

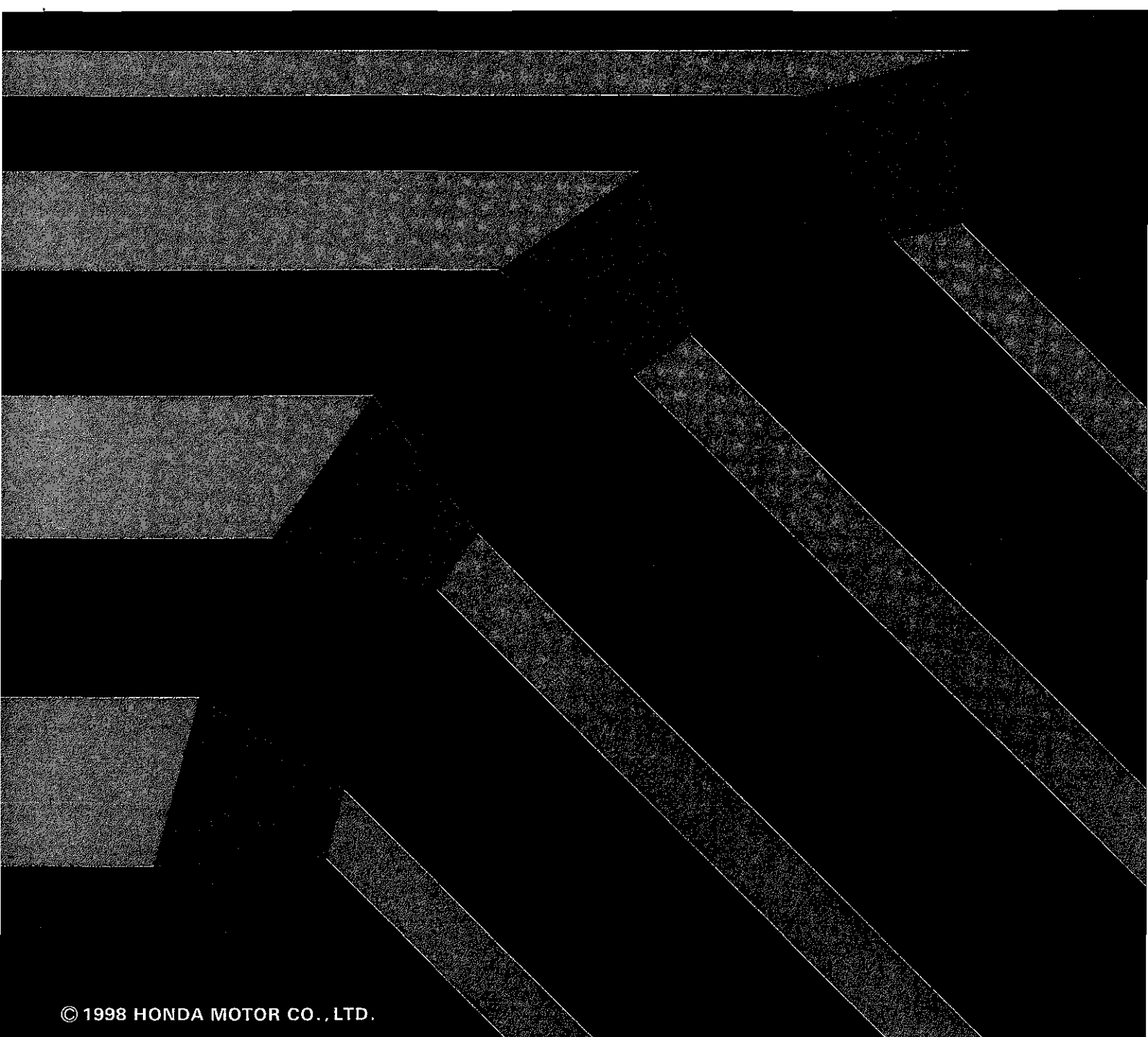
SHOP MANUAL

HONDA

Accord

Body Repair Manual

99



INTRODUCTION

How to Use This Manual

This manual covers the repair of a Accord that has been involved in an accident, and it describes the work related to the replacement of damaged body parts.

Please read through these instructions and familiarize yourself with them before actually using this manual.

NOTE: Refer to the Accord Shop Manual, P/N 62S1A00, for specifications, wire harness locations, safety stand support points, etc.

Special Information



Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause **PERSONAL INJURY**, or could damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possible hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, must satisfy himself thoroughly that neither personal safety or vehicle safety will be jeopardized.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

Service Precautions

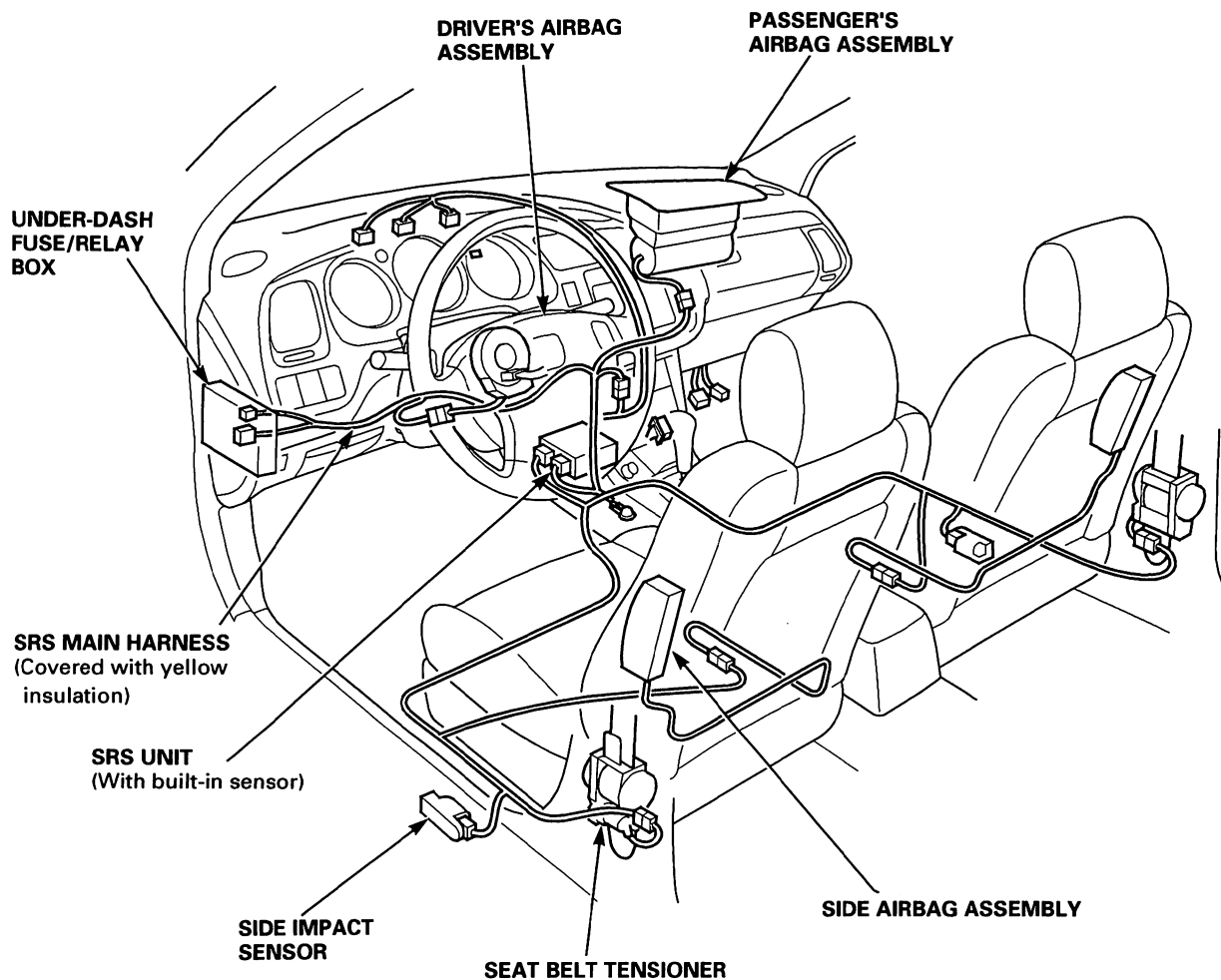
Supplemental Restraint System (SRS)

The Accord SRS includes a driver's airbag located in the steering wheel hub, and a passenger's airbag located in the dashboard above the glove box, and some types include seat belt tensioners located in the front seat belt retractors, and some types include side airbags located in the front seat-backs. The SRS unit is not part of the airbag assembly, has built-in sensors, and side impact sensors.

NOTE: The following precautions should be observed when performing sheet metal work, pain work, and repair work around the locations of the SRS components.

- ① The SRS unit (including safing sensor and impact sensor) is located under the dashboard, and impact sensor is located insid sill. Avoid any strong impact with a hammer or other tools when repairing the front side frame, the lower part of the dashboard and the side sill. Do not apply heat to these areas with a torch, etc.
- ② All SRS electrical wiring harnesses are located under the lower part of the dashboard below the dashboard panel. (All SRS electrical wiring harnesses are covered with yellow insulation.) Care should be taken not to damage the harness when repairing this area.
- ③ Do not apply heat of more than 100°C (212°F) when drying painted surfaces anywhere around the locations of SRS components.
- ④ If strong impact or high temperature needs to be applied to the areas around the locations of SRS components, remove the components before performing the repair work.
- ⑤ If any of the SRS related components are damaged or deformed, be sure to replace them.

NOTE: Refer to the Restraints section of the Shop Manual for removal and replacement of SRS related components.



General Safety Precautions

Before beginning work:

- Disconnect the battery to reduce the possibility of fire caused by electrical shorts.
- Check for fuel leaks and repair as necessary.
- Remove the fuel tank and/or fuel lines if welding equipment is to be used near the fuel system.
- Before welding, sanding or cutting, protect carpets and seats with fire-proof covers.

Use standard safety equipment when spraying paint, welding, cutting, sanding, or grinding. Standard safety equipment includes:

Respirator and filter masks--Designed to filter out toxic fumes, mist, dust or other airborne particles. Use a respirator or filter mask designed to protect you from the hazards of the particular job; some respirators, for example, are designed to filter out only dust and airborne particles, not toxic fumes.

Safety goggles or glasses--Designed to protect your eyes from projectiles, dust particles, or splashing liquid.

Gloves--Rubber gloves protect against corrosive chemicals. Welding gloves protect against burns and abrasions caused by welding, sanding, or grinding.

Safety shoes--Non-slip soles protect against slipping. Metal toe inserts protect against falling objects.

Ear plugs--Protect eardrums from harmful noise levels.

During work:

- Do not smoke while working near the fuel system.
- Deposit gas or solvent-soaked shop towels in an approved container.
- Always attach a safety cable when using a hydraulic ram or a frame straightening table; do not stand in direct line with the chains used on such equipment.
- Follow standard safety practices when using toxic or flammable liquids.

Body Repair

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Preparation of Work

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Preparation of Work

Description

Most monocoque bodies are composed as a single unit by welding together pressed parts made of steel plates which come in a variety of different shapes and sizes. Each part is responsible for displaying a certain strength and durability in order that it may play its role in meeting the functions of the body as a whole.

Damage to the exterior of the body can be inspected visually, but where there has been an external impact, it is necessary to inspect the extent of the damage. In some cases, the deformation may have spread beyond the actual areas which were in the collision so the deformation must be inspected closely.

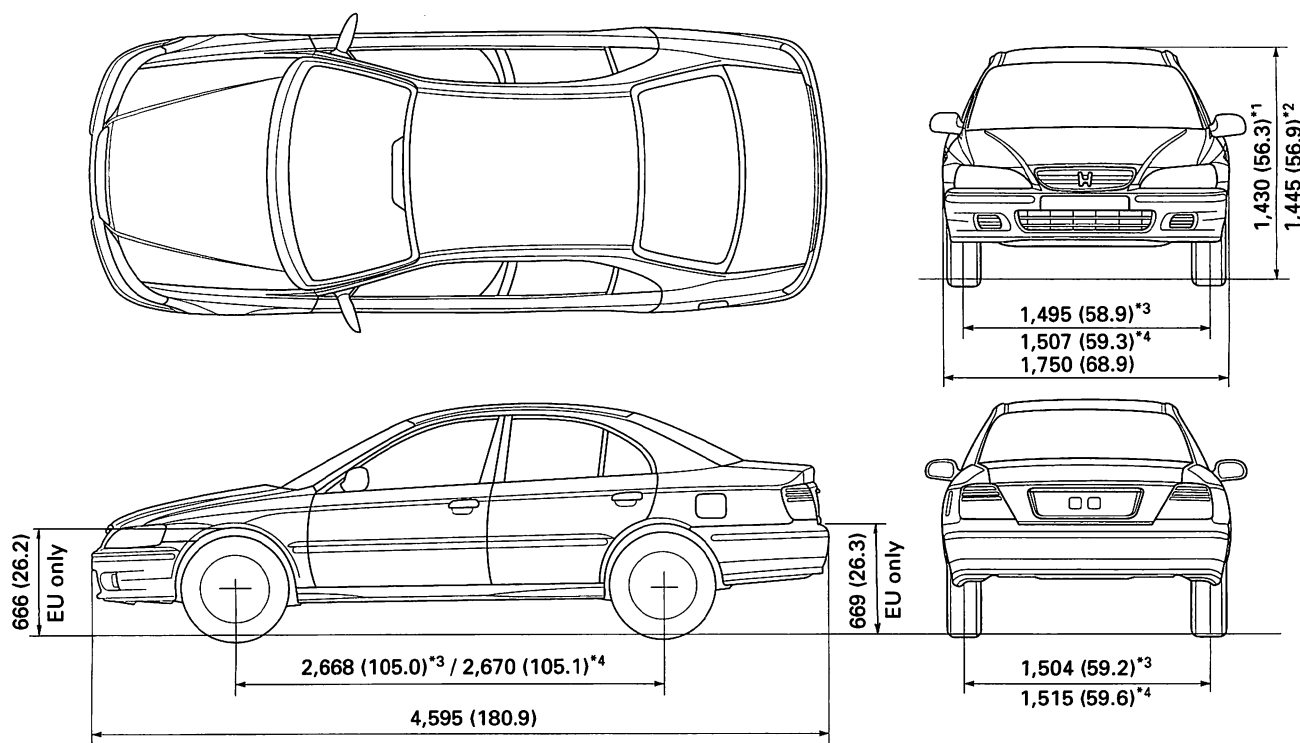
*1: Except KY model

*2: KY model

*3: Except Type R

*4: Type R

Unit: mm (in.)



Front wheel alignment:

	Other engine types	H22A7 engine types only
Camber	0°00'±1° (*0°10'±1°)	-0°15'±1°
Caster	2°50'±1° (*2°45'±1°)	3°00'±1°
Total toe	0±2 (0±0.08)	←
Wheel turning angle	in	39°10'±2° (*39°27'±2°)
	out (Reference)	36°6'±2°

*: KY model

Rear wheel alignment:

	Other engine types	H22A7 engine types only
Camber	-1°00'±30' (*-0°50'±30')	-1°15'±30'
Total toe	IN2±2 (0.08±0.08)	←

*: KY model

Checkpoints

Accurate Inspection of Damaged Parts (Visual)

Seat Belts

Replace the seat belts if:

- The airbags were deployed.
- The belt material is cut, punctured, burned, or in any way damaged.
- The buckle or retractor does not work properly.
- They were worn at the time of a collision (check for damage at the seat belt anchor points.)
- Their condition is questionable.

Front Section:

- Is there any bending, splitting, denting or other damage to the suspension and its related parts?
- Is there any deformation of the front bulkhead or radiator core? Have any of the connected sections come apart?
- Are there any creases or distortion in the front wheelhouse or side frame? Have any of the connected sections come apart?
- Is there any bending or twisting of the whole front area?
- Is there any deformation like creases, bulges, or dents in the front pillar, dashboard, floor, or other areas?
- Is there any vertical twisting or misaligned clearance in the door?
- Is the windshield seal broken?
- Is there any deformation in the vicinity of the top part of the roof panel's center pillar?
- Is there any damage inside the vehicle (is there any twisting of the dashboard, or anything irregular with the clearances or mounting areas) ?
- Is there any damage to the steering wheel? Is there any deformation in the column and the column-mounted parts?
- Is there any oil or water leakage and damage to the engine, transmission, or brakes?
- Is there any irregular noise in the gear changing operation, engine, and transmission rotation?
- Are there any traces of contact between the engine block and the dashboard lower panel?
- Is there any damage to brake lines, fuel lines, or wire harnesses?

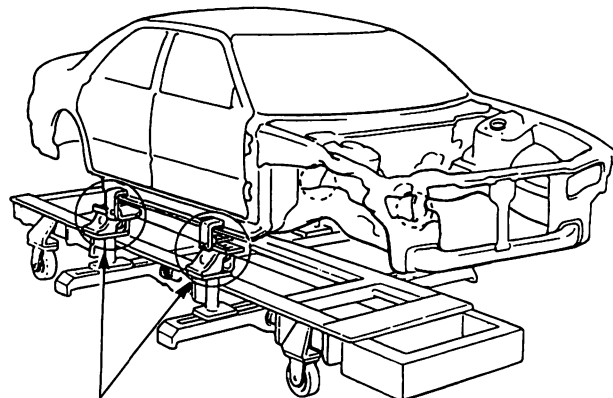
Rear Section:

- Is there any twisting, bulging or denting of the rear floor and rear bulkhead? Have any of the connected sections come apart?
- Is there any irregular bulging or denting in the rear fender?
- Is there any distortion in the rear inner panel? Is there any bending and denting in the vicinity of the rear pillar?
- Is there any distortion or creasing in the rear wheelhouse and arch sections? Have any of the connected sections come apart?
- Is there anything irregular in the rear glass seal clearance?
- Is there any twisting or misalignment of the clearance of the trunk lid opening section?
- Is there any bending, splitting, denting or other damage to the suspension and its related parts?
- Is there any deformation of the rear floor, rear floor cross member and damper base? Have any of the connected sections come apart?

Preparation of Work

Correction of the Damaged Area

Connect the frame corrector to the vehicle body.
The side sill is flangeless to allow reshaping by pulling it out.
Use the horizontal pinch welds for anchoring the vehicle.



UNDERBODY CLAMPS

Underbody Clamp:
V.L. CHURCHILL Ltd.
PO BOX 3, London Road,
Daventry, Northants,
NN114NF
TEL + 44 (01327) 704461
FAX + 44 (01327) 71625

Underbody Clamp Specifications:

UNDERBODY CLAMP (Special tool)	Clamp Number		
<p>ATTACHMENT</p>	AT-63		
	<ul style="list-style-type: none"> ① Clamp body ② Side clamp ③ Under clamp 		
Standard type:	AT-63-AL	<p>Frame correctors</p> <ul style="list-style-type: none"> ● Dataliner ● Car-o-liner ● Celette ● Flex-o-liner ● etc. 	
C — type:	AT-63-C	<ul style="list-style-type: none"> ● Korek ● Auto pole ● etc. 	
U — type:	AT-63-U	<ul style="list-style-type: none"> ● U-Base ● Pro-Tec ● etc. 	

1. Apply load to the damaged section, and pull on it until the section is almost restored to its original shape.

2. Check that the parts of the body are more or less restored to their original shapes.

NOTE: Check the original position using the body dimensional drawings (see section 6) and the positioning jigs (see page 1-7).

3. Remove the parts that require replacement.

4. Decide whether to replace all the affected parts or whether to cut the weld joined parts and replace them.

5. Cut off and separate the damaged parts.

NOTE: When cutting the parts off, take special care that you do not damage adjacent parts on the vehicle.

Setting Conditions for Replacement Parts Joint Sections:

- Make sure that you can perform straightening work after welding.
- Make sure that the locations will not be susceptible to distortion caused by other parts.
- Make sure that there are few removable parts and that the location allows for safe welding.
- Make sure that the joints are short, and that paint repair can be performed easily.
- Make sure the locations are such that the joints can be finished in a way that will not affect the outward appearance.
- Make sure that the locations do not hinder the removing and attaching of parts.

NOTE: Keep all of these conditions in mind, and after determining the joint locations, cut the joints for an overlap of 20 ~ 30 mm (0.8 ~ 1.2 in.)

6. Mold the related parts.

7. Set and tack weld the replacement parts.

NOTE: Temporarily mount the related parts, and check for clearance and level differences.

8. Weld the replacement parts.

Use proper welding methods (see section 2).

NOTE: Use of the positioning jig is recommended.

CAUTION: Protect body parts with the heat-resistant protective cover to prevent damage when welding.

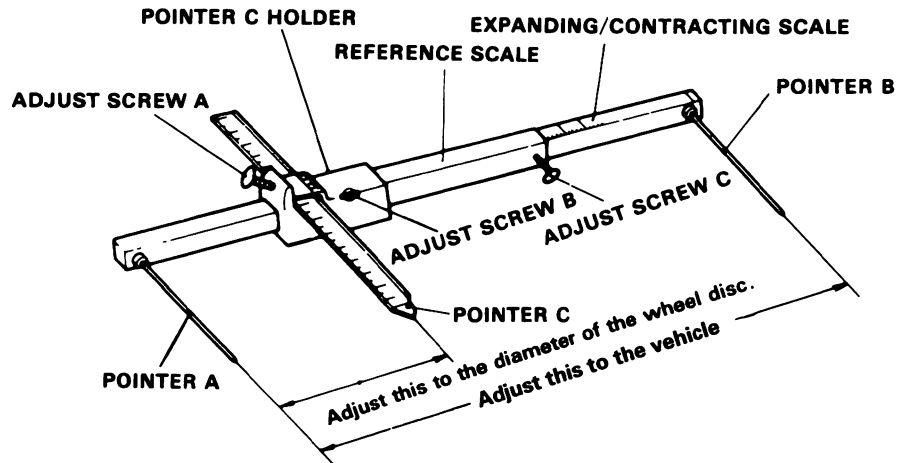
The paint film designed to prevent corrosion will be destroyed around edges of the areas that were welded. Therefore, these areas and other areas not clearly visible must be repainted. Refer to rust prevention in section 7 of this manual.

Preparation of Work

Measurement (Excluding Small Damage)

Whenever possible, make judgements and conclusions based on measurement. Measure the wheel alignment (see page 1-2) to prevent uneven tire wear or incorrect steering wheel alignment.

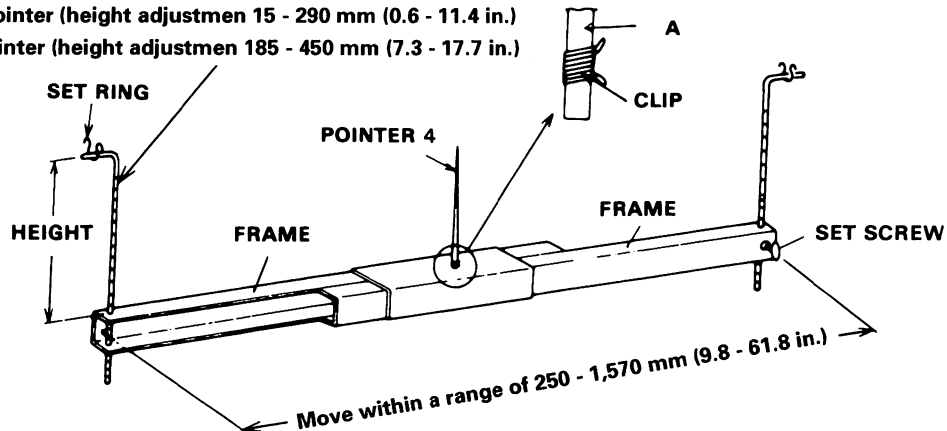
If there are any deviations, use a tram tracking gauge and measure parts of the body.



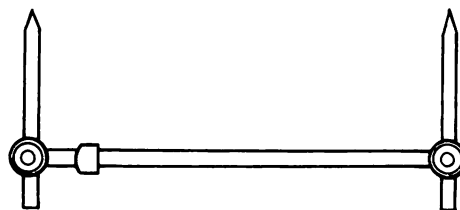
If there is any twisting to the body, measure by using a frame centering gauge.

Pointer B - short pointer (height adjustmen 15 - 290 mm (0.6 - 11.4 in.)

- long pointer (height adjustmen 185 - 450 mm (7.3 - 17.7 in.)

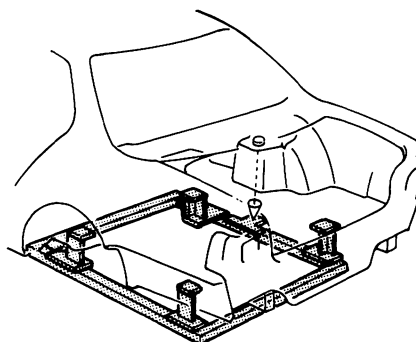
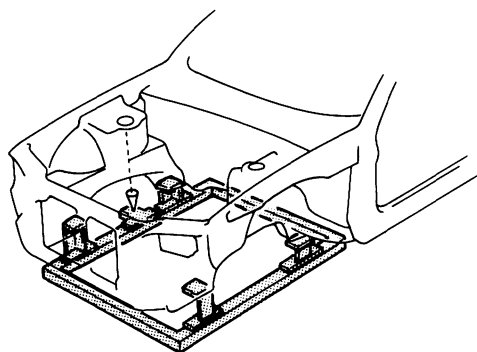


To measure body dimensions, use a universal tram gauge.



Positioning Jigs

No.	Jig Number	Description	Page Reference
①	HJ-44	Under frame positioning jig set	
① - 1	HJF-01	Frame	4-11, 17, 40
① - 2	HJ-44-F	Front jig brackets	4-11, 17
① - 3	HJ-44-R	Rear jig brackets	4-40

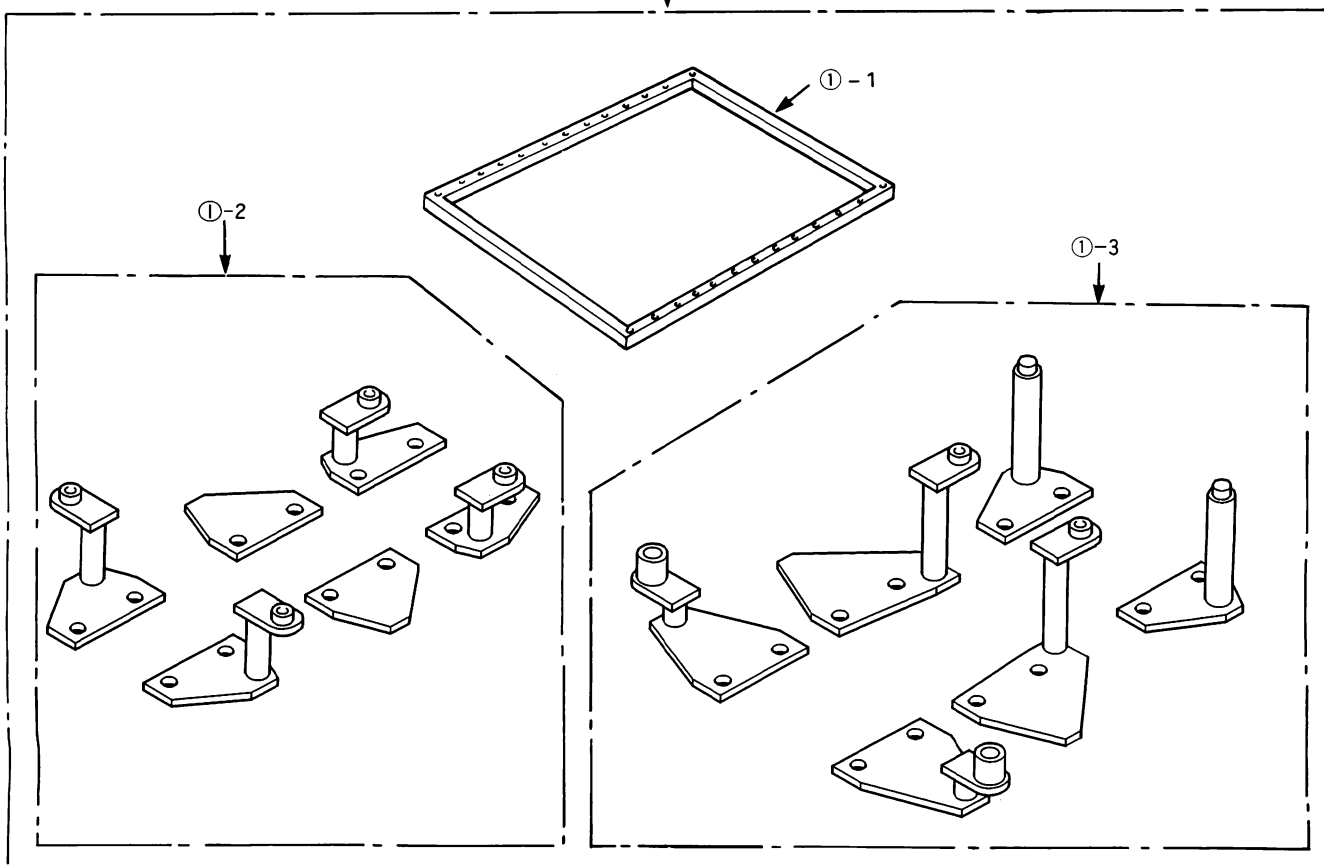


Positioning Jig:

V.L. CHURCHILL Ltd.

PO VOX 3, London Road, Daventry, Northants, NN114NF

TEL + 44 (01327) 704461 FAX + 44 (01327) 71625



Welding Methods/Repair Tools

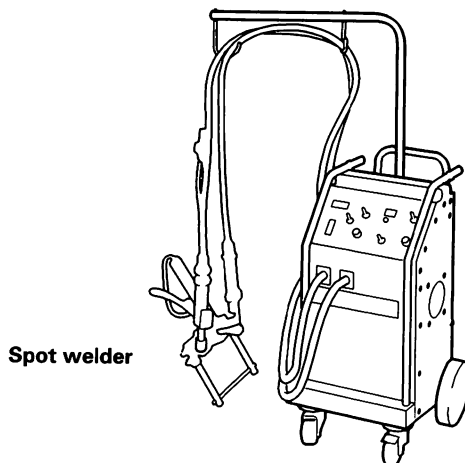
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Welding Methods/Repair Tools

Spot Welding

Spot welding is also known as resistance spot welding, and it is the most suitable method of welding for vehicle. It has three main features: the welding can be performed instantaneously, it has a minimal effect on the source material, and it helps keep distortion to the absolute minimum. However, please remember to remove all paint and other impurities from the surface of the material you intend to weld for reliable results.

Welders:



Spot welder

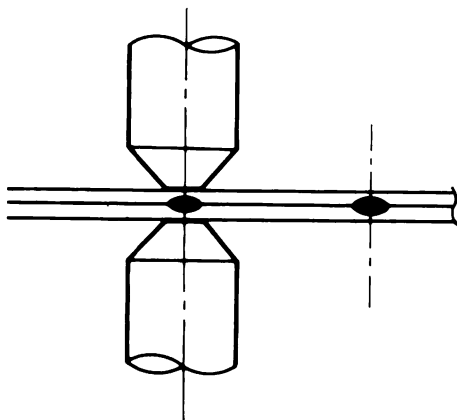
Timer/Transformer

Welding Conditions:

When performing spot welding, make sure that you conform to the following conditions: use the correct current, conductivity time, welding pressure, holding time, and shutdown time recommended for the spot welder.

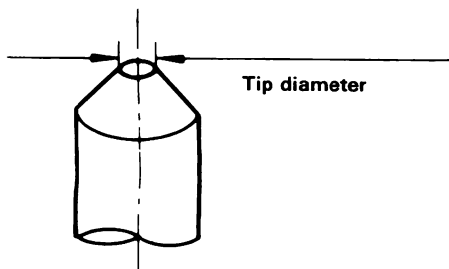
Please bear in mind the following points when welding:

- Plate thickness and minimum welding pitch

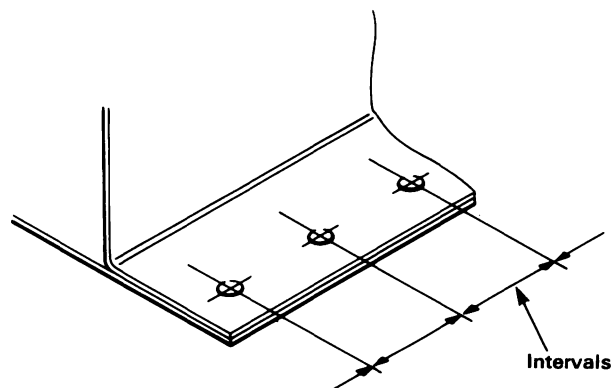


NOTE: If the welding intervals are too short, branching may occur, making it impossible to maintain the desired soldering state.

Plate thickness and tip diameter



Tip diameter



Intervals

Unit: mm (in.)

Plate thickness	0.6 (0.02)	0.9 (0.04)	1.2 (0.05)	1.6 (0.06)
Minimum intervals	11 (0.43)	16 (0.63)	20 (0.79)	24 (0.94)

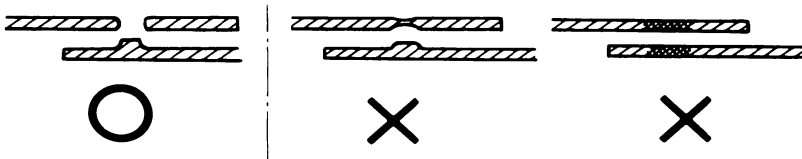
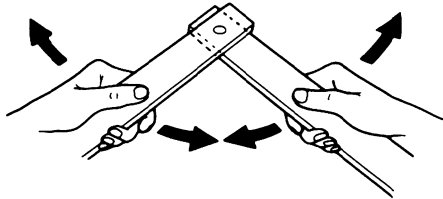
Unit: mm (in.)

Plate thickness	0.8 (0.03)	0.9 (0.04)	1.2 (0.05)	1.6 (0.06)
Tip diameter	4.5 (0.12)	5.0 (0.2)	5.5 (0.22)	6.0 (0.24)

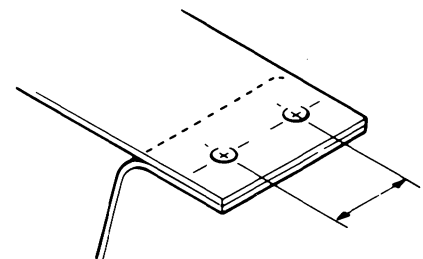
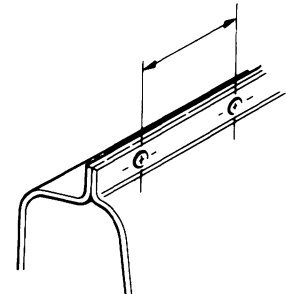
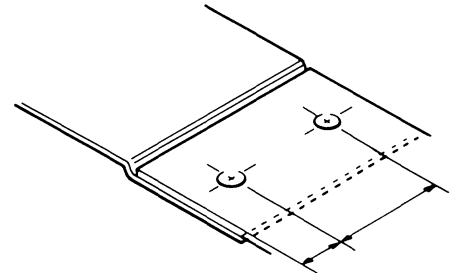
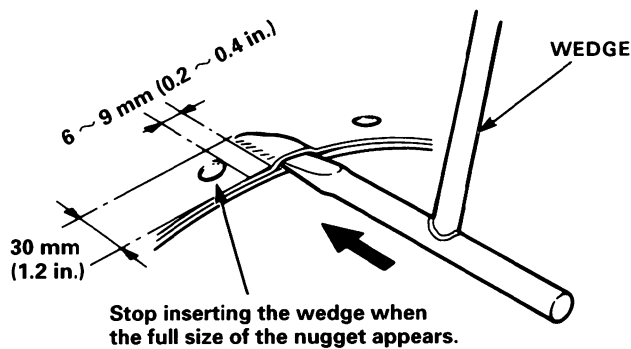
Welding Strength Test

Even if you perform the welding according to the proper conditions, the strength of the welded sections may fluctuate due to drops in the voltage and other factors. The quality of the welding cannot be evaluated unless the welded sections are destroyed. Provide yourself with a steel plate of the same thickness and conduct a destruction test.

- If holes appear in the steel plates, this means that the welding is of standard strength.



- Drive a wedge between two panels near the nugget. If the welded parts do not come apart and the diameter of the nugget is more than 3 mm (0.1 in.), the welding should be satisfactory.



NOTE:

It is difficult to perform spot welding in the following circumstances:

- When it is not possible to remove any rust or paint attached to the welding surfaces.
- When the tip of the spot welder cannot be inserted into the welding section.
- When the welding surfaces can be seen from the outside and welding will impair the exterior appearance.

In all these cases, the gas welding method should be employed. Moreover, if it is not possible to perform spot welding because of space restrictions, plug welding using on the arc welding method may be performed instead. For plug welding, the sections to be welded must be close together.

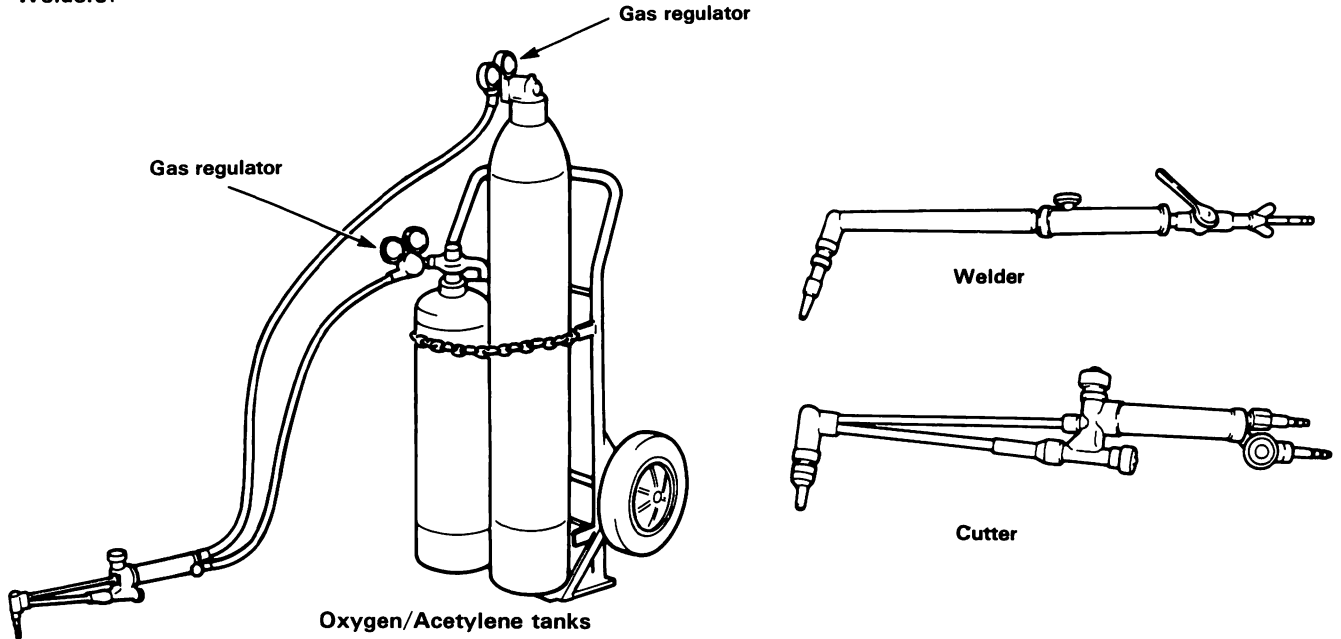
Welding Methods/Repair Tools

Gas Welding

Gas welding is indispensable for body repair because of the broad range of its applications to join the body panels, cut the materials that construct the body and apply heat to refrm panels.

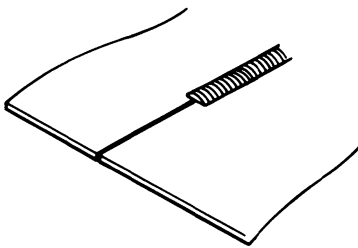
However, this method requires experience.

Welders:

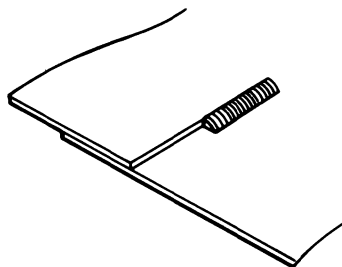


Welding Methods:

Butt welding



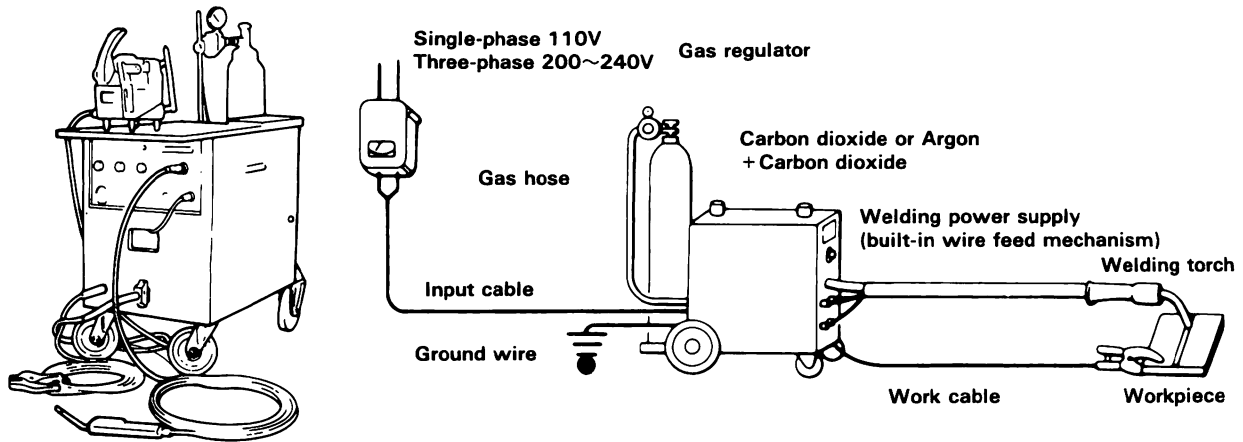
Fillet welding or soldering



Carbon Dioxide Arc Welder (MIG Arc Weld)

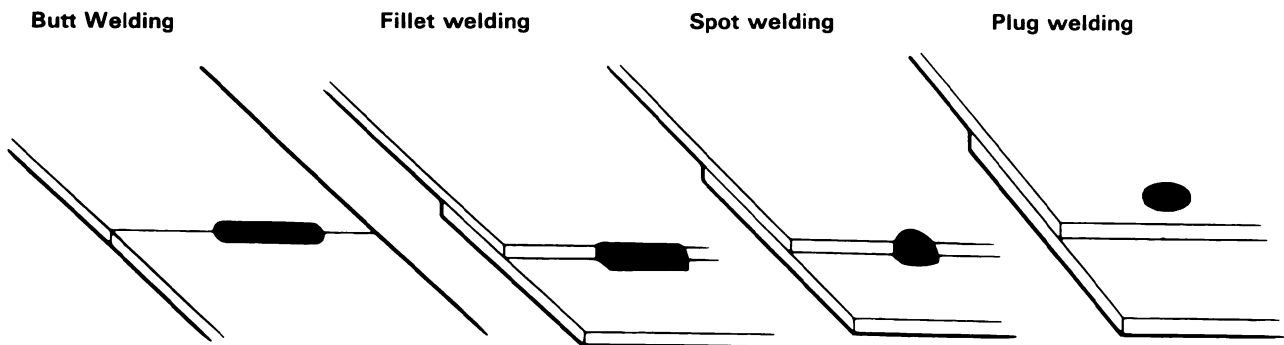
This welding process uses inexpensive carbon dioxide instead of expensive inert gases as a shielding means. Consumable metal electrodes are employed. It has a wide range of applications, including butt welding of a thin plate, fillet welding, plug welding, and MIG spot welding. In terms of the weld strength, it is also highly stable.

Welders:



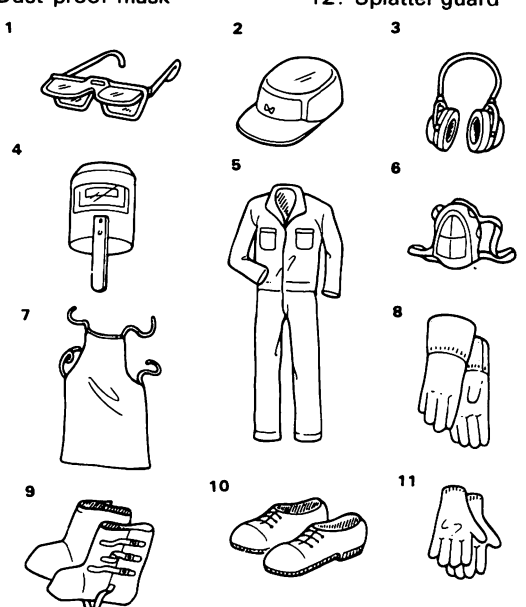
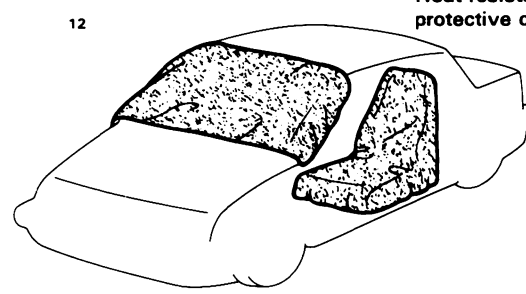


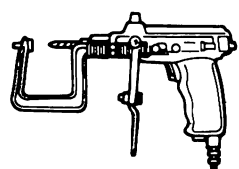
CAUTION: Disconnect the negative battery cable before arc welding.

