

## **FOREWORD**

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

Applicable models: ACV 40 series  
GSV 40 series

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

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

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

For the repair procedures and specifications other than collision-damaged body components of the TOYOTA CAMRY refer to the repair manuals.

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

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

**TOYOTA MOTOR CORPORATION**

## ABOUT THIS MANUAL

### Scope of the repair work explanation

- This text explains the welding panel replacement instructions from the vehicle's white body condition. We have abbreviated the explanations of the removal and reinstallation of the equipment parts up to the white body condition and of the installation, inspection, adjustment and final inspection of equipment parts after replacing the weld panel.

### Section categories

- This manual has been divided as shown below.

Section Title	Contents	Examples
INTRODUCTION	Explanation of general body repair. Views of weld panel replacement instructions.	Cautionary items. Views of weld panel replacement instructions.
BODY PANEL REPLACEMENT	Instructions for replacing the weld panels from the white body condition, from which bolted parts have been removed, with individual supply parts.	Front side member replacement. Quarter panel replacement.
BODY DIMENSIONS	Body aligning measurements.	Dimension diagrams.
PAINT • COATING	Scope and type of anti-rust treatment, etc. together with weld panel replacement.	Under coating. Body sealer.

### Contents omitted in this manual.

- Make sure to perform the following essential procedures, although they are omitted in this manual.
  - (1) Clean and wash removed parts, if necessary.
  - (2) Visual inspection.

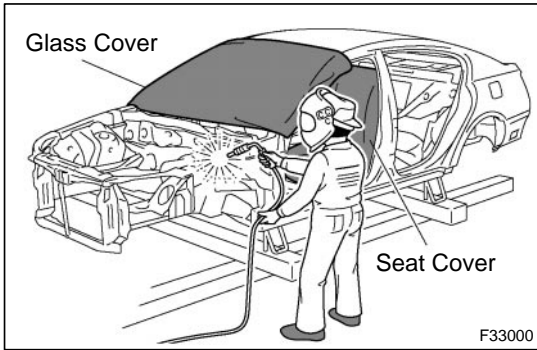
# PRECAUTION

## GENERAL REPAIR INSTRUCTIONS

### 1. WORK PRECAUTIONS

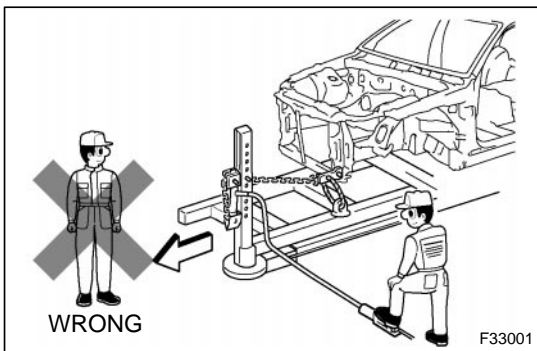
#### (a) VEHICLE PROTECTION

- (1) When welding, protect the painted surfaces, windows, seats and carpet with heat resistant, fireproof covers.



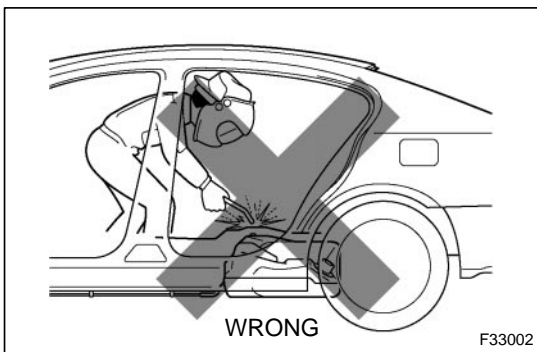
#### (b) SAFETY

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



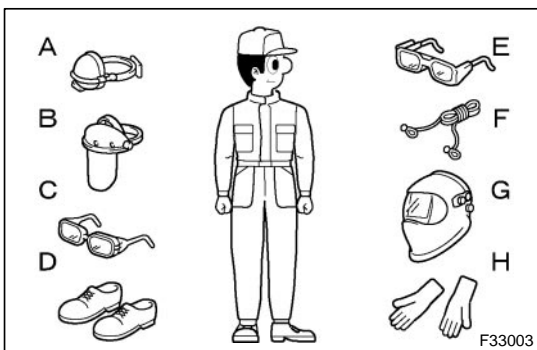
- (2) Before performing repair work, check for fuel leaks. If a leak is found, be sure to close the opening completely.

