be welded are listed, including descriptions of those areas to which the portion under the subtitle (ex. Hoodledge panel) will be welded.

Ⓔ **REMOVAL/INSTALLATION NOTES**
Main service points and special notes for body repair work are described.

IDENTIFICATION NUMBERS



SGI620

VEHICLE IDENTIFICATION NUMBER ARRANGEMENT

JNK N G 0 1 C * L M 000001

Manufacturer
JNK : Nissan, Passenger vehicle

Engine type
N : VH45DE

Vehicle line
G : Infiniti Q45

Model change (0 to 9)

Body type
1 : 4-Door Sedan

Restraint system
C : Air Bag System

Check digit (0 to 9 or X)
The code for the check digit is determined by mathematical computation.

Model year
L : 1990 year model

Manufacturing plant
M : Tochigi

Vehicle serial number

LIFTING POINTS

GARAGE JACK AND SAFETY STAND

WARNING:

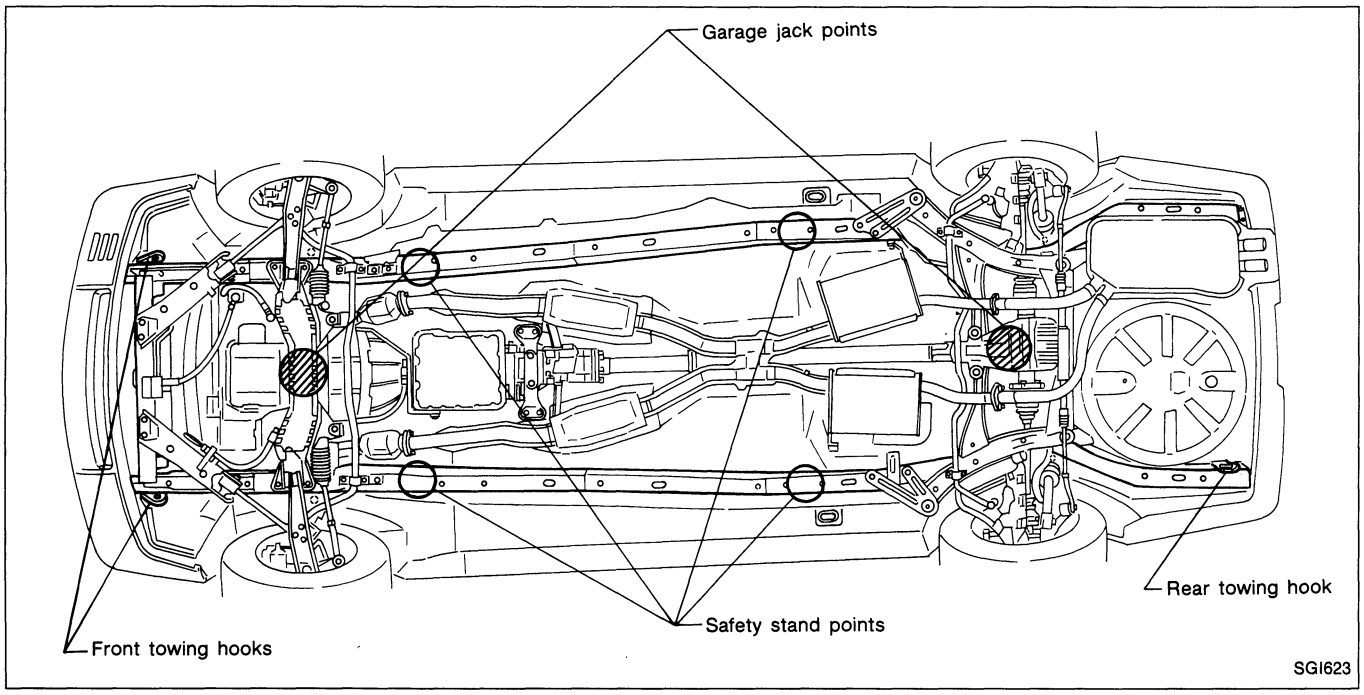
a. When carrying out operations with the garage jack, be sure to support the vehicle with safety stands.

b. Place wheel chocks at both front and back of the wheel, diagonally opposite the jack position.

CAUTION:

Always place a wooden block between safety stand and vehicle 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.



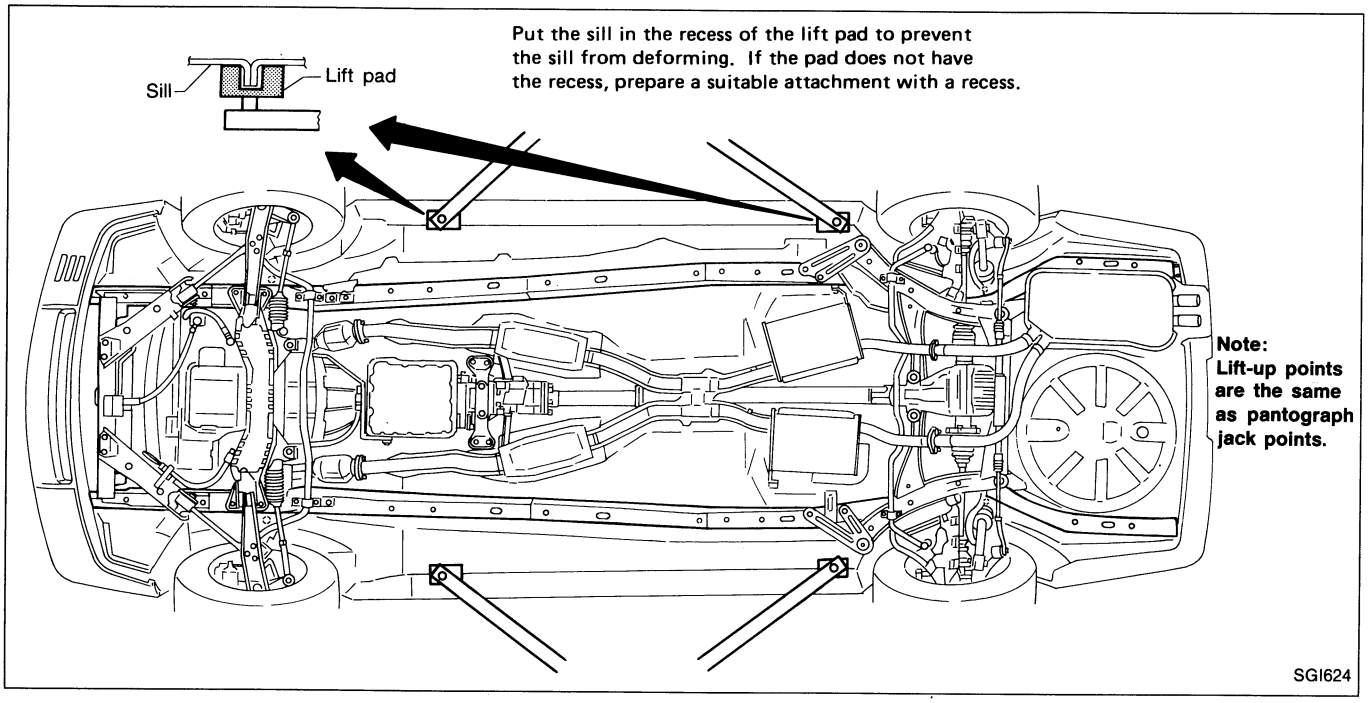
LIFTING POINTS

2-POLE LIFT

WARNING:

When lifting the vehicle, open the lift arms as wide as possible and ensure that the front and rear of the vehicle are well balanced.

When setting the lift arm, do not allow the arm to contact the brake tubes and fuel lines.



VEHICLE DIMENSIONS

Unit: mm (in)

	Sedan
Overall length	5,075 (199.8)
Overall width	1,825 (71.9)
Overall height	1,435 (56.5)
Front tread	1,570 (61.8)
Rear tread	1,570 (61.8)
Wheelbase	2,875 (113.2)

WHEEL ALIGNMENT

FRONT WHEEL ALIGNMENT (Unladen*1)

Camber	degree	−1°35′ to −0°05′
Caster	degree	5°45′ - 7°15′
Kingpin inclination	degree	12°00′ - 13°30′
Toe-in (Total)	mm (in)	0 - 2 (0 - 0.08)
	degree	0′ - 10′
Front wheel turning angle Full turn*2	degree	
Inside		35°30′ - 39°30′
Outside		32°

*1: Fuel, radiator coolant and engine oil full.
Spare tire, jack, hand tools and mats in designated positions.

*2: On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

REAR WHEEL ALIGNMENT (Unladen*)

Camber	degree	−1°35′ to −0°35′
Toe-in (Total)	mm (in)	0 - 5 (0 - 0.20)
	degree	0′ - 28′

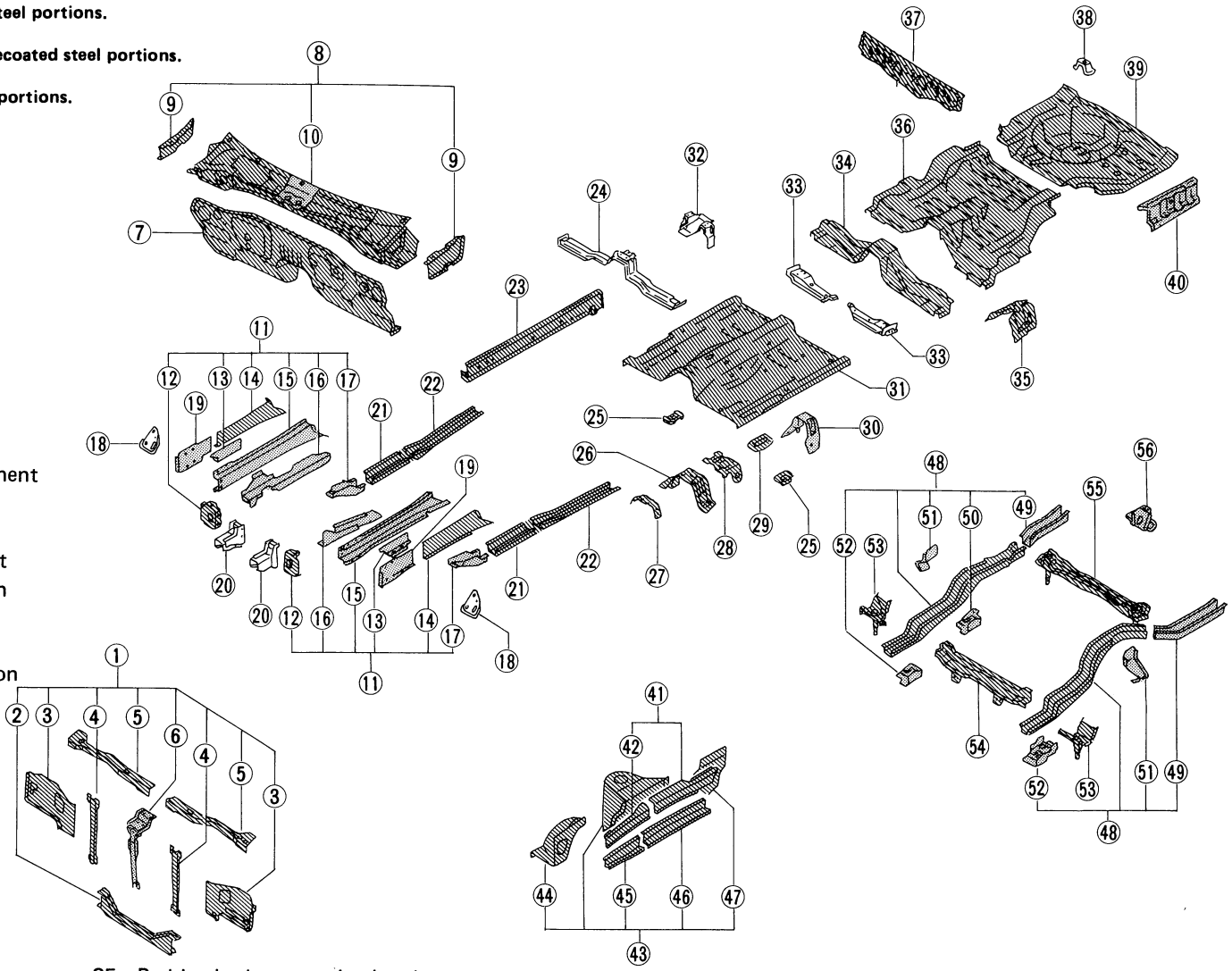
* Fuel, radiator coolant and engine oil full.
Spare tire, jack, hand tools and mats in designated positions.

UNDERBODY COMPONENT PARTS

: Indicates anti-corrosive precoated steel portions.

: Indicates two-side anti-corrosive precoated steel portions.

* : Indicates high strength steel (HSS) portions.



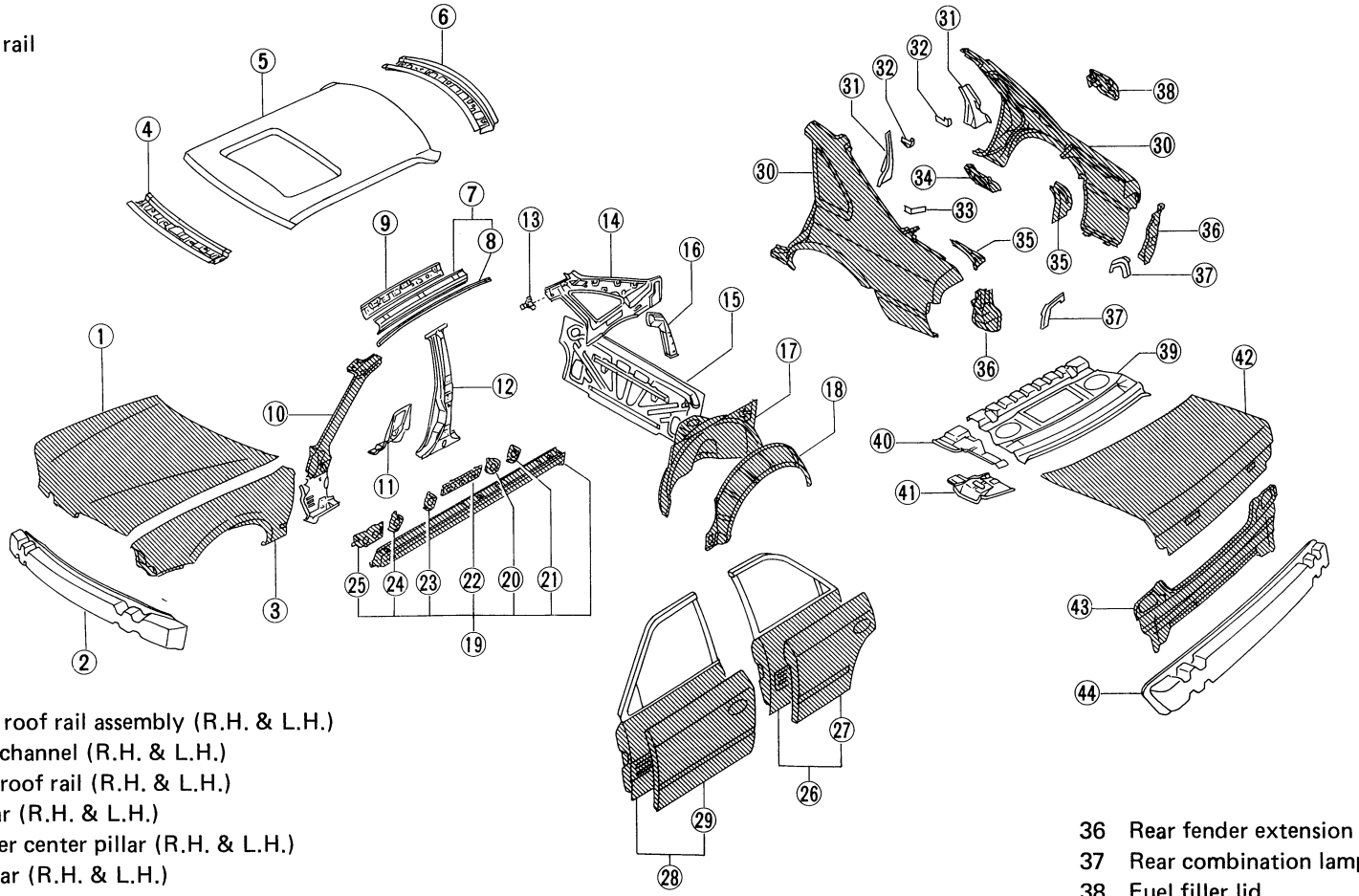
1 Radiator core support assembly
* 2 Lower radiator core support
3 Side radiator core support
* 4 Headlamp stay
* 5 Upper radiator core support
6 Hood lock stay
7 Lower dash assembly
8 Air box assembly
* 9 Side cowl top
10 Cowl top
11 Front side member assembly
12 Front bumper bracket
*13 Tension rod mounting reinforcement
*14 Rear closing plate
*15 Front side member
*16 Front side member reinforcement
*17 Front side member rear extension
18 Front hook
*19 Front closing plate
20 Front side member front extension
*21 Center side member front
*22 Center side member rear
*23 Inner sill assembly (R.H. & L.H.)
24 2nd crossmember
25 Lift-up point bracket
26 Rear engine mounting bracket
27 Instrument stay bracket
28 Transmission control reinforcement
29 Parking brake & seat belt reinforcement
30 Front seat mounting bracket inner
31 Front floor
32 Sensor bracket
*33 Front seat mounting bracket outer
*34 Rear floor front extension
35 Parking brake mounting bracket (R.H. & L.H.)
36 Rear floor front
37 Rear floor brace
38 Spare wheel clamp bracket
39 Rear floor rear
40 Rear floor side (R.H. & L.H.)
*41 Hoodledge reinforcement assembly (R.H. & L.H.)
*42 Front hoodledge reinforcement (R.H. & L.H.)
*43 Hoodledge assembly (R.H. & L.H.)
44 Lower front hoodledge (R.H. & L.H.)
*45 Upper front hoodledge (R.H. & L.H.)
*46 Upper rear hoodledge (R.H. & L.H.)
47 Lower rear hoodledge (R.H. & L.H.)
*48 Rear side member
*49 Rear side member extension
50 Suspension rod center bracket
*51 Brake hose bracket
52 Suspension rod bracket
53 Rear side member outrigger
54 Fuel tank mounting member
55 Rear crossmember
*56 Rear towing hook bracket

BODY COMPONENT PARTS

▨ : **Indicates two-side anti-corrosive precoated steel portions.**

***: Indicates high strength steel (HSS) portions.**

* 1 Hood
2 Front bumper armature (PP and glass fiber)
3 Front fender (R.H. & L.H.)
4 Front roof rail
5 Roof
6 Rear roof rail



7 Outer side roof rail assembly (R.H. & L.H.)
8 Roof drip channel (R.H. & L.H.)
* 9 Inner side roof rail (R.H. & L.H.)
*10 Front pillar (R.H. & L.H.)
*11 Lower inner center pillar (R.H. & L.H.)
*12 Center pillar (R.H. & L.H.)
13 Rear assist grip bracket
14 Inner rear pillar assembly (R.H. & L.H.)
15 Seat back support
16 Inner rear pillar reinforcement (R.H. & L.H.)
17 Inner rear wheelhouse (R.H. & L.H.)
18 Outer rear wheelhouse (R.H. & L.H.)

19 Outer sill assembly (R.H. & L.H.)
20 Outer sill brace (R.H. & L.H.)
21 Outer sill brace (R.H. & L.H.)
22 Outer sill reinforcement rear (R.H. & L.H.)
23 Outer sill brace (R.H. & L.H.)
24 Outer sill brace (R.H. & L.H.)

25 Outer sill reinforcement front (R.H. & L.H.)
26 Rear door assembly (R.H. & L.H.)
27 Rear door outer panel (R.H. & L.H.)
28 Front door assembly (R.H. & L.H.)
29 Front door outer panel (R.H. & L.H.)

30 Rear fender
31 Rear fender patch
32 Rear fender reinforcement
33 Cable clip
34 Fuel filler base
35 Rear fender corner

36 Rear fender extension
37 Rear combination lamp base
38 Fuel filler lid
39 Parcel shelf with rear waist
40 Side parcel shelf (R.H. & L.H.)
41 Side parcel shelf reinforcement
*42 Trunk lid
43 Rear panel
44 Rear bumper armature (PP and glass fiber)

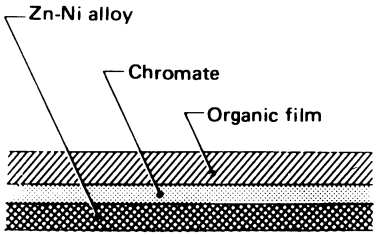
DESCRIPTION

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

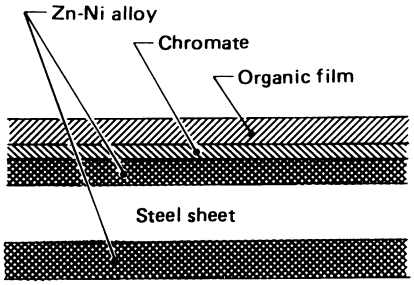
ANTI-CORROSIVE PRECOATED STEEL (DURASTEEL)

In order to improve repairability and corrosion resistance, a new type of anti-corrosive precoated steel sheets have been adopted taking the place of conventional zinc-coated steel sheets.
This durasteel is electroplated, zinc-nickel alloy under organic film, which provides excellent corrosion resistance.

Durasteel is classified as either one-side precoated steel or two-side precoated steel. The two-side precoated steel provides excellent corrosion resistance.



One-side precoated



Two-side precoated

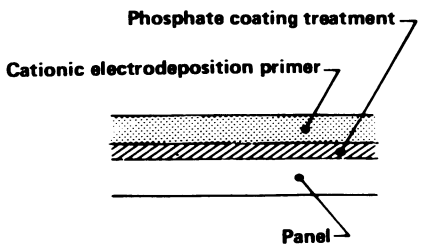
Nissan Genuine Service Parts are fabricated from durasteel sheets. Therefore, it is recommended that GENUINE NISSAN PARTS or equivalent be used for panel replacement to maintain the anti-corrosive performance built into the vehicle at the factory.

PHOSPHATE COATING TREATMENT AND CATIONIC ELECTRODEPOSITION PRIMER

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

CAUTION:

Confine paint removal in the welding operation to the absolute minimum.

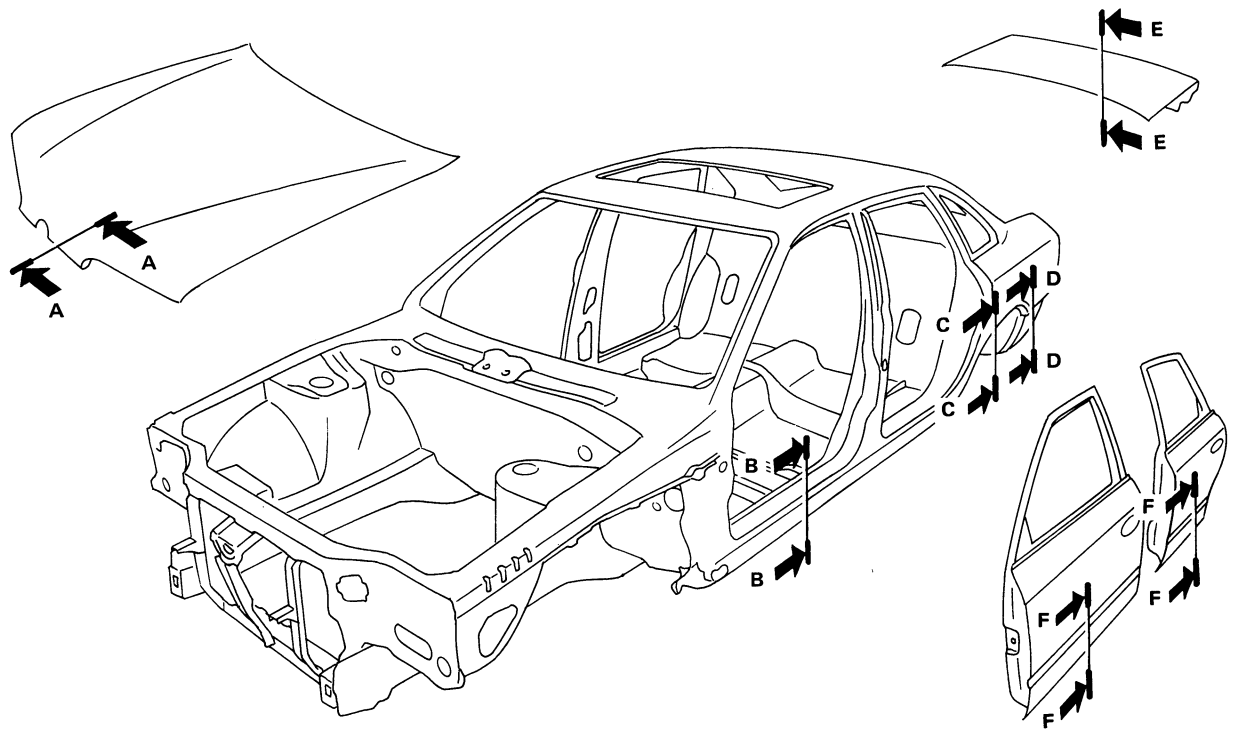


Nissan Genuine Service Parts also are treated in the same manner. Therefore, it is recommended that GENUINE NISSAN PARTS or equivalent be used for panel replacement to maintain anti-corrosive performance built into the vehicle at the factory.

ANTI-CORROSIVE WAX

In order to improve corrosion resistance, anti-corrosive wax is applied inside the body sill and inside other closed sections. Accordingly, when replacing these parts, be sure to apply anti-corrosive wax to the appropriate areas of the new parts. Select an excellent anti-corrosive wax which will penetrate after application and has a long shelf life.

: Indicate anti-corrosive wax coated portions



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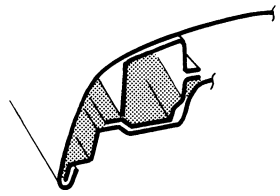	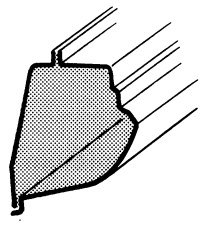	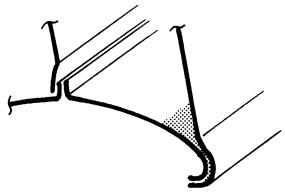	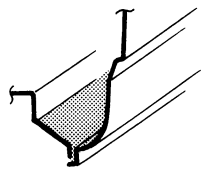
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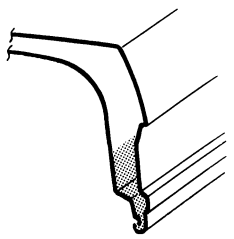
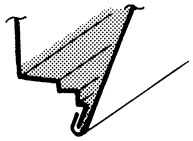
			

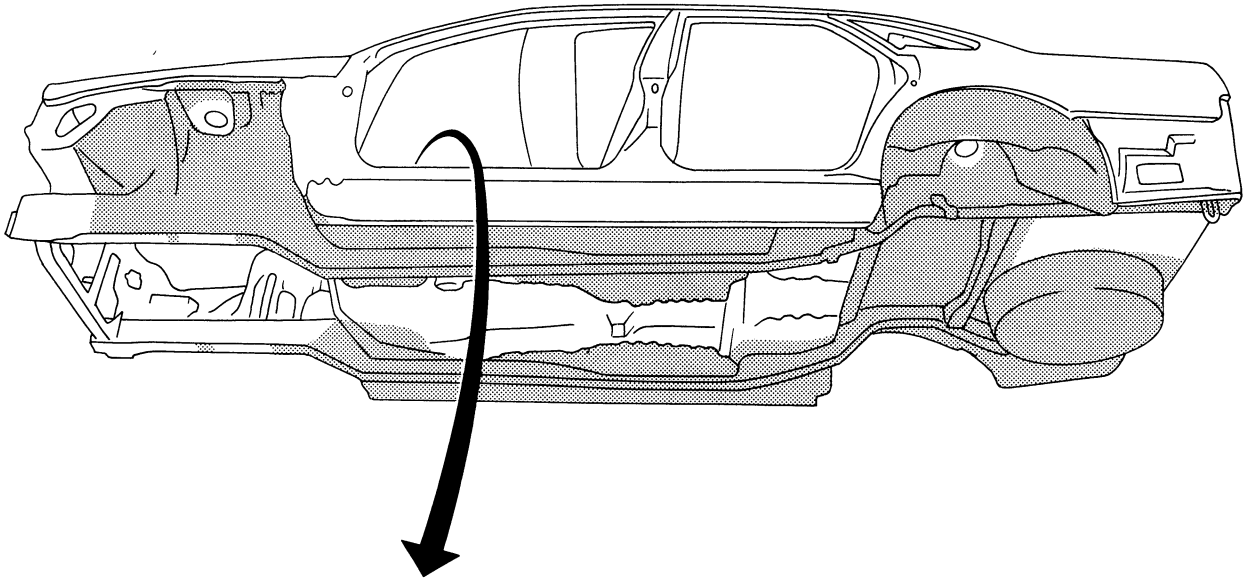
UNDERCOATING

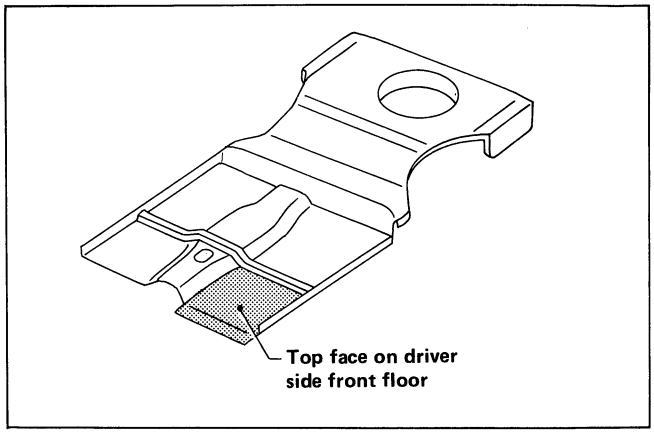
The undersides of the floor and wheelhouse are undercoated to prevent rust, vibration, noise and stone chipping.
Therefore, when such a panel is replaced or repaired, apply undercoating to that part. Use an undercoating with the following properties: rust preventive, soundproof, vibration-proof, shock-resistant,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

Precautions in undercoating

1. Do not apply undercoating to any place unless specified (such as the areas above the muffler and catalytic converter which are subjected to heat).
2. Do not undercoat the exhaust pipe, other parts which become hot, and rotary parts.
3. Apply bitumen wax after applying undercoating.

: **Indicates undercoated portions.**

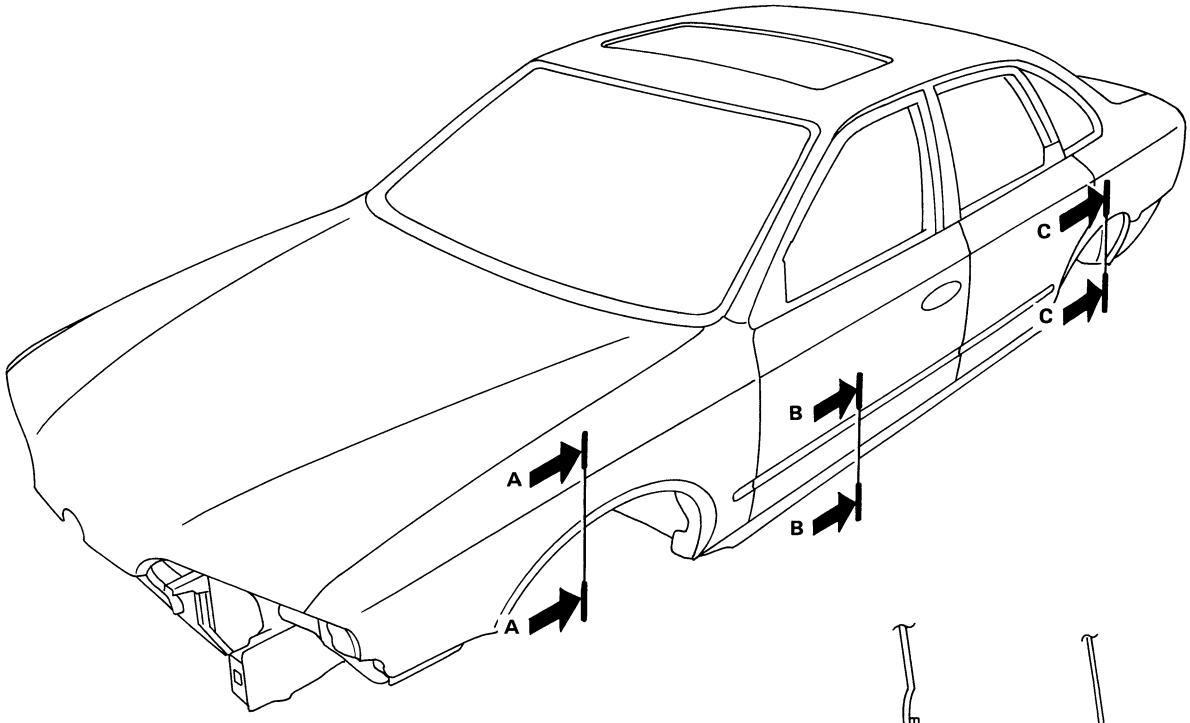


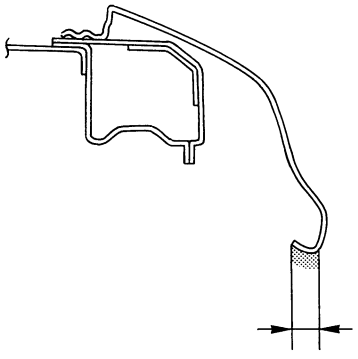


STONE GUARD COAT

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

: Indicates stone guard coated portions.





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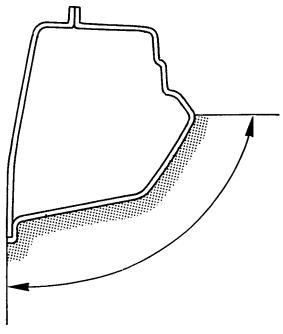

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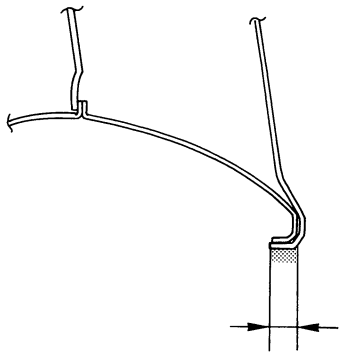
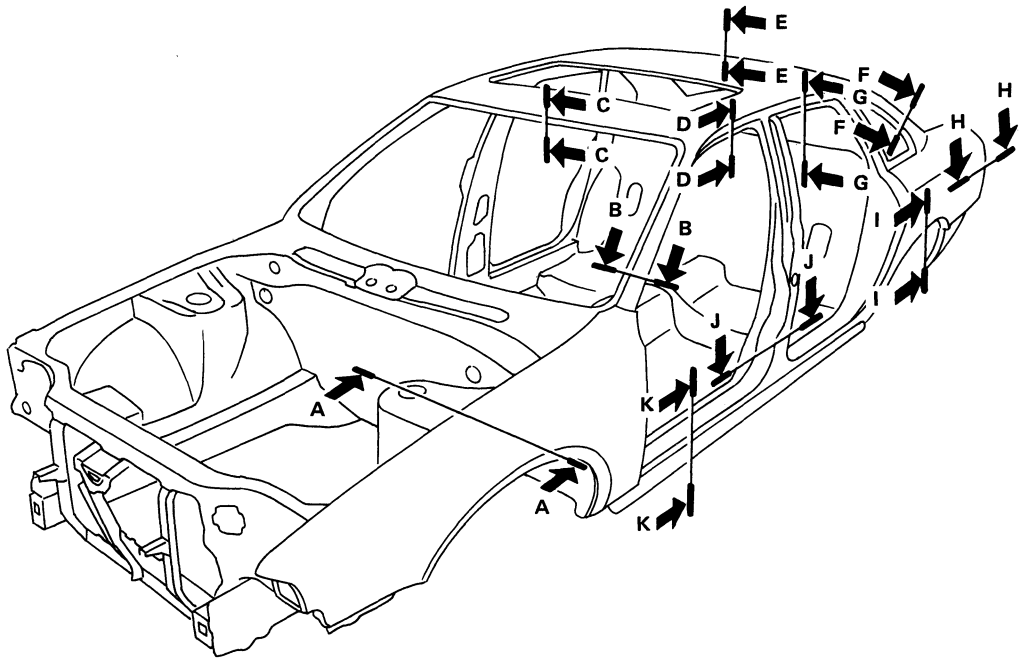


Section C–C

BODY CONSTRUCTION



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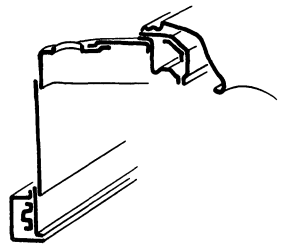	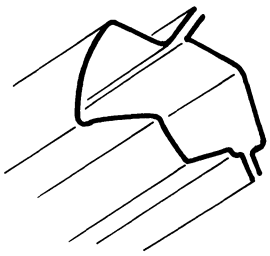		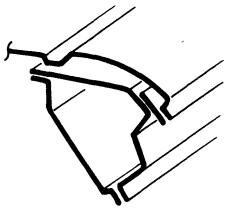
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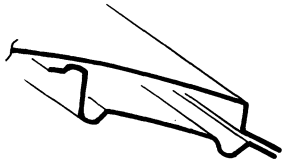
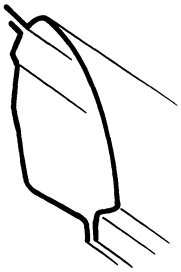
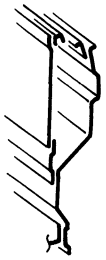
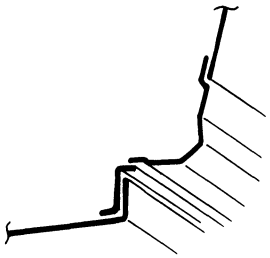
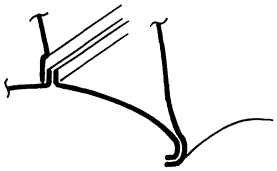
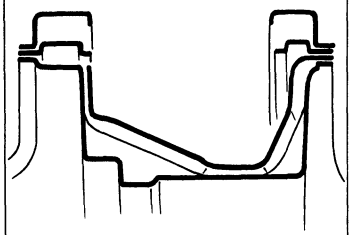
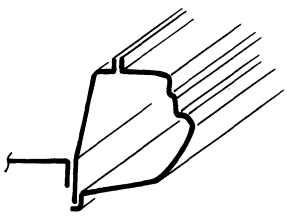
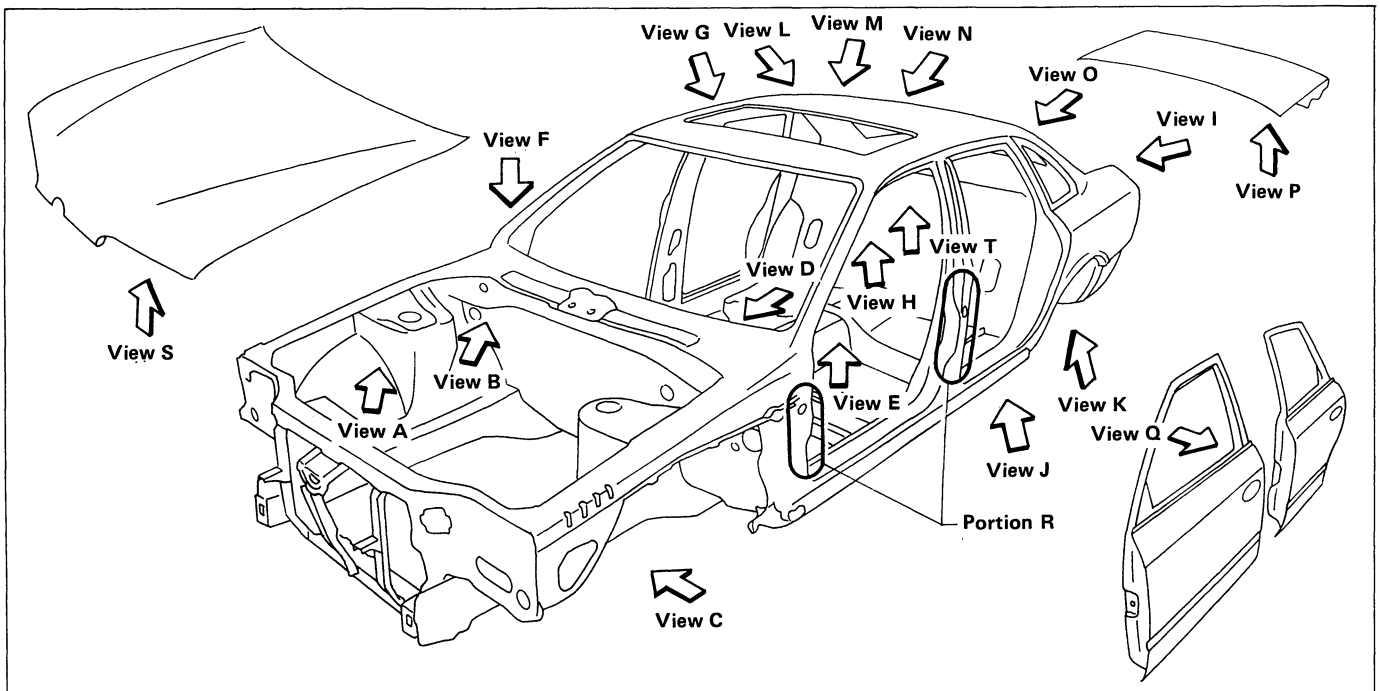
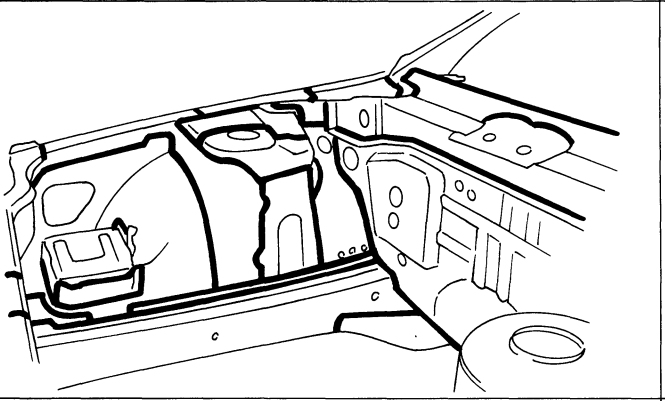
			
Section I–I	**Section J–J**	**Section K–K**	
			

DESCRIPTION

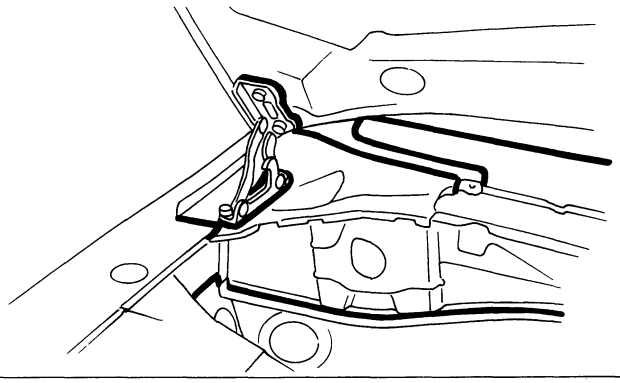
The following figure shows the areas which are sealed at the factory. Sealant which has been applied to these areas should be smooth and free from cuts or gaps.
Care should be taken not to apply an excess amount of sealant and not to allow other unaffected parts to come into contact with the sealant.



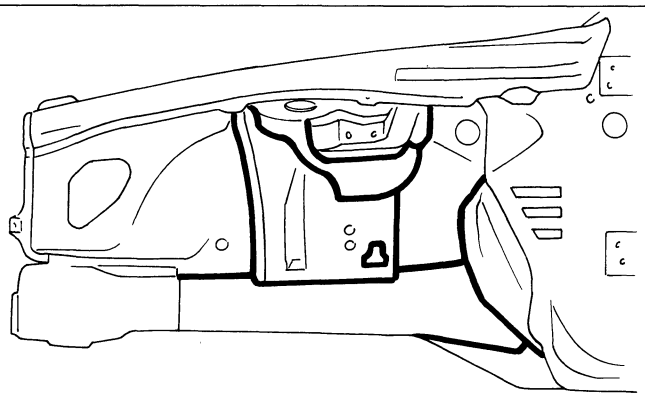
View A



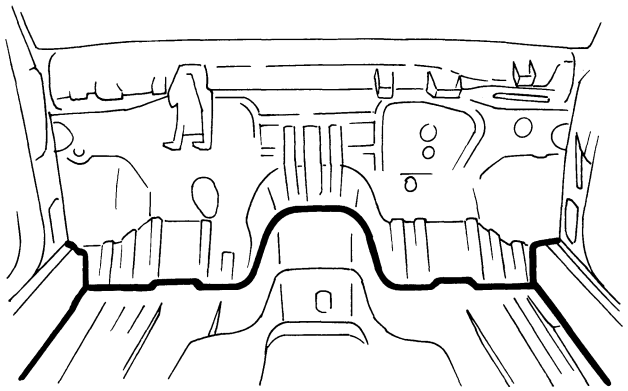
View B



View C

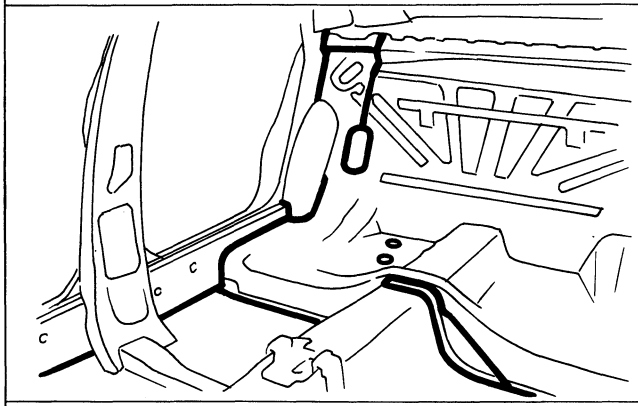


View D

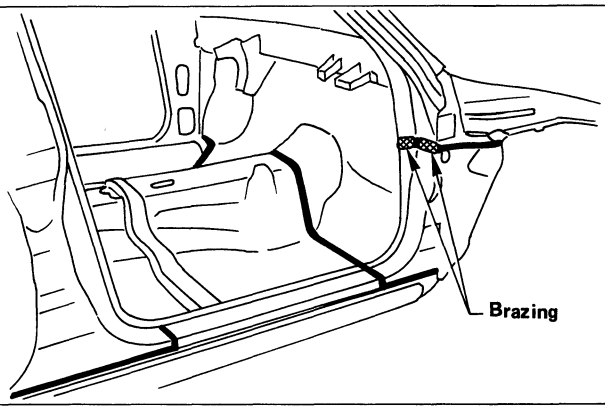


DESCRIPTION

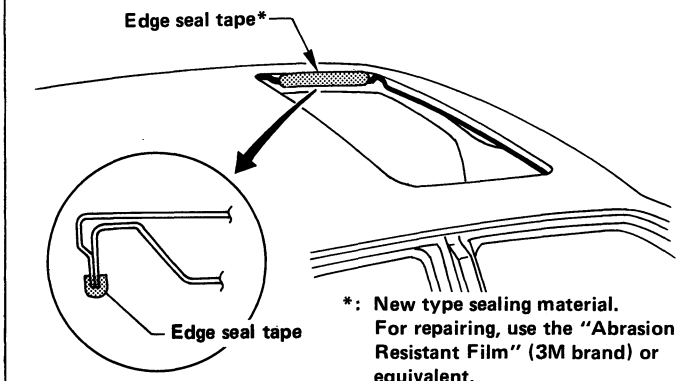
View E



View F

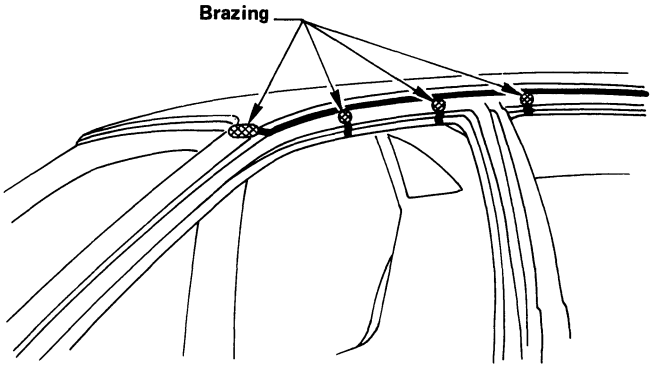


View G

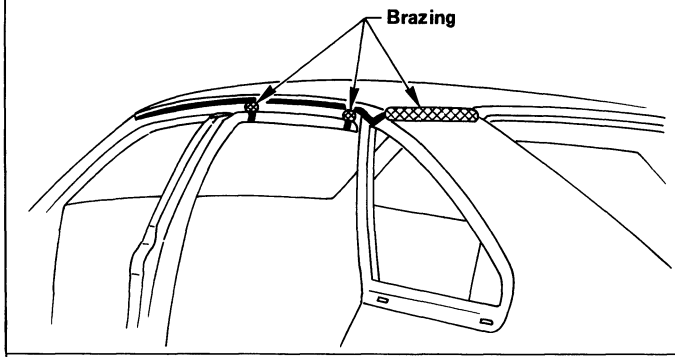


*: New type sealing material. For repairing, use the "Abrasion Resistant Film" (3M brand) or equivalent.