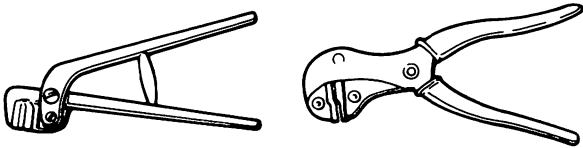
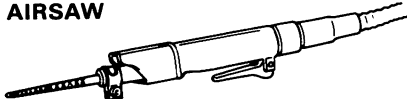

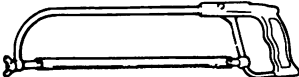
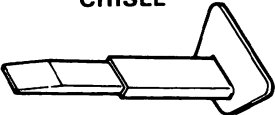
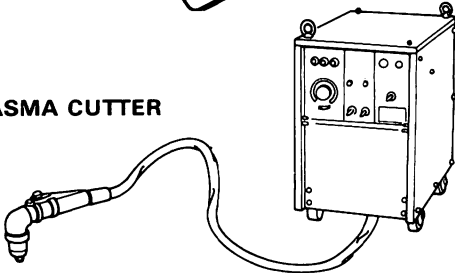
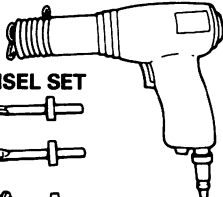
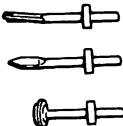


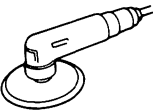
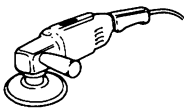
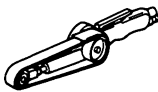
Welding Methods:



Welding Methods/Repair Tools

Examples of Repair Tools

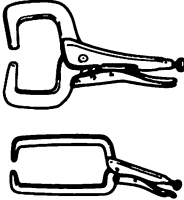
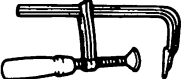

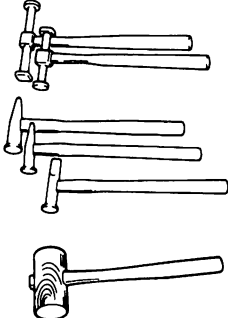



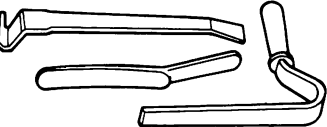
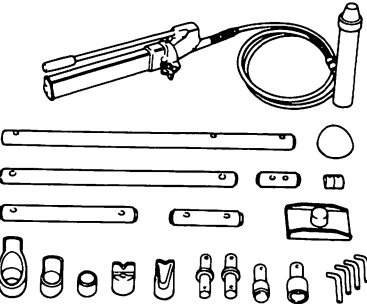
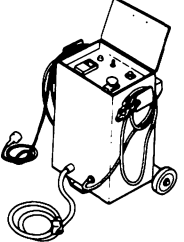
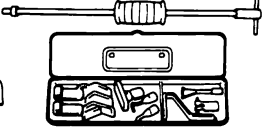
Item	Work	Tools, equipment used
Protective tools	Operator	<ol style="list-style-type: none"> 1. Protective goggles 2. Cap 3. Ear plug 4. Shield for eyes 5. Overalls with long sleeves 6. Dust-proof mask 7. Protective apron 8. Welding gloves 9. Foot protectors 10. Safety shoes 11. Work gloves 12. Splatter guard 
	Vehicle body	<p>12</p>  <p>Heat-resistant protective cover.</p>
Processing tools	Plug hole drilling	<p>DRILLING BLADE, DRILL, SPOT CUTTER</p>  <p>PUNCH</p>  <p>PRESSURE DRILL</p> 

Item	Work	Tools, equipment used
Flange tools	Edge preparation	
Cutting tools	Cutting	<div> <p>AIRSAW</p>  </div> <div> <p>AIR JIGSAW</p>  </div> <div> <p>HANDSAW</p>  </div> <div> <p>CHISEL</p>  </div> <div> <p>PLASMA CUTTER</p>  </div> <div> <p>AIR IMPACT CUTTER</p>  </div> <div> <p>CHISEL SET</p>  </div> <div> <p>HAND NIBBLER</p>  </div> <div>  </div>
Sanding tools	Cleaning	<div> <p>DISC SANDER</p> <p>Air type: </p> <p>Electric type: </p> </div> <div> <p>BELT SANDER</p>  </div>

(cont'd)

Welding Methods/Repair Tools

Examples of Repair Tools (cont'd)

Item	Work	Tools, equipment used
Fixing tools	Base metal fixing	<p>WISE-GRIPS</p>  <p>SCREW CLAMP</p>  <p>SQUILL VISES</p> 
Shaping tools	Skin panel shaping	<p>HAMMERS</p>  <p>DOLLIES</p>  <p>CHISEL</p>  <p>SNIPS/SHEARS</p>  <p>SPOONS</p> 
	Body and frame shaping	<p>BODY JACK</p>  <p>WELDER</p>  <p>SLIDE HAMMER</p> 

General Information

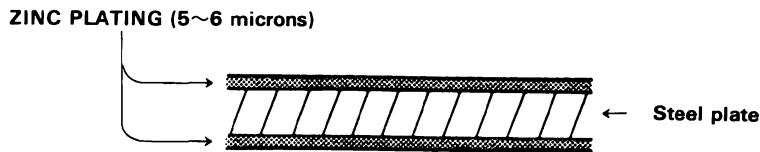
Zinc-plated Steel Plate Repair3-2

Door and Bumper Reinforcement Beams3-4

General Information

Zinc-plated Steel Plate Repair

The zinc-plated steel plate used in some panels of the Accord requires different repair techniques than ordinary steel plate. Refer to "Body Construction" (see page 4-2) for the location of the zinc-plated panels.



1. Before spot welding the zinc-plated steel plate, remove the paint from both sides of the flange to be welded. Apply sealer to the flange after welding.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

NOTE: Seal the sanded surfaces thoroughly to prevent rust.

2. The electric continuity property of zinc-plated steel plate is different from ordinary steel plate. When spot welding, increase the current by 10-20%, or increase the resistance welding time. Increase the number of weld spots by 10-20% also.

NOTE: The MIG welding procedures for zinc-plated steel plate are the same as for ordinary steel plate.

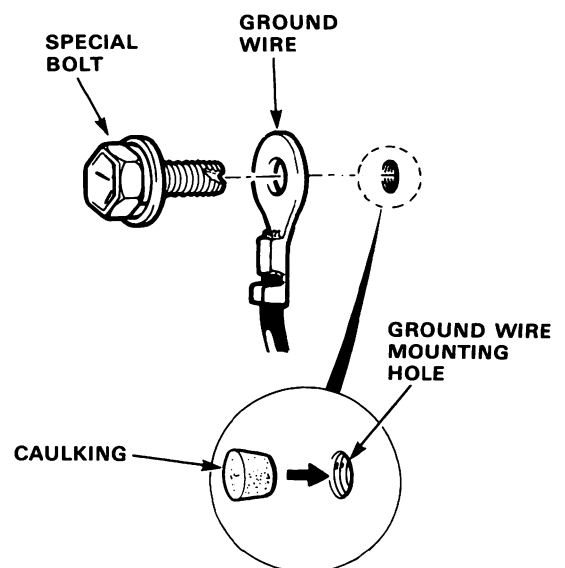
⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

3. Before applying putty or body filler to the zinc-plated steel plate, sand the zinc plating thoroughly to promote adhesion and to prevent blistering.

NOTE:

- Use only epoxy-based putties and fillers on zinc-plated steel plate.
- Follow the manufacturer's specification.

4. When performing paint work, put caulking in the ground wire mounting hole to keep the paint out.



Avoid puttying as much as possible when repairing a new vehicle. Use alternative methods if possible.

⚠ WARNING

- **Most paints contain substances that are harmful if inhaled or swallowed. Read the paint label before opening the container. Spray paint only in a well ventilated area.**
- **Cover spilled paint with sand, or wipe it up at once.**
- **Wear an approved respirator, gloves, eye protection and appropriate clothing when painting. Avoid contact with skin.**
- **If paint gets in your mouth or on your skin, rinse or wash thoroughly with water. If paint gets in your eyes, flush with water and get prompt medical attention.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.**

Operation	Tools/Materials	Procedure	Remarks
1. Prep the repair area.	Double-action sander, #80 sandpaper.	Sand the area with a double-action sander and #80 sandpaper. Clean with wax and grease remover.	
2. Apply putty. NOTE: Putty can be applied after priming as described in step 4.	Epoxy-based putty: Mix the putty and hardener according to the manufacturer's directions. Polyester resin putty. Body filler.	Apply in several thin coats if necessary. Try to avoid leaving pinholes in the putty. Follow the manufacturer's recommendations for preparation.	
3. Sand and clean the puttied area.	Double-action sander, orbital sander, hand sanding file, #80, #120, #240 sandpaper, wax and grease remover, shop towels.	Rough-sand the area with a double-action sander and #80 sandpaper, then sand with #120 sandpaper. Featheredge with #240 sandpaper. Clean with wax and grease remover.	
4. Coat with primer. NOTE: Apply to bare sheet metal and puttied area.	Epoxy-based primer and hardener, epoxy thinner: Mix and thin the primer according to the manufacturer's directions.	Apply 2–4 coats, allowing sufficient flash time between coats. Force dry at 140–158°F (60–70°C) for at least 30 minutes.	Spray to a thickness of 30–35 microns
5. Sand and clean the whole area.	Double-action sander, #300, #400 sandpaper, wax and grease remover, shop towels.	Sand the repair area by hand with #300, #400 sandpaper. Blow off with compressed air. Clean with wax and grease remover.	
6. Apply intermediate coat to the whole area to be repainted.	Polyester/urethane resin primer/surfacer or top-coat enamel: Mix and thin the primer according to the manufacturer's directions.	Apply 2–4 coats, allowing sufficient flash time between coats. Force dry at 140–158°F (60–70°C) for at least 30 minutes.	Spray to a thickness of 30–35 microns
7. Sand and clean the whole area to be repainted.	Hand sanding file, double-action sander, #400, #600 sandpaper, wax and grease remover, shop towels.	Sand the repair area by hand with #400 sandpaper until it's level. Sand the whole area to repainted with #400–600 sandpaper. Clean with wax and grease remover.	
8. Top-coat the whole area to repainted.	Acrylic urethane resin top coat paint, hardener, and thinner: Mix and thin the paint according to the manufacturer's directions.	Apply 2–4 coats allowing sufficient flash time between coats. Force dry at 140–158°F (60–70°C) for at least 30 minutes.	Spray to a thickness of 40–50 microns

General Information

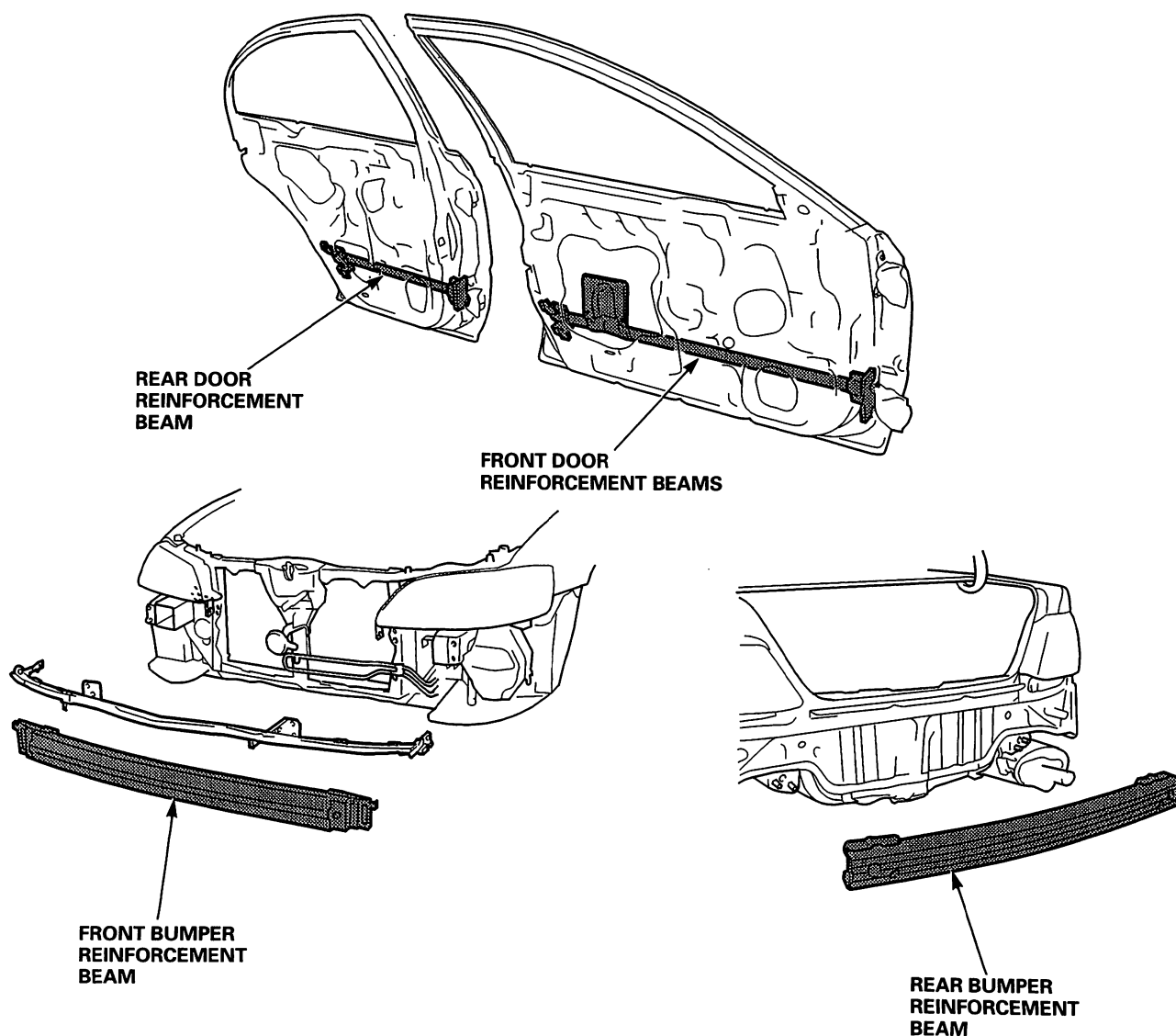
Door and Bumper Reinforcement Beams

Door and bumper reinforcement beams used on Honda vehicles are made from a metal equivalent to High Strength Steel.

If High Strength Steel is heated, the strength of the steel will be reduced. If High Strength Steel is damaged, as in a vehicle accident, where the door and bumper reinforcement beams are bent, the beams may crack if an attempt is made to straighten them.

For this reason, door and bumper reinforcement beams should never be repaired; they should be replaced if they are damaged.

NOTE: If a door beam is damaged, the whole door panel assembly should be replaced.



SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The Accord SRS includes a driver's airbag located in the steering wheel hub, and a passenger's airbag located in the dashboard above the glove box, and some types include seat belt tensioners located in the front seat belt retractors, and some types include side airbags located in the front seat-backs. Information necessary to safely service the SRS is included in the Accord Shop Manual, P/N. 62S1A00. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorized Honda dealer.

WARNING

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.**
- **Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags, side airbags and seat belt tensioners.**
- **SRS electrical wiring harnesses are indicated with yellow color. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, front seats and around the floor. Do not use electrical test equipment on these circuits.**

Replacement

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The symbols in the mass production body welding diagrams and in the replacement illustrations carry the following meanings:

〈Mass Production Body Welding Diagram〉

※ : Spot welding
 ▽ : MIG welding
 × : 2-plate welding
 ⊗ : 3-plate welding
 ⊠ : 4-plate welding
 P= : Spot welding pitch

Unit: mm (in.)

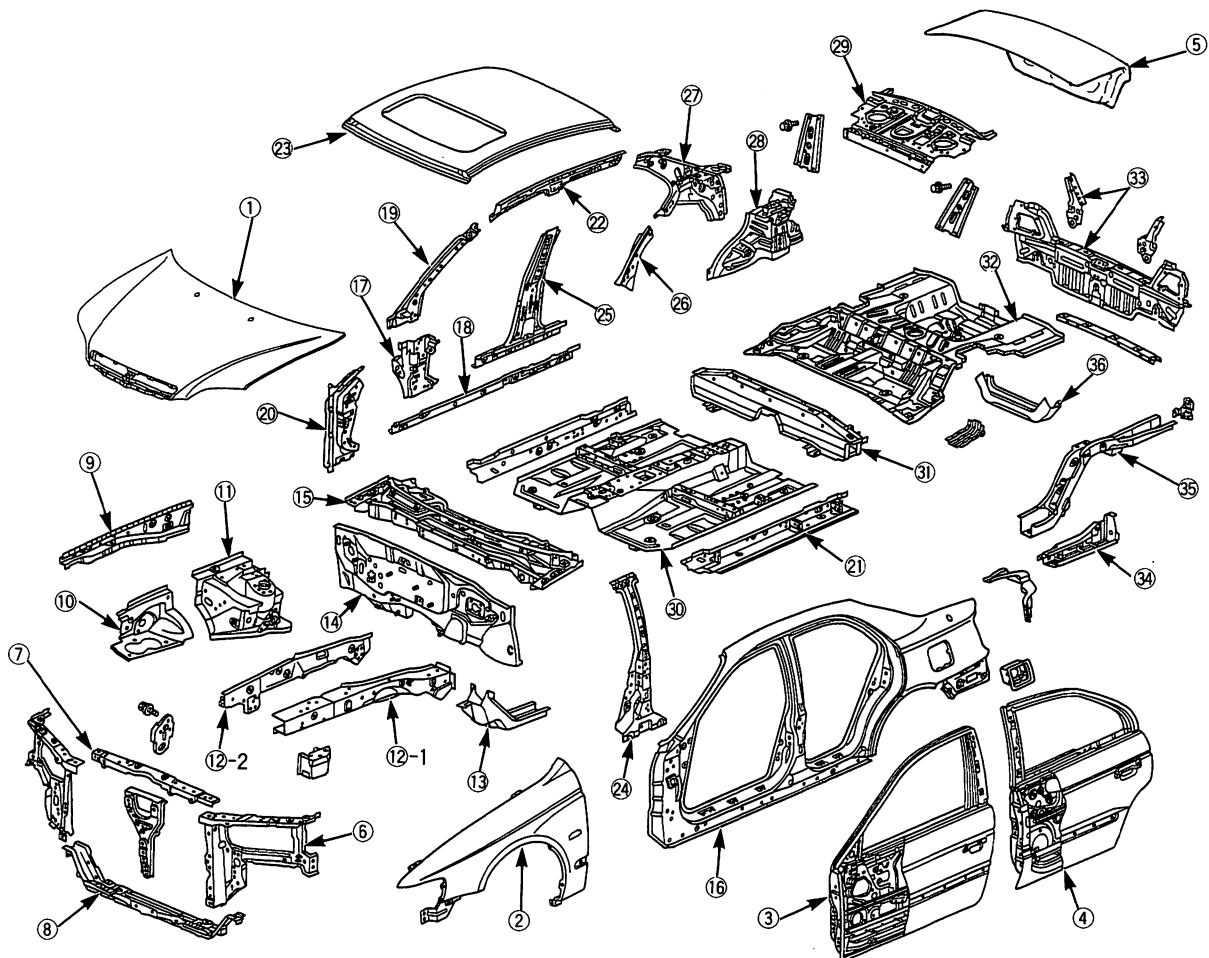
(): The number of spot welds.

〈Replacement Illustration〉

X : Spot welding
 ● : MIG welding

NOTE: The welding symbols in the illustrations don't show exact welding locations. For exact welding locations, refer to the mass production body welding diagrams.

Construction



NOTE: Be sure to use epoxy-based putty and primer surfacer to make any repairs on paint coats or zinc-plated sheet metal (see page 3-3).

No.	Part Name	Zinc-plated	No.	Part Name	Zinc-plated
①	Hood	○	⑱	Front Pillar Inner Upper	
②	Front Fender	○	⑳	Front Pillar Lower Stiffener	○
③	Front Door Panel/Door Skin	○	㉑	Inside Sill	○
④	Rear Door Panel/Door Skin	○	㉒	Roof Side Rail	
⑤	Trunk Lid	○	㉓	Roof Panel	
⑥	Front Side Bulkhead	○	㉔	Center Pillar Stiffener	
⑦	Bulkhead Upper Center Frame	○	㉕	Center Pillar Inner	
⑧	Bulkhead Lower Cross-member	○	㉖	Wheel Arch Extension	○
⑨	Wheelhouse Upper Member	○	㉗	Rear Inner Panel	○
⑩	Front Wheelhouse	○	㉘	Rear Wheelhouse	○
⑪	Damper Housing	○	㉙	Rear Shelf	
⑫-1	Front Side Frame	○	㉚	Front Floor	○
⑫-2	Front Side Extension	○	㉛	Middle Floor Cross-member	○
⑬	Side Frame Rear End/Outrigger	○	㉜	Rear Floor	○
⑭	Dashboard Lower	○	㉝	Rear Panel	○
⑮	Dashboard Upper	○	㉞	Side Sill Extension	○
⑯	Outer Panel	○	㉟	Rear Frame	○
⑰	Front Pillar Inner Lower	○	㊱	Rear Floor Cross-member	○
⑱	Side Sill Reinforcement	○			

Exterior Body Parts

Removal/Installation

NOTE: To adjust the clearance with the hood door, and trunk lid alignment, refer to the Accord Shop Manual.

Mounting bolts/nuts Torque:

6 × 1.0 mm: 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

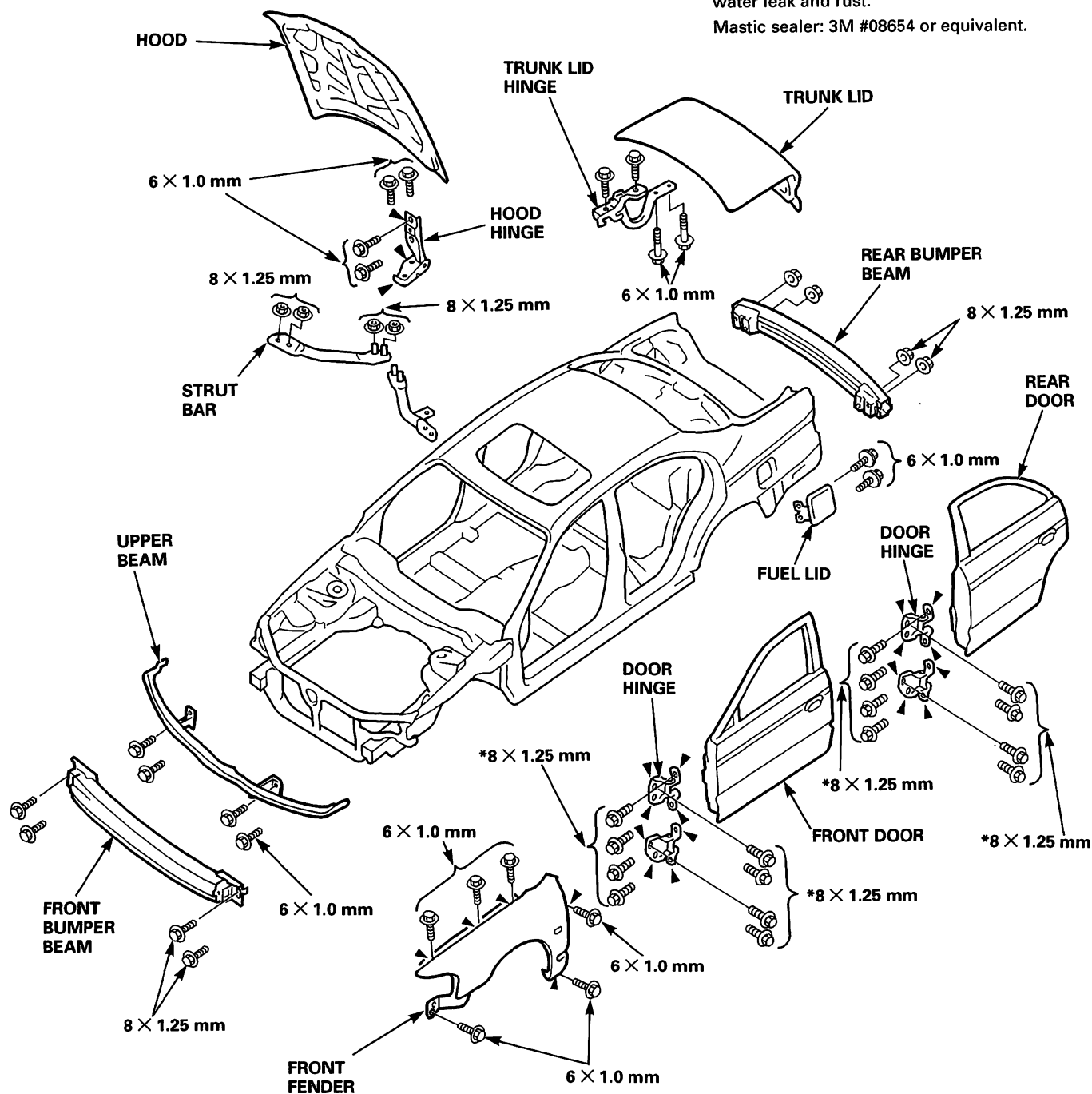
8 × 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)

*8 × 1.25 mm: 28 N·m (2.9 kgf·m, 21 lbf·ft)

►: Sealing locations

NOTE: Seal the following areas to prevent water leak and rust.

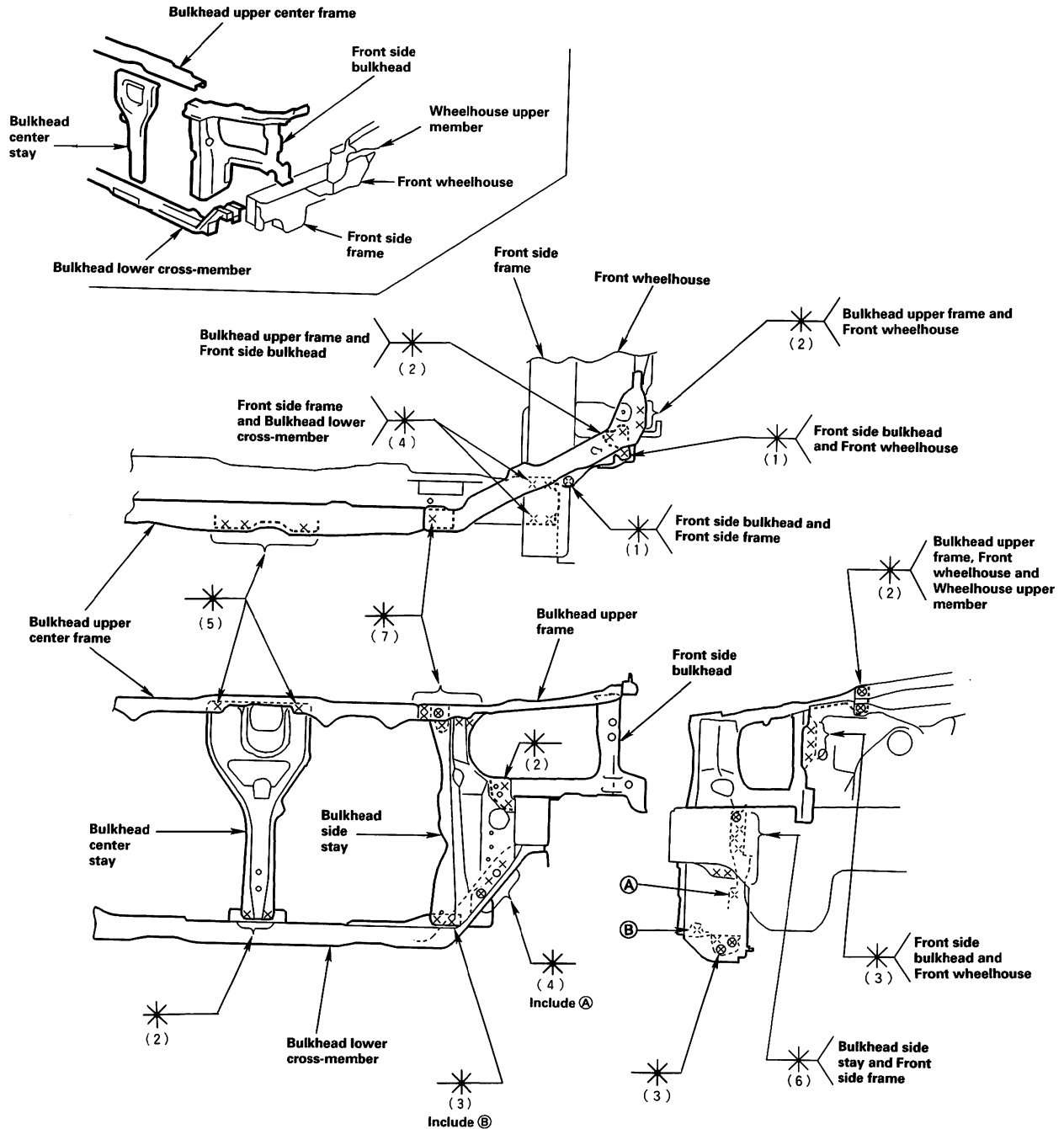
Mastic sealer: 3M #08654 or equivalent.



Front Bulkhead

Mass Production Body Welding Diagram

The front bulkhead is joined to the front wheelhouse and front side frame. It forms the base for the headlights and other parts and maintains the rigidity of the front section of the body. Pay particular attention to twists and parallelism and check mounting of related parts when welding.



Replacement

1. Remove the related parts.
 - Front bumper
 - Right and left headlights
 - Right and left front fenders
 - Radiator, condenser
 - Hood latch
2. Roughly pull out and straighten the damaged area.
 - Check the damage to the front wheelhouse and front side frame before removing the front bulkhead. Use the frame straightener to roughly pull out and repair the damaged bulkhead before removing the bulkhead.

NOTE: Check the fit of the door, taking care not to pull the damaged area out more than necessary.

- Use the horizontal pinch weld clamps and attach the vehicle to the frame straightener at the clamping points securely.

3. Keep the body level.

Jack up the body, and place safety stands at the four designated places of the side sills.

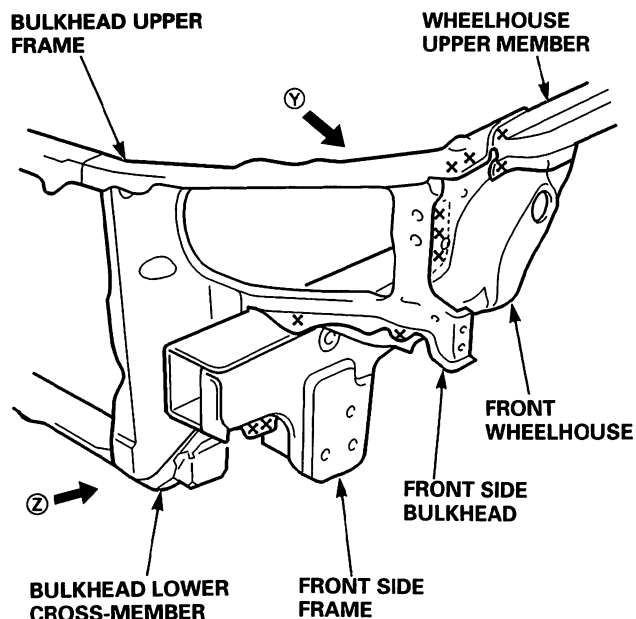
NOTE: Refer to the Accord Shop Manual for safety stand location points.

4. Cut and pry off the front bulkhead.
 - Center punch around the spot weld imprints.
 - Use the special spot cutter to drill holes at the spot weld nuggets on the front wheelhouse and front side frame.

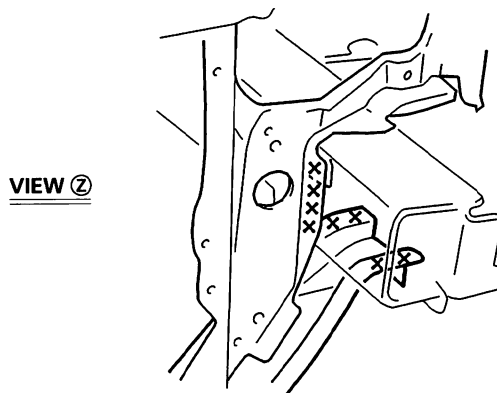
NOTE: Refer to the Accord Shop Manual for safety stand location points.

- Cut off the bulkhead with an air chisel, leaving the weld flanges intact.
- Level and finish the burrs from the pried off spot welds with a disc sander.

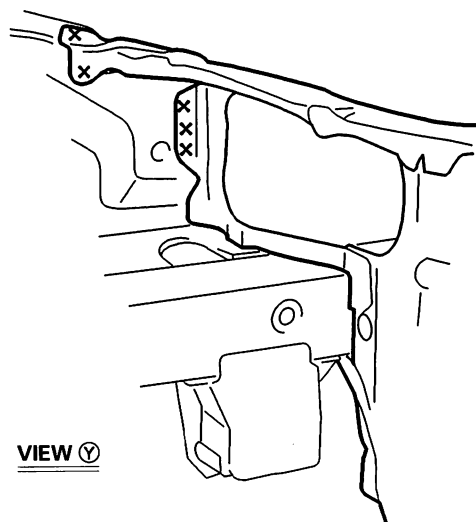
⚠ WARNING To prevent eye injury, wear goggles or safety glass whenever sanding, cutting or grinding.



VIEW ②



VIEW ①

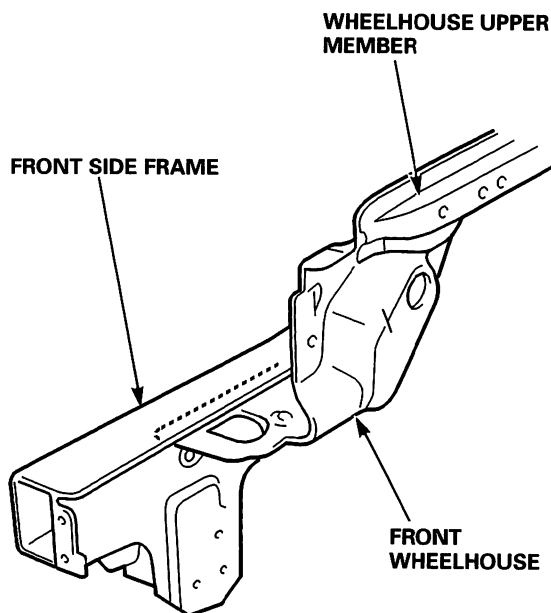


(cont'd)

Front Bulkhead

Replacement (cont'd)

5. Check the front side frame, front wheelhouse, and wheelhouse upper member for position and damage.
If necessary, replace the front wheelhouse (see page 4-9).



6. Straighten the damaged related parts.
- Use a hammer and dolly to mold the damaged areas of the front wheelhouse and side frame.
 - Even out the welding flanges with a hammer and dolly.
 - Fill all drilled holes by MIG or gas welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

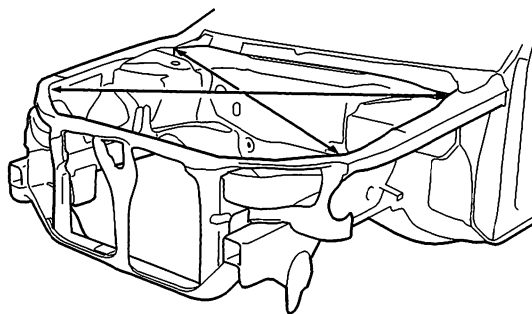
7. Set the new front bulkhead.
- Grind both sides of the welding section of the bulkhead with a sander to remove the undercoat and to expose the steel plate.

- Clamp both the right and left sides with the vise-grips.

NOTE: Apply the spot sealer to the welding surface when spot welding.

- Check the front bulkhead position using the body dimensional drawings (see section 6).

8. Measure the front compartment diagonally with a tracking gauge or convex tool as shown to check it for twisting or bending.



9. Tack weld the new front bulkhead.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

Spot weld the clamped sections.

NOTE: Make sure that the right and left bulkheads are in line with each other.

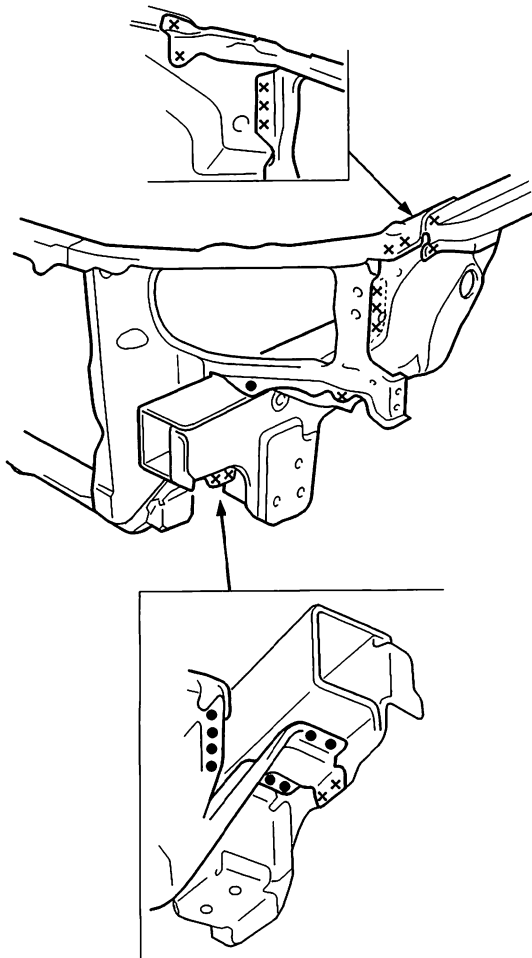
10. Temporarily assemble the hood, headlight, front fender and front bumper, then check the clearances and level differences.

11. Perform the main welding.

- Spot weld the bulkhead as shown.
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



12. Finish the welds. Use a hammer and dolly to even out the front wheelhouse gusset, front wheelhouse and front side frame flanges for a close fit with the surface of the front bulkhead.

13. Apply the undercoat (see section 7).

14. Attach the front fender.

15. Lower the body.

16. Apply the paint. See Paint Repair section.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

17. Install the related parts.

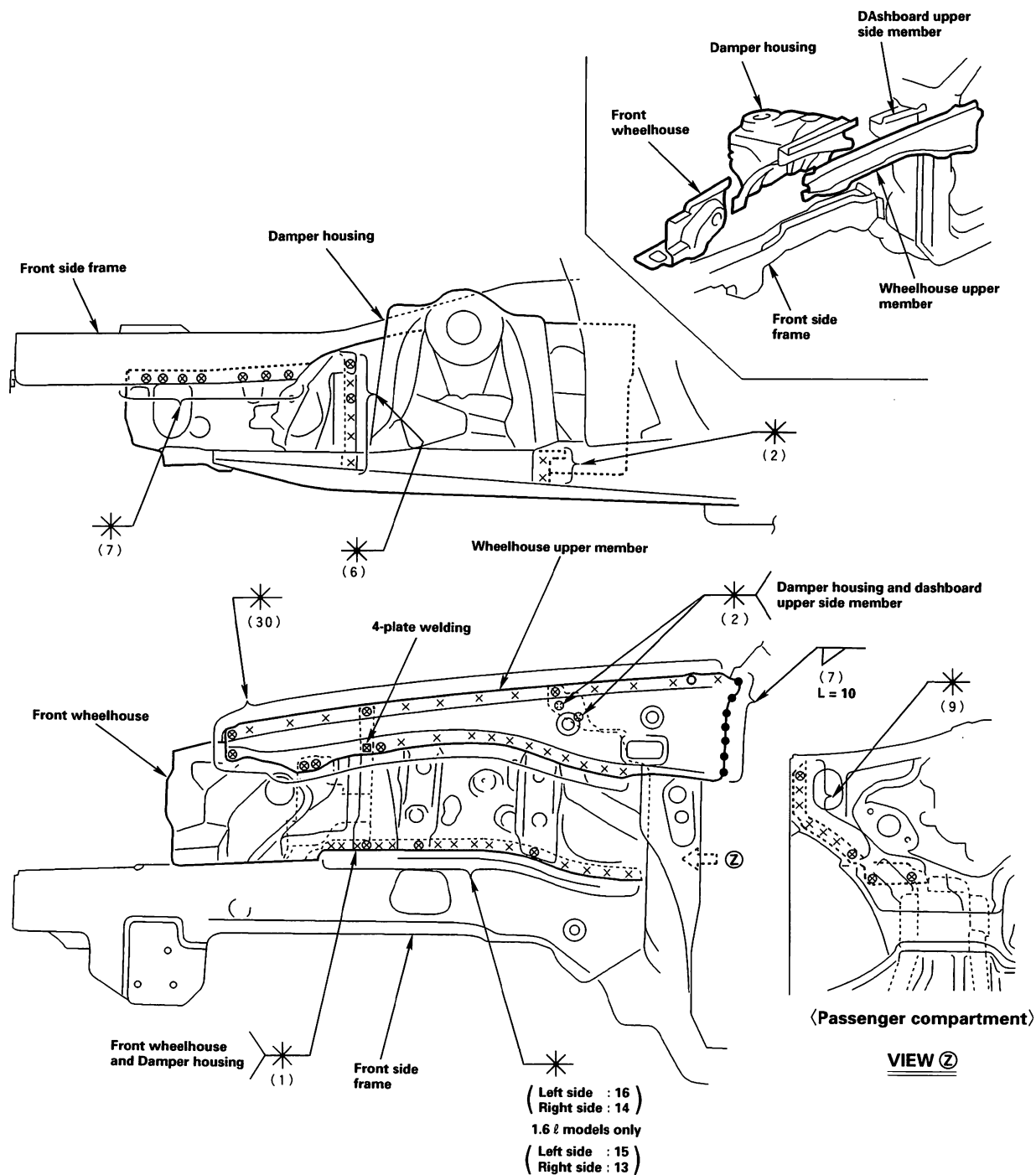
18. Inspect, check, and make adjustments.

- Adjust the headlight aim.
- Check that the electrical components light up and operate properly.
- Replenish radiator coolant and inspect for leaks.

Front Wheelhouse/Damper Housing

Mass Production Body Welding Diagram

The front wheelhouse component is constructed as a unit with the front damper housing. Therefore, replacement of the component affects the front wheel alignment. When assembling it, either use a positioning jig or follow the dimensions on the frame repair chart for positioning. Weld carefully.



Replacement

1. Remove the related parts.
 - Parts that must be removed when removing the front bulkhead
 - Parts on passenger side of lower dashboard which are especially flammable.
 - Electrical accessories in engine the compartment and the wire harnesses.

NOTE: See the Accord Shop Manual, for removal and installation of the engine, front suspension, and brakes.

2. Pull out and straighten the damaged area to approximately the original shape.
 - Attach the vehicle to the frame straightener by tightening the underbody clamps at the horizontal pinch weld points.

NOTE: Refor to the Accord Shop Manual for safety stand location points.

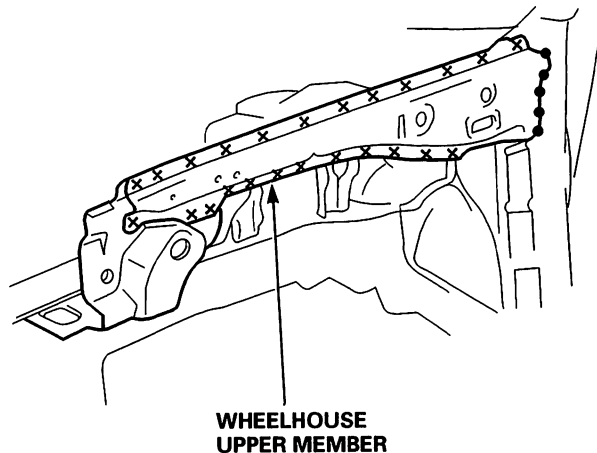
- Before cutting off the damaged sections, pull them out so that they are restored to the original shape.
- Do not pull out more than necessary.
- Pull out and straighten the damaged area of the lower dashboard, front pillar, and other parts.
- After pulling, check the damper housing position using the body dimensional drawings (see section 6) and positioning jig (see page 1-7).

NOTE: Check the condition of the door and hinges.

3. Peel off the undercoat.
Heat the undercoat at the weld areas of the wheelhouse and front side frame with a gas torch, and peel off the undercoat with a metal spatula.
4. Remove the wheelhouse upper member carefully so it can be reused.
 - Center punch around the spot weld imprints.
 - Use the special spot cutter to drill holes at the spot weld nuggets.
 - Remove the MIG weld flange with a disc sander.

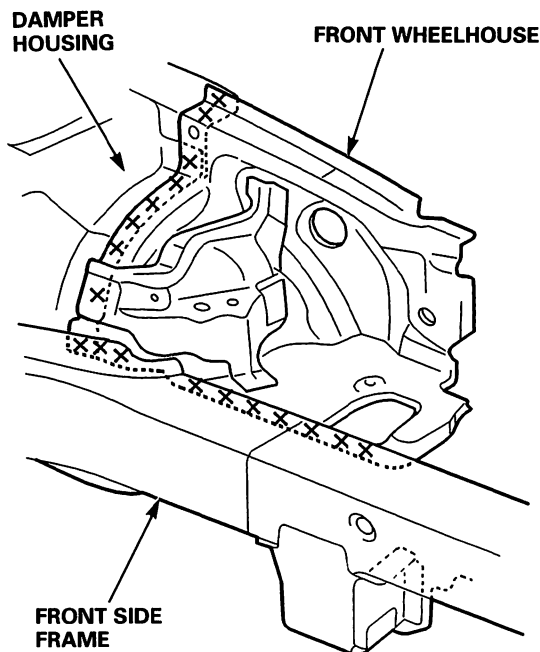
⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

 - Using a chisel, pry off the welded flange from the front pillar and damper housing.



5. Replace the front wheelhouse

- Center punch around the spot weld imprints on the front side frame and damper housing.
- Drill holes in the center punched areas using a spot cutter.
- Using a chisel, pry off the welded flange.
- Level and finish the burrs left on the welding surfaces with a sander.