- (3) If it is necessary to use a flame in the area of the fuel tank, first remove the tank and plug the fuel line.



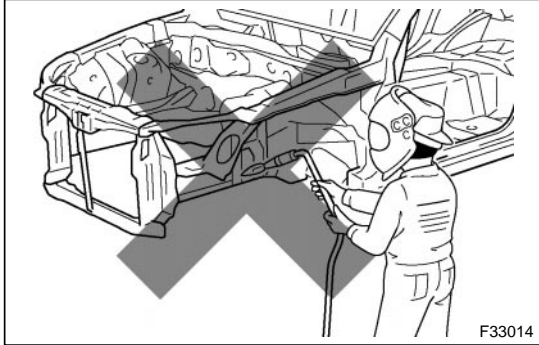
#### (c) SAFETY WORK CLOTHES

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



Code	Name
A	Dust-Prevention Mask
B	Face Protector
C	Eye Protector
D	Safety Shoes
E	Welder's Glasses
F	Ear Plugs
G	Head Protector
H	Welder's Gloves

## PRECAUTIONS FOR REPAIRING BODY STRUCTURE PANELS



### 1. HEAT REPAIR FOR BODY STRUCTURE PANELS

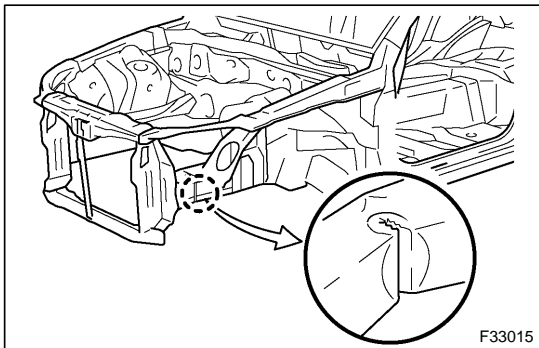
Toyota prohibits the use of the heat repair method on body structure panels when repairing a vehicle damaged in a collision.

Panels that have high strength and rigidity, as well as a long life span for the automobile body are in high demand.

At Toyota, in order to fulfill these requirements, we use high tensile strength steel sheets and rust preventive steel sheets on the body. High tensile steel sheets are made with alloy additives and a special heat treatment in order to improve their strength.

To prevent the occurrence of rust for a long period of time, the surface of the steel is coated with a zinc alloy.

If body structure parts are heat repaired with an acetylene torch or other heating source, the crystalline organization of the steel sheet will change and their strength of the steel sheet will be reduced. The ability of the body to resist rust is significantly lowered as well since the rust resistant zinc coating is destroyed by heat and the steel sheet surface is oxidized.

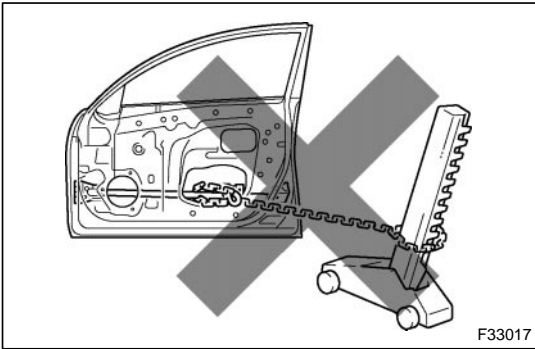
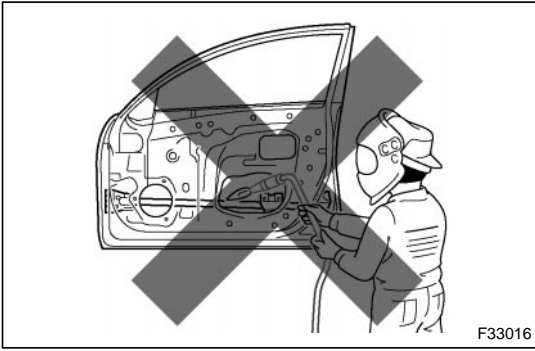


### 2. STRUCTURE PANEL KINKS

A sharp deformation angle on a panel that cannot be returned to its original shape by pulling or hammering is called a kink.

