TOYOTA

Vehicle Delivery Quality Improvement

PPO/DIO OPERATIONS MANUAL

TOYOTA MOTOR CORPORATION

FOREWORD

The accessories are very important to meet diverse customer demands, and they contribute to the increase in both vehicle sales and Customer Delight.

On the other hand, there is possibility of damaging Toyota's high quality image because of poor accessories quality and poor installation quality.

TMC is continually making effort to improve vehicle production quality at plant.

In order to keep the high vehicle quality, distributors/dealers are requested to expand usage of Toyota genuine accessories and to handle accessories very carefully.

PPO/DIO OPERATIONS MANUAL

1) Introduction

A) Purpose of This Manual

B) Definition of PPO/DIO

C) Requests to Distributors

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INTRODUCTION

A) Purpose of This Manual

This manual has been prepared as a guide to assist you in upgrading accessory operations at distributor/dealer.

Please read this manual thoroughly and carefully, and follow the instruction given in order to improve Customer Satisfaction.

B) Definition of PPO/DIO

* PPO (Post Production Operations)
  Accessories which are installed by Distributor
* DIO (Dealer Installed Option)
  Accessories which are installed by Dealer

C) Requests to Distributors

In order to assure high quality of Toyota PPO/DIO accessories, each distributor is requested to implement the following activities.

1) Use only Toyota genuine accessories including Oil/Chemicals.

   They are engineered for Toyota vehicles, and have the highest quality. Some of after-market accessories may adversary affect to vehicle performance and strength.

2) Establish a system in which market problem information is gathered and feed backed from dealers to distributors.

   * Grasp the cause of claims and/or complaint and record them so that the corrective action can be taken and it's effectiveness can be confirmed.

3) Establish an auditing system for evaluating the installation process and finished product quality for all PPO/DIO accessories and implement it at Distributor and dealers.

   * Refer to the attached guide which was established by TMS/U.S.A. for their VDC Quality Audit. (Note that this is not the latest version.)
   * VDC is Vehicle Distribution Center where Accessories are installed.

4) Establish an evaluation index and target for improvement activities.

5) Conduct effective training

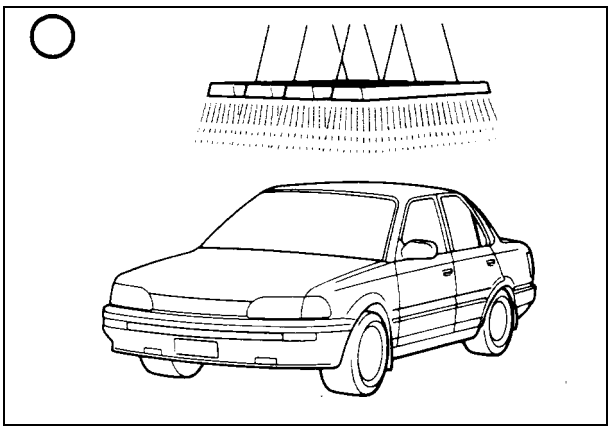
* Provide detailed and precise installation instructions and training for non-technical processing installers.

* Standardize installation procedures to include sequence of operations and identify required equipment, tools, templates, parts and materials.

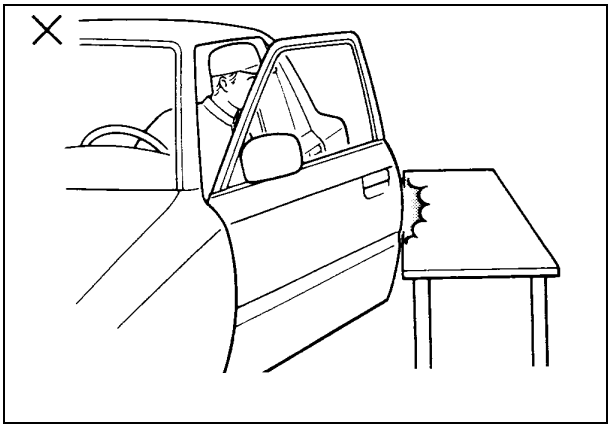
* Implement installation standards to include torque ranges and accessory fit/gap tolerances.

Guidelines to the operation

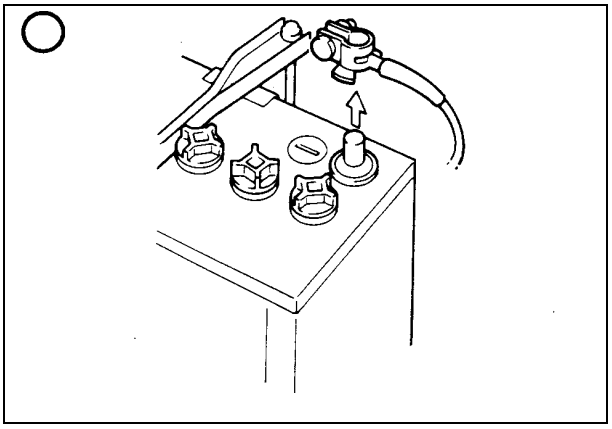
A) Preparation



☐ 1. The working area should be clean and well lit.

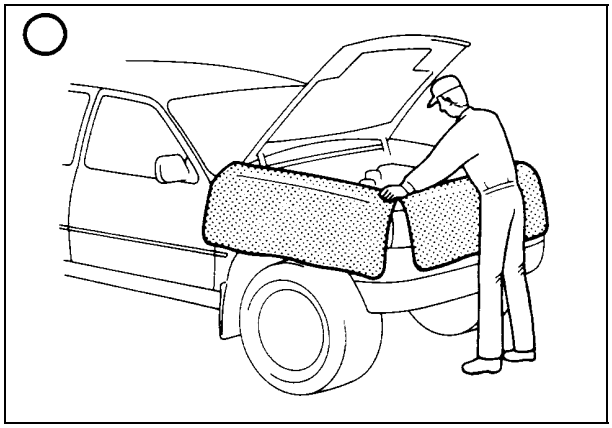


☐ 2. Make sure there is enough space to prevent the vehicle from damage when the doors are opened.