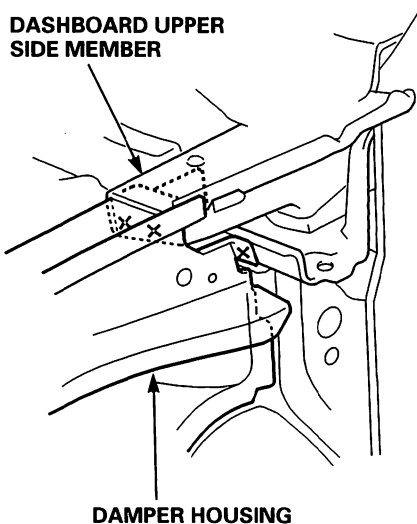
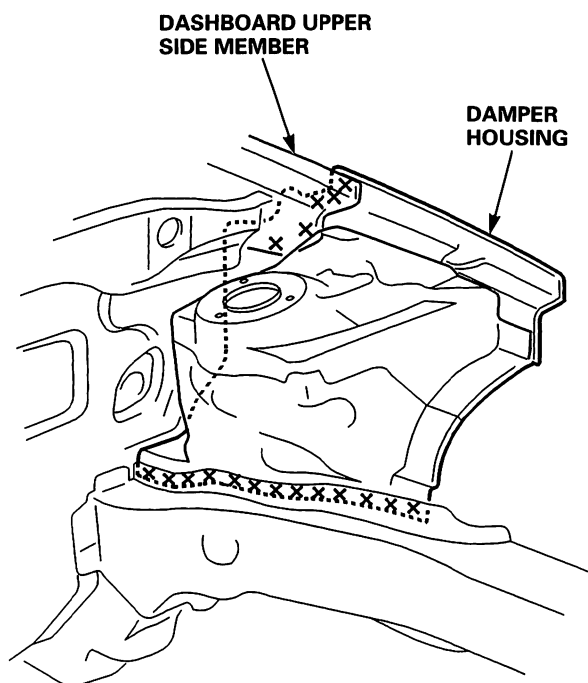


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Front Wheelhouse/Damper Housing

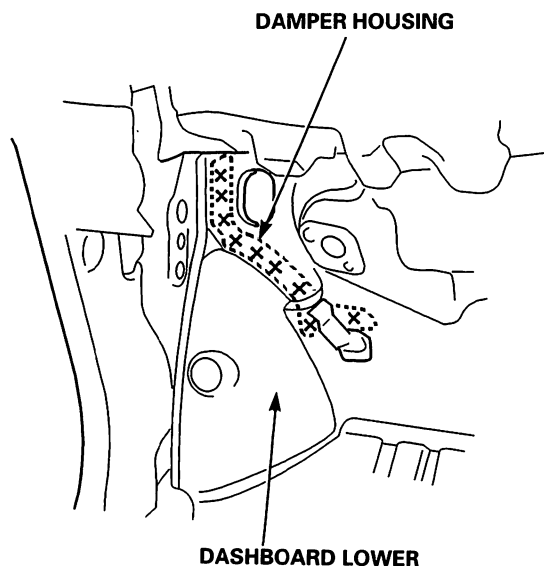
Replacement (cont'd)

6. Check the damper housing for position and damage. If necessary, replace the damper housing.
- Center punch around the spot weld imprints on the front side frame, lower dashboard, and dashboard upper side member.
 - Drill holes using a spot cutter.
 - Using a chisel, pry off the weld flange.

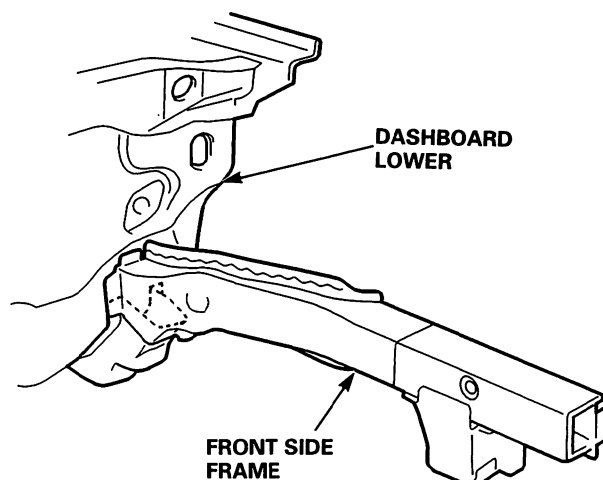


- From the passenger compartment side, drill holes in the spot welded area with a 5 mm (0.2 in.) spot weld cutter.

NOTE: Drill holes completely through the parts since the replacement damper housing will be welded by MIG welding.



7. Straighten the related parts.
- Level and finish the burrs left on the welding surfaces with a sander.
 - Fill all drilled holes by MIG or gas welding.
 - Use a hammer and dolly to even out the welded areas of the lower dashboard, front side frame and dashboard upper side member.



8. Set the new front wheelhouse and damper housing.

- Apply body paint to both sides of the new front wheelhouse and damper housing.
- See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.**
- **Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.**
- Remove the undercoat from both sides of the welding section and expose the steel plate using a disc sander.

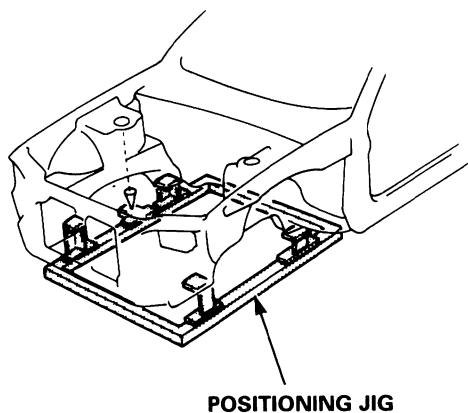
⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

- Clamp the front side frame with vise-grips and squill vises.

NOTE: Apply the spot sealer to the welding surface when spot welding.

- Clamp the front bulkhead with vise-grips.
- Measure the front compartment diagonally.

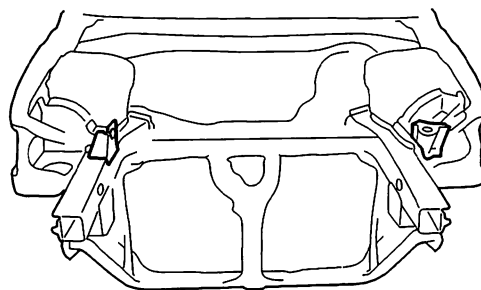
NOTE: Use of a positioning jig is recommended (see page 1-7).



- Spot weld several points in the clamped sections, and temporarily attach the front wheelhouse and damper housing.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

9. Check the dimensions (see section 6), temporarily install the hood, front fender and headlight, and check for differences in level and clearance.



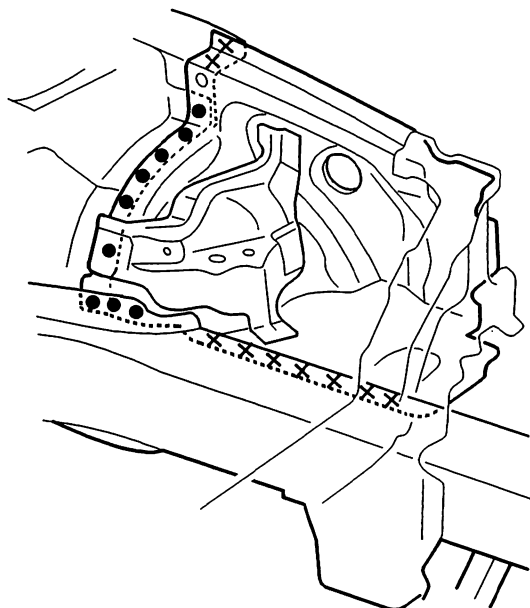
10. Perform the main welding.

- Weld as much as possible with the jig still mounted.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

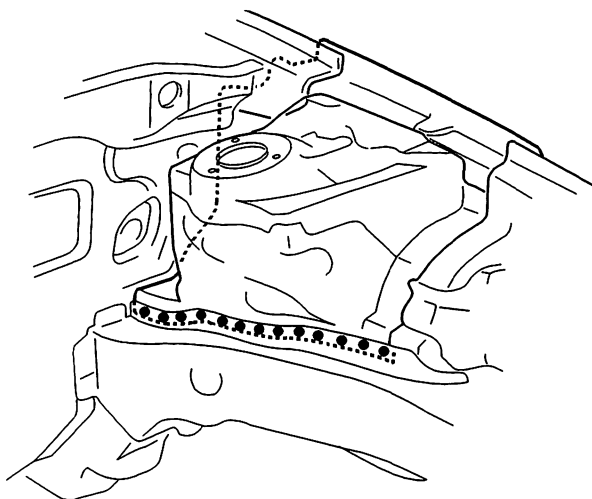
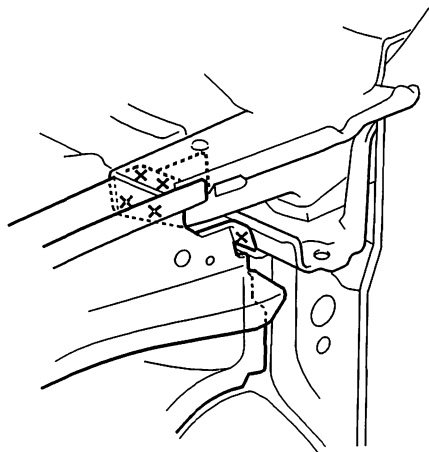
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

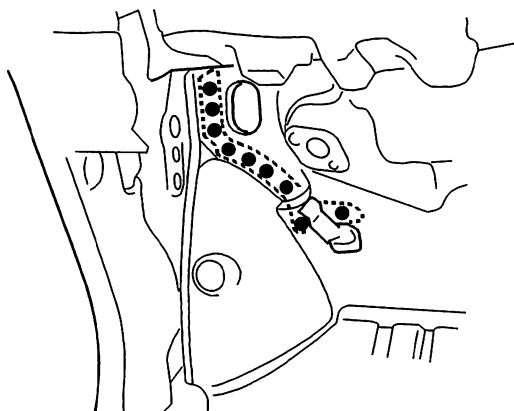


Front Wheelhouse/Damper Housing

Replacement (cont'd)

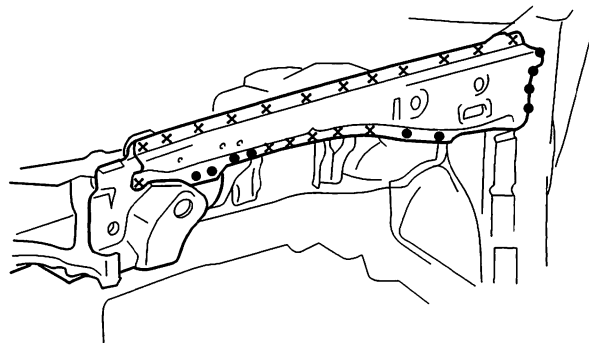


- Plug weld the holes in the lower dashboard and damper housing with a MIG welder.



11. After the front bulkhead has been welded, weld the wheelhouse upper member.

If the upper member is to be reused, make MIG plug welds at the drilled holes.



12. Finish the welded area. Use a hammer and dolly to even out the side bulkhead and front side frame flanges for a close fit with the surface of the front wheelhouse and damper housing.

13. Apply sealer (see section 5) to the mating surface of the lower dashboard and front side frame, etc.

14. Apply the paint. See Paint Repair section.

WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames or cigarettes.

15. Apply the undercoat. Undercoat the front floor, etc, and apply anti-rust agent to the inside of the welding section of the front side frame, lower dashboard, and upper member, etc (see section 7).

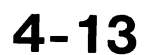
16. Install in the parts in the reverse order in which they were removed.

17. Inspect, check, and make adjustments.

- Measure the front wheel alignment.
- Inspect the brake system.
- Adjust the headlight aim.

Mass Production Body Welding Diagram

NOTE: Replace the side frame rear end and outrigger as an assembly.

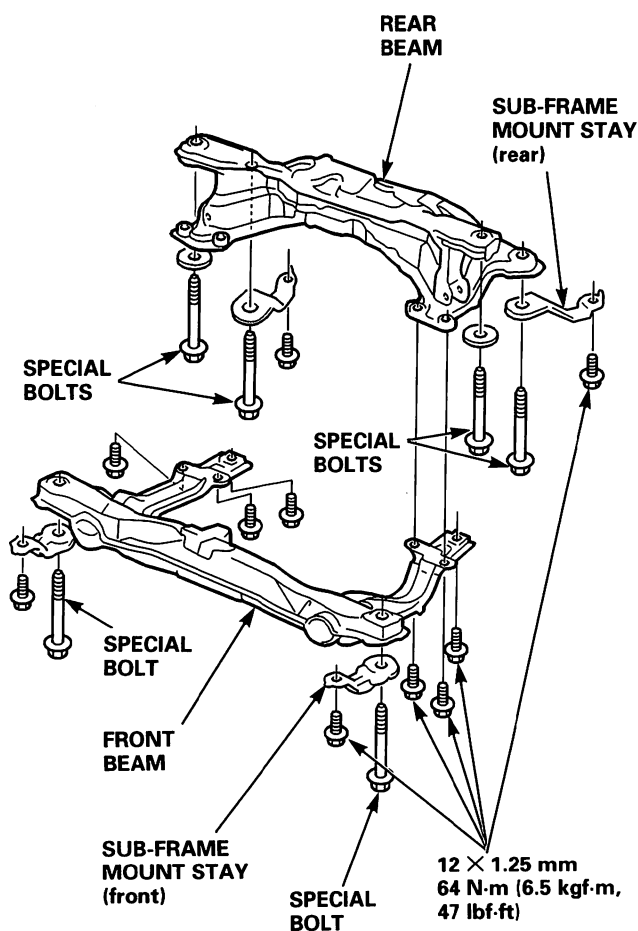


Front Side Frame/Side Frame Rear End

Replacement

1. Remove the related parts.
 - Front suspension parts
 - Brake hose and lines
 - Engine compartment electrical components
 - Fittings in passenger compartment, etc.
 - Steering gearbox.
2. Remove the front sub-frame.

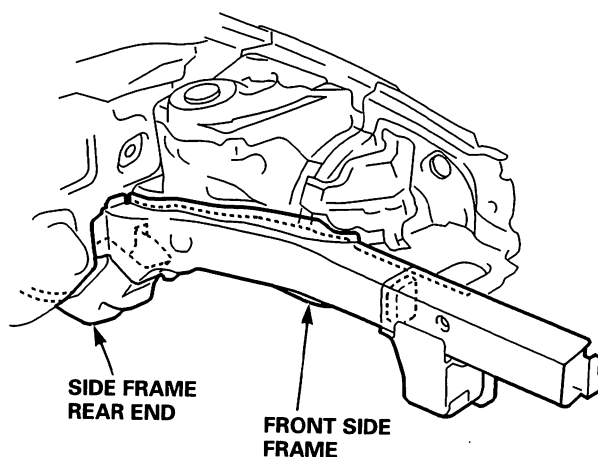
SPECIAL BOLT:
14 × 1.5 mm
103 N·m (10.5 kgf·m, 76 lbf·ft)
Replace.



3. Roughly pull out and straighten the damaged area.
 - Attach the vehicle to the frame straightener by tightening the underbody clamps located at the horizontal pinch welds.

NOTE: Refer to the Accord Shop Manual for safety stand location points.

- Before cutting off the damaged sections, pull them out so that they are restored to the original shape.
- Cutting off the front side frame before pulling out the damage makes repair of the side frame rear end, lower dashboard, and other related parts difficult.



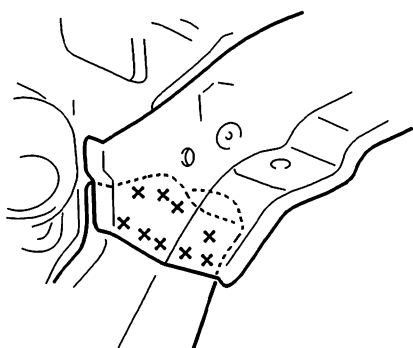
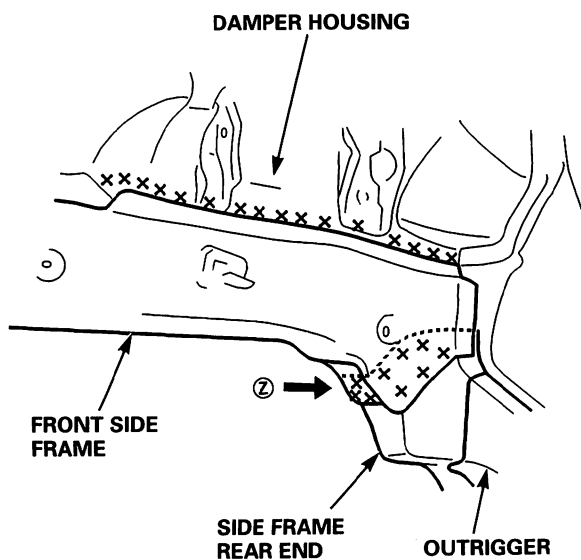
4. Peel off the undercoat. Heat the undercoat at the weld areas of the lower dashboard, front floor and side sill with a gas torch and peel off the undercoat with a metal spatula.

CAUTION: Be careful not to burn the fittings inside the passenger compartment and dashboard insulator when heating.

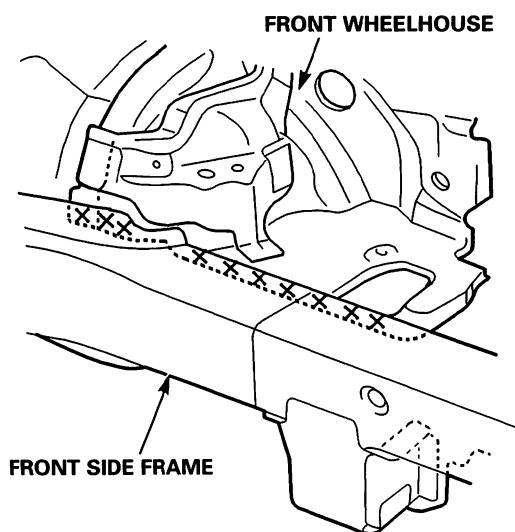
5. Remove the front side frame.

NOTE: It's not necessary to separate the front wheelhouse from the front side frame if the wheelhouse/damper housing need replacing also.

- Center punch around the spot weld imprints on the wheelhouse, damper housing, lower dashboard, and side frame rear end.
- Using a spot cutter, drill holes in the spot welded areas.
- Peel off the welding flange using a chisel.

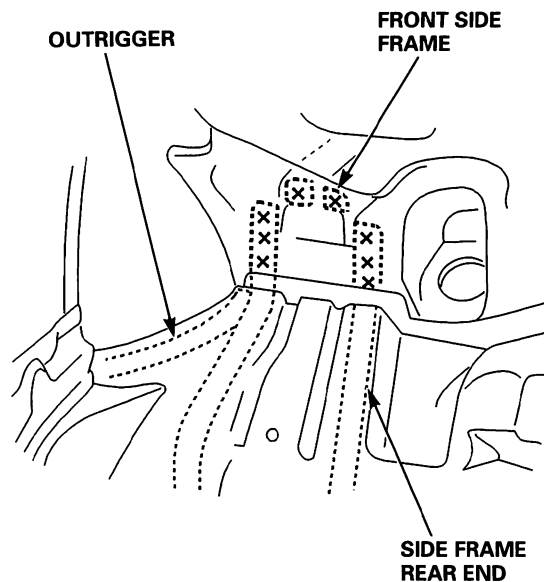


VIEW 2

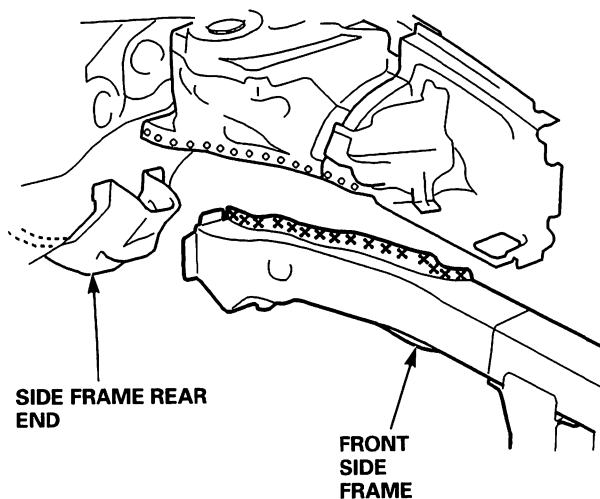


- Center punch around the spot weld imprints on the front side frame from inside the passenger compartment.
- Drill holes in the spot welded area with a 5 mm (0.2 in.) drill.

NOTE: Drill holes completely through the parts since the replacement front side frame will be welded by MIG welding.



6. Check the side frame rear end and outrigger for position and damage.
If necessary, replace the side frame rear end and outrigger as an assembly.



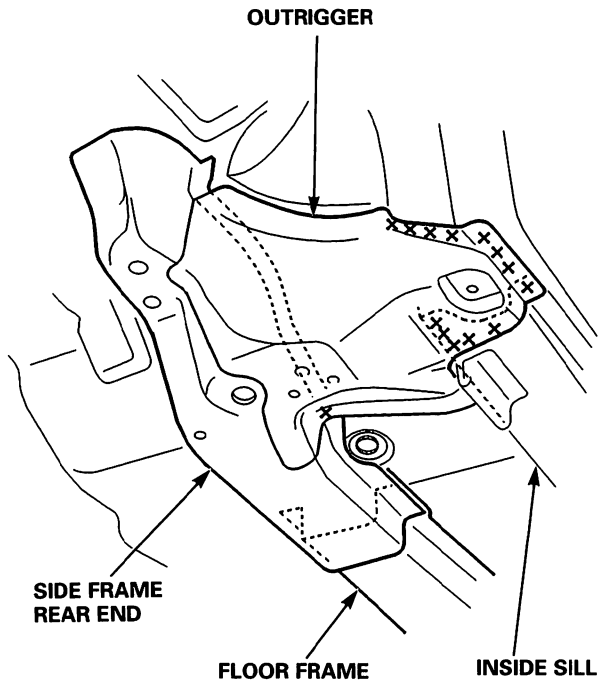
(cont'd)

Front Side Frame/Side Frame Rear End

Replacement (cont'd)

- Center punch around the spot weld imprints on the outer panel, floor frame, and inside sill.
- Drill holes in the center punched areas using a spot weld cutter.

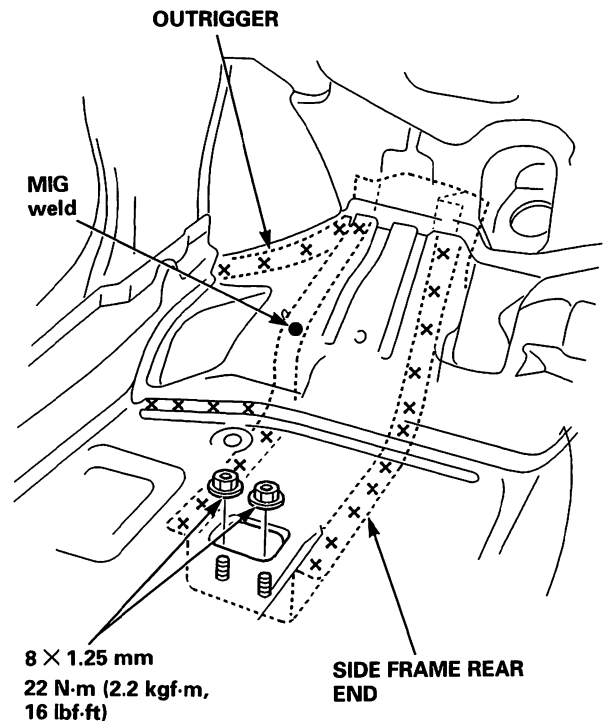
NOTE: When drilling holes be careful not to drill down to the floor frame and the inside sill.



- Center punch around the spot weld imprints on the side frame rear end and outrigger from inside the passenger compartment.
- Drill holes in the spot welded areas with a 5 mm (0.2 in.) spot weld cutter.

NOTE: Drill holes through the parts completely since the replacement side frame rear end and outrigger will be welded by MIG welding.

- Remove the MIG weld of the side frame rear end and lower dashboard with a disc sander.
- Remove the mounting nuts from the hole of the front floor.



- Level off and finish the burrs of the pried off spot welds with a disc sander.



WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

7. Straighten the related parts.
Reshape the lower dashboard, floor frame, front floor, inside sill and side sill inner joint using a hammer and dolly. Check the floor frame and inside sill for position and damage.
8. Set the new front side frame.
 - Remove the undercoat from the both sides of the welding section, and expose the steel plate using a disc sander.

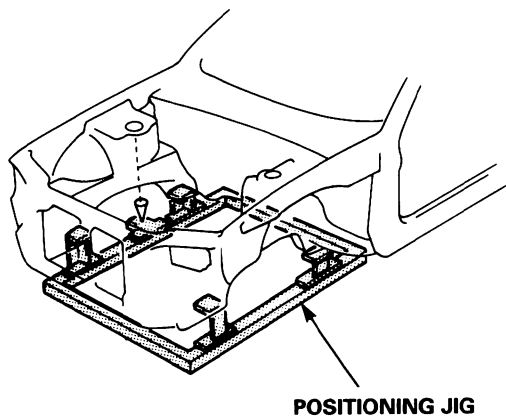


WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

NOTE: Apply the spot sealer to the welding surface when spot welding.

- Tighten the front side frame against the front floor and side sill using vise-grips or pliers.
- Drill 3 mm (0.12 in.) holes, and screw 5 mm self-tapping screws into the drilled holes at the areas where the side frame rear end and outrigger does not fit closely.
- Even out the welded flange and damaged area with a hammer and dolly.
- Place a jack under the side frame rear end and support it, then measure the positions for temporary attachment.

NOTE: Use of a positioning jig is recommended (see page 1-7).



- Clamp the front bulkhead and front wheelhouse/damper housing with squill vises and vise-grips.
- Measure the front compartment diagonally.
- Spot weld several points in the clamped sections, and temporarily attach the front side frame and side frame rear end.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Check the body dimensions (see section 6).
- Install the new sub-frame, and check the front side frame position.

9. Perform the main welding.

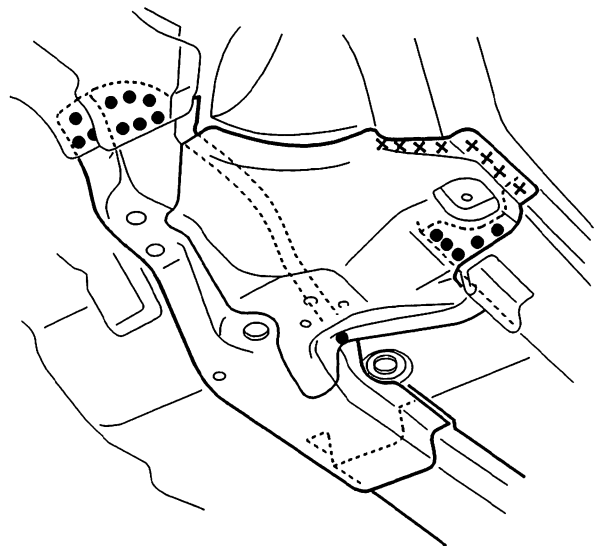
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

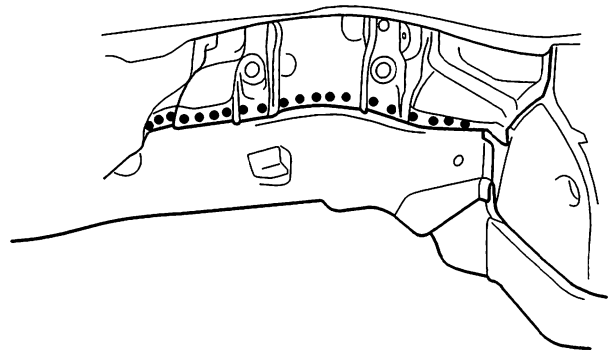
- Weld as much as possible with the jig still mounted.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

- MIG weld the side frame rear end and outrigger.



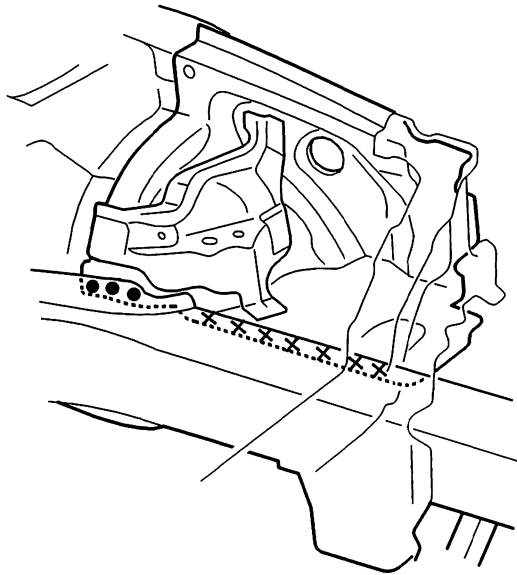
- Weld the front side frame, wheelhouse, damper housing, and bulkhead.



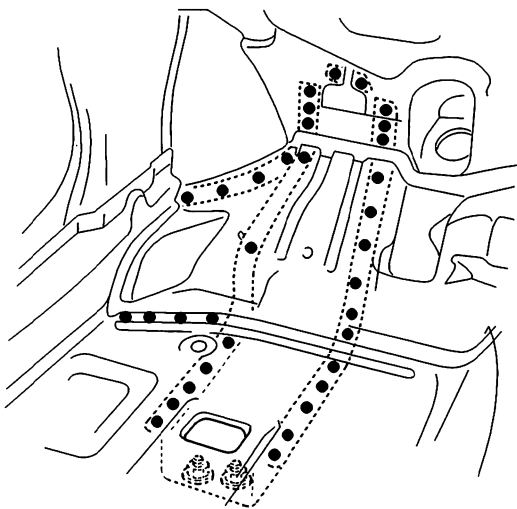
(cont'd)

Front Side Frame/Side Frame Rear End

Replacement (cont'd)



- From the passenger compartment side, plug weld the holed areas of the lower dashboard, front floor and floor frame with a MIG welder.



10. Finish the welds. Use a hammer and dolly to even out the damper housing, wheelhouse, lower dashboard, front bulkhead and side sill flanges for a close fit with the surface of the front side frame.

11. Apply sealer (see section 5) to the mating surfaces of the lower dashboard, etc.

12. Apply the paint. See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

13. Apply the undercoat.

Undercoat the front floor, and apply anti-rust agent to the inside of the welding section of the side sill, front side frame, side frame rear end and outrigger (see section 7).

14. Install the related parts in the reverse order in which they were removed.

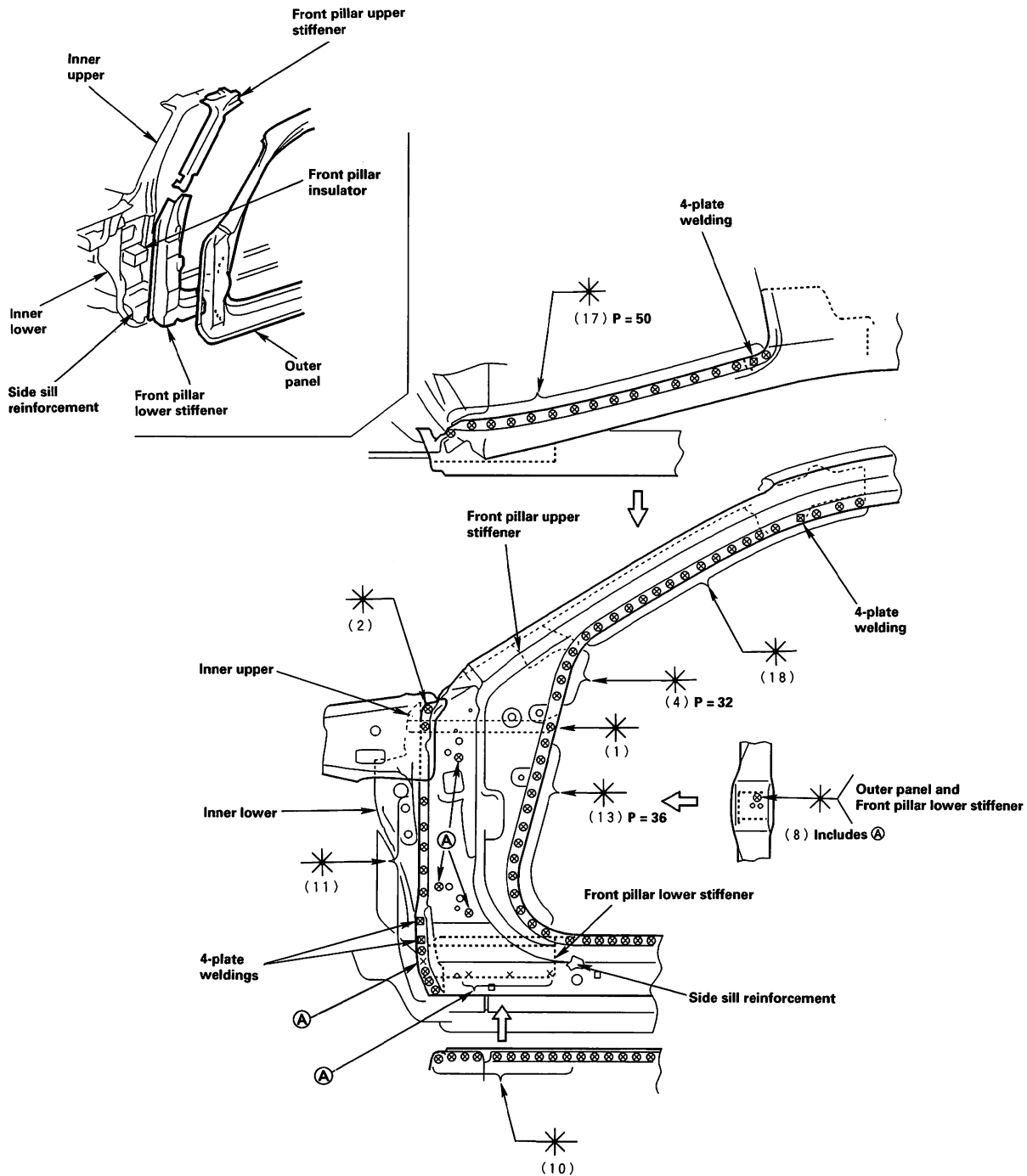
15. Inspect, check, and adjust.

- Measure the front wheel alignment.
- Inspect the brake system.
- Adjust the headlight aim.

Front Pillar (Outer Panel)

Mass Production Body Welding Diagram

The front pillar is connected to the roof, windshield door hinges and side sills and the front pillar is a very important support. Proper connection of the front pillar determines the position of the windshield and front door. Align the front fender, door and windshield while the front pillar is loosely mounted, then check the clearances and level differences.



Front Pillar (Outer Panel)

Replacement

1. Remove the related parts:

- Hood
- Front fender
- Front door
- Windshield
- Front side trim
- Door opening trim
- Side cowl lining
- Dashboard
- Front pillar trim
- Wire harness, etc.
- Steering column
- Steering hanger brace

NOTE: Make sure that the right and left pillars are parallel with the windshield surface. Check the door for proper opening and closing.

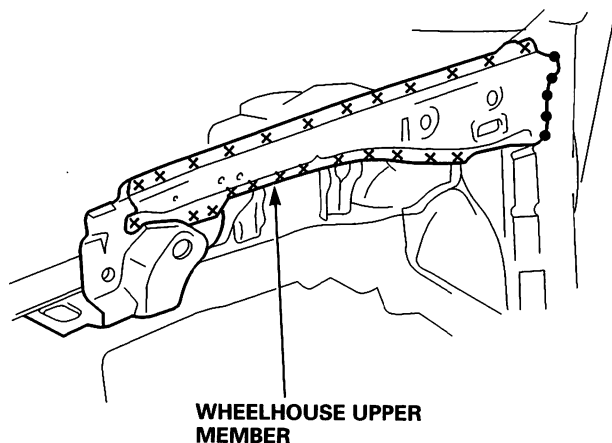
2. Pull out and straighten the damaged area.

- Pull out the damaged area with the frame straightener before cutting off the wheelhouse upper member and front pillar.

NOTE: Pull out until the pillar is lined up with the surface of the windshield.

- With the pillar pulled out, pull out and straighten the related lower dashboard and floor section.
- After pulling, check the inner pillar position using the body dimensional drawings (see section 6).

3. Remove the wheelhouse upper member carefully so it can be reused.



4. Cut off the front pillar.

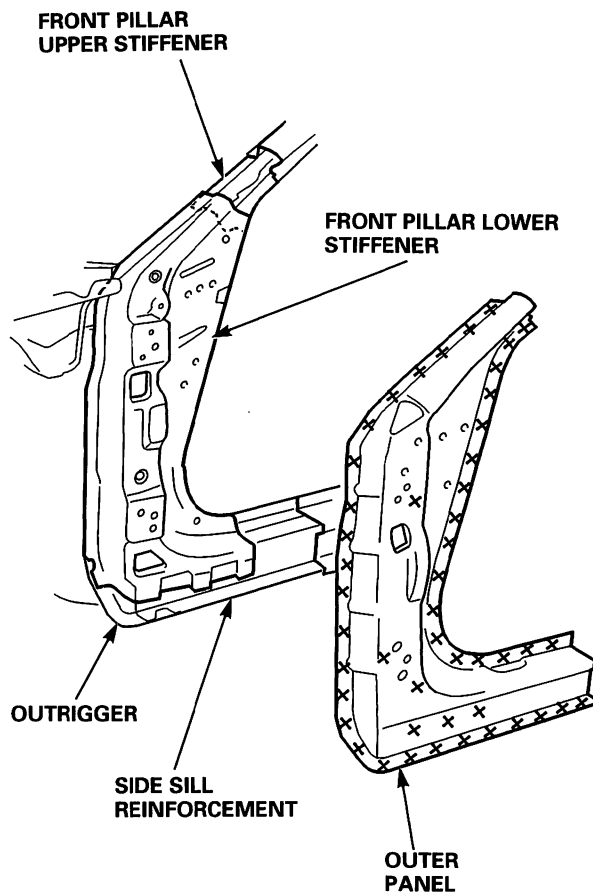
- Use a die grinder to cut the windshield and side sill areas.

NOTE: Be careful not to cut the front pillar upper stiffener and side sill reinforcement.

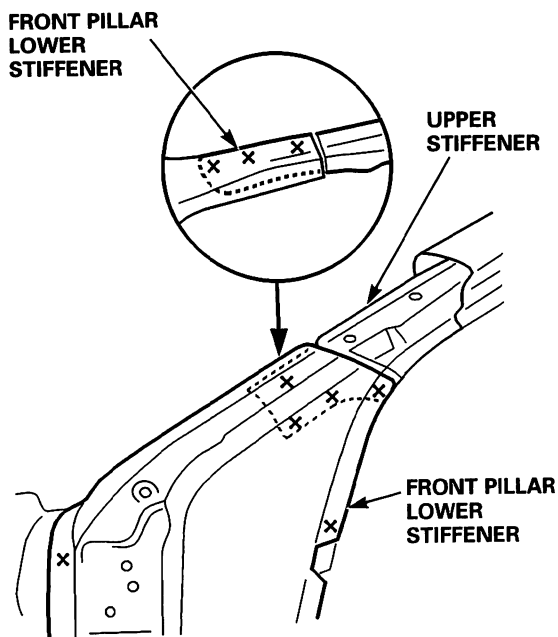
- Center punch around the spot weld imprints.
- Drill holes using a spot cutter.
- Chisel off the weld flanges.
- Finish the burrs at the drilled areas with a disc sander.

⚠ WARNING

To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.



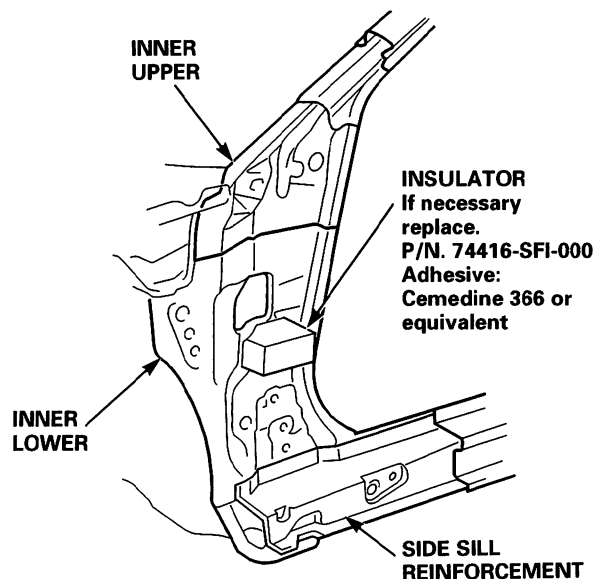
- Check the front pillar lower stiffener for position and damage, if necessary replace it.



5. Straighten the related parts.

Fill any holes by MIG or gas welding and even out with a hammer and dolly.

▲ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



6. Set the new front pillar lower stiffener and repair part.

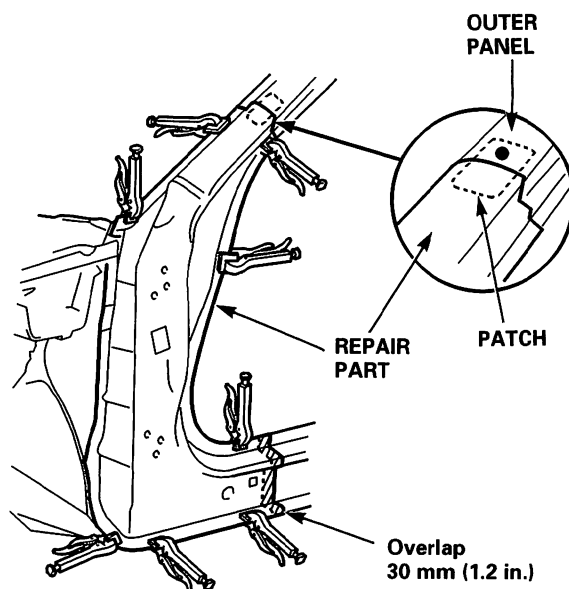
- Align the repair part with the top cut section, then cut it with a handsaw.

NOTE: Cut the side sill joint with a handsaw leaving an overlap of 30 mm (1.2 in.).

- Attach the patch to the cut section of the front pillar (body side) and plug weld it.
- Remove the undercoat from both sides of the areas to be spot welded with a sander to expose the steel plate.

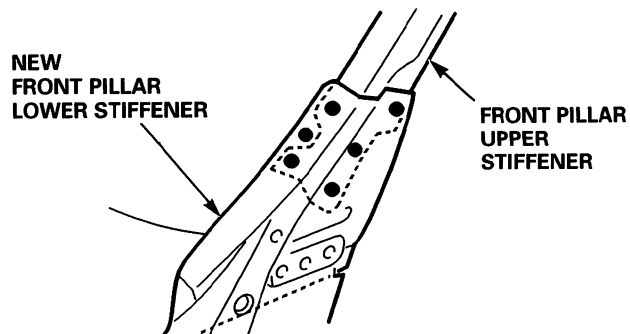
NOTE: Apply the spot sealer to the welding surface of the new front pillar lower stiffener.

- Clamp the new front pillar lower stiffener and the repair part.
- Check the body dimensions (see section 6).
- Temporarily install the door, and check the door hinge mounting position



7. Remove the repair part and weld the new front pillar lower stiffener and upper stiffener.

▲ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



(cont'd)

Front Pillar (Outer Panel)

Replacement (cont'd)

8. Apply spot sealer to the welding surface of the repair part.

9. Clamp the repair part and recheck the clearance and alignment of the door, front fender and windshield.

10. Perform the main welding.

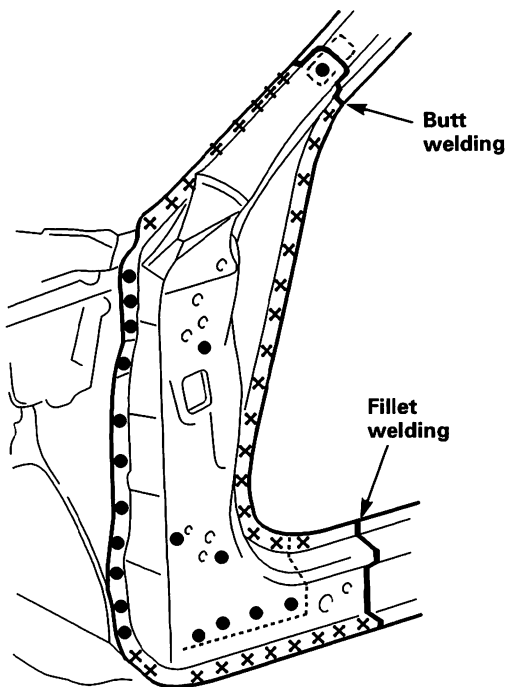
NOTE: Be careful not to burn the insulator of the fitting inside the front pillar lower stiffener while welding.

- Weld the front pillar and side sill outer joints with a MIG welder.
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Make 5 mm (0.2 in.) holes in the MIG weld holes with the repair part, and weld the lower stiffener and dashboard upper side member with a MIG welder.



- Weld the wheelhouse upper member (see page 4-12).

11. Finish the welding areas.

- Grind the finishing allowance with a disc sander until it is smooth.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

- Smooth the flanged section of the door opening with a hammer and dolly.

12. Apply the sealer (see section 5).

13. Apply the paint.

See Paint Repair section.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

14. Apply anti-rust agent to the inside of the front pillar, wheelhouse upper member, and side sill (see section 7).

15. Install the related parts.

- Install in the reverse order of removal.
- Check the door for proper installation and alignment with from the fenders.