Structural parts are designed to perform in their original shape. If parts are deformed in an accident, or if the deformed parts are repaired and reused, the parts may be unable to perform as intended.

It is necessary to replace the part where the kink has occurred.



### 3. IMPACT BEAM REPAIR

The impact beam and bracket are necessary and important parts that help reduce the probability of injury to passengers in side collisions.

For impact beams, we use special high tensile strength steel.

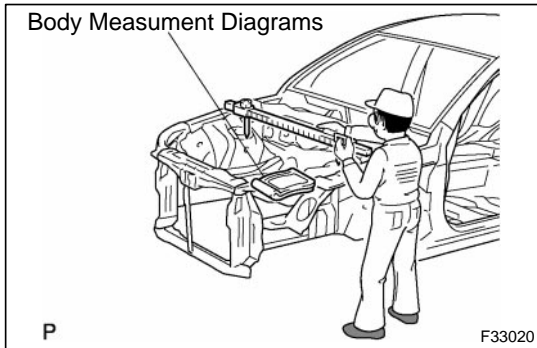
The high tensile strength steel maintains its special crystalline organization by heat treatment or alloy additives.

Structural parts are designed to perform in their original shape. If parts are deformed in an accident, or if the deformed parts are repaired and reused, the parts may be unable to perform as intended.

If the impact beam or bracket is damaged, replace the door assembly that has the damaged beam.

Also, the bumper reinforcement is a necessary and important part that helps reduce the probability of injury to passengers in front collisions, and for the same reasons explained above, should be replaced if damaged.

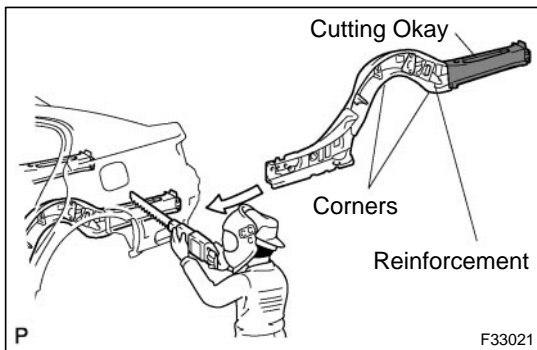
# PROPER AND EFFICIENT WORK PROCEDURES



## 1. REMOVAL

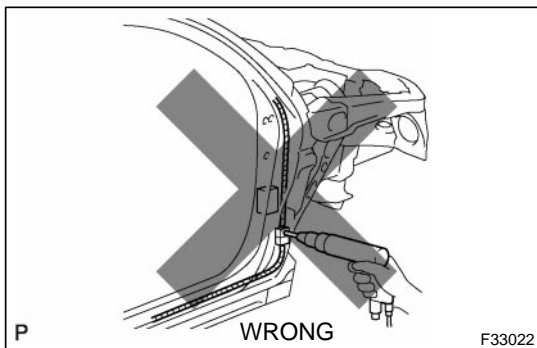
### (a) PRE-REMOVAL MEASURING

- (1) Before removal or cutting operations, take measurements in accordance with the dimensions diagram. Always use a puller to straighten a damaged body or frame.



### (b) CUTTING AREA

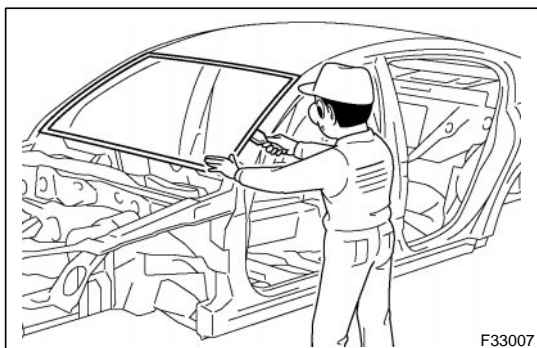
- (1) Always cut in a straight line and avoid cutting reinforced areas.