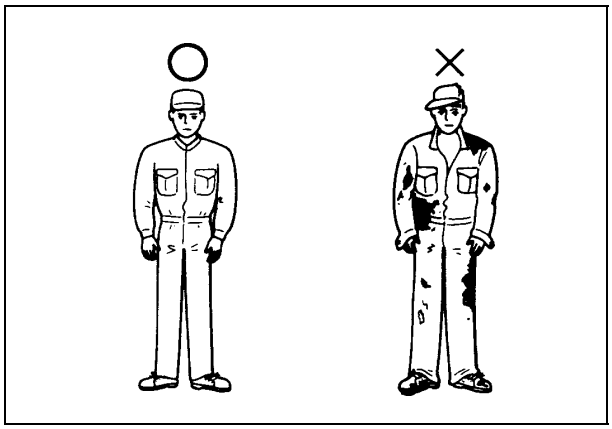


☐ 3. When working on or installing electrical system components, always disconnect the negative terminal of the battery

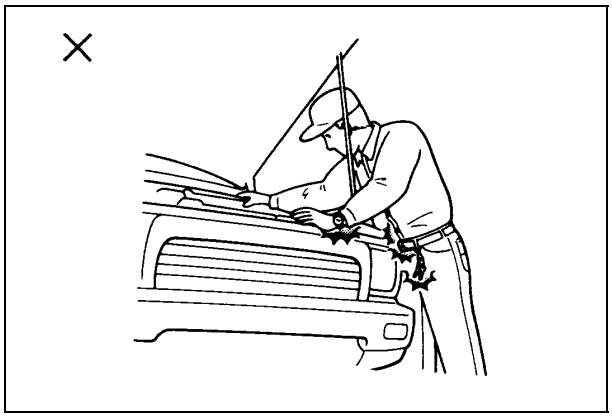
After installation, set on terminal same direction and set bolts torque.



☐ 4. Before starting work, be sure to place the necessary fender covers, seat covers and floor covers in or on the vehicle to prevent dirt from getting on the vehicle and to keep it from getting scratched.

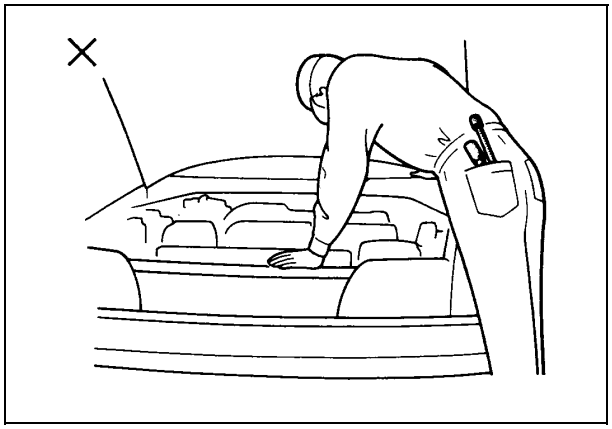


☐ 5. Always wear a clean, well-fitted uniform and keep your shoes free of dirt and mud.

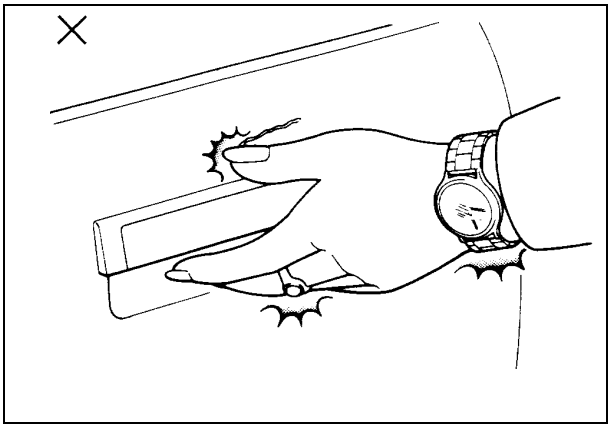


☐ 6. Keep your uniform free of the following items:

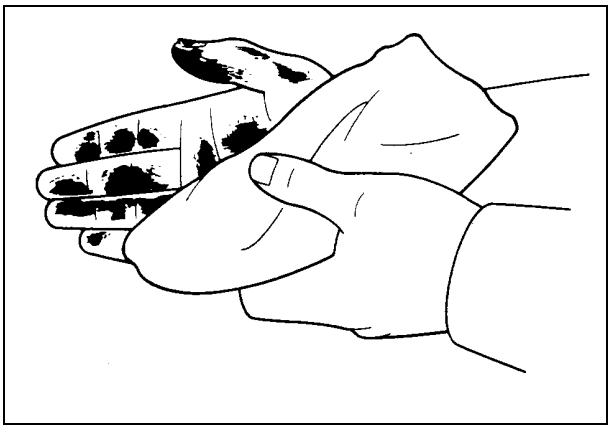
- **Belt buckles**
- **Buttons**
- **Watches**
- **Rings**
- **Key chains**



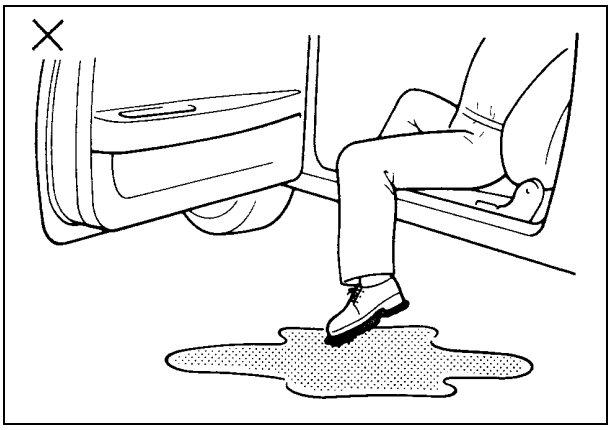
☐ 7. Never carry tools in your pocket.



☐ 8. Don’t have your fingernails grow long.