16. Clean and check.

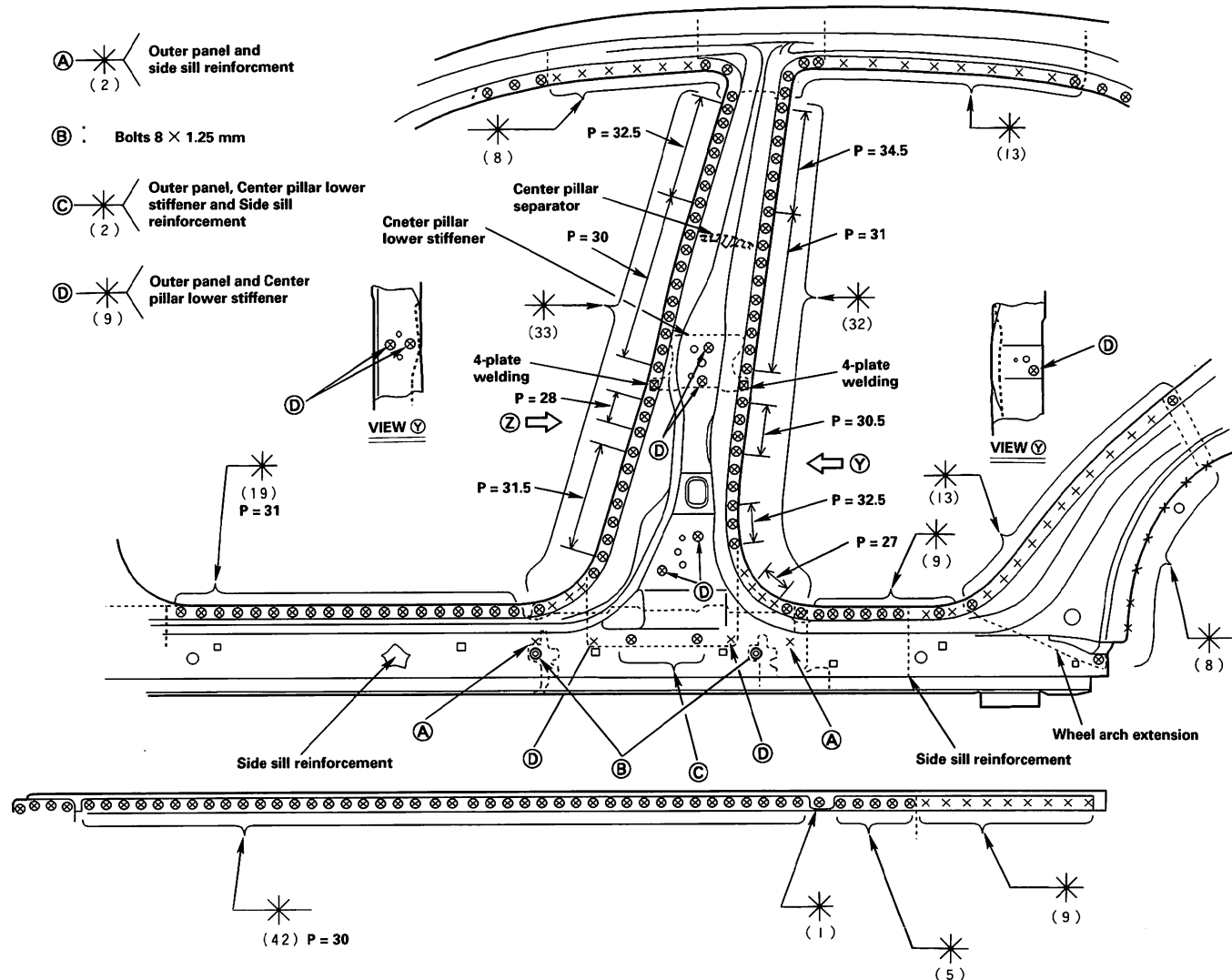
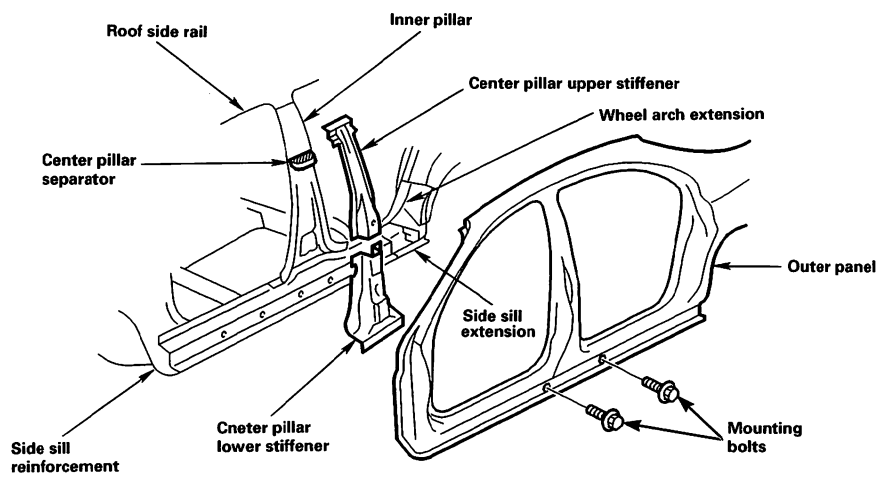
- After installing the dashboard, check the lights and gauges for proper operation.
- Clean the passenger compartment and check for water leaks.

Side Sill (Outer Panel)

☐ Mass Production Body Welding Diagram

Side Sill (Outer Panel)

☐ Mass Production Body Welding Diagram

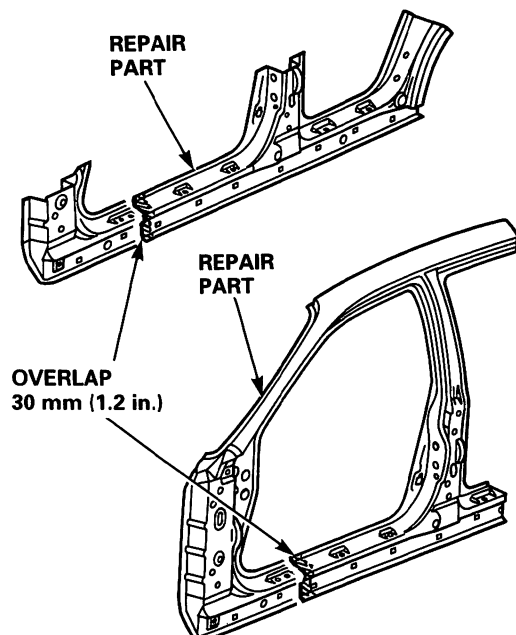


Side Sill (Outer Panel)

Replacement

1. Remove the related parts.
 - Doors
(remove according to part damaged)
 - Side trim panel
 - Door opening trim and door sill moldings
 - Carpet
 - Door switch
 - Seat belt
2. Pull out and straighten the damaged area.
Damage may extend to the inside sill and floor. Determine the extent of the damage first, so that the frame can be pulled out properly.
3. Cut and pry off the side sill
 - Check the damage on the outer side sill, then cut the repair outer side sill so it will overlap by 30 mm (0.2 in.) in the front and back.
 - Cut the side sill with a handsaw.

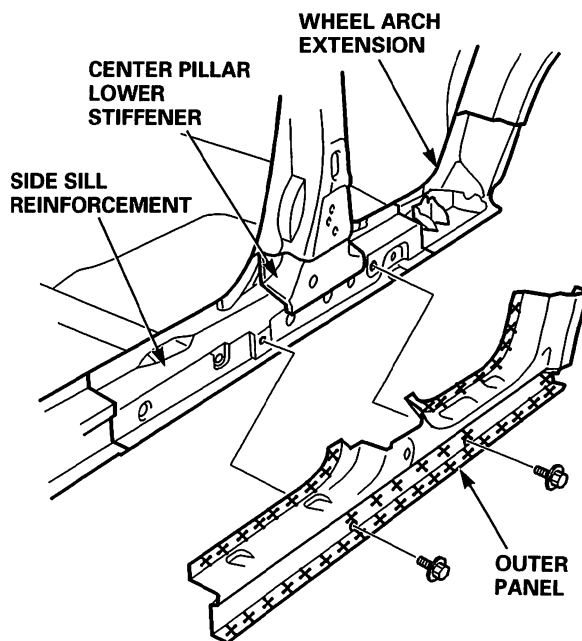
NOTE: Be careful not to cut the inside sill and center pillar stiffener and side sill reinforcement. This could result in extensive repair.



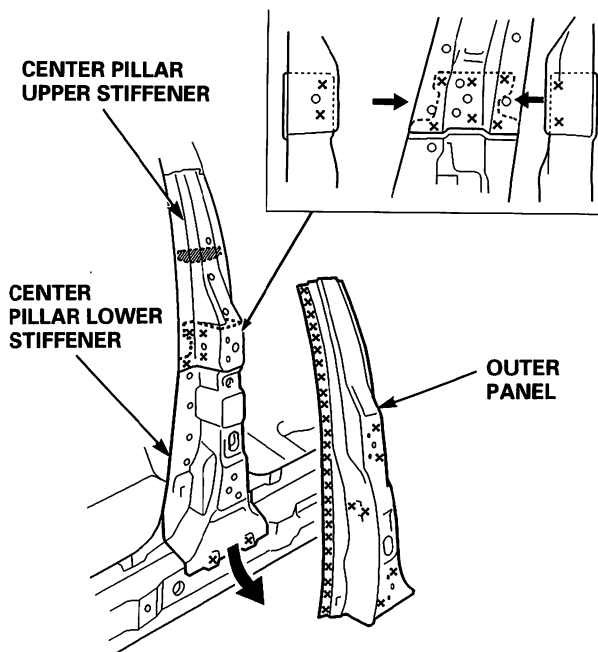
- Center punch around the spot weld imprints on the welded flange.
- Drill holes using the spot cutter.
- Pry off the welded flange with a chisel.

NOTE: Be careful not to let the holes penetrate down to the inner section.

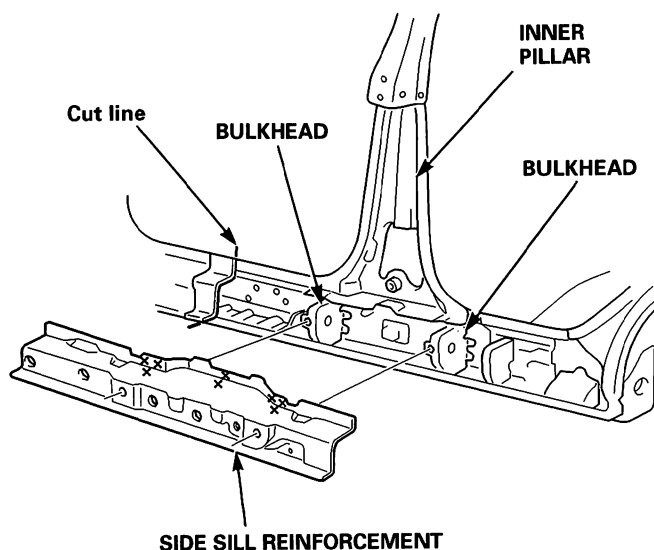
- If the damage involves part of the center pillar and rear wheel arch, cut them as shown with a handsaw.



- Check the inside sill, center pillar lower stiffener, side sill reinforcement, and inner pillar for position and damage.
- Cut the outer panel, and replacing the center pillar lower stiffener, if necessary.



- If necessary, cut the side sill reinforcement and replace it.

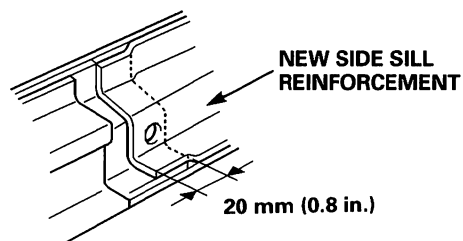


4. Straighten the related parts.
 - Fill any holed areas by MIG or gas welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Level and finish burrs at welded areas with a disc sander, then even them out with a hammer and dolly.
- Sand off the undercoat from both sides of the flange to be welded.

5. Cut the new side sill reinforcement so it will overlap the body side by approximately 20 mm (0.8 in.).



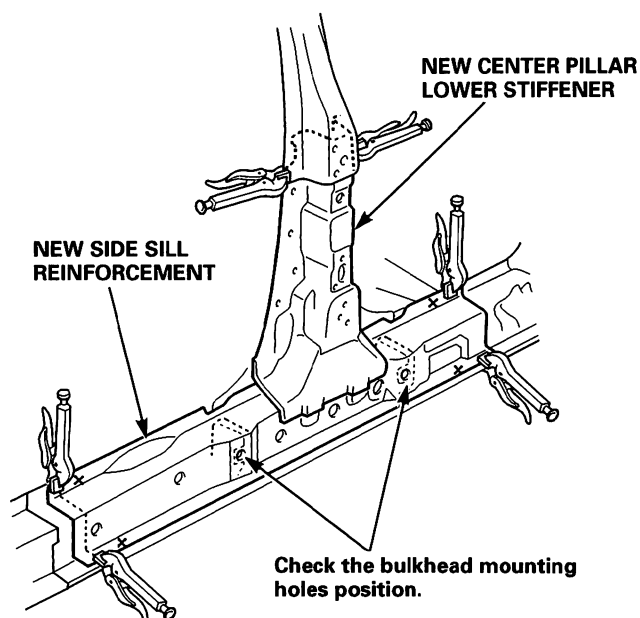
6. Set the side sill reinforcement and new center pillar lower stiffener.

- Sand off the undercoat from both sides of the welded flange with a sander to expose the steel plate.

NOTE: Apply the spot sealer to the side sill reinforcement welding surface when spot welding.

- Clamp the side sill reinforcement and front pillar lower stiffener and check the position of them using the body dimensional drawings (see section 6).
- Tack weld the side sill lower reinforcement.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



7. Clamp the new outer panel and temporarily install the doors, and check the door hinge mounting positions.

8. Remove the new outer panel and new center pillar lower stiffener.

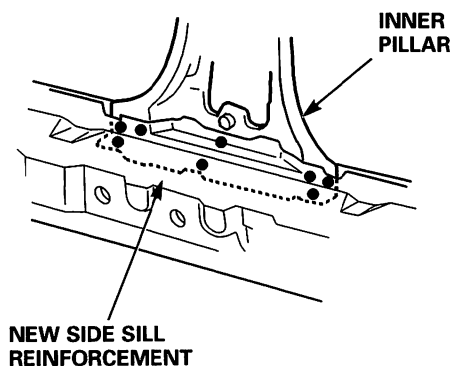
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Side Sill (Outer Panel)

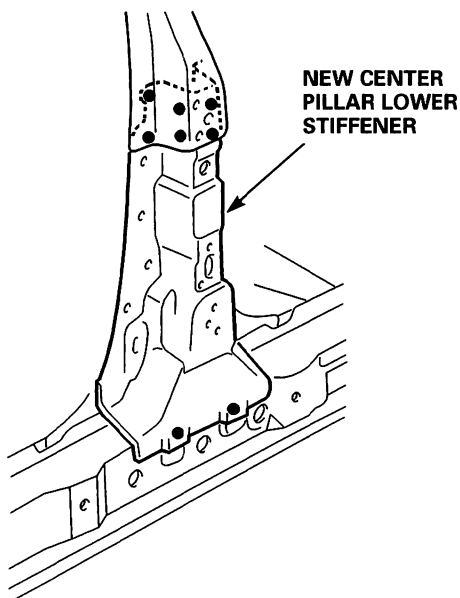
Replacement (cont'd)

9. Weld the new side sill reinforcement and inner pillar with a MIG welder.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



10. Apply the spot sealer to the welding surface of the new center pillar lower stiffener.
11. Clamp the new center pillar lower stiffener and recheck the door hinge mounting position.
12. Main weld the center pillar lower stiffener with a MIG welder.

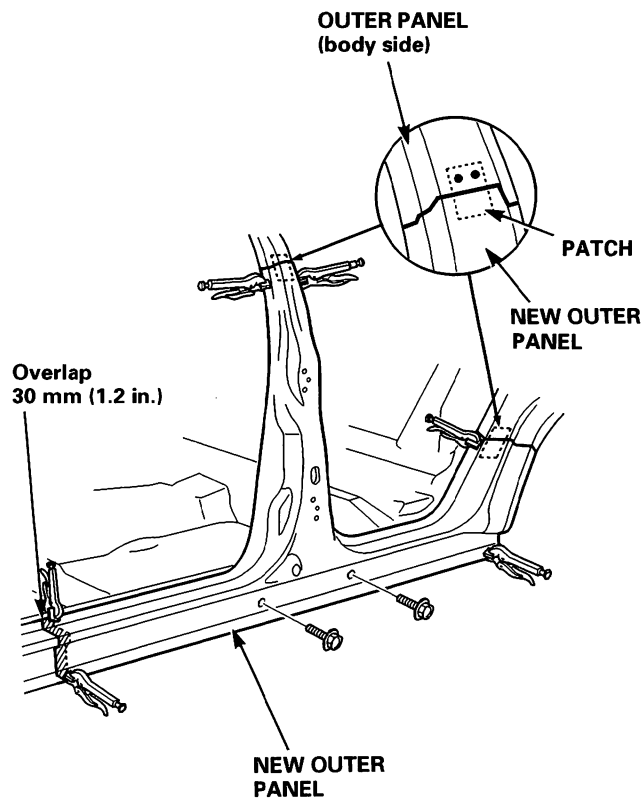


13. Clamp the new outer panel.

- Attach the patches to the cut sections of the center pillar and wheel arch (body side) and plug weld them.
- Sand off the undercoat from both sides of the welded flange on the outer panel.
- Clamp the outer panel in place with vise-grips.

NOTE: Apply the spot sealer to the welding surface when spot welding.

- Check the body dimensions (see section 6).



14. Tack weld the new outer panel.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

Remove the vise-grips and install the fender and doors. Check for differences in level and clearance.

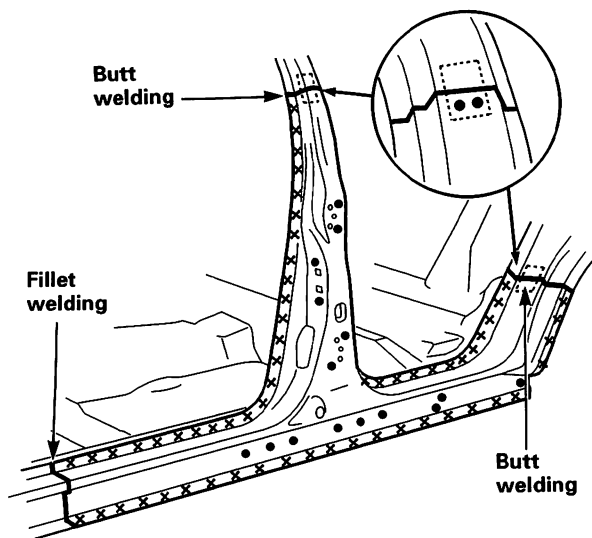
15. Perform main welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

- Weld the side sill and rear side outer joints with a MIG welder.
- Spot weld the side sill flanges.
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

- Make 5 mm (0.2 in.) holes in the MIG weld holes with the new outer panel, and weld the center pillar lower stiffener and side sill reinforcement with a MIG welder.



- Level the weld beads at the front and rear with a disc sander. Hammer down the projections, then fill with solder or putty to finish it.

16. Apply sealer to the mating surfaces of the floor and inside sill (see section 5).

17. Apply the paint. See Paint Repair section.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

18. Apply the undercoat.

Undercoat the front floor, and apply an anti-rust agent to the inside of the side sill and center pillar (see section 7).

19. Install the related parts.

- Install in the reverse order of removal.
- Check the doors for proper installation and level differences from the fender.

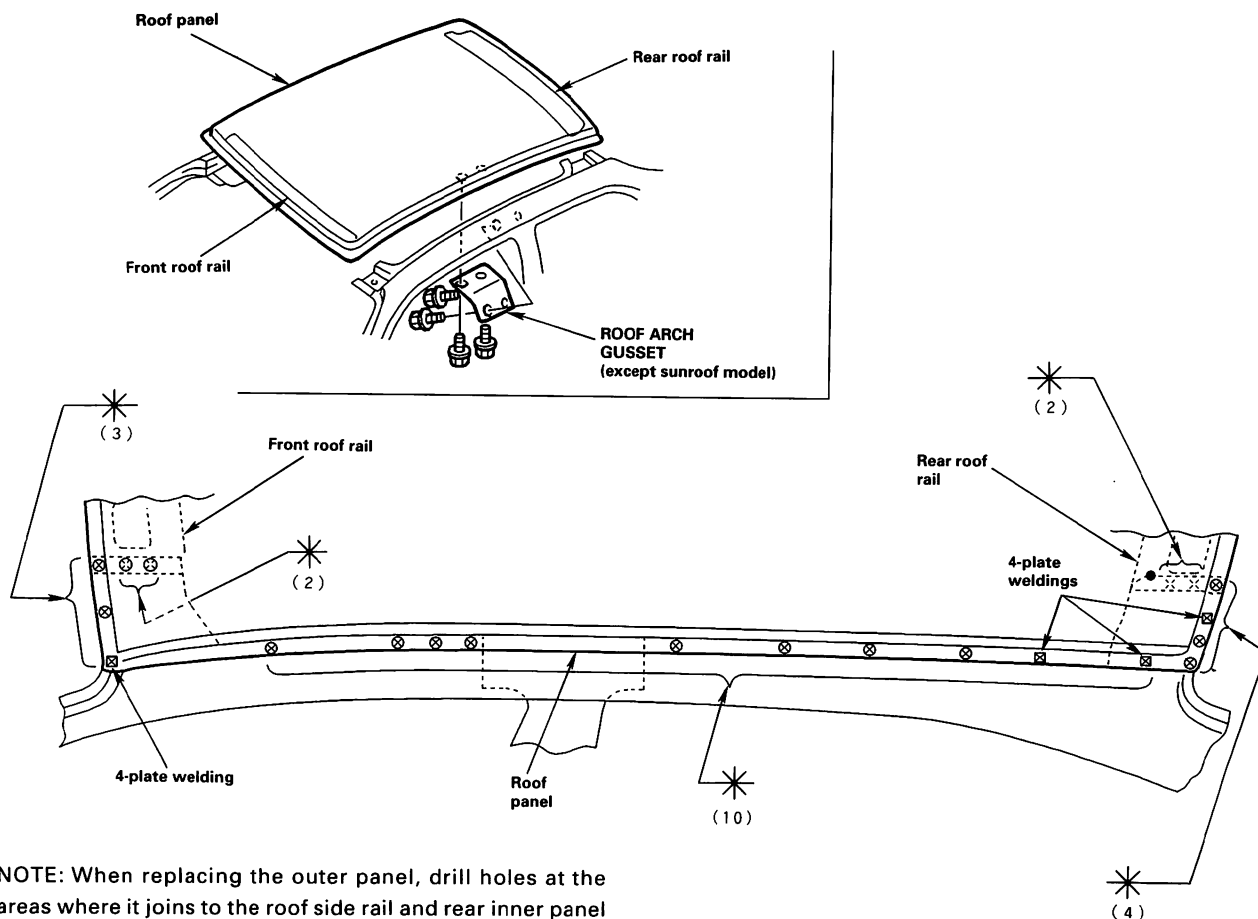
20. Clean the passenger compartment and check for water leaks.

Roof Panel

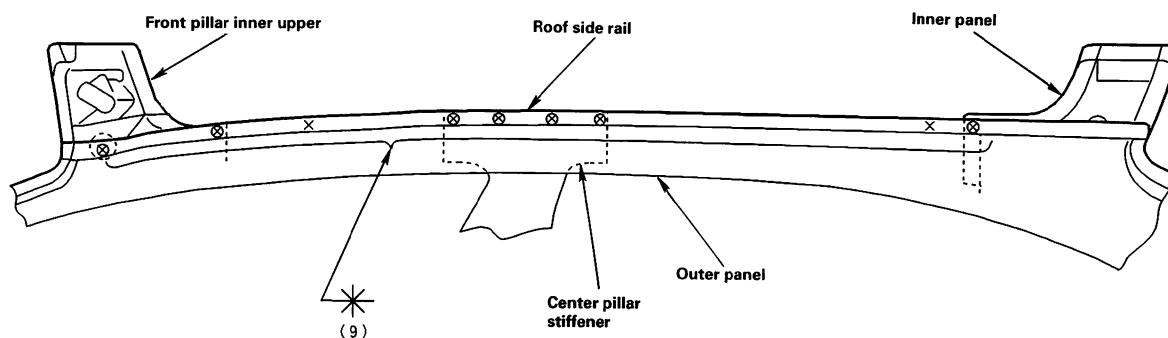
Mass Production Body Welding Diagram

Deformation of the roof panel is highly noticable in terms of the vehicle's outer appearance.

Before replacing the roof rail, make sure that the body is horizontal. Before welding the roof panel, adjust the roof rail flanges so that they contact the roof panel.



NOTE: When replacing the outer panel, drill holes at the areas where it joins to the roof side rail and rear inner panel as shown.



Replacement

1. Remove the related parts.

- Windshield
- Rear window
- Sunvisor
- Ceiling lights
- Headliner
- Sunroof frame (for some models)

2. Pull out and straighten the damaged area to approximately the original shape.

NOTE: Check the inner front pillar and the inner center pillar for position and damage.

Cut the roof panel and pull out the pillars if necessary.

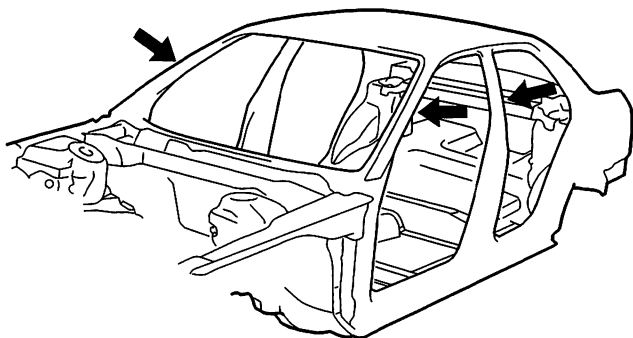
- Pull out the damaged area with the frame straightener before removing the roof panel.
- Attach the vehicle to the frame straightener by tightening the underbody clamps located at the horizontal pinch welds.

3. Keep the body level.

NOTE: Refer to the Accord Shop Manual for safety stand location points.

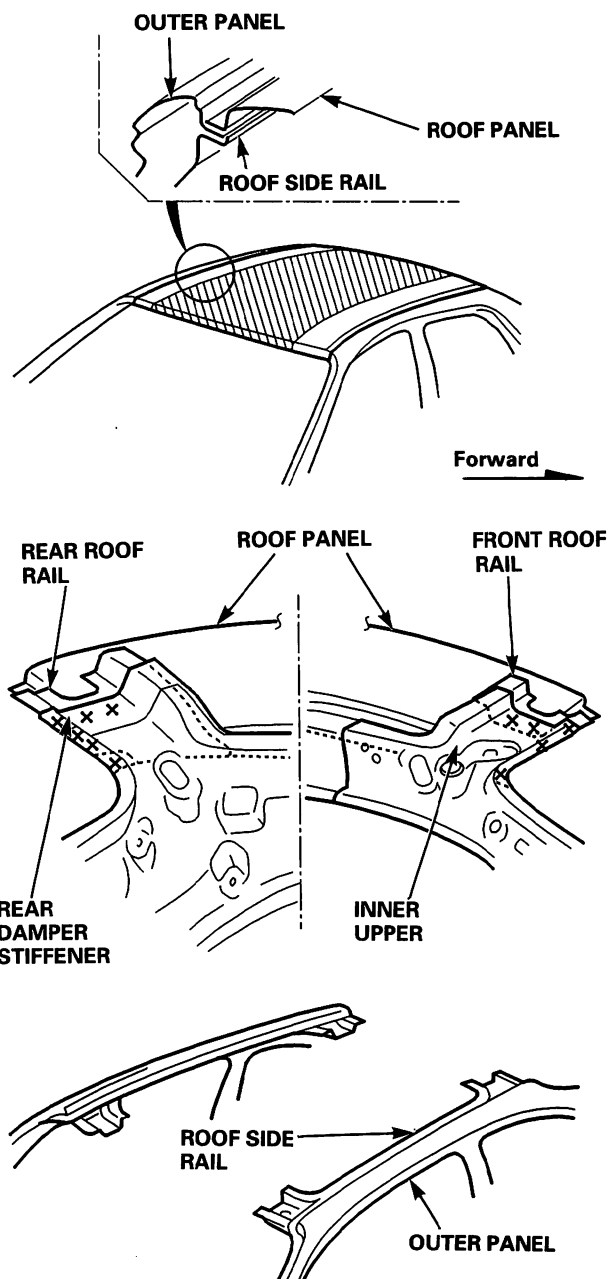
Jack-up the body at the front and back. Place safety stands to support engine weight, at the four designated places of the side sills.

NOTE: Make sure that the right and left pillars are parallel with the windshield surface. Check the door for proper opening and closing.

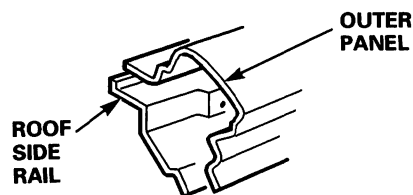


4. Cut off the shaded areas of the roof panel.

- Cut the roof rail weld flange with a handsaw at the four corners.
- Using a chisel, pry off the roof panel along the bold lines as shown.
- Center punch around the spot weld imprints of the roof gutter welded flange.
- Drill holes using the spot cutter.
- Using a chisel, pry off the welded flange.



NOTE: If necessary, replace the outer panel (see page 4-28).



(cont'd)

Roof Panel

Replacement (cont'd)

5. Plug weld the holes with a MIG welder.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

- Level and finish the burrs on the welded flanges with a disc sander.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

- Even out the roof side rail welded flange with a hammer and dolly for a close fit with the roof panel welded flange.

6. Apply paint to the underside of the new roof panel. See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

7. Set the new roof panel.

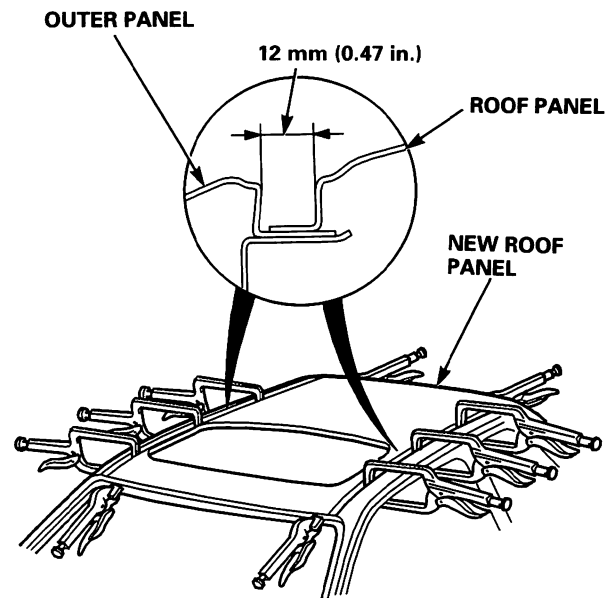
- Sand off the undercoat from both sides of the flange sections to be spot welded to expose the steel plate.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

- Clamp the roof panel with vice-grips.

NOTE:

- Check that the flange surfaces fit closely. Be careful not to twist or deform the roof panel.
- Check the width of the groove of the roof moldings on both sides.
- Apply the spot sealer to the welding surface when spot welding.



- Check the body dimension (see section 6).

8. Tack weld the new roof panel.

⚠ WARNING

To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

- Spot weld the clamped sections to temporarily install the roof panel.
- Set the windshield and rear window, and check the roof panel for proper installation.
- Install the roof molding and check the width of the groove.

9. Perform the main welding.

⚠ WARNING

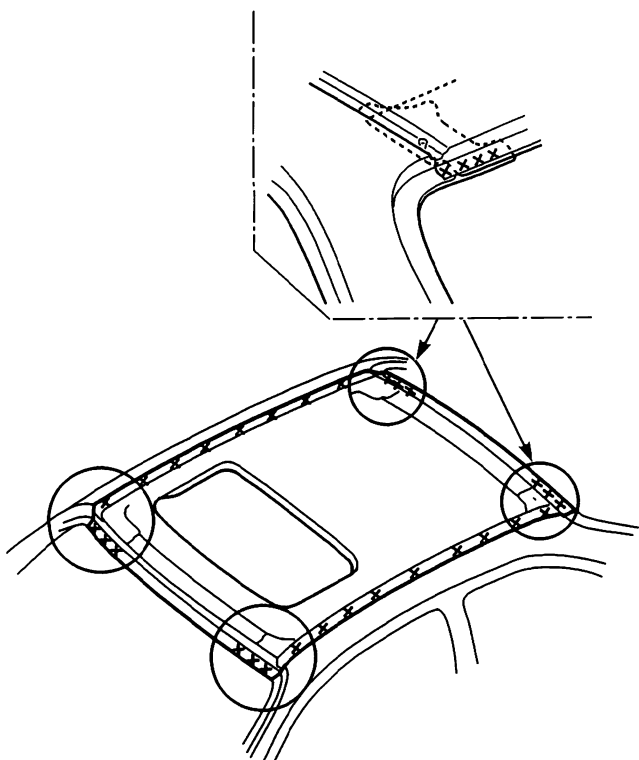
To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Spot weld the roof rails at the front and rear.
- Spot weld the roof arch.
- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by MIG welds.

- Smooth the spot weld areas under the windshield and rear window with a hammer and dolly.

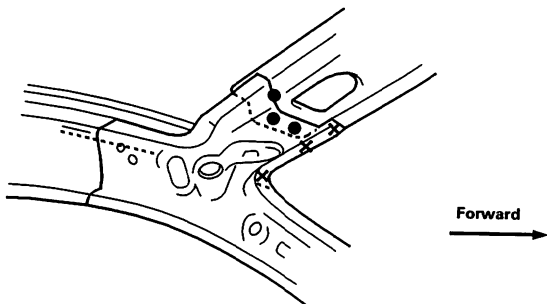
NOTE: After welding the pillars, grind and finish the welded areas flat and blend them into the roof panel.



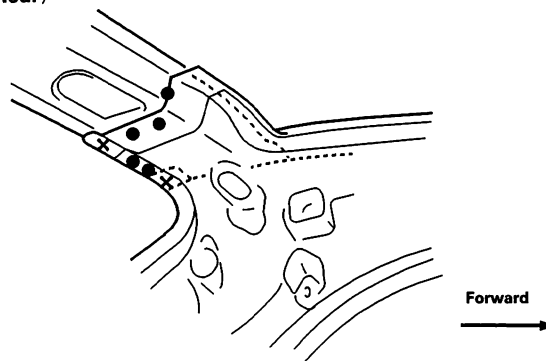
- Weld the roof rail from the inside by MIG welding as shown.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

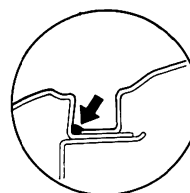
⟨Front⟩



⟨Rear⟩



10. Apply and level the sealer to the welded areas.



11. Apply the paint See Paint Repair section.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

12. Apply an anti-rust agent to the inside of the roof side rail.

13. Install the related parts in the reverse order of removal.

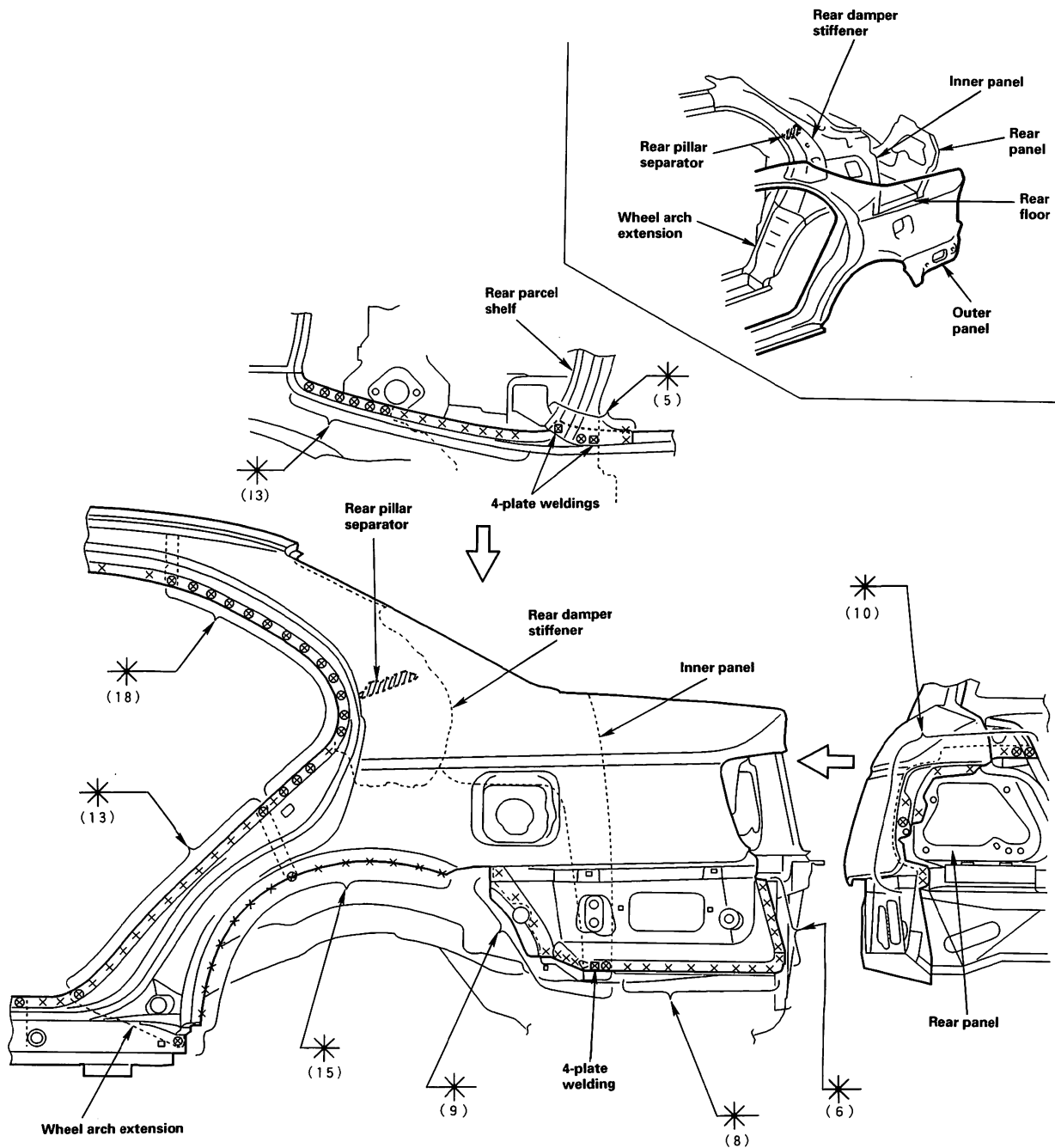
14. Check and clean.

- Check the windshield and rear window for water leaks.
- Make sure the sunroof operates smoothly.
- Clean the passenger compartment thoroughly.

Rear Side Outer Panel

Mass Production Body Welding Diagram

The rear side outer panel is a conspicuous part of the vehicle. It is especially important for the body line continuing from the door. Therefore, pay particular attention to it when conducting work. This part also is next to the trunk lid, door and rear window, and other parts and must be aligned with them.



Replacement

1. Remove the related parts.

- Rear bumper
- Rear window
- Trunk lid
- Taillight
- Rear pillar trim panel
- Trunk side panel
- Rear seat
- Rear seat belt
- Fuel fill pipe (left side only)

⚠ WARNING Do not smoke while working near the fuel system. Keep open flame away from the fuel system. If necessary, remove the fuel tank and/or lines before welding nearby. Drain fuel into an approved container.

2. Pull out and straighten the damaged area.

NOTE: Carefully check the inner pillar and trunk gutter for position and damage. Pull out the inner panel by cutting the outer if necessary.

- Jack-up the body and place safety stands at the four designated support points.
- Pull out the damaged rear side outer panel with the frame straightener, then pull out and straighten the rear pillar inner panel and rear wheelhouse.

NOTE: Be careful not to pull out more than necessary.

- After pulling, check the inner pillar, rear panel and trunk gutter position using the body dimensional drawings (see section 6).

3. Peel off the undercoat.

Heat the undercoat at the weld areas of the rear wheel house with a gas torch and peel off the undercoat with a metal spatula.

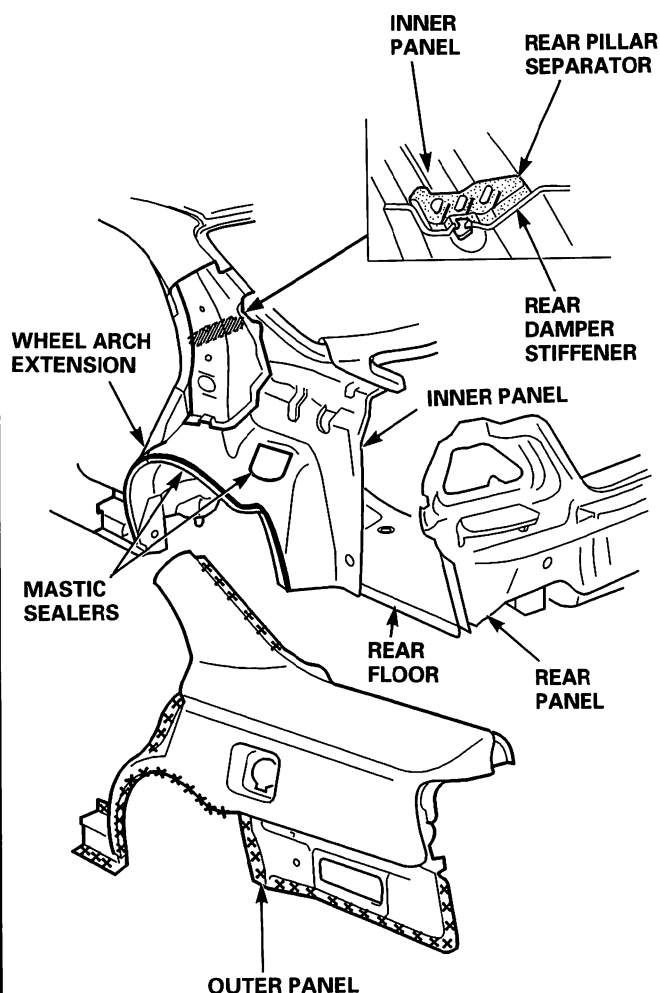
⚠ WARNING Do not smoke while working near the fuel system. Keep open flame away from the fuel system. If necessary, remove the fuel tank and/or lines before welding nearby. Drain fuel into an approved container.

4. Cut and pry off the rear side outer panel.

- Cut at the rear pillar and side sill with a handsaw.
- Cut the panel from the body with a chisel, leaving the weld flange at the inner panel intact.

NOTE: Do not cut or damage the inner panel, rear damper stiffener, and rear pillar separator.

- Cut at the side sill or wheel arch according to the extent of the damage.
- Center punch around the spot weld imprints on the remaining flange.
- Drill out the spot welds with the spot cutter.
- Pry off the welded flange sections using a chisel.



(cont'd)

Rear Side Outer Panel

Replacement (cont'd)

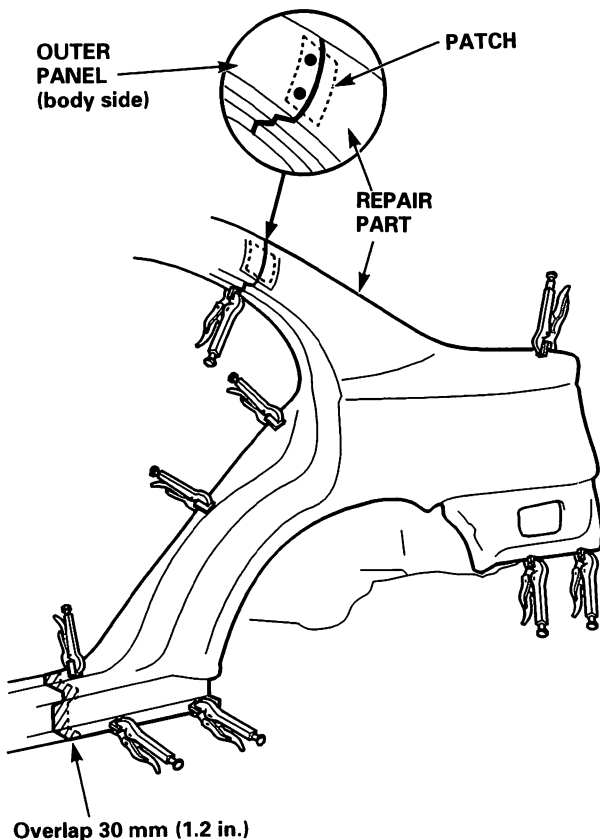
5. Straighten the inner panel and related parts.
 - Use a slide hammer to even out the damaged areas of the rear wheel arch.
 - Fill the holes drilled by MIG or gas welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Level and finish burrs, etc. with a disc sander.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

6. Cut and set the repair part.
 - Cut the repair part cut so that the repair part overlaps the side sill by 30 mm (1.2 in.).
 - Attach the patch to the cut section of the rear pillar (body side) and plug weld it.



- Apply body paint to the back of the repair part.
- See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames or cigarettes.
- Remove the undercoat from both sides of the weld flange with a sander to expose the steel plate.

NOTE: Apply the spot sealer to the welding surface when spot welding.

7. Check the position of the rear panel and repair part using the body dimensional drawings (see section 6).

Temporarily spot weld the panel at the clamped positions

⚠ WARNING

To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

8. Remove the vise-grips and install the rear door, taillight, rear bumper, and trunk lid.

NOTE:

- Check for flushness of the front fender, doors, and the rear fender, taillight, rear bumper, and make sure the body lines flow smoothly.
- Check the alignment of the rear window and trunk lid.

9. Perform the main welding.

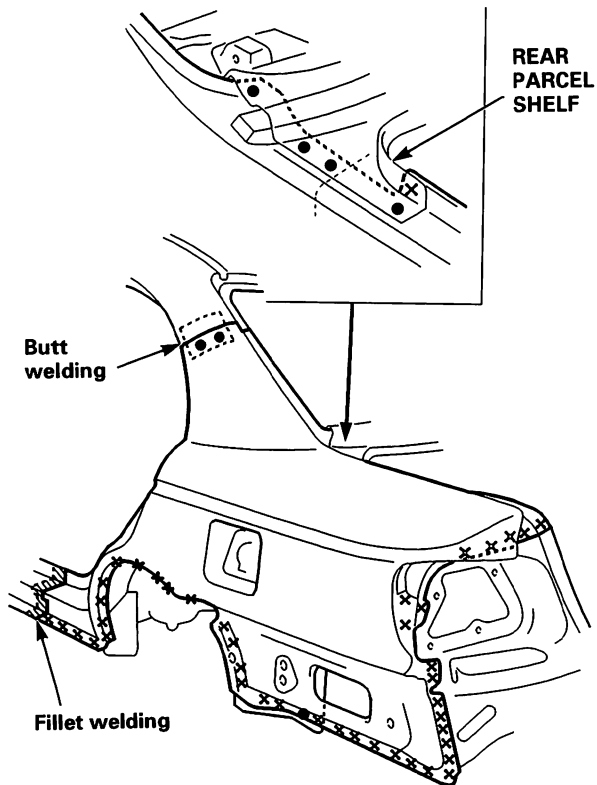
⚠ WARNING

To prevent eye injury and burns when welding, wear an approved welding helmet, gloves, and safety shoes.

- Make 20 % to 30 % more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.

- Make 5 mm (0.2 in.) holes in the MIG weld hole with the repair part and the inner panel and center pillar stiffener with a MIG welder.
- Weld the outer panel at the rear pillar and side sill with a MIG welder.



10. Finish the welded areas.

- Level the MIG welded areas with a disc sander.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

- Even out high areas with a hammer. Be careful not to deform them.
- Even out the spot welded flange areas with a hammer and dolly.
- Fill in deformations and level differences of the welded areas with solder or putty, then finish.

11. Apply the sealer (see section 5).

Apply sealer to the fuel filler section, trunk lid opening joint and around the taillight area of the rear panel.

12. Apply paint. See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

13. Apply the undercoat.

Apply undercoat to the wheelhouse and apply anti-rust agent to the inside of the outer panel (see section 7).