### (c) PRECAUTIONS FOR DRILLING OR CUTTING

- (1) Check behind any area to be drilled or cut to ensure that there are no hoses, wires, etc., that may be damaged.

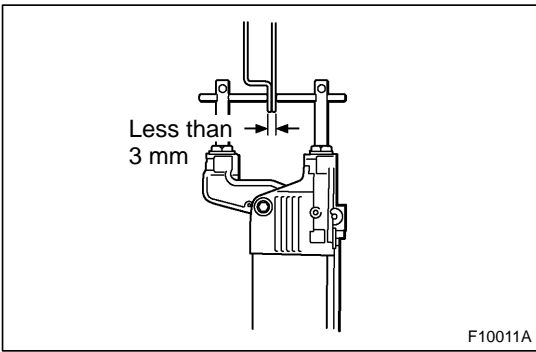
*HINT: See "Handling Precautions on Related Components" on page IN-9.*



### (d) REMOVAL OF ADJACENT COMPONENTS

- (1) When removing adjacent components, apply protective tape to the surrounding body and your tools to prevent damage.

*HINT: See "Handling Precautions on Related Components" on page IN-9.*

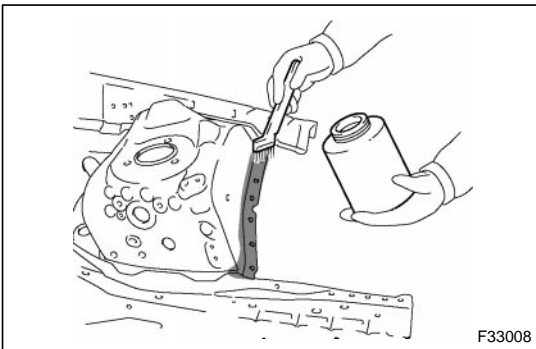


## 2. PREPARATION FOR INSTALLATION

### (a) SPOT WELD POINTS

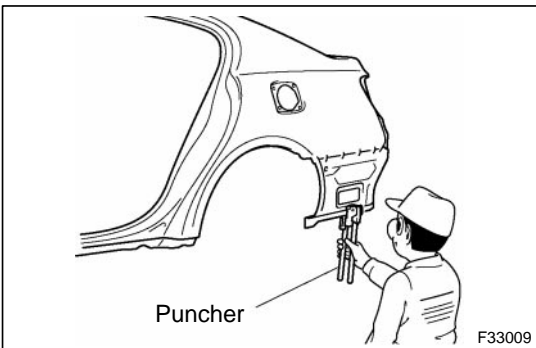
- (1) When welding panels with a combined thickness of over 3 mm (0.12 in.), use a MIG (Metal Inert Gas) welder for plug welding.

*HINT: Spot welding does not provide sufficient durability for panels with a combined thickness of over 3 mm (0.12 in.)*



### (b) APPLICATION OF WELD-THROUGH PRIMER (SPOT SEALER)

- (1) Remove the paint from the portion of the new parts and body to be welded, and apply weld-through primer.

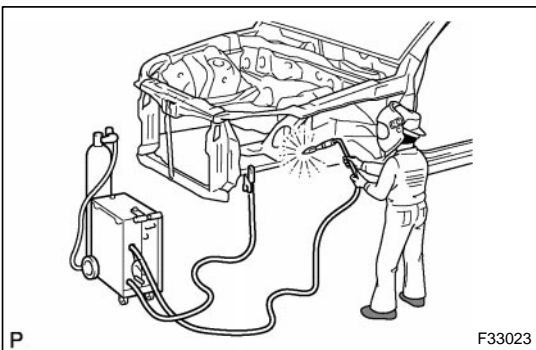


### (c) MAKING HOLES FOR PLUG WELDING

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

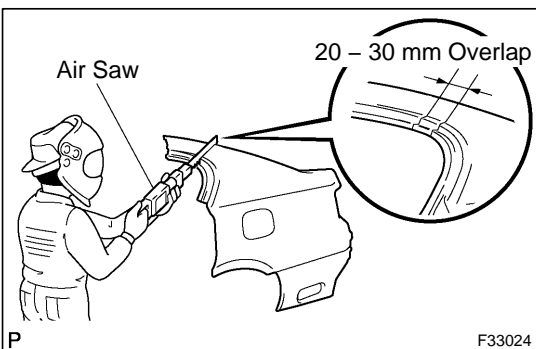
**REFERENCE:** mm (in.)

