

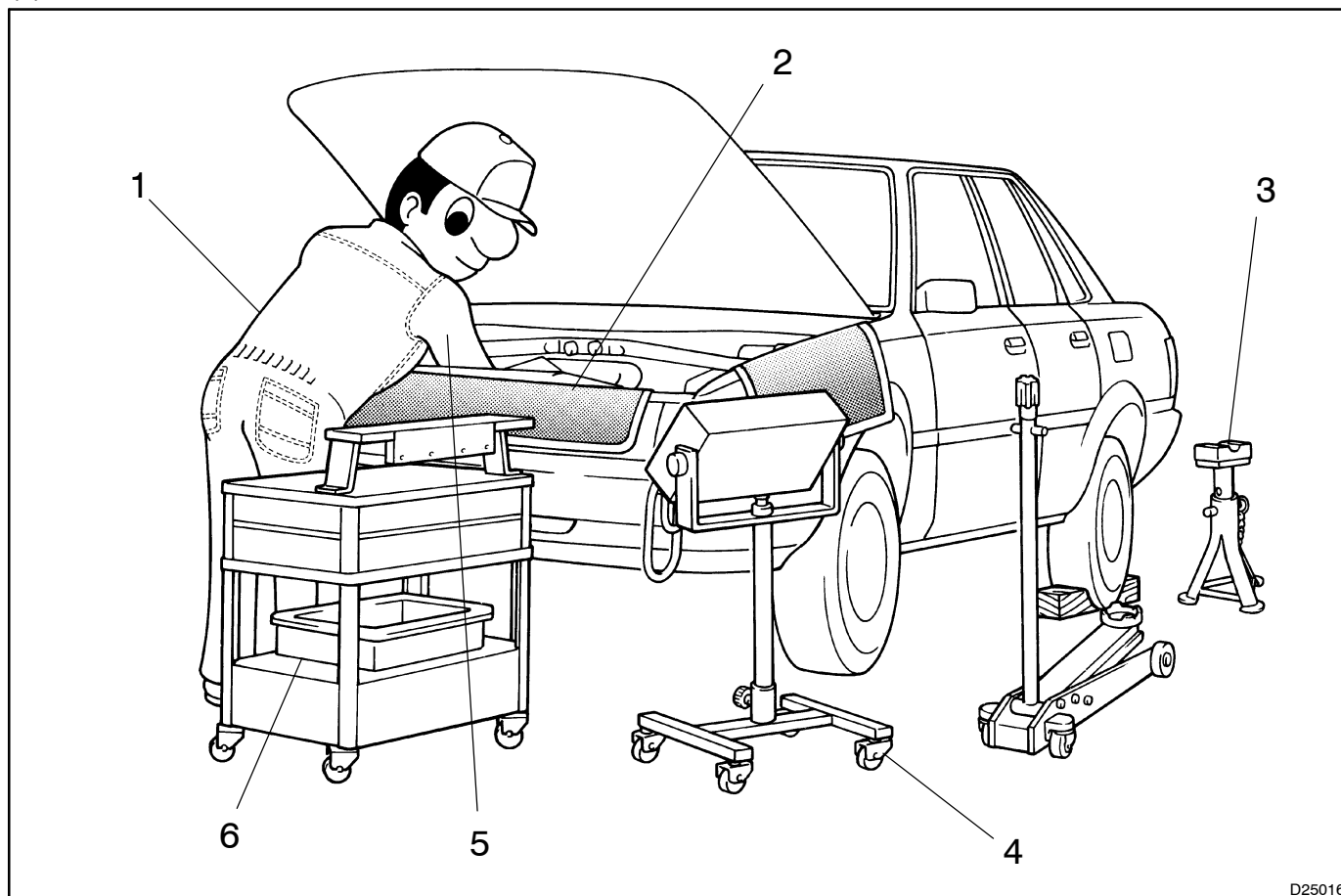
REPAIR INSTRUCTION

PRECAUTION

01062-02

1. BASIC REPAIR HINT

(a) HINTS ON OPERATIONS