14. Install the related parts in the reverse order in which they were removed.

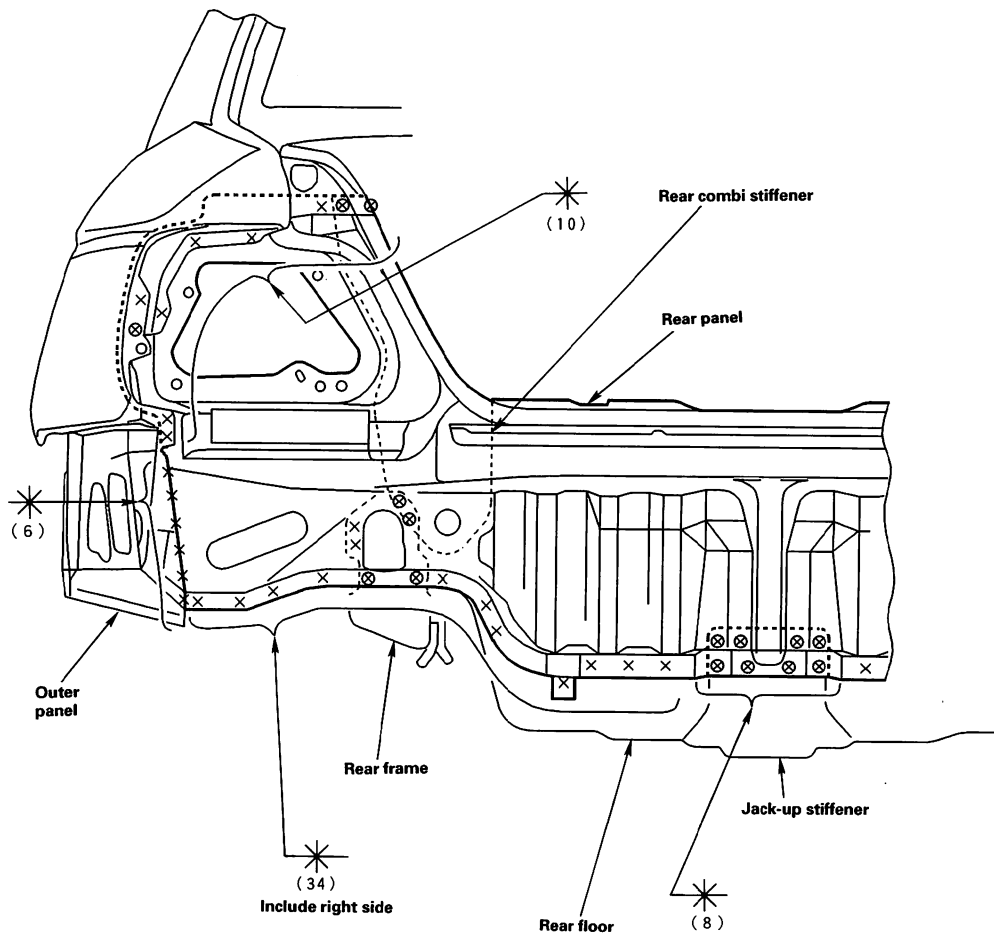
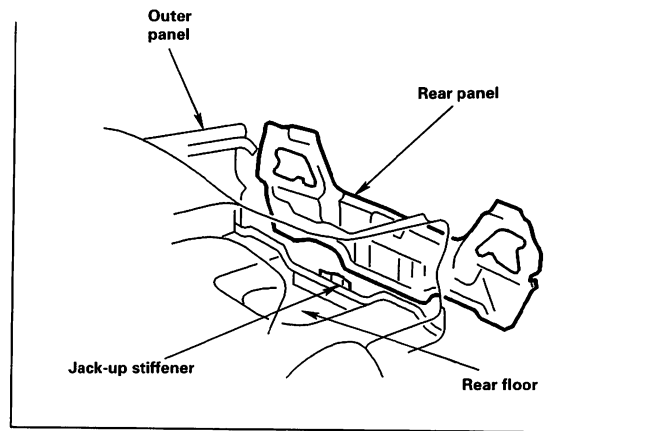
15. Inspect, check, and clean.

- Adjust the clearance with the door and trunk lid then adjust the level differences and fit. Check operation.
- Test for leaks in the trunk and passenger compartments.
- Check the quarter glass for water leaks.
- Clean the trunk floor.

Rear Panel

Mass Production Body Welding Diagram

The rear panel is joined to the rear outer panel and rear floor, and maintains the righthit of both sides of the rear body. It must be welded carefully.



Replacement

1. Remove the related parts.

- Rear bumper
- Rear bumper beam
- Trunk lid lock and its attachments
- Other related parts
- Rear and side trim panels
- Taillights

2. Pull out and straighten the damaged area.

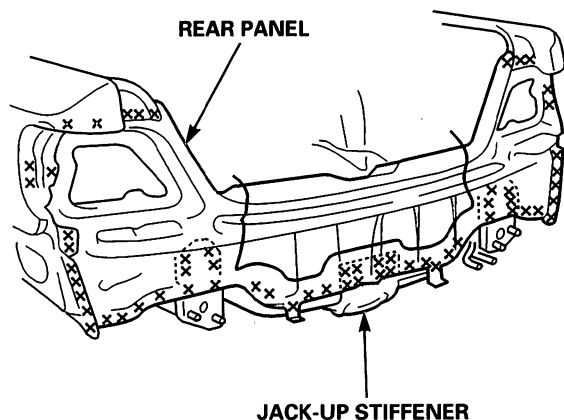
- Pull out the related rear side inner panel, rear floor, rear side frame, and other damaged parts with the frame straightener.
- Attach the vehicle to the frame straightener by tightening the underbody clamps located at the jack-up points on the bottom of the side sill and the side sill side flanges.

3. Cut and pry off the rear panel.

- Cut along the bold line shown with a gas cutter or an air chisel and remove the rear panel.
- Center punch around the spot weld imprints with the rear side outer panel and rear floor.
- Drill holes using the spot cutter.

NOTE: Be careful not to let holes penetrate through to the rear floor.

- Remove weld flange with a chisel.

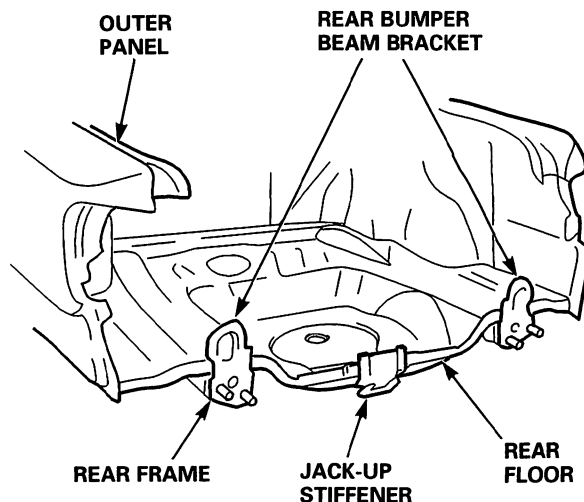


4. Straighten the related parts.

Repair all cracks, holes or other defects by MIG or gas welding.

⚠ WARNING

To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.



5. Set the new rear panel and rear.

- Paint the inside of the rear panel with the body color.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

- Remove the undercoat from the welding section of the panels and expose the steel plate using a disc sander.

⚠ WARNING

To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

NOTE: Apply the spot sealer to the welding surface when spot welding.

- Check the rear panel position using the body dimensional drawings (see section 6).

(cont'd)

Rear Panel

Replacement (cont'd)

6. Tack weld the rear panel.

- Weld the clamped sections for temporary installation.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

7. Open and close the trunk lid to check for proper installation.

NOTE: Make sure the trunk lid locks securely.

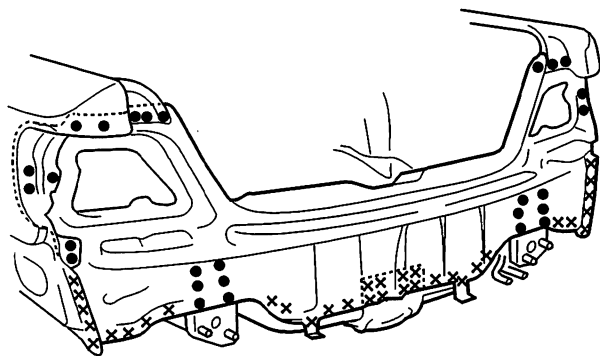
Position the rear panel in its correct position with the rear bumper and taillight installed.

8. Perform the main welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Make 20% to 30% more spot welds than there were holes drilled.

NOTE: If there isn't room for spot welds, compensate by using MIG welds.



9. Finish the welding area.

- Level the welded areas with a disc sander, then even out high areas with a hammer. Be careful not to deform them.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

- Even out the spot welded flange area with a hammer and dolly.

10. Apply the sealer (see section 5).

- Apply sealer to the rear side outer joint and around the taillight areas of the rear panel.
- Apply sealer to the rear panel and rear floor joint.

11. Apply the paint. See Paint Repair section.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

12. Apply anti-rust agent (see section 7).

- Apply agent to the outer panel, rear panel and rear floor joint.
- Apply agent to the inside of the jack position stiffener.

13. Install the related parts in the reverse order in which they were removed.

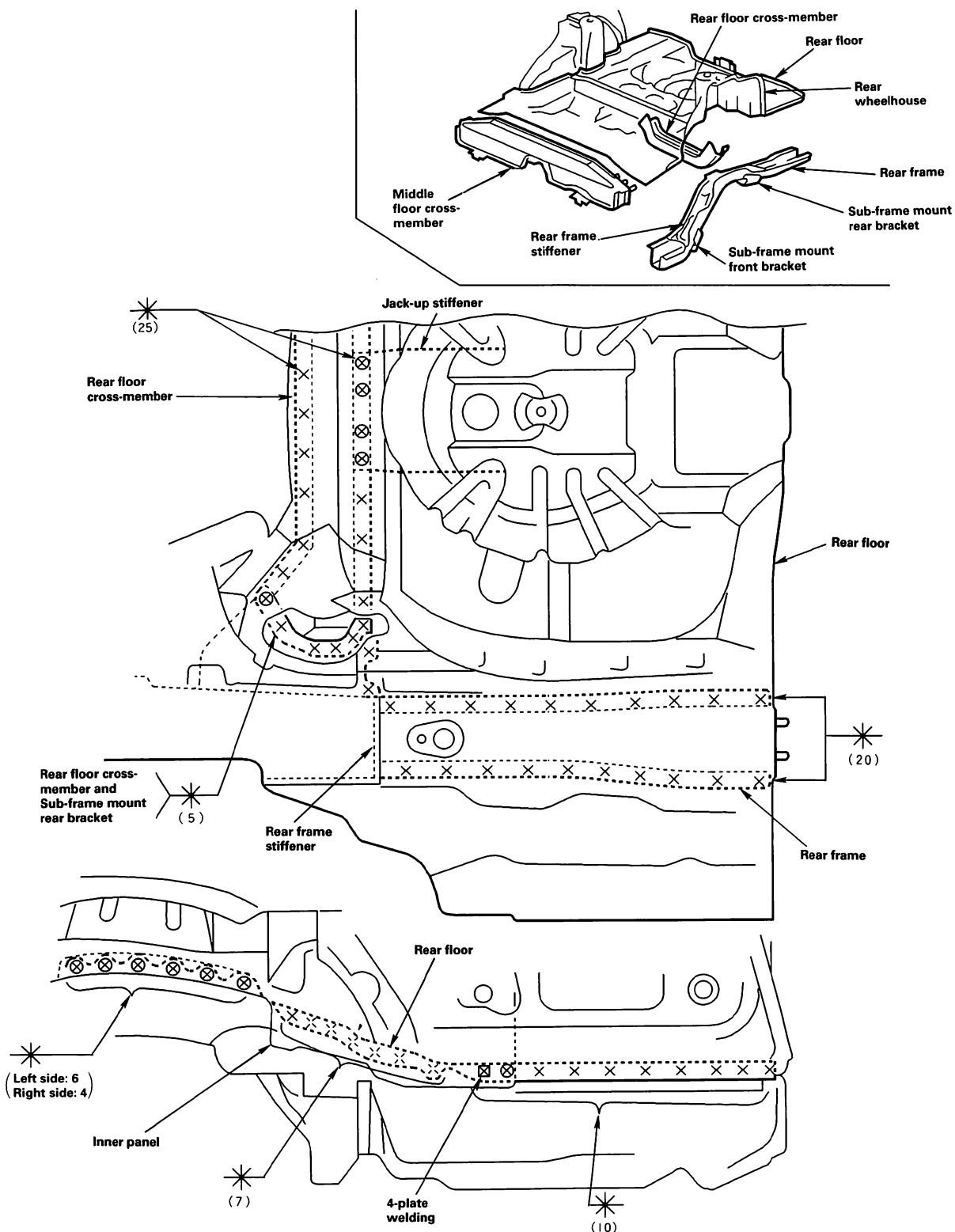
14. Inspect, check, and clean.

- Adjust the clearance with the trunk lid, then adjust the level differences and fit. Check operation.
- Test for leaks in the trunk compartment.
- Clean the trunk floor.

Rear Floor/Rear Floor Cross-member

Mass Production Body Welding Diagram

The rear floor and rear floor cross-member are the base of the rear body and it is critical for the rigidity of the rear body. During replacement, refer to the body dimension chart or body correction chart and determine the position to set the rear floor, and rear floor cross-member, properly. Be sure that the rear floor is not bent or deformed. Weld securely following the welder manufacturer's instructions to maintain the rigidity of the body.



Rear Floor/Rear Floor Cross-member

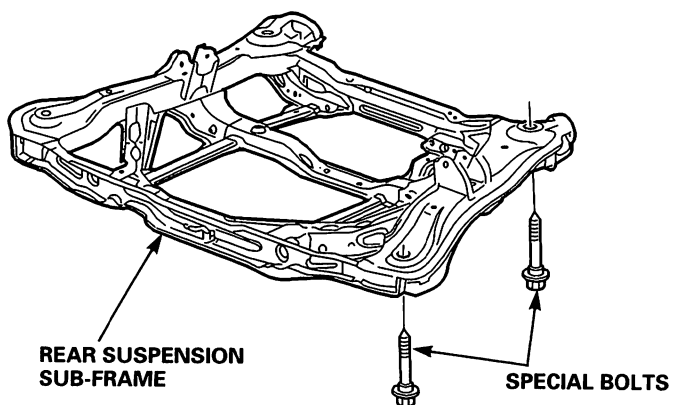
Replacement

1. Remove the related parts.
 - Rear seat
 - Trim and other luggage compartment fittings
 - Left and right rear suspension assembly
 - Parking brake parts
 - Muffler
 - Wire harness
 - Other parts as necessary
2. Disconnect the fuel lines and remove the rear suspension sub-frame.



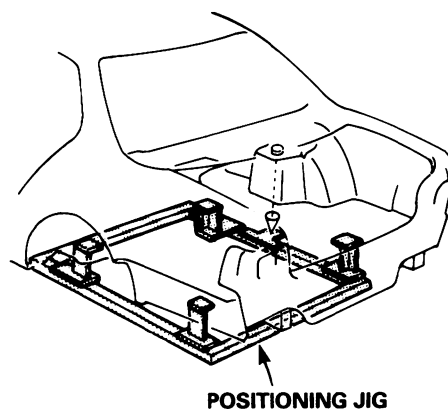
WARNING Do not smoke while working near the fuel system. Keep open flame away from the fuel system. If necessary, remove the fuel tank and/or lines before welding nearby. Drain fuel into an approved container.

SPECIAL BOLT: 14 × 1.5 mm
103 N·m (10.5 kgf·m,
76 lbf·ft)
Replace.



3. Pull out and straighten the damaged area.
 - Check whether the damage extended to the rear floor cross-member, rear wheelhouse, and the passenger compartment. Pull out the damaged parts using the frame corrector.
 - Impact damage to the rear floor spreads to related parts such as the rear frame, rear floor cross-member, and rear wheel house.
 - Therefore, pull out the damaged areas with the frame straightener and measure in reference to body dimensional drawing.

NOTE: Use of a positioning jig is recommended (see page 1-7).



4. Peel off the undercoat. Heat the undercoat at the weld areas of the lower rear floor with a gas torch and peel off the undercoat with a metal spatula.

CAUTION: Be careful not to burn the fittings inside the trunk compartment and rear wheelhouse insulator while heating.

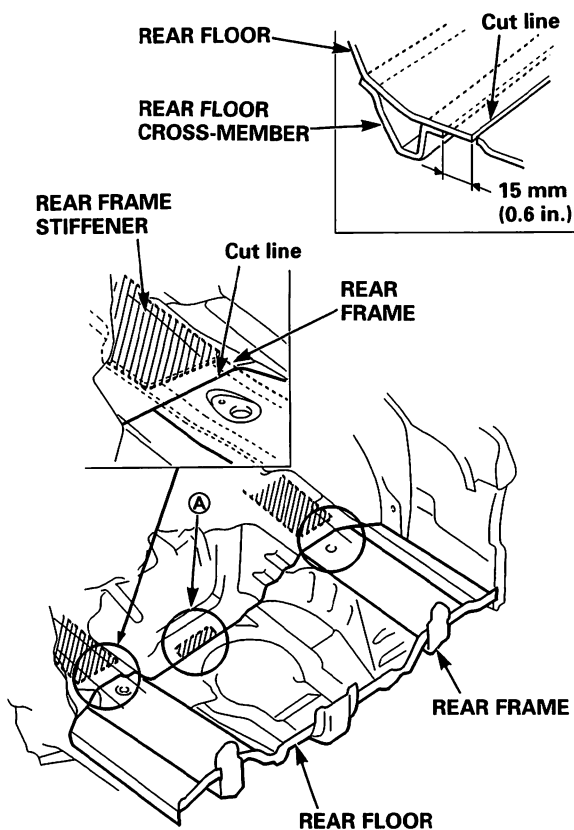
5. Cut and pry off the rear panel (see page 4-36).

6. Cut and pry off the rear floor.

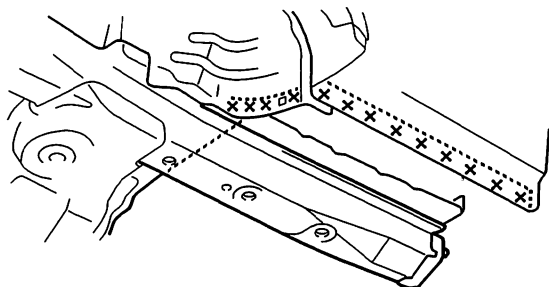
- Cut off the rear floor with a gas cutter or air chisel.
- Leave the spot welded flanges of the rear frame and rear floor cross-member shown by the bold line in the figure below.

NOTE:

- Cut the rear floor 15 mm (0.6 in.) from the welded flange of the rear floor cross-member.
- Do not cut or damage the rear frame stiffener.

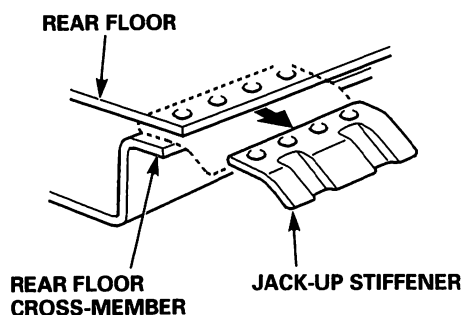


- Center punch around the spot weld imprints on the remaining welded flanges.
- Drill holes with a spot cutter.



Ⓐ section:

Drill and pry off the jack-up stiffener.

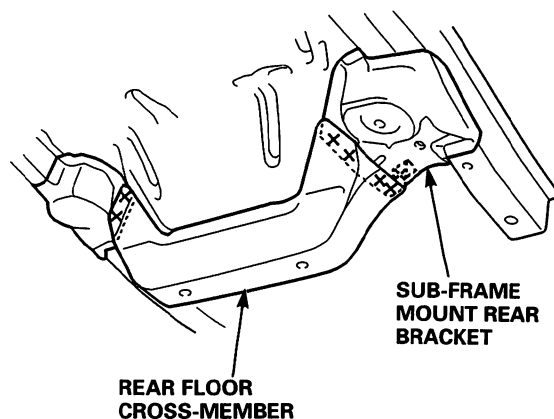
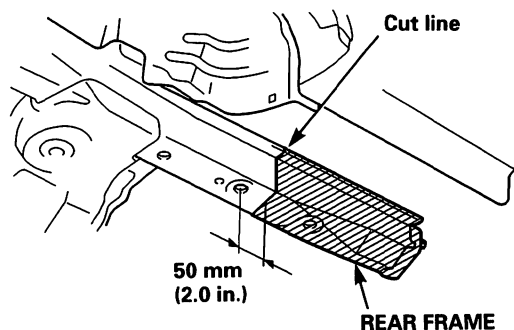


7. Check the damage and position of the rear frame and rear floor cross-member.

- Smooth the welding flanges of the rear frame with a hammer and dolly.

NOTE: Check that the rear frame is parallel at the right and left.

8. If necessary, cut the rear frame, and replace the rear floor cross-member.



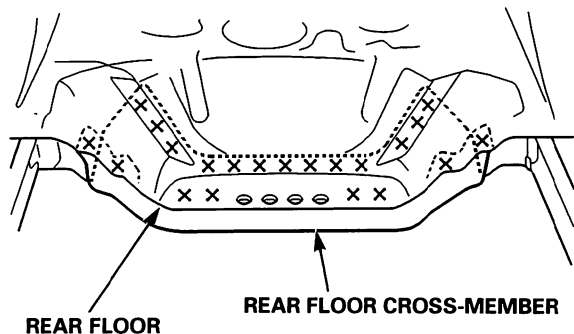
(cont'd)

Rear Floor / Rear Floor Cross-member

Replacement (cont'd)

- Strike a center punch around the spot weld imprints on the rear floor cross-member from inside the trunk compartment.
- Drill out the spot welds with the spot cutter.

NOTE: Keep the holes to a minimum since they will be used as weld holes MIG welding of the new part.



9. Straighten the related parts.

- Remove the burrs from the spot weld or MIG weld using a sander.

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

- Fill any holes made in the spot welded areas of the flange by MIG or gas welding.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, groves, and safety shoes.

10. Keep the body level.

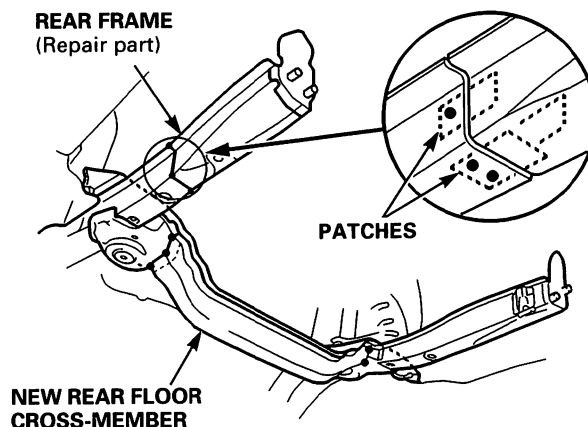
Jack the body at the front and back. Place safety stands at the four designated places of the side sill.

11. Set the new rear floor cross-member and rear from (repair part), and check the position of the rear frames using the body dimensional drawings (see section 6) and the positioning jig.

12. Tack weld the new rear floor cross-member and rear frame (repair part).

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, groves, and safety shoes.

- Attach the patches to the cut section of the rear frame, and weld them.

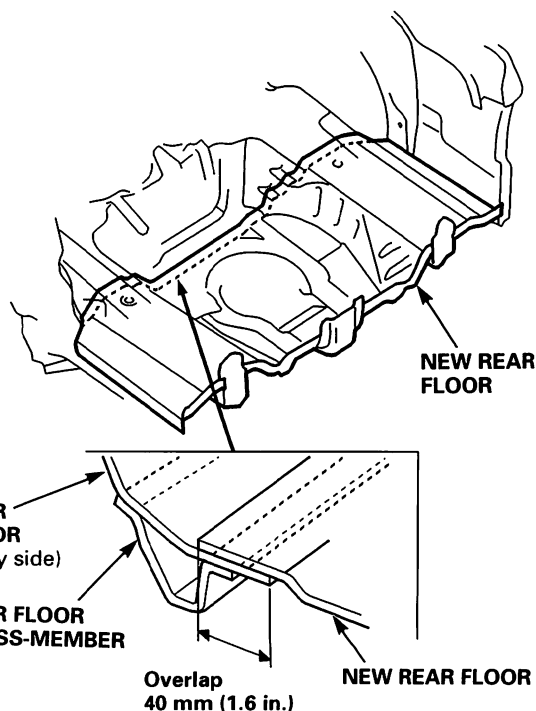


13. Cut the new rear floor to align it with the body.

NOTE: Cut the new part so it overlaps the body side floor by approximately 40 mm (1.6 in.).

Remove the undercoat from both sides of the areas to be welded with a sander to expose the steel plate.

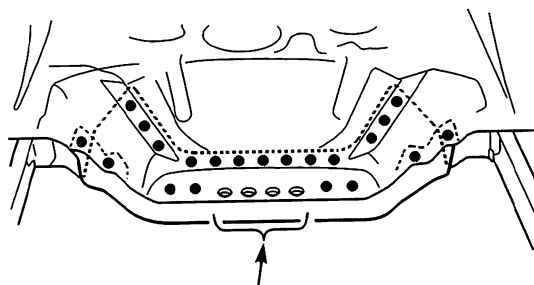
⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.



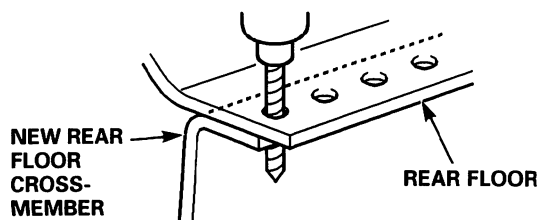
14. Clamp the new rear floor, and check the position of the rear wheelhouse, inner panel and outer panel.
15. Check the rear frame in its correct position with the rear sub-frame installed.
16. Remove the new rear floor.
17. Weld the rear floor cross-member and rear floor (body side).

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

NOTE: Weld as much as possible with the positioning jig still mounted.



Align the rear floor holes (body side), and drill the holes in the plug weld holes with the new rear floor cross-member.

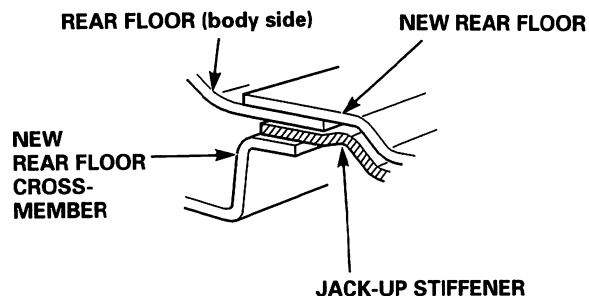


18. Finish the welding area.
Roughly grind the welds in the trunk compartment with a disc grinder. Be sure to leave the finishing allowance.

NOTE: Take care not to grind excessively.

19. Set the new rear floor.
 - Drill the holes for welding the new rear floor.
 - Check that the weld flange surfaces fit closely.

- Insert the jack-up stiffener (new part) between the rear floor (body side) and rear floor cross-member.



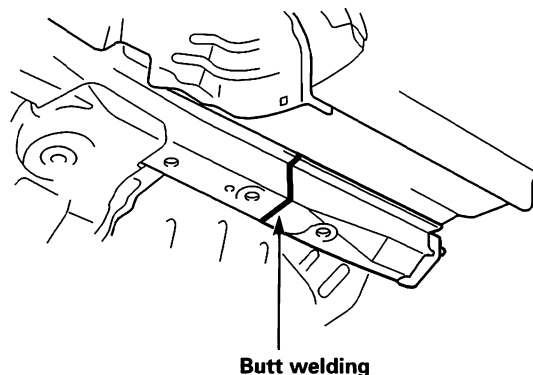
- Tack weld the new rear floor.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

20. Clamp the rear panel and check the outer panel and trunk gutter position.
Remove the rear panel.
21. Main weld the new rear floor, rear frame (repair part) and rear floor cross member.

⚠ WARNING To prevent eye injury and burns when welding, wear an approved welding helmet, gloves and safety shoes.

- Weld the rear frame.

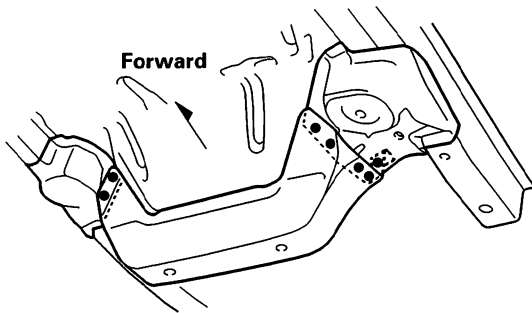


(cont'd)

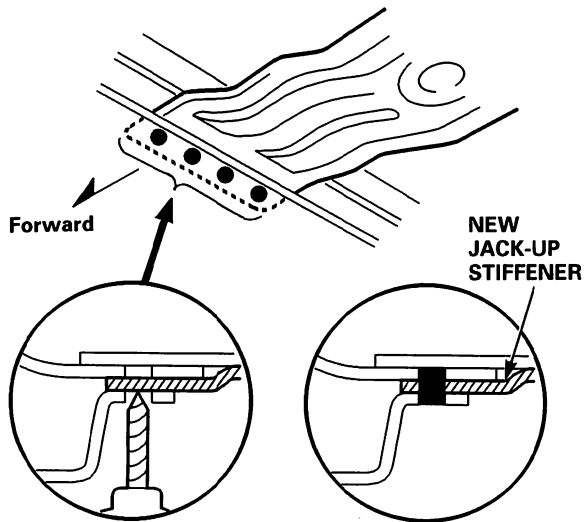
Rear Floor / Rear Floor Cross-member

Replacement (cont'd)

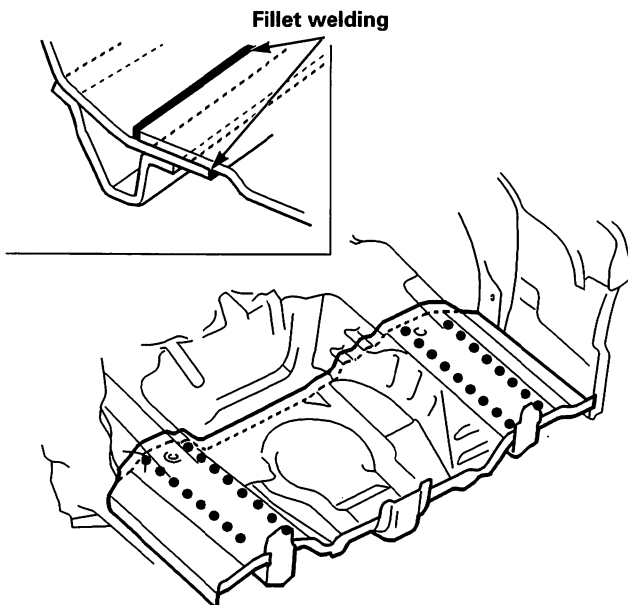
- Weld the new rear floor cross-member.



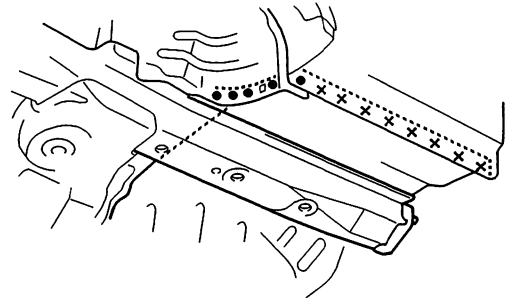
- Drill the holes for welding the new jack-up stiffener and weld the rear floor cross-member.



- Weld the new rear floor.



- weld the inner panel and outer panel.



- Weld the rear panel (see page 4-38).

22. Finish the welded area.

Even out the welded area with a hammer and dolly , and fit the flange surfaces closely together.

23. Apply sealer at the overlapped area of the rear floor, and the welded surfaces of the rear wheelhouse and rear end inner panel. Seal gaps completely (see section 5).

24. Apply the paint. See Paint Repair section.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

25. Apply the undercoat.

Apply anti-rust agent to the inside of the rear floor cross-member, jack-up stiffener, and jointed areas of the rear floor (see section 7).

26. Weld the rear panel and install the related parts.

Install in the reverse order in which they were removed.

27. Inspect and clean.

- Measure the rear wheel alignment.
- Clean the inside of the trunk compartment.

Cross Section of Body and Sealants

Engine Compartment , Front Wheelhouse/
 Damper Housing 5-2
Dashboard, Floors, Roof Panel/Outer Panel 5-3
Rear Side Outer Panel/Rear Panel 5-4
Rear Wheelhouse, Under Floor 5-5

NOTE: Seal the following areas to prevent air
leaks, water leaks and rust.
▶ : Sealing locations

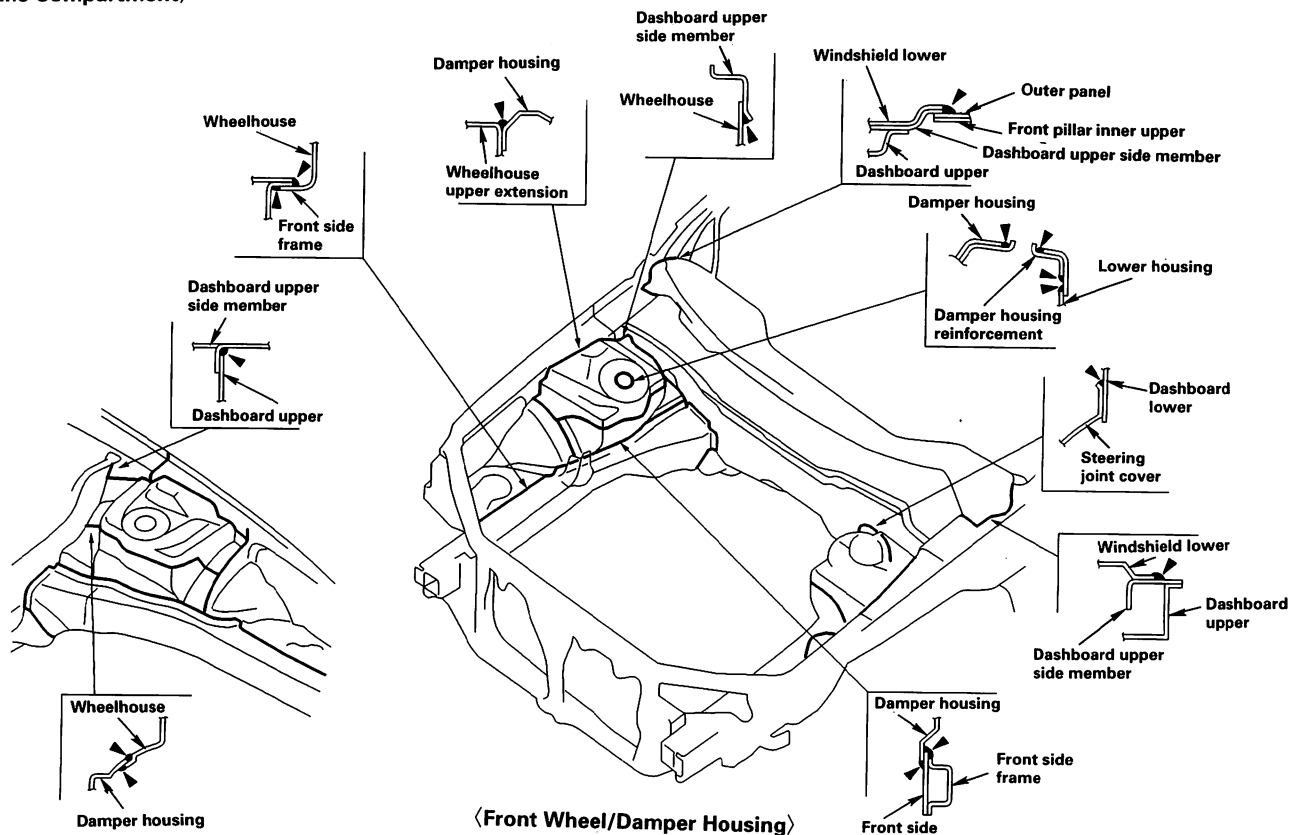
Spot Sealer : 3M #08892 (internal)
 : 3M #08893 (External)

Use materials above or equivalents.

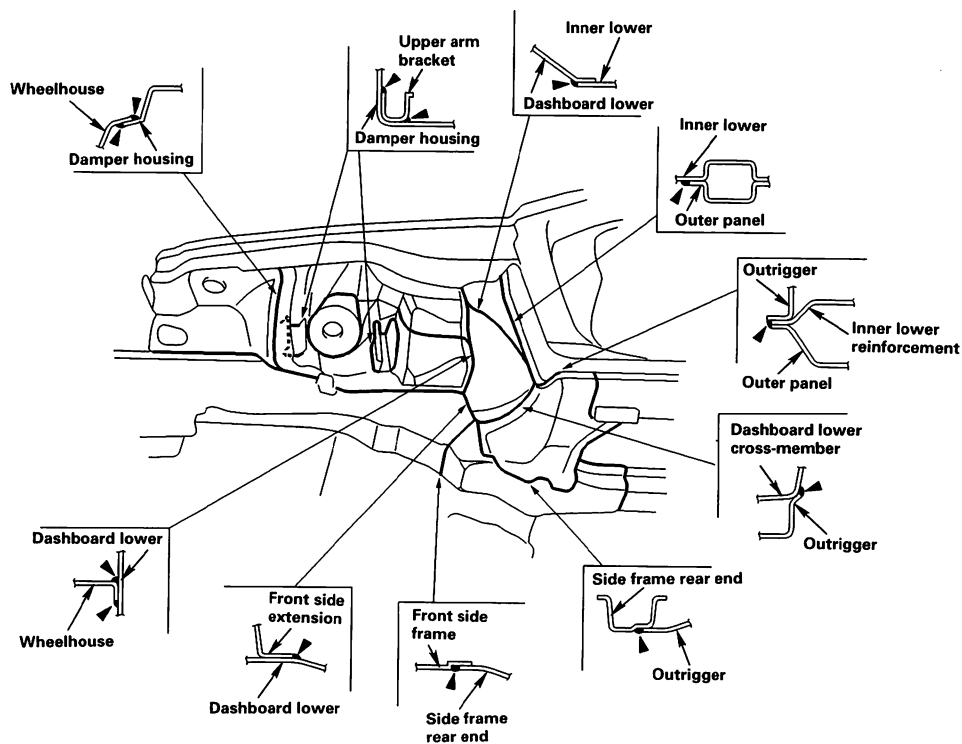
Cross Section of Body and Sealants

Engine Compartment, Front Wheelhouse/Damper Housing

〈Engine Compartment〉

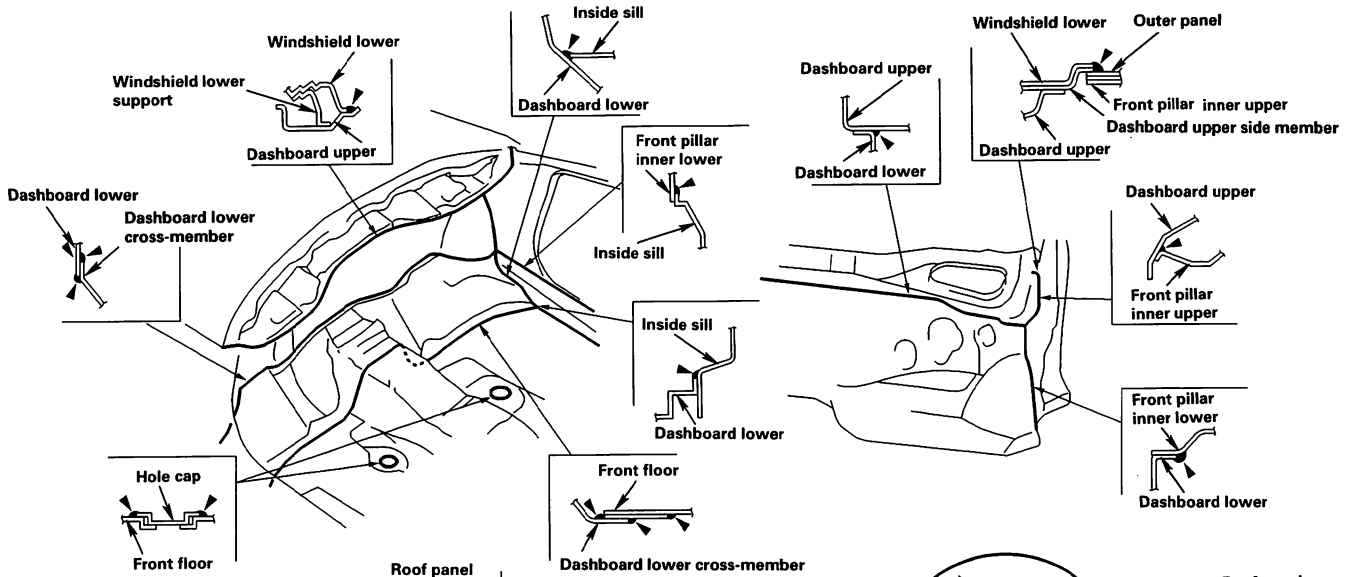


〈Front Wheel/Damper Housing〉



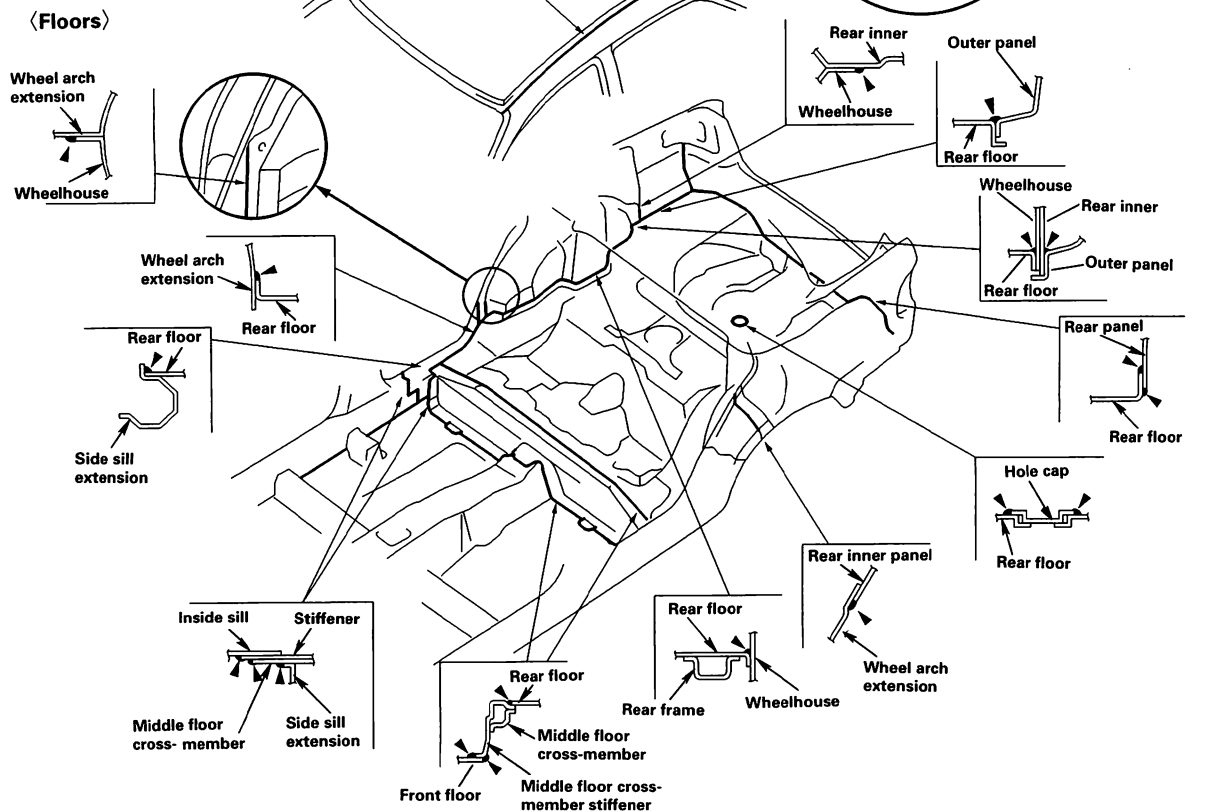
Dashboard, Floors, Roof Panel/Outer Panel

〈Dashboard〉



〈Roof〉

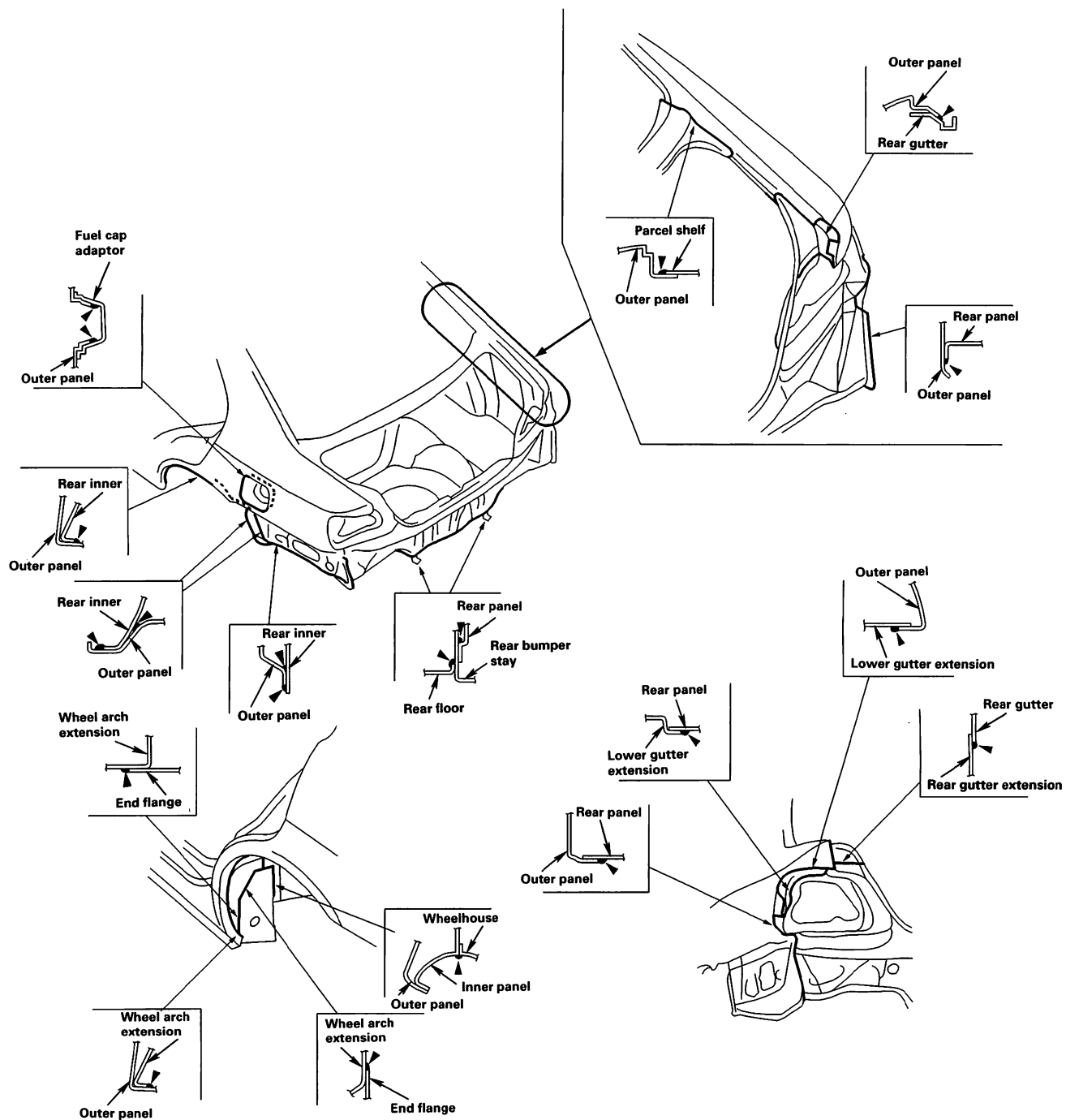
〈Floors〉



Cross Section of Body and Sealants

Rear Side Outer Panel/Rear Panel

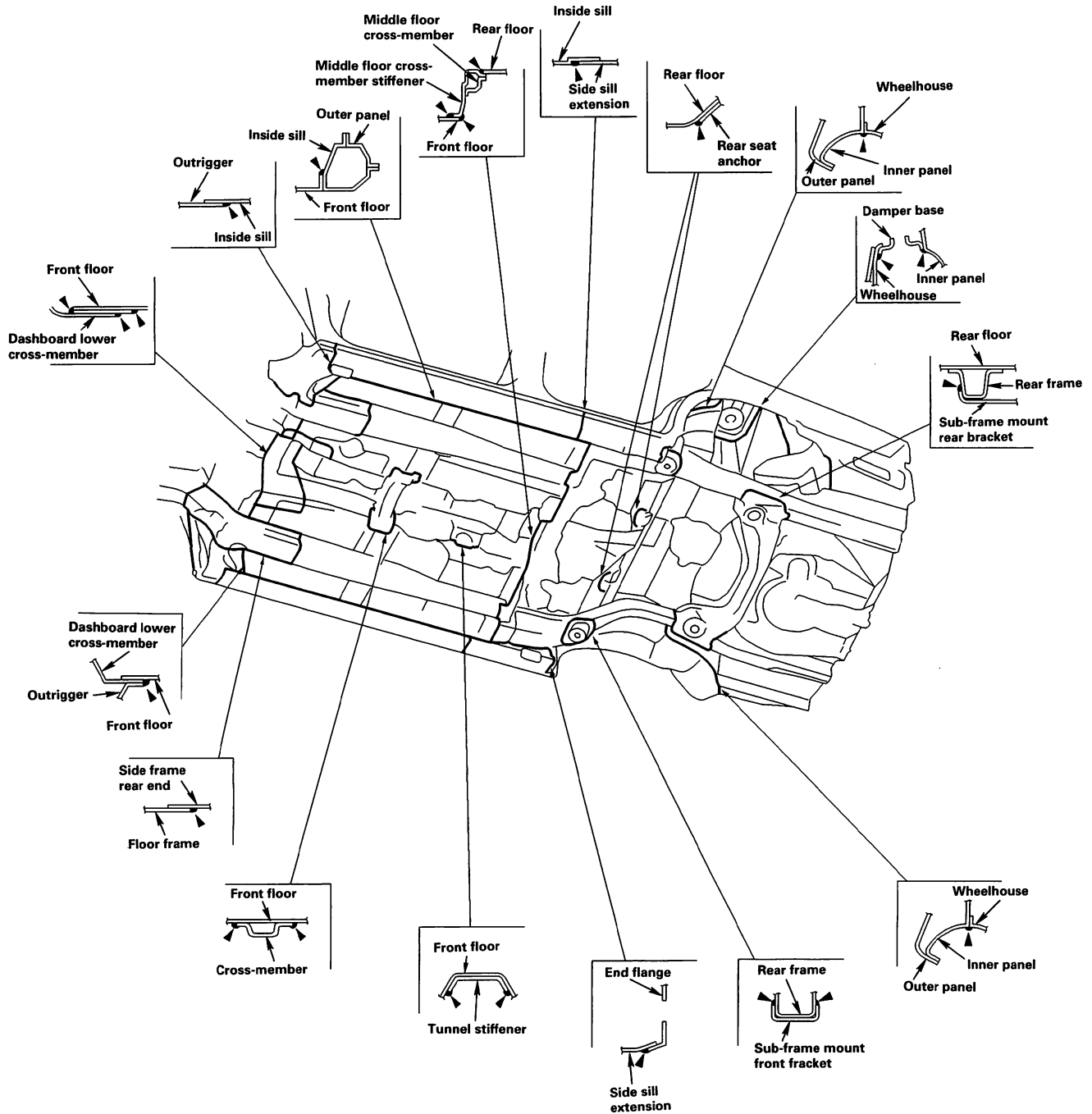
〈Rear Side Outer Panel/Rear Panel〉



Rear Wheelhouse, Under Floor

〈Under Floor〉

〈Rear Wheelhouse〉



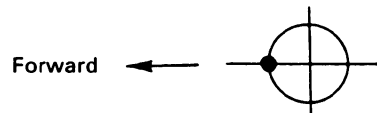
Body Dimensional Drawings

Upper Body Measuring Dimensions

Engine Compartment	6-2
Passenger Compartment	6-3
Engine/Transmission Mounting Positions	6-3
Under Body Measuring Dimensions	6-4
Opening Repair Chart	6-5
Frame Repair Chart	
Top View	6-6
Side View	6-8

NOTE: Measuring dimensions show the distance between the forward or upper edge of positioning bosses and/or holes shown in the detail sketches.