Thickness of welded portion	Size of plug hole
1.0 (0.04) under	ø 5 (0.20) over
1.0 (0.04) – 1.6 (0.06)	ø 6.5 (0.26) over
1.7 (0.07) – 2.3 (0.09)	ø 8 (0.31) over
2.4 (0.09) over	ø 10 (0.39) over



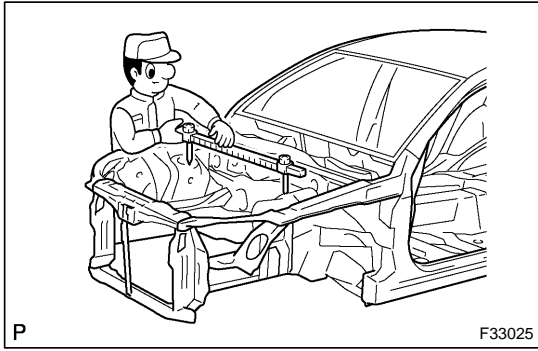
### (d) SAFETY PRECAUTIONS FOR ELECTRICAL COMPONENTS

- (1) When welding, there is a danger that electrical components will be damaged by the electrical current flowing through the body.
- (2) Before starting work, disconnect the negative terminal of the battery and ground the welder near the welding location of the body.



### (e) ROUGH CUTTING OF JOINTS

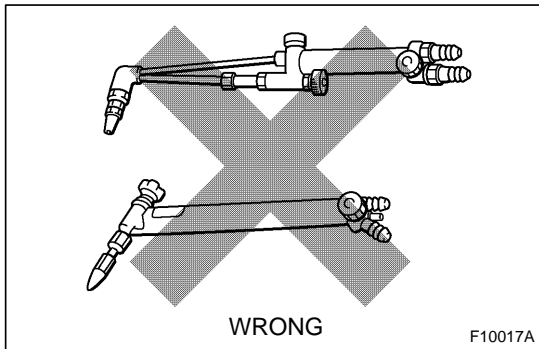
- (1) For joint areas, rough cut the new parts, leaving 20 – 30 mm (0.79 – 1.18 in.) of overlap.



### 3. INSTALLATION

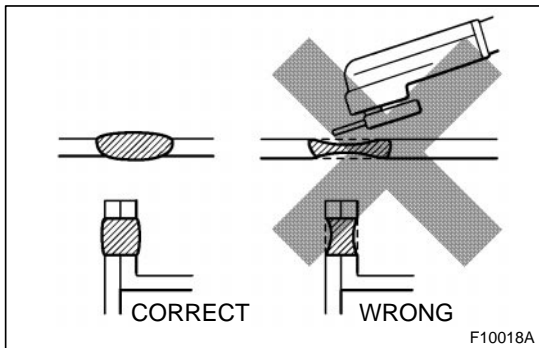
#### (a) PRE-WELDING MEASUREMENTS

- (1) Always take measurements before installing underbody or engine components to ensure correct assembly. After installation, confirm proper fit.



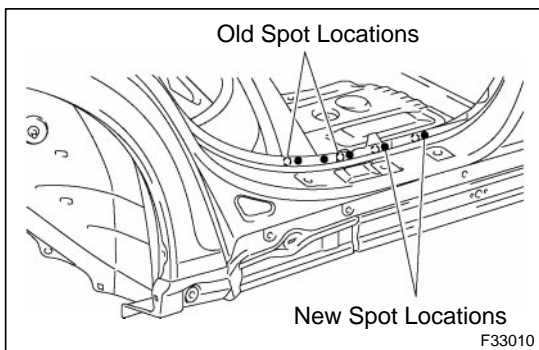
#### (b) WELDING PRECAUTIONS

- (1) The number of welding spots should be as follows.  
Spot weld: 1.3 X No. of manufacturer's spots.  
Plug weld: More than No. of manufacturer's plugs.
- (2) Plug welding should be done with a MIG (Metal Inert Gas) welder. Do not gas weld or braze panels at areas other than where specified.