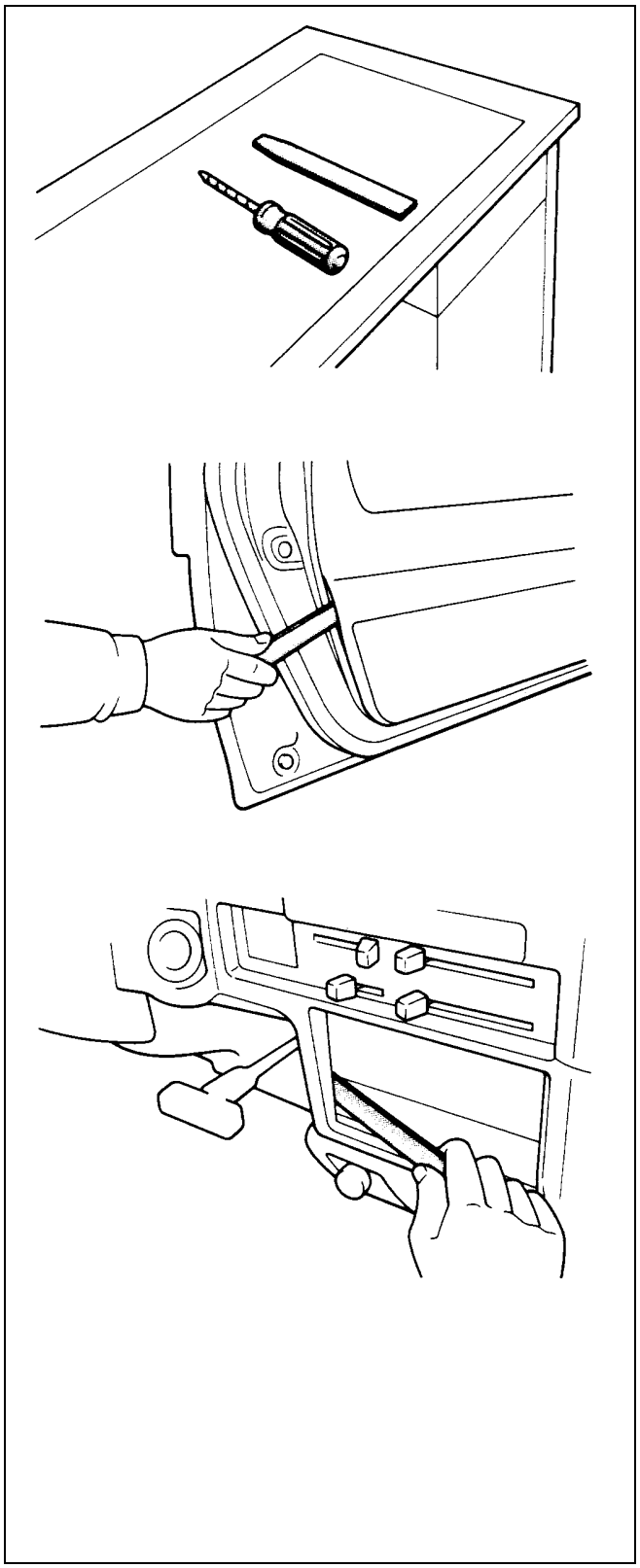
☐ 9. Always keep your hands clean. Wipe your hands clean immediately when they become dirty.



☐ 10. Do not enter the cabin compartment with dirty shoes.

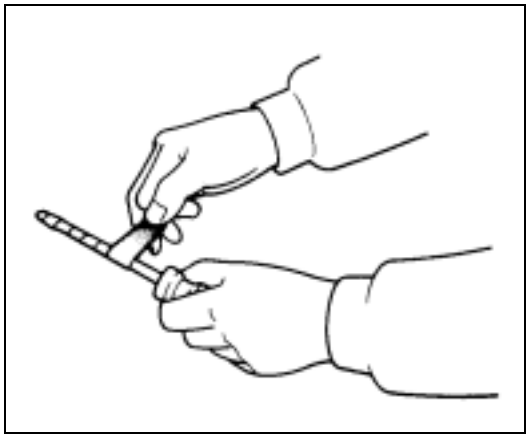
B) Installation

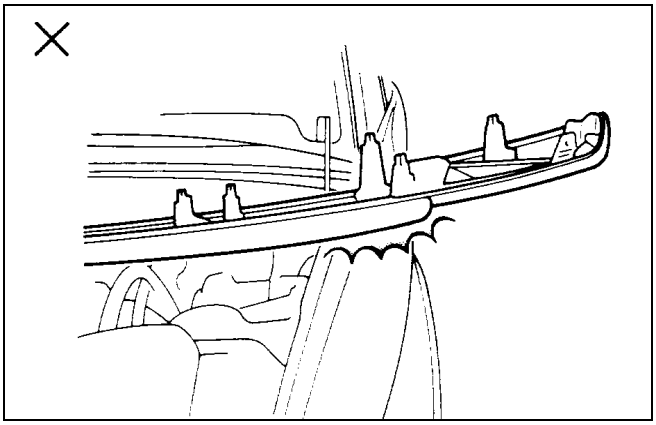
When installing accessories, follow the installation procedures provided by the manufacturers.



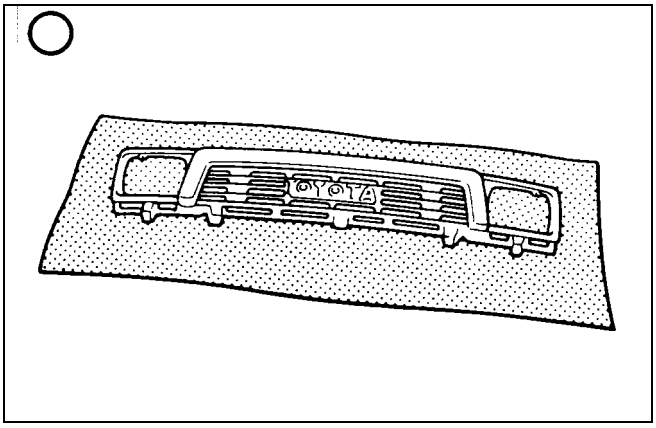
☐ 1. To protect the vehicle from damage when removing the garnish or door trim, etc., use a spatula made of resin.