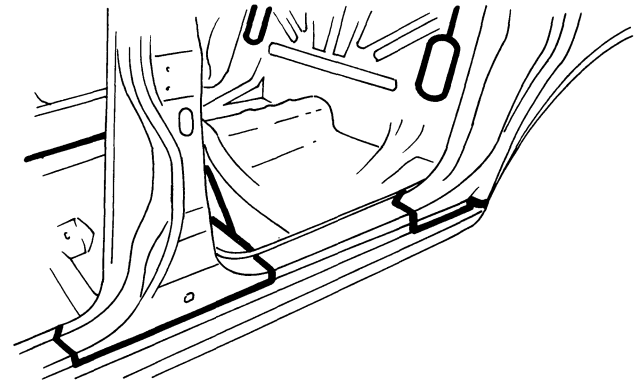
View H



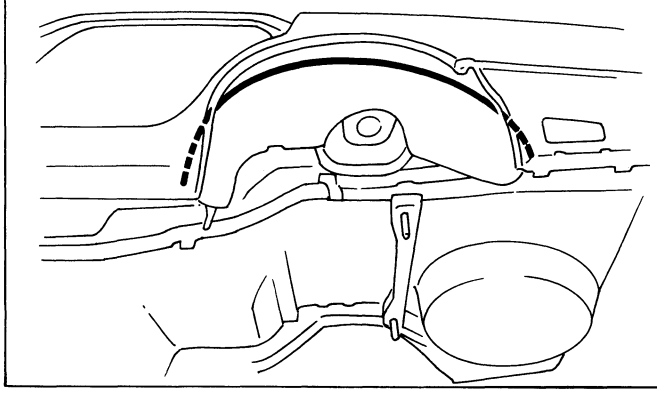
View I



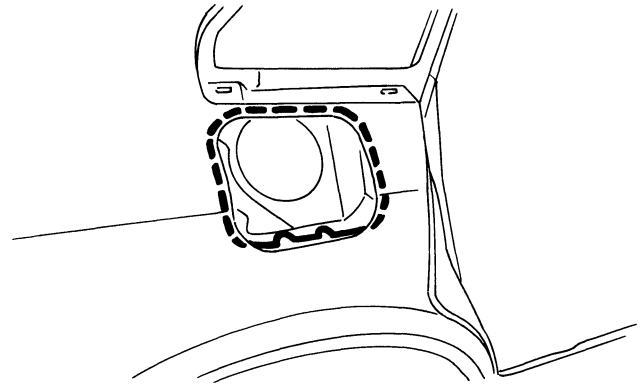
View J



View K

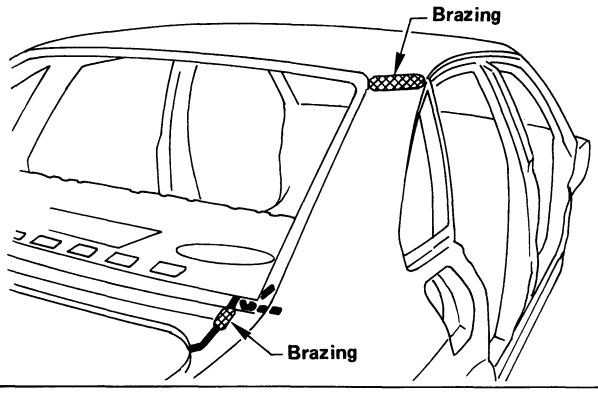


View L

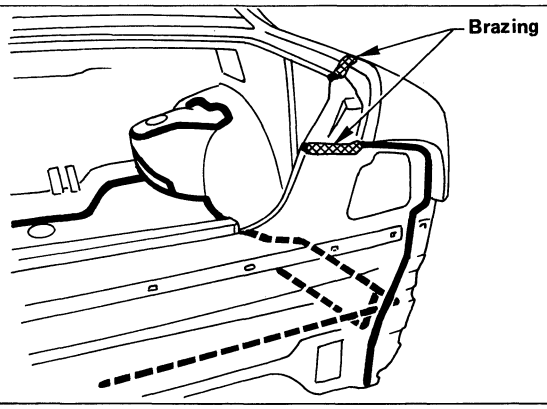


DESCRIPTION

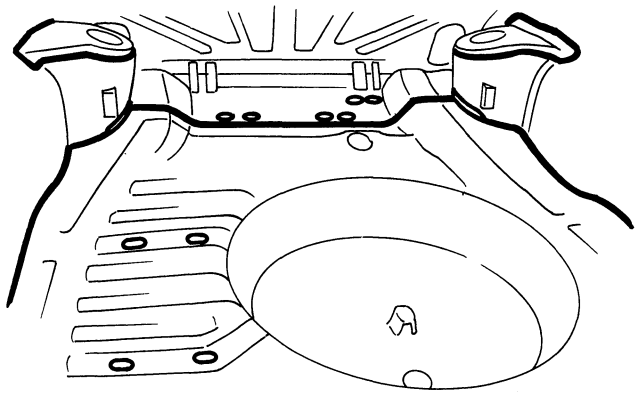
View M



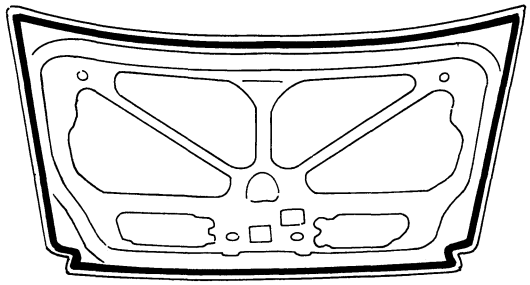
View N



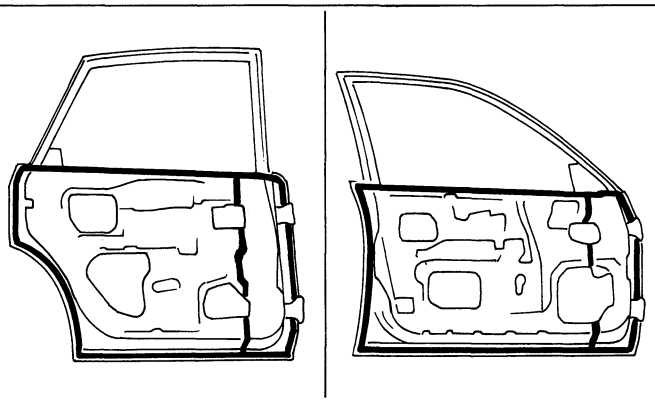
View O



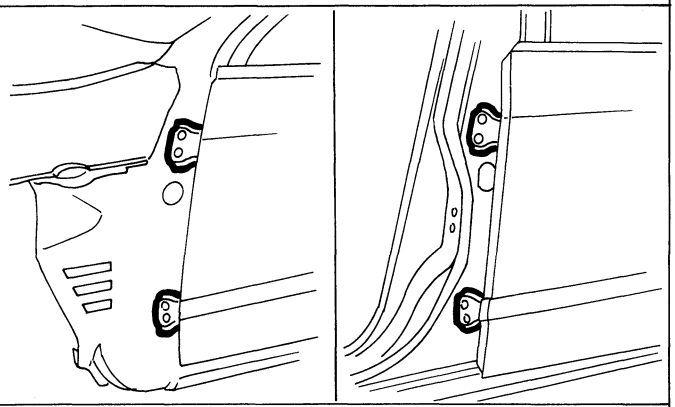
View P



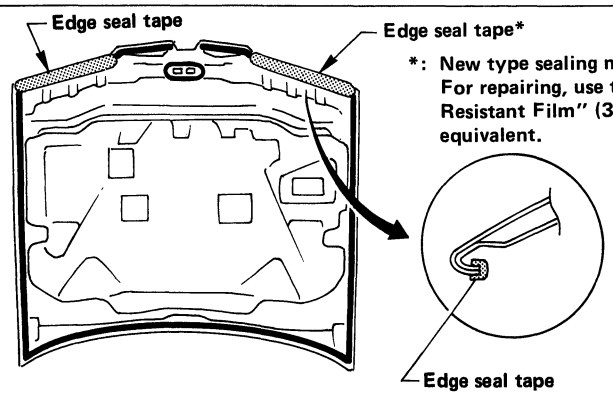
View Q



Portion R

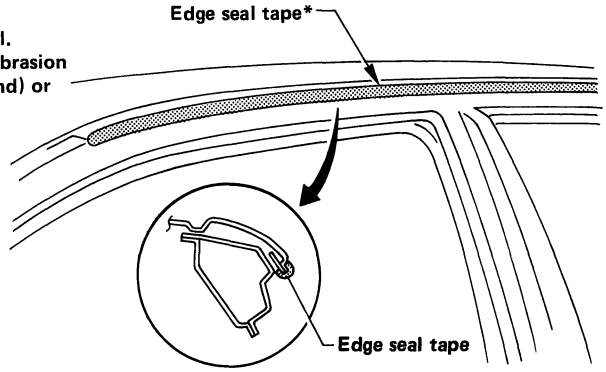


View S



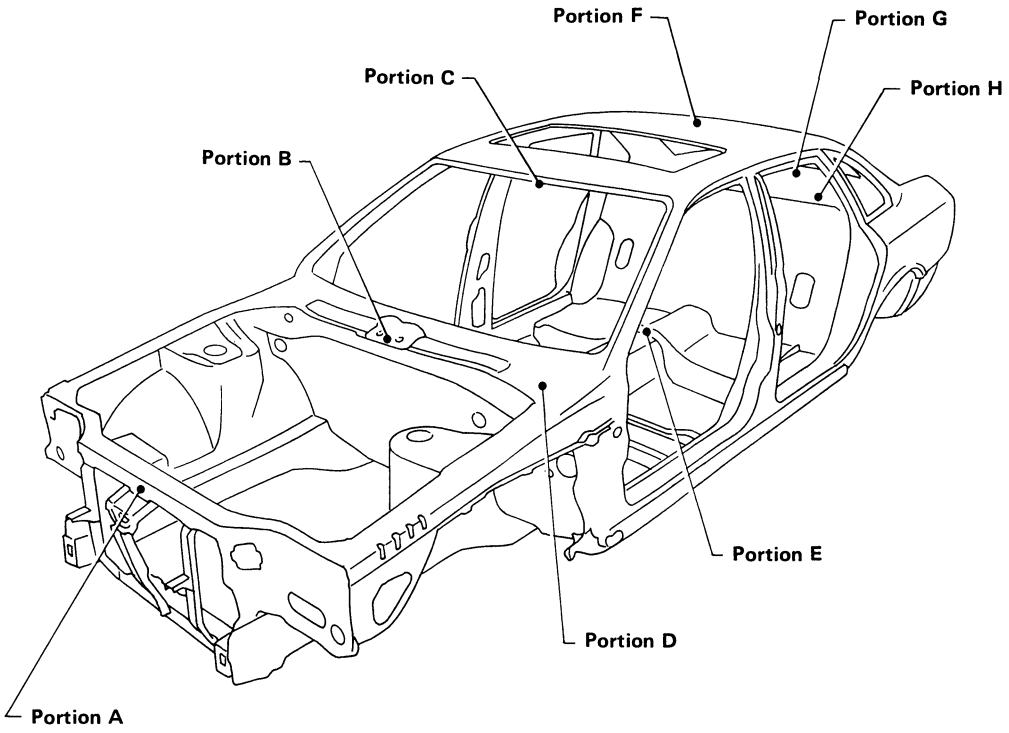
*: New type sealing material. For repairing, use the "Abrasion Resistant Film" (3M brand) or equivalent.

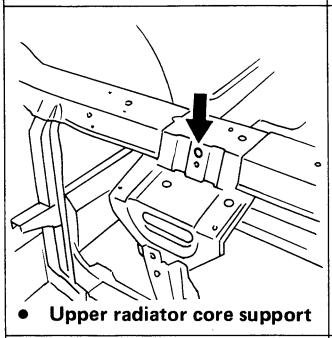
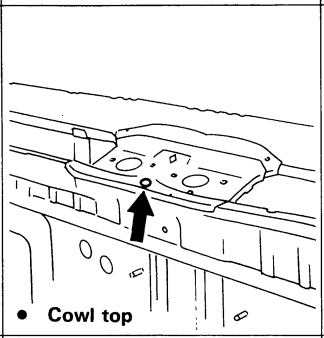
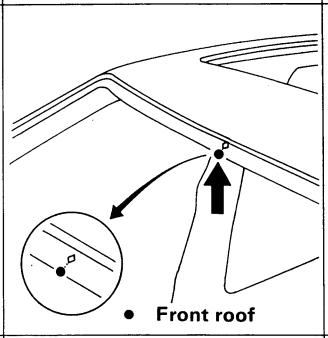
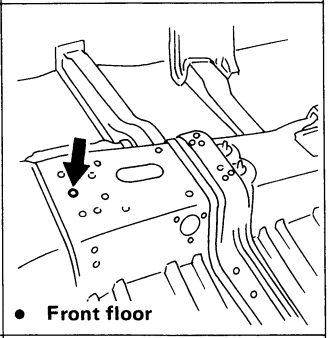
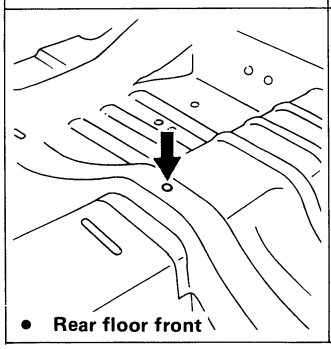
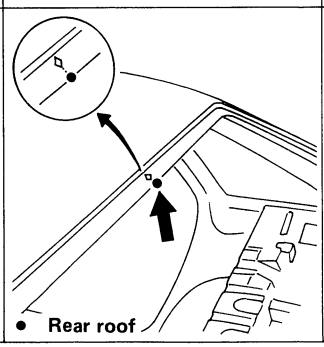
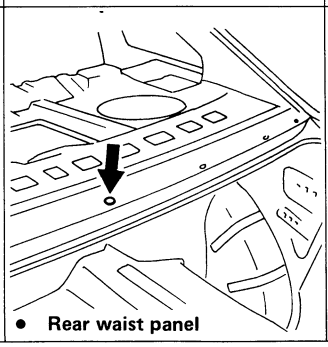
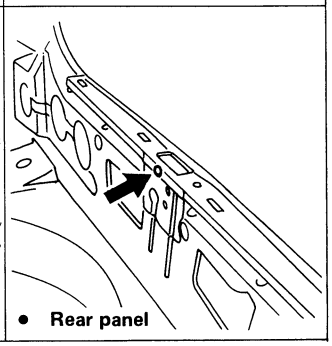
View T



BODY CENTER MARKS

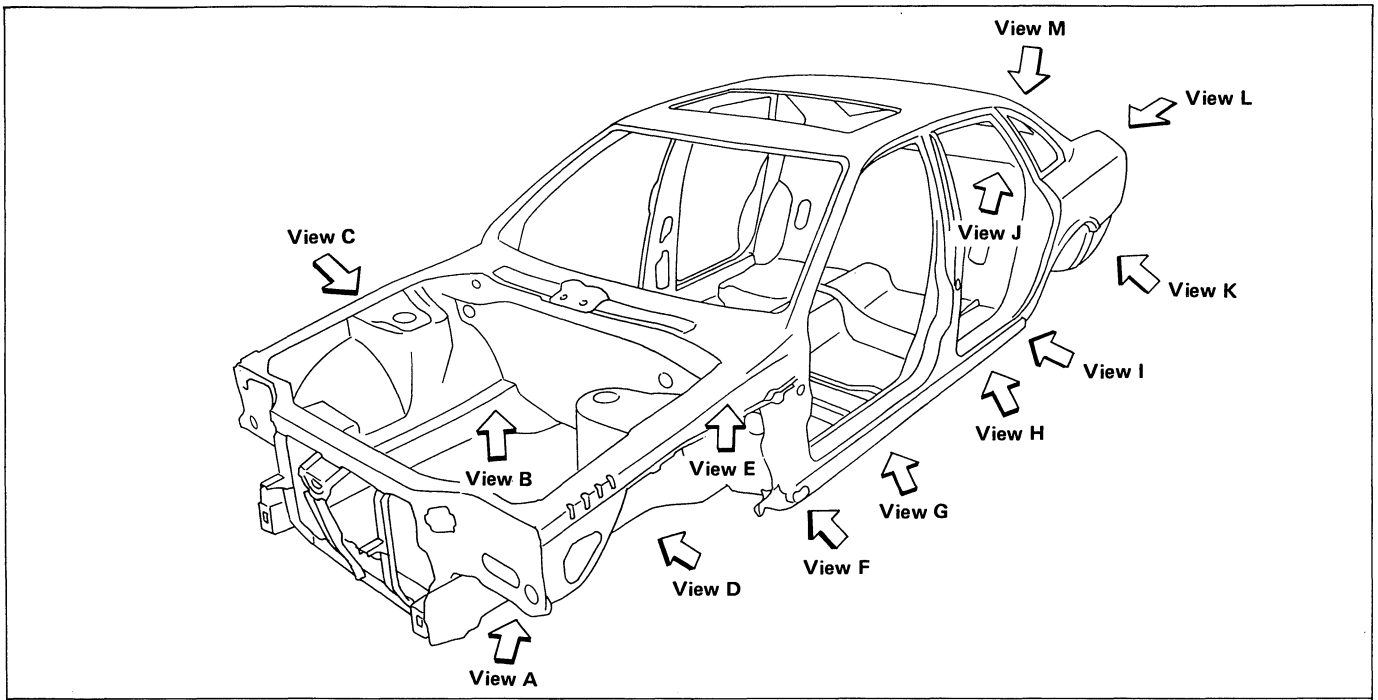
A mark has been placed on each part of the body to indicate the vehicle center. When repairing parts damaged by an accident which might affect the vehicle frame (members, pillars, etc.) more accurate, effective repair will be possible by using these marks together with body alignment data.



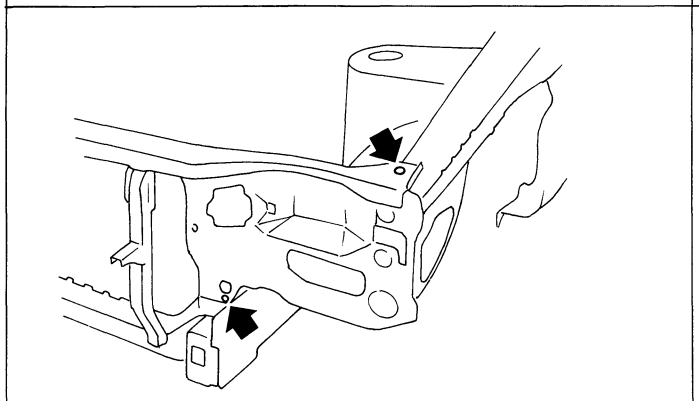
Portion A	Portion B	Portion C	Portion D
			
• Upper radiator core support	• Cowl top	• Front roof	• Front floor
Portion E	**Portion F**	**Portion G**	**Portion H**
			
• Rear floor front	• Rear roof	• Rear waist panel	• Rear panel

PANEL PARTS MATCHING MARKS

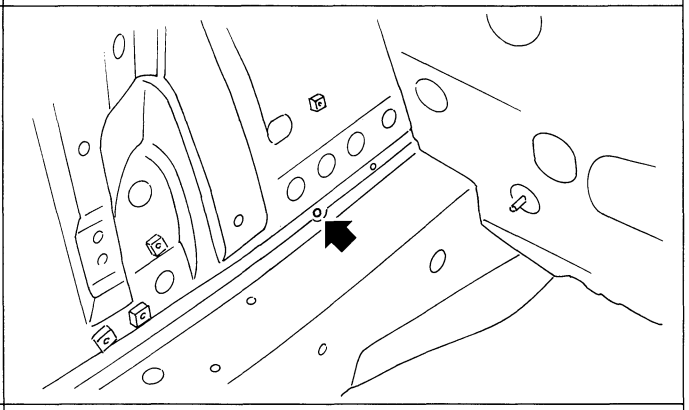
A mark has been placed on each part of the body to indicate the panel parts matching positions. When repairing parts damaged by an accident which might affect the vehicle frame (members, pillars, etc.) more accurate, effective repair will be possible by using these marks together with body alignment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



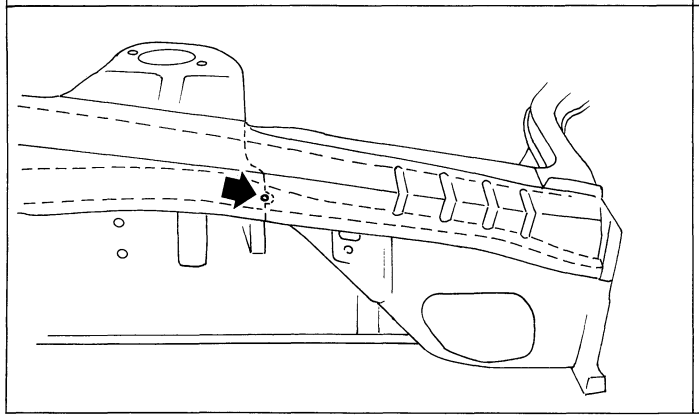
View A



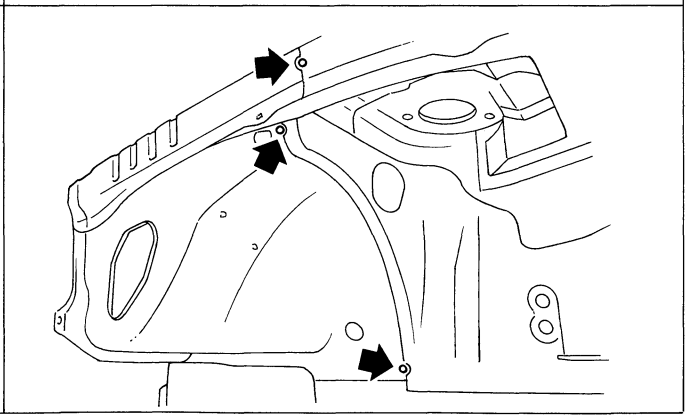
View B



View C

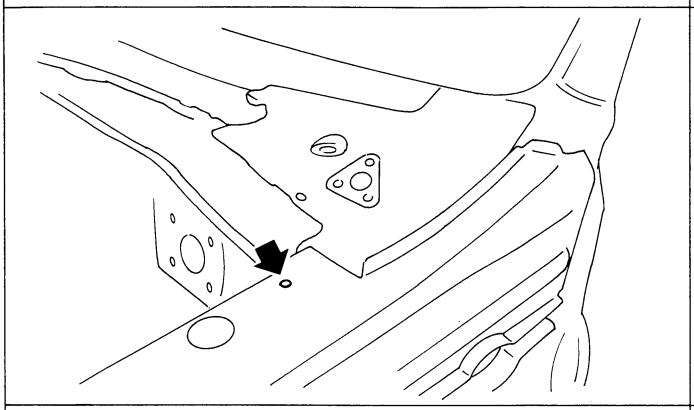


View D

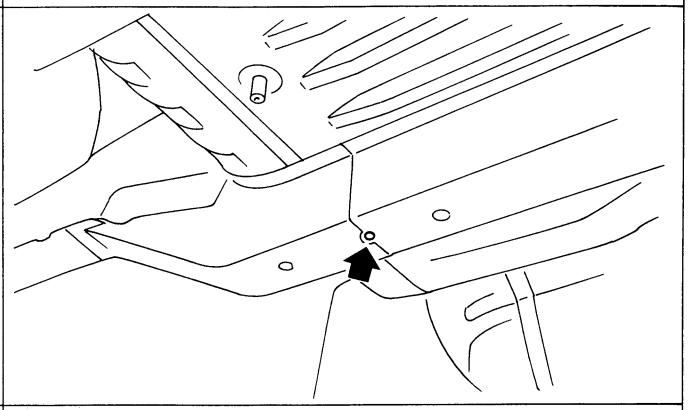


PANEL PARTS MATCHING MARKS

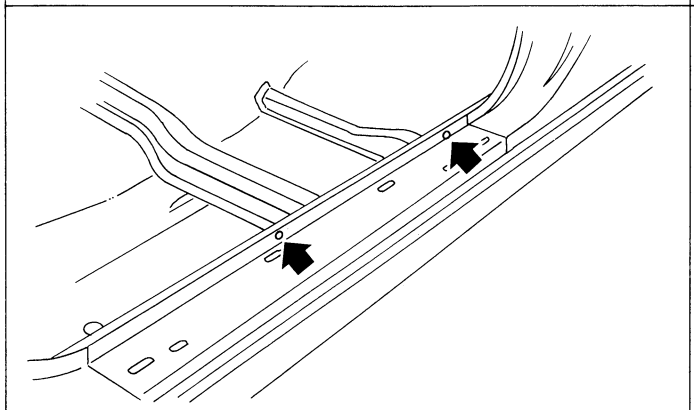
View E



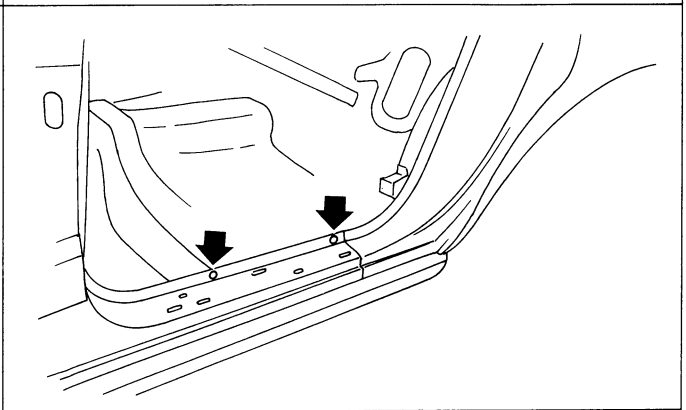
View F



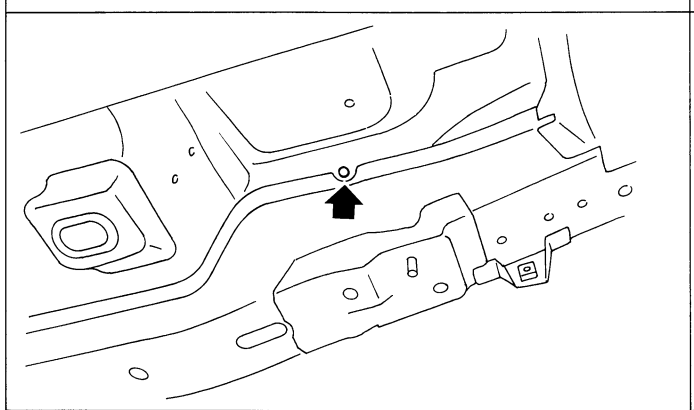
View G



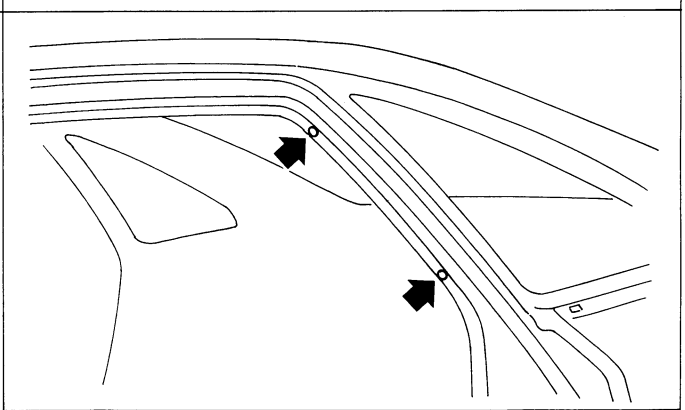
View H



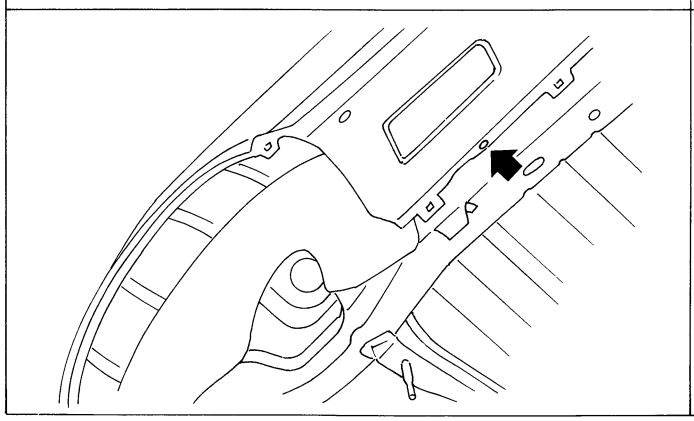
View I



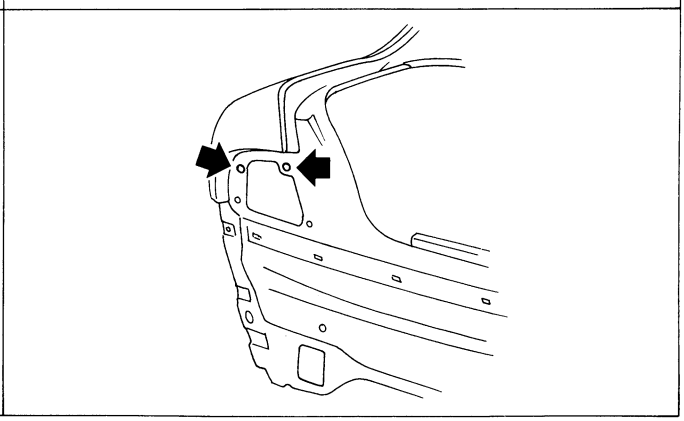
View J

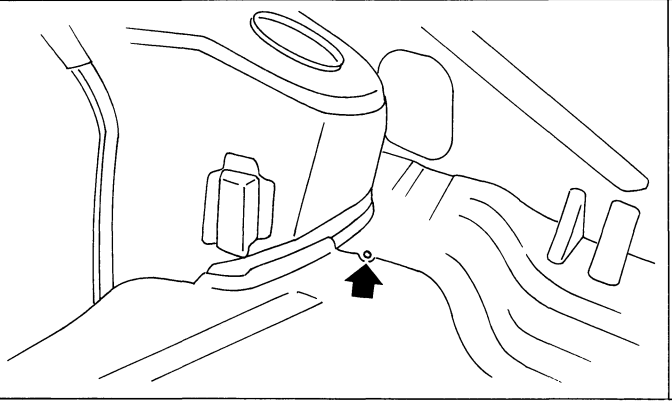


View K



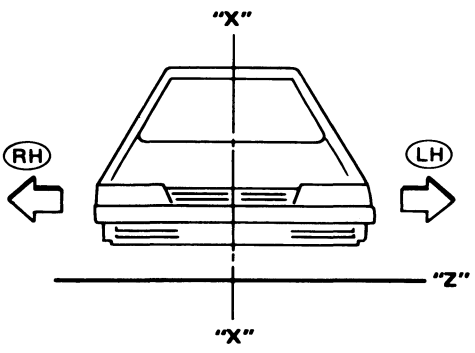
View L

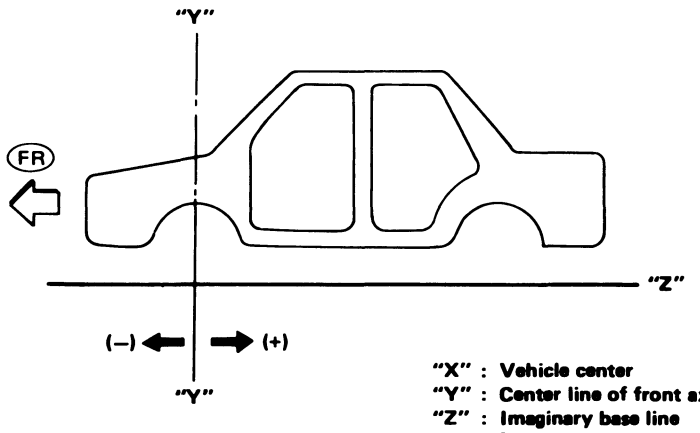


View M	
	

DESCRIPTION

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



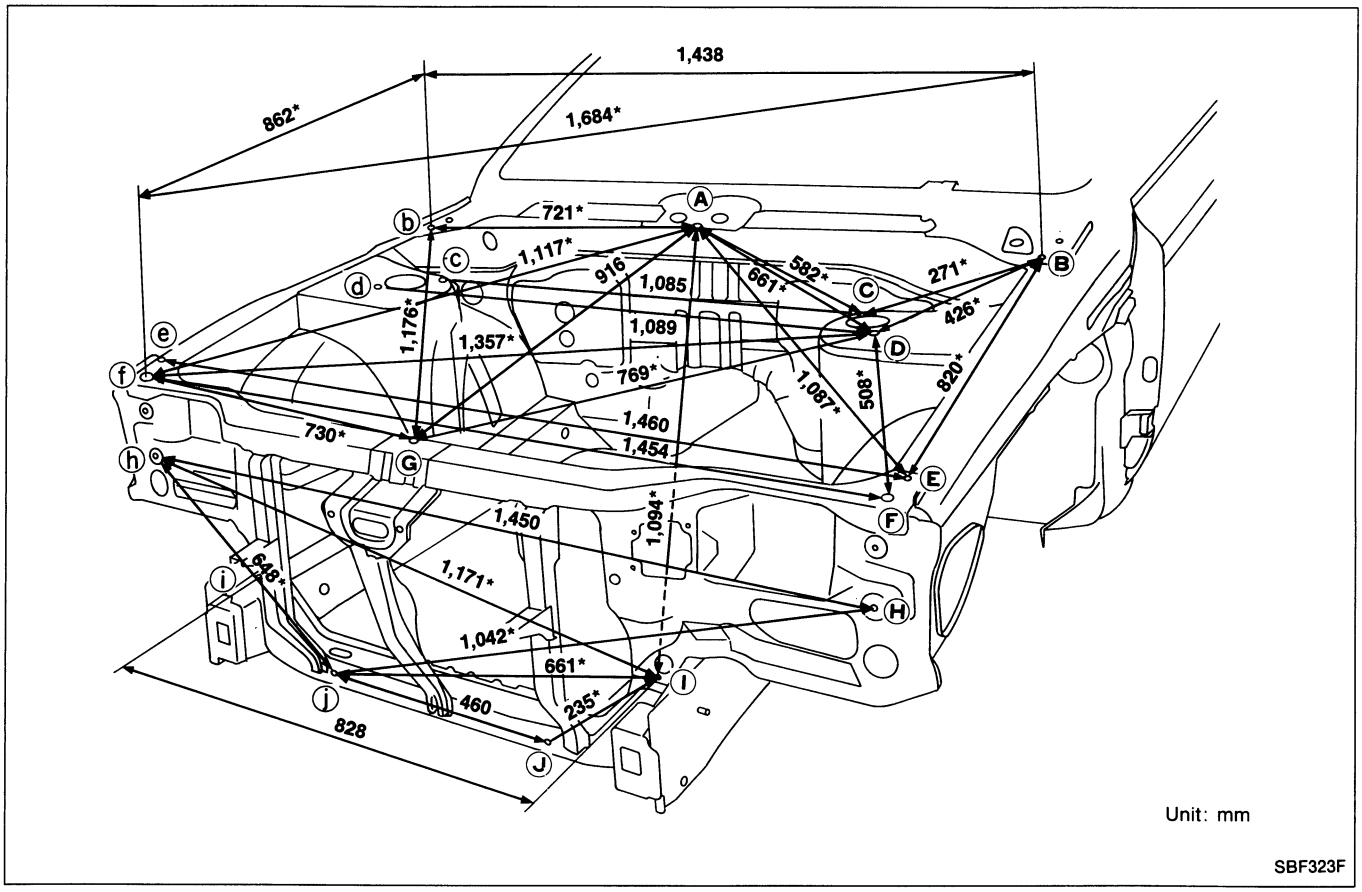


"X" : Vehicle center
"Y" : Center line of front axle
"Z" : Imaginary base line
[200 mm below datum line ("OZ" at design plan)]

(LH) : L.H. side
(RH) : R.H. side

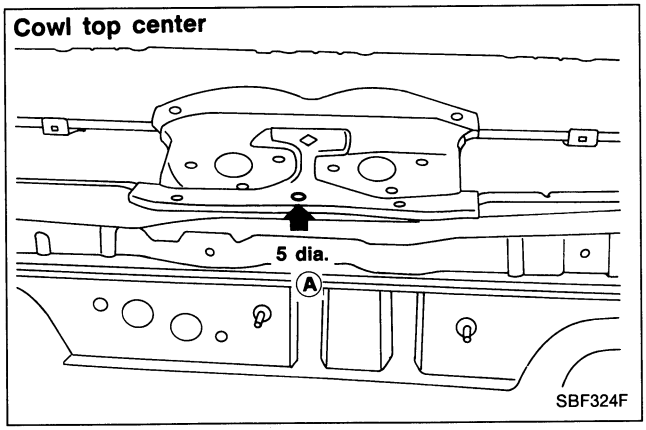
ENGINE COMPARTMENT

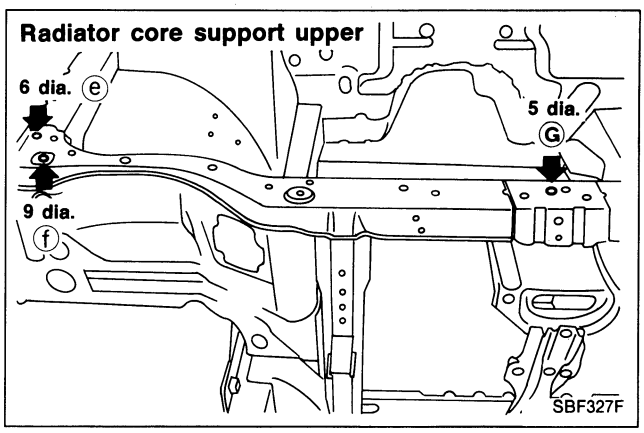
MEASUREMENT



MEASUREMENT POINTS

Unit: mm

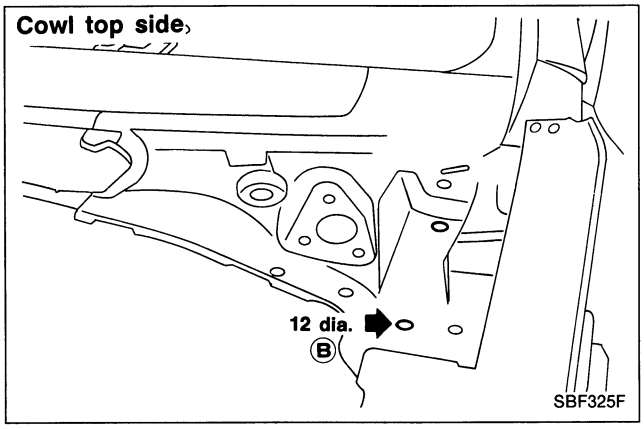




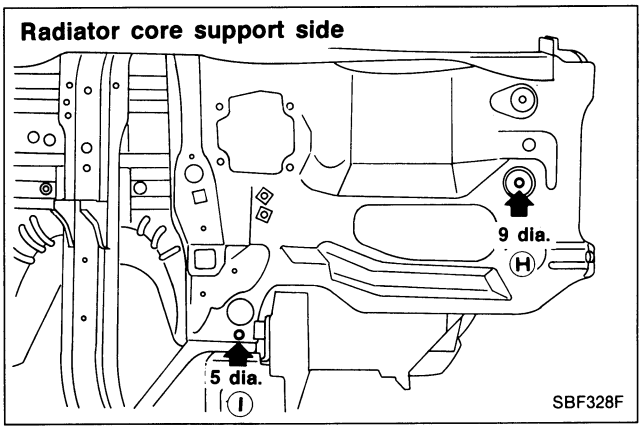
ENGINE COMPARTMENT

Unit: mm

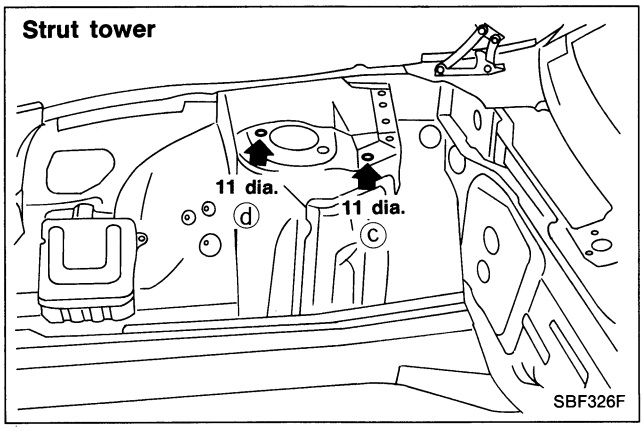
Cowl top side



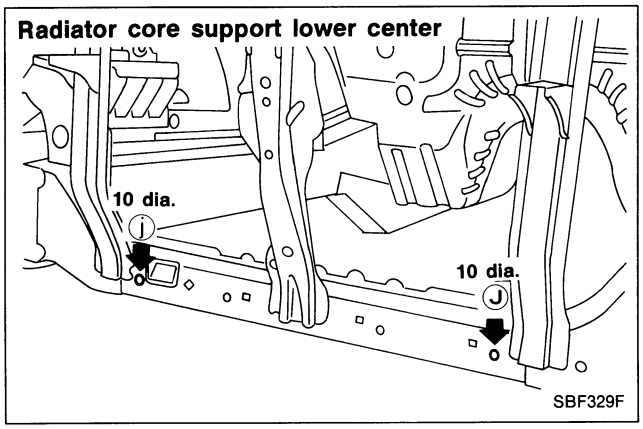
Radiator core support side



Strut tower

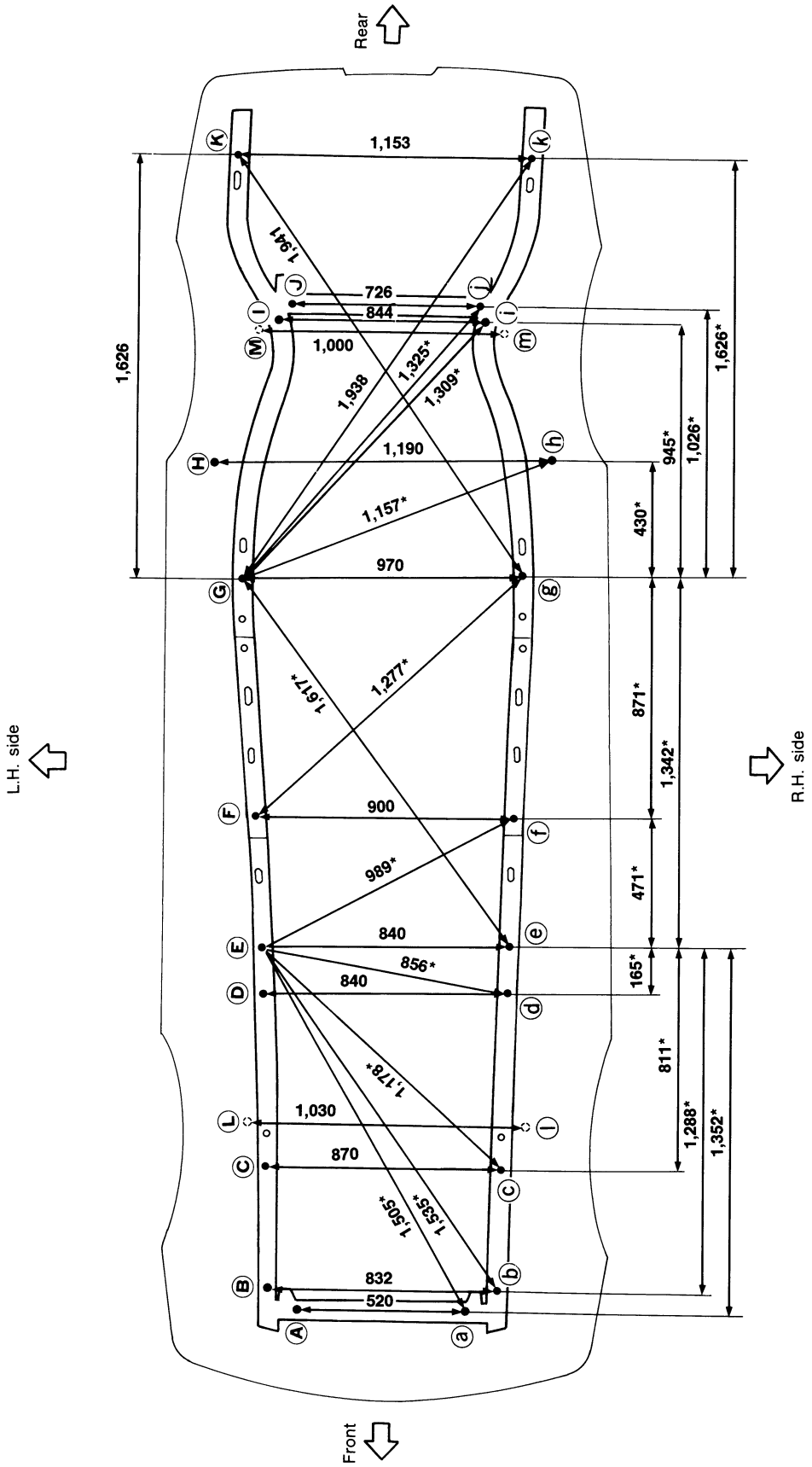


Radiator core support lower center



UNDERBODY

MEASUREMENT



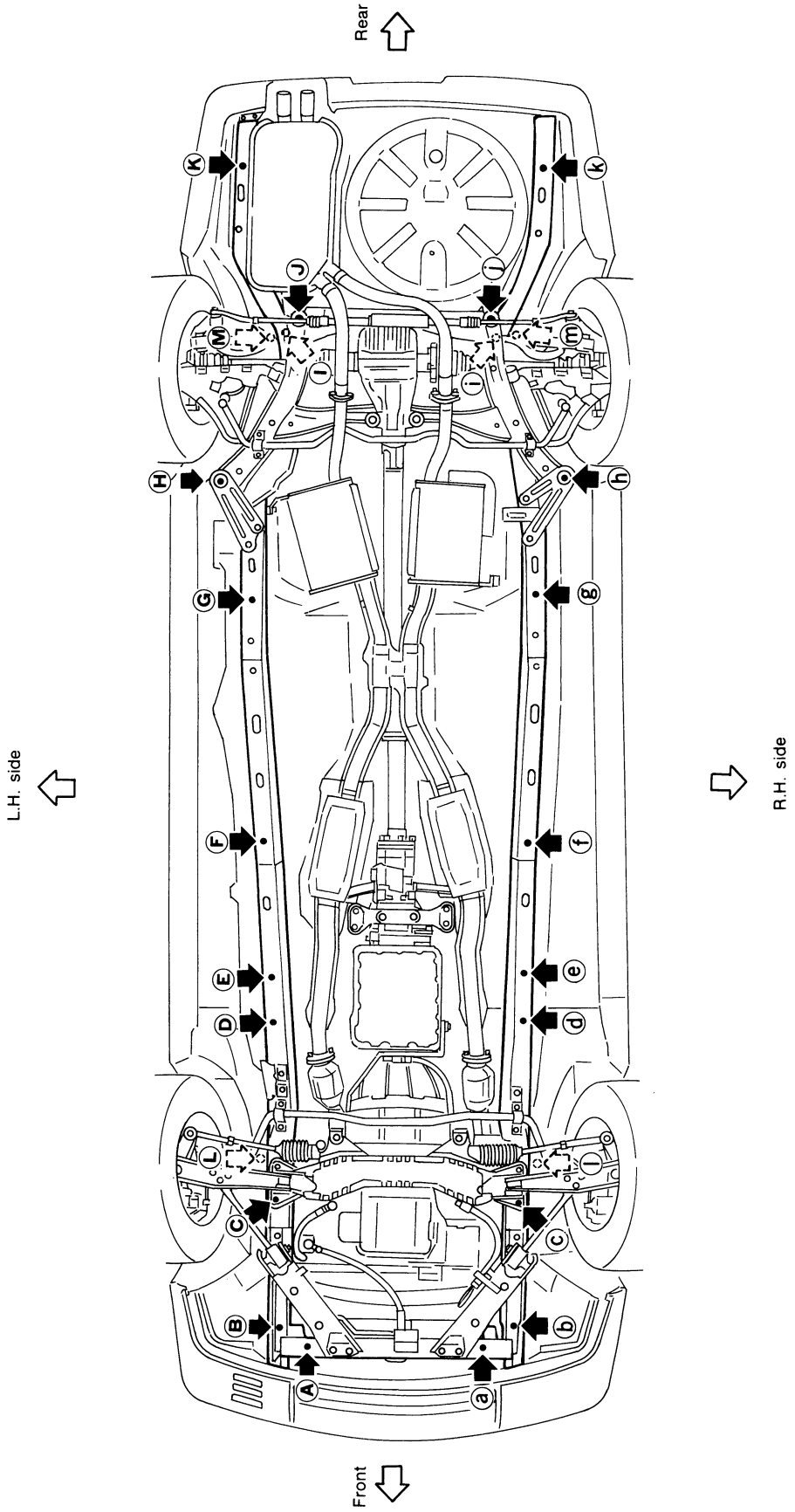
All dimensions indicated in this figure are actual ones.
(There are no projected dimensions.)