Measuring point (Black dots)



F: Forward

C: Center

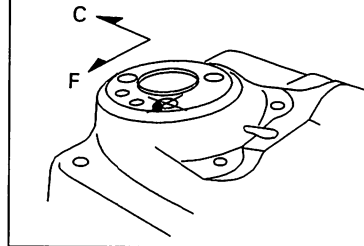
Body Dimensional Drawings

Upper Body Measuring Dimensions

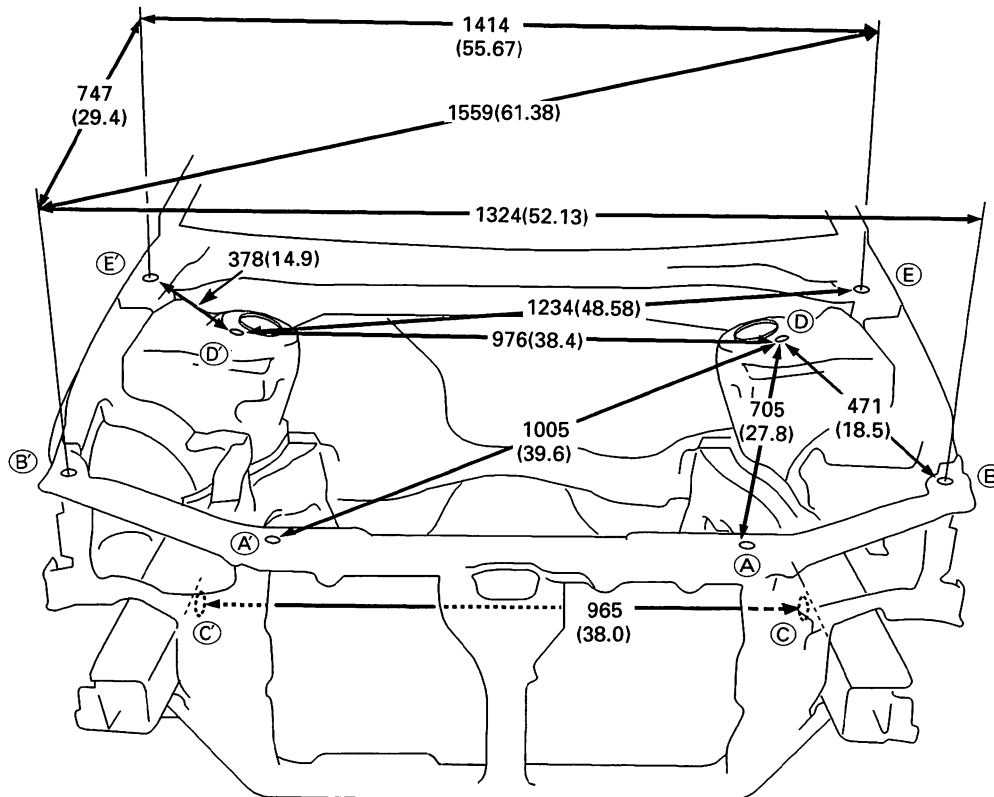
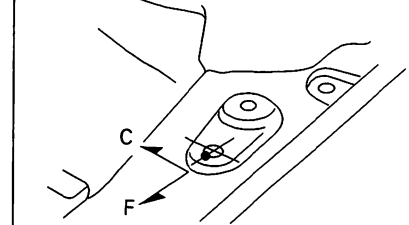
〈Engine Compartment〉

Unit: mm (in.)

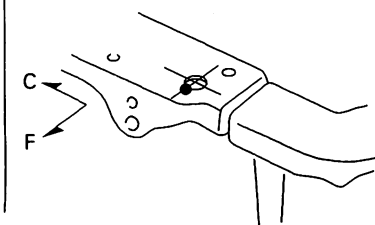
①、①
FRONT DAMPER MOUNTING
HOLE 11.5 (0.45)



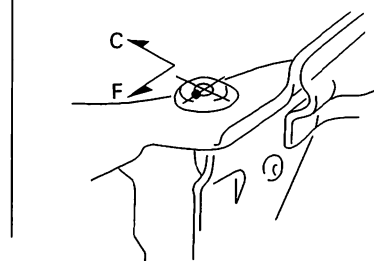
②、②
FRONT FENDER
MOUNTING HOLE 7 (0.3)
(rearward)



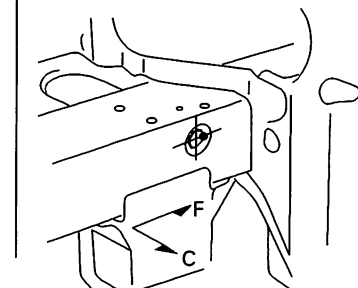
③、③
BULKHEAD UPPER CENTER
FRAME POINT 11(0.43)



④、④
FRONT FENDER
MOUNTING HOLE 7 (0.3)
(forward)



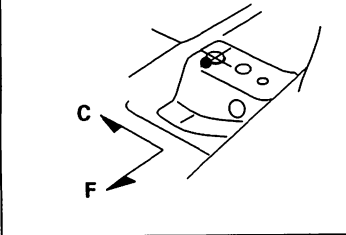
⑤、⑤
FRONT SIDE FRAME
POINT 20 (0.8)



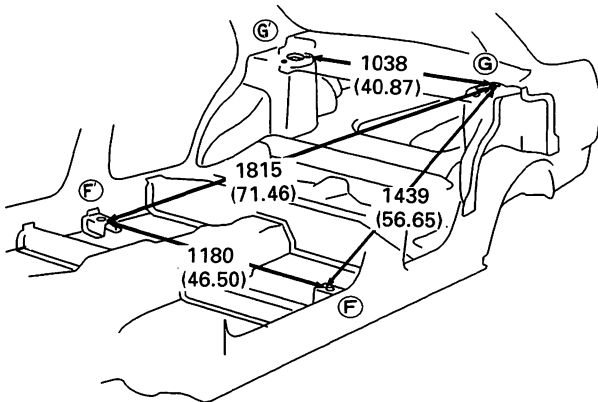
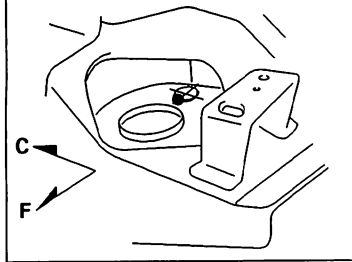
〈Passenger Compartment〉

Unit: mm (in.)

⑥、⑦
FRONT SEAT REAR SIDE
BRACKET POINT 11 (0.43)



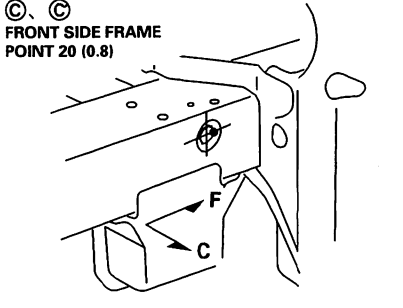
③、④
REAR DAMPER
MOUNTING HOLE 13 (0.5)



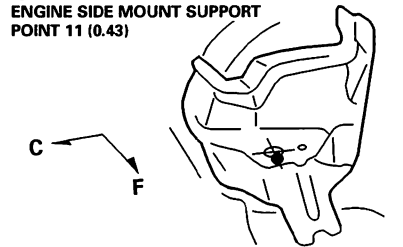
Engine/Transmission Mounting Positions

Unit: mm (in.)

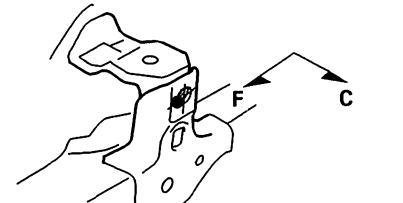
②、③
FRONT SIDE FRAME
POINT 20 (0.8)



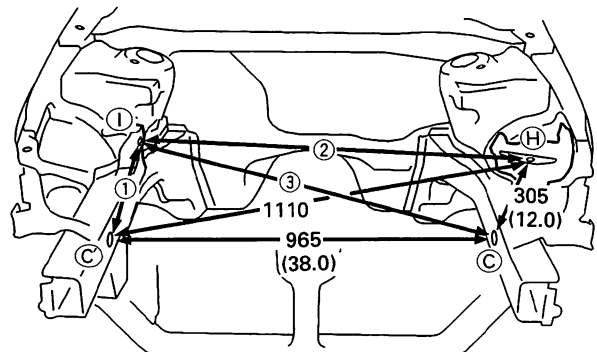
⑧
ENGINE SIDE MOUNT SUPPORT
POINT 11 (0.43)



①
TRANSMISSION MOUNT BRACKET
POINT
1.6 l engine model : 13 (0.51)
Except 1.6 l engine model : 15 (0.59)



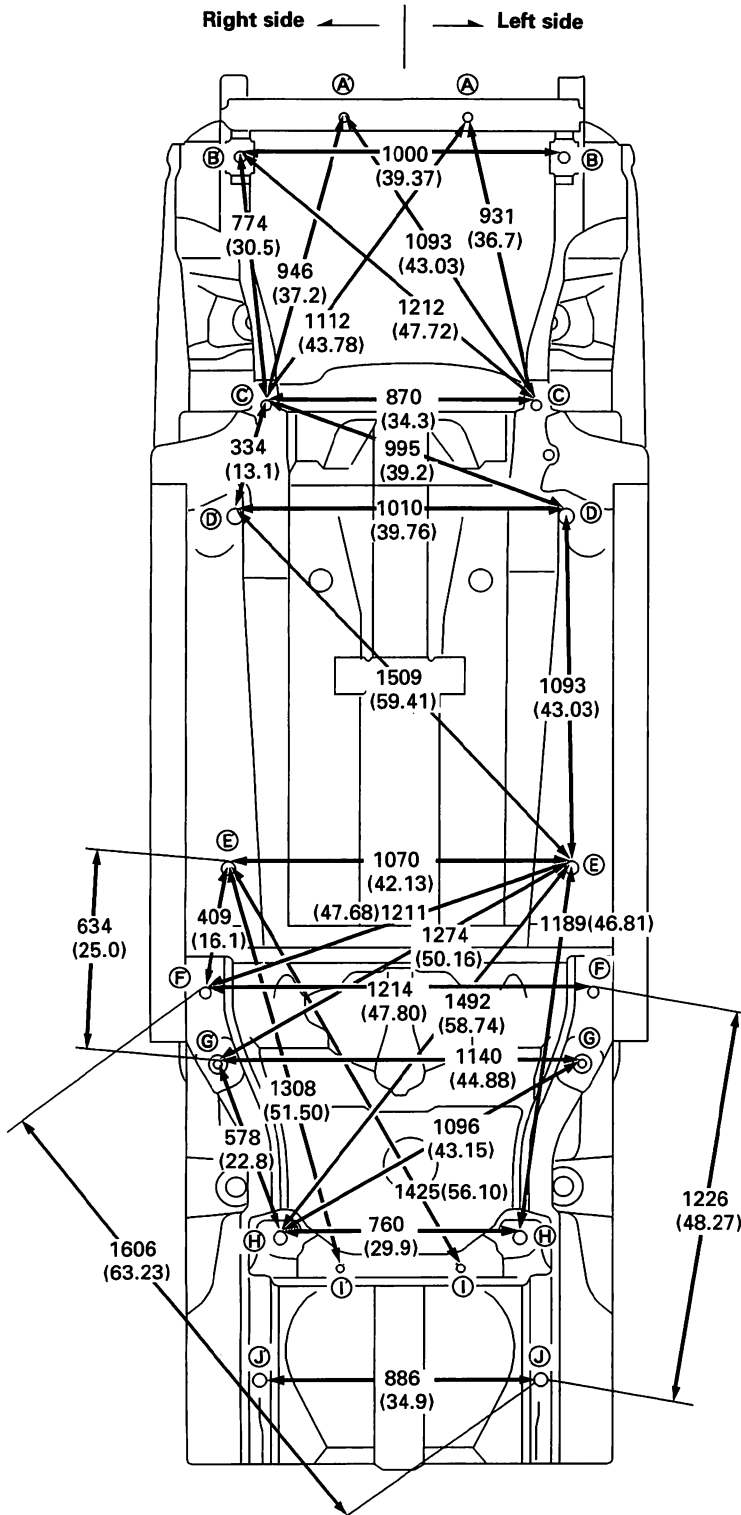
No.	①	②	③
1.6 l engine model	384 (15.1)	1041 (40.98)	1004 (39.53)
Except 1.6 l engine model	375 (14.8)	1045 (41.14)	1006 (39.61)



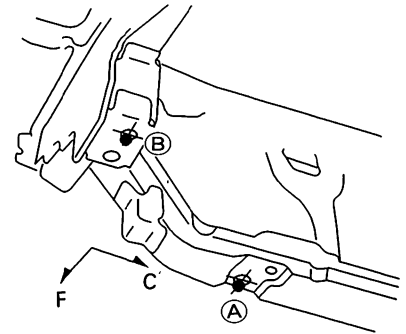
Body Dimensional Drawings

Under Body Measuring Dimensions

Unit: mm (in.)

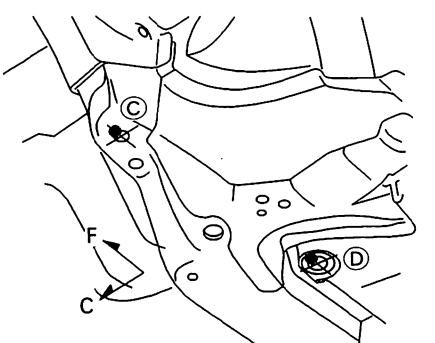


(A, A)
RADIATOR MOUNT
HOLE 15 (0.6)



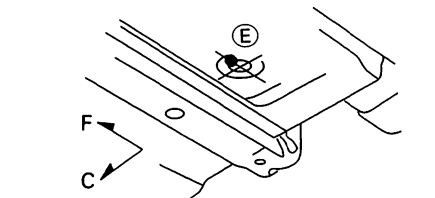
(B, B)
FRONT SUB-FRAME
MOUNT HOLE
16 (0.63) (forward)

(C, C)
FRONT SUB-FRAME
MOUNT HOLE
16 (0.63) (rearward)

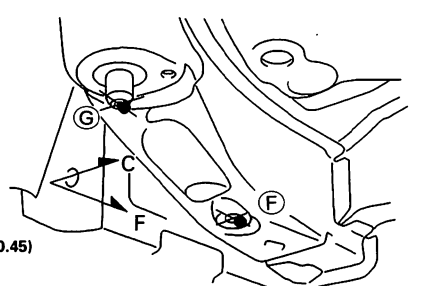


(D, D)
FRONT FLOOR
POINT 25 (1.0)
(forward)

(E, E)
FRONT FLOOR
POINT 25 (1.0)
(rearward)



(F, F)
REAR FRAME
POINT 22.8 (0.9)
(forward)

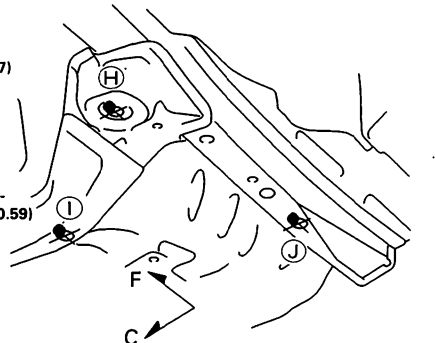


(G, G)
REAR SUB-FRAME
MOUNT HOLE 11.4 (0.45)
(forward)

(H, H)
REAR SUB-FRAME
MOUNT HOLE 17 (0.7)
(rearward)

(I, I)
REAR FLOOR CROSS-
MEMBER POINT 15 (0.59)

(J, J)
REAR FRAME
POINT 27.8 (1.09)
(rearward)

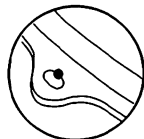


Opening Repair Chart

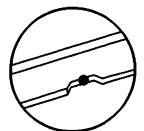
〈Windshield/Door Opening〉

Unit: mm (in.)

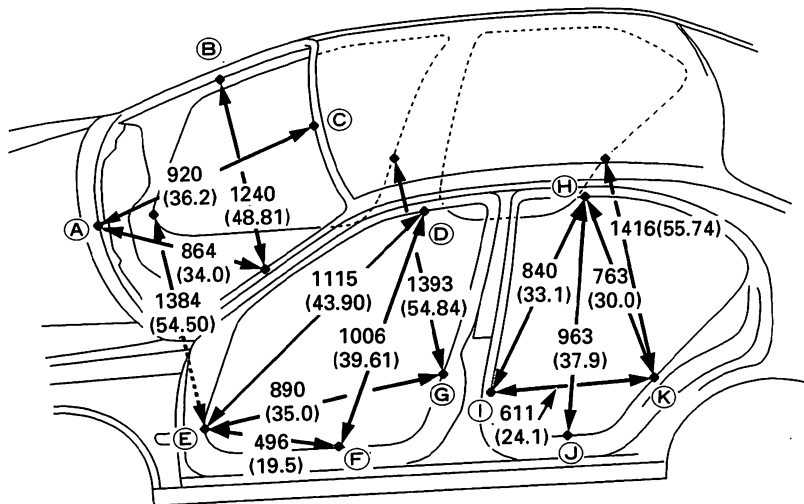
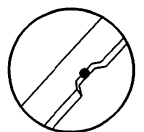
Ⓐ
Dashboard upper
cowl cover mounting hole



Ⓑ、Ⓒ
Windshield opening
flange notch
(3 places)

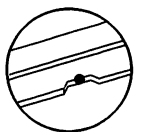


Ⓓ、Ⓔ、Ⓕ、Ⓖ、
Ⓗ、Ⓘ、Ⓙ、Ⓚ
Door opening
flange notch
(4 places)

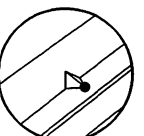


〈Rear Window/Trunk Lid Opening〉

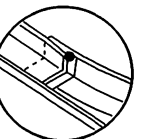
Ⓛ、Ⓜ
Rear window
opening flange notch
(3 places)



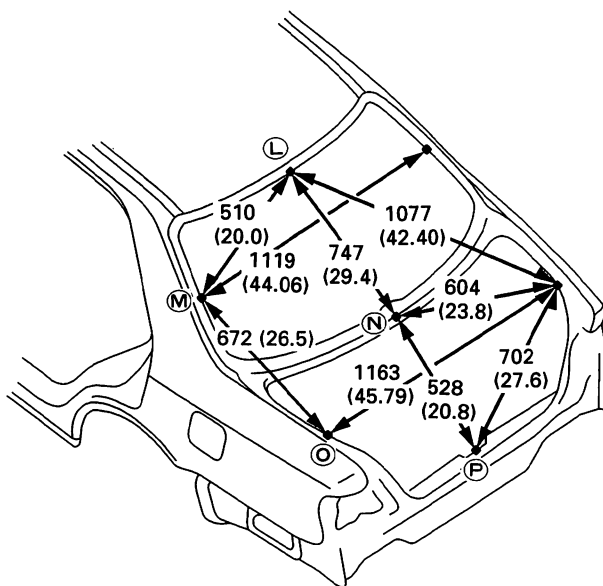
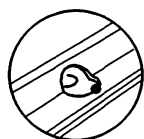
Ⓝ
Trunk gutter area
convex bead



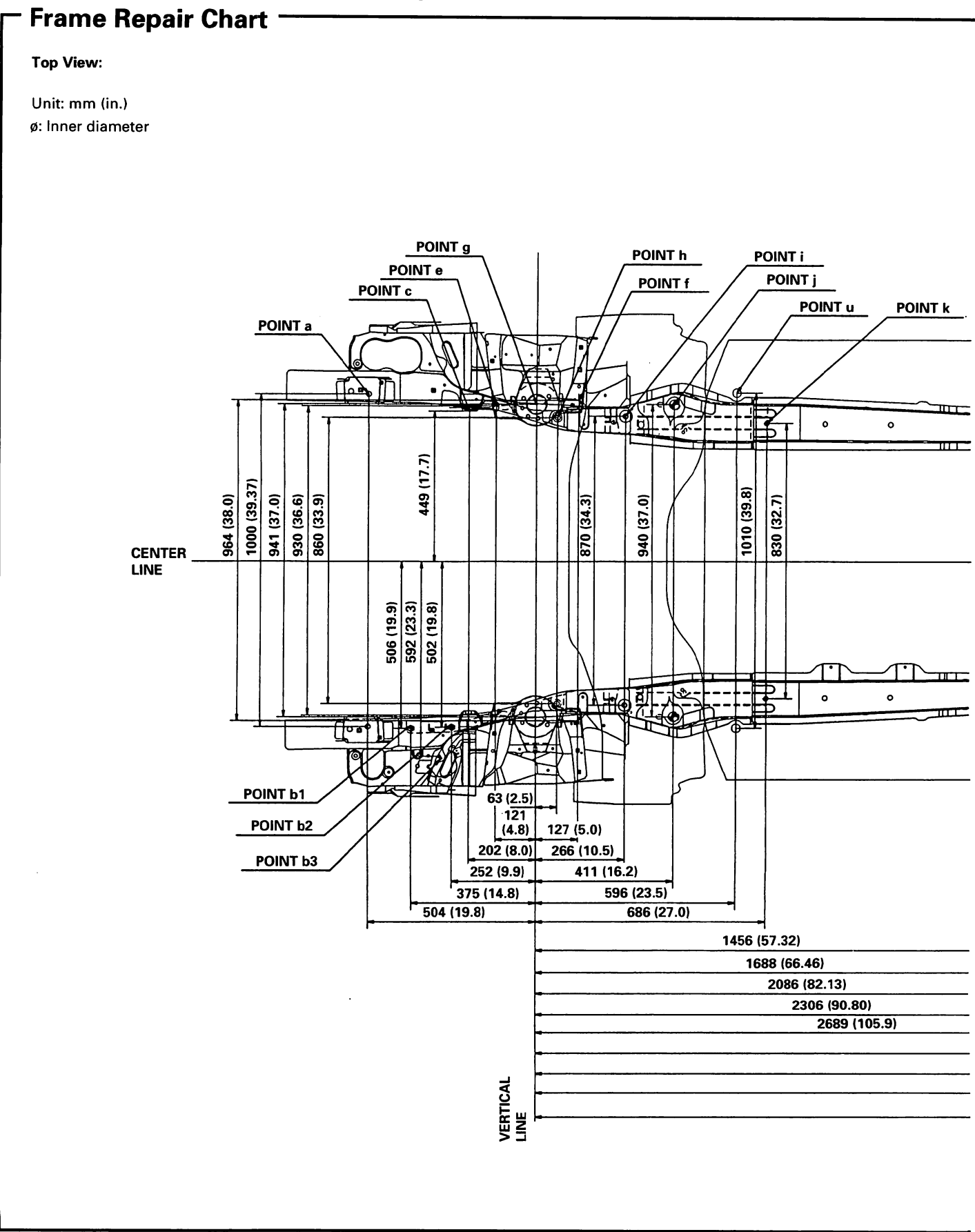
Ⓞ
Outer panel
flange end
(2 places)

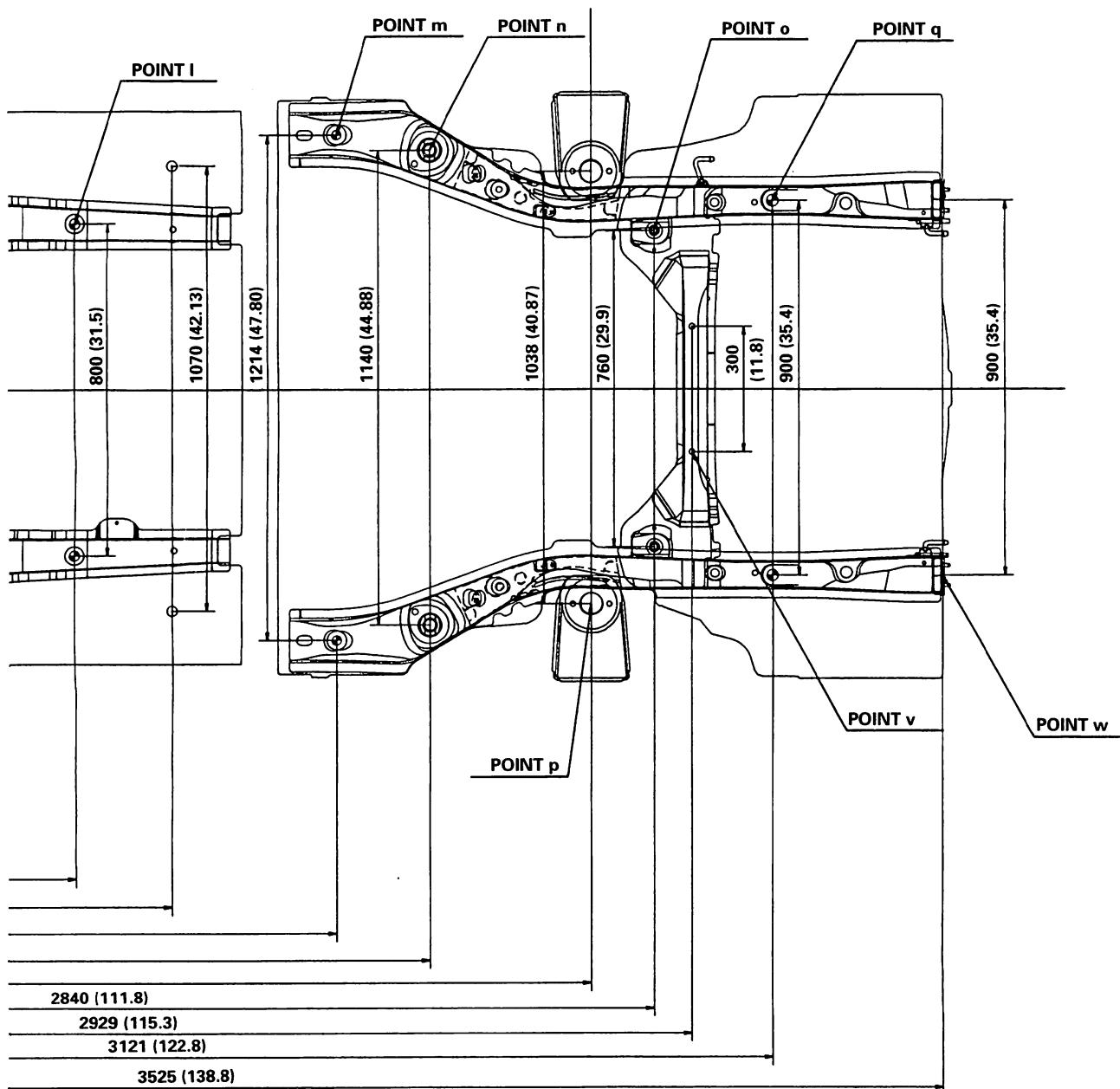


Ⓟ
Trunk seal
flange water
drain holes



Body Dimensional Drawings





(cont'd)

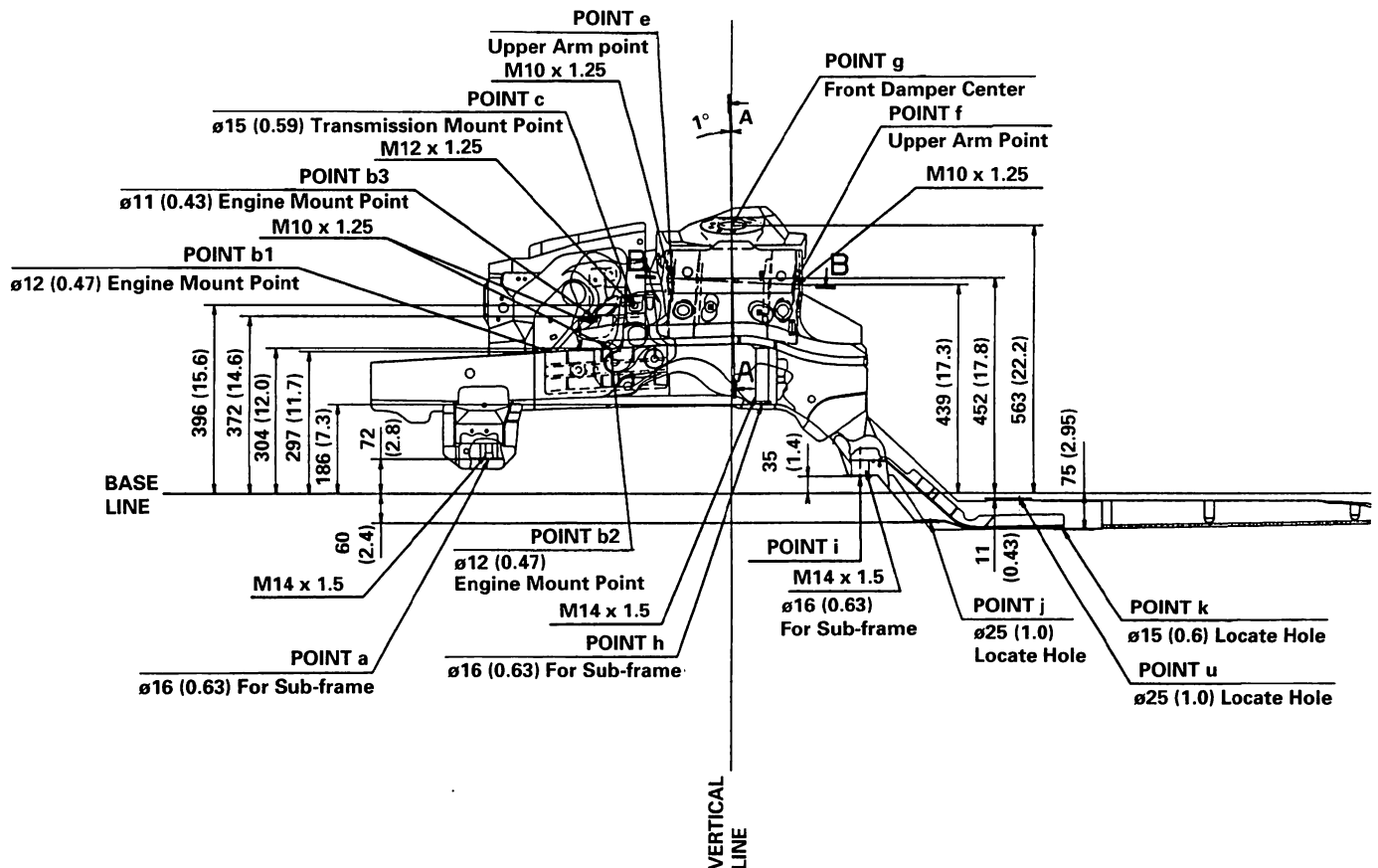
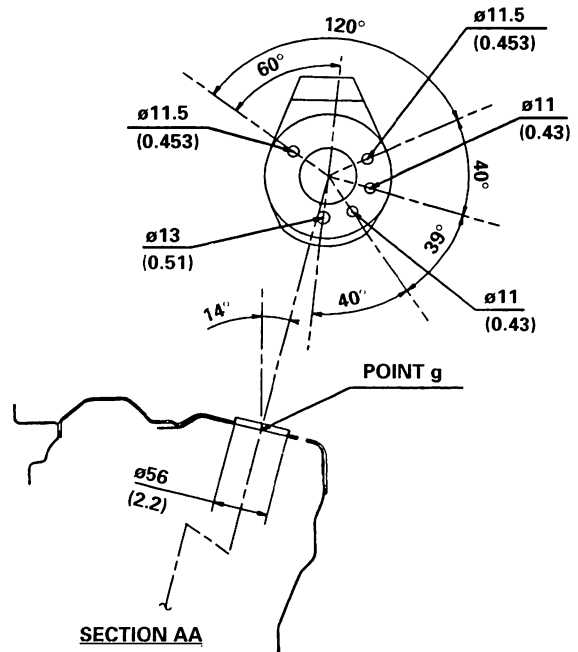
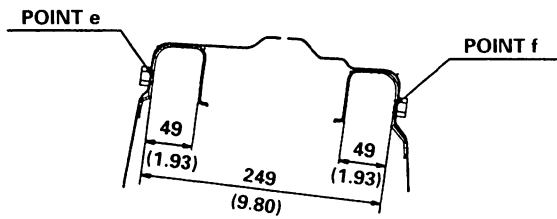
Body Dimensional Drawings

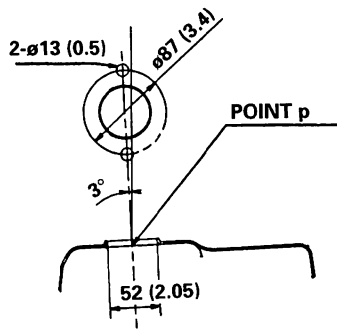
Frame Repair Chart (cont'd)

Side View:

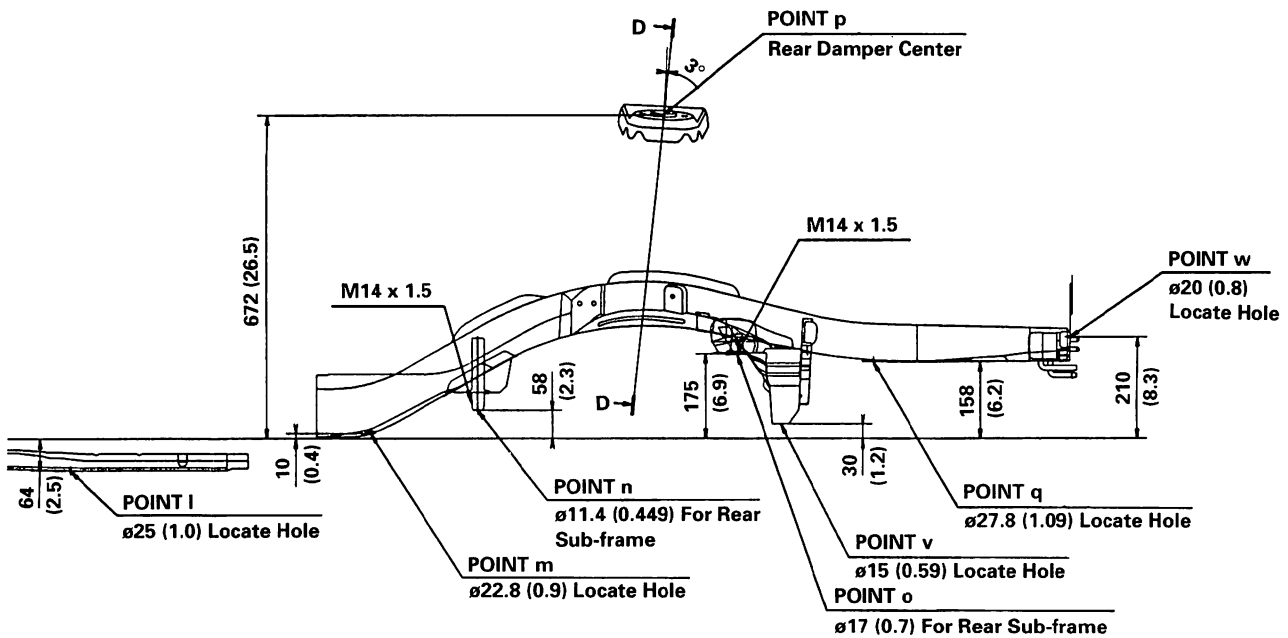
Unit: mm (in.)

ø: Inner diameter





SECTION DD



Rust-preventive Treatments

General	7-2
Diagram	7-3
Area to be Covered by Anti-rust Agents	7-4
Undercoating Diagram	7-9

Rust-preventive Treatments

General

Corrosion starts immediately after the steel base contacts the atmosphere. The condition is aggravated by sea wind, road salt, rain, snow and industrial fallout. There are many ways to protect vehicles against corrosion. Primer surfacers, and paints are applied by electrodeposition or spray to protect the body.

Anti-rust Agents and Spray Guns

Use the following anti-rust agents or equivalents when making a body repair.

⚠ WARNING **ANTI-RUST agents contain substances that are harmful if you breathe or swallow them, or get them on your skin. Wear coveralls, gloves, eye protection, and an approved respirator while using such agents.**







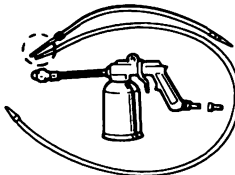


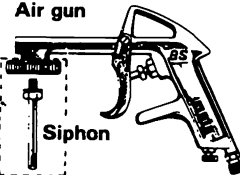



Anti-rust agents:

RUSTOP DEOX #100 WAXOYL or equivalent	To be applied to welded joints inside body panel.
NOX-RUST 409-20S SOLTON 1000S or equivalent	To be applied to under-floor and wheelhouse.

Spray guns:

Use the correct gun for the agent being used.

- Use of a pressure type spray gun is recommended when work involves a considerable number of vehicles.

For RUSTOP	For DEOX#100	For WAXOYL	For NOXRUST 409-20S/ SOLTON 1000S
 Flexible nozzle  Open nozzle 	 L-type nozzle  360° nozzle 	 L-type nozzle  360° nozzle 	Air gun  Siphon  V-type nozzle  Open nozzle 
Protectors: Wear gloves, mask, and suitable eye protection. • Use light oil and a rag to clean up spilled anti-rust agents.			

Precautions:

1. Before applying an anti-rust agent, thoroughly clean the areas to be coated with a steam cleaner, etc., and let dry.

NOTE: Waxoyl may be applied to wet surface.

2. Spray an anti-rust agent sufficiently until the excess amount oozes out when filling, the doors, side sills, etc. Wipe the excess agent with a clean rag dampened with light oil.
3. Do not spray an anti-rust agent on the brake hoses, brake wheel cylinders, brake drums, exhaust muffler and its related parts, emission control devices in the engine compartment, ball joint covers, plastic fuel strainer, etc. Wipe up spilled agent at once.
4. Heat an anti-rust agent to room temperature 97.7°F (36.5°C) by submerging the container in hot water when outside temperature is below 50°F (10°C).
5. Ventilate when spraying an anti-rust agent since it contains a small amount of organic solvent. Keep sparks, flames and cigarettes away. Clean the spray gun after spraying with anti-rust agent.

CAUTION: Any remaining agent will harden in the passages of the spray gun, making it unserviceable.

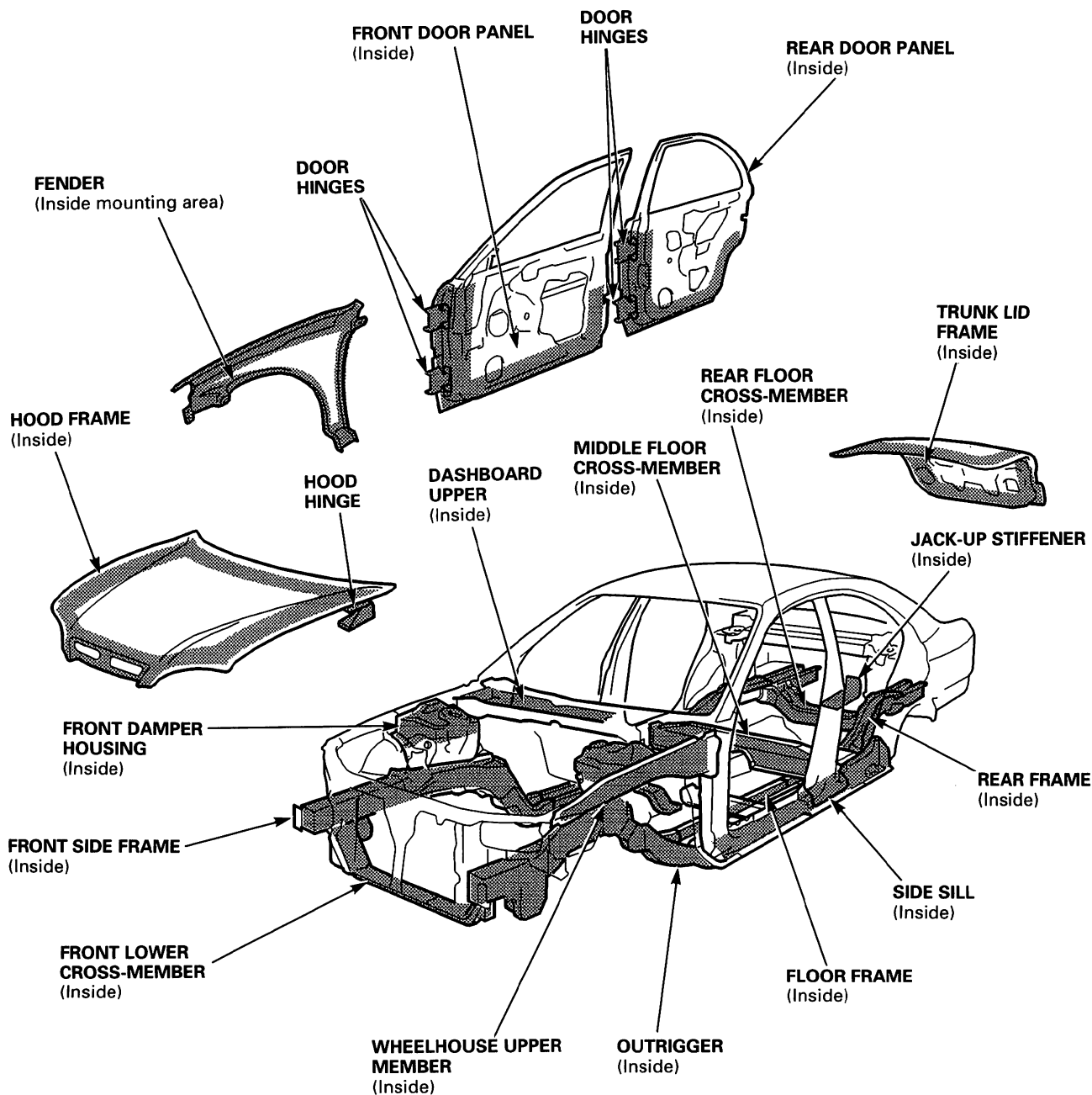
Diagram

NOTE:

- Apply the designated thickness over surfaces including gaps and edges.
- Avoid spraying agents on following parts:
Window glass, lights, grille, exhaust parts, tires, bumper and lower skirt.
- Wipe up spilled agents at once from rubber and plastic parts.