HINT: If a resin spatula is not available, use a tool with the metal part covered by a rubber protector or tape.

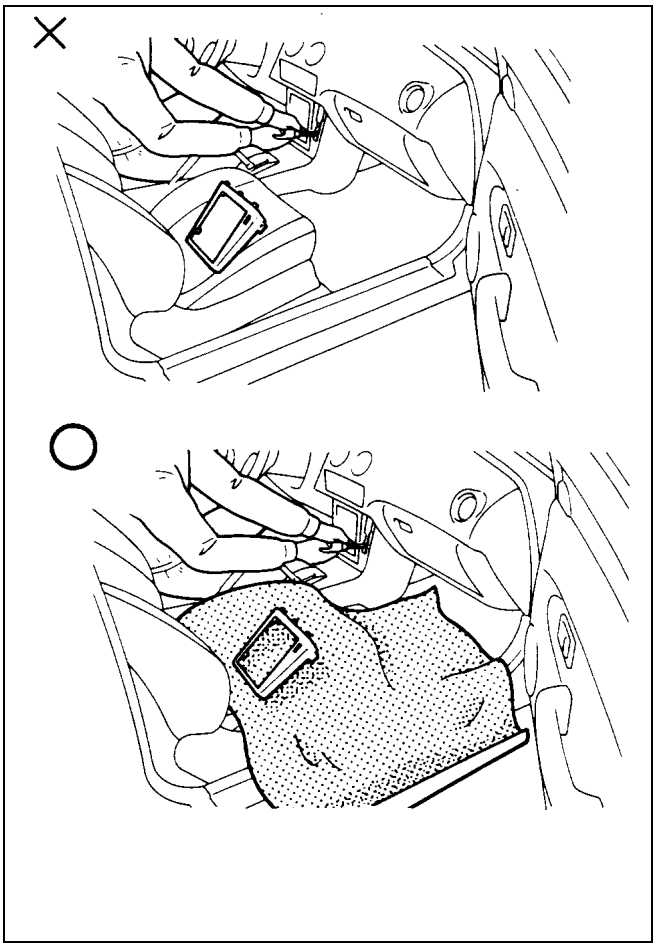




□ 2. To protect the body paint and removed parts from scratches, do not put any parts on the hood, trunk lid, roof, etc.

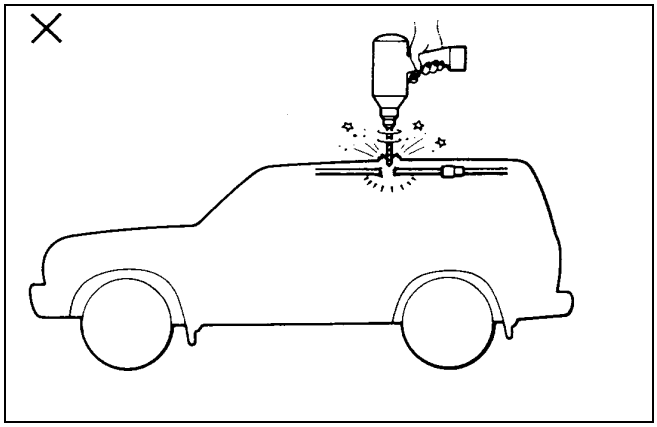


□ 3. To protect removed parts from dirt and scratches, do not place them directly on the floor.
Place outer side of removed parts being faced up.

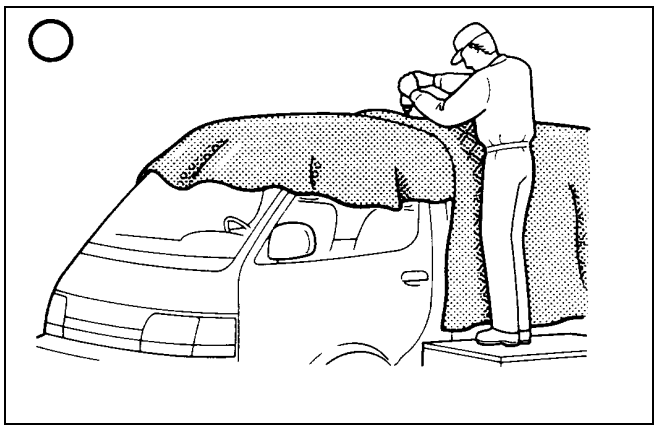


□ 4. To protect the vehicle interior (ie. seat, floor carpet) and removed parts from damage, do not place removed parts and tools directly on the seat and floor carpet.

* We suggest that you don't put parts and tools on the seat to avoid any negative issues.
(Put them on the floor.)

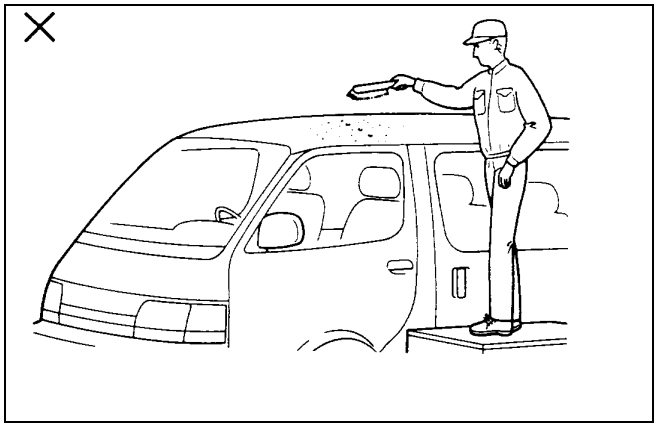


☐ 5. When drilling holes on vehicle body panel, confirm that wire harnesses are not routed at that place.