Unit: mm

SBF321F

UNDERBODY

MEASUREMENT POINTS



SBF322F

UNDERBODY

Unit: mm

Radiator core lower support, front side member, front side member extension and front suspension mounting lower member

Coordinates:

Ⓐ, ⓐ
X: 260
Y: –634
Z: 237.5

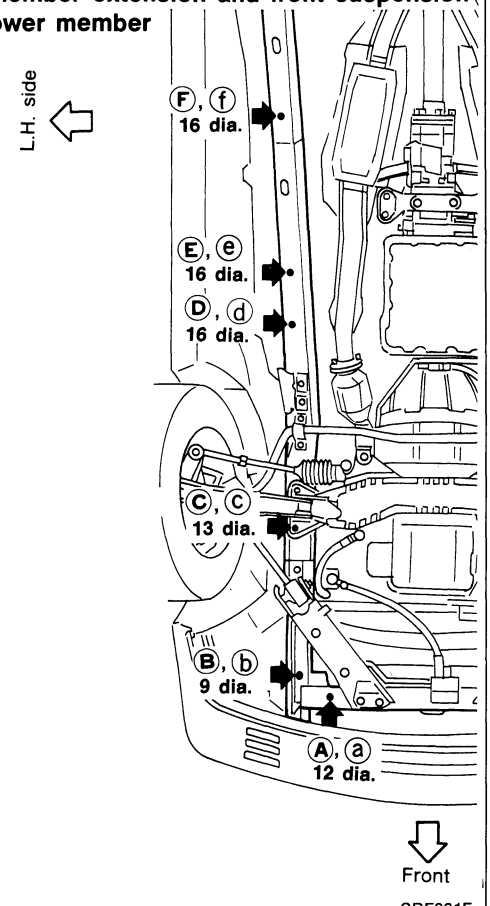
Ⓑ, ⓑ
X: 416
Y: –582
Z: 211.2

Ⓒ, ⓒ
X: 435
Y: –100
Z: 220

Ⓓ, ⓓ
X: 420
Y: 535
Z: 88.6

Ⓔ, ⓔ
X: 420
Y: 700
Z: 90.4

Ⓕ, ⓕ
X: 450
Y: 1,170
Z: 92



SBF331F

Front side member rear extension, rear side member, rear side member extension and rear suspension mounting bolt top

Coordinates:

Ⓖ, ⓖ
X: 485
Y: 2,040
Z: 84.6

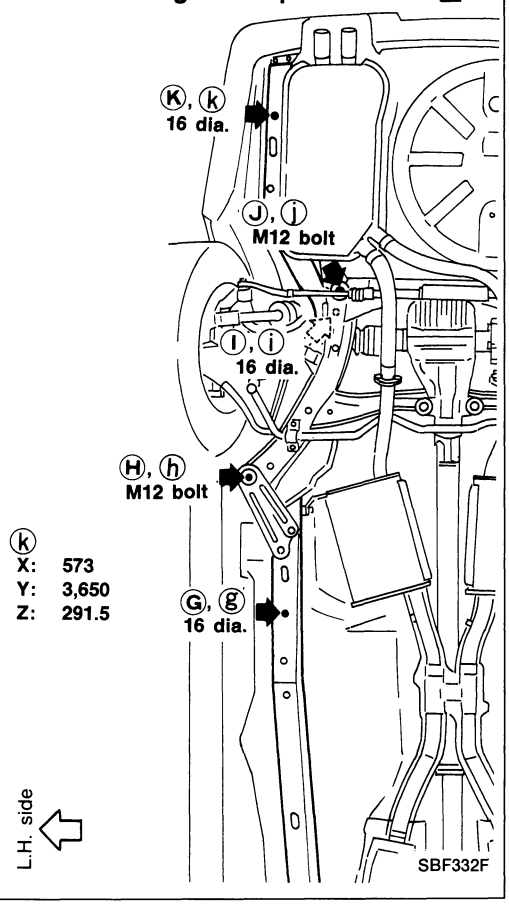
Ⓗ, ⓗ
X: 595
Y: 2,455
Z: 99.2

Ⓘ, ⓘ
X: 422
Y: 2,935
Z: 382.6

Ⓙ, ⓙ
X: 363
Y: 3,045
Z: 249.3

Ⓚ
X: 580
Y: 3,650
Z: 291.5

ⓚ
X: 573
Y: 3,650
Z: 291.5



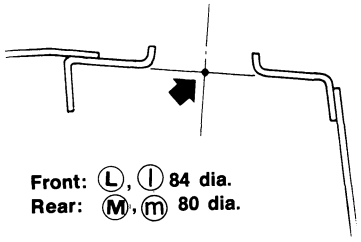
SBF332F

Front and rear strut tower centers

Coordinates:

Ⓛ, ⓛ
X: 514.8
Y: –42
Z: 747.8

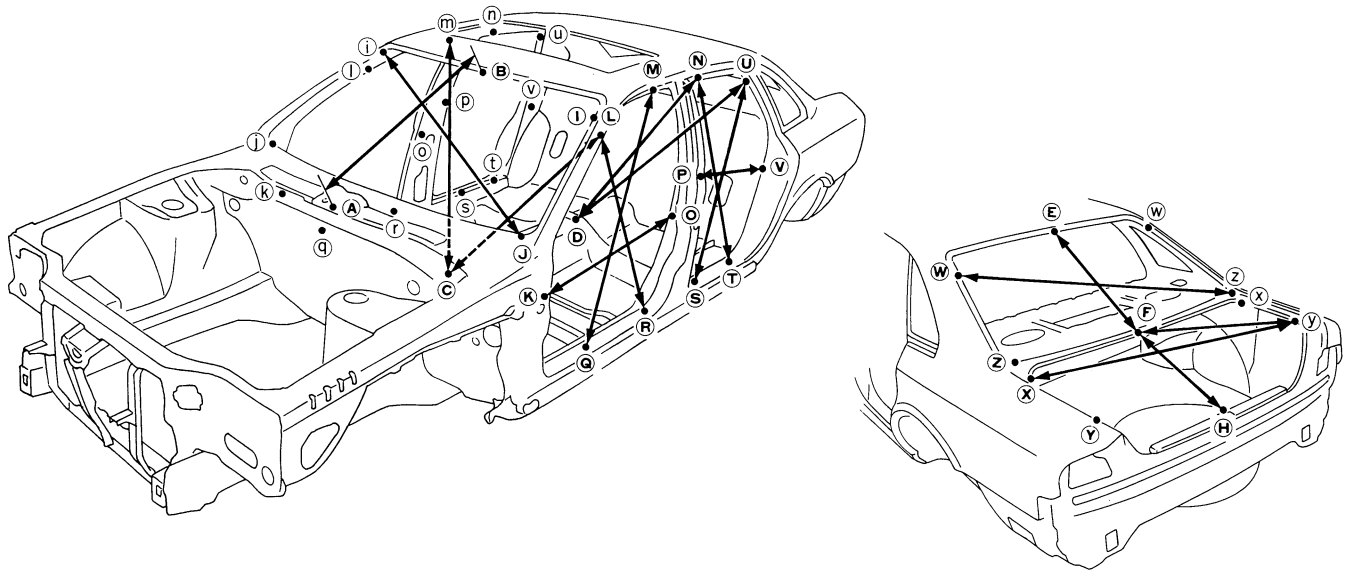
Ⓜ, ⓜ
X: 500
Y: 2,925
Z: 641.5



SBF119C

PASSENGER COMPARTMENT AND REAR BODY

MEASUREMENT



Unit: mm

Point	Dimension	Point	Dimension	Point	Dimension
Ⓘ - ⓘ	1,202	Ⓞ - ⓞ	1,496	Ⓤ - ⓤ	1,233
Ⓙ - ⓙ	1,417	Ⓟ - ⓟ	1,478	Ⓥ - ⓥ	1,484
Ⓚ - ⓚ	1,498	Ⓠ - ⓠ	1,503	Ⓦ - ⓦ	1,120
Ⓛ - ⓛ	1,305	Ⓡ - ⓡ	1,503	Ⓧ - ⓧ	1,205
Ⓜ - ⓜ	1,188	Ⓢ - ⓢ	1,503	Ⓨ - ⓨ	1,223
Ⓝ - ⓝ	1,174	Ⓣ - ⓣ	1,503	Ⓩ - ⓩ	1,223

Unit: mm

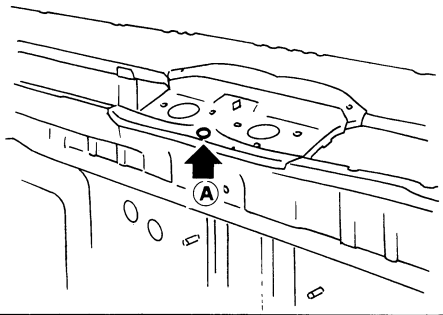
Point	Dimension	Point	Dimension
Ⓐ - Ⓑ	935	Ⓢ - Ⓤ, ⓢ - ⓤ	996
Ⓘ - ⓙ, ⓘ - Ⓙ	1,475	Ⓝ - Ⓓ, ⓝ - Ⓓ	1,061
Ⓚ - Ⓞ, ⓚ - ⓞ	904	Ⓤ - Ⓓ, ⓤ - Ⓓ	1,085
Ⓛ - Ⓡ, ⓛ - ⓡ	865	Ⓔ - Ⓕ	749
Ⓜ - Ⓠ, ⓜ - ⓠ	1,067	Ⓦ - ⓩ, ⓦ - Ⓩ	1,329
Ⓛ - Ⓒ, ⓛ - Ⓒ	990	Ⓕ - Ⓗ	536
Ⓜ - Ⓒ, ⓜ - Ⓒ	1,108	Ⓧ - ⓨ, ⓧ - Ⓨ	1,253
Ⓟ - Ⓥ, ⓟ - ⓥ	757	Ⓕ - ⓨ, Ⓕ - Ⓨ	687
Ⓝ - Ⓣ, ⓝ - ⓣ	985		

PASSENGER COMPARTMENT AND REAR BODY

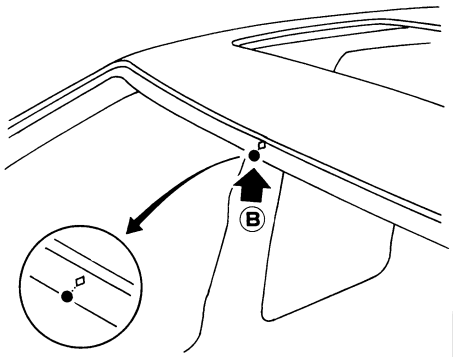
MEASUREMENT POINTS

Unit: mm

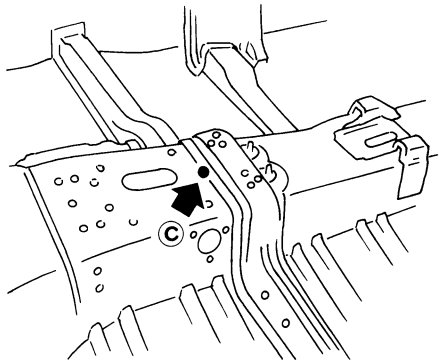
Ⓐ : Cowl top hole center (5 dia.)



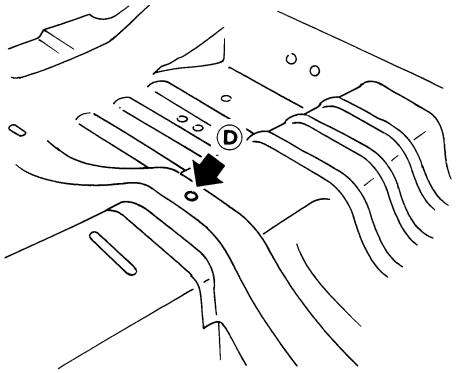
Ⓑ : Front roof flange end at center positioning mark



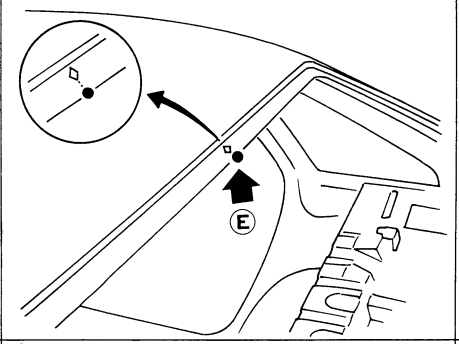
Ⓒ : 2nd crossmenber positioning mark



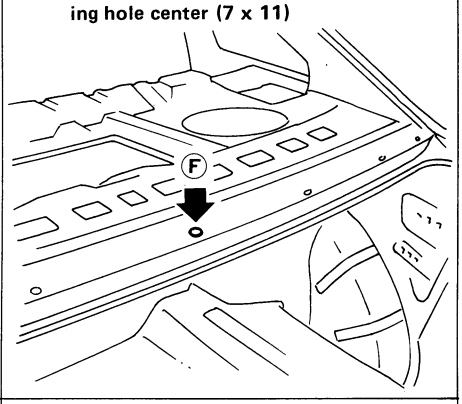
Ⓓ : Rear floor front standard hole center (8 dia.)



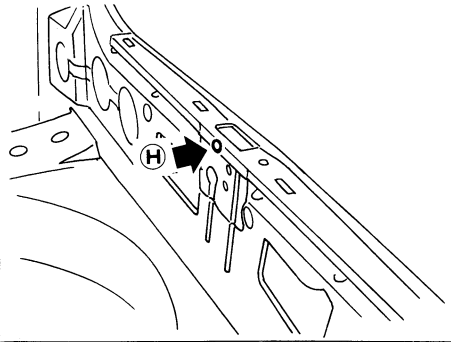
Ⓔ : Rear roof flange end at center positioning mark



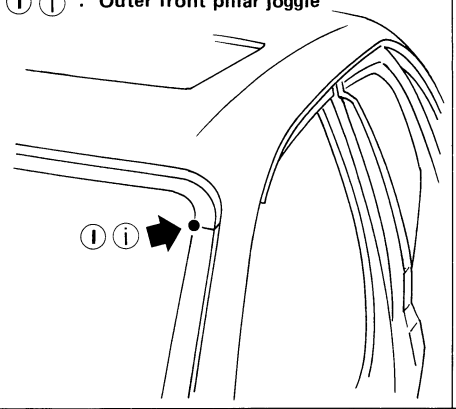
Ⓕ : Rear waist molding installing hole center (7 x 11)



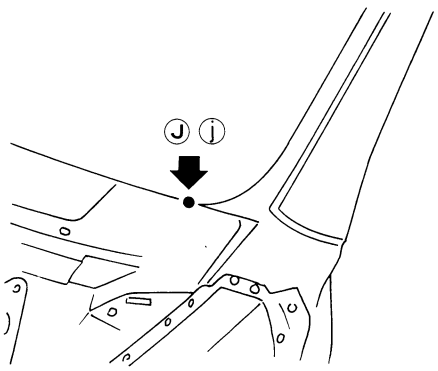
Ⓗ : Rear panel trunk lid lock installing hole center (6 dia.)



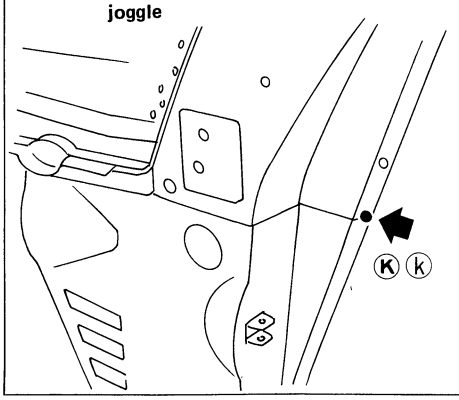
Ⓘ ⓘ : Outer front pillar joggle



Ⓙ ⓙ : Outer front pillar joggle

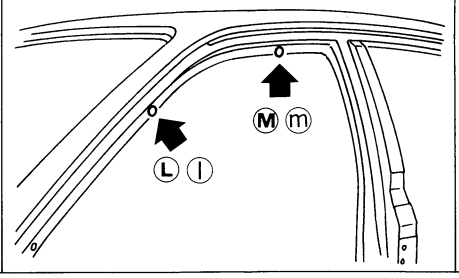


Ⓚ ⓚ : Lower outer front pillar joggle



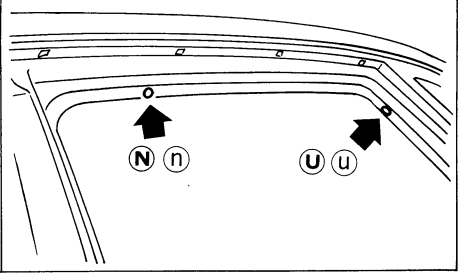
Ⓛ ⓛ : Outer front pillar standard hole center (6 dia.)

Ⓜ ⓜ : Side roof rail standard hole center (6 dia.)



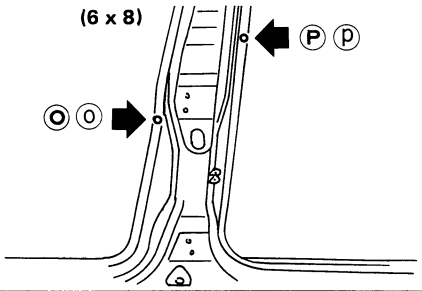
Ⓝ ⓝ : Side roof rail standard hole center (6 dia.)

Ⓤ ⓤ : Rear fender standard hole center (6 x 10)

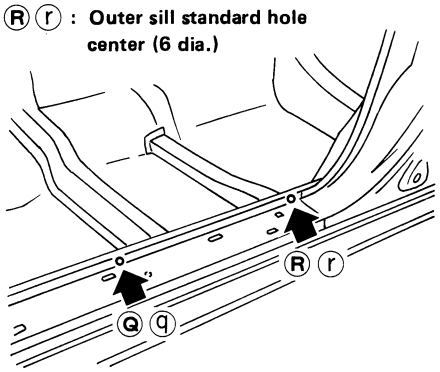


Unit: mm

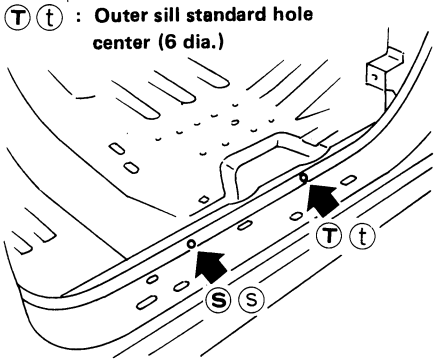
Ⓞ ⓞ : Outer center pillar standard hole center (6 dia.)
Ⓟ ⓟ : Outer center pillar standard hole center (6 x 8)



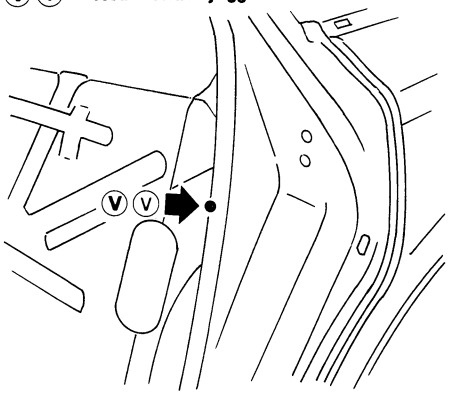
Ⓠ ⓠ : Outer sill standard hole center (6 dia.)
Ⓡ ⓡ : Outer sill standard hole center (6 dia.)



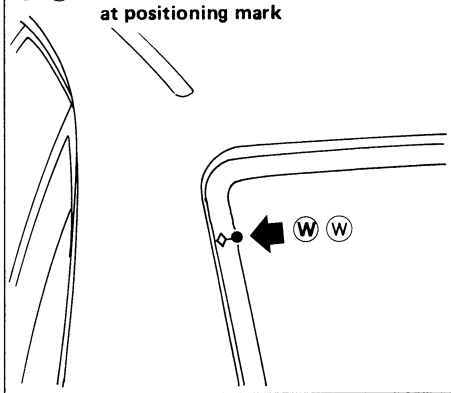
Ⓢ ⓢ : Outer sill standard hole center (6 dia.)
Ⓣ ⓣ : Outer sill standard hole center (6 dia.)



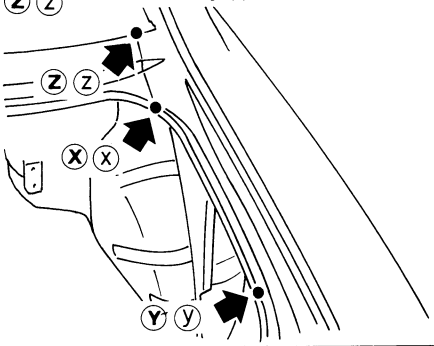
Ⓥ ⓥ : Rear fender joggle



Ⓦ ⓦ : Rear fender flange end at positioning mark



Ⓧ ⓧ : Rear fender joggle
Ⓨ ⓨ : Rear fender corner joggle
Ⓩ ⓩ : Rear fender joggle

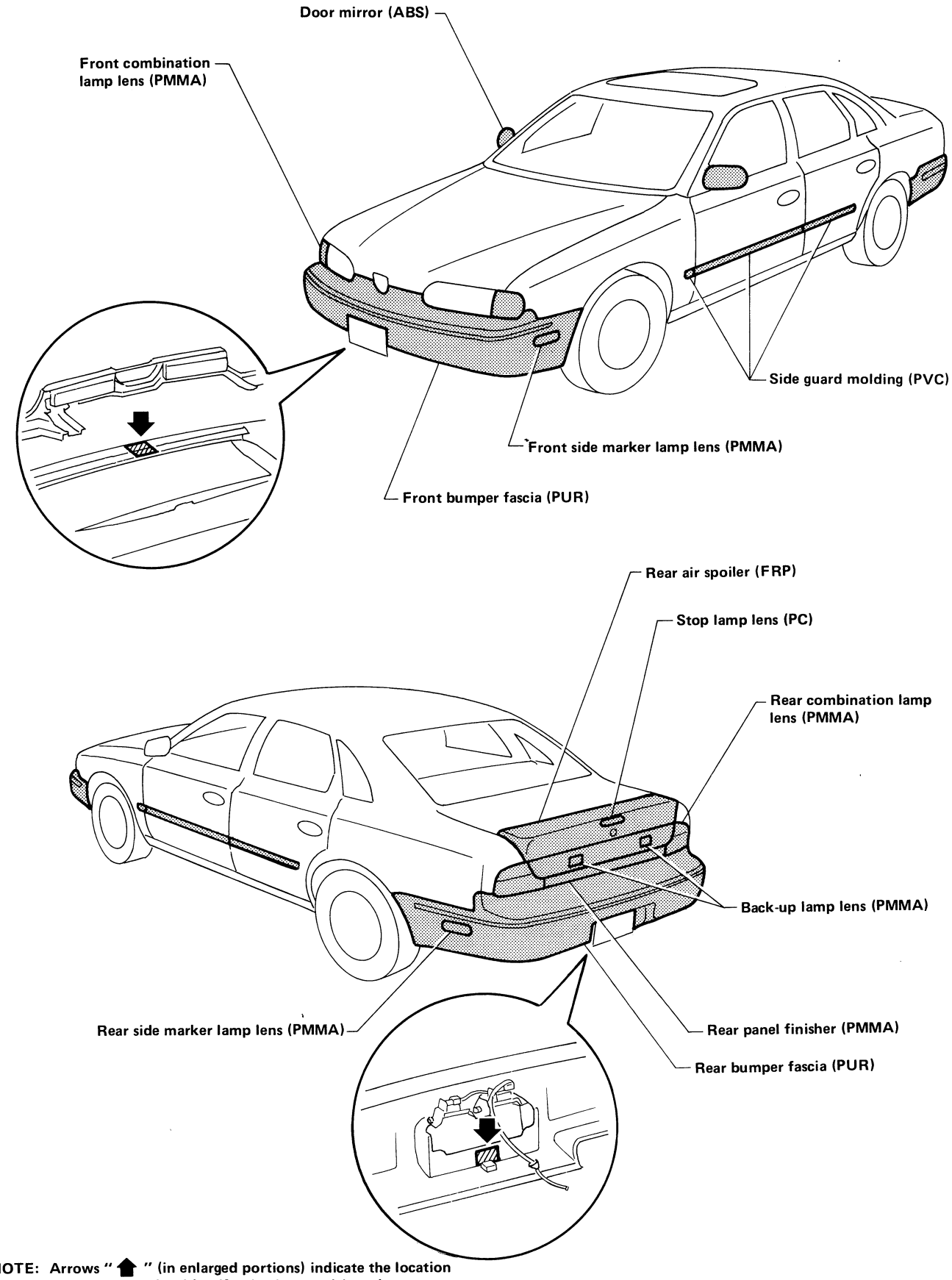


HANDLING PRECAUTIONS FOR PLASTICS

Abbreviation	Material name	Heat resisting temperature °C (°F)	Resistance to gasoline and solvents	Other cautions
PE	Polyethylene	80 (176)	Gasoline and most solvents are harmless.	Flammable
PVC	Polyvinyl chloride	90 (194)	Gasoline and most solvents are harmless if applied for a very short time (wipe up quickly).	Poison gas is emitted when burned.
PP	Polypropylene	90 (194)	Gasoline and most solvents are harmless.	Flammable
ABS	Acrylonitrile butadiene styrene resin	90 (194)	Avoid gasoline and solvents.	Avoid brake fluid.
AES	Acrylonitrile ethylene styrene	90 (194)	Avoid gasoline and solvents.	Avoid brake fluid.
PMMA	Polymethyl methacrylate	90 (194)	Avoid gasoline and solvents.	Avoid brake fluid.
PUR	Polyurethane	90 (194)	Gasoline and most solvents are harmless.	Avoid brake fluid.
AAS	Acrylonitrile acrylic rubber styrene	95 (203)	Avoid gasoline and solvents.	Avoid brake fluid.
AS	Styrene-acrylonitrile	85 (185)	Avoid gasoline and solvents.	Avoid brake fluid.
PPO	Polyphenylene oxide	110 (230)	Avoid gasoline and solvents.	
POM	Polyacetal	120 (248)	Gasoline and solvents are harmless.	Avoid battery acid.
PC	Polycarbonate	120 (248)	Avoid gasoline and solvents.	
PA	Polyamide (Nylon)	150 (302)	Gasoline and most solvents are harmless.	Avoid immersing in water.
FRP	Fiber reinforced plastics	170 (338)	Gasoline and most solvents are harmless.	
PPC	Polypropylene composite	115 (239)	Gasoline and most solvents are harmless.	Flammable
PBT	Polybutylene terephthalate	140 (284)	Gasoline and most solvents are harmless.	
TPR	Thermoplastic rubber	80 (176)	Avoid gasoline and solvents.	
TPE	Thermoplastic elastomer	80 (176)	Avoid gasoline and solvents.	

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

LOCATION OF PLASTIC PARTS



NOTE: Arrows " ⬆ " (in enlarged portions) indicate the location of symbols used to identify plastic material used.

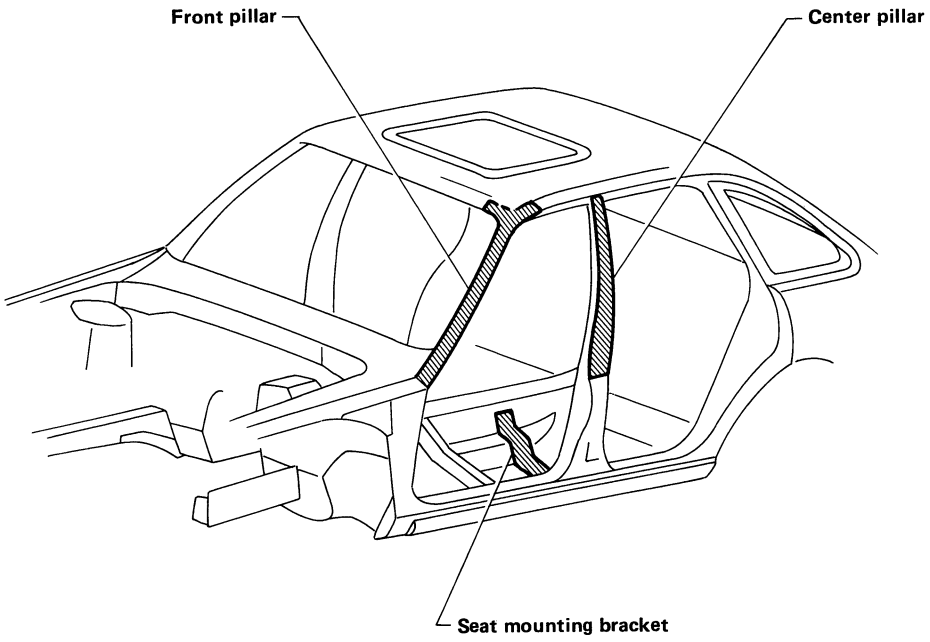
To provide unsurpassed rigidity of the lightweight body (To increase passenger compartment's crash worthiness).

REQUIRED MATERIAL CHARACTERISTICS

- Density: Over 0.1 g/cm^3 (0.06 oz/cu in)
- Noticeable volumetric changes should not occur with changes in humidity and temperature.
- Material characteristics should not adversely affect ED (electrodeposition) coats.
- For repairing, use the Super Panel Filler (3M Brand) or equivalent.

APPLICABLE LOCATIONS AND SERVICE PARTS AVAILABILITY

Applicable locations



Service parts availability

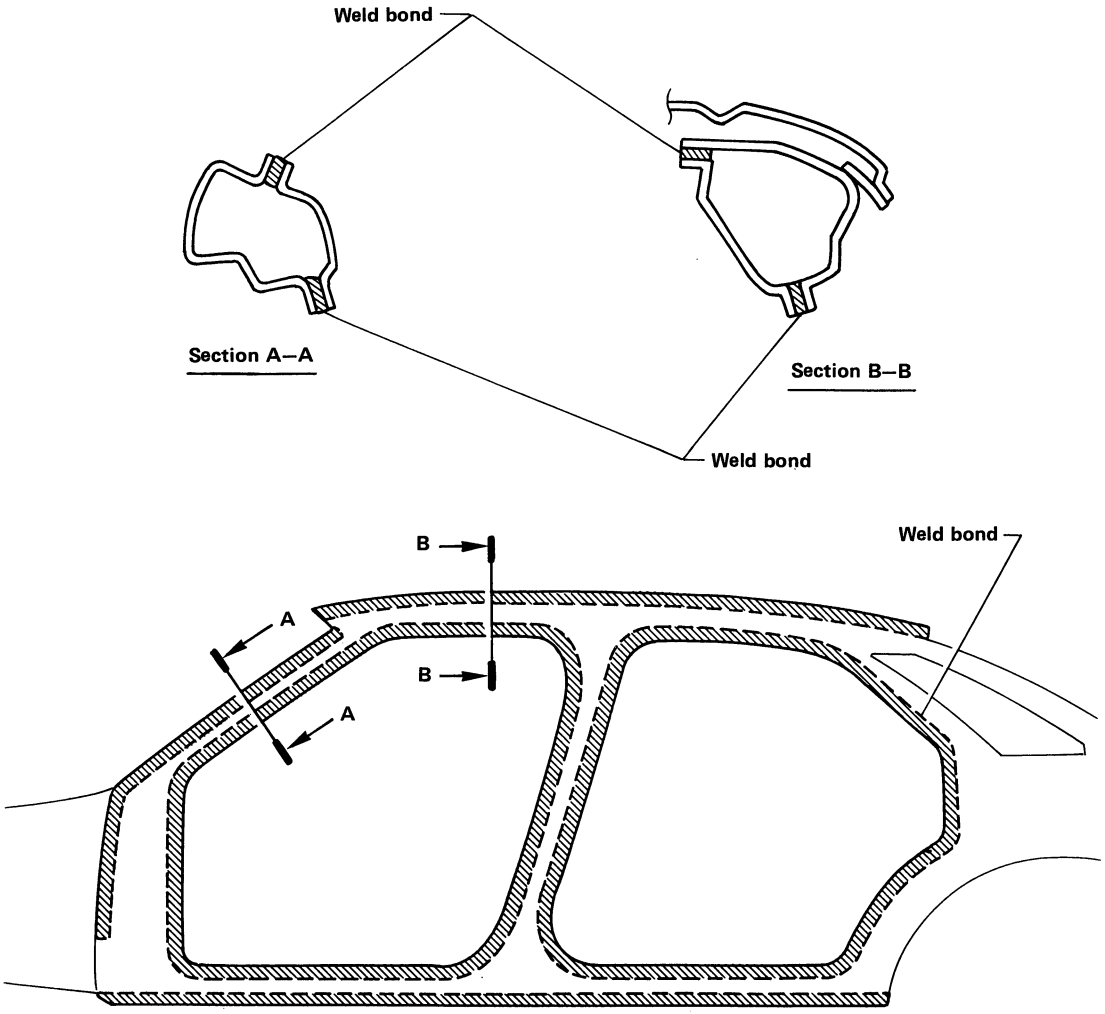
Each service part is ED coated. These are filled with urethane foam filler after the trim mounting clips have been installed and, for the front pillar, when the drain hose has been installed.

To increase torsional rigidity and strength of body.

MATERIAL CHARACTERISTICS

- Material should be a 2-components, epoxy adhesive. (C1BA-GE1GY: Araldite AV8113/Hardner HV8113 or equivalent)
- Use in conjunction with spot welding

APPLICABLE LOCATION AND SERVICE PARTS AVAILABILITY

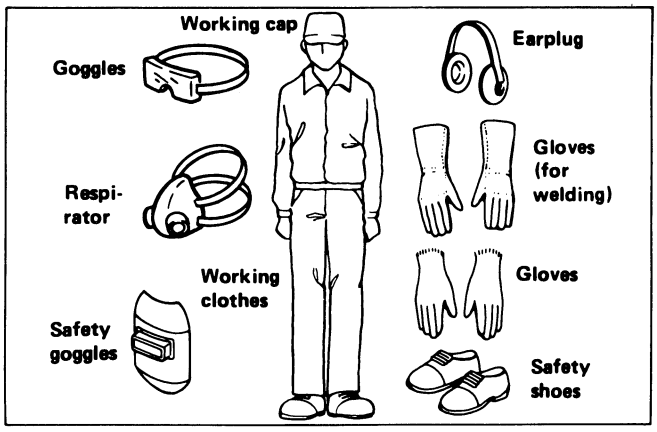


Entire perimeter of body panels at door locations and side roof rails

PRECAUTIONS IN OPERATION

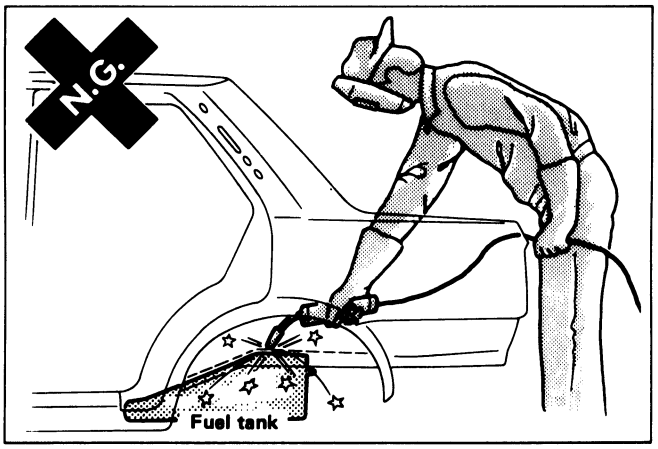
WELDING PRECAUTIONS

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.

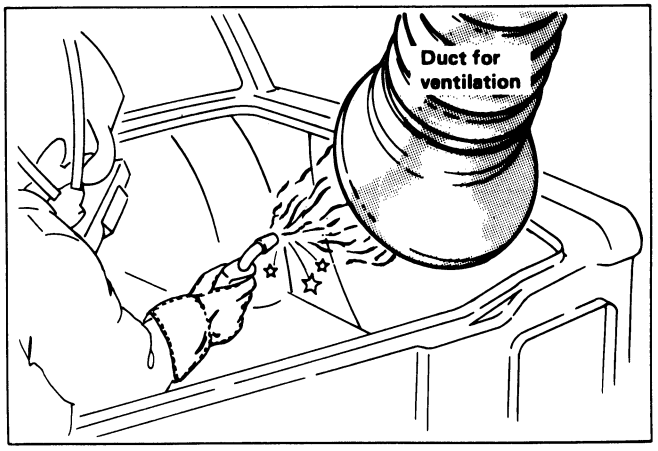


2. Safety stand
- After jacking up a vehicle body, be sure to support it with the safety stand. For the supporting positions, refer to "Lifting Points".

3. Inflammables
- Before starting repair work, be sure to disconnect the negative terminal of the battery.
- When welding parts near the fuel tank, 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.

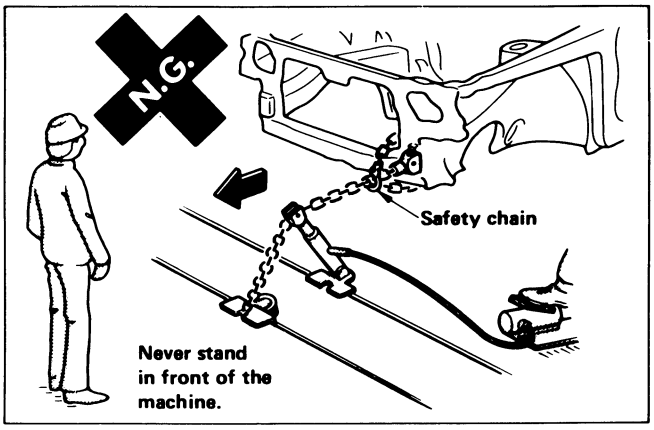


4. Working environment
- Pay attention to ventilation and the health of operators.
- Paint and sealant may generate poisonous gases when heated by fire. To prevent this, do not use a gas welder for cutting off damaged portions. Use an air saw or an air chisel.
- Use a belt sander or rotary wire brush for removing paint from the panel.



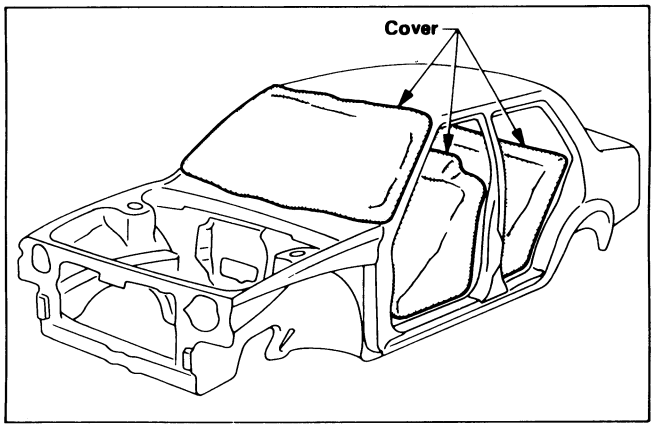
PRECAUTIONS IN OPERATION

5. Vehicle body straightener
- Be sure to use correctly according to the instruction manual prepared by the manufacturer of the straightener. When straightening a damaged portion, never stand in front of the machine in the direction that the body is to be straightened. Equip with a safety chain in case of emergency.



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 (moldings 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.

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 or equivalent.

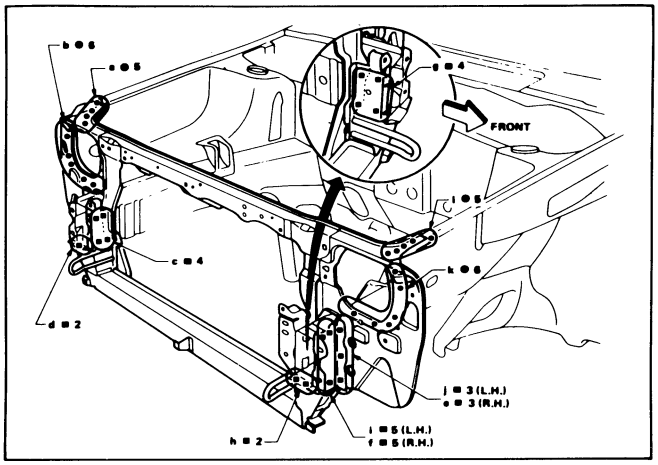
PRECAUTIONS IN OPERATION

WELDING PRECAUTIONS

General precautions

Welding must be properly performed so that vehicle body will retain sufficient strength and durability.

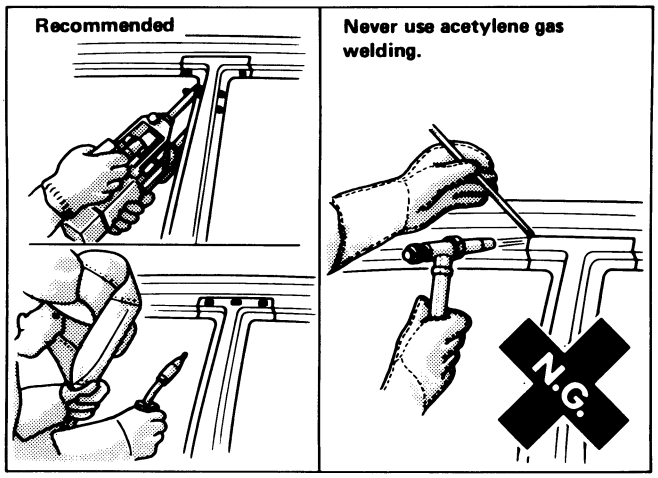
- The REPLACEMENT OPERATION section in the Manual deals with the welding methods, locations to be welded, number of welding spots (or welding pitches) for each body portion. It is recommended to perform welding according to the instructions.



- Resistance spot welding is superior in weld strength to other welding processes. In addition, it features a low amount of thermal strain, a short welding time and finishing is unnecessary.

  For these reasons, it is recommended that resistance spot welding be used whenever possible.

  Further, use of mig welding is recommended for locations where resistance spot welding cannot be utilized.



CAUTION:

Gas welding (oxyacetylene gas welding) must not be used because it causes a decline in strength of areas surrounding the welded parts.

There are a variety of resistance spot welders on the market. Be sure to use a welder with a sufficient capacity to secure weld strength. Also, inspect welded parts to confirm weld strength.

PRECAUTIONS IN OPERATION

Spot welding

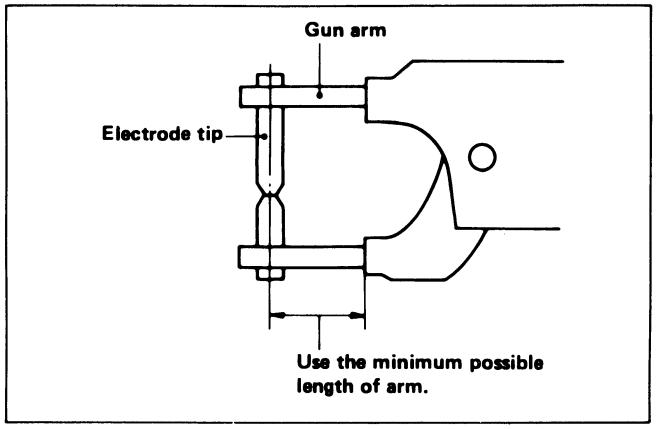
1. Spot welder

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

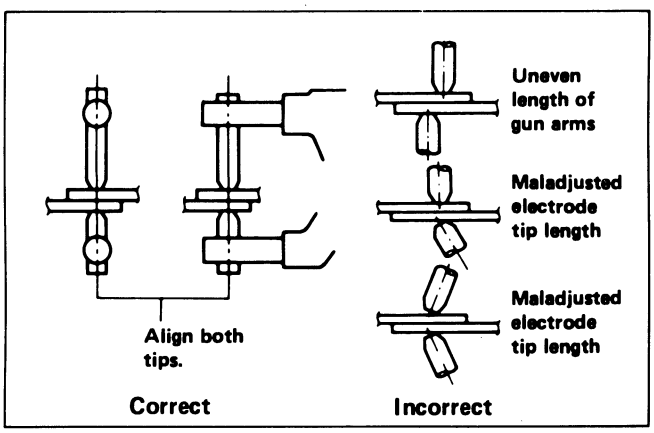
a. Keep the gun arm as short as possible to obtain the maximum pressure for welding.