Anti-rust Agents:

- Use RUSTOP, DEOX #100, WAXOYL or equivalents for protecting inner surfaces.
- Use NOX-RUST 409-20S, SOLTON 1000S or equivalents for protecting outer surfaces.



Rust-preventive Treatments

Areas to be Covered by Anti-rust Agents

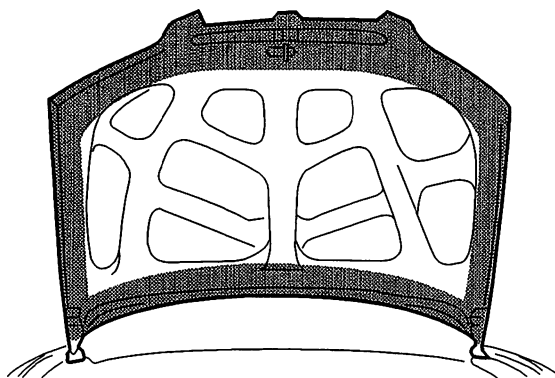
Rust-preventive Treatments:

Nozzle	Type
A	360°
B	L-type
C	Straight nozzle (undercoat gun)

Hood, Underside

- Coat the entire panel and seams all the way around.
- Spray sufficient anti-rust agent to the front area and each corner.
- Apply rust-preventive agent or grease to the hood hinges.
- Also coat the bulkhead upper frame and hood frame with anti-rust agent.

Nozzles used: A and B

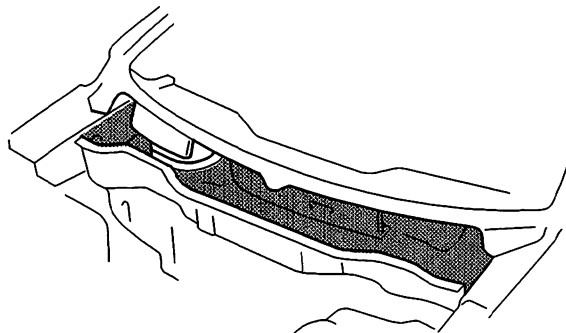


Dashboard Upper/Windshield Lower

- Coat the windshield lower and dashboard upper water drain with anti-rust agent at front, right and left.
- Spray anti-rust agent completely over the rear of the dashboard upper (windshield side).

NOTE: To insert the nozzle in the dashboard upper, remove the air scoop grille for easier, more thorough spraying.

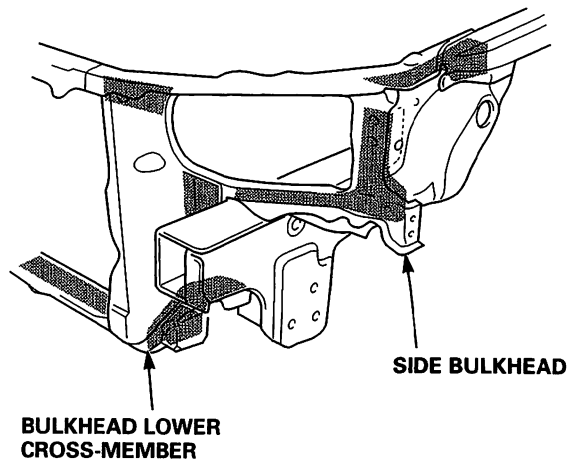
Nozzles used: A and B



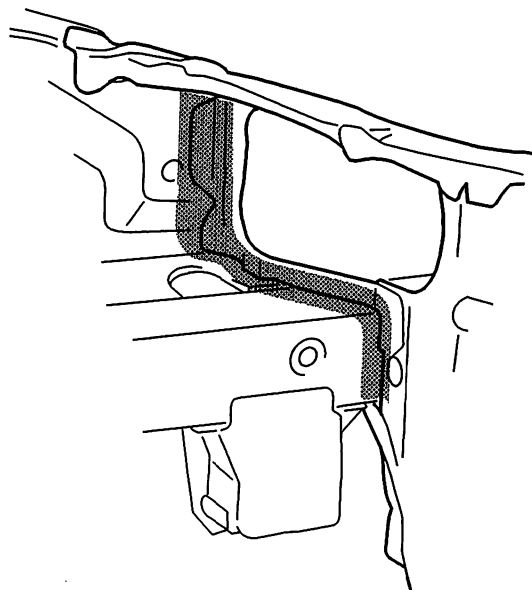
Front Bulkhead Area

- With the hood opened, coat the joints of the bulkhead, wheelhouse and side frame and around the back of the headlight assembly.
- Coat the inside of the bulkhead lower cross-member.

Nozzle used: B



Side bulkhead, Back



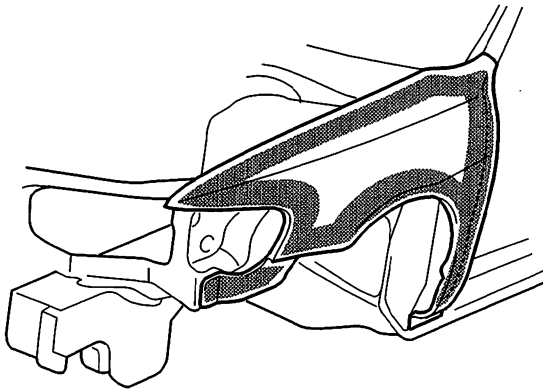
Front Fender, Underside

Apply anti-rust agent to the end of the fender, wheelhouse, and side sill installation.

NOTE:

- Apply a coat of agent to the front door side, wheel arch end.
- If the fender is to be removed, care take to avoid damaging the paint finish. Apply agent to the entire surface of the back of the fender.
- Apply agent to the front fender filling pillar.

Nozzles used: B and C

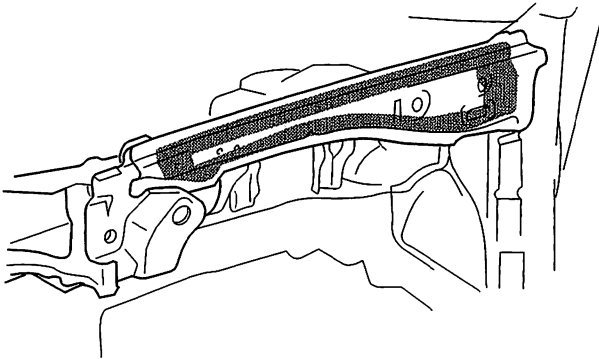


FILLING PILLAR

Wheelhouse Upper Member, Inside

- Remove the front fender.
- Remove the air scoop grille in the dashboard upper and coat the inside of the wheelhouse upper member with anti-rust agent.

Nozzles used: A and B



Doors, Front Pillar and Center Pillar, Inside

- Apply agent to the joint between the door stiffener and door skin through the water drain hole at the bottom of the door.

NOTE: When a suction type spray gun is used, remove the door trim panel.

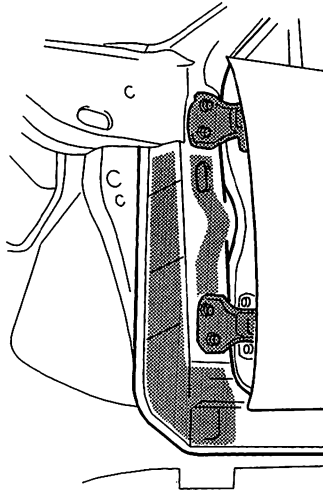
- Remove the door harness grommet and insert the nozzle facing down.

NOTE: Make sure that the nozzle is not interfering with the door hinge bracket. Spray thoroughly.

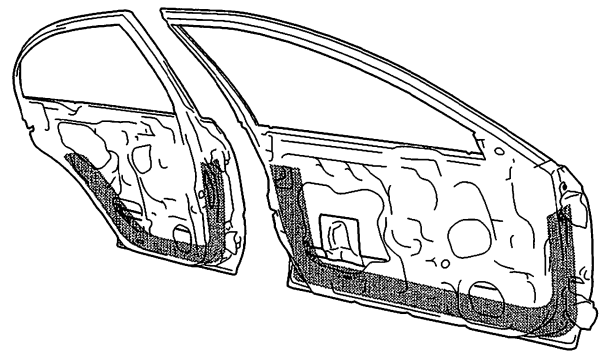
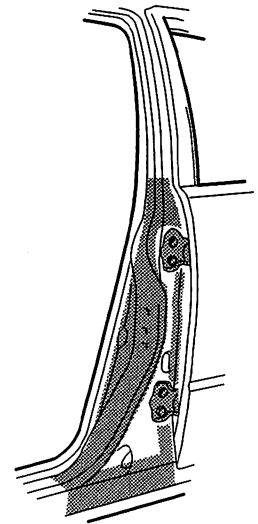
- Coat the door checker bracket.

Nozzles used: A and B

Front pillar:



Center pillar:



(cont'd)

Rust-preventive Treatments

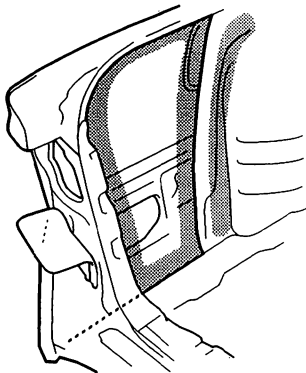
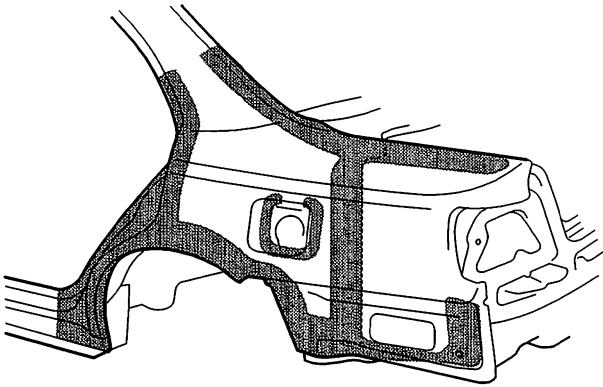
Areas to be Covered by Anti-rust Agents (cont'd)

Rear Side Outer Panel and Center Pillar stiffener, Inside

- Remove the door lock striker, taillight and grommets, then spray agent through the hole.
- To apply agent to the inside of the rear wheelhouse, remove rear side trim panel and trunk side trim panel.

NOTE: Make sure that all the surfaces are coated with anti-rust agent since the areas to be covered are relatively extensive.

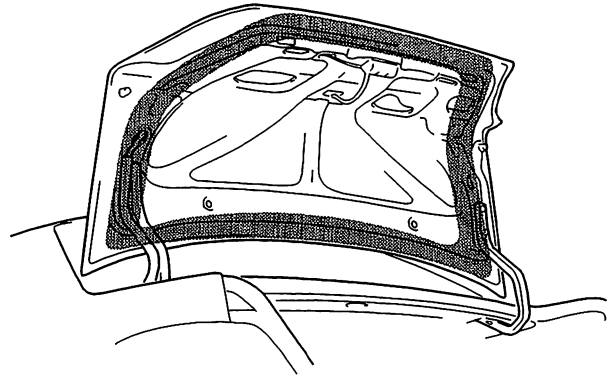
Nozzle used: A



Trunk Lid, Inside

- Coat the trunk lid skin, and frame seams all the way around.
- On the trunk lid, apply the agent to the inside of the reinforcement frame.

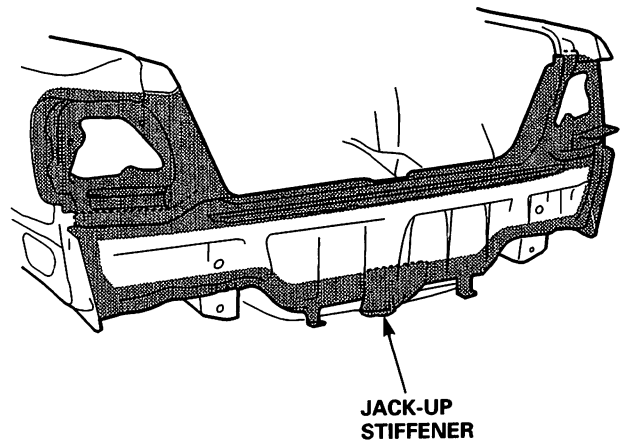
Nozzles used: A and B



Rear Panel, Inside and Outside/Rear Floor End

- Apply the agent to the gap between the rear panel and rear floor.
- Apply the agent to the inside of the rear combi stiffener and center frame.
- Undercoat may be used on those areas of the rear panel that are concealed from view when parts are installed.
- Apply the agent to the inside of the jack-up stiffener.

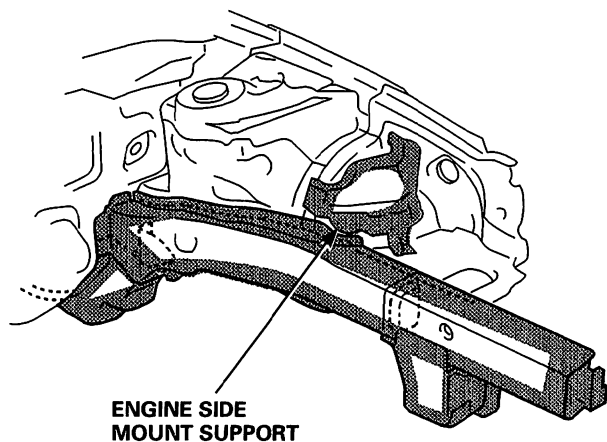
Nozzle used : B



Front Side Frame, Inside

- Remove the grommets from inside the front compartment and coat the inside of the front side frame.
- Coat the battery mount bracket base.
- Apply the agent to the inside of the engine side mount support and front side outrigger.

Nozzles used: A and B

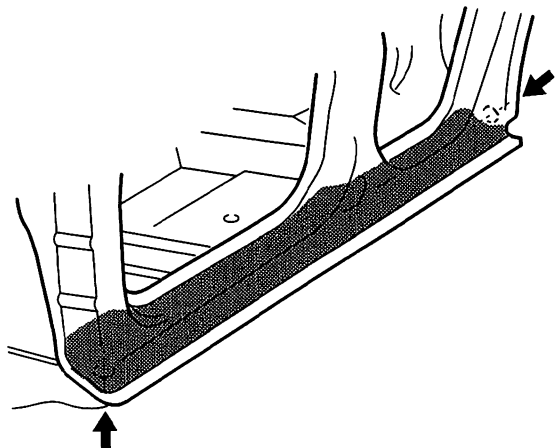


Side Sill, Inside

- Remove the rear grommets and side sill panel to spray agent.
- Insert the nozzle all the way through the grommet holes and spray. Move the nozzle right and left, and up and down while pulling it back out of the grommet hole.

NOTE: Spray agent until it drips from the drain hole.

Nozzles used: A and B



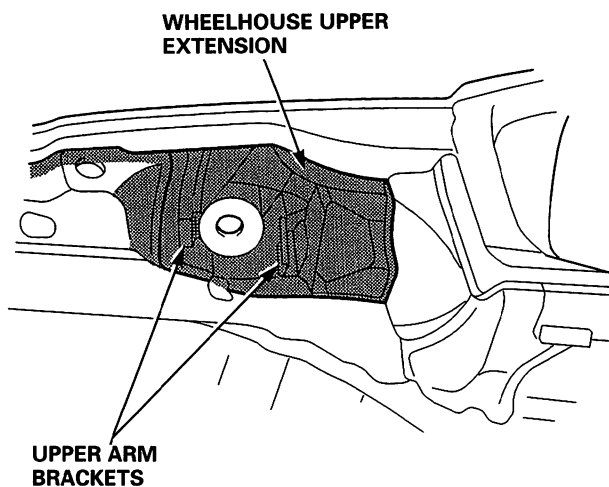
Damper Housing

- Spray agent on the wheelhouse, front fender stay, upper member and upper arm brackets as shown.
- Undercoat the wheelhouse where anti-rust agent or undercoat has not yet been applied.

NOTE:

- Coat the wheelhouse upper extension, particularly the upper face.
- Undercoat the inner fender mounting area of the wheelhouse and upper face of the inner fender

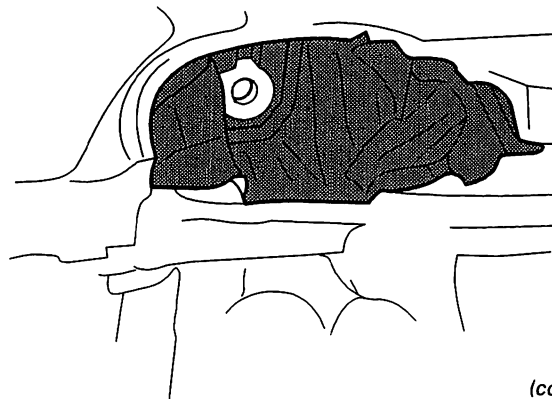
Nozzles used: A and C



Rear Wheelhouse

- Coat the gaps between the inner and outer wheelhouses, including the damper base.
- Apply agent to the edge of the rear frame, side sill and rear floor.
- Undercoat the wheelhouse where undercoat or anti-rust agent has not yet been applied.

Nozzles used: B and C



(cont'd)

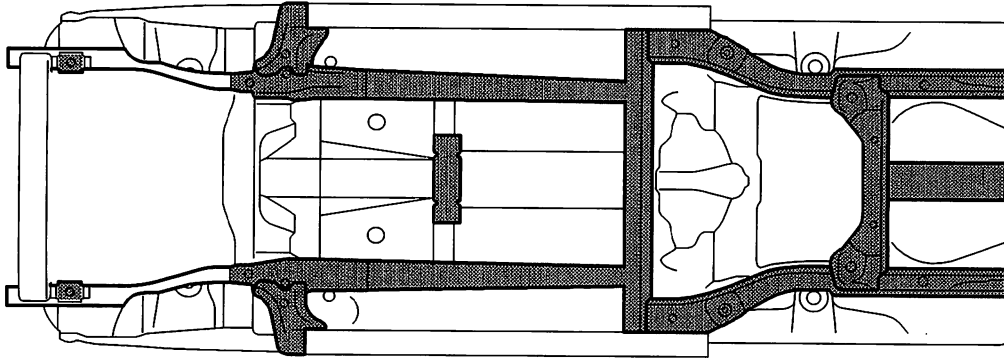
Rust-preventive Treatments

Areas to be Covered by Anti-rust Agents

Under-Floor Member/Floor Frame, Inside

- To spray agent to the inside of the under floor member, insert the nozzle in the holes in the members.
- Also apply the agent to the inside of the floor frame and rear frame.

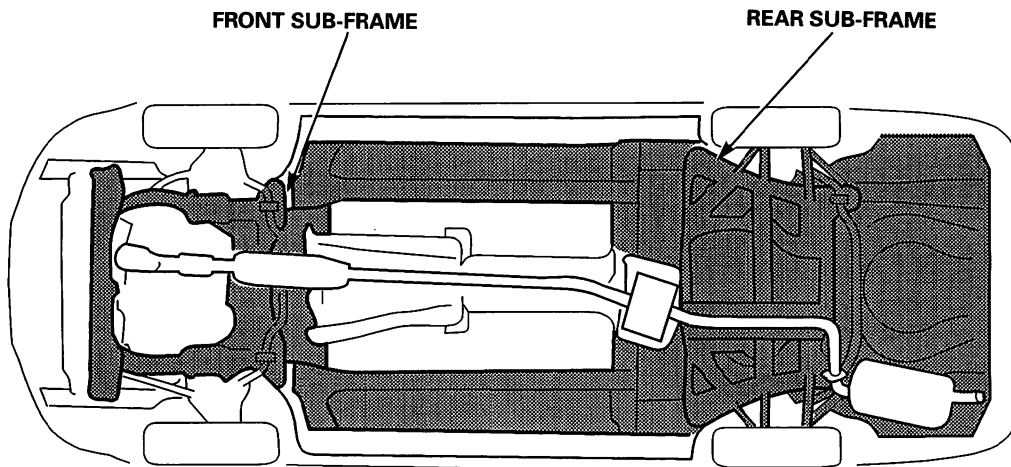
Nozzle used: A



Under-Floor

- Apply the agent to the shaded areas only. Do not apply it to the exhaust system and heated oxygen sensors.
- Coat the bottom of the fuel tank.

Nozzle used: C



Rust-preventive Treatments

Undercoating Diagram

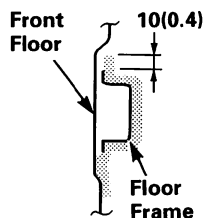
 indicates PVC coating areas.

NOTE:

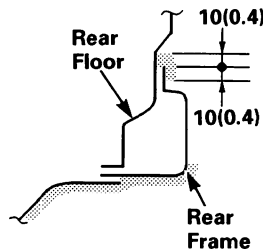
- Coating thickness: 0.5 mm (0.02 in.) MIN.
- Follow the above instructions for paint repair or refinishing.
- Avoid coating on the front and rear suspensions, and exhaust system mount area.
- Items marked with an asterisk(*) on the important control areas. Coating thickness 1 mm (0.04 in.).

Unit: mm (in.)

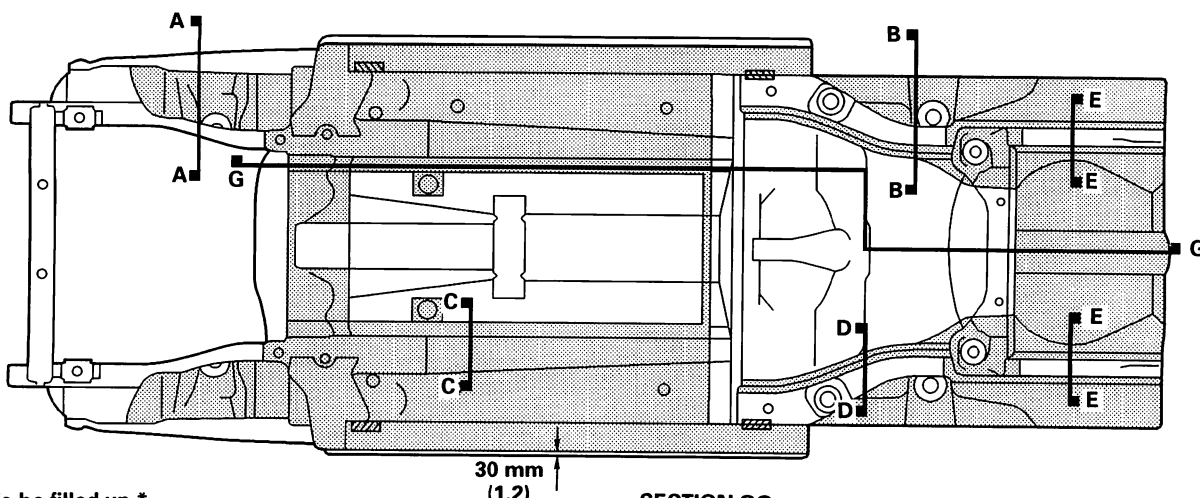
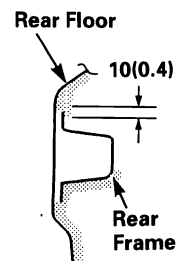
SECTION CC



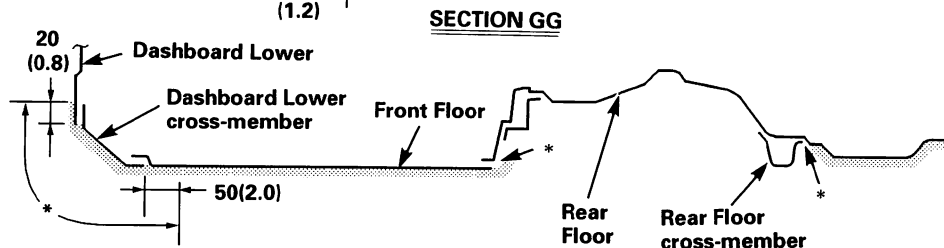
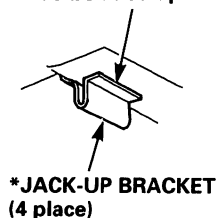
SECTION DD



SECTION EE

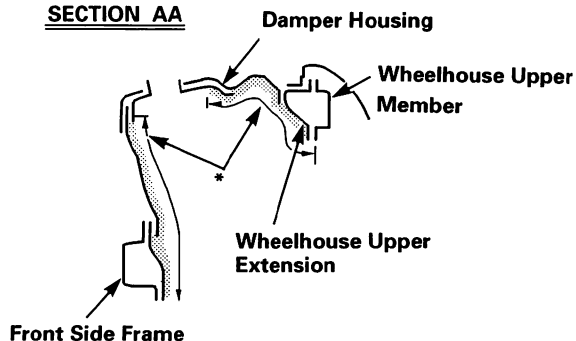


To be filled up.*



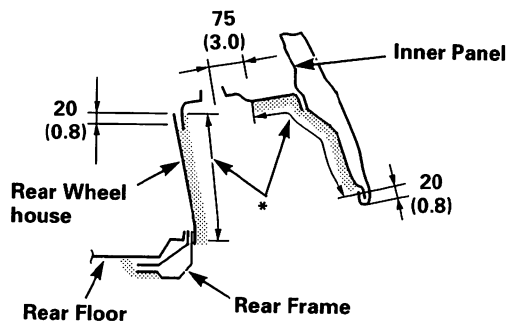
〈FRONT WHEELHOUSE〉

SECTION AA



〈REAR WHEELHOUSE〉

SECTION BB



Body Paint Repair

Color Chart Painting Specifications8-2

Paint

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Refinishing Procedures8-7

Soft Chipping Guard Primer Coat

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Coating Procedures8-14

Color Chart Painting Specifications

Paint Code Color Name		B-77P Orleans Blue Peal	B-94 Midnight Blue Solid	G-86P Baikal Green Peal	GY-20M Chartreuse Metallic	NH-0 Champion- ship White	NH-605P Pirates Black Peal	NH-614M Titan Silver Metallic	R-500P Sicilian Red Peal	R-502 Vesuvio Red
KR / KE / KG	1.6iS									
	1.6iLS									
	1.8iS									
	1.8iLS	○	○	○	○			○	○	
	1.8iES									
	2.0iLS									
	2.0iES									
	TYPE R					○	○			○
KS	1.6iS									
	1.6iLS									
	1.8iS									
	1.8iLS	○	○	○	○		○	○	○	○
	2.0iLS									
	2.0iES									
KY	1.8iS	○	○	○	○		○	○	○	○

Side Sill Panel

Body color	TYPE R
BP. Dark gray NH-533	1.6iS, 1.6iLS, 1.8iS, 1.8iLS, 1.8iES, 2.0iLS, 2.0iES

Protector Molding

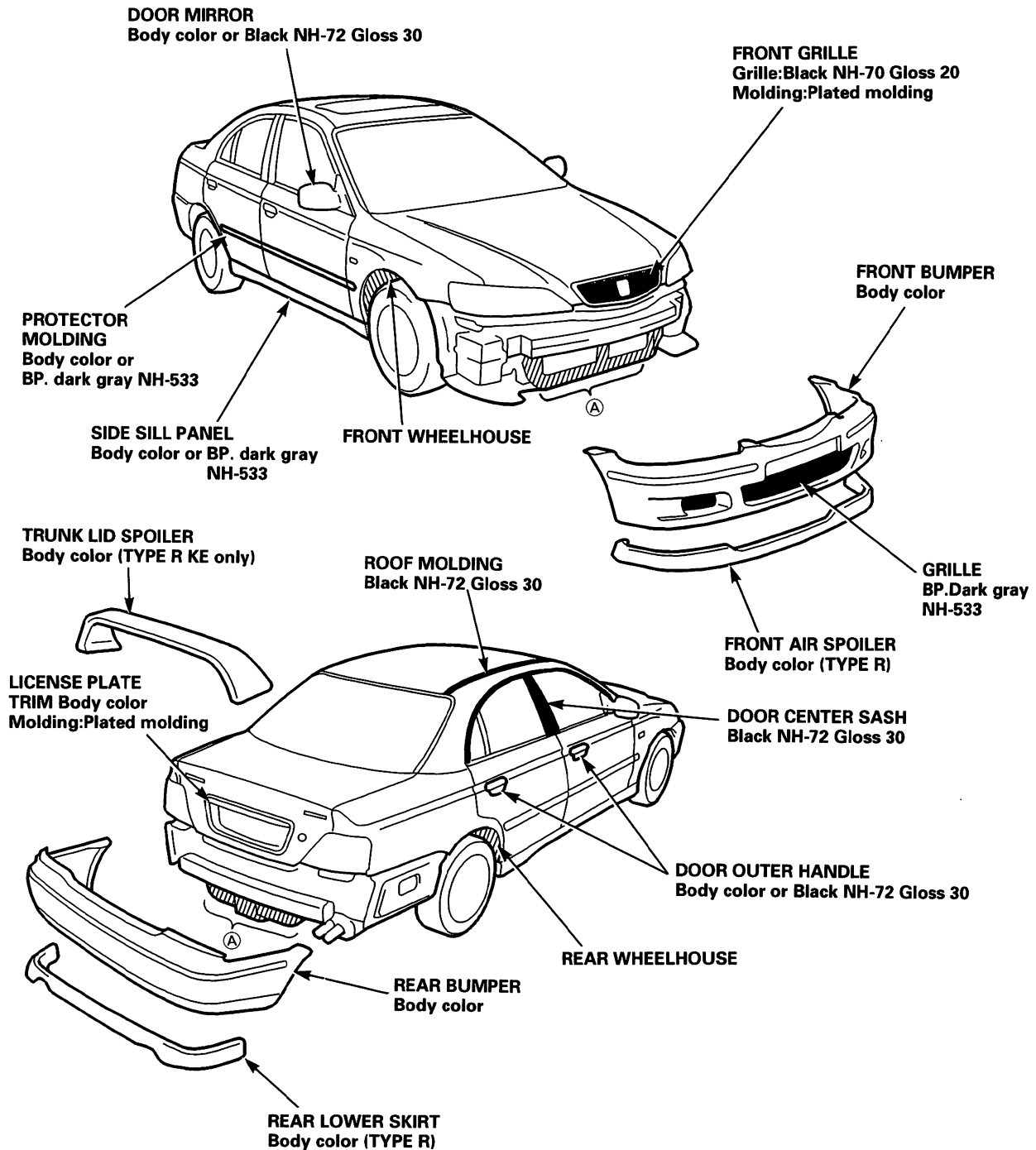
Body color	1.8iES, 2.0iES
BP. Dark gray NH-533	1.6iS, 1.6iLS, 1.8iS, 1.8iLS, 2.0iLS

Door Mirror / Outer Handle

Body color	1.8iES, 2.0iES, TYPE R
Black NH-72 (Gloss 30)	1.6iS, 1.6iLS, 1.8iS, 1.8iLS, 2.0iLS

NOTE:

- Apply NH-86 black (Gloss 40) to the visible surfaces of (A) areas, front and rear wheelhouses after installing equipment (except vehicles painted with B-94, G-86P and NH-605P).
- For body colors B-77P, GY-20M, NH-0, NH-614M, R-500P and R-502 apply NH-86 black (Gloss 40) to the (A) areas, front and rear wheelhouses.



Paint

General

The 3-coat•3-bake (3C•3B) paint finishes give the Accord a deep gloss and stunning finish. This manual provides information on paint defect, repair, and refinishing. Throughout, the objective is to explain in a simple yet comprehensive manner the basic items you should know about paint repairs. Select the correct material for the defect and repaint or refinish in the correct manner as described in this manual.

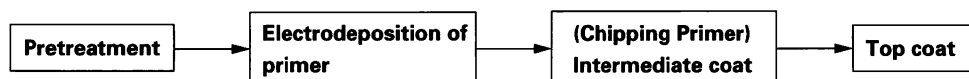
⚠ WARNING

- Most paints contain substances that are harmful if inhaled or swallowed. Read the paint label before opening the container. Spray paint only in a well ventilated area.
- Cover spilled paint with sand, or wipe it up at once.
- Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting. Avoid contact with skin.
- If paint gets in your mouth or on your skin, rinse or wash thoroughly with water. If paint gets in your eyes, flush with water and get prompt medical attention.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

Basic Rules for Repairing a Paint Finish

To repair paint damage, always use the 2-part acrylic urethane paints designated; polish and bake each of the three coats, as in production, to maintain the original film thickness, and to assure the same quality as the original finish.

Outline of Factory Painting Process:



Features in Each Work Process

1. Pretreatment and Electrodeposition

In the pretreatment process, the entire body is degreased, cleaned, and coated with zinc phosphate by dipping.

After the body has been cleaned with pure water, it is placed in an electrolytic bath of soluble primer (Cationic Electrodeposition). This produces a thorough corrosion inhibiting coating on the inner surface and corners of the body, pillars, sills, and panel joints. Chipping primer is then applied to the most susceptible areas (see page 8-12).

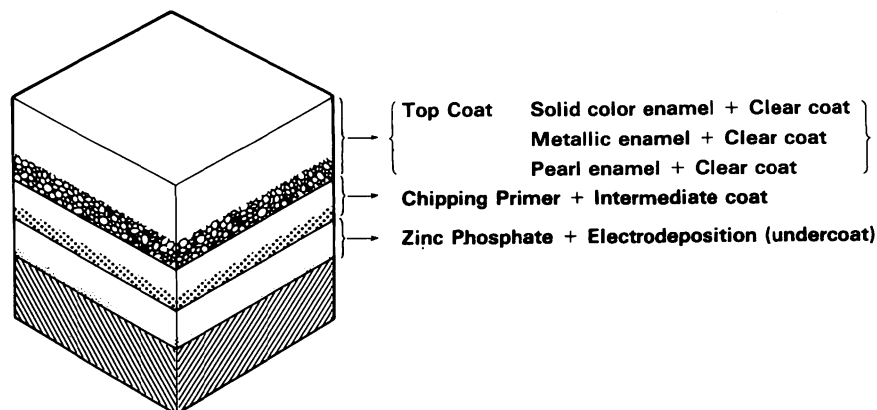
2. Intermediate coat

The intermediate coat is applied to the prepared surface for further protection against damage.

3. Top coat

Enamel paint and either polyester or acrylic resin paint are used in the top coat for higher solidity, smoothness, brightness, and weather resistance.

Sectional View of Paint Coats:



Paint Refinishing

Paint damage can appear in any form. Before making a repair, check the damaged area carefully, and determine the procedure best suited to the type. The following relates paint refinishing methods to various types of paint damage or defects.

Defects and Refinishing Processes

▲ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

A. Damage or defects that have gone through to the metal surface

Rusting or deformation:

- ① Featheredge the damaged area.
- ② Prepare the metal surface.
- ③ Apply a chemical coating to the metal surface.
Metal conditioner, Precoat, A.C.P treatment.
- ④ Apply an undercoat (primer surfacer).
- ⑤ Apply an intermediate coat (color matched to top enamel paint).
- ⑥ Apply a top coat (body color paint).
Solid color: Enamel top coat paint
Metallic color: Metallic enamel paint + Clear top coat
Pearl color: Pearl enamel paint + Clear top coat

B. Damage or defects up to undercoat or intermediate coat.

For external damage or blisters, perform steps ④ through ⑥ under Item A.

For external damage only perform steps ⑤ through ⑥ under Item A.

C. Damage or defects that have not gone through to intermediate coats (only in top coat)

Shallow scratches or score marks:

- (1) If damage has gone through to the metallic paint, spray metallic enamel, then apply top coat wet on wet.
- (2) If damage has not reached the metallic color paint and remained in the clear top coat, polish the damaged surface or spray only the clear top coat.

NOTE: Try to repair by polishing as much as possible if the damage has not reached the metallic color paint.

D. Replacement of Parts

Welded parts

Rear side outer panel, etc.


- (1) Perform step ① through ⑥ if the damaged area is covered with filler or welded with reinforcement plate.
- (2) Perform steps ⑤ and ⑥ for undercoats except those on joints (Intermediate coat for replacement parts).
- (3) On inner panels, apply paint where the undercoat is burned by welding heat. Follow this with a rust preventive treatment (see section 7).




Single Parts

- Painting the outer and inner hood, door, trunk, lid, etc. Perform steps ⑤ and ⑥ under Item A.
- Painting the inside of the front fender.
Only enamel top coat paint may be used on solid color enamel, metallic enamel, or pearl enamel.
- After spraying enamel paint, perform rust preventive treatment (apply inner or outer rust preventive agent).

Paint

Refinishing Processes

NOTE: () : Indicates steps which may be required depending on the degree of damage)

Refinishing Processing	Damage	To metal surface	To under/intermediate coats	To top coat	Replacement Parts	
					Welded part	Single part
1. Featheredging (polishing damaged surface)		↑			↑	
2. Preparation of metal surface						
3. Air blowing/Degreasing						
4. Treatment of metal surface						
5. Filling/drying/Polishing						
6. Air blowing/Degreasing						
7. Masking (part)						
8. Undercoating/Drying						
9. Polishing undercoat			↓			
10. Air blowing/Degreasing						
11. Masking						
12. Spraying intermediate coat/Drying						
13. Polishing intermediate coat/Top coat						↓
14. Air blowing/Degreasing				↑		
15. Masking						
16. Spraying top coat/Drying						
17. Polishing/Buffering		↓	↓	↓	↓	↓

Refinishing Procedures

1. Featheredging (polishing damaged areas)

Damage to metal surface

- Sand the damaged area flat and smooth with a double action sander and #60 or #80 disc paper.
- Sand the boundary between the metal surface and undercoat with a double action sander and #180 or #280 disc paper. Try to sand a larger area than the damage.

NOTE:

- Make sure there is no height difference between the metal surface and undercoat.
- If double action sander is not available, use a rubber block and wrap sandpaper around it to sand the surface.

▲ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting or grinding.

Damage to Undercoat

Intermediate coat

Top coat

Paint coat on replacement parts

Sand the damaged surface flat and smooth with a double action sander and #280 or #320 paper.

NOTE:

- If double action sander is not available, use a rubber pad and wet or dry sand the surface with #280, #320, #400, or #600 sandpaper.
- After sanding, check that the surface is flat and smooth.
- Perform the operations provided in "damage to metal surface" above for the areas where parts are welded to the body.

2. Preparation of metal surface.

Remove all corrosion from the damaged area using a #180 or #280 paper.

3. Air Blowing/Degreasing

- Air blow the sanded area, then degrease with a wax and grease remover.
- Use the following materials:

- 38125 Enamel Reducer (Dupont)
- Spies Hecker Silicon Remover (Hoechst)
- Standox Silicon Remover (Herberts)

▲ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.

4. Treatment of metal surface

- Brush or spray a solution of chrome phosphat or washer primer on the exposed metal surface.
- Use the following materials to treat the metal surface:
 - 2145 Kwik-Prep TM (Dupont)
 - 6155/6165 Vari Prim self Etching Primer TM (Dupont)
 - Spies Hecker Priomat 1:1 Wash Primer 3688 (Hoechst)
 - Standox Etching Adhesion Primer (Herberts)

NOTE:

- Follow the manufacturer's instructions.
- Treat the metal surface, as much as possible, to provide a better bonding surface for the subsequent paint.

5. Application of Filler, Drying and Sanding

- Small cracks or pinholes in the sheet metal should be repaired with a filler and sanded flat and smooth.

NOTE:

- Mix the putty with the hardener in the correct ratio.
- Follow the filler manufacturer's instructions.

(cont'd)

Paint

Refinishing Procedures (cont'd)

▲ WARNING Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- Allow the filler to air dry for about 5-6 minutes, then force dry with an infrared lamp.

NOTE: Keep the lamp 40-50 cm (16-20 in.) from the filler while drying

- Stop drying the filler if a white mark appears when the surface is scratched with your nail. Wet or dry sand the surface flat and smooth with a #280 or #320 sand paper.

6. Air Blowing/Degreasing

- Blow the surface to be repaired with compressed air, then degrease with a wax and grease remover.
- Use the following materials:
 - 38125 Enamel Reducer (Dupont)
 - Spies Hecker Silicon Remover (Hoechst)
 - Standox Silicon Remover (Herberts)

NOTE: Also clean and degrease surfaces where masking tape will be attached.

7. Masking

Mask the areas surrounding the damage to prevent overspray from the primer.

8. Application and Drying of Primer/Drying

▲ WARNING

- **Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.**
- **Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.**
- Spray the primer over the filler and surface (use epoxy or urethane 2-part primer).
Spray : 2-3 coats.

- Use the following materials:

- 615S Primer Surfacer (DuPont)
- Primer Surfacer EP (Akzo)
- NPS735 Urethane Primer Surfacer (R-M)
- Spies Hecker Permacron HS Surface (Hoechst)
- Standox 2K HS Filler (Herberts)

- Let the primer air dry for 5-10 minutes, then force dry with an infrared lamp.

NOTE: Keep the dryer 40-50 cm (16-20 in.) from the surface.

9. Application of Polishing Undercoat

- Remove the masking paper and tape.
- Check that the undercoat has dried thoroughly, then dry or wet sand the surface with a #280 or #320 sand paper.

NOTE:

- Use a rubber block and sand flat and smooth.
- Sand the entire surface to be refinished.

10. Air Blowing/Degreasing

▲ WARNING

- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**
- Blow all the surfaces with compressed air then degrease with a wax and grease remover.
- Use the following materials:
 - 38125 Enamel Reducer (Dupont)
 - Spies Hecker Silicon Remover (Hoechst)
 - Standox Silicon Remover (Herberts)

NOTE: Also degrease the surfaces where masking tape will be attached.

11. Masking

Mask the undamaged areas surrounding the damage to prevent overspray from primer surfacer (undercoat).

NOTE: Use masking tape and paper to mask the body. A vinyl cover may also be used to effectively mask the body.

12. Application of Intermediate Coat (same color as enamel) top coat spraying/drying

⚠ WARNING

- **Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.**
- **Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.**
- Use the same color paint as the top coat. Spray it over the surface until the undercoat (primer surfacer) is fully covered.
- Spray the paint slightly thicker than normal to allow for loss during subsequent polishing.
 - Super ponacle II (R-M)
 - Super Centri (Dupont)
 - Auto cryl (Akzo)
 - Spies Hecker Permacron 2k Acrylic Top Coat (Hoechst)
 - Stadox Standocryl 2K (Herberts)

13. Polishing of Intermediate Coat

- Check that the paint coat has dried thoroughly, then dry or wet sand the surface with a #600 and #800 sand paper.

NOTE: Use a rubber block to sand flat and smooth, being careful not to expose the undercoat.

Polishing of Top Coat (if damaged):

Use the same technique described above.

14. Air Blowing/Degreasing

⚠ WARNING

- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**
- Blow the entire surface with compressed air then degrease with wax and grease remover.
- Use the following materials:
 - 38125 Enamel Reducer (Dupont)
 - Spies Hecker Silicon Remover (Hoechst)
 - Stadox Silicon Remover (Herberts)
- For shading or spot painting, polish the area with a polishing compound. Sand with a #2000 paper to give a better bonding surface for the subsequent paint.

15. Masking

- Remove all existing masking paper, then mask with new paper.
- Use a heat resistant type masking tape (SCOTCH TAPE) where tape is attached directly to the body.
- Use brown paper or masking roll paper to cover.

NOTE:

- Mask the area surrounding the damage sufficiently to prevent overspray. It is also a good practice to use a vinyl cover to protect other areas.
- Protect resin parts with aluminum foil under the brown paper or masking paper to prevent damage due to heat during baking.

16. Application of Top Coat Spraying/Drying

- Prior to putting the vehicle in the painting booth, thoroughly clean the interior and spray water over the floor. Be careful about blowing dust and dirt.

⚠ WARNING

- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**
- Blow with compressed air and degrease the surface before spraying the paint. Also clean the surface with a tack cloth.

⚠ WARNING

- **Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.**
- **Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.**
- Spray color matched top coat over the prepared surface. Apply 2-3 coats in two directions until the intermediate coat is fully covered.

NOTE: For application of the top coat, refer to step 12 "Application of Intermediate Coat."

Solid color: Color enamel + Color clear coat

Metallic color: Metallic enamel + Clear coat

Pearl color: Pearl enamel + Clear coat

(cont'd)

Paint

Retinising Procedures (cont'd)

⚠ WARNING Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- After spraying, allow the paint to settle for about 10 minutes, then force dry with an infrared lamp.

NOTE: Follow the paint manufacturer's instructions.

17. Polishing/Buffering

- Let the paint dry gradually, then polish the surface carefully using a polishing compound and sponge buff.
- To remove lint or dirt, wet sand the surface with #2000 sand paper or finer first, then polish with compound.

NOTE: Polish all roughness caused by sanding thoroughly. To do this, first polish with very fine compound, then with ultra fine compound.

- After polishing, remove the masking paper and tape, then wash the entire vehicle thoroughly.