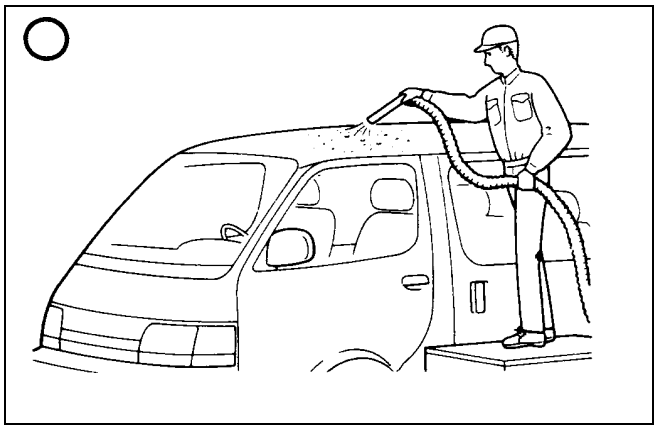


☐ 6. When drilling holes on vehicle body panel, cover around entire panel to protect the area from metal chips.

Drilling holes needs to vacuum cleaning for metal chips.

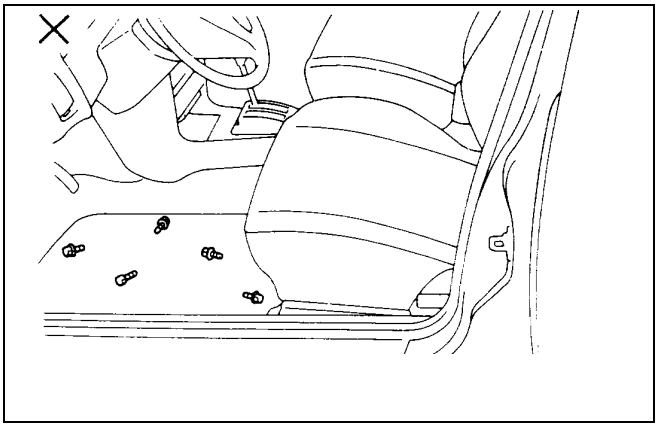


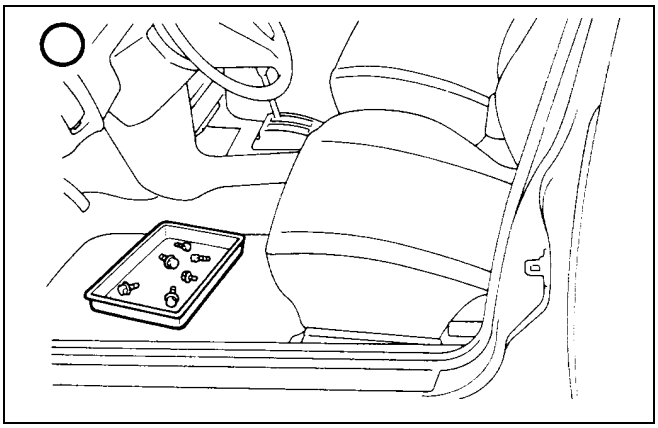
☐ 7. To remove metal chips, use a vacuum, not by cloth or brush to prevent from scratches.



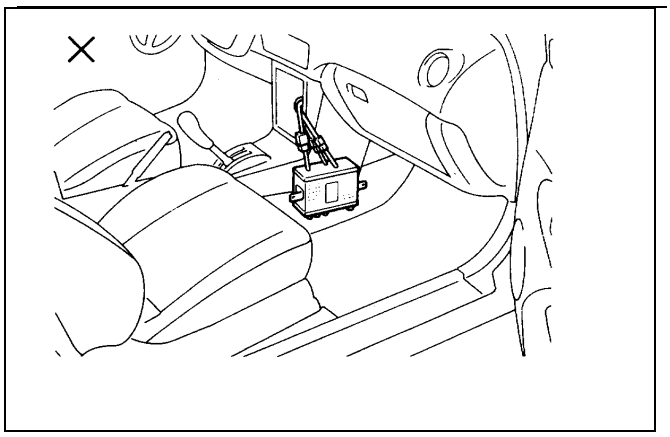
* Apply specified rust preventive agent and sealer after drilling.

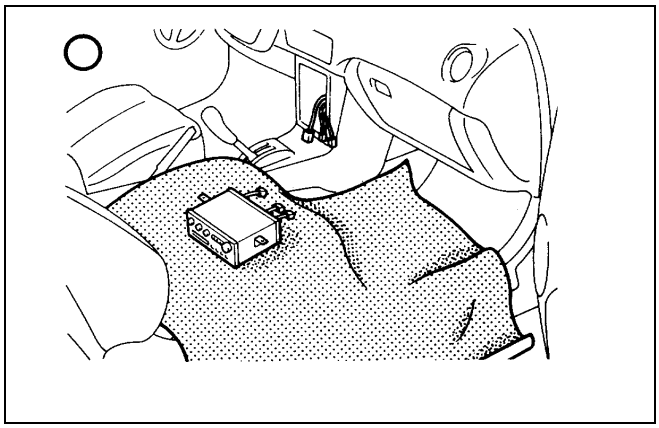
Tip hose with a brush not to damage vehicle body panel.





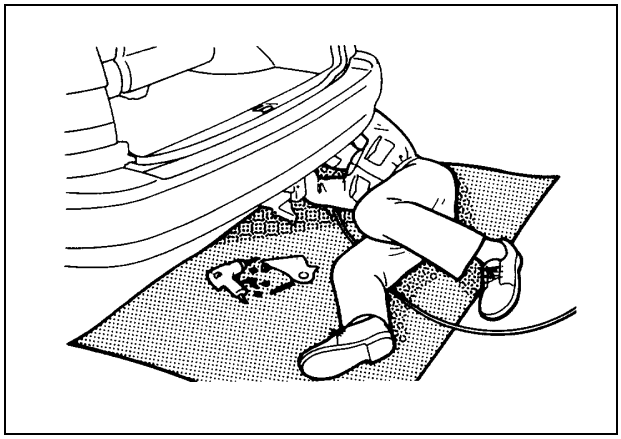
☐ 8. Small parts such as bolts and nuts should be kept in a parts tray.