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



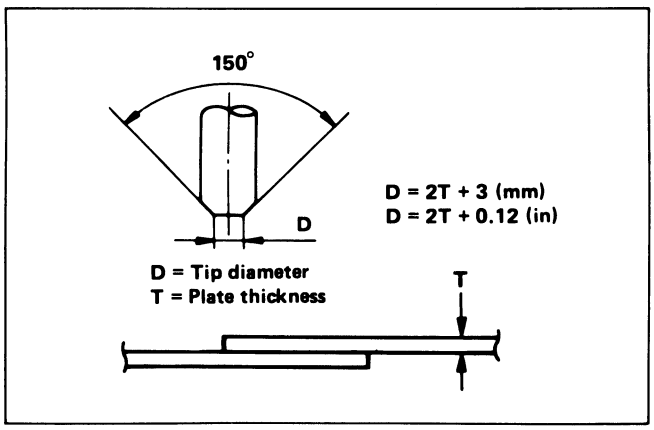
(2) Alignment of electrode tips

Align the upper and lower electrode tips on the same axis. Poor alignment of the tips causes insufficient pressure, resulting in insufficient current density and insufficient strength at the weld.



(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.



Unit: mm (in)

Thickness (T)	Diameter (D)	Thickness (T)	Diameter (D)
0.6 (0.024)	4.2 (0.165)	1.0 (0.039)	5.0 (0.197)
0.7 (0.028)	4.4 (0.173)	1.2 (0.047)	5.4 (0.213)
0.8 (0.031)	4.6 (0.181)	1.4 (0.055)	5.8 (0.228)
0.9 (0.035)	4.8 (0.189)	1.6 (0.063)	6.2 (0.244)

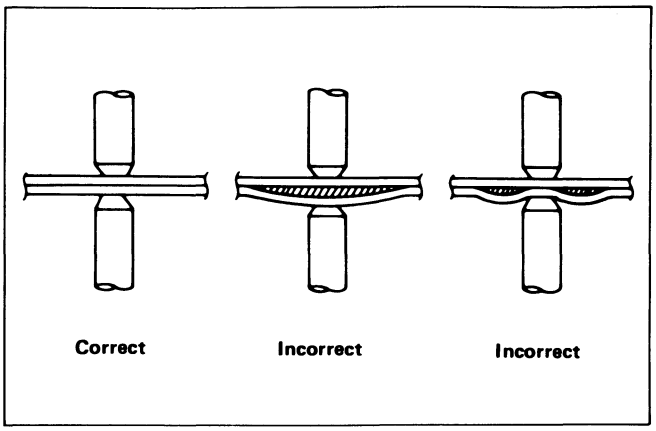
2. Condition of the panel

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.

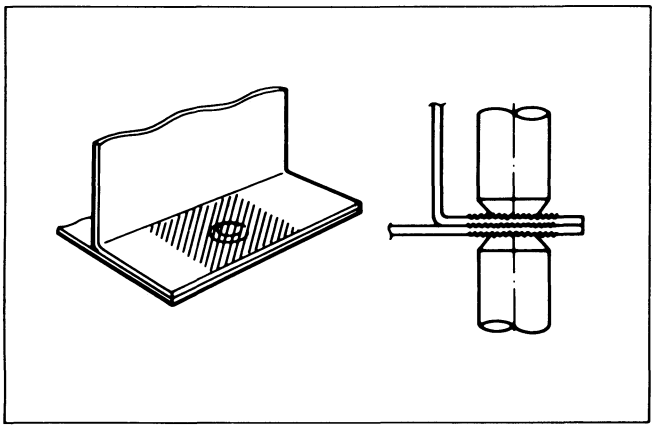
Before beginning, it is necessary to thoroughly check the condition of the panel, and make any necessary corrections.

PRECAUTIONS IN OPERATION

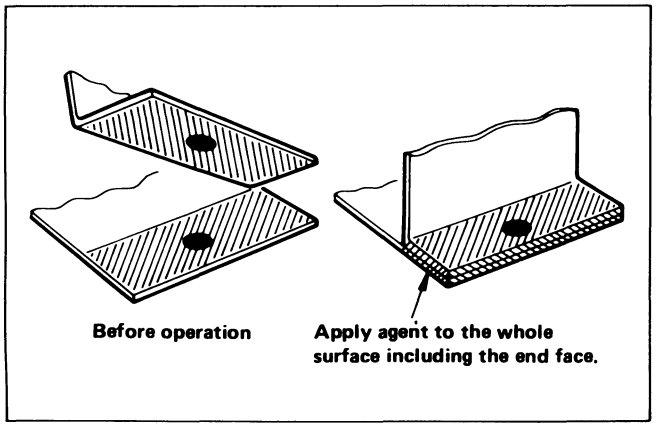
(1) Clearance between welding surfaces:
Any clearance between the surfaces to be welded causes poor current flow. Even if welding can be made without removing such gap, the welded area would become smaller, resulting in insufficient strength.
Flatten the two surfaces to remove the gaps, and clamp them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



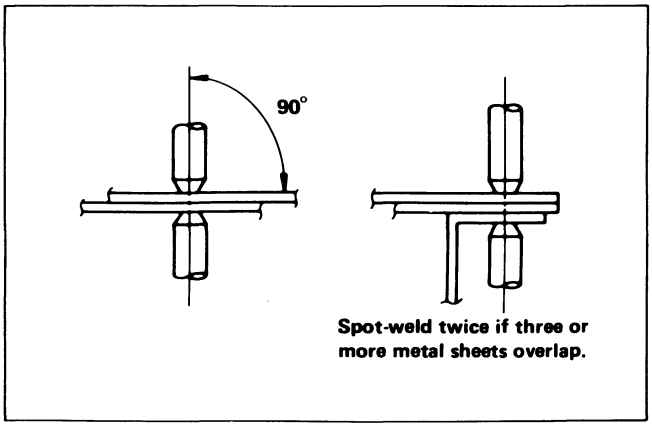
(2) Metal surfaces to be welded:
Paint film, rust, dust, or any other contamination on the metal surfaces to be welded cause insufficient current flow and poor results.
Remove all foreign matter from the surfaces to be welded.



(3) Corrosion prevents the welding process on metal surface:
Corrosion agent has higher conductivity. It is important to apply the agent evenly 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 portions where three or more metal sheets are overlapping, spot welding should be done twice.



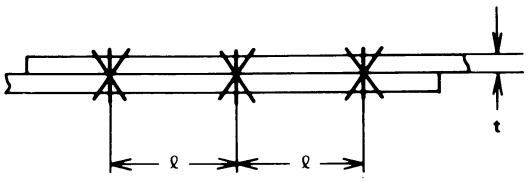
PRECAUTIONS IN OPERATION

(4) No. of points of spot-welding:
Generally, the capacity of spot welding machines available in 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)
0.8 (0.031)	12 (0.47)
1.0 (0.039)	18 (0.71)
1.2 (0.047)	20 (0.79)
1.6 (0.063)	27 (1.06)
1.8 (0.071)	31 (1.22)

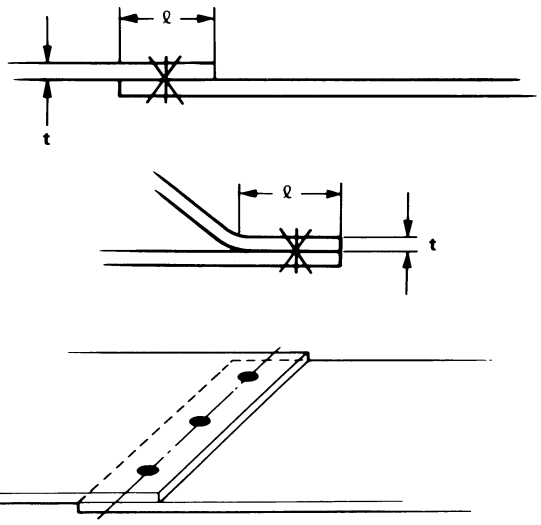


(6) Minimum lap of panels:
Observe the following values for the lap distance of panels. If the lap distance is too small, it results in insufficient strength and also in a strained panel.

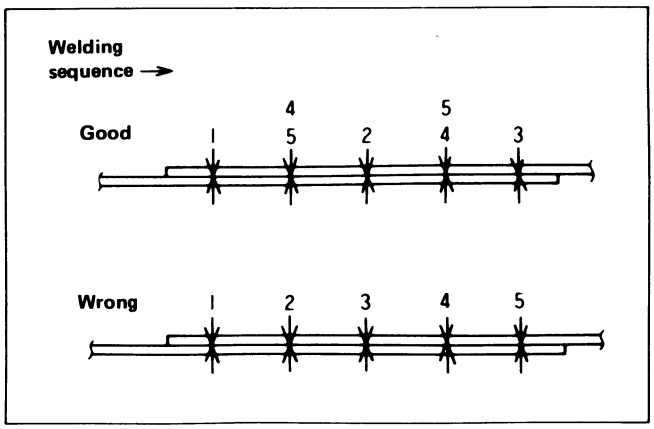
Unit: mm (in)

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

Be sure to spot weld at the center of the overlapped portion.



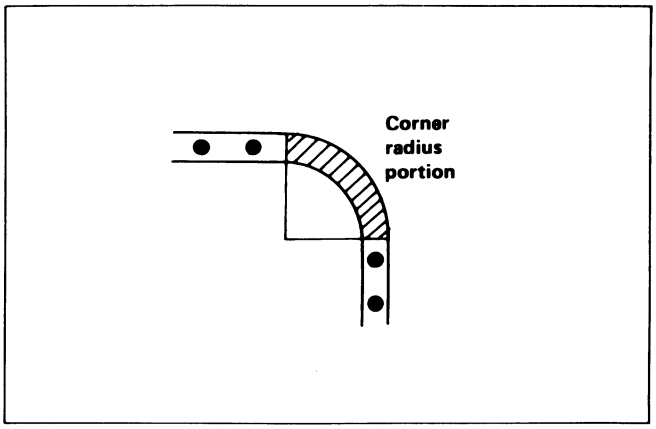
(7) Spotting sequence:
Do not spot continuously in only one direction. This method provides weak welding due to the shunt effect of the current. If the welding tips become hot and change their color, stop welding and allow the tips to cool.



PRECAUTIONS IN OPERATION

(8) Welding corners:
Do not weld the corner radius portion. Welding this portion results in stress concentration, 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

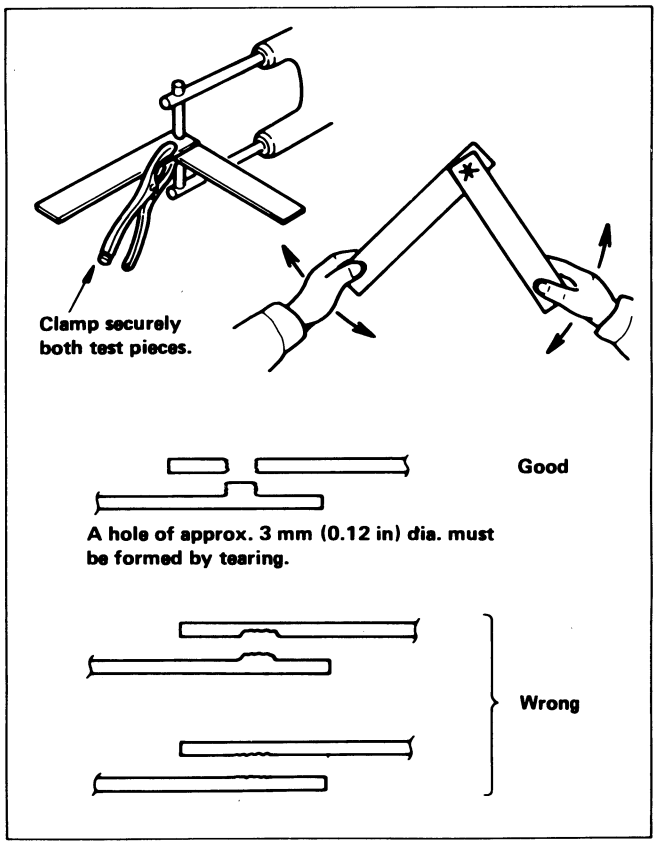


4. Inspection of welded portion
Spot-welded portions can be checked by visual inspection and destructive inspection. The destructive inspection explained below can be adopted easily at the time of welding. Before and after welding, be sure to perform this destructive inspection to check the strength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

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.



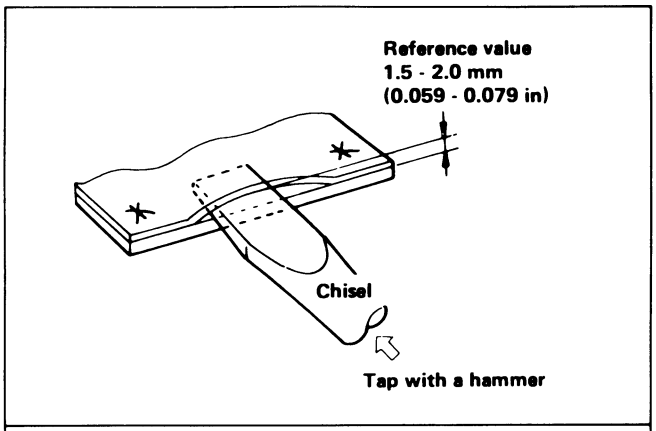
PRECAUTIONS IN OPERATION

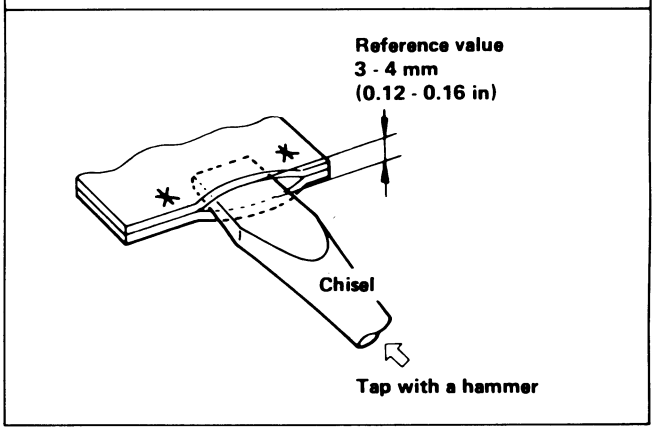
(2) Check by using chisel and hammer (Confirmation after welding)

- 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.

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.

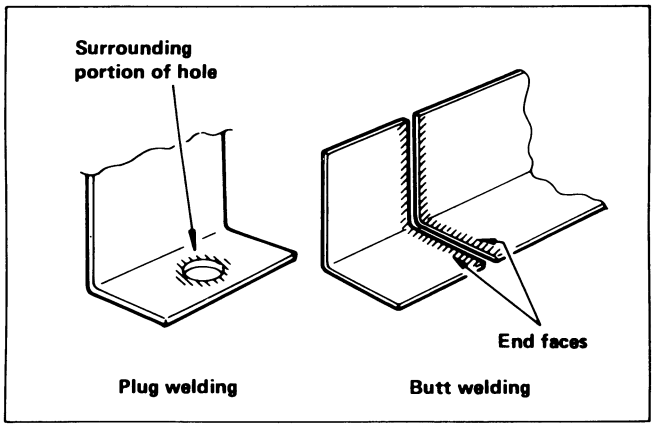
2. Precautions in welding

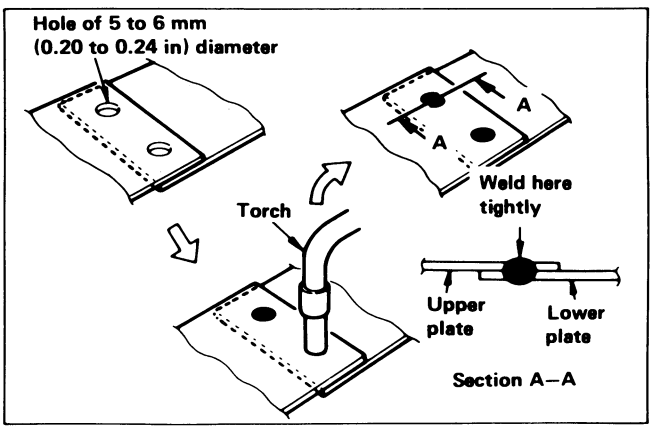
(1) Plug welding

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.

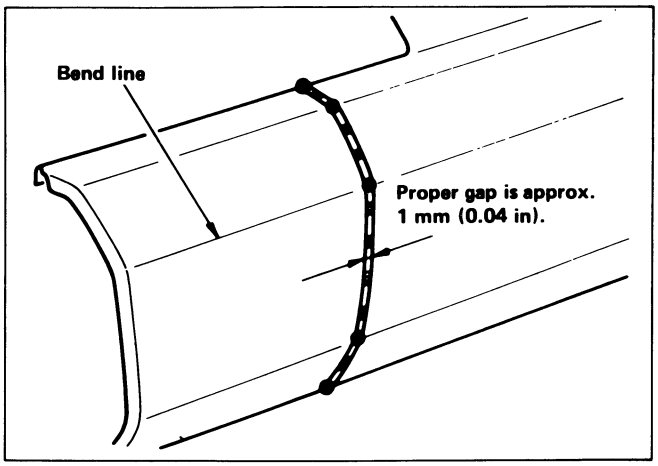




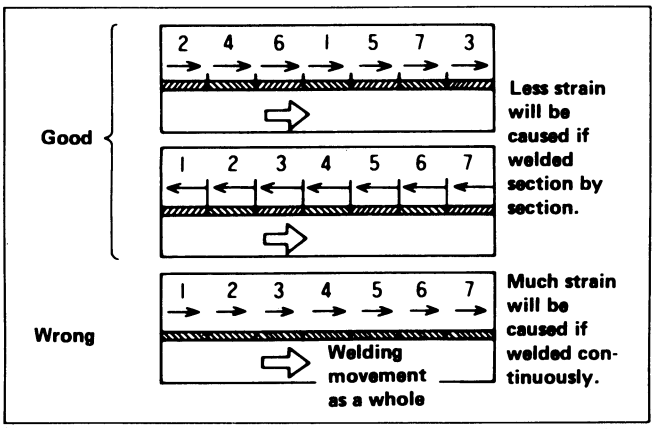
PRECAUTIONS IN OPERATION

(2) Butt welding

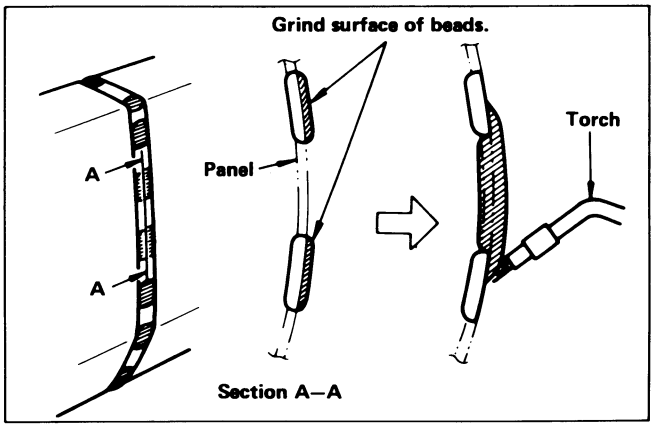
a. Before performing this welding, tack-weld two pieces of the metals to be welded to prevent generation of strains and to align two metal surfaces. Tack two metal pieces by placing point welds and then fill in the spaces by placing short welding beads.



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.

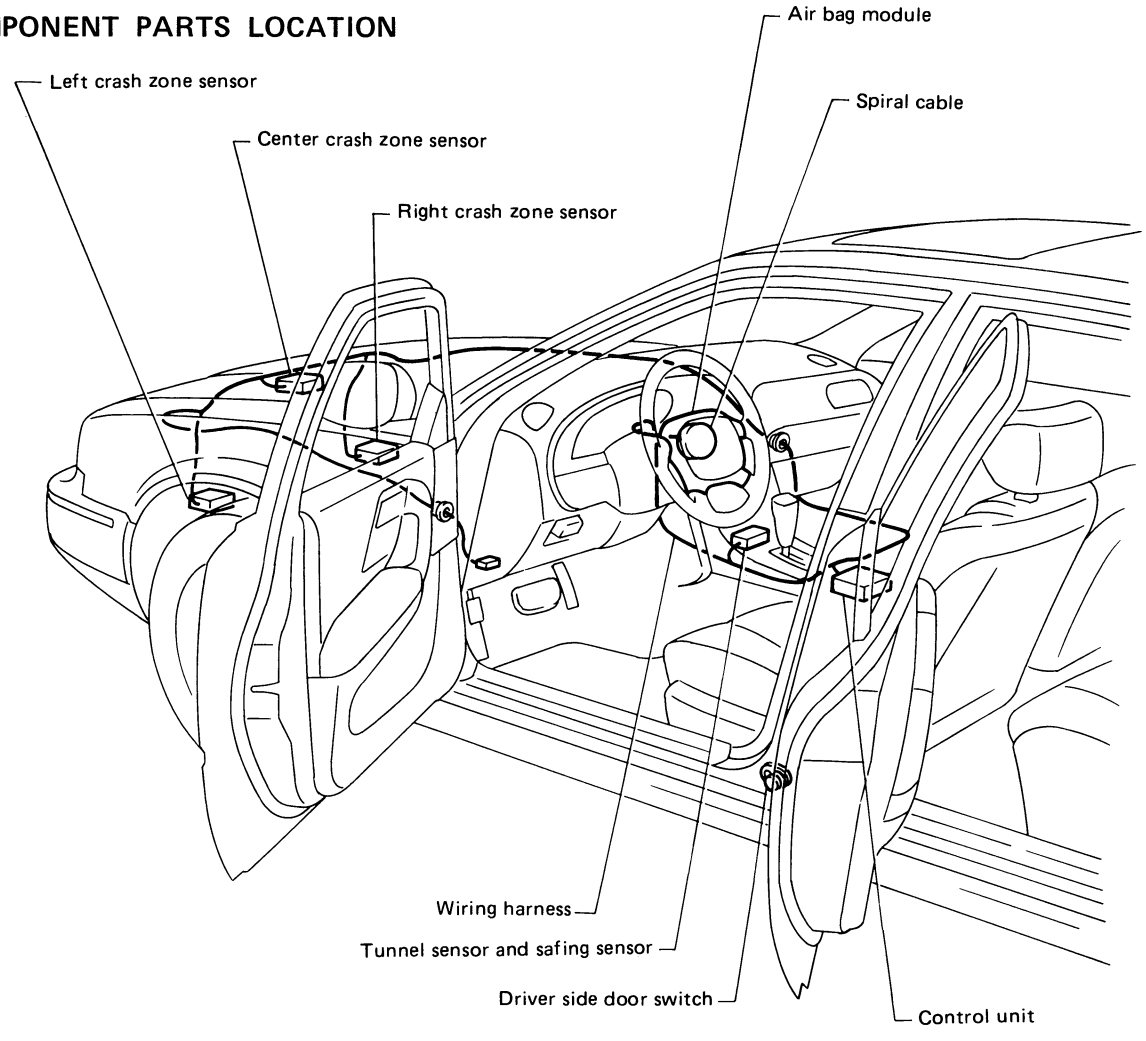
PRECAUTIONS IN OPERATION

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) "AIR BAG" SERVICE

When removing or installing SRS (Supplemental Restraint System), closely observe the related precautions outlined in the BF section of the Service Manual.

- Do not use a circuit tester to check SRS circuits.
- Before servicing the SRS, turn ignition switch "OFF", disconnect battery ground cable and wait for at least 10 minutes.
  For approximately ten minutes after the cables are removed, it is still possible for the air bag to inflate. Therefore, do not work on any air bag system connectors or wires until at least ten minutes have passed.
- SRS sensors must always be installed with their arrow marks " ⇦ " facing the front of the vehicle for proper operation. Also check sensors for cracks, deformities or rust before installation and replace as required.
- The spiral cable must be aligned with the neutral position since its rotations are limited. Do not attempt to turn steering wheel or column after removal of steering gear.
- Handle air bag module carefully. Always place it with the pad side facing upward.
- After removing any SRS parts, discard old bolts and replace with new ones. Conduct self-diagnosis to check entire SRS for proper function.
- If front of vehicle is damaged in a collision, always check the three crash zone sensors and the wiring harness.

SRS COMPONENT PARTS LOCATION

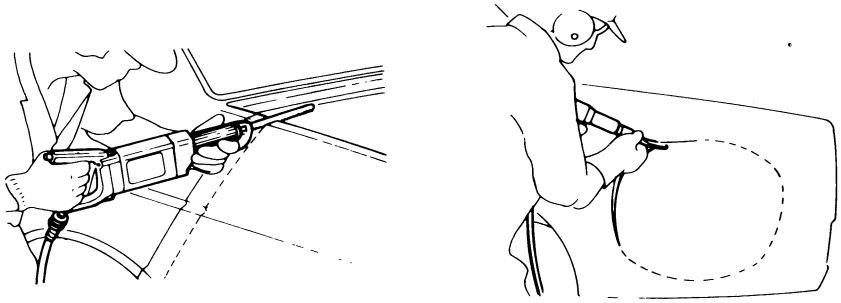


SBF213F

DESCRIPTION — SYMBOLS FOR CUTTING AND WELDING/BRAZING OPERATIONS

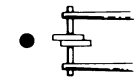
The identification of the cutting and the welding/brazing symbols used throughout this guide is given in the following pages.

Saw cut or
air chisel cut

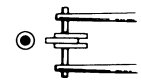


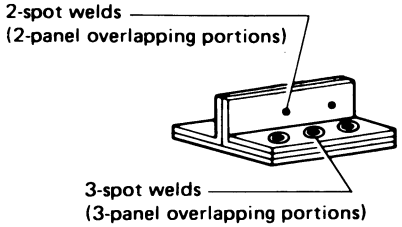
Spot weld

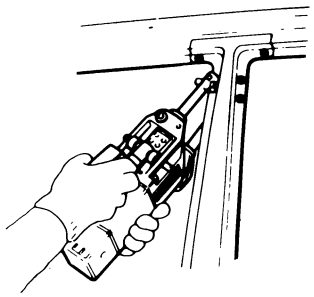
●●●● 2-spot welds



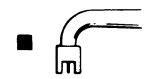
⊙⊙⊙⊙ 3-spot welds

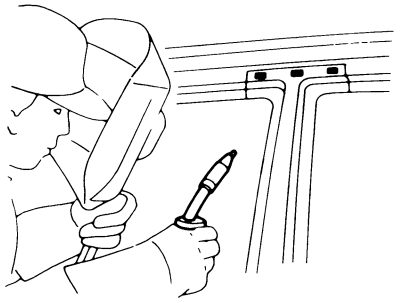


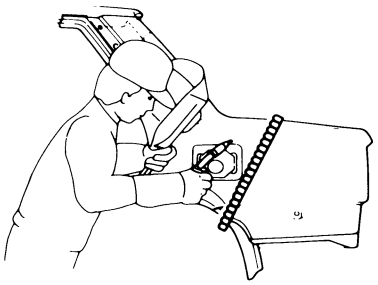




■ ■ ■ M.I.G. plug weld

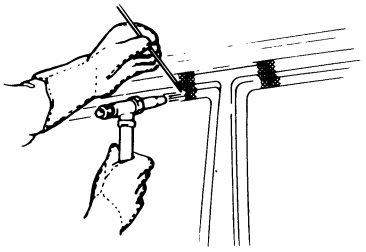




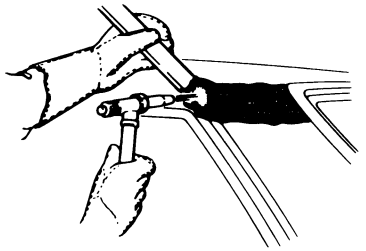


M.I.G. seam weld/
Point weld

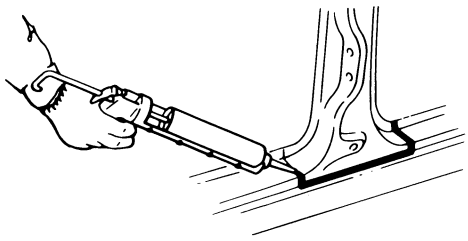
Brazing



Soldering



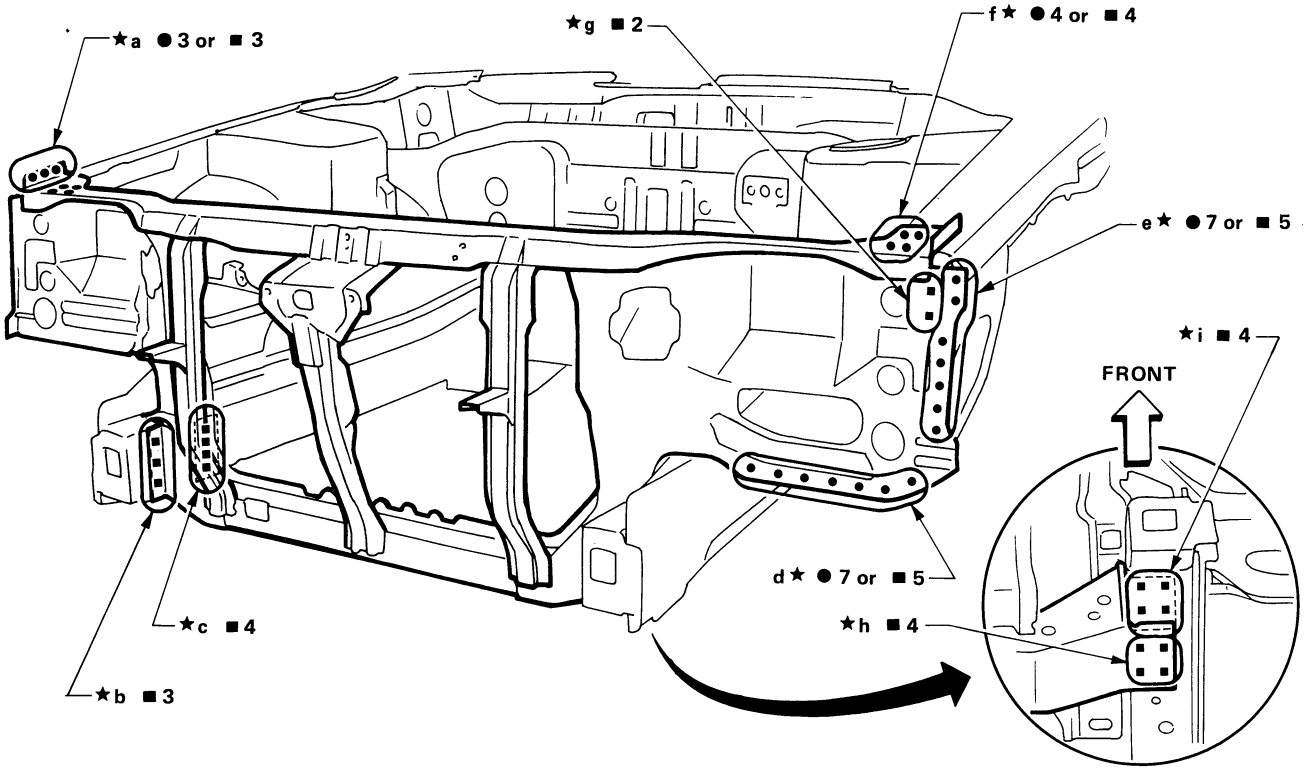
Sealing

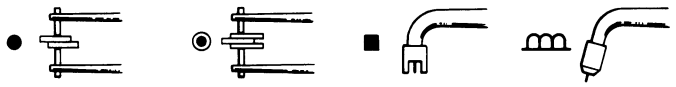


RADIATOR CORE SUPPORT

Service Joint

★ indicates that there is an equivalent welding portion with the same dimensions on the R.H. side or L.H. side.



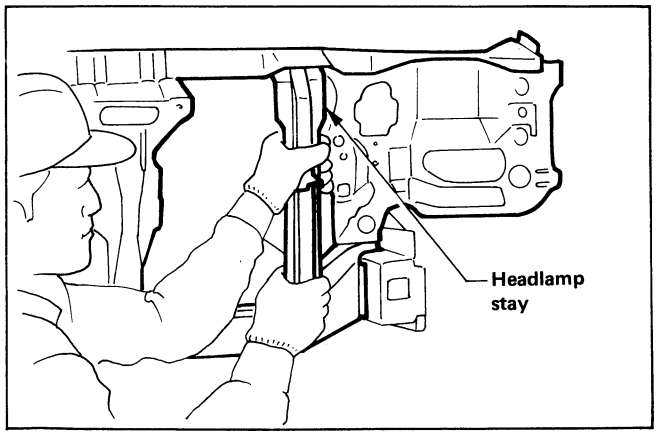


Portions to be welded

a. Lower hoodledge
b. Front side member
c. Front side member
d. Lower hoodledge
e. Lower hoodledge
f. Upper hoodledge
g. Upper hoodledge
h. Front side member
i. Front side member & front side member reinforcement

REMOVAL NOTE

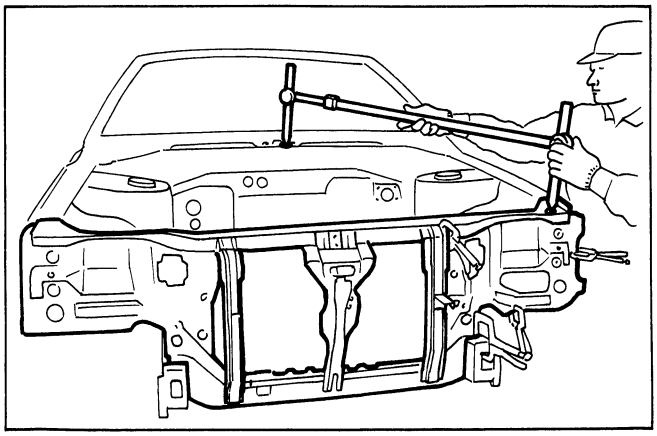
Spot cut and remove headlamp stay, as shown in the figure, to facilitate removal of welds at portion (b).



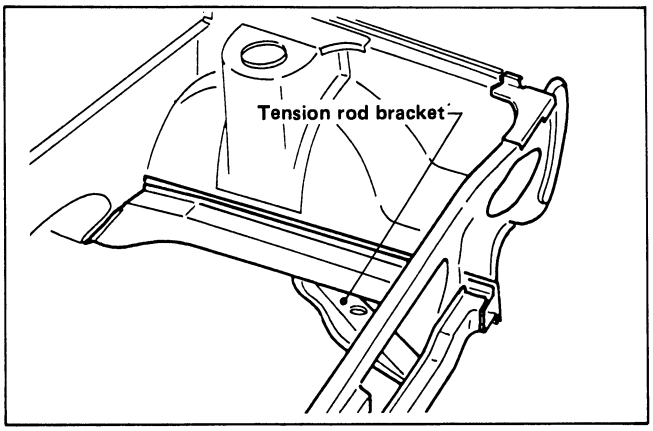
RADIATOR CORE SUPPORT

INSTALLATION NOTES

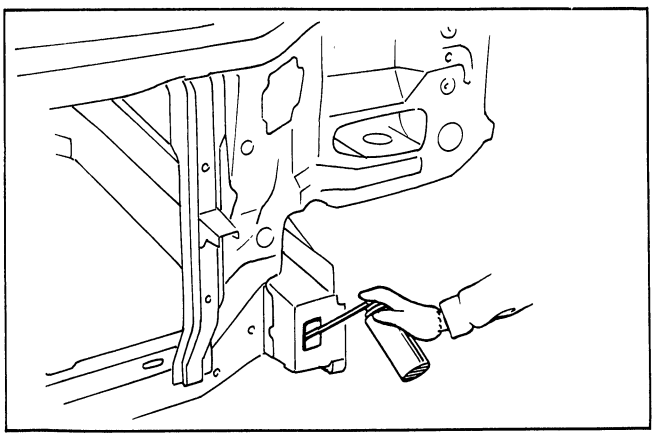
- Measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing.



- When installing service part, use tension rod bracket as a jig to facilitate adjusting its position.

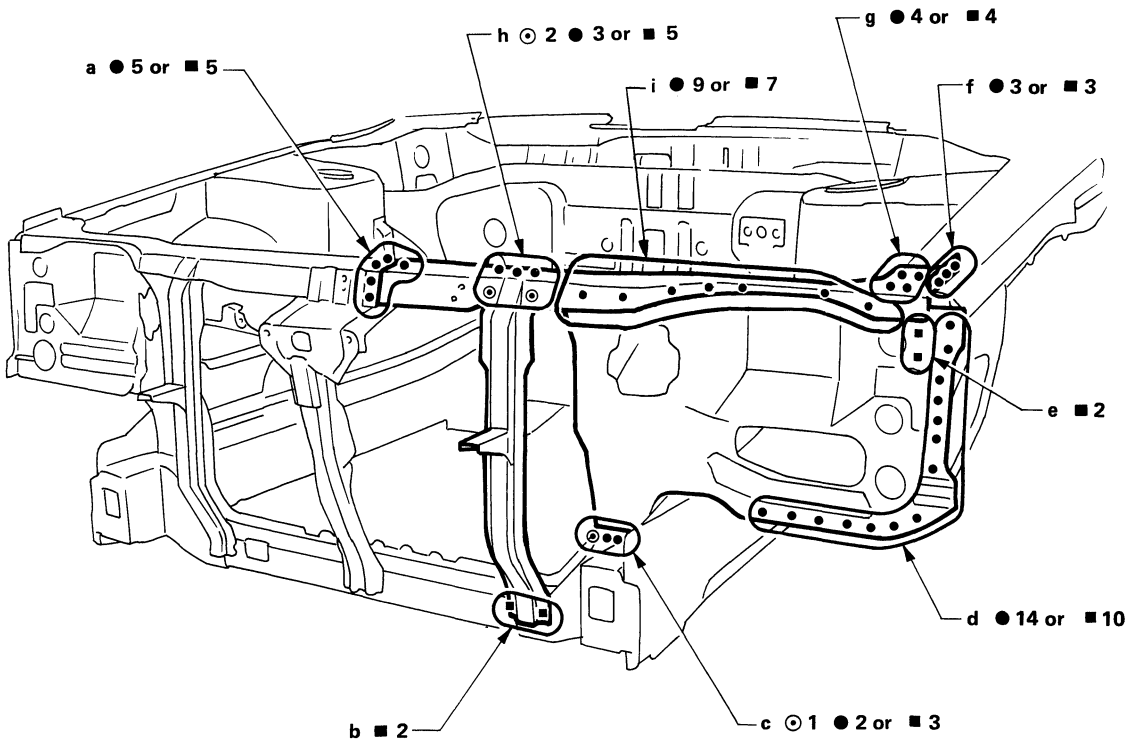


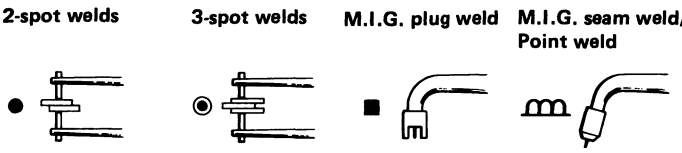
- Apply an anti-corrosive agent to welded parts and inside of front side member.



RADIATOR CORE SUPPORT (Partial Replacement)

Service Joint

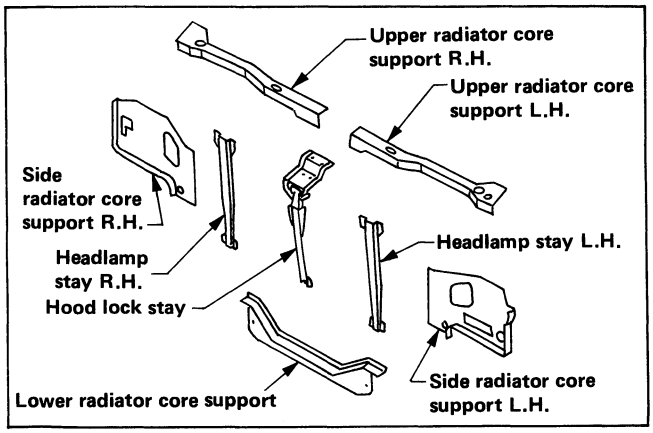




Portions to be welded

a. Hood lock stay
b. Headlamp stay assembly
c. Lower radiator core brace
   Lower radiator core brace & lower radiator core support
d. Lower hoodledge
e. Upper hoodledge
f. Lower hoodledge
g. Upper hoodledge
h. Headlamp stay assembly
i. Upper radiator core support

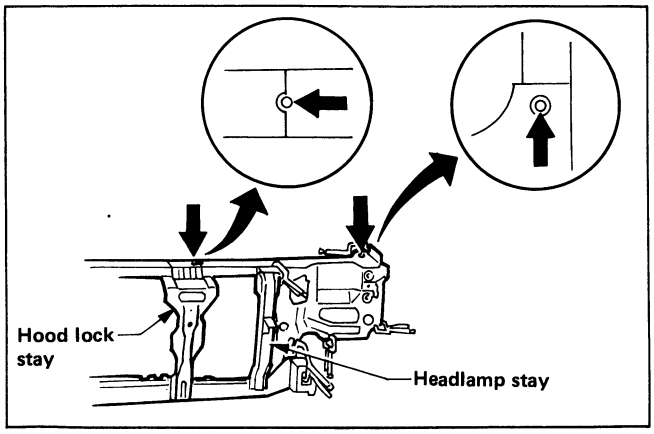
Service parts for radiator core support are available in 8 parts in addition to an assembly.
Thus, only the damaged part need be replaced. The procedure, whereby side radiator core support and upper radiator core support are replaced simultaneously, is described in the page that follows.



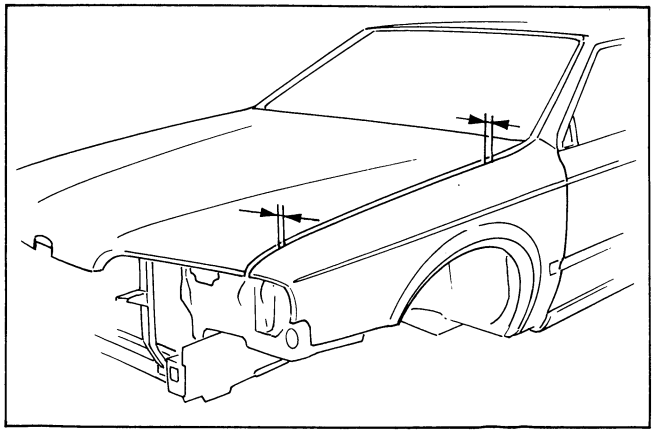
RADIATOR CORE SUPPORT (Partial Replacement)

INSTALLATION NOTES

- Align locating holes (positioning marks) and install headlamp stay and hood lock stay, when installing service part.

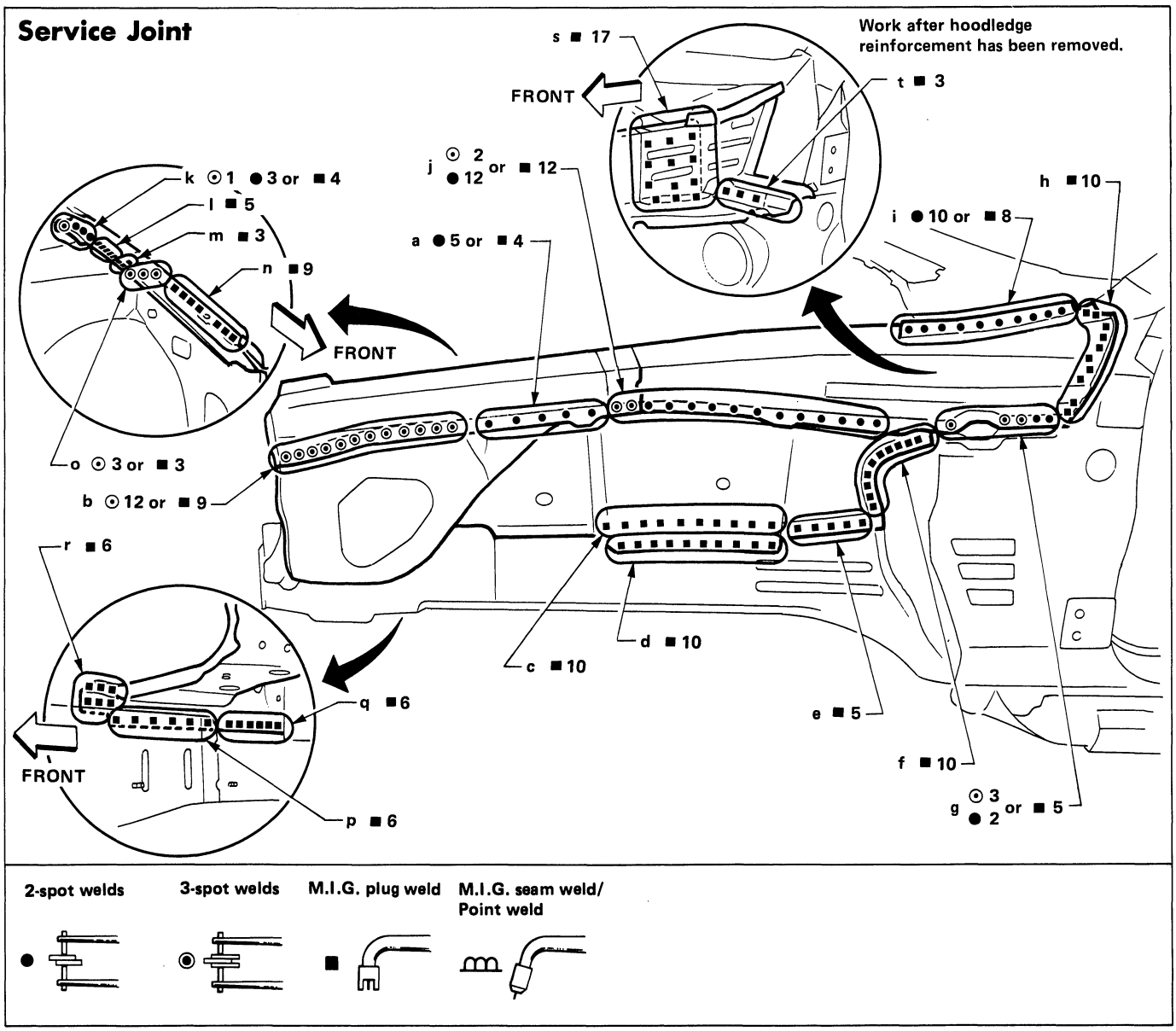


- Install service part with vise clamps, and measure various dimensions of part locations according to "BODY ALIGNMENT" drawing. Install hood and front fender and check clearances, grades and parallelism.



HOODLEDGE

(Work after radiator core support has been removed.)



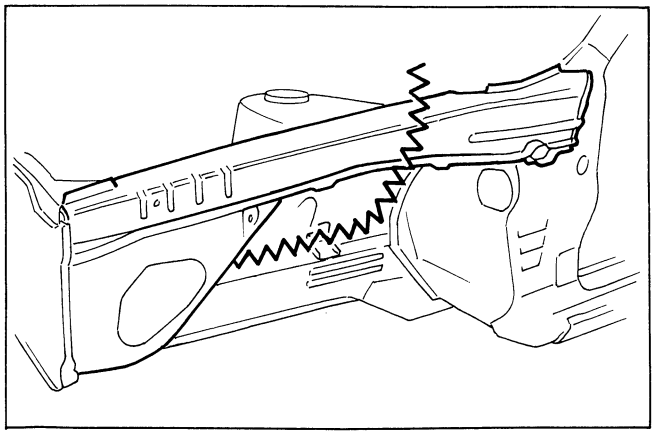
Portions to be welded

a. Front hoodledge reinforcement
b. Front hoodledge reinforcement & upper hoodledge
c. Rear closing plate & front strut housing
   Rear closing plate
d. Front side member & rear closing plate
e. Rear closing plate
f. Lower dash
g. Front pillar & upper dash
   Front pillar
h. Front pillar
i. Side cowl top
j. Front hoodledge reinforcement & upper hoodledge
   Rear hoodledge reinforcement
k. Side cowl top assembly
l. Strut housing gusset & rear hoodledge reinforcement
m. Strut housing gusset & front hoodledge reinforcement & rear hoodledge reinforcement
n. Front hoodledge reinforcement
o. Front hoodledge reinforcement & upper front hoodledge
   Front hoodledge reinforcement & strut housing gusset
p. Front closing plate
   Front closing plate & rear closing plate
q. Rear closing plate
r. Front side member reinforcement
s. Side cowl top
   Side cowl top & strut housing gusset
t. Upper dash & lower dash

HOODLEDGE

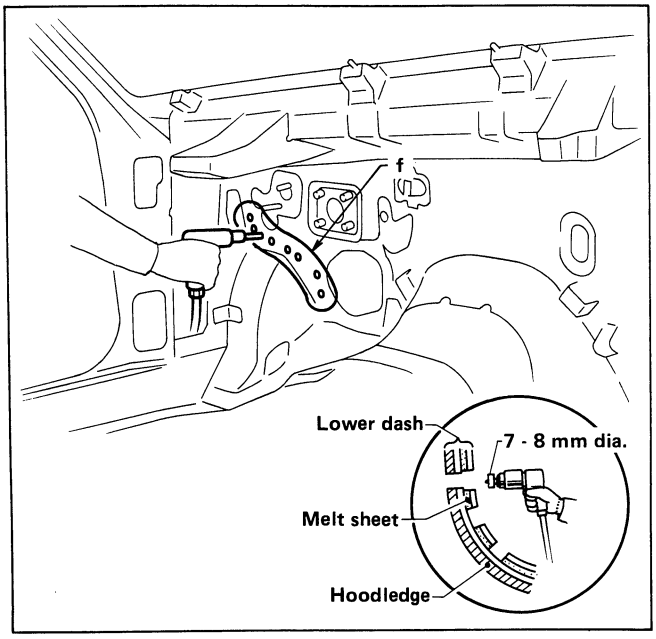
REMOVAL NOTES

Cut off damaged portion to facilitate removal.