Soft Chipping Guard Primer Coat

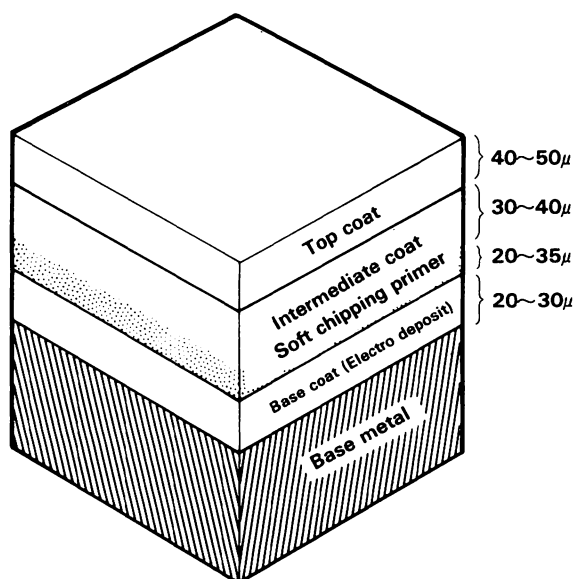
General

The removal of paint and undercoating by stones and gravel immediately exposes metal to the atmosphere, causing it to rust. The thickness of this rust increases if the process continues unchecked. The soft chipping guard primer protects against damage due to the impact of flying objects. The purpose of this guide is to provide information you will find useful when repairing damage to the protective coating. Refer to the Soft Chipping Primer Undercoating Diagram.

Type	Composition	Physical properties	Drying time
Polyester resin	Polyester resin Pigment Additive Solvent	Color Gray Viscosity 26sec/68°F (20°C) at painting Non volatile 40~45% at painting	302~320°F (150~160°C) × 30 minutes

The soft chipping guard primer is applied over the E.D. (Electrostatically Deposited) primer. It is followed by guide coating and top coating.

The soft chipping guard primer produces a smooth surface when dry. It should be sprayed so the thickness of the protective film is 20 microns.



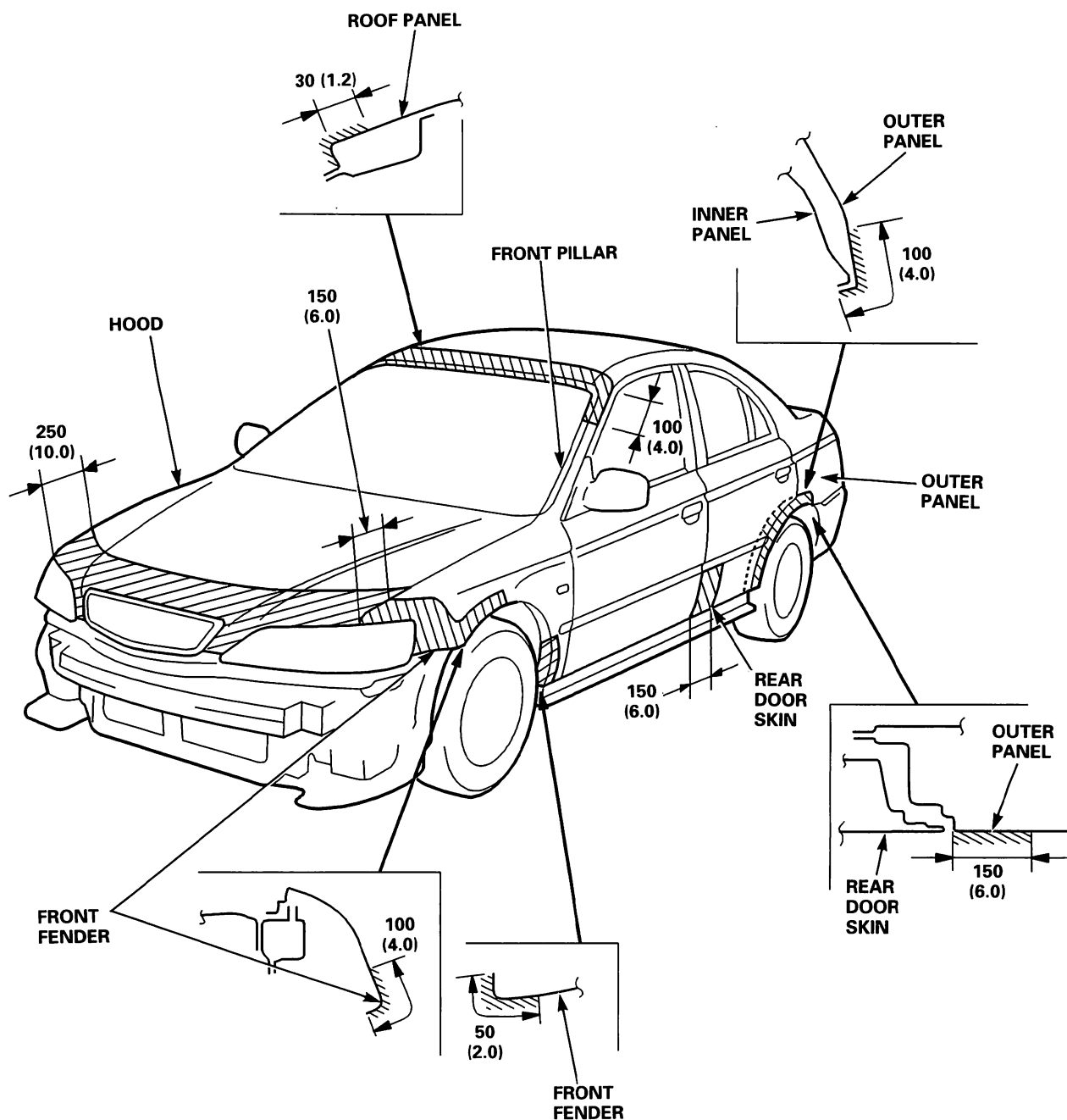
Soft Chipping Guard Primer Coat

Coating Diagram

The diagram shows the areas to which soft chipping primer is to be applied.

NOTE: Make sure to coat the flange on front and rear wheel arches.

Unit: mm (in.)



Soft Chipping Guard Primer Coat

Types of Soft Chipping Guard Primer (Reference)

Type	Application	Composition	Physical property	Drying time
Dual liquid synthetic resin	Room temperature Baked at 176°F (80°C) for 40 minutes	Pigment: 12% Calcic pigment: 37% Epoxy polyole resin: 15% Additive, Solvent 36% ----- 100%	Color: Gray Viscosity: 68°F (20°C) Non volatile: 65% mini. Specific gravity: 68°F (20°C), 1.378	Room temperature: 68°F (20°C), 3 days Baked: 176°F (80°C), 40 minutes (to harden thoroughly)
Dual liquid Acrylic } resin Urethane }	Room temperature Baked at 176°F (80°C) for 30 minutes.	Pigment: 40% Acrylic resin: 37% Additive, Solvent 23% ----- 100%	Color: Gray Viscosity: 68°F (20°C) 4 – 6 Poiseuille Non volatile: 65% mini. Specific gravity: 68°F (20°C), 1.35	Room temperature: 68°F (20°C), a day Baked: 176°F (80°C), 30 minutes (to harden thoroughly)

Repair Materials and Tools

Gun and brushes:

- Spray gun

NOTE: Any gun having a tip of more than 1.0 mm (0.04 in.) in diameter may be used for spraying the primer.

- Viscosity measure

Iwata-type (IHS) cup, Ford cup

- Beaker

1–2 ℓ (1.05–2.10 US. qt, 0.9–2 Imp. qt) in capacity

- Stirring stick

Materials:

- Use primers equivalent to the ones shown in Types of Chipping Guard Primer (Reference).
- Make sure to keep the thickness of the coat at 20 microns.

Masking:

- Masking tape, paper, vinyl sheet and plate (veneer and steel).
- Masking plates are not necessary when spraying in a booth.

Tools:

- Air or double action sander
- Sandpaper (#240–#400)

Protectors:

- Wear an approved respirator or dust mask, gloves, safety goggles, and other protective clothing.
- Rags.

Thinner and cleaner:

- Use the thinner specified for the primer.
- Any commercially available lacquer thinner may be used to clean the gun.

⚠ WARNING

- Most paints contain substances that are harmful if inhaled or swallowed. Read the paint label before opening the container.
- Spray paint only in a well ventilated area.
- Cover spilled paint with sand, or wipe it up at once.
- Wear an approved respirator, gloves, eye protection and appropriate clothing when painting. Avoid contact with skin.
- If paint gets in your mouth or on your skin, rinse or wash thoroughly with water. If paint gets in your eyes, flush with water and get prompt medical attention.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

Soft Chipping Guard Primer Coat

Coating Procedures

NOTE: This section covers the application of the soft chipping primer to the replacement part.

1. Sanding the replacement part

⚠ WARNING Wear goggles or safety glasses to prevent eye injury.

Sand the area to be painted with #240–#400 sandpaper.

NOTE:

- Do not oversand the edges or corners of the part.
- Do not expose bare metal.

2. Air blowing/degreasing

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Paint thinner is flammable. Store it in a safe place, and keep it away from sparks, flames or cigarettes.

Clean the surface with compressed air and wax and grease remover.

3. Masking

- Place masking tape or paper around the surface to be painted.
- Cover as wide an area as possible with tape or paper to keep primer from spreading.

4. Spraying chipping guard primer

- Stir the primer thoroughly.
- Put the primer in a beaker and weigh the needed amount of primer to be used.
- Mix the hardener into the primer, following the manufacturer's instructions.

NOTE: Measure the primer and hardener so they are in correct ratio.

Item	Primer	:	Hardener
* High Primer Surfacer 2C	10	:	1
* Auto Primer Surfacer Mighty	5	:	1

- Add the specified thinner to the mixture of hardener and primer to attain the proper viscosity for spraying.
2C 68°F (20°C) 18 sec ± 1
- These substances are not available in the using duPont's 123 vinyl Coating, or Sherwin-Williams' Vinyl Gravel Guard. Follow the manufacturer's instructions for application.
- Use the following materials:
 - Spies Hecker Permacron 4:1 Surfacer 4:1 (Hoechst)
 - Standox 2K 4:1 Special Filler (Herberts)
- Once mixed with the hardener and thinner, the primer must be used within the times shown below.

Temperature		41°F (5°C)	50°F (10°C)	68°F (20°C)
Time	High Primer Surfacer 2C	30H	24H	8H
	Auto Primer Surfacer Mighty	4H	3.5H	3H

⚠ WARNING

- Most paints contain substances that are harmful if inhaled or swallowed. Read the paint label before opening the container. Spray paint only in a well ventilated area.
- Cover spilled paint with sand, or wipe it up at once.
- Wear an approved respirator, gloves, eye protection and appropriate clothing when painting. Avoid contact with skin.
- If paint gets in your mouth or on your skin, rinse or wash thoroughly with water. If paint gets in your eyes, flush with water and get prompt medical attention.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

- Fill the gun's paint cup with the primer. Use a strainer when pouring the primer into the cup.
- Primer should never be applied to a dirty or greasy surface. Before spraying, blow dust and dirt off the surface and clean with wax and grease remover.

(Method of spraying)

- Do not try to cover the surface with one heavy coat. Apply several thin coats.

NOTE:

- Spray coat 4–5 coats to get 20 microns of thickness, as one coat deposits 5–7 microns.
- Spray the primer at 250–300 kPa (2.5–3.0 kgf/cm², 35.6–42.7 psi) pressure. Spraying with improper air pressure will cause imperfections.
- Open the gun 3–4 turns.
- Wipe up unwanted primer immediately with thinner.

5. Cleaning spray gun

- After spraying, be sure to clean the spray gun thoroughly with thinner or solvent.
- The gun will be permanently clogged if the primer is allowed to dry.

6. Drying

- After spraying the chipping guard primer, air-dry for 7–10 minutes to evaporate the thinner in the primer. Then dry it with infrared lamps at 176°F (80°C) for 30–40 minutes.

NOTE: Insufficient baking may cause pinholes if the primer coat is too thick.

- The temperature lamps and drying time recommendations should be followed closely.

7. Intermediate and Top coating

- Sand the chipping guard primer film with #280–#400 sandpaper.
- Follow the intermediate/top coating Procedures (see page 8-9).

Temperature		41°F (5°C)	68°F (20°C)	86°F (30°C)	140°F (60°C)	176°F (80°C)
Time	Before sanding	8–13H 6–10H	3.5–5H 4–5H	2–3H 2–4H	30 Min. 15–20 Min.	20 Min. 10–15 Min.
	Before painting	8H 10–18H	4H 6–8H	3H 4–8H	30 Min. 20–40 Min.	20 Min. 15–30 Min.

NOTE: The upper line of time shows specifications for High Primer Surfacer 2C, and the lower line Auto Primer Surfacer Mighty.

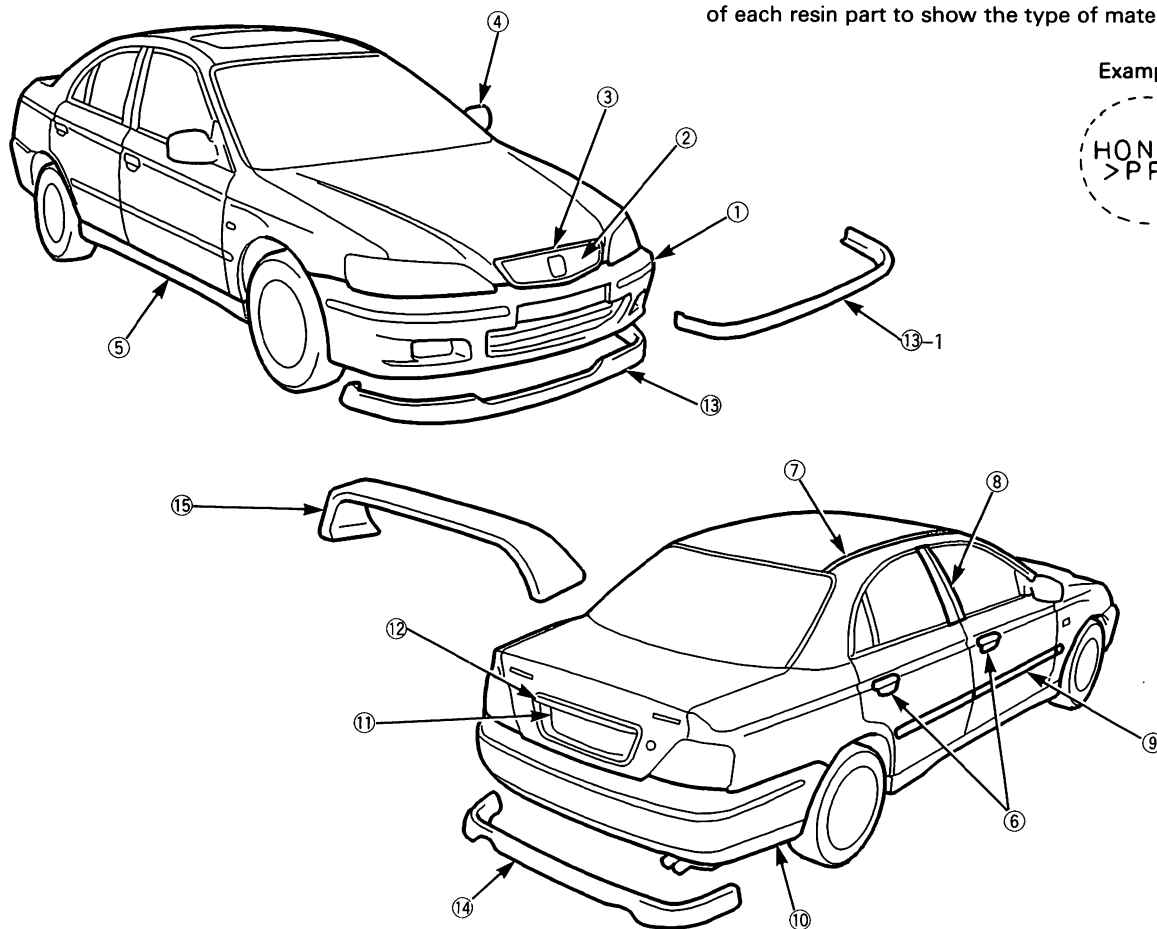
Resin Parts Paint Repair (Exterior)

Types and Materials of Exterior Resin Parts	9-2
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Types and Materials of Exterior Resin Parts

NOTE: A standard symbol is stamped on the underside of each resin part to show the type of material of used.

Example:



No.	Part Name		Material
①	Front Bumper		Polypropylene (PP)
②	Front Grille Base		Acrylonitrile / Butadiene / Styrene (ABS)
③	Front Grille Molding		Acrylonitrile / Butadiene / Styrene (ABS)
④	Door Mirror	Body color	Acrylonitrile / Butadiene / Styrene (ABS)
		Black	Acrylonitrile / Styrene / Acrylate (ASA)
⑤	Side Sill Panel		Polypropylene (PP)
⑥	Door Outer Handle		Poly carbonate plastics (PC)
⑦	Roof Molding		Poly vinyl chloride (PVC)
⑧	Door Center Sash		Acrylonitrile / Styrene / Acrylate (ASA)
⑨	Protector Molding		Polypropylene (PP)
⑩	Rear Bumper		Polypropylene (PP)
⑪	License Plate Trim		Acrylonitrile / Butadiene / Styrene (ABS)
⑫	License Plate Molding		Acrylonitrile / Butadiene / Styrene (ABS)
⑬	Front Air Spoiler (TYPE R)		Polyurethane (PUR)
⑬-1	Front Air Spoiler		Polypropylene (PP)
⑭	Rear Lower Skirt (TYPE R)		Polyurethane (PUR)
⑮	Trunk Lid Spoiler (TYPE R)		Polyurethane (PUR)

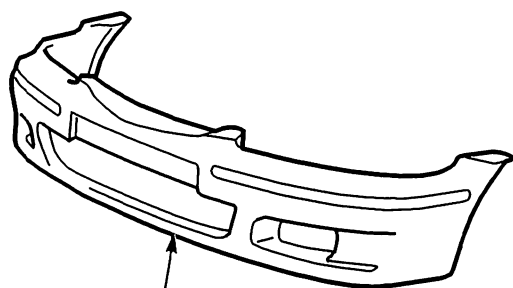
• No. ①, ⑤, ⑨, ⑩, ⑬-1: Repair procedures see page 9-3

• No. ②, ③, ④, ⑥, ⑧, ⑪, ⑫, ⑬, ⑭, ⑮: Repair procedures see page 9-12

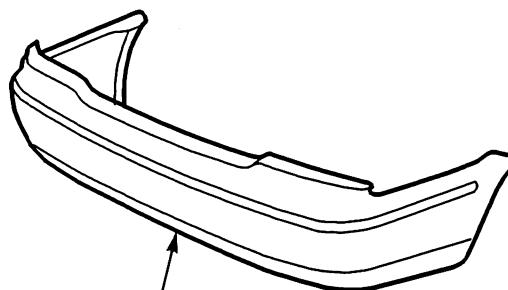
Polypropylene (PP) Resin Parts

General Information

The front bumper, rear bumper, and side sill panel are made of polypropylene (PP) resin. They can be repaired if the damage or deformation is minor in nature. This section covers PP repair. Repairing PP is different from other resins such as ABS and urethane.



FRONT
BUMPER



REAR
BUMPER

Repair Materials and Tools

The following materials and tools are required to resin bumpers:

Adhesive and Filler (examples):

- Bumper primer (clear type)
- Bond quick mender
- High art mat black
- High art thinner
- High art hardener

Primer surfacer (examples).

- Dual-liquid type bumper primer surfacer (gray) Reference (Isam Paint)
- Pigment: (1kg) (35.3 oz)
- Hardener: (100g) (3.5 oz)
- Thinner: (900 ml) (30.4 fl. oz, 31.7 Imp. oz)

NOTE: Follow the manufacturer's recommendations

Tools:

- Putty knife
- Base (putty)
- Sandpaper
- Cutter
- Brush
- Masking tape
- Masking paper

1. Bumper Primer (Clear): Premixed type

The primer provides a good support for the filler and primer surfacer. It is applied to the surface of the bumper.

Drying time:

Natural	68°F (20°C) 20 minutes
Baked	140°F (60°C) 10 minutes

2. PUTTY BOND QUICK MENDER

After the PP primer has dried thoroughly, apply the PUTTY BOND QUICK MENDER.

- 1. Mix one part of the mender (A) and one part of the hardener (B) and stir thoroughly.

NOTE: Do not mix the mender and hardener in excess of 20g (0.7oz) at a time.

(cont'd)

Polypropylene (PP) Resin Parts

Materials and Tools (cont'd)

–2. Hardening starts immediately after mixing.

Practical hardness will be obtained within 60 minutes. The surface will be tacky within 5 minutes and nearly hardened after 15 minutes. It takes 12 hours for the surface to harden thoroughly 68°F (20°C)

–3. Sanding can be done after:

3 hours	68°F (20°C)-natural drying
30 minutes	140°F (60°C)-baked

3. Primer Surfacer

NOTE: Use a dual-liquid type bumper primer surfacer (gray).

- The primer surface is used to protect the PP resin surface and to fill cavities or flaws in the intermediate and top coats.
- Mix 10 parts of primer surfacer and 1 part of hardener. Add the specific thinner (30-60%) to the mixture of the hardener and primer to attain the proper viscosity for spraying.

4. Intermediate and Top Paint Coats (body color)

NOTE:

- The paints are the dual liquid type based on the color chart.
- Measure the pigment and hardener as described so they are in correct ratio.
- Use the acrylic urethane paint prepared according to the mixing chart as the intermediate coat.

Mixing Ratio:

Mix 5 parts of body color pigment to 1 part of additive.
Mix 4 parts of the mixture of the pigment and additive with 1 part of the hardener.

NOTE:

- Dilute the mixture with 40-50% of the specified thinner (Highart Thinner).
- Be sure to mix the correct amount of the additive.
- Use a spray gun to apply the paint. Do not use a brush.

⚠ WARNING

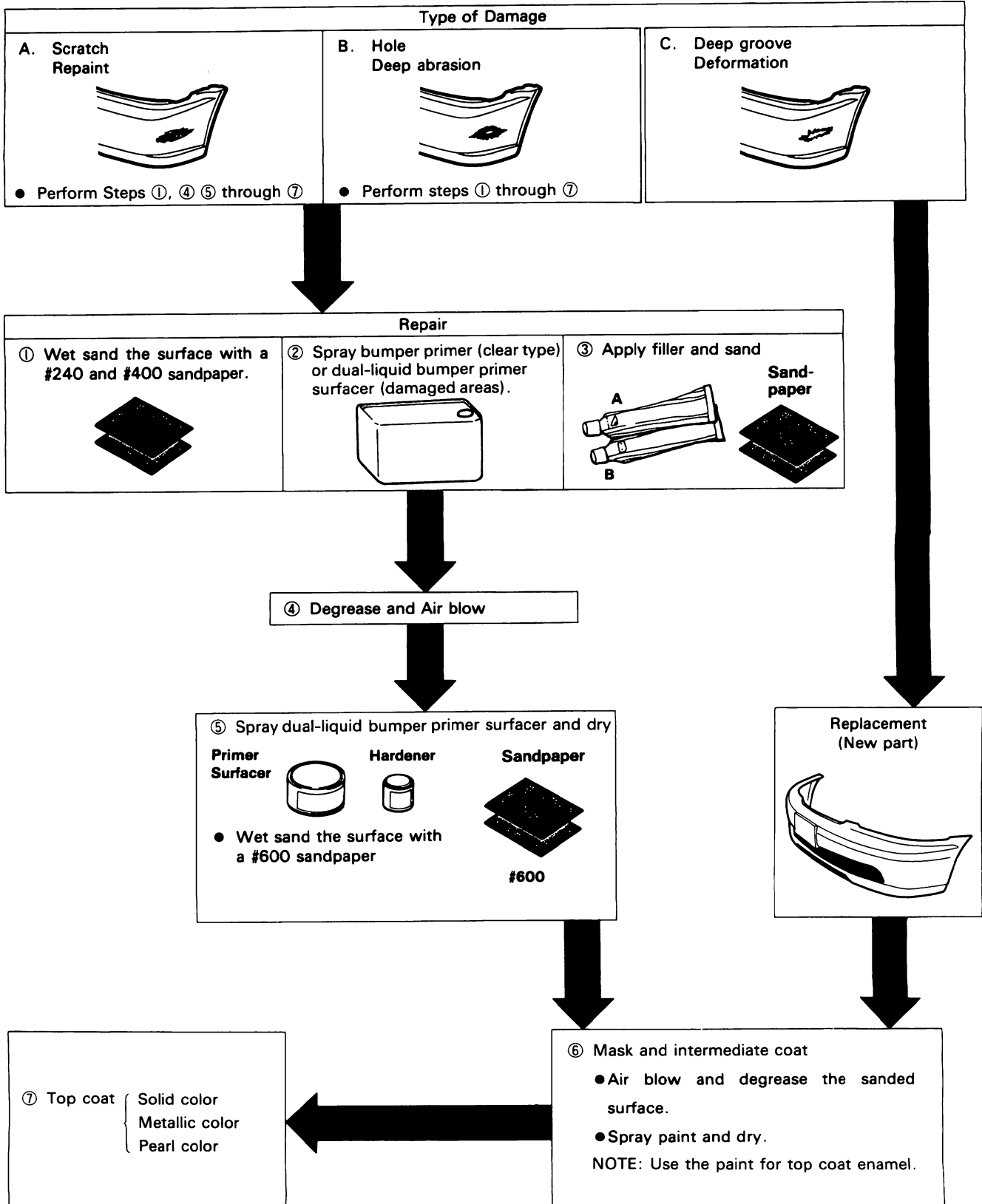
- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

Drying time:

Natural	68°F(20°C)
Surface only	20 minutes
Almost hardened	4 hours
Thoroughly hardened	96 hours

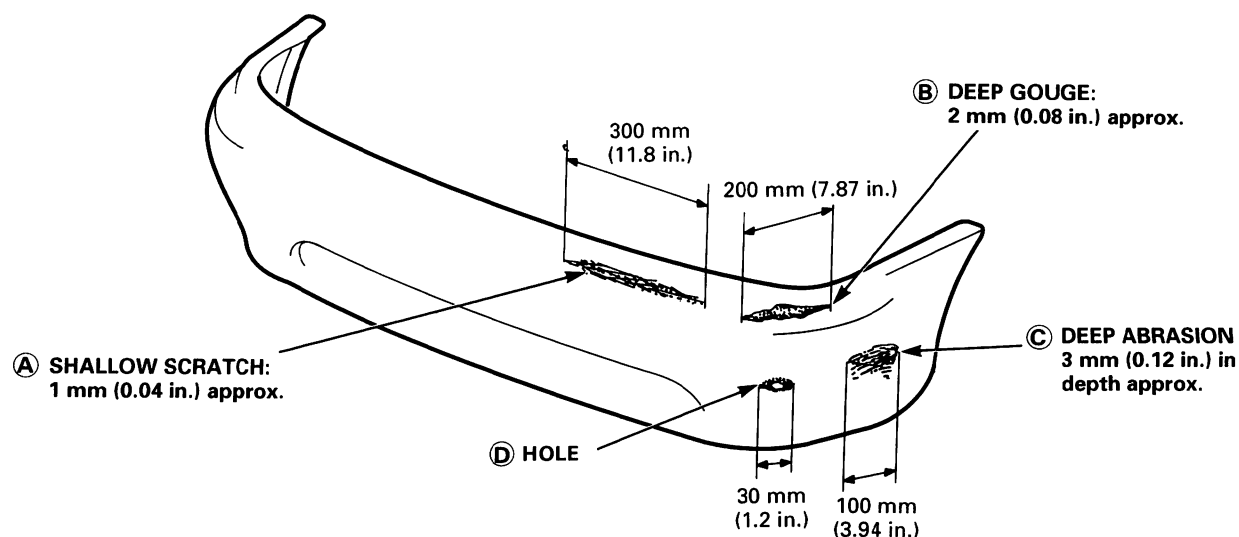
NOTE: The HIGH ART MAT BLACK SURFACER is a dual liquid type. If mixed, it will harden in a matter of hours.

Refinishing Processes



Polypropylene (PP) Resin Parts

Repair Procedures



NOTE: (): Indicates steps which may be required according to the degree of damage.

Damage	A	B	C	D	Repaint	Replacement
Work Steps						
1. Sanding	↑	↑	↑	↑		
2. Degreasing/Cleaning (damaged areas)						
3. Spraying primer or primer						
4. Drying surfacer						
5. Applying filler						
6. Drying filler						
7. Sanding filler						
8. Degreasing/Cleaning (filled area)						
9. Spraying primer surfacer						
10. Polishing (Air blowing/degassing)						
11. Intermediate coating						
12. Degreasing/Cleaning						
13. Masking						
14. Top coating						
15. Drying top coat						
16. Polishing/Buffering						

NOTE: Intermediate coating is recommended for bright colors.

Refinishing Procedures

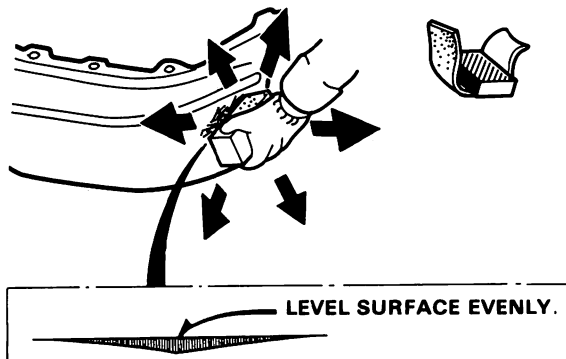
1. Sanding damaged areas

Shallow scratch:

- Level and finish damaged areas with #240-#400 sandpaper.
- Polish the leveled area with #400 sandpaper.

NOTE:

- Use a flexible block to sand the surface evenly.
- Do not remove too much material.



Deep groove/tear:

- Level and finish burrs and other irregularities with #240 sandpaper. Keep the surface as even as possible.



2. Degreasing/Cleaning

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Clean with wax and grease remover and dry with compressed air.
- Wipe off all lint and other foreign particles from the surface with a tack cloth.

NOTE: Be sure to use a tack cloth. Dust and dirt are electrostatically drawn to the surface.

3. Applying bumper primer (clear type).

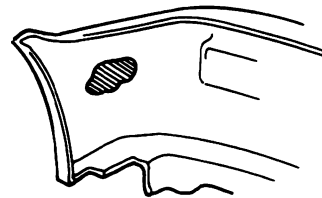
- Stir thoroughly before applying the primer. Use a spray gun or brush depending on working conditions.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.
- Cover as wide an area as possible, except for shallow grooves (2-3 coats).

NOTE:

- Do not dilute the primer with thinner.
- Warm the primer if the outside temperature is below 50°F (10°C).
- Apply the primer to the back of the bumper if the damage is a tear or hole.



4. Drying bumper primer.

⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- Dry the primer thoroughly with an infrared dryer or other dryer suitable for the purpose.

(cont'd)

Polypropylene (PP) Resin Parts

Refinishing Procedures (cont'd)

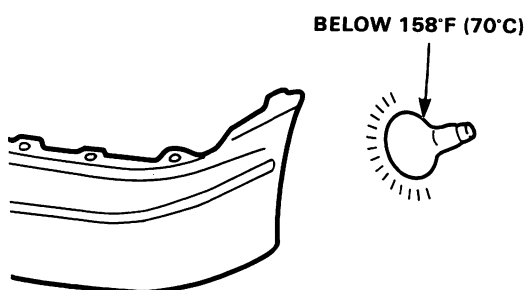
- If the damage or groove is shallow, heat the entire surface evenly. Apply heat locally if the bumper is gouged or torn open.

Drying time:

Dryer	10 minutes 140°F (60°C)
Natural	20 minutes 68°F (20°C)

NOTE:

- Use a dryer whenever possible.
- Do not allow temperature to exceed 158°F (70°C) or the bumper will deform



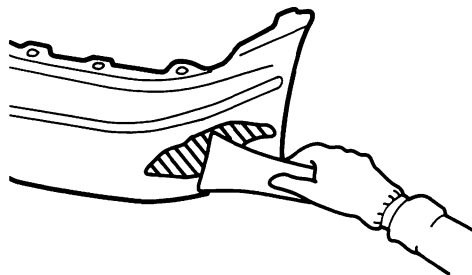
5. Apply filler (BOND QUICK MENDER.)

Mix the mender (A) into the hardener (B) at a ratio of 1 to 1, and stir until they are thoroughly mixed.

1. Apply the mixture over the damaged area with a putty knife using light pressure.
2. Even out the surface to match the contour of the bumper.
3. If there is a hole, cover it with a masking tape from the back, then apply the filler over the outside surface.

After the filler has been dried, remove the tape and apply filler to the side that was taped.

NOTE: Apply filler so it extends over more than the damaged area.



6. Drying filler

Drying time:

Almost hardened	5 minutes
Initial hardness	15 minutes
Practical hardness	60 minutes
Sanding 68°F (20°C)	After 3 hours
140°F (60°C)	After 30 minutes

7. Sanding filler

⚠ WARNING To prevent eye injury, wear goggles or safety glasses whenever sanding, cutting, or grinding.

Wet sand first with #240 sandpaper then with #400 sandpaper.

NOTE: Sand the surface evenly, particularly at the area where the PP resin and mender meet.

8. Degreasing/Cleaning

- Blow off the sanded surface, then clean with wax and grease remover.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.
- Remove all dust and dirt with a tack cloth.

9. Spraying dual-liquid bumper primer surfacer (gray)

NOTE: Use the urethane bumper primer.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.

Spray the primer surfacer over a wider area than the filler and the exposed surfaces of bumper primer.

NOTE: Spray 2-3 coats to get 20-25 microns of thickness.

Mixing Ratio: (Reference)

Urethane bumper primer	10
Hardener	1
Thinner	30-60%

10. Drying and polishing

Force dry the primer surfacer with infrared lamps or other industrial dryer.

⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

Drying temperature:

Force drying	140°F (60°C) 20 minutes
Natural drying	68°F (20°C) 2 hours min

NOTE:

- Use a dryer whenever possible.
 - Do not allow the temperature to exceed 158°F (70°C).
- 1. After force drying, wet sand the primer surface with #600 sandpaper.

NOTE: Use #600 or finer sandpaper as any paper coarser than this might scratch the surface.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle
- Wear goggles or safety glasses to prevent eye injury.

-2. Blow the surface to be repaired with compressed air then degrease with a wax and grease remover.

-3. Also clean and degrease where masking tape will be attached.

11. Intermediate coating

NOTE: Intermediate coating is recommended for bright colors.

- Use the top coat enamel.

⚠ WARNING

- Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- Avoid contact with skin. Wear an approved respirator, gloves, eye protection and appropriate clothing when painting.
- Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.
- Mix the additive into the solid enamel color, metallic enamel or pearl enamel color in the ratio of 1 to 5 (by weight).
- Mix the hardener into the mixture of pigment and additive described above in the ratio of 1 to 4 (by weight).

NOTE: Keep the correct ratio, especially of the additive. Excessive additive takes longer to dry.

- Adjust to the proper viscosity for spray by adding the thinner specified for the primer into the mixture of primer additive and hardener.
Viscosity: 68°F (20°C) 11-13 sec.

(cont'd)

Polypropylene (PP) Resin Parts

Refinishing Procedures (cont'd)

NOTE: It is not necessary to apply the clear coat.

- Spray 2-3 coats of the top coat enamel to get 15-20 microns of thickness. The primer surfacer (gray) should not show through the top coat.

NOTE:

- Apply the top coat enamel to the repaired surface.
- Apply the top coat enamel to the entire surface of the primer surfacer when replacement is necessary.

12. Degreasing and Cleaning

Air dry the entire surface, then clean with wax and grease remover.

NOTE: For shading or spot painting, polish the area with a polishing compound. Also sand with a #1500 sandpaper to make a better bonding surface for the paint.

13. Masking

- Remove all existing masking paper, then mask with new paper.
- Use a heat resistant type masking tape (SCOTCH TAPE) where tape is attached directly to the bumper.
- Use brown paper or masking roll paper to cover.

NOTE:

- Mask the area completely to prevent overspray.
- Protect resin parts with aluminum foil under the brown paper or masking paper to prevent damage due to heat during baking.

14. Top Coating

- Air dry and degrease the surface before spraying the paint. Also clean the surface with a tack cloth.

⚠ WARNING

- **Ventilate when spraying paint. Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.**
- **Avoid contact with skin. Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.**
- **Paint is flammable. Store it in a safe place, and keep it away from sparks, flames, or cigarettes.**
- Remove dust and dirt from the surface to be coated with compressed air, then use a tack cloth.
- Use a strainer when filling the cup with paint.
- Spray the paint evenly over the surface so the replacement part is completely covered.
- For application of the top coating refer to step 11 "Intermediate coating."

NOTE: Do not try to cover the surface with one heavy coat. Apply several thin coats.

- With solid color (2-coat type), metallic color and pearl color enamels, allow final coat to flash-off (5-20 minutes) before applying clear coat.

- Mix the additive into the clear at a ratio of 1 to 5. Adding the hardener and adjusting viscosity should be done the same way as described on the previous page.

Viscosity: 68°F (20°C) 13-15 sec.

Mixing Ratio (weight)

Metallic enamel/Clear solid enamel	Additive	Hardener
5	: 1 = 4	: 1

15. Drying top coat

⚠ WARNING Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- Before force drying, let it air dry for 5-10 minutes.
- Force dry the sprayed surface under the infrared lamps for 60-90 minutes.
- Keep the drying temperature between 140°F (60°C) and 158°F (70°C).

NOTE: Take care not to let the heat deform the part during the drying process.

16. Polishing and Buffing

- Let the paint dry gradually, then polish the surface carefully using a polishing compound and sponge buff.
- To remove lint or dirt, wet sand the surface with #2000 or finer paper first, then polish with compound.

NOTE: Polish all roughness caused by sanding thoroughly. To do this, first polish with very fine compound, then with ultra fine compound.

- After polishing, remove the masking paper and tape and wash the entire vehicle thoroughly.

ABS/PC Resin Parts

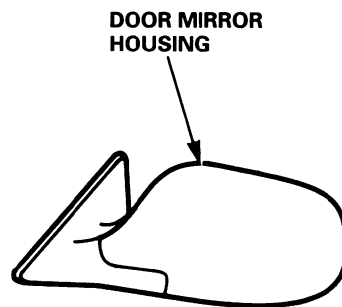
General Information

The door mirror housing, license plate trim, and front grille are made from ABS resin.

They can be repaired if the damage or deformation is minor in nature. This section covers ABS repair. Repairing ABS is different from other resins such as PP.

NOTE:

- The ABS resin is the copolymer resin consisting of the three monomers of acrylonitrile, butadiene, and styrene.
- Polycarbonate is a generic name for high polymers which have the carbonic ester structure in the structural unit. The most prominent feature of polycarbonate is its tensile strength which shows the same level of yielding point as metals in the normal temperature. It also has outstanding impact strength compared to other plastics.



NOTE: The following repair procedures also apply to the door outer handle (PC) and front air spoiler, rear lower skirt and trunk lid spoiler (PUR).

Repair Materials

Examples:

Adhesive and filler: Epoxy

- Kemit TE2301 bond quick mender

Filler:

- R-M Stop zinc (R-M)
- 3M 5900 Repair Material (Akzo)

NOTE: Follow the manufacturer's specification.

Top coat:

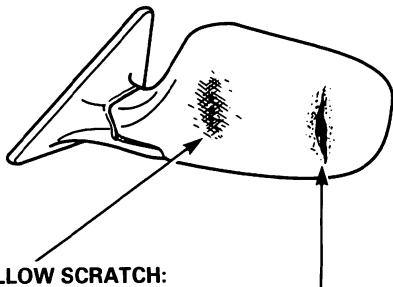
- Super ponacle II, Solo de Diamont, Diamont (R-M)
- Autocryl Auto base (Akzo)
- Super Centari (DuPont)

Primer/Primer surfacer:

Use when the resin material is exposed.

- R-M fast filler + R-M flex primer (R-M)
- Plasto flex primer 2 coat (Akzo)
- 1220RH-S filler primer (DuPont)

Repair Procedures



B. SHALLOW SCRATCH:
1 mm approx.
(0.04 in.)

A. DEEP SCRATCH:
2 mm approx.
(0.08 in.)

A. Deep scratches, when filling:

- (1) Sand the damage section. (#120~#240)
- (2) Apply the filler and dry.
- (3) Sand the filler (#240~#400)
- (4) Coat with the primer/primer surfacer and dry.
- (5) Sand the primer surfacer. (#600~#800)
- (6) Top coating.

B. Shallow scratches:

- (1) Coat with the primer/primer surfacer.
- (2) Sand the primer surfacer. (#600~#800)
- (3) Top coating.

C. Repaint:

- (1) Sand the primer surfacer. (#600~#800)
- (2) Top coating.

Refinishing Procedures

1. Base material reconditioning (sanding)

- 1. Repaint the replacement part
Lightly sand the part with #400, #600 or #800.
- 2. Slight scores or scratches
Use a flexible sanding block, wet sand the damaged section with #400, #600 sandpaper.
NOTE: Sand level to remove damage.
- 3. Deep scratches when filling.
Use a flexible sanding block and wets and the damaged section with #240, #400 sandpaper.

2. Degreasing and cleaning

Clean the repaired area with wax and grease remover, then blow with compressed air.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.

NOTE: Wipe dust off surface with a tack cloth.

3. Filling, drying, and sanding

Apply the filler in several thin coats.

NOTE: Mix and apply the filler according to the manufacturer's instructions.

- 1. Dry the filler with an infrared dryer for 5 or 6 minutes.
Be sure to keep the dryer 40-50 cm (16-20 in.) away from the surface.
- 2. Scratch the filled surface with your nail. If the surface is white when scratched, dry sand and wet sand with the #240-#400 sandpaper. Be sure to sand level.

4. Cleaning with compressed air, and degreasing

Blow the entire area to be coated with compressed air, then clean with wax and grease remover.

⚠ WARNING

- Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.
- Wear goggles or safety glasses to prevent eye injury.

NOTE: Clean the whole surface to the help the masking tape adhere securely.

(cont'd)

ABS/PC Resin Parts

Refinishing Procedures (cont'd)

5. Masking

Use the masking tape and paper to mask the area that should not be sprayed.

6. Coat with primer/primer surfacer, followed by drying and sanding.

- Spray the primer surfacer over the filled area.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.
- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**
- The coating thickness should be 20-25 microns.

NOTE: Follow the primer/primer surfacer manufacturer's instructions.

-1. Drying

- Let the primer surfacer dry naturally for 5 to 10 minutes, then dry with an infrared dryer.

⚠ WARNING

Body parts being dried with an industrial dryer can get hot enough to cause injury. Do not touch parts being dried.

- Be sure to keep the dryer 40-50 cm (16-20 in.) away from the paint film.

-2. Sanding

Lightly dry sand the whole area to be painted with #600, #800 sandpaper.

7. Blow off with compressed air, then clean with wax and grease remover.

⚠ WARNING

- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**

NOTE: Clean the whole surface to help the masking tape adhere securely.

8. Top coating

- Remove dust with a tack cloth before spraying.
- Spray the top coating. Spray until the primer surfacer is covered.
- The coating thickness should be 30-35 microns.

⚠ WARNING

- **Ventilate when spraying paint.** Most paint contains substances that are harmful if inhaled or swallowed. Read the paint label before opening the paint container.
- **Avoid contact with skin.** Wear an approved respirator, gloves, eye protection, and appropriate clothing when painting.
- **Paint is flammable.** Store it in a safe place, and keep it away from sparks, flames, or cigarettes.
- **Do not use high air pressure; use only an approved, 210 kPa (2.1 kgf/cm², 30 psi) air nozzle.**
- **Wear goggles or safety glasses to prevent eye injury.**

NOTE: For the recommended top coat paint, refer to "Example of repair materials".

Solid color: Color enamel + color clear coat

Metallic: Metallic enamel + clear coat

Pearl: Pearl enamel + clear coat

9. Drying

After top coating for about 10 minutes, then dry with an infrared dryer.

NOTE: Follow the paint manufacturer's specification to dry properly.

Glossary

All paint	Painting of complete surface.
Air blow	Using compressed air to blow away dust and debris.
Block paint	Painting a section only, such as a door.
Clear paint (clear coat)	Clear paint without dye (pigment).
Double coat	Application of two paint coats.
Dry coat	Paint which left the spray gun and dried partially before it reached the surface, thereby making the painted surface rough. Dry coating is caused by too little paint being fed, too high an air pressure, too much distance between the painted surface and the gun, or moving the gun too fast.
Dry film	Paint which has dried completely.
Dust coat	Paint is applied thinner than a dry coat. Painted surface becomes rough.
ED painting	Electrostatic discharge painting.
Enamel	Finishing paint pigmented with dye.
Featheredging	Smoothing off the edges of painted surfaces.
Flash off	Evaporation of the paint solvent. (Flash off time is the period between paint coat applications.)
Ford cup	A type of viscosity meter.
Gun stroke	Movement of the paint gun.
Hardener	Hardening agent of two-liquid type paint or fillers. Polycyanates and oxides are used for hardeners.
Heat-hardening acrylic resin paint	Composed of acrylic resin and meramine resin, and hardened (forms a paint film) by baking.

(cont'd)

Glossary

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Lacquer	A type of paint that uses cellulose nitrate or other chemicals, and which dries by evaporation of its solvent agent.
Meramine resin	Used as component for aminoalkyd resin paint and heat-hardening acrylic resin paint.
Metallic-base paint	Paint with aluminum powder for metallic tone.
Mist coat	Painting for fade-in sections. A small amount of paint may be dissolved with slow-evaporating thinner, or thinner alone may be applied with low pressure. 150-200kPa (1.5-2.0kgf/cm ² , 21.3-28.4psi)
Mixing scale	Color mixing device.
Overlap	Blending of spray patterns.
Overspray	Spraying other than the area that needs painting.
Paddle	A tool to mix paint.
Paint dust	Dust of paint formed by spraying.
Paper dispenser	A paper posting device (masker) that combines tape and paper.
Scrapes	Traces of scratches.
Scuffing	Particles on the painted surface are lightly polished with fine emery paper (#600 or over).
Set (setting)	Evaporation time of solvent in the paint, before drying the layer forcefully or by baking. (May be considered the same as flash-off time.)
Single coat	Application of paint in single layer.
Spot paint	Painting of small section, such as for touch-up.
Undercoat	Undercoat paint (such as primer and surfacer). May be applied to lower section of car for noise prevention and rustproofing.

Wet coat	Paint is applied with an excess of solvent, thereby producing a painted surface that's smooth, glossy, and has a wet look.
Wet film	Paint which has not dried completely.
Wet on wet	Application of the next coat of paint before the preceding layer has dried completely.
Wool bonnet	Wool grinder for compound polishing.

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