☐ 9. When removing electrical parts such as audio, entire connector must be removed so that parts are not hanging by wire.

* Always place any parts and tools on a floor.

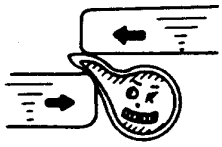


☐ 10. Prepare an auxiliary lamp when working in dark places such as underneath vehicle.

General Comments for Wiring

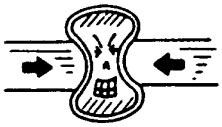
The following precautions should be taken in electrical wiring.

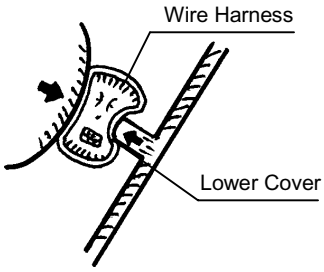
a. Avoid getting caught by other parts.
   Note: Make sure that the wire will not get caught by parts movement and vibration.



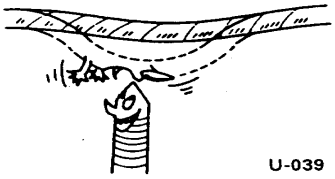
U-037

b. Do not press fit wire.





c. Prevent wire from coming in contact with a sharp edge.
   Note: Avoid wiring near the edges and burrs of iron sheets, spot welding burrs, the edges of tapping screws and bolt heads.

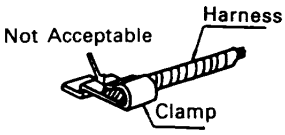


U-039

d. Clamp wire securely by proper spacing to prevent the wire from dropping and coming in contact with other parts.

   Note: 1 Do not clamp or tape wire together with fuel pipe, brake pipe, air conditioner pipe, etc.

   2 Use rubber or vinyl coated clamps.

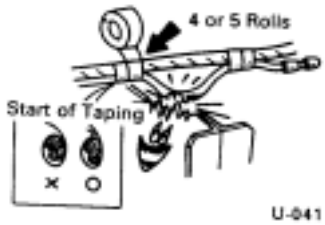


U-040

Don't clamp too tightly.

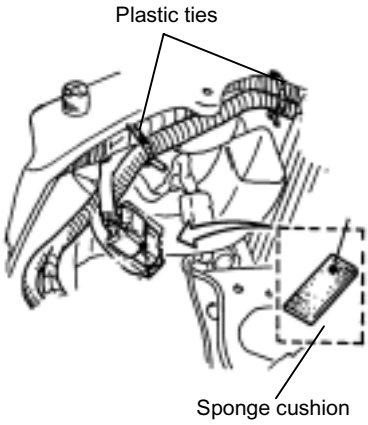
e. Avoid interference of wire with other parts by means of taping as necessary.

Note: Do not clamp or tape wire on fuel pipe, brake pipe, A/C pipe, etc.



f. Wire clamp setting. (plastic ties and sponge cushion)

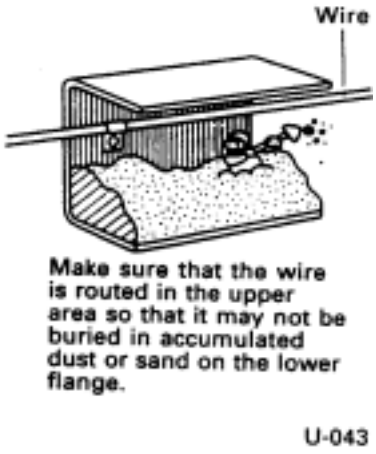
Note: Keeping the installation manual point.



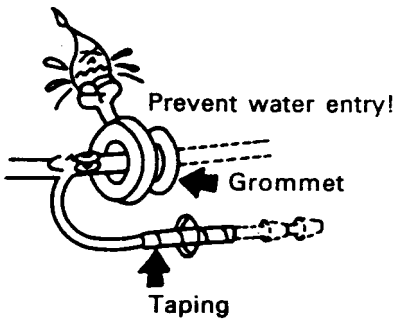
g. Avoid wiring on the frame top and outside areas where wires can easily be damaged by mounting equipment.

h. Avoid wiring on inside locations as much as possible to avoid damage caused by the accumulation of water, dust, mud and snow as well as freezing and stone chipping.

Note: In an unavoidable case, protect the wire by means of a protector or a cover.

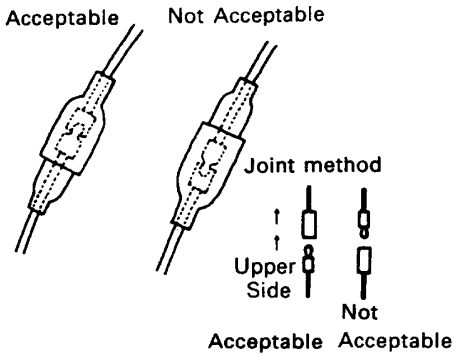


i. Use a grommet where the wire goes through the metal sheet so as to prevent water entry and damage.



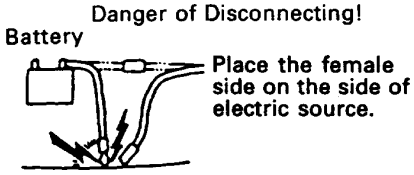
U-044

j. Prevent water entry along the wire by a cover or a protector.
Note: Make sure of waterproof boots faced down.



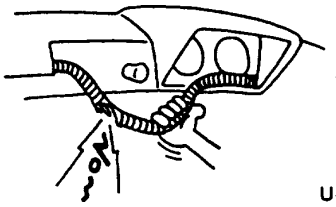
U-045

k. In case that the wire is disconnected, place the female side in the direction of the positive side of the electric source to avoid short circuit.