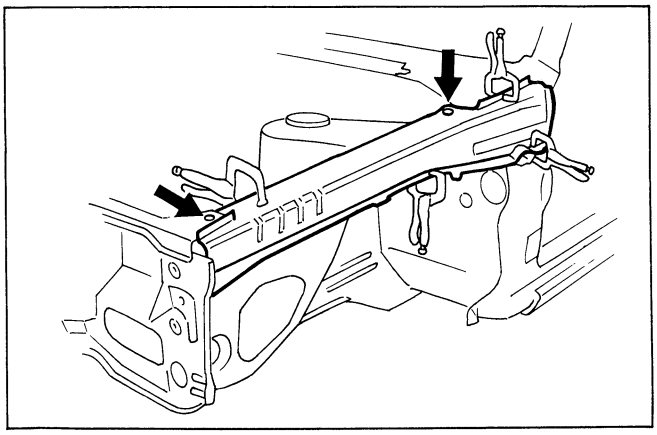
- Spot cut through weld portion (f) from inside. Use a 7 to 8 mm dia. drill because holes on lower dash panel will be used as M.I.G. plug weld holes.

As lower dash panel is a sandwich steel plate, it is difficult to align weld points when welding from outside. (Weld failure will occur if welding is made at portions with melt sheet overlapped.) Accordingly, M.I.G. plug weld from inside.

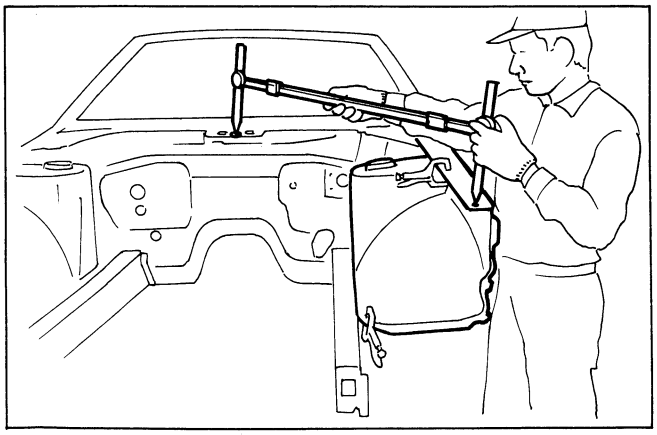


INSTALLATION NOTES

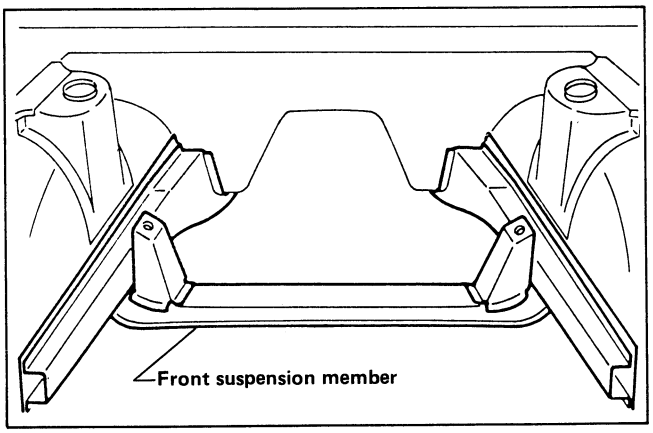
- When installing service part, be sure to align locating holes correctly.



- Measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing.

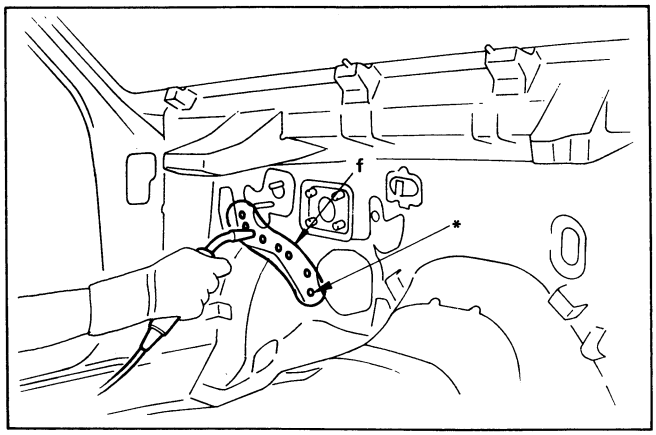


- Install front suspension member to avoid moving front side member.

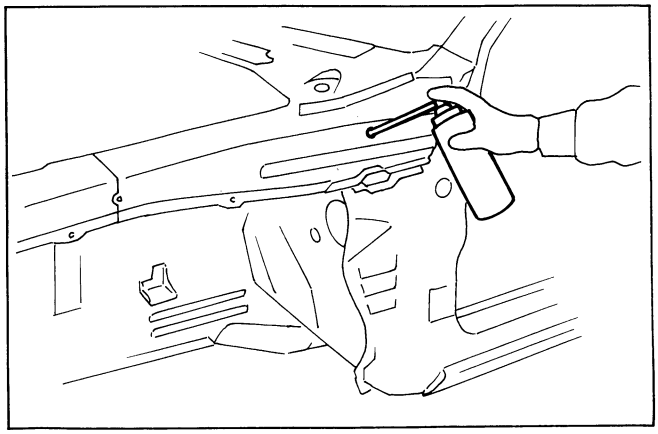


HOODLEDGE

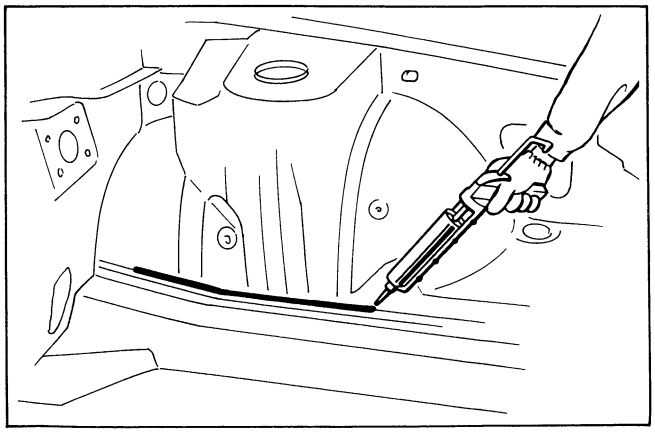
- M.I.G. plug weld portion (f) from inside. Portion with * (asterisk) should be welded from outside.



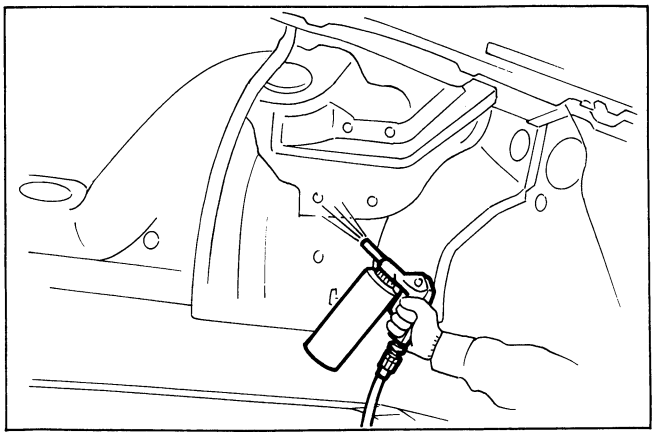
- Apply an anti-corrosive agent to welded parts and inside of side cowl top.



- Apply sealer to service parts joints from both sides.

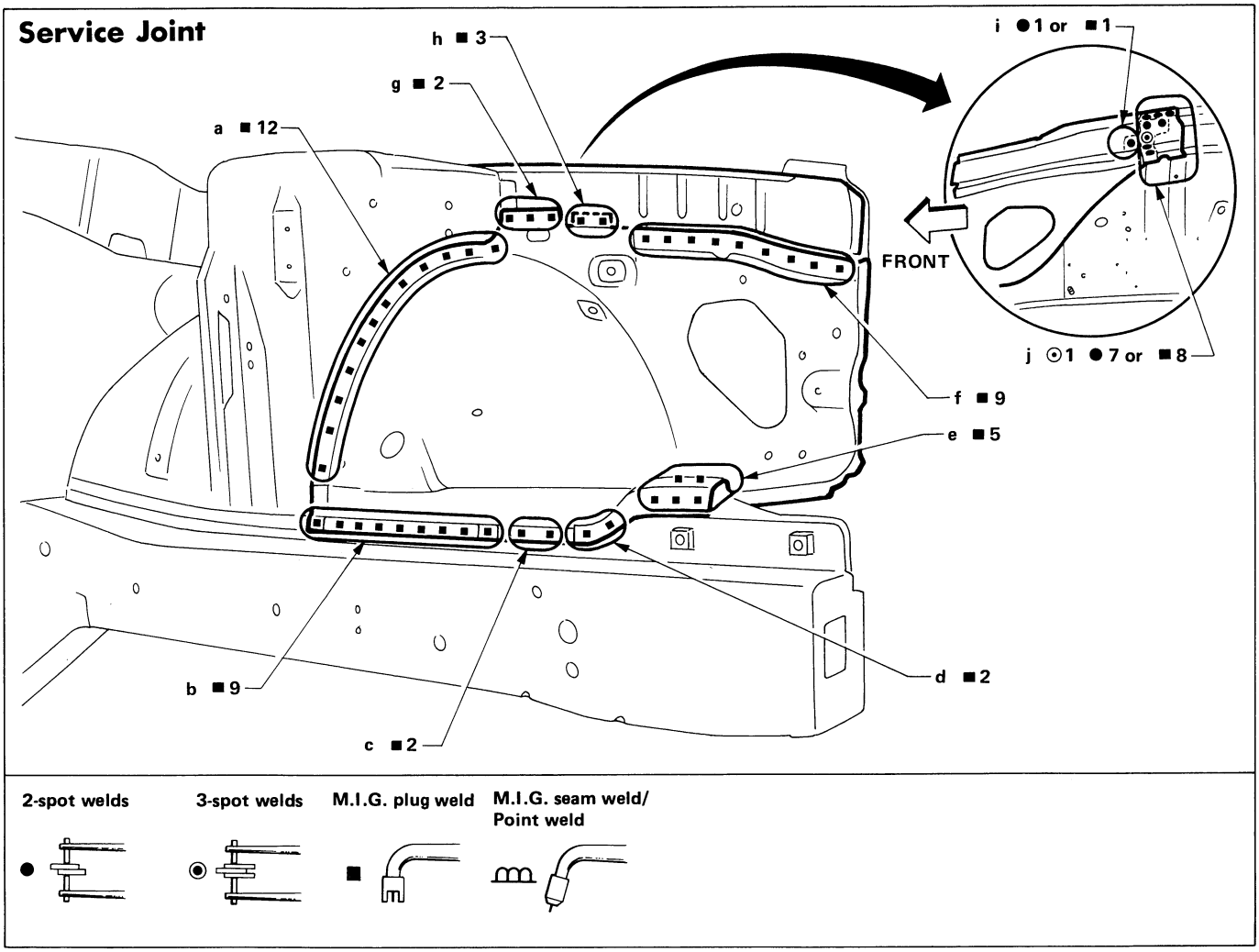


- Undercoat inside of wheelhouse.



HOODLEDGE (Partial Replacement)

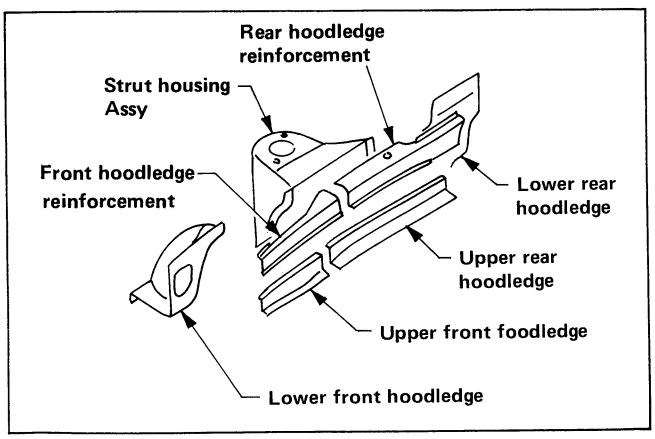
(Work after radiator core support has been removed.)



Portions to be welded

a. Strut housing
b. Strut housing & rear closing plate
Rear closing plate
Rear closing plate & front closing plate
c. Front closing plate
d. Front closing plate & front side member reinforcement
e. Front side member reinforcement
f. Front hoodledge reinforcement & upper front hoodledge
g. Upper front hoodledge
h. Strut housing, upper rear hoodledge & upper front hoodledge
Upper rear hoodledge & upper front hoodledge
Upper front hoodledge
i. Upper front hoodledge
j. Strut housing assembly

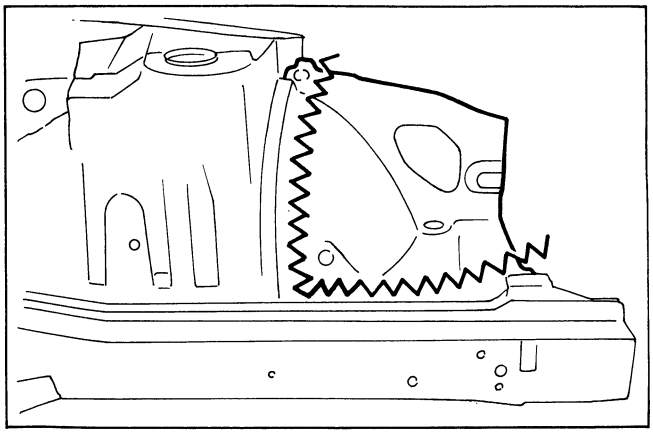
Service parts for hoodledge are available in 7-individual service parts in addition to an assembly. Thus, the damaged part alone can be replaced.
The procedure, whereby partial replacement of upper front hoodledge and lower front hoodledge are replaced simultaneously, is described below.



HOODLEDGE (Partial Replacement)

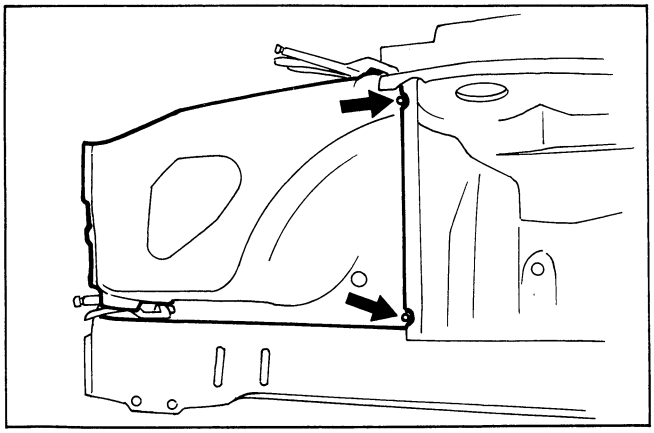
REMOVAL NOTE

- Cut off damaged portion to be removed.

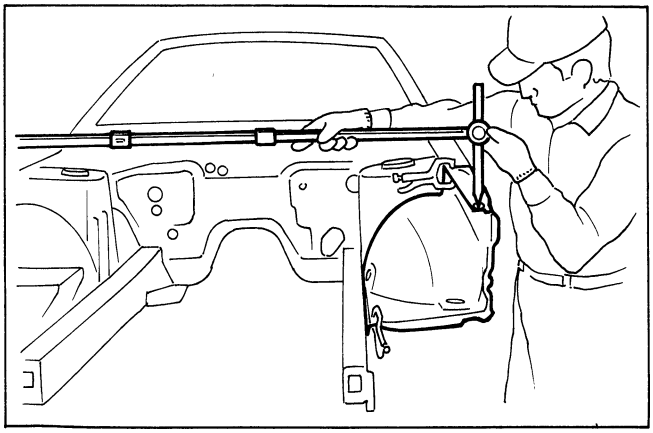


INSTALLATION NOTES

- When installing service parts, be sure to align locating holes (positioning mark) correctly.

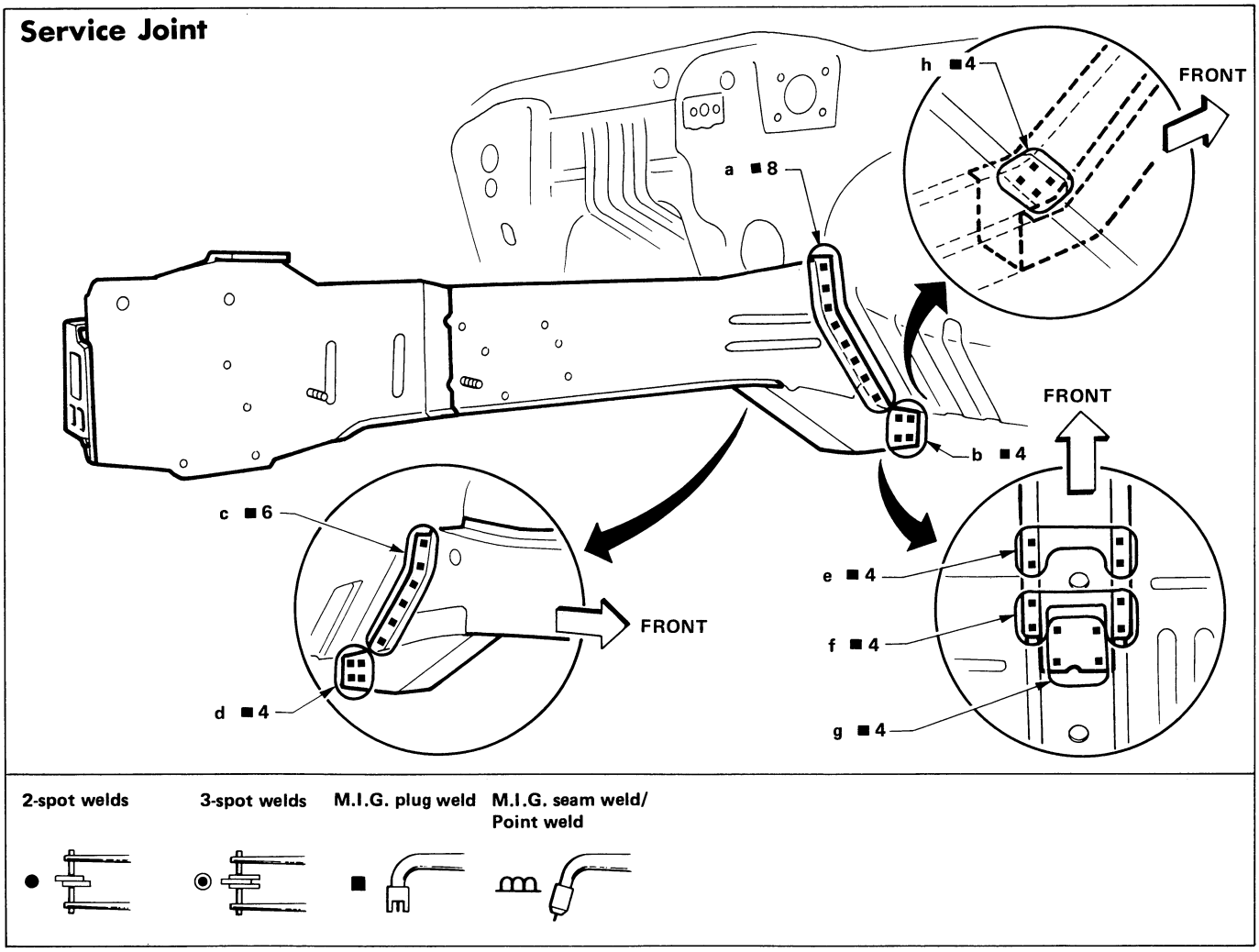


- Measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing.



FRONT SIDE MEMBER

(Work after hoodledge has been removed.)

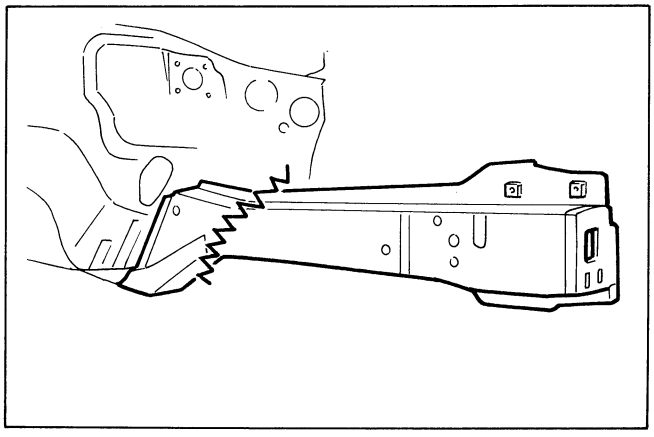


Portions to be welded

a. Lower dash
b. Center front side member
c. Lower dash
d. Center front side member
e. Lower dash & front side member extension
f. Center front side member & front floor
g. Center front side member
h. Front side member reinforcement & lower dash

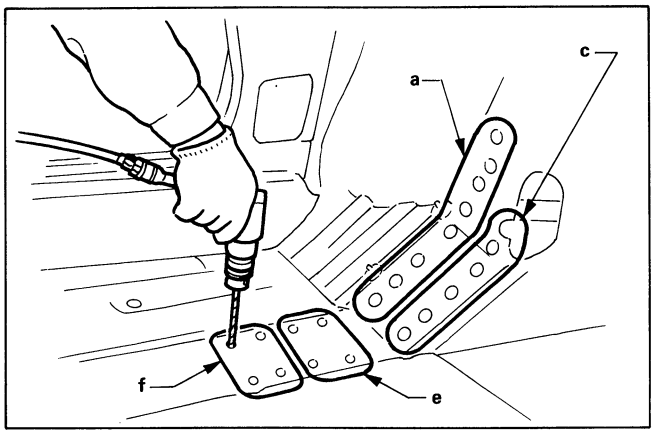
REMOVAL NOTES

- Cut off damaged portion to facilitate removal.



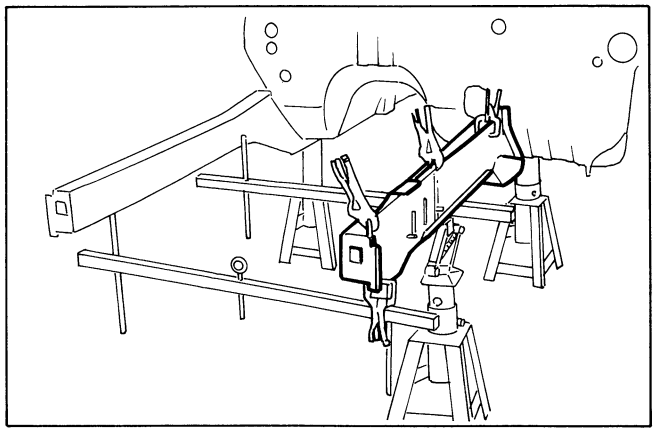
FRONT SIDE MEMBER

- Spot cut weld portions (a), (c), (f) and (e). Use holes on lower dash panel and front side member extension as M.I.G. plug weld holes when installing service part.

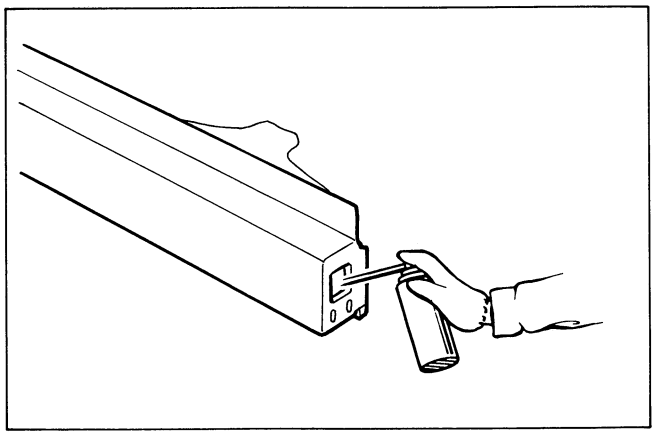


INSTALLATION NOTES

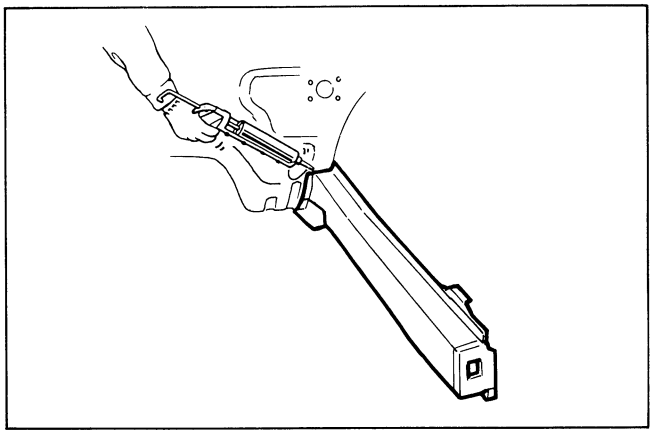
- When installing service part, measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing.



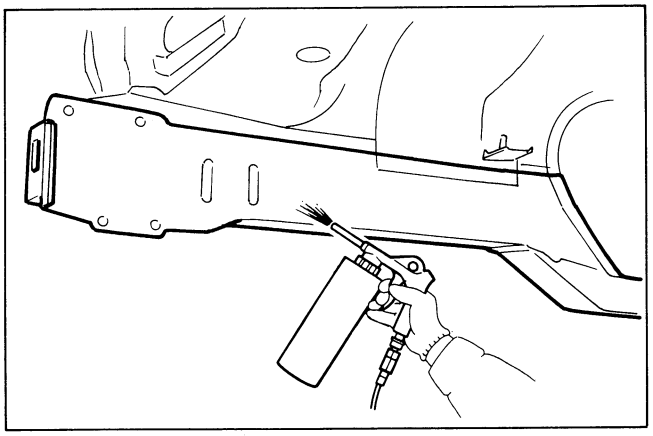
- After welding, apply an anti-corrosive agent to the inside of front side member.



- Apply sealer to the service part joints from both sides.

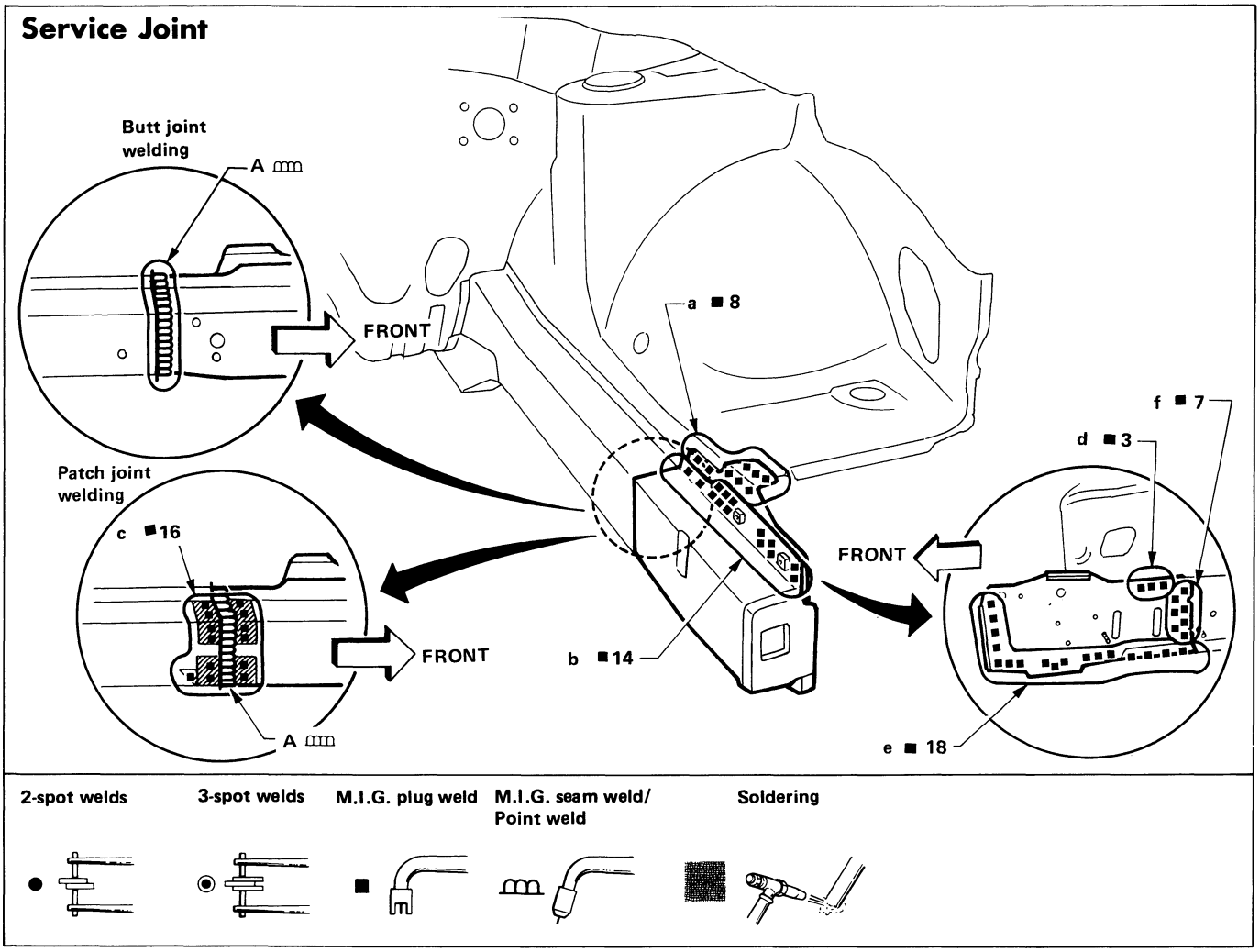


- Undercoat the inside of wheelhouse.



FRONT SIDE MEMBER (Partial Replacement)

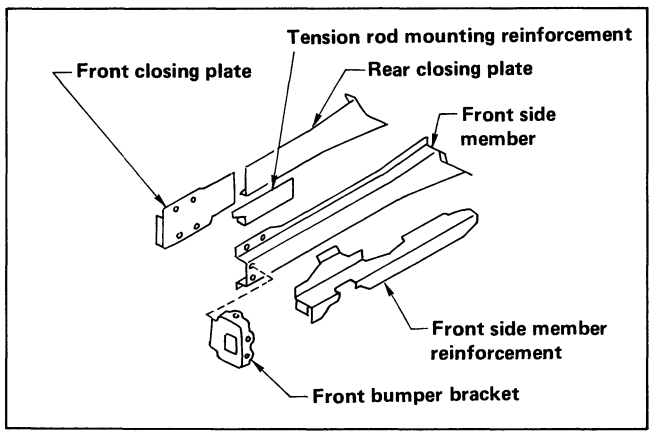
(Work after radiator core support has been removed.)



Portions to be welded

A. Front side member
a. Lower front hoodledge
Lower front hoodledge & front closing plate
b. Front side member reinforcement & front closing plate
c. Patch
d. Front closing plate & lower front hoodledge
Lower front hoodledge
e. Front closing plate
f. Rear closing plate

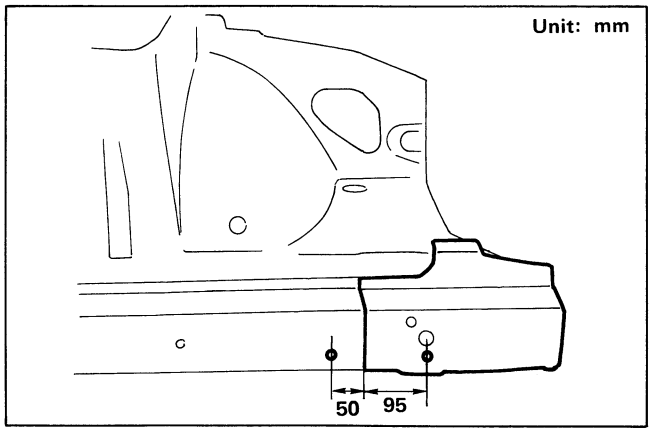
- Front side member and front side member closing plate service parts are available. The front side member closing plates are available in separate parts.
  Thus, the damaged area alone can be replaced.
  The procedure for replacing the front closing plate and partially front side member simultaneously are described below.



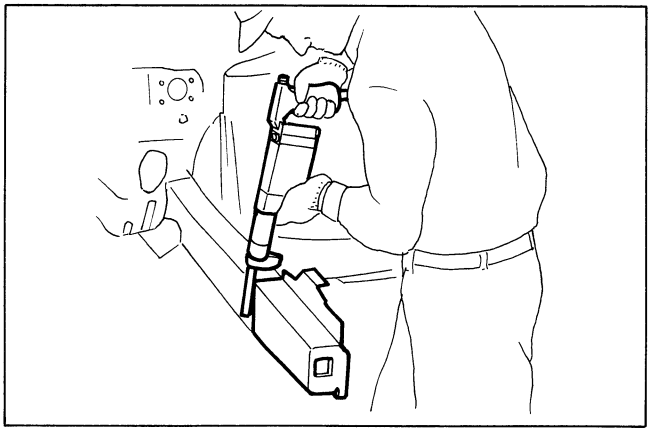
FRONT SIDE MEMBER (Partial Replacement)
—Butt Joint Welding—

REMOVAL NOTES

- Scribe a straight line on front side member 50 mm away from hole centers as shown in the figure.

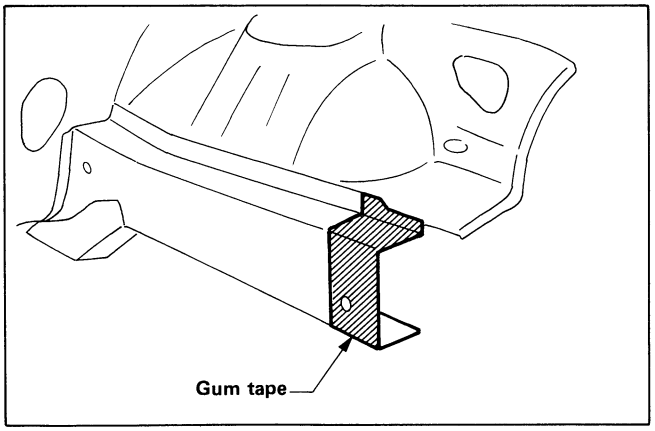


- Cut off damaged portion along the scribe line.

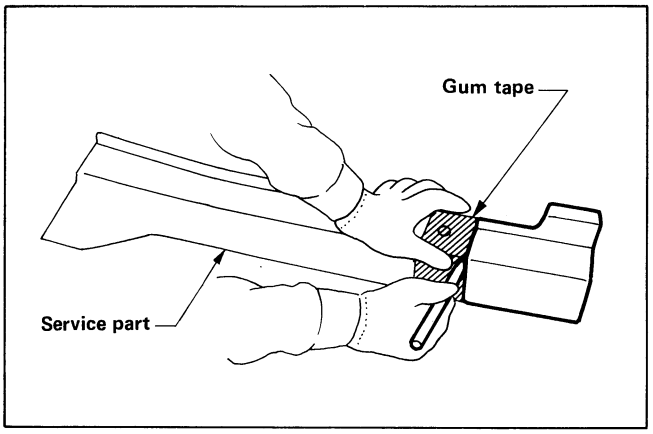


INSTALLATION NOTES

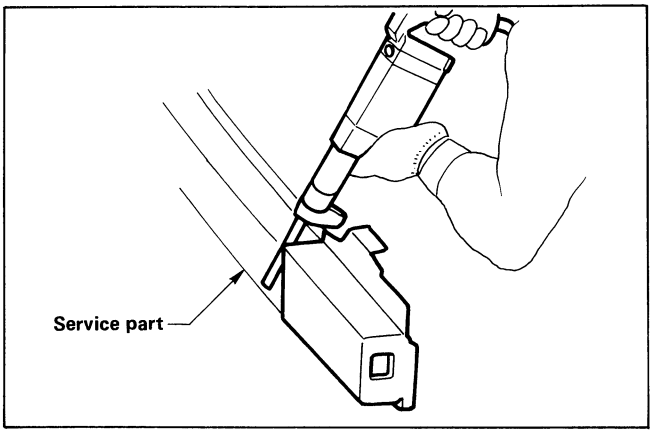
- Put gum tape on front side member. Cut off gum tape along front side member edge and make holes in gum tape at front side member holes.



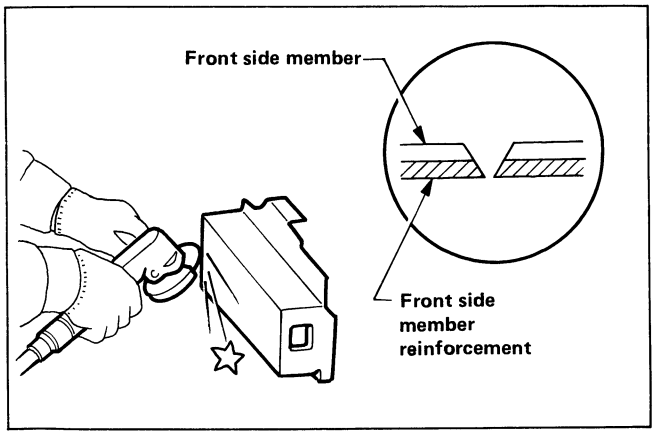
- Remove gum tape and fix it to service part, aligning front side member flange end and holes.
- Scribe a line at end of gum tape.



- Cut off service part along the line.

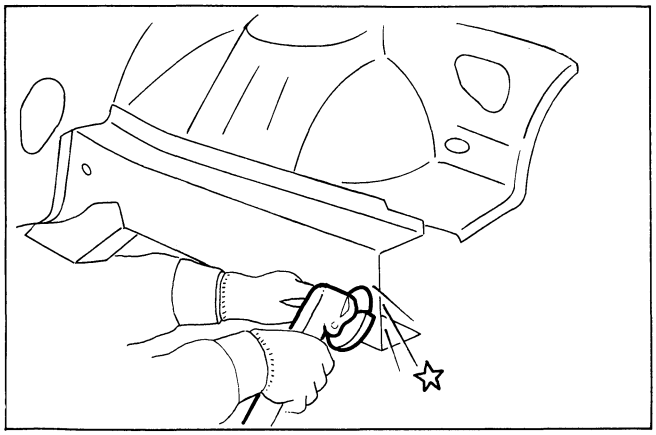


- Dress cut surface on service part so that "V" shape is as shown in the figure.

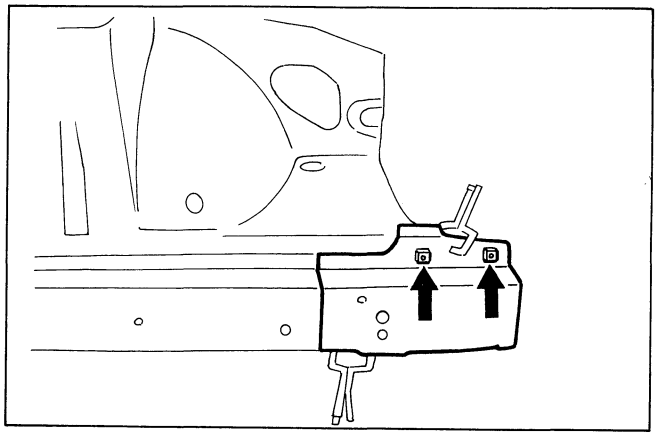


FRONT SIDE MEMBER (Partial Replacement)
—Butt Joint Welding—

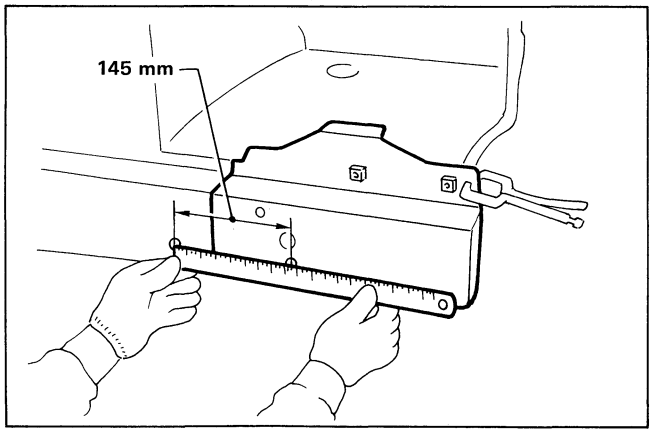
- Also dress cut surface on body side in the same manner.



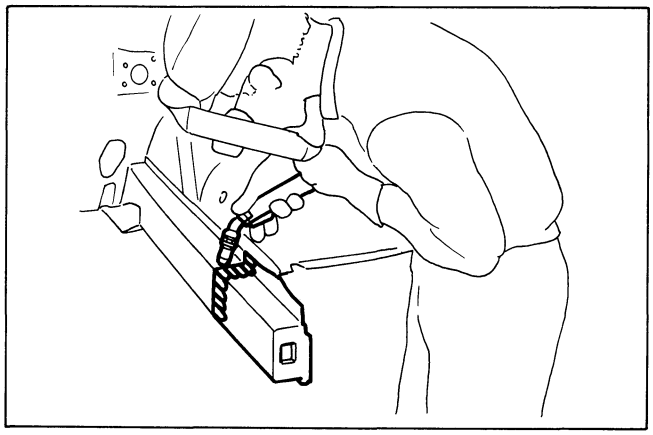
- When installing service parts, measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing and align location holes.



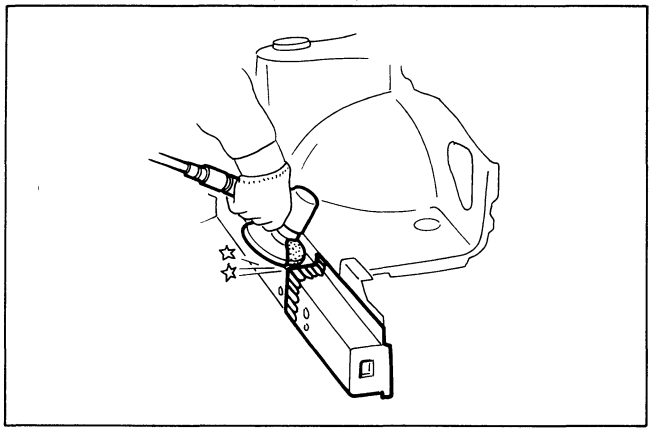
- Before welding, measure dimensions shown in the figure so that they can be used for positioning during installation.



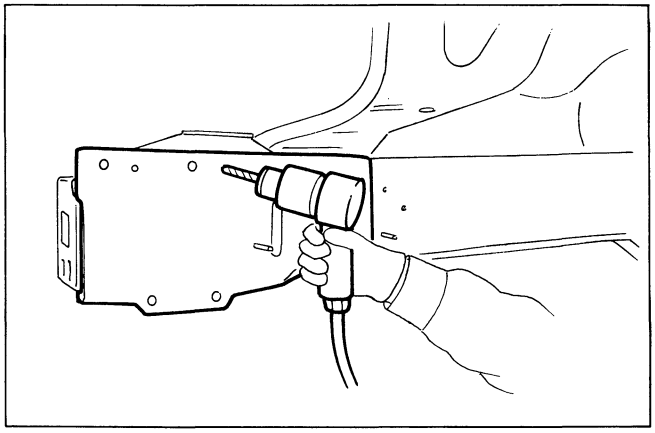
- Weld part to be butt welded as far as flange end portion.



- Finish welded part with an air grinder.

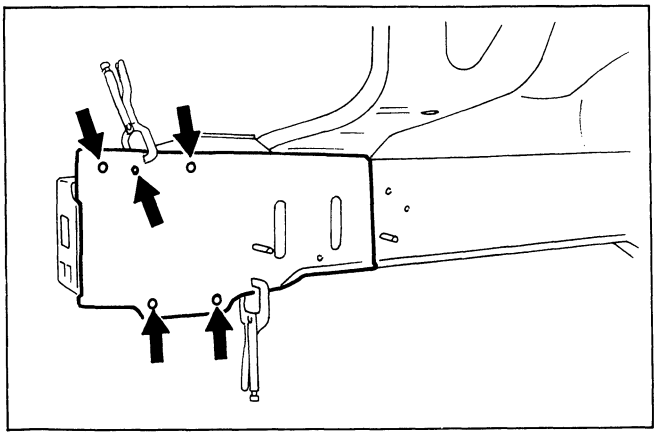


- Drill M.I.G. plug weld holes in front closing plate of service part with a 10 mm dia. drill bit.

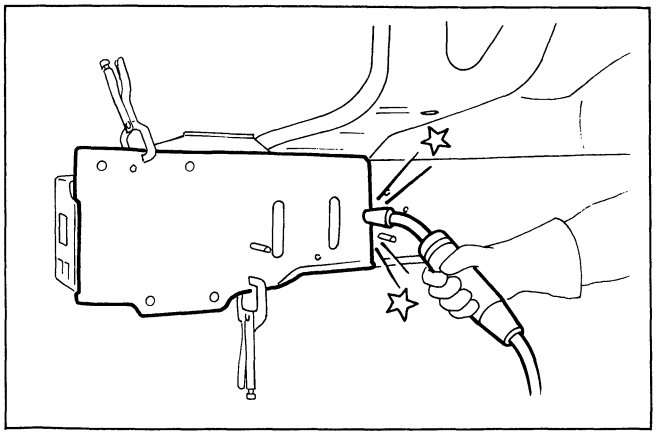


FRONT SIDE MEMBER (Partial Replacement)
—Butt Joint Welding—

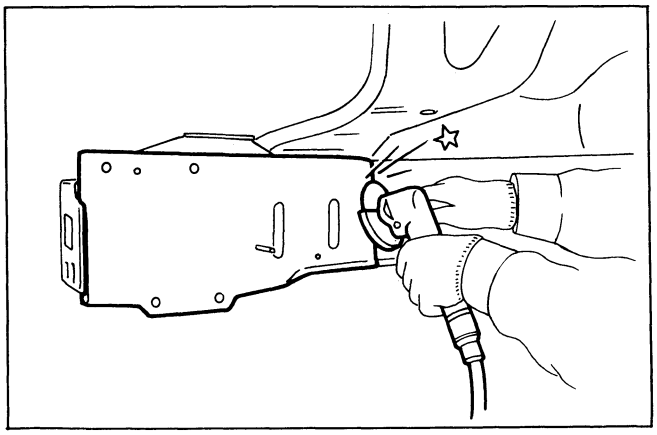
- When installing front closing plate, be sure to align locating holes.