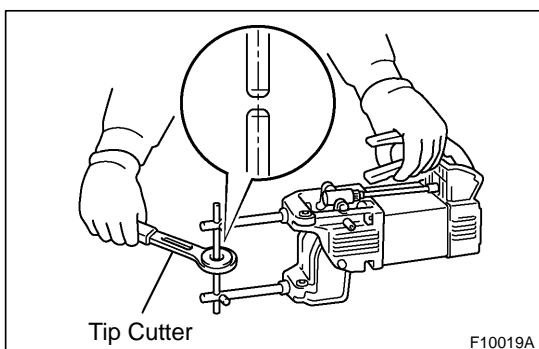
#### (c) POST-WELDING REFINISHING

- (1) Always check the welded spots to ensure that they are secure.
- (2) When smoothing out the weld spots with a disc grinder, be careful not to grind off too much as this will weaken the weld.



#### (d) SPOT WELD LOCATIONS

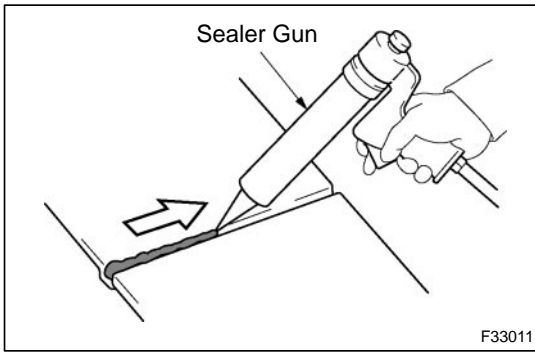
- (1) Avoid welding over previously welded areas.



#### (e) SPOT WELDING PRECAUTIONS

- (1) The shape of the tip point of the spot welder significantly affects the strength of the weld. Therefore, maintain the tip point in the proper shape, and allow it to cool after every five or six spots.
- (2) Completely remove the paint from the areas to be spot welded, including the seams and the surfaces that come in contact with the welding tip.
- (3) Use a sander to remove any burrs that are created during spot welding.

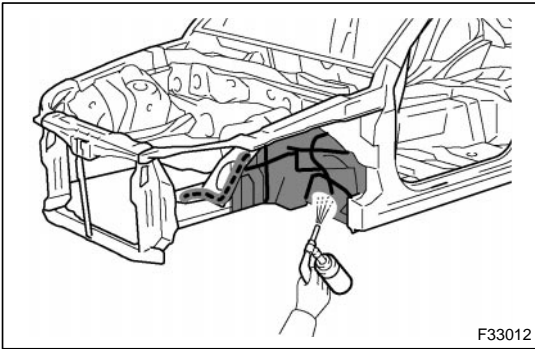




#### 4. ANTI-RUST TREATMENT AFTER INSTALLATION (BEFORE PAINTING PROCESS)

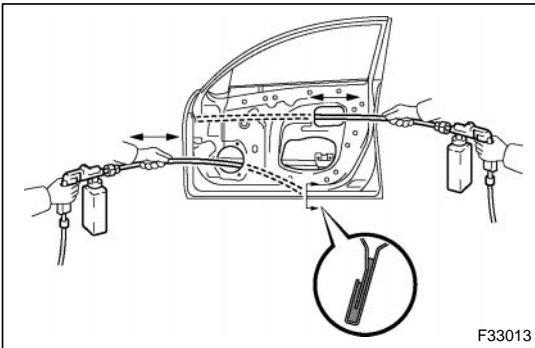
##### (a) BODY SEALER APPLICATION

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



##### (b) UNDERCOAT APPLICATION

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



#### 5. ANTI-RUST TREATMENT AFTER INSTALLATION (AFTER PAINTING PROCESS)

##### (a) ANTI-RUST AGENT (WAX) APPLICATION

- (1) To preserve impossible to paint areas from corrosion, always apply sufficient anti-rust agent (wax) to the inside of the hemming areas of the doors and hood, and around the hinges, or the welded surfaces inside the box-shaped cross sections of the side members, body pillars, etc.

## 6. ANTI-RUST TREATMENT BY PAINTING

### REFERENCE:

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

#### (a) ANTI-CHIPPING PAINT

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

#### HINT:

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