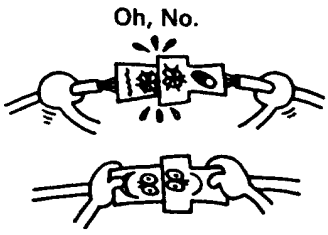
U-046

l. Do not pull the wire harness hard when handling.



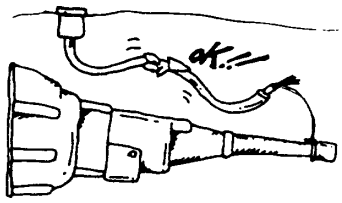
U-047

m. Remove the connector by holding both connector bodies. Do not pull the wire harness.



U-048

n. When routing wire between relative moving parts (engine, transmission, etc.), prevent the wire from coming in contact with the other parts by vibration. Allow 30 to 50 mm slack to avoid wire coming in contact with each other.

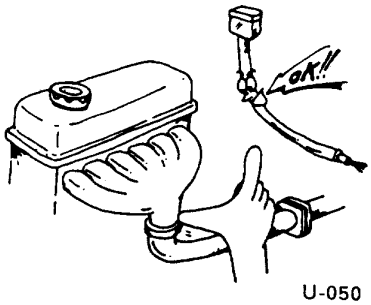


U-049

o. Secure an adequate clearance between wire and high-temperature parts.

Note: 1. Confirm that there is no problem from a safety point of view by measuring the temperature, if necessary

2. Avoid such a location as directly exposed to high temperature from the exhaust pipe.



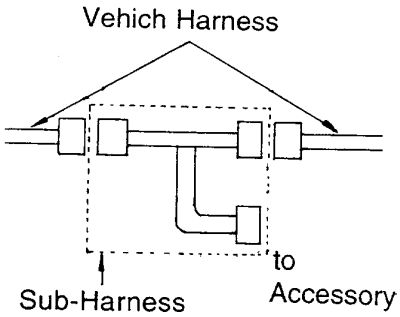
U-050

p. When connecting accessory harness to vehicle harness, as a rule, use a sub-harness with connector.

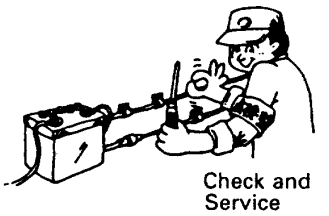
Note: 1. For harness connection of power source of accessory, do not use the engine computer circuit which relates to driving, and so on.

If power source hooked up to entire circuit and a fuse of the circuit breaks, it may cause a safety problem.

2. Do not change the original fuses to larger capacity fuses, since such fuses can not break when a short circuit takes place in the wire harness of the vehicle and this may result in the wire harness itself to burn.



q. Route wire to provide easy check and service of wiring and electrical equipment (switches and joints) after mounting the equipment.



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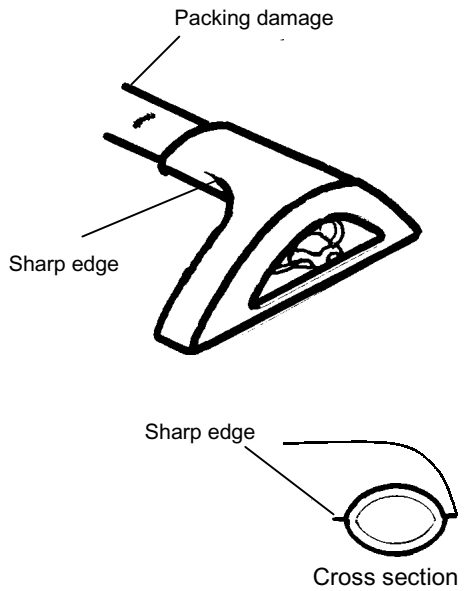
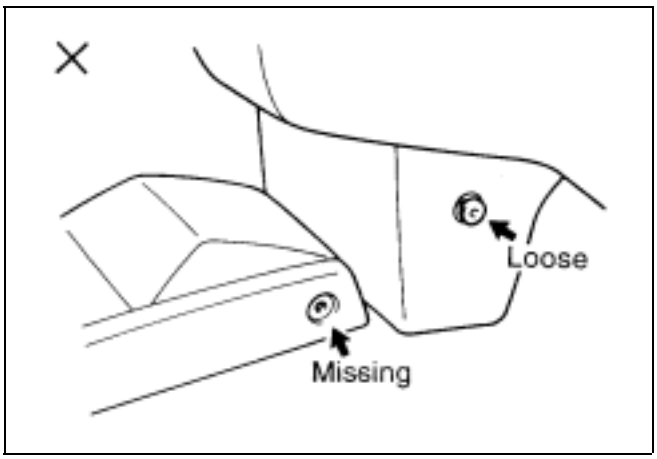
C) Inspection



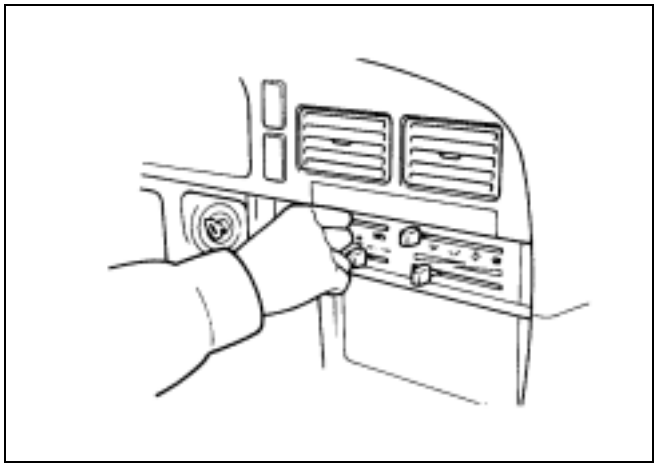
☐ 1. Part inspection: Before installation, we need to check part of installation and installed parts.

Note: Shape edge, packing damage, color mismatch , etc.