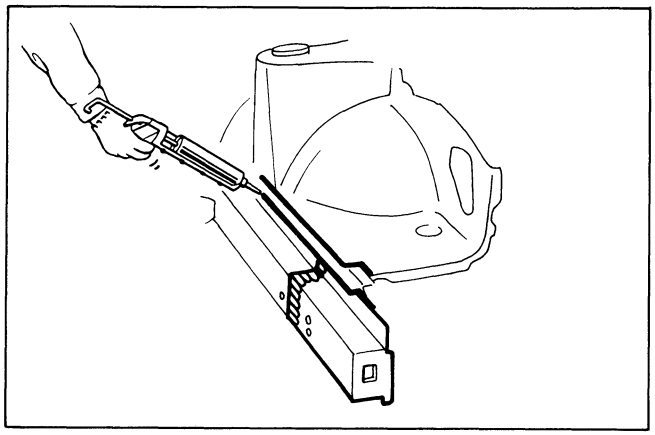
- M.I.G. plug weld on front closing plate. When doing this, current level of welder should be maximum.



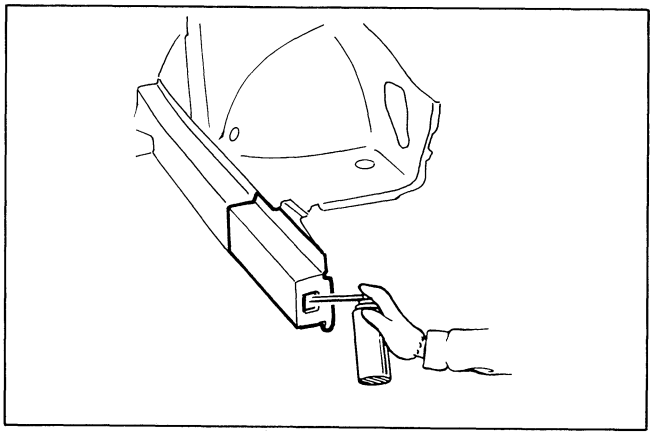
- After welding, dress welded portion with an air grinder.



- Apply sealer to service part joints from both sides.



- Apply an anti-corrosive agent to welded parts and the inside of front side member.



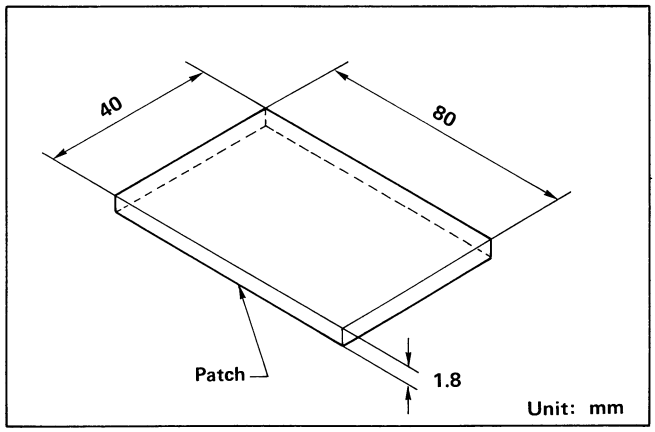
FRONT SIDE MEMBER (Partial Replacement) —Patch Joint Welding—

REMOVAL NOTE

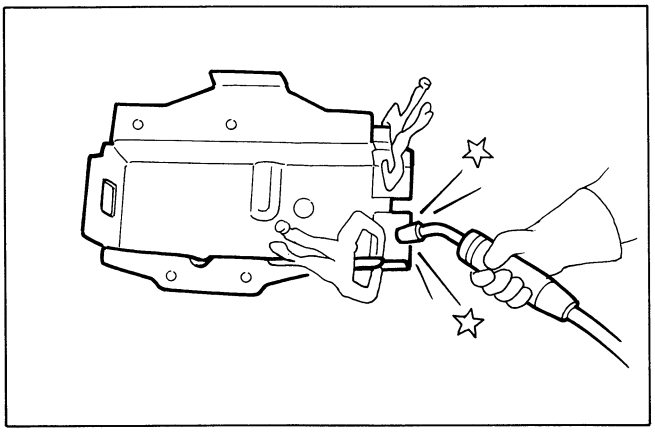
- When removing panel, use procedures outlined in section titled "BUTT-JOINT WELDING".

INSTALLATION NOTES

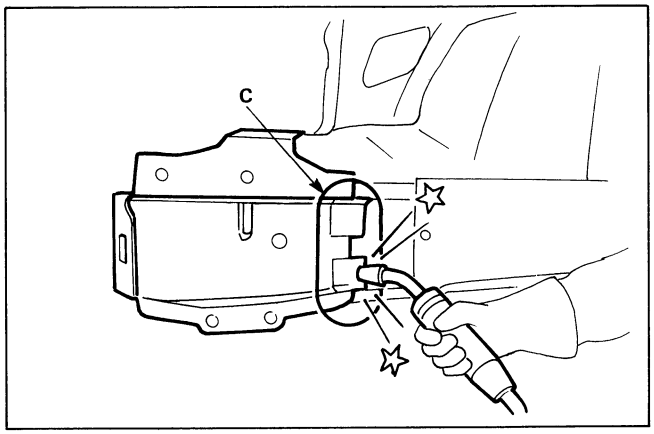
- For patch-joint welding, proceed as follows:
- Prepare a patch panel [40 mm (W) x 80 mm (L) x 1.8 mm (T)] as shown in the figure below.
  Use service part leftovers to make a patch panel to improve work efficiency.

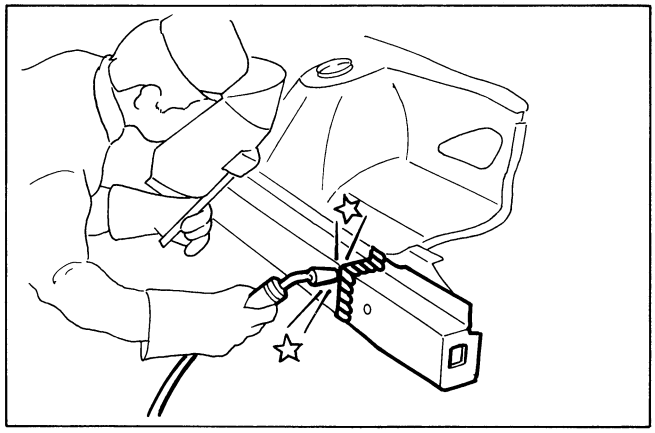


- Fit patch panel to service part and plug weld.



- Align service part with body. Plug weld at portion (C) first and then M.I.G. seam weld as specified.



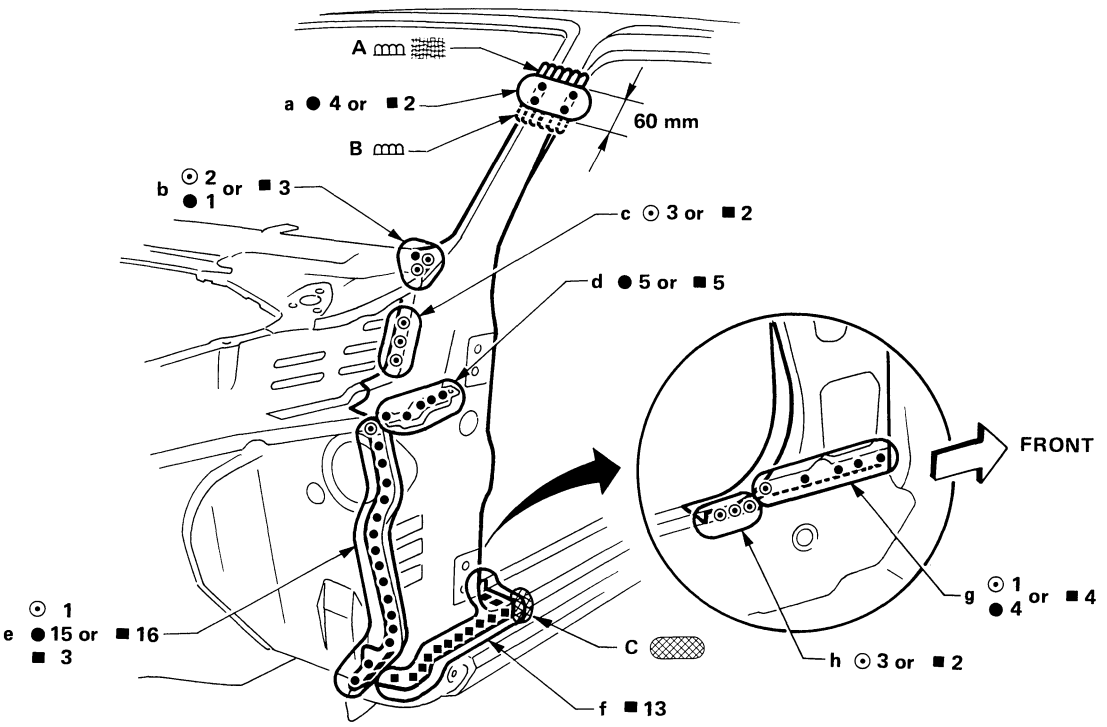


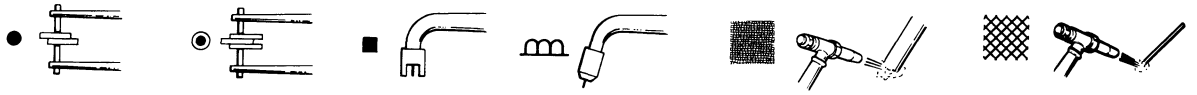
- Perform subsequent operations using procedures outlined in section titled "BUTT-JOINT WELDING".

FRONT PILLAR

(Work after hoodledge reinforcement has been removed.)

Service Joint



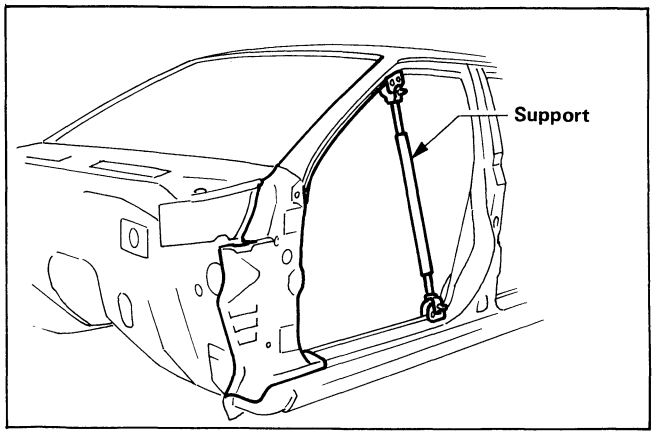


Portions to be welded

A. Outer front pillar
B. Inner front pillar
C. Outer sill
a. Inner front pillar
b. Cowl top & inner front pillar
   Cowl top
c. Upper dash & side cowl top
d. Upper dash
e. Lower dash & side dash
   Lower dash
   Outer sill reinforcement
f. Outer sill
g. Outer sill reinforcement & side dash
   Outer sill reinforcement
h. Inner sill & outer sill reinforcement

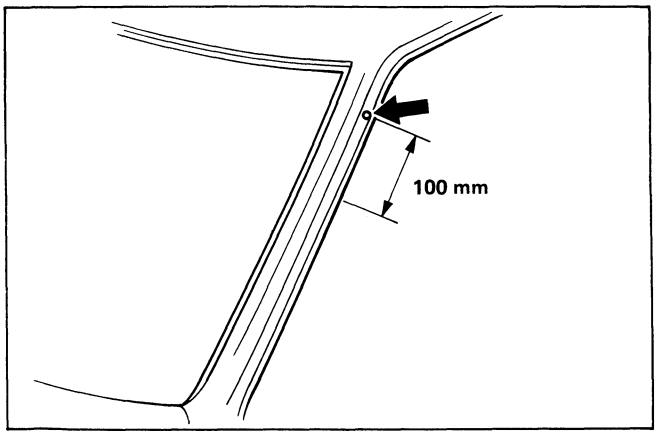
REMOVAL NOTES

- Before cutting front pillar, be sure to support roof.

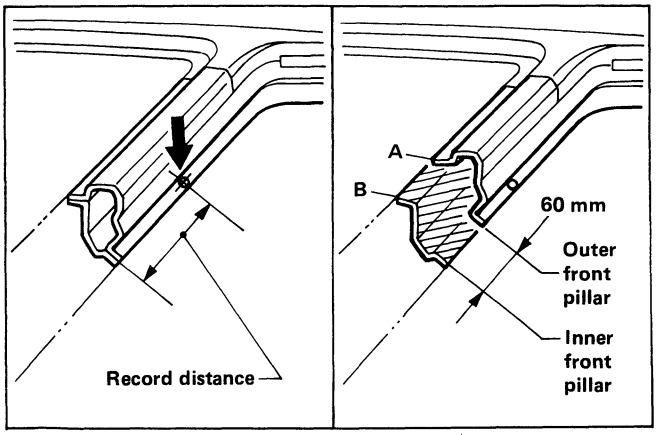


FRONT PILLAR

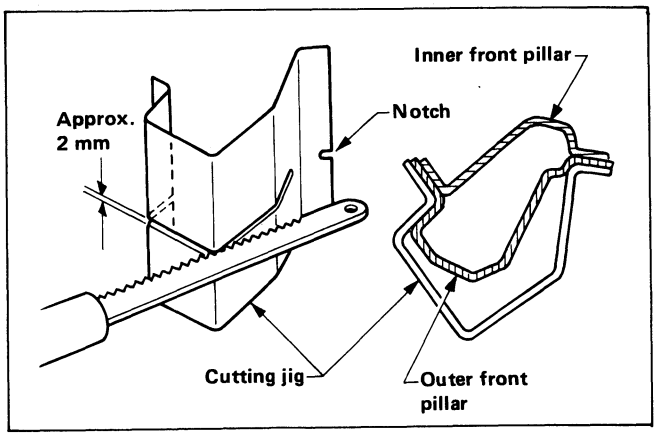
- Butting position is 100 mm away from locating hole.
  It is better to butt at this position due to its construction.



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

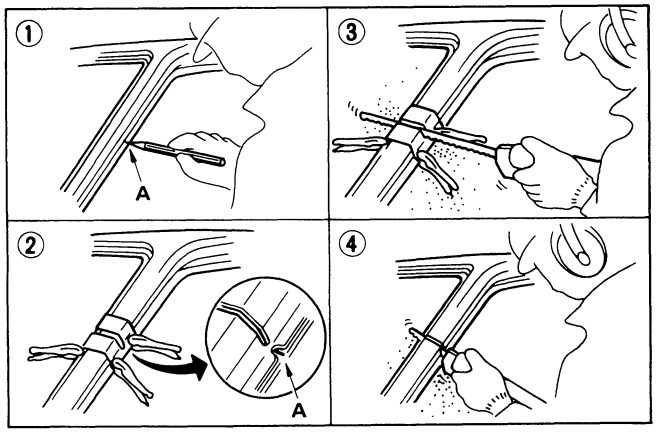


- Using a cutting jig makes it easier to cut. Also, it will permit service part to be accurately cut at joint position.



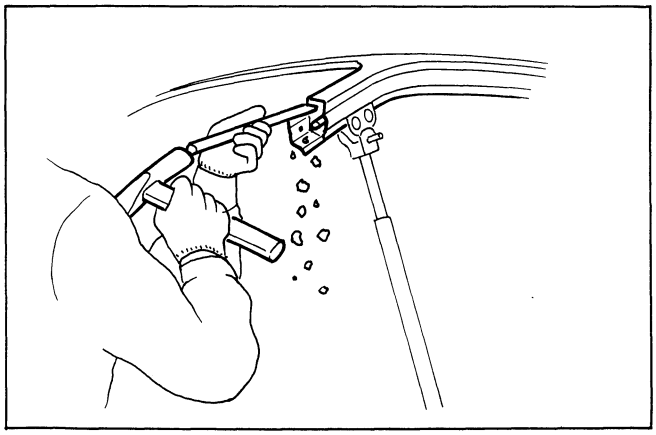
- An example of cutting operation using a cutting jig is as follows:

① Mark cutting lines.
  A: Cut position of outer front pillar
  B: Cut position of inner front pillar
② Align cutting line with mark on jig and clamp jig.
③ Cut off along groove of jig.
④ Remove jig and cut remaining portions.
⑤ Cut off position B in the same manner.



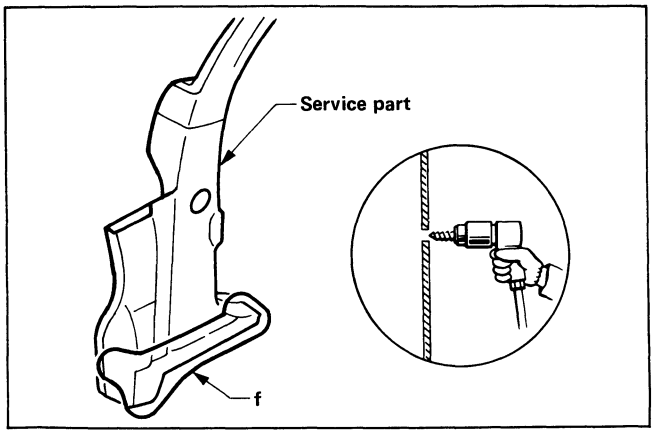
INSTALLATION NOTES

- Before installing service part, remove urethane foam filler from inside of front pillar.

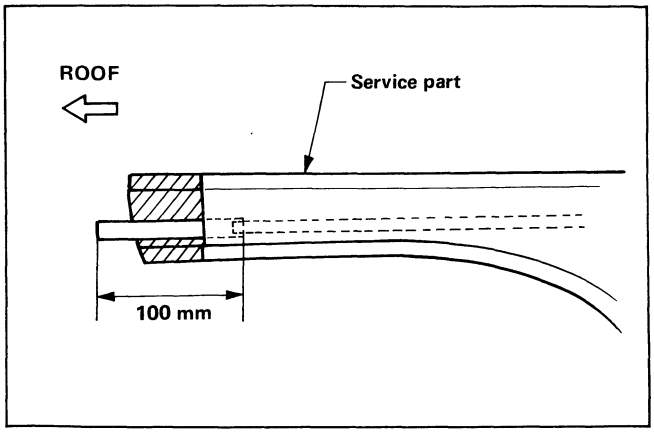


FRONT PILLAR

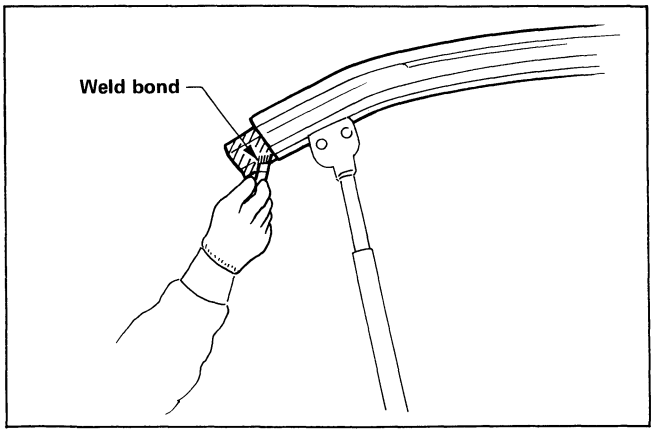
- Drill M.I.G. plug weld holes at portion (f) of service part.



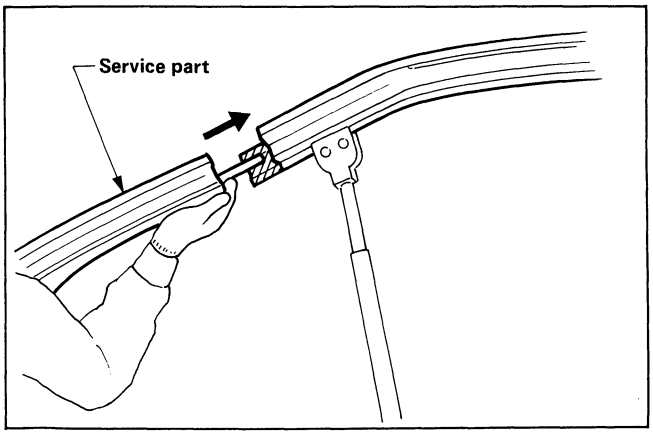
- Insert service pipe into drain hose of front pillar service part.



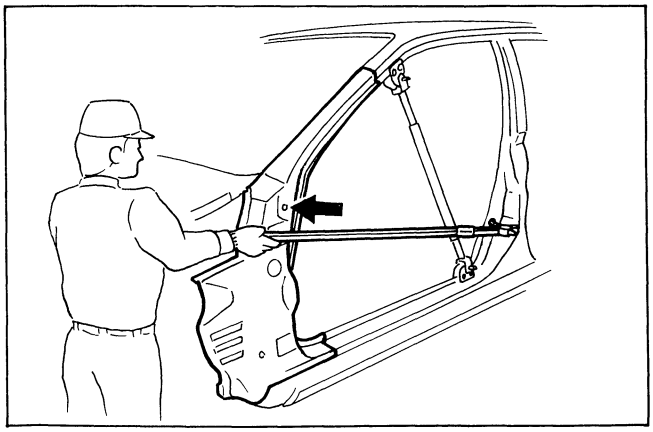
- Apply weld bond to mating surfaces.
  When doing this, if using M.I.G. welding, avoid M.I.G. weld holes.



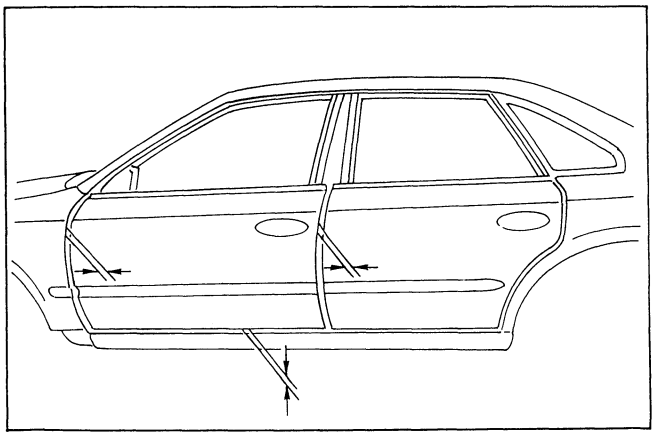
- Apply soapy water to drain hose.
- Align pipe with drain hose, and then install correctly.



- Install service part as indicated in "BODY ALIGNMENT" drawing. When doing this, align front fender attaching hole.

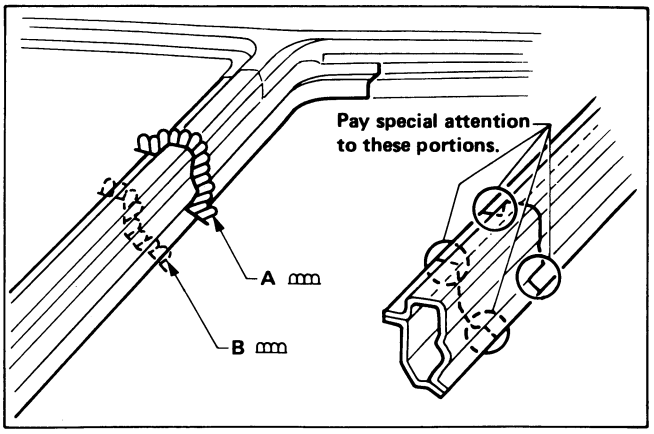


- Install door and front fender. Check clearances, grades and parallelism.

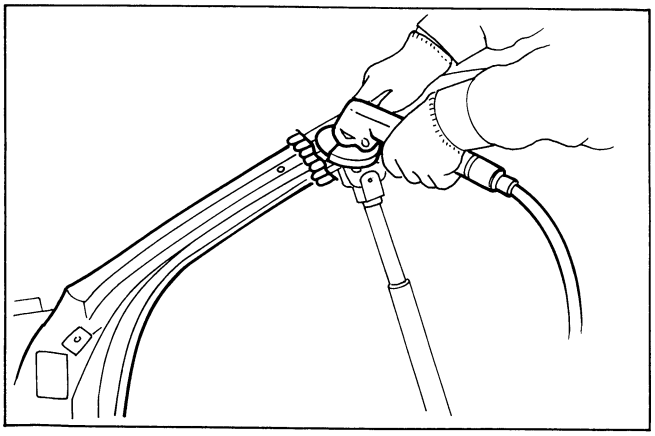


FRONT PILLAR

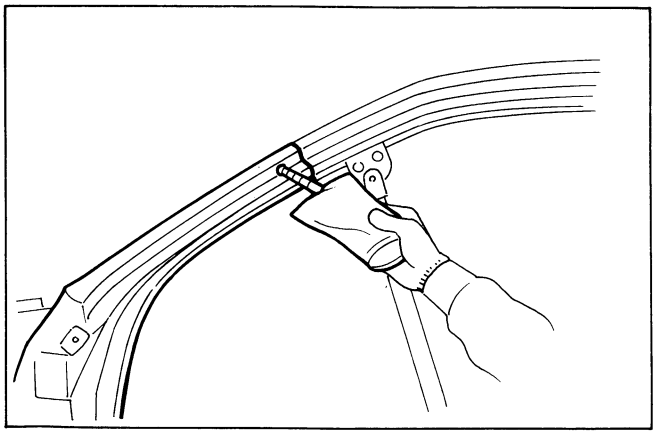
- Weld parts to be butt welded as far as flange end portion. Finish welded part with an air grinder.
  If a smooth finish cannot be obtained, finish by soldering.



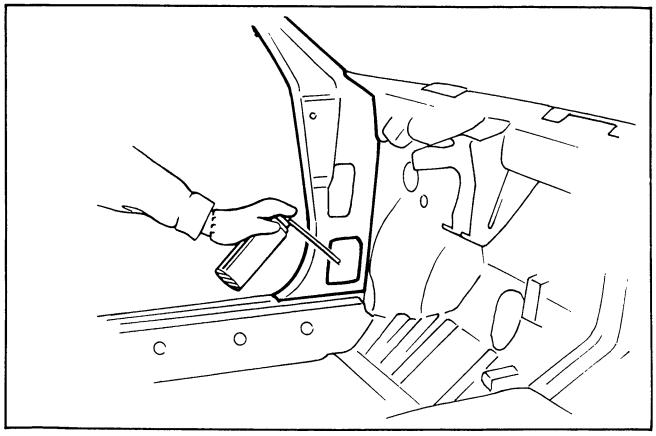
- Dress welded portion with an air grinder at portions (A) and (B).



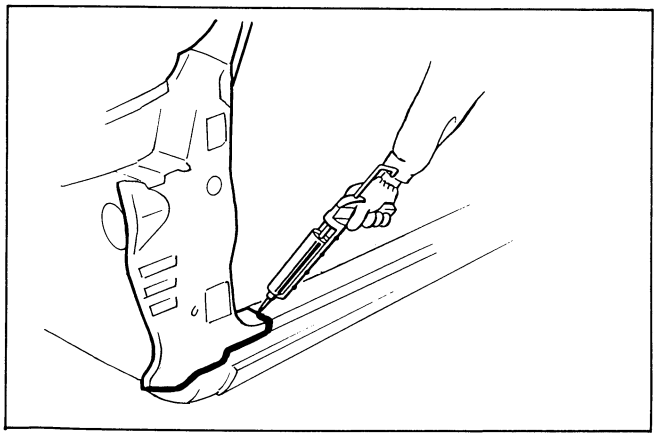
- Pour service urethane foam filler (3M super panel filler or equivalent) into front pillar assembly through a hole which is located on upper portion of inner front pillar as shown in the figure.



- Apply an anti-corrosive agent to welded parts and inside of front pillar.

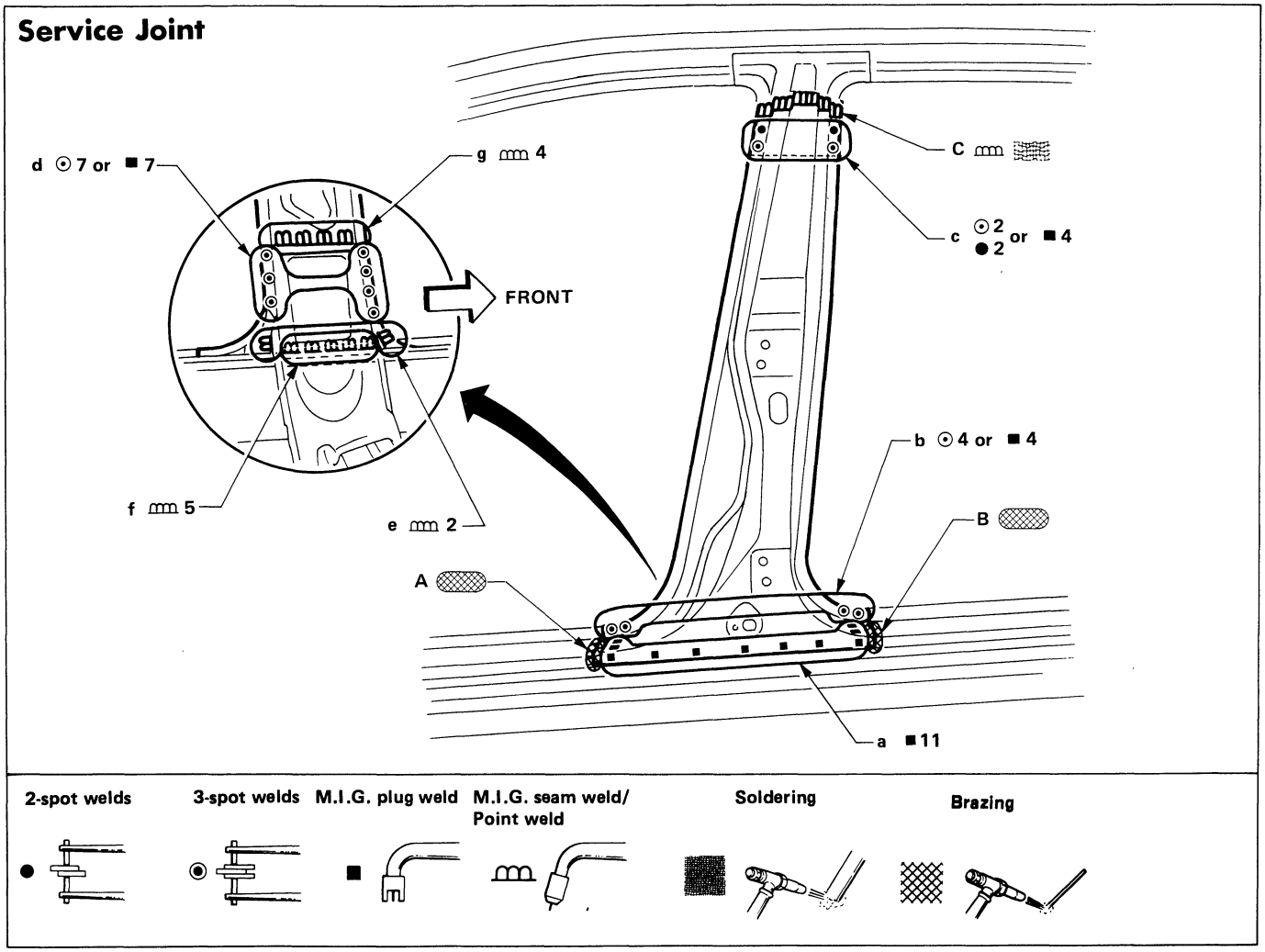


- Apply sealer according to "BODY SEALING" drawing.



CENTER PILLAR

Service Joint

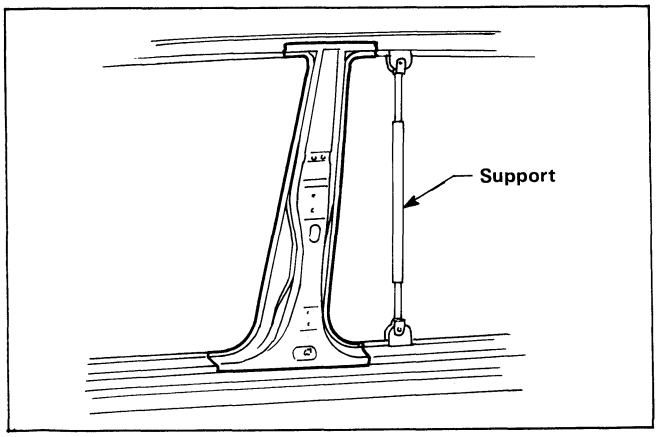


Portions to be welded

A. Outer sill
B. Outer sill
C. Outer center pillar
a. Outer sill
b. Outer sill & inner sill
c. Inner side roof rail brace & inner center pillar
Inner side roof rail brace
d. Inner center pillar & lower inner center pillar
e. Lower inner center pillar
f. Inner sill & outer sill
g. Lower inner center pillar

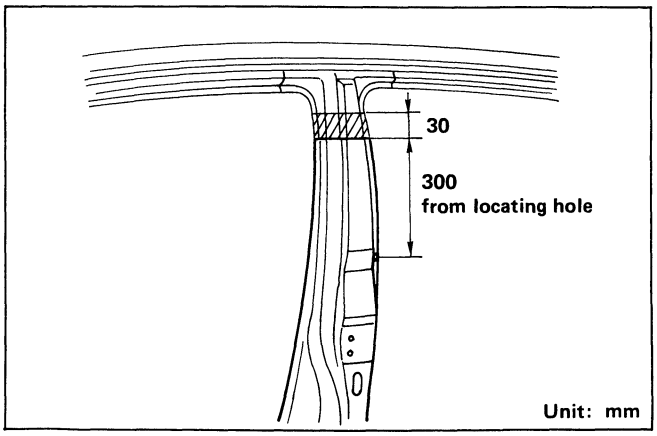
REMOVAL NOTES

- Before cutting center pillar, be sure to support roof.

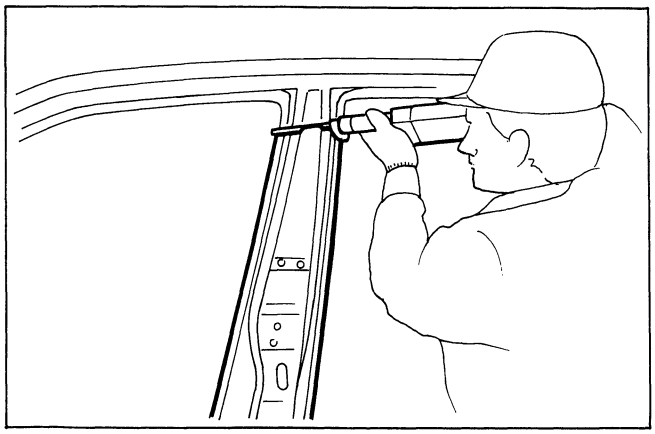


CENTER PILLAR

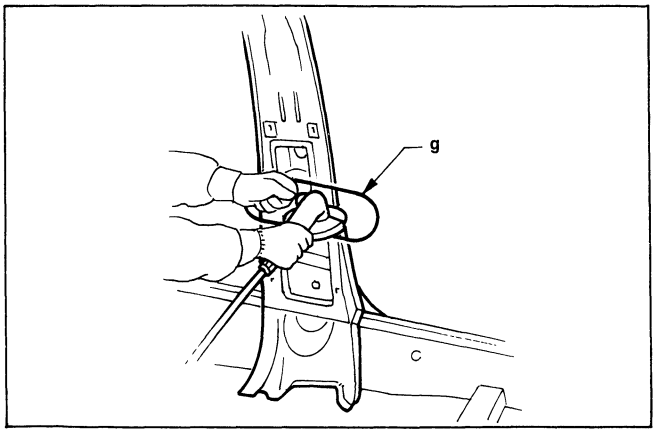
- Butt portion can be determined anywhere within shaded area as shown in the figure. It is better to butt in this position, due to the construction.



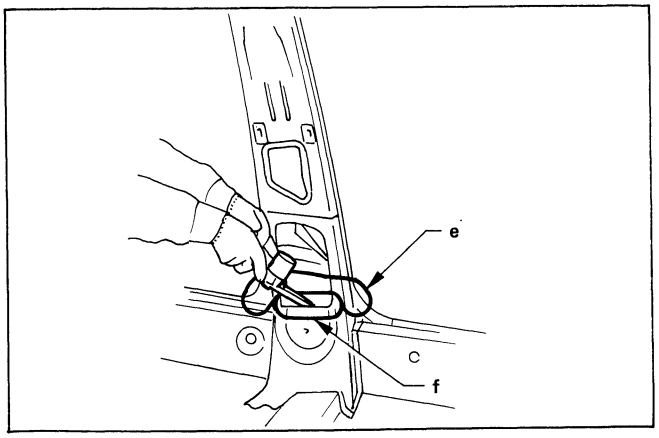
- Cut off outer center pillar.
  Be careful not to damage inner side roof rail brace.



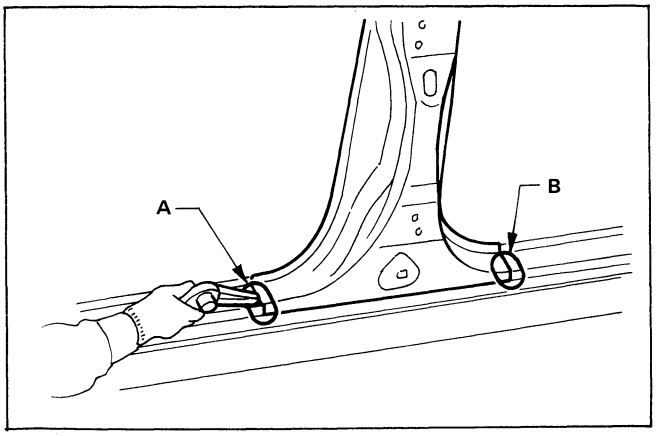
- Cut welds with an air grinder at portion (g).



- Cut welds with a mini belt sander at portions (e, f).

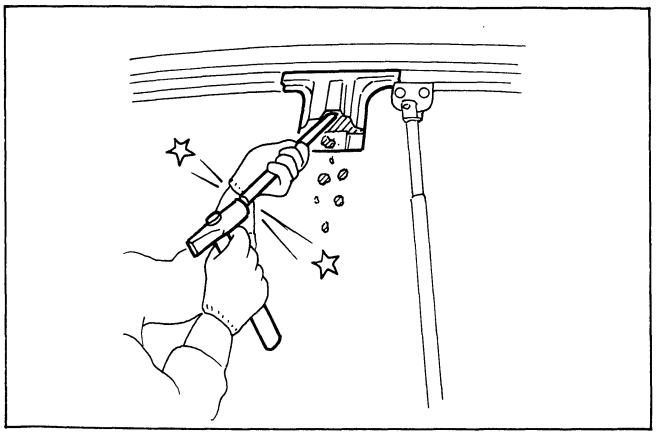


- Cut brazing with a mini belt sander at portions (A, B). Be careful not to cut mating panel.



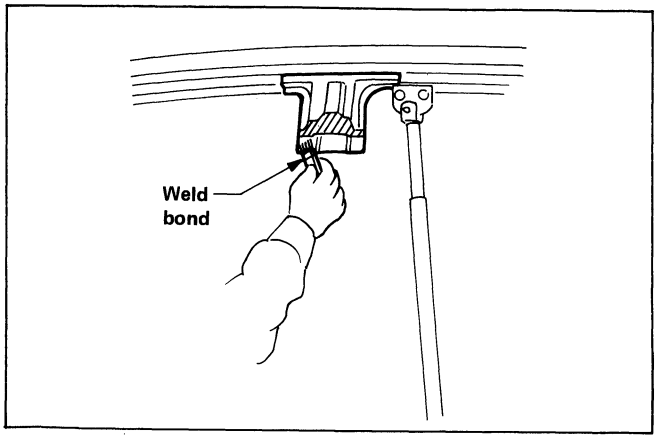
INSTALLATION NOTES

- Before installing service part, remove urethane foam filler from inside of center pillar.

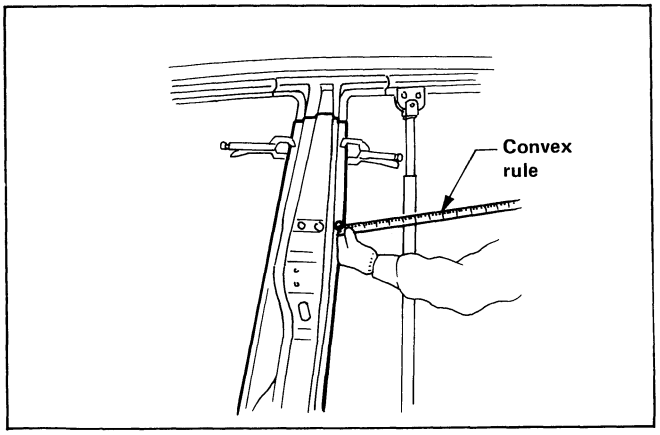


CENTER PILLAR

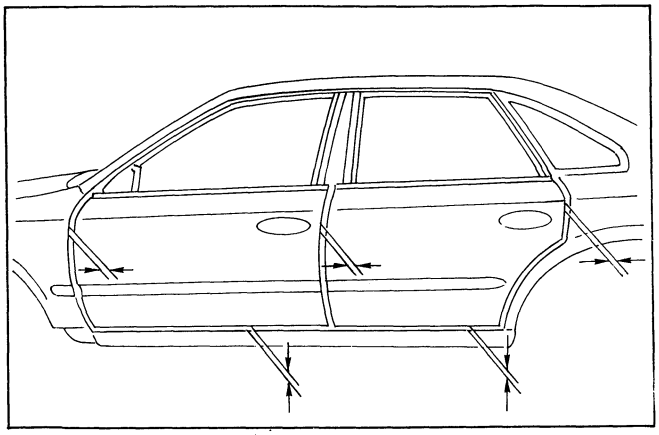
- Apply weld bond to mating surfaces.
  When doing this, if using M.I.G. welding, avoid M.I.G. weld holes.



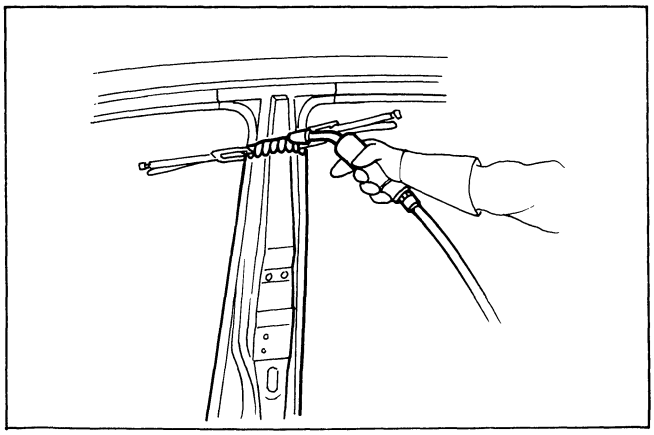
- When installing service parts, be sure to align locating holes correctly. Measure various dimensions of part location. Refer to "BODY ALIGNMENT" drawing.



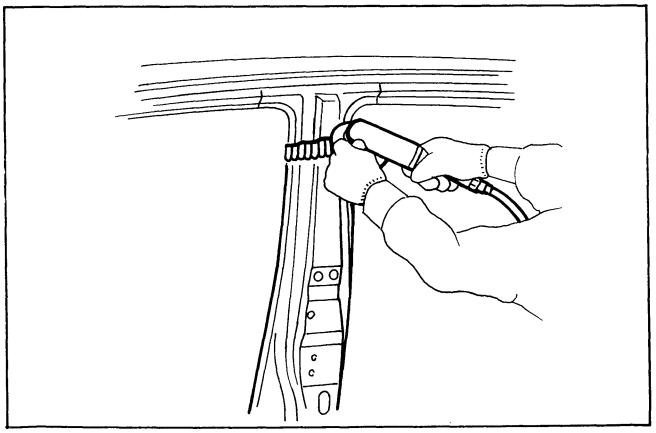
- Install front door and rear door.
  Check clearances, grades and parallelism.



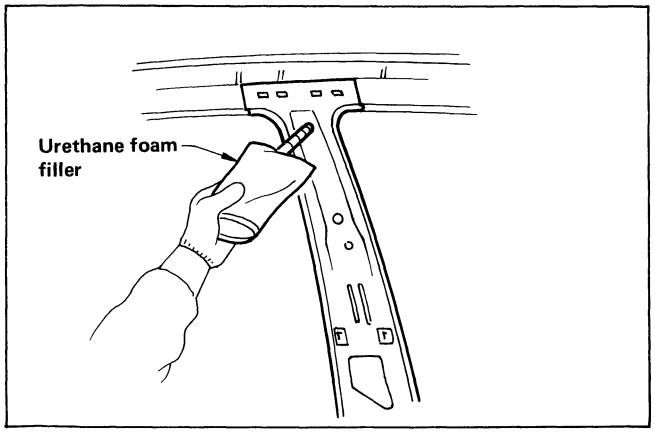
- Positively weld parts to be butt welded as far as flange end portion.



- Finish welded part with an air grinder.
  If a smooth finish cannot be obtained, finish by soldering.

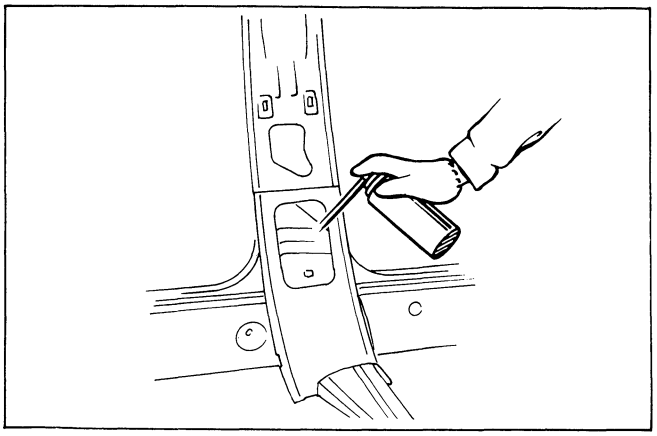


- Pour service urethane foam filler (3M super panel filler or equivalent) into center pillar assembly through hole located on upper portion of inner center pillar as shown in the figure.

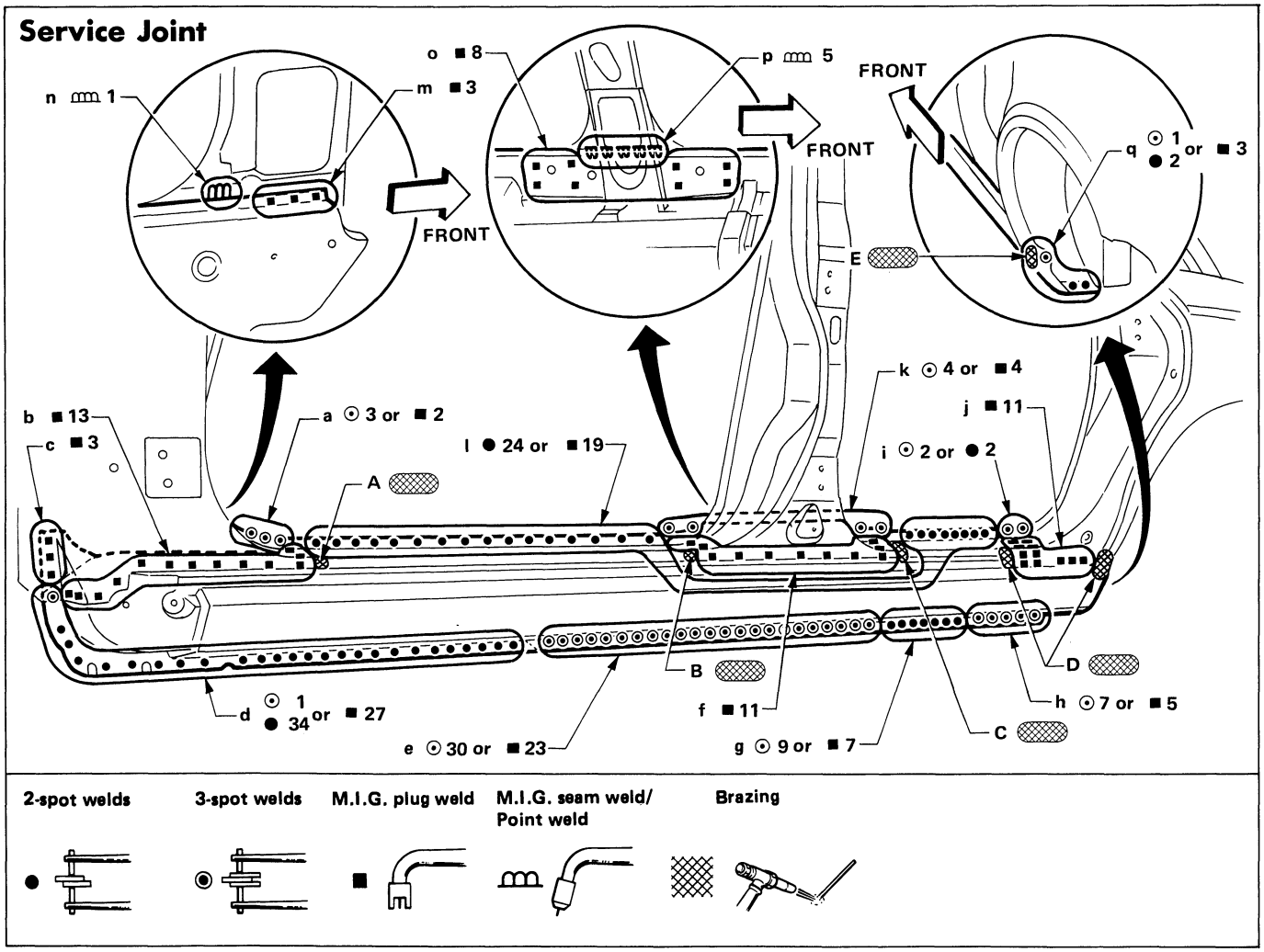


CENTER PILLAR

- Apply an anti-corrosive agent to welded parts and inside of center pillar.



OUTER SILL

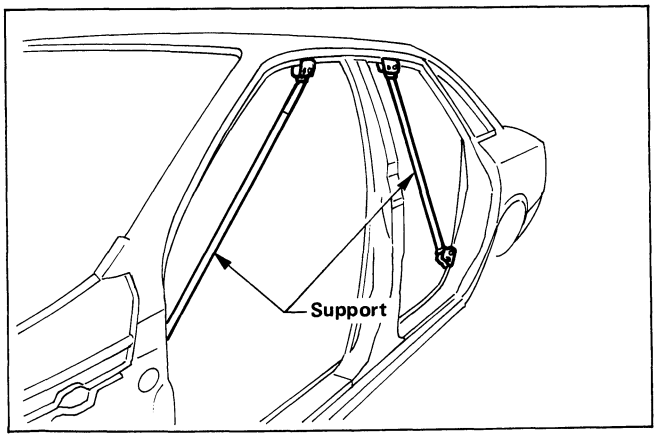


Portions to be welded

A. Outer front pillar
B. Outer center pillar
C. Outer center pillar
D. Rear fender
E. Rear fender
a. Inner sill & outer sill reinforcement
b. Front pillar
c. Front pillar
d. Outer sill reinforcement & front pillar
   Inner sill
e. Inner sill & front floor
f. Center pillar
g. Inner sill
h. Inner sill & outer rear wheelhouse
i. Inner sill & rear fender
j. Rear fender
k. Inner sill & center pillar
l. Inner sill
m. Inner sill
n. Inner sill
o. Inner sill
p. Inner sill & center pillar
q. Rear fender & outer rear wheelhouse
   Outer rear wheelhouse

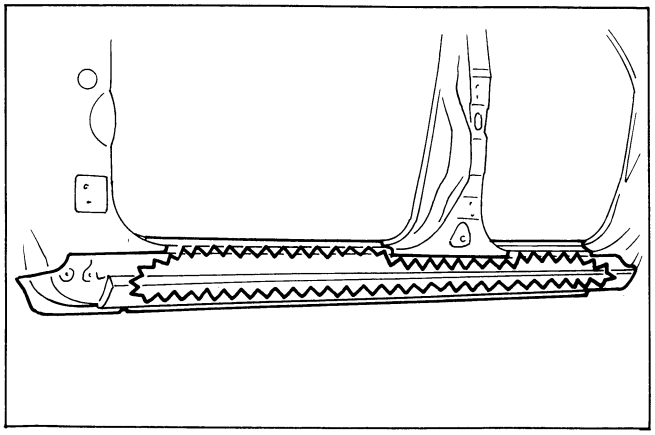
REMOVAL NOTES

- Before cutting welded portions, be sure to support the roof.

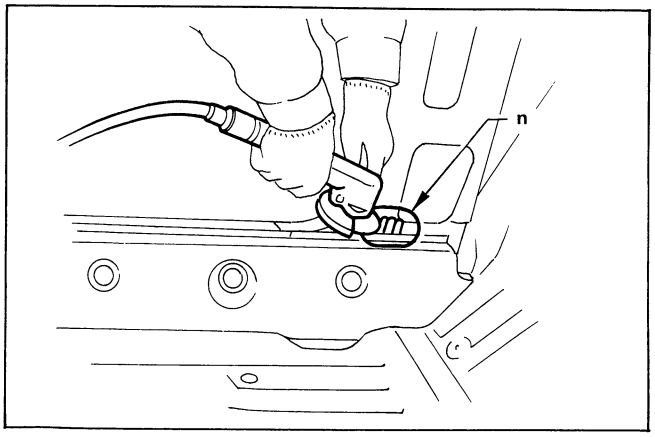


OUTER SILL

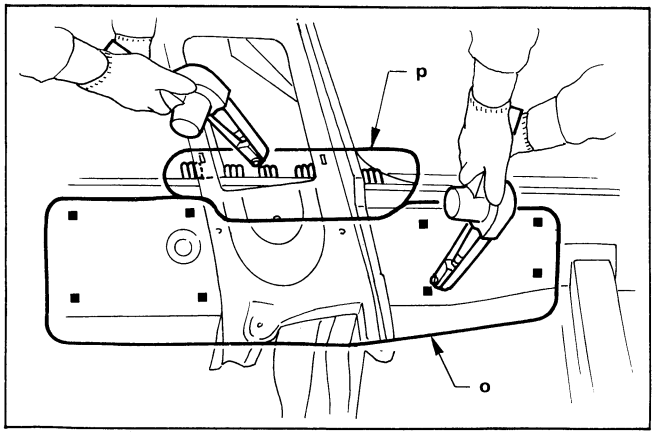
- Cut off damaged portion as shown in the figure to facilitate removal.



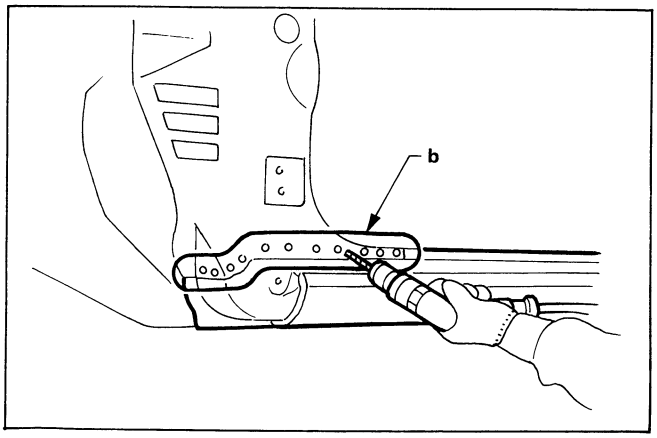
- Cut welded parts with an air grinder at portion (n).



- Spot cut welded portions (o), (p) with a mini belt sander from inside.

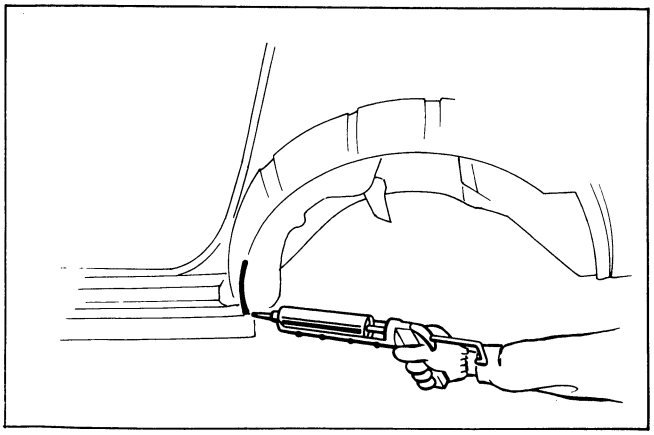


- Spot cut completely through welded parts at portion (b). Use these holes as M.I.G. plug weld holes when installing service part.

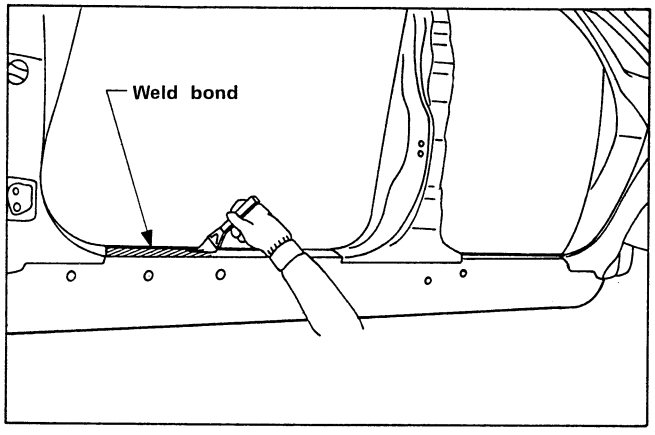


INSTALLATION NOTES

- Apply sealant to joint between rear fender wheel arch and outer sill.

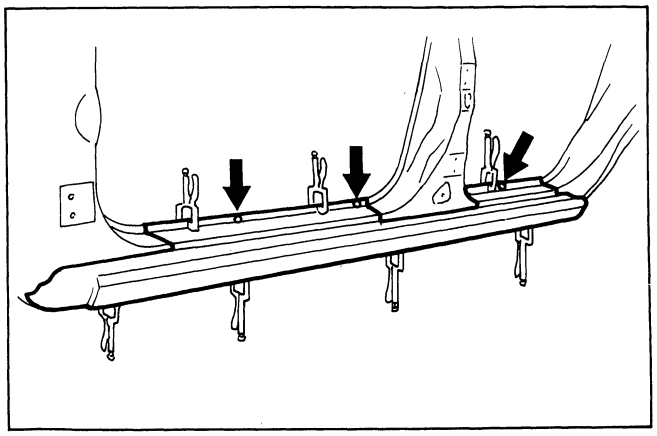


- Apply weld bond to mating surface.
  When doing this, if using M.I.G. welding, avoid M.I.G. weld holes.

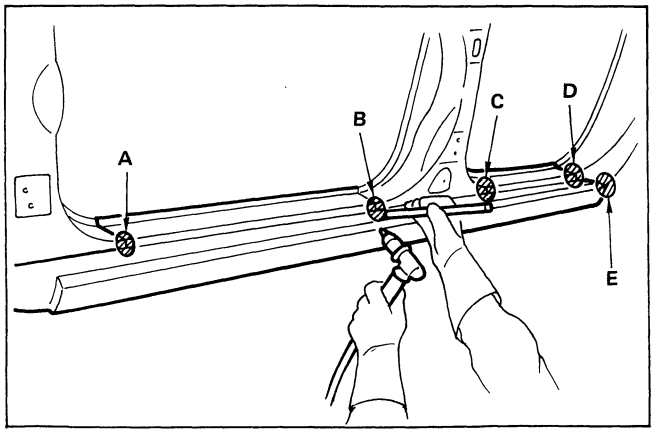


OUTER SILL

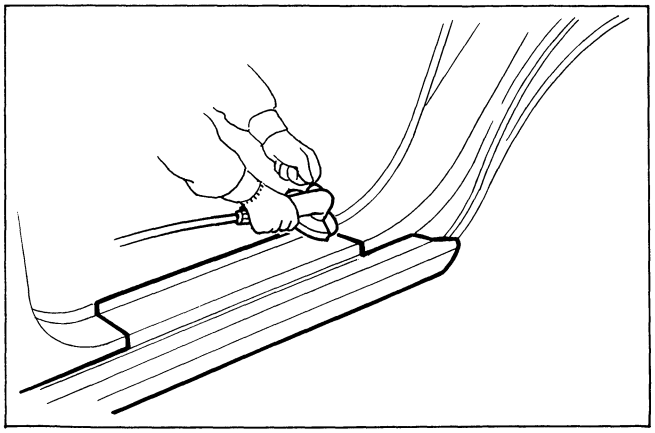
- When installing, be sure to align locating holes.



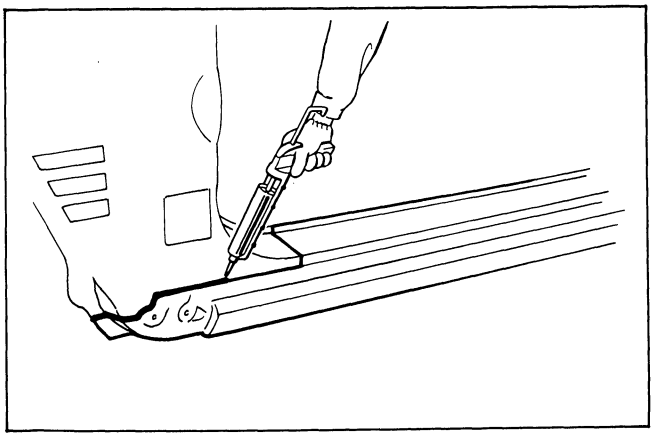
- Braze at portions (A, B, C, D, E).



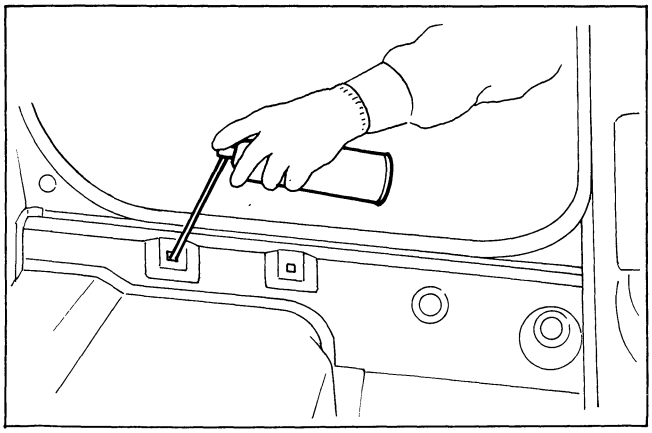
- Dress M.I.G. plug welded parts and brazed portion with an air grinder to smooth the surface and finish with a sander.



- Apply sealer.



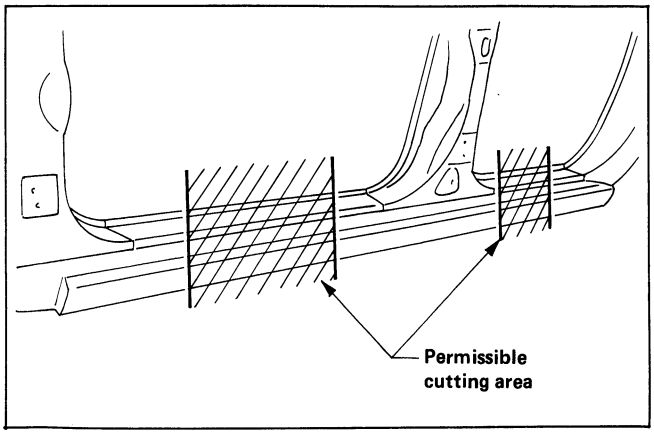
- Apply an anti-corrosive agent to inside of outer sill.



OUTER SILL (Partial Replacement)

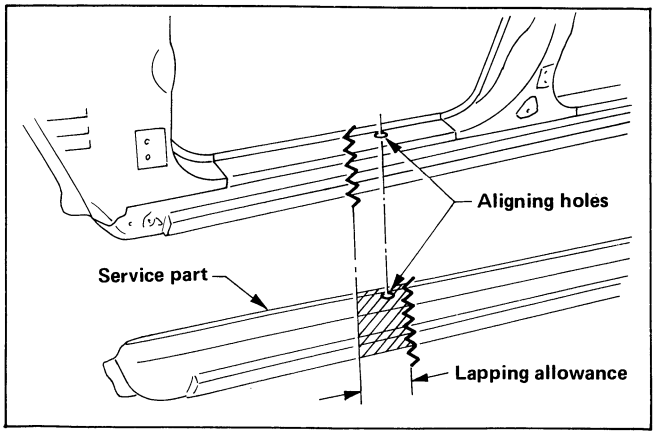
REMOVAL NOTE

- Determine butting position, avoiding outer sill brace and holes.

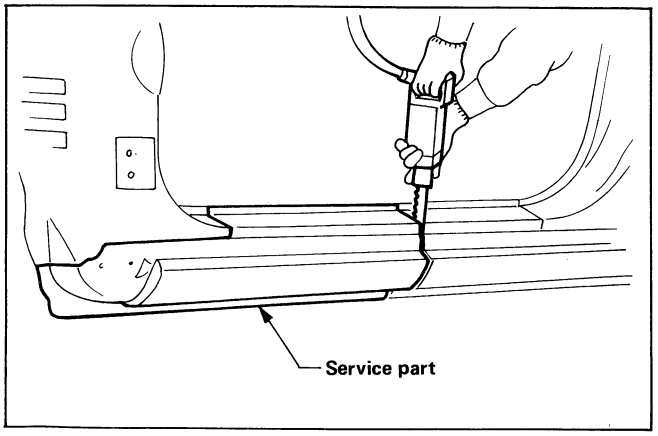


INSTALLATION NOTES

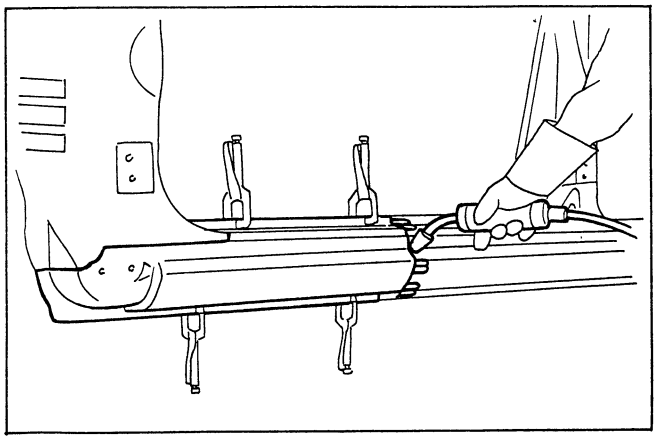
- Cut off service part, leaving its hole in the same position as that of vehicle body for positioning.



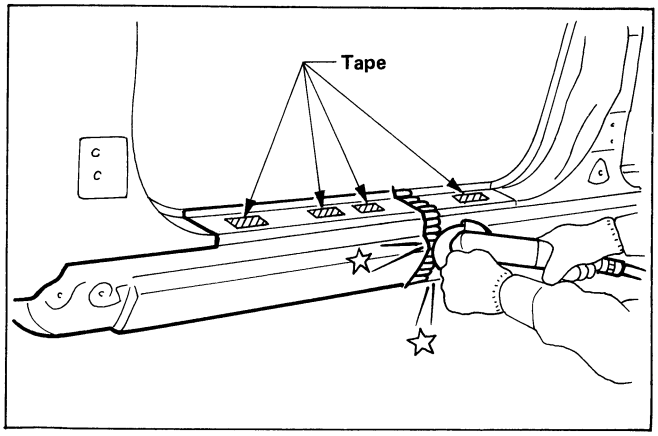
- Place service part, align its hole with that of vehicle body, and perform overlap cutting.



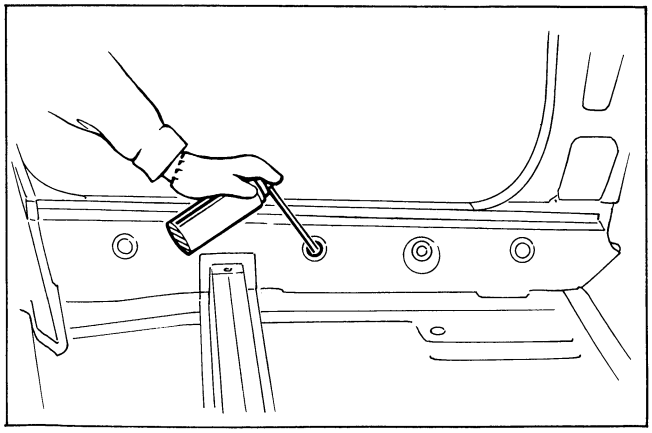
- When welding, temporarily weld each press line first to prevent movement.



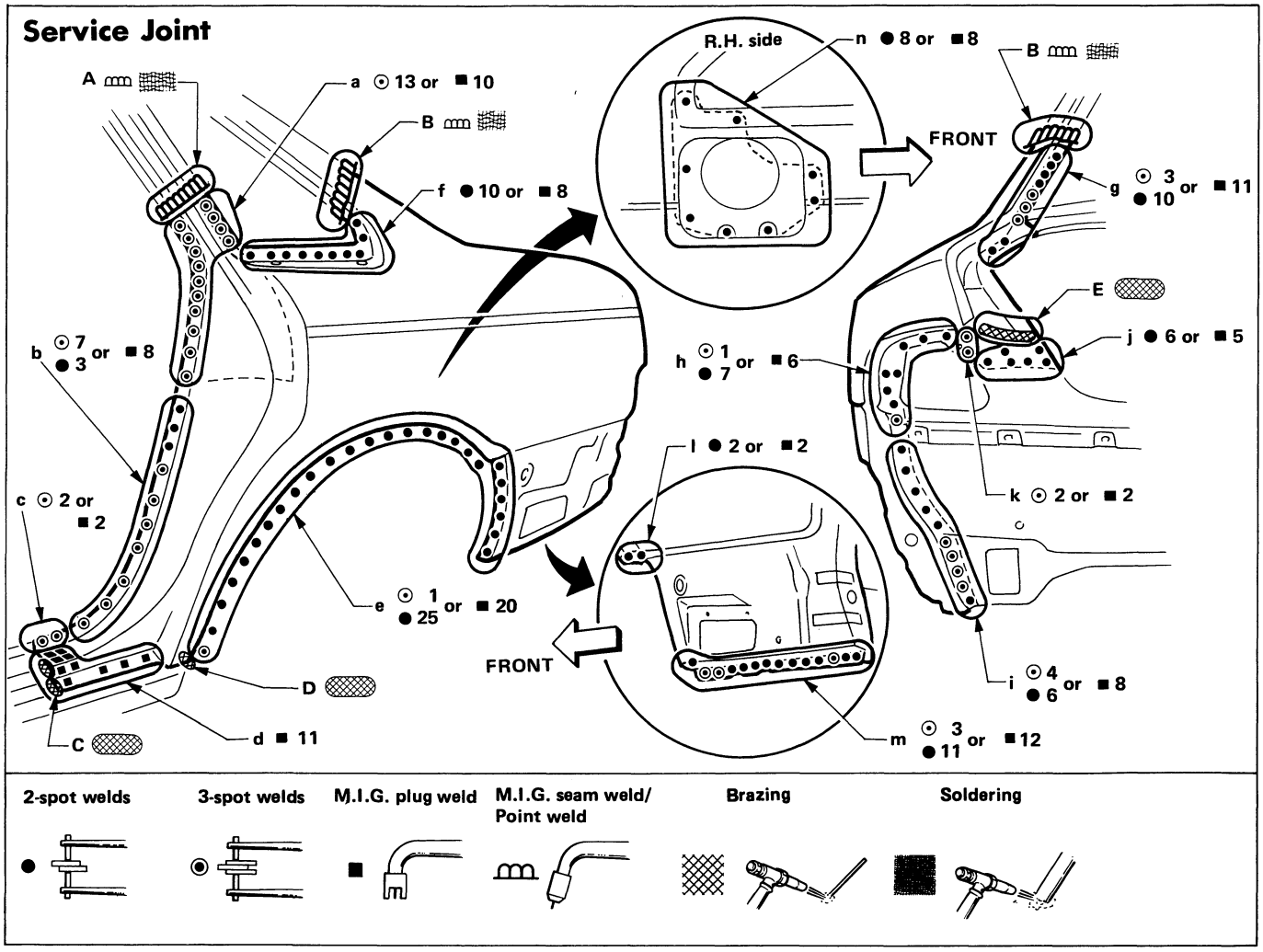
- When dressing butt weld part, cover up holes in upper part of outer sill with tape to prevent chips from entering.



- Be sure to treat inside of outer sill with an anti-corrosive agent.



REAR FENDER



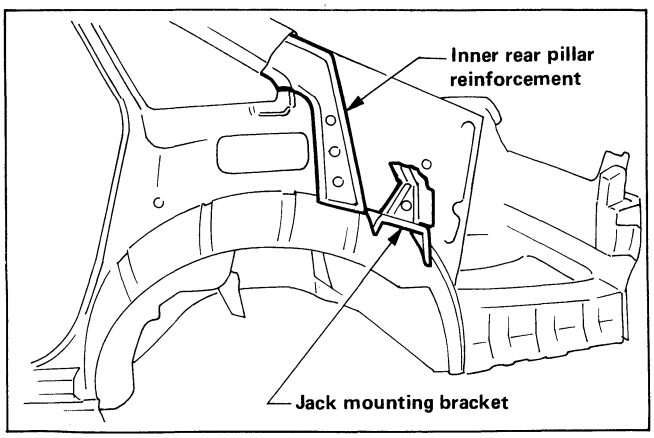
Portions to be welded

A. Rear fender
B. Rear fender
C. Outer sill
D. Outer sill
E. Rear panel
a. Rear fender patch & inner rear pillar
Rear fender patch & inner rear pillar & inner rear wheelhouse
b. Inner rear wheelhouse
Inner rear wheelhouse & outer rear wheelhouse
c. Outer sill & inner sill
d. Outer sill
e. Outer sill & outer rear wheelhouse
Outer rear wheelhouse
f. Inner rear pillar
g. Inner rear pillar
Side parcel shelf & inner rear pillar
Parcel shelf with rear waist & inner rear pillar
h. Rear panel
Rear panel & rear combination lamp base
(Not welded to rear fender.)
i. Rear panel
Rear floor side
(Not welded to rear fender.)
j. Rear panel
(Not welded to rear fender.)
k. Rear combination lamp base & rear panel
(Not welded to rear fender.)
l. Outer rear wheelhouse
m. Outer rear wheelhouse & rear floor side
Rear fender extension & rear floor side
Outer rear wheelhouse
Rear floor side
Rear fender extension
n. Fuel filler base

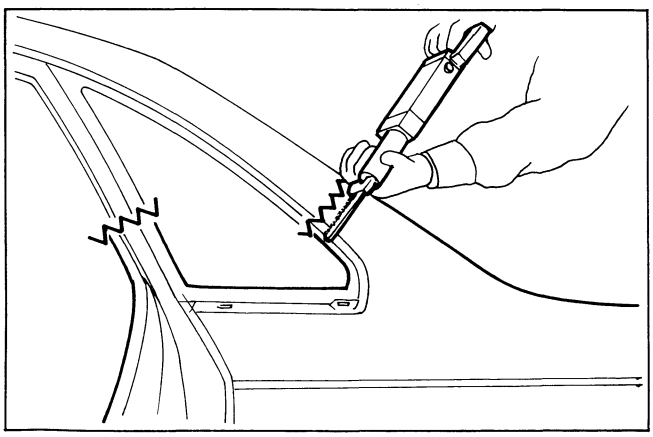
REAR FENDER

REMOVAL NOTES

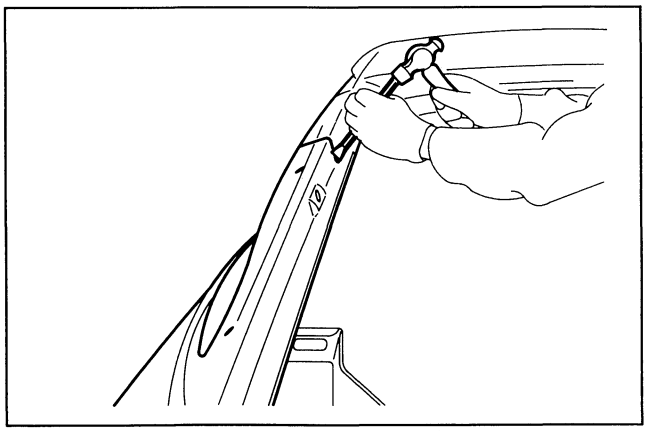
- The inside body construction is shown in the figure.



- Cut off rear fender portions (A) and (B) as shown in the figure.

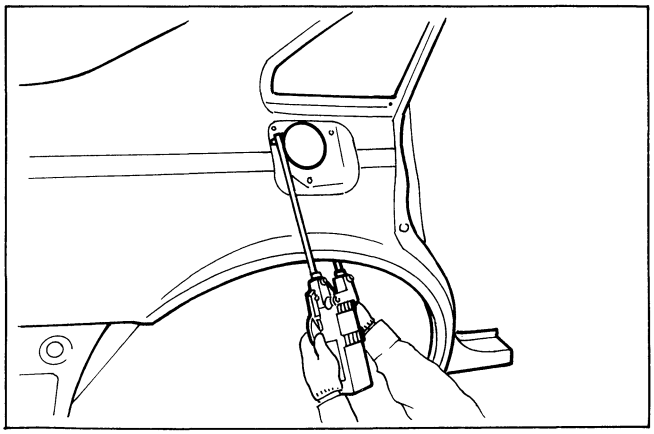


- When cutting portion (B), use a chisel so as not to damage mating parts.

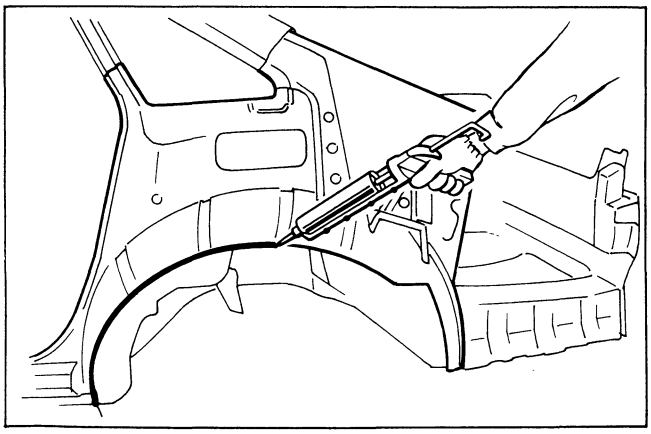


INSTALLATION NOTES

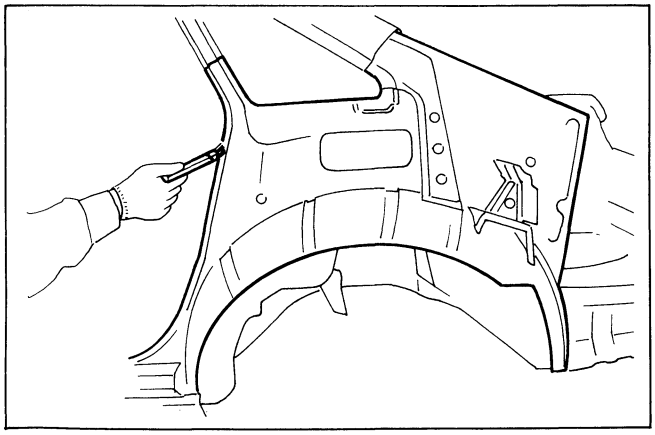
- Before installing rear fender, apply sealant to fuel filler base, and spot weld to rear fender.



- Apply sealant to wheel arch.

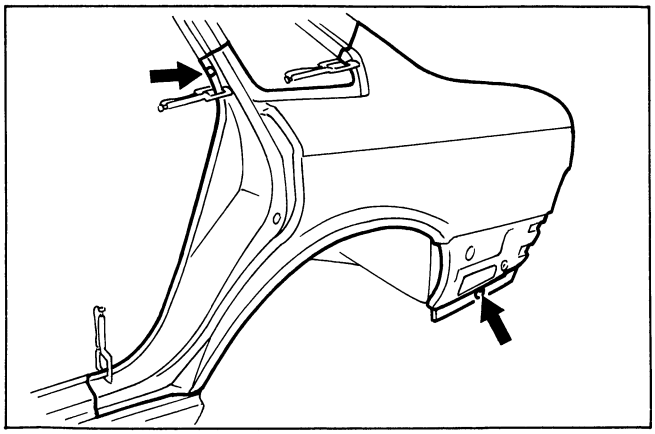


- Be sure to clean the surfaces to be bonded and then apply weld bond.

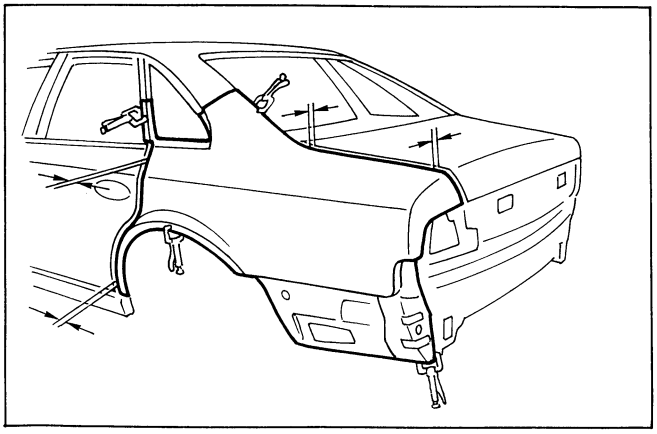


REAR FENDER

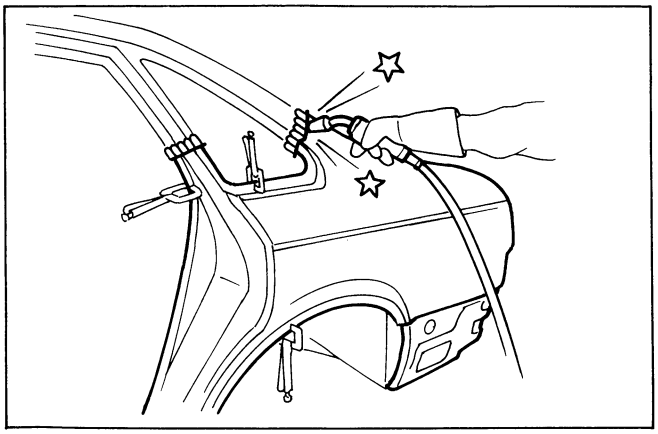
- When installing service part, measure various dimensions of part locations. Refer to "BODY ALIGNMENT" drawing and align locating holes.



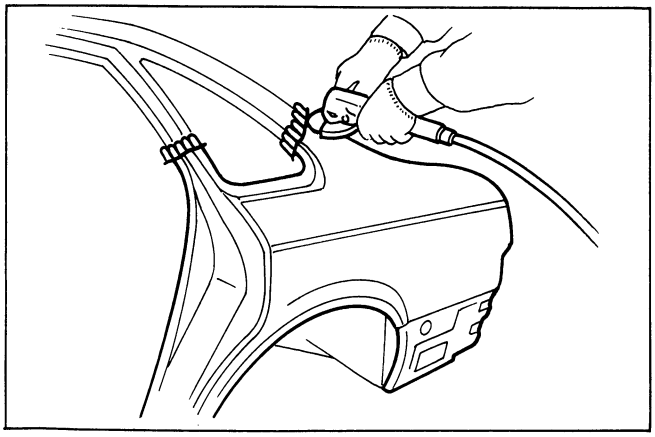
- Install rear door and trunk lid. Check clearances, grades and parallelism.



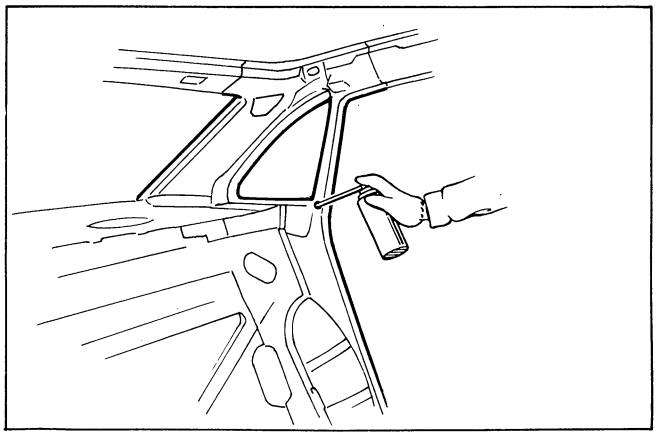
- Weld part to be butt welded up to flange end portion.



- Dress welded part with an air grinder and ensure the surface is smooth.



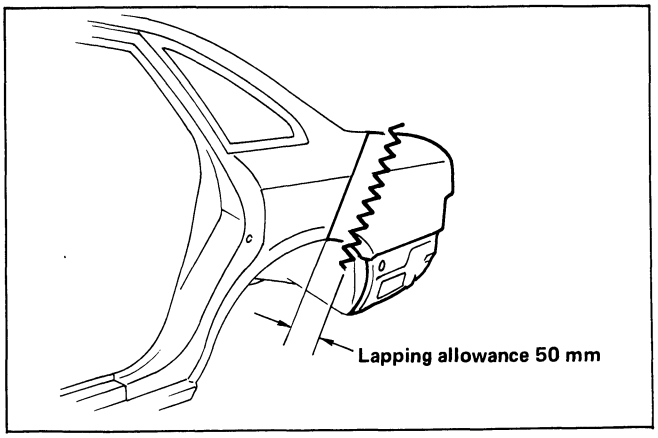
- After welding, apply an anti-corrosive agent to inside of welded part.



REAR FENDER (Partial Replacement)

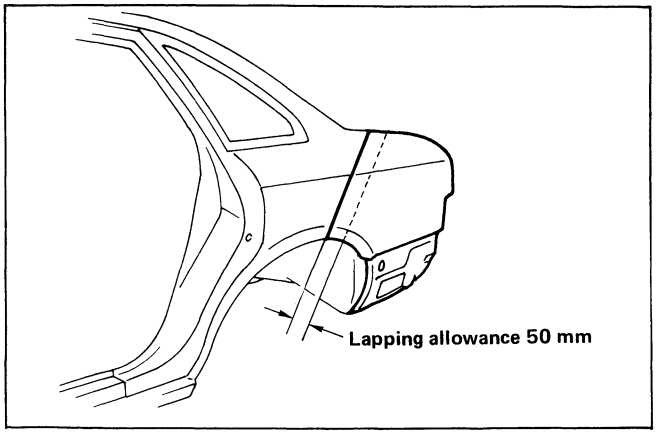
REMOVAL NOTE

- Cut off damaged portion with lap allowance of about 50 mm.

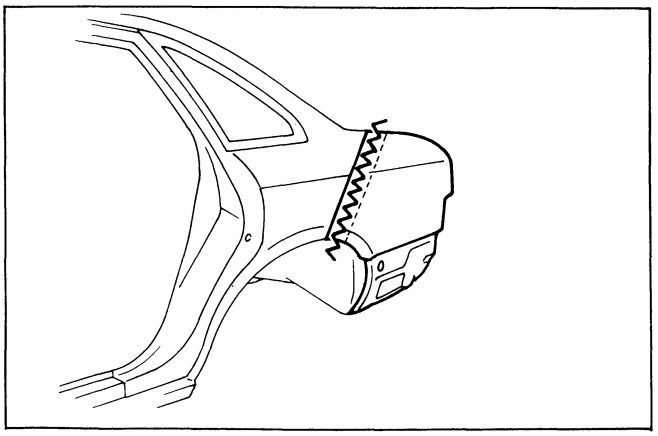


INSTALLATION NOTES

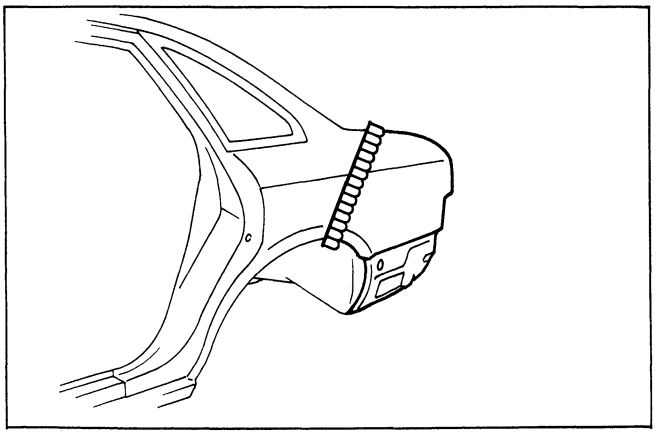
- Cut off service part leaving 50 mm lap allowance with mating part.



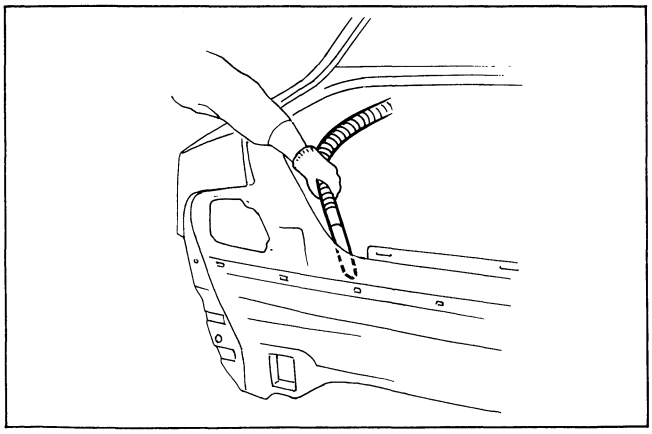
- Install service part in place with vise clamps, and cutt off in middle of lapped part.



- M.I.G. seam weld butt ends.

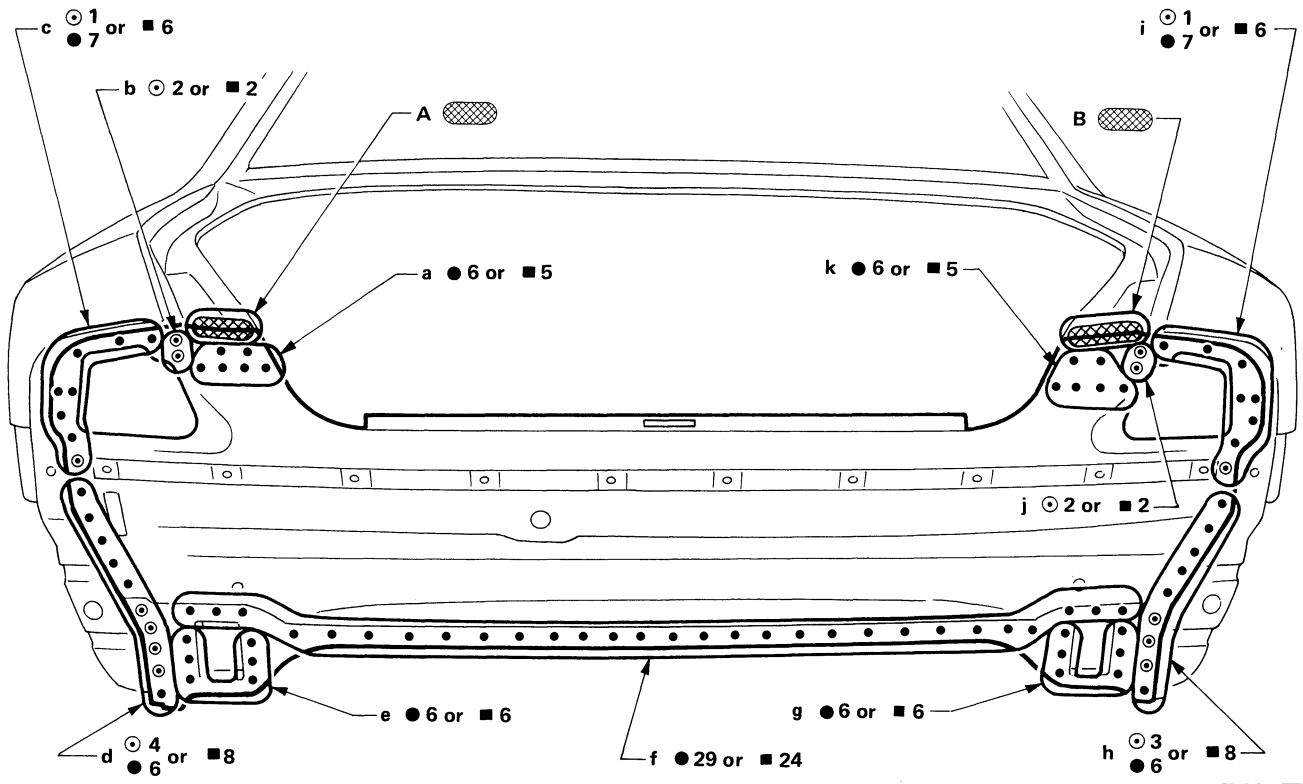


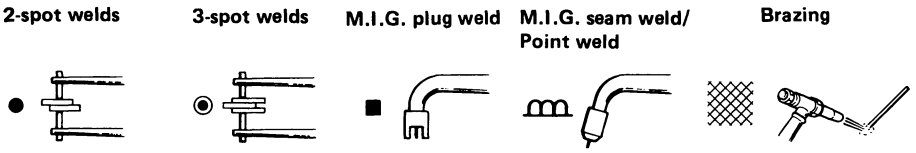
- Remove any iron particles with a vacuum cleaner to prevent rust and corrosion.



REAR PANEL

Service Joint





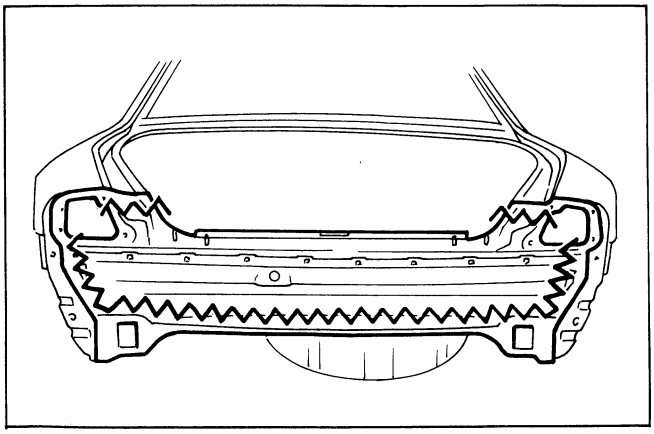
Portions to be welded

A. Rear fender corner
B. Rear fender corner
a. Rear fender corner
b. Rear fender corner & rear combination lamp base
c. Rear combination lamp base
   Rear combination lamp base & rear fender extension
d. Rear fender extension
   Rear fender extension & rear floor side
e. Rear side member
f. Rear floor rear
g. Rear side member
h. Rear fender extension
   Rear fender extension & rear floor side
i. Rear combination lamp base
   Rear combination lamp base & rear fender extension
j. Rear fender corner & rear combination lamp base
k. Rear fender corner

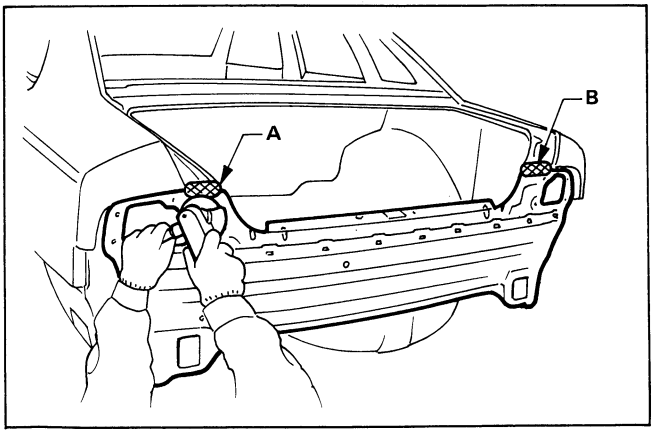
REAR PANEL

REMOVAL NOTES

- Cut off damaged portion so that welded part can be easily spot cut later.