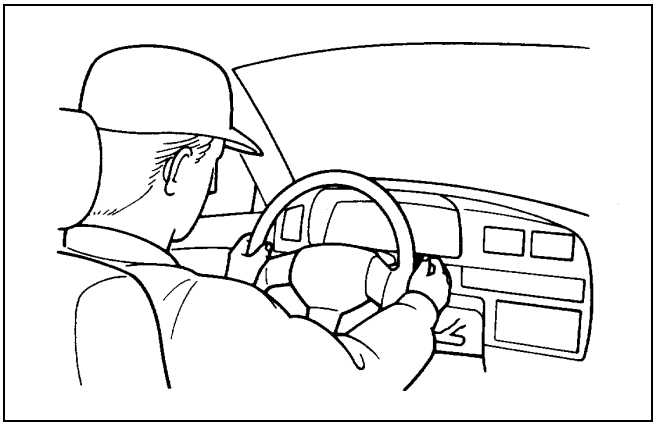
* If you discover some problems, please return to suppliers.



☐ 2. Reinstalled clamping bolts and screws should be tightened securely to prevent rattling noises when the vehicle is driven.

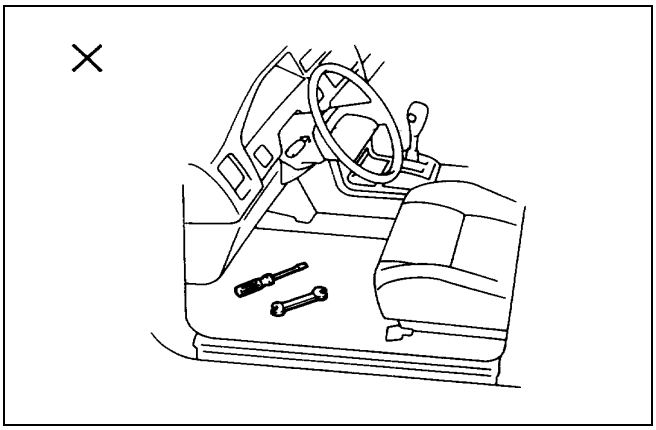


☐ 3. After installation, check the installed parts for proper operation, fit, dirt and scratches. Check body and trim near area of installation to be certain no dirt or scratches resulted from the installation.

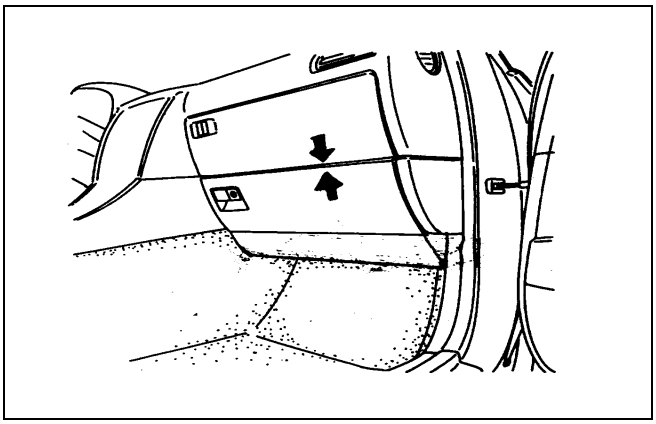


☐ 4. Also check the related electrical equipment for proper operation after working on or installing electrical system components.

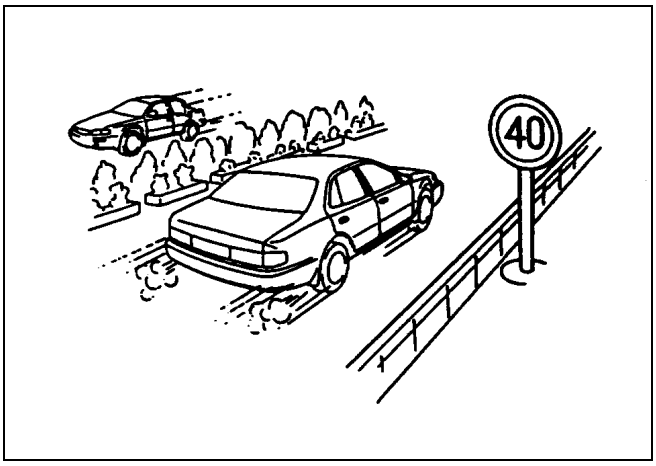
* Refer to pages 18～19



☐ 5. Make sure that no tools, rags, or parts have been left in the vehicle.



☐ 6 Check clearance of interior and exterior parts.
Especially, check clearance between parts and floating alignment.



☐ 7 Running check
Check noise caused by rattling harness, connector, etc.

These recommended checks will help minimize problems and customer complaints due to option installations.

After air conditioner installation, verify the operation of:

- Headlights
- Parking lights
- Turn signals
- Back up lights
- Emergency flashers
- Interior lights
- Instrument panel illumination and dimmer switch
- A/C switch light illumination
- OD indicator light
- Gauges
- Defogger switch
- Seatbelt buzzer
- Heater
- Engine idle up when A/C system is turned on
- Radiator cooling fan
- A/C condenser fan
- Blower fan control for all speeds
- Alternator warning light
- No engine misfire
- Wiper and washer
- Head lamp washer
- Horn
- Audio

After audio system installation, verify the operation of:

- Radio tuner reception quality (AM and FM)
- Radio sound adjustment controls including bass, treble Fader and balance
- Cassette deck functions
- CD player functions
- Speaker operation and sound quality
- Audio unit(s) illumination with headlights off and on
- Instrument panel illumination dimmer switch

On power window models:

- Ensure there is no buzz noise with headlights on

After Security System installation, verify the operation of:

- Audio operation
- Instrument panel illumination dimmer switch
- Dome light when opening all doors
- Power door locks and windows if applicable
- Ignition switch function in “ACC”, “ON” and “START”
- Horn
- Headlights and taillights (all functions)
- Turn signal light

After trailering wire harness installation, verify the operation of tail lights to include:

- Running lights (illumination with parking lights and headlights on)
- Right and left directional turn signals
- Stop lights
- Emergency flashers
- Back up lights

Set check items for other parts and verify related operations

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