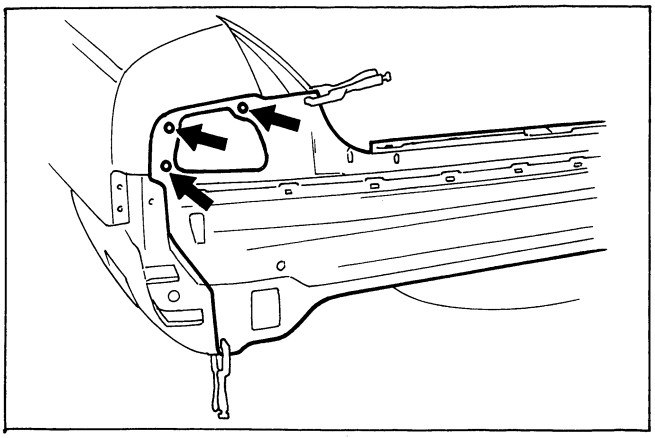


- Grind brazed portions (A) and (B) with an air grinder.

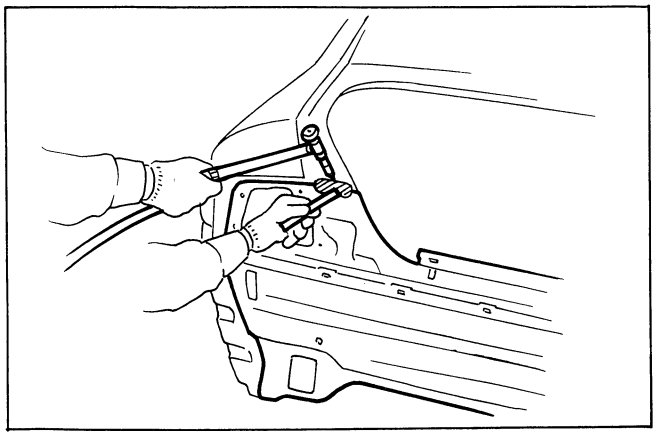


INSTALLATION NOTES

- When installing service part, align locating holes.



- Be sure to finish brazed portion as shown in the figure.

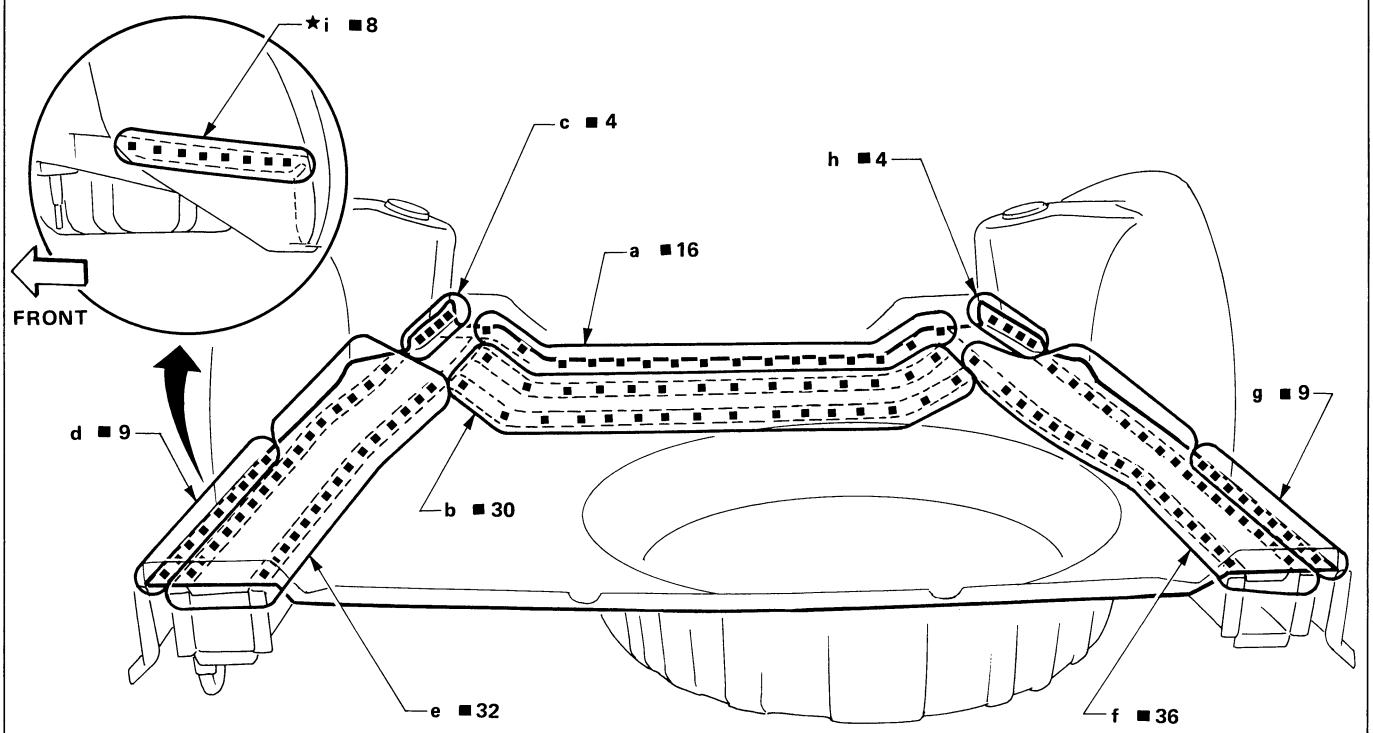


REAR FLOOR REAR

(Work after rear panel has been removed.)

Service Joint

★ indicates that there is an equivalent welding portion with the same dimensions on the R.H. side.

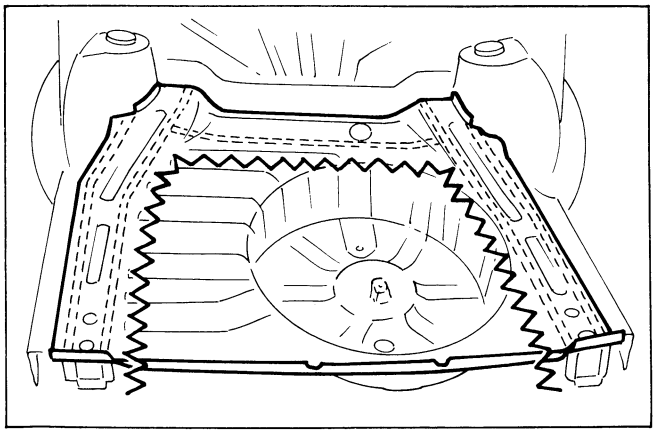


Portions to be welded

a. Rear side member & rear floor front
   Rear floor front
b. Rear crossmember
c. Rear side member & rear floor front
   Rear side member
d. Rear floor side
e. Rear side member
f. Rear side member
g. Rear floor side
h. Rear side member & rear floor front
   Rear side member
i. Inner rear wheelhouse
   Inner rear wheelhouse & rear floor side
   Rear floor side

REMOVAL NOTE

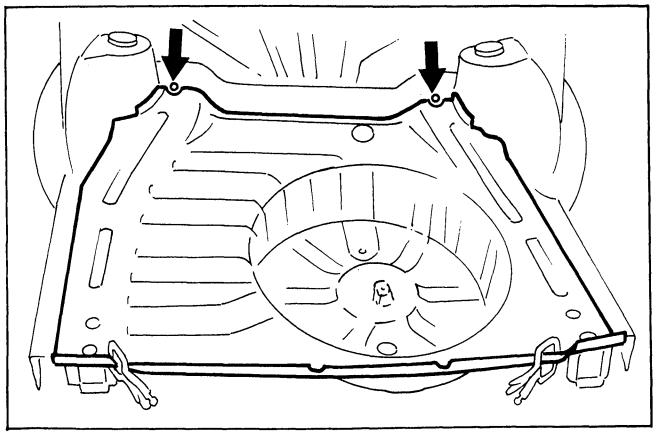
- Cut off damaged portion so that it is easy to work with.



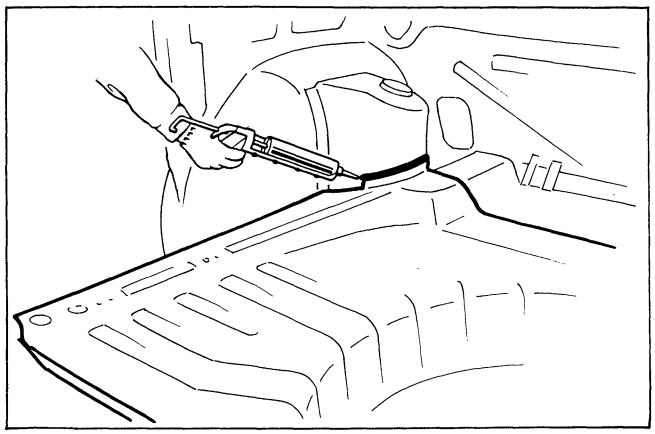
REAR FLOOR REAR

INSTALLATION NOTES

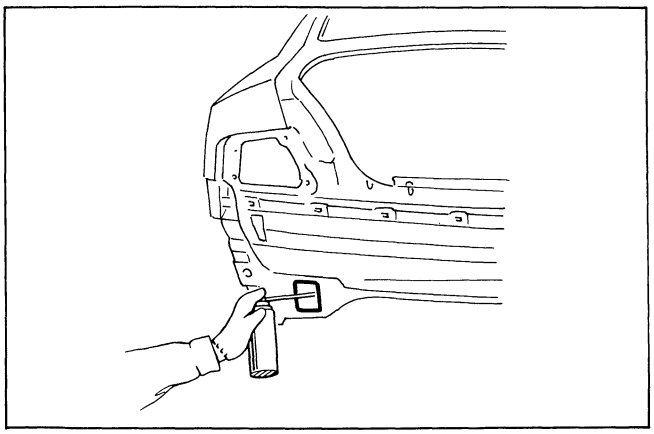
- Align service part with positioning marks.



- Apply sealant.

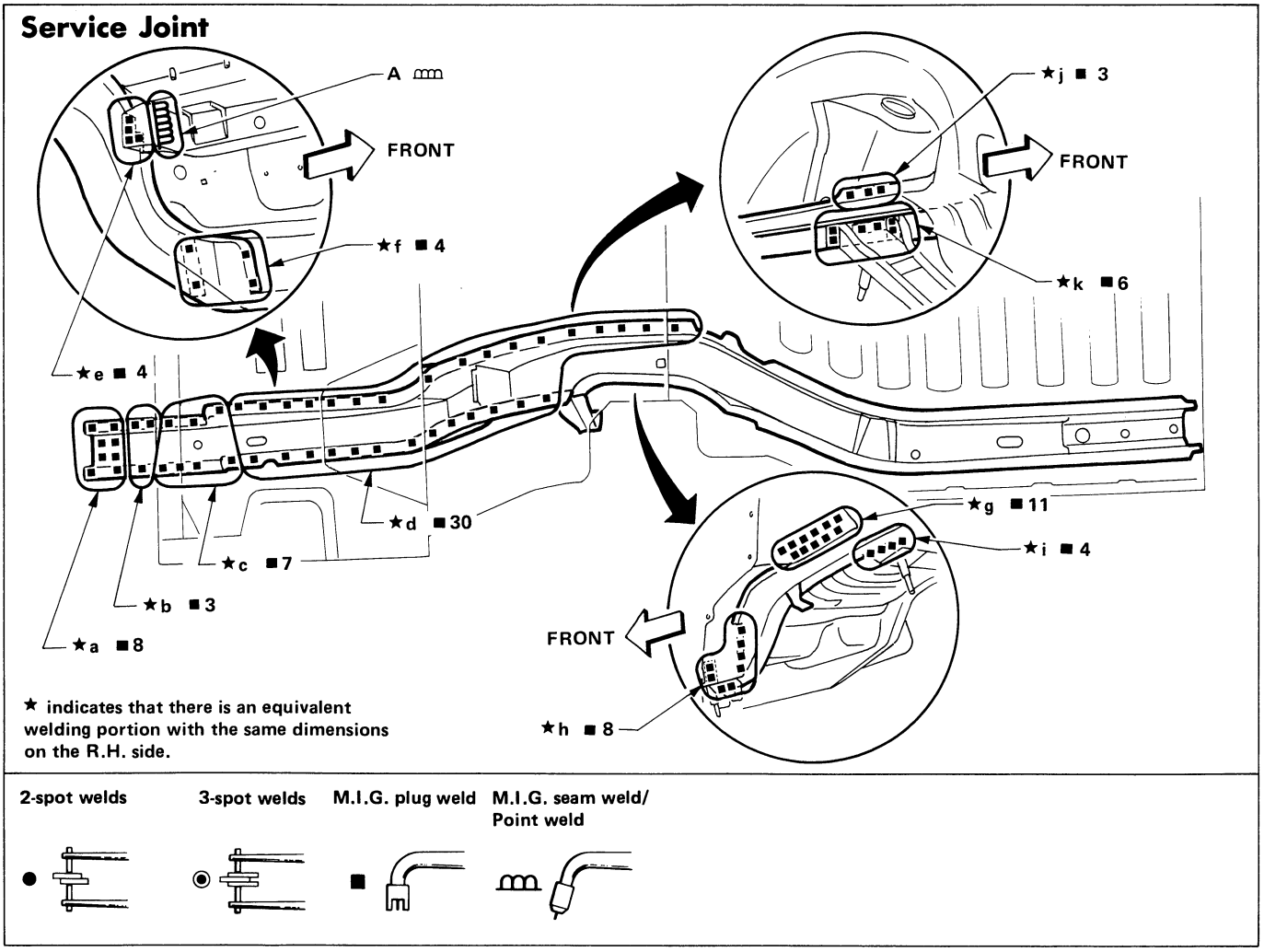


- After welding, spray in an anti-corrosive agent from rear opening of rear side member.



REAR SIDE MEMBER

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

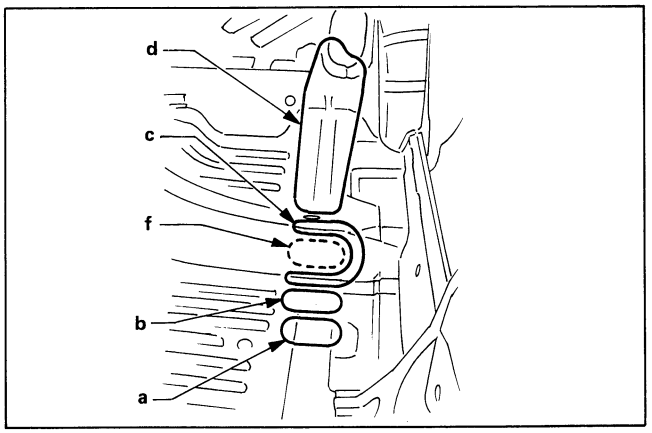


Portions to be welded

A. Fuel tank mounting member
a. Center side member rear
Center side member rear & front floor
b. Front floor & rear floor front & rear floor front extension
c. Rear floor front extension
d. Rear floor front
e. Fuel tank mounting member
f. Rear floor front extension
g. Inner rear wheelhouse
h. Rear side member outrigger
i. Rear crossmember
j. Inner rear wheelhouse & rear floor front
k. Rear crossmember

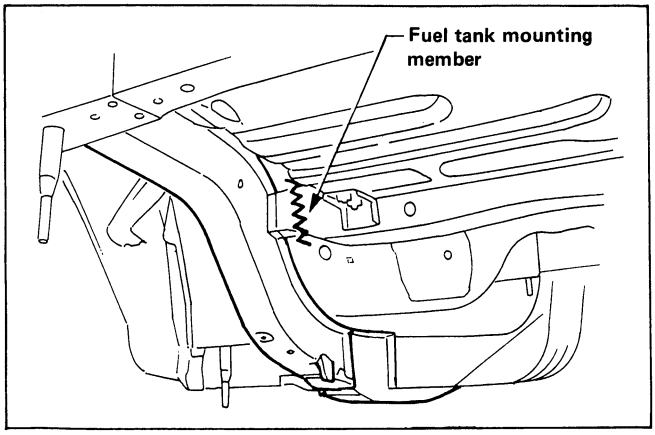
REMOVAL NOTES

- Cutting portions welded to the floor panel from the upper side is easier. Cut portions (a), (b), (c) and (d) first to facilitate removal. Use a drill or spot cutter with a diameter of 7 to 8 mm. Drilled holes will be used to M.I.G. plug welding when installing service part.

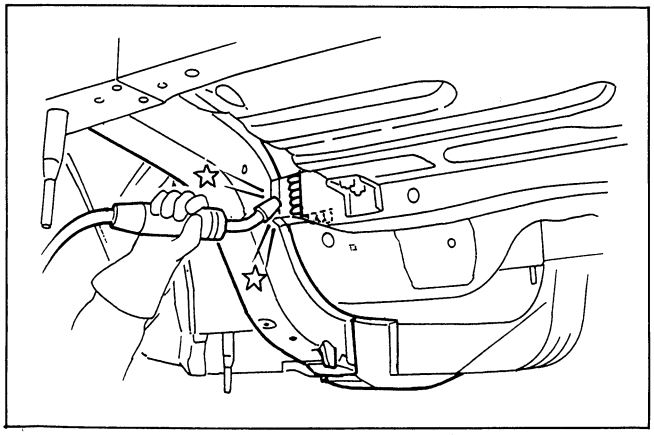


REAR SIDE MEMBER

- Cut off fuel tank mounting member portion as shown in the figure to facilitate removal.

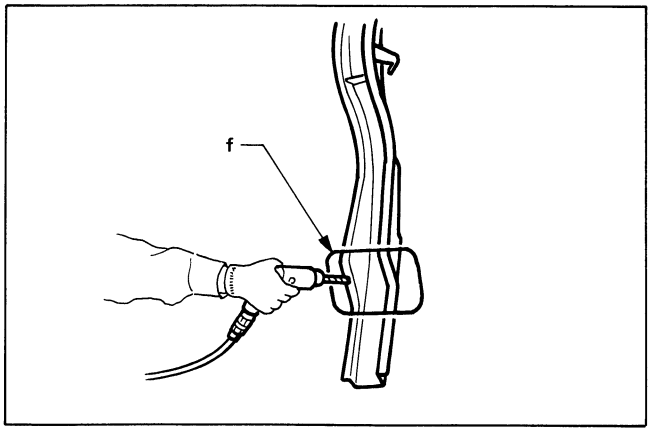


- M.I.G. seam weld cut portion of fuel tank mounting member. Then M.I.G. plug weld.

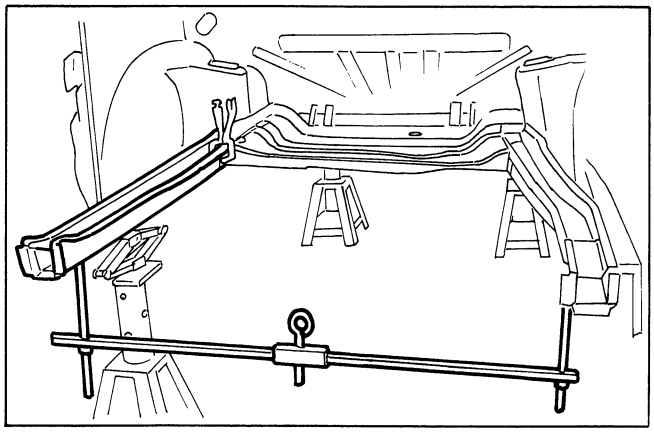


INSTALLATION NOTES

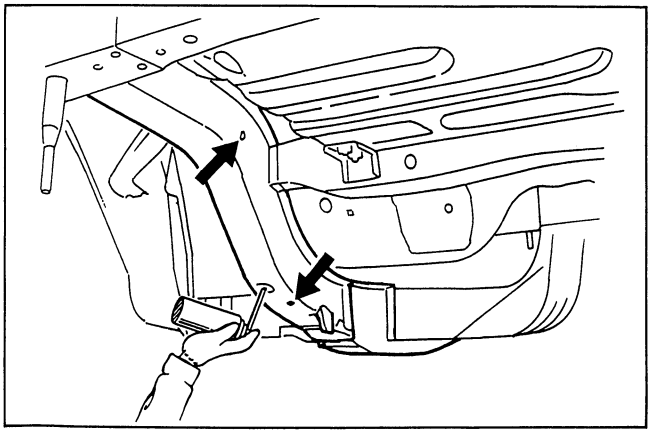
- Drill M.I.G. plug weld holes in service part portion (f).

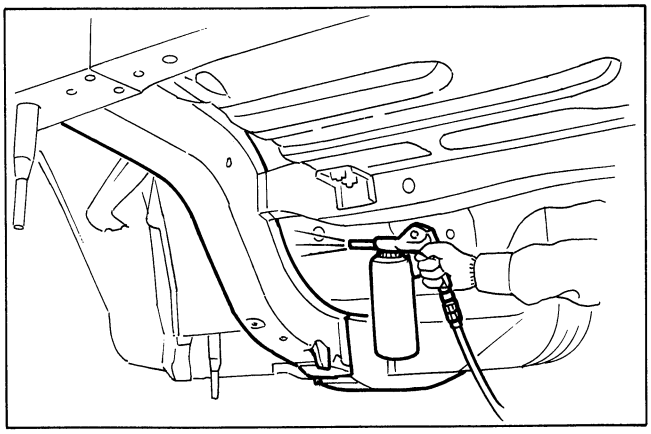


- Adjust position of service part according to "BODY ALIGNMENT" drawing. Then support it in place with a jack or port power and a clamp.



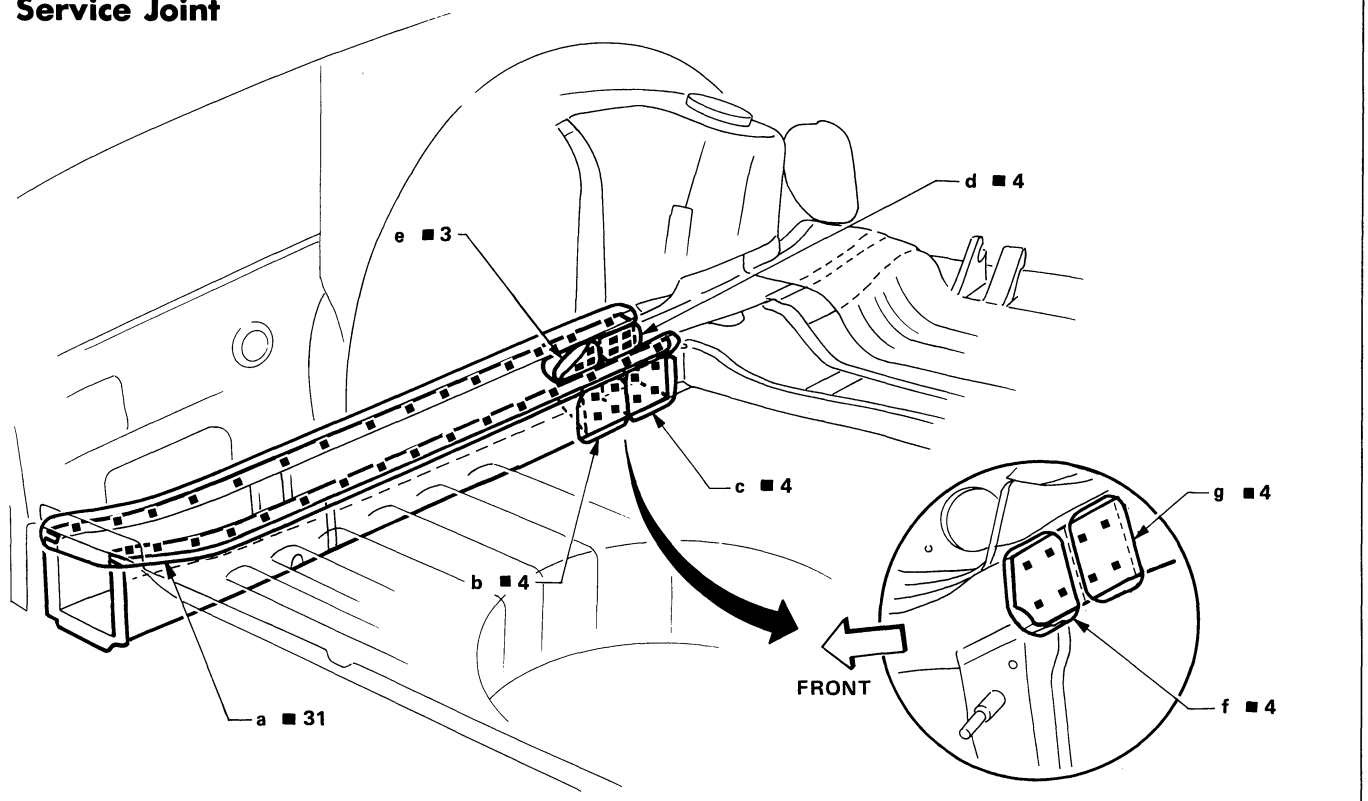
- Apply an anti-corrosive wax inside of rear side members and undercoating to underside of floor.





REAR SIDE MEMBER EXTENSION

Service Joint

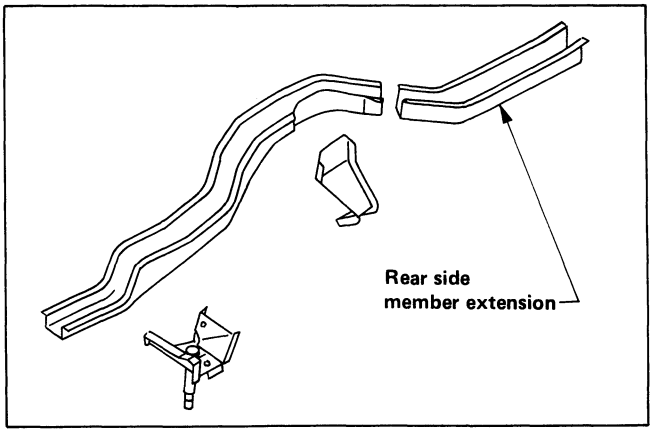


2-spot welds	3-spot welds	M.I.G. plug weld	M.I.G. seam weld/ Point weld
●	◉	■	

Portions to be welded

a. Rear floor rear
b. Rear side member reinforcement
c. Rear side member
d. Rear side member
e. Rear side member reinforcement
f. Rear side member
g. Rear side member reinforcement

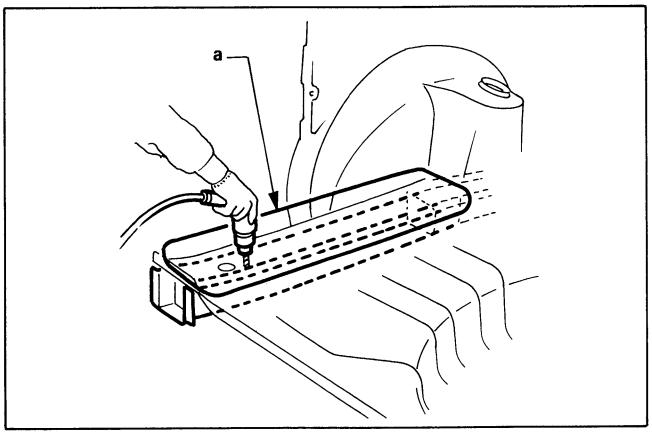
- Rear side member service parts are available as an assembly and three single parts. This section gives replacement procedures for rear side member extension.



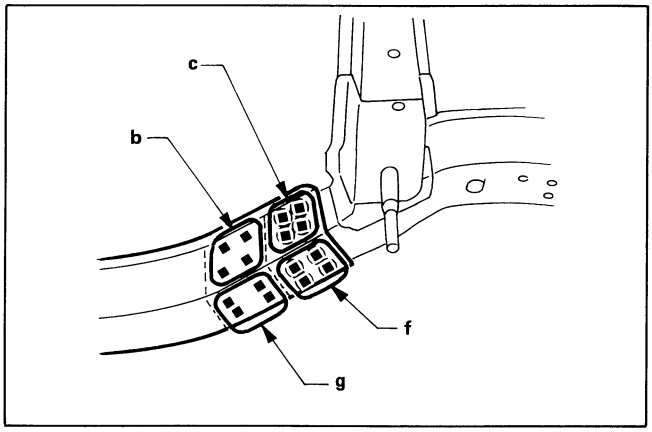
REAR SIDE MEMBER EXTENSION

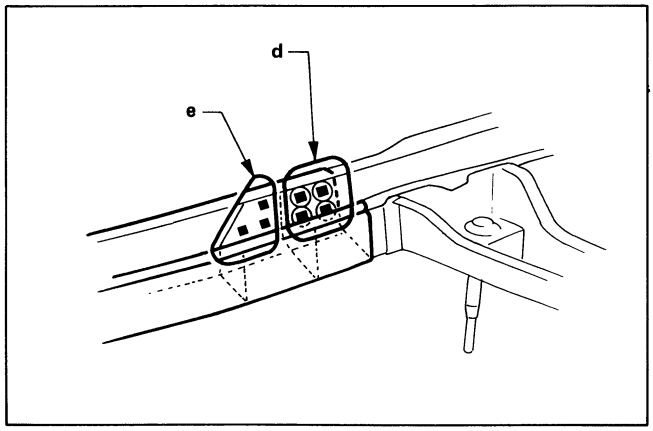
REMOVAL NOTES

- Spot cut portion (a) from rear floor rear side.



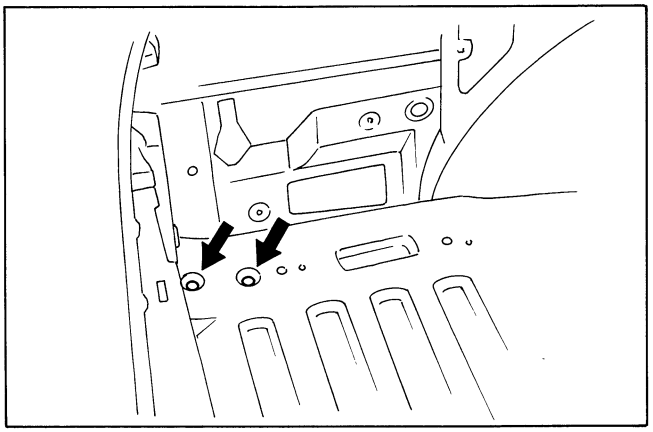
- Spot cut portions (b), (c), (d), (e), (f) and (g) from the under side.



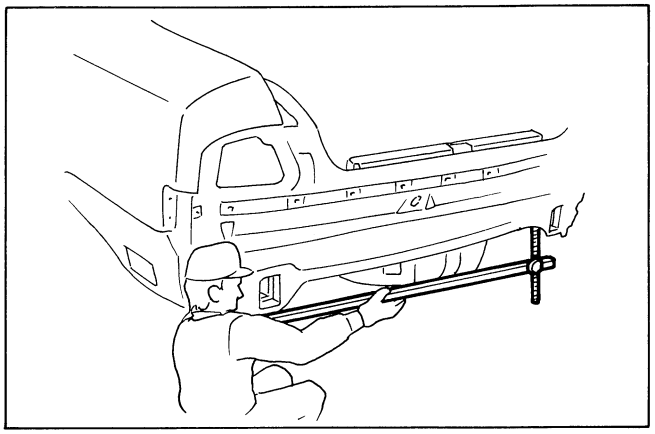


INSTALLATION NOTES

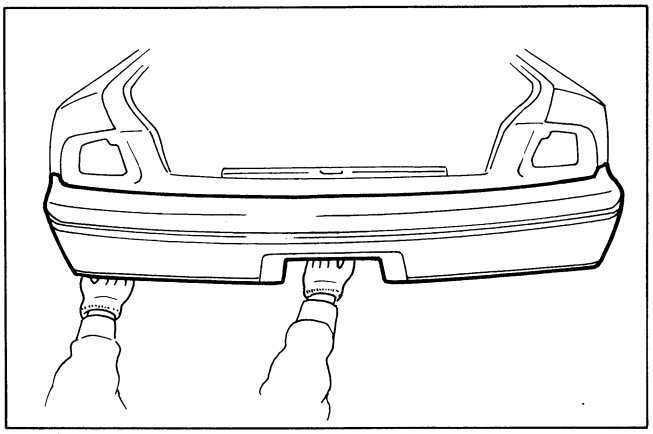
- Align holes to rear side member before installing service panel.



- Measure dimensions and properly position service part according to "BODY ALIGNMENT" drawing.

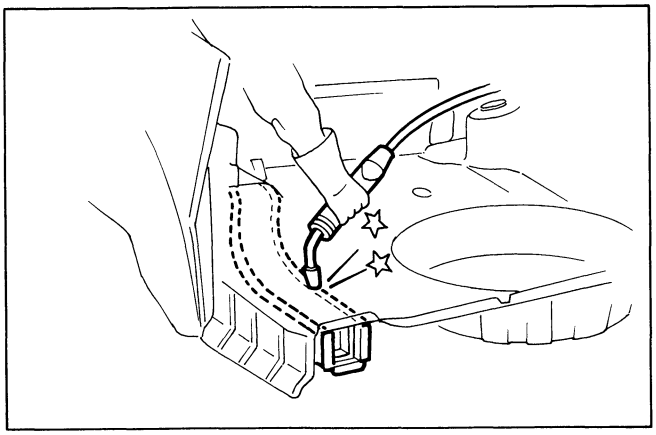


- Install rear bumper and check grades and parallelism.

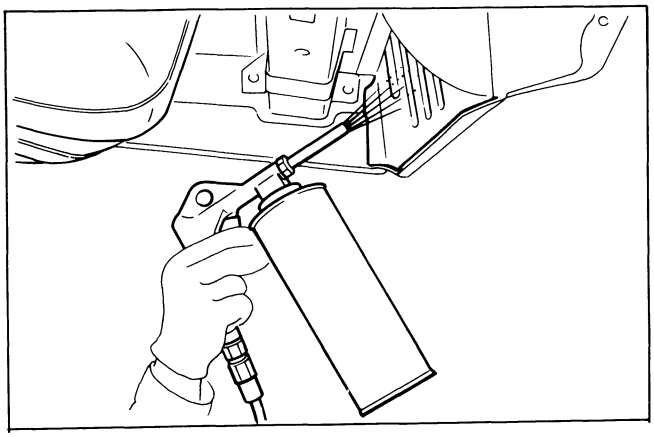


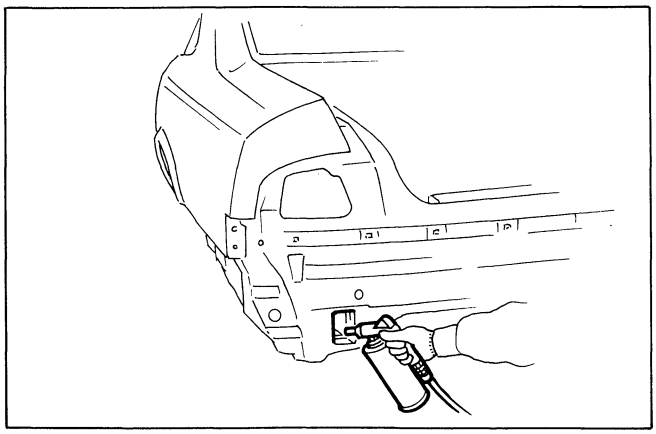
REAR SIDE MEMBER EXTENSION

- M.I.G. plug weld portions (a), (b), (c), (d), (e), (f) and (g).

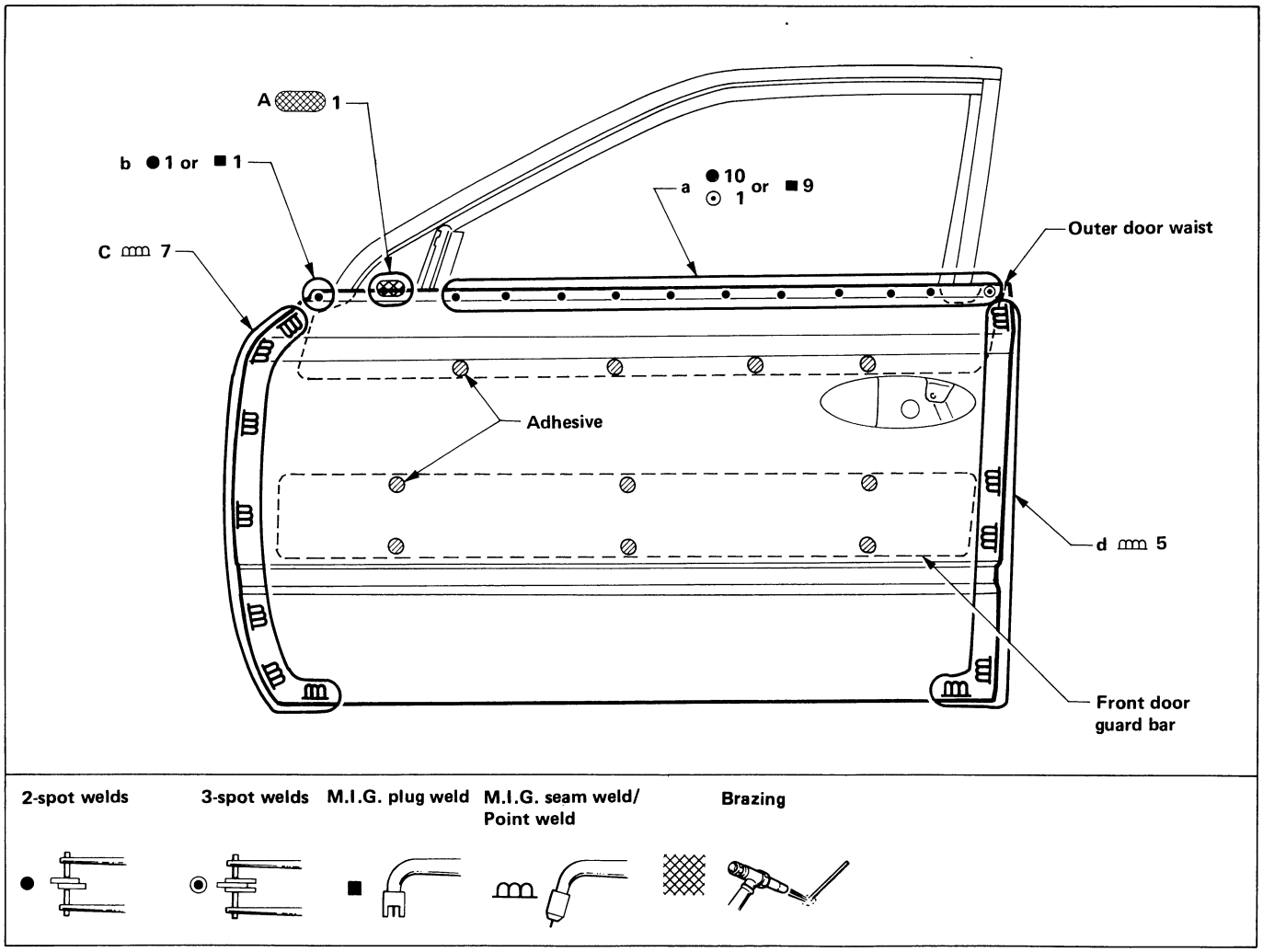


- Treat welded part of under body with an anti-corrosive agent, and apply an undercoat to it. Then spray an anti-corrosive agent from rear opening of rear side member.





OUTER DOOR PANEL



Portions to be welded

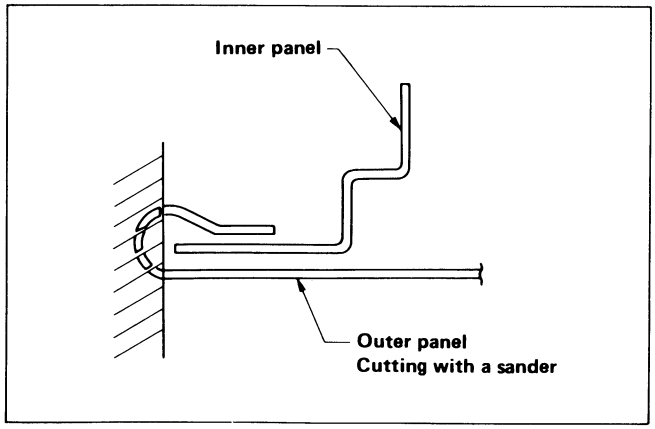
A. Corner piece

a. Outer front door waist reinforcement
Outer front door waist reinforcement & inner front door

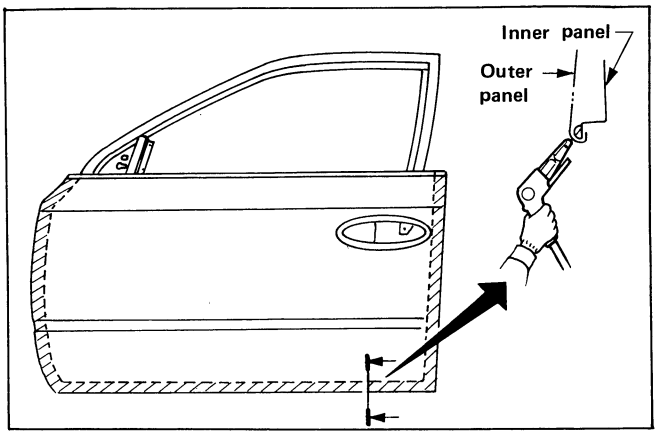
b. Inner front door reinforcement
c. Inner front door reinforcement
d. Inner front door

REMOVAL NOTES

- Cut door outer panel hem with a sander.



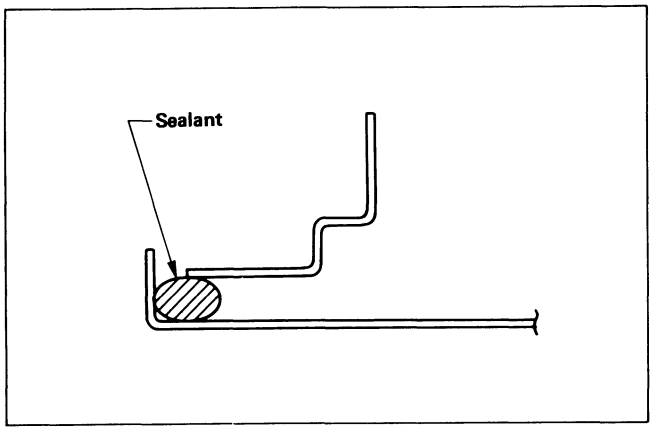
- After removing outer panel, dress rusty part with a belt sander and treat with an anti-corrosive agent.



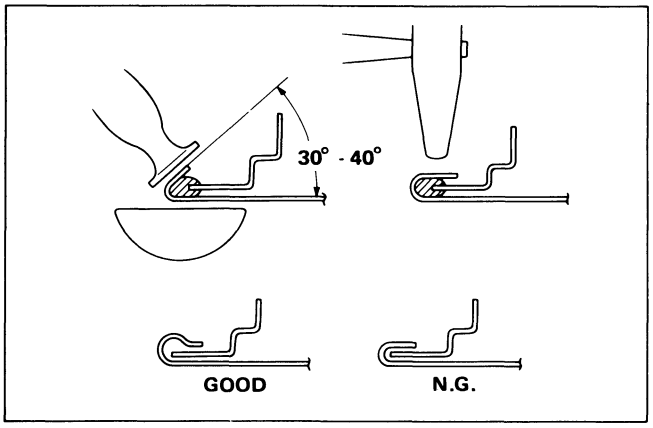
OUTER DOOR PANEL

INSTALLATION NOTES

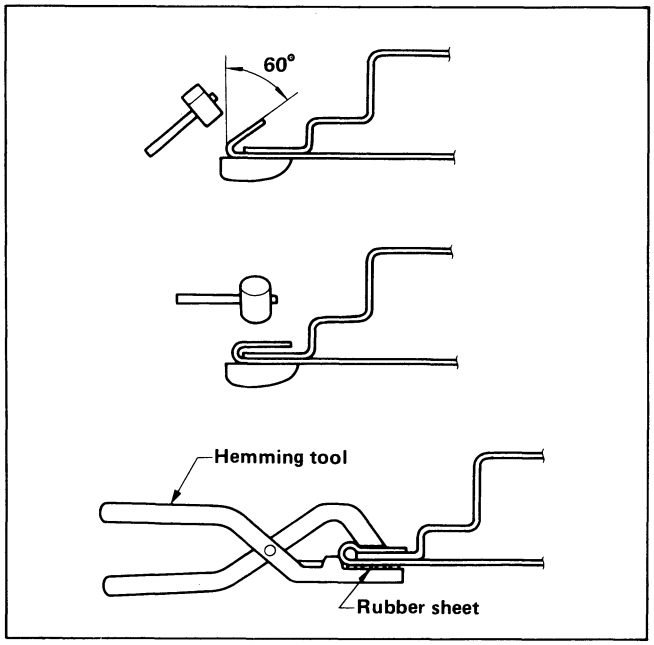
- Apply sealant to outer panel hem.



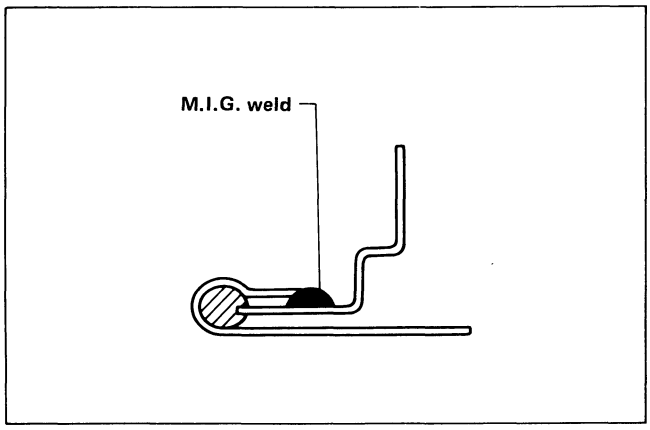
- Hemming work of outer panel should be carried out in two steps.
  Note: Bend panel edge round.



- When using hemming tool, partially bend panel with a hammer in advance and then use hemming tool.
  Be sure to protect outer panel with a rubber sheet.

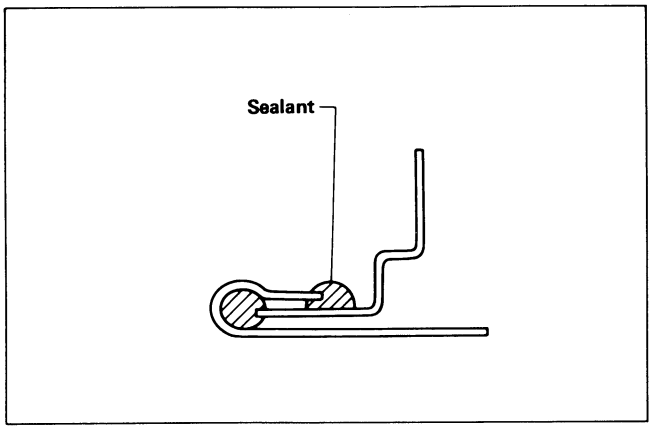


- M.I.G. weld edge after hemming outer panel.



OUTER DOOR PANEL

- Apply sealant to whole panel edge.



- Apply anti-corrosive wax to lower inside of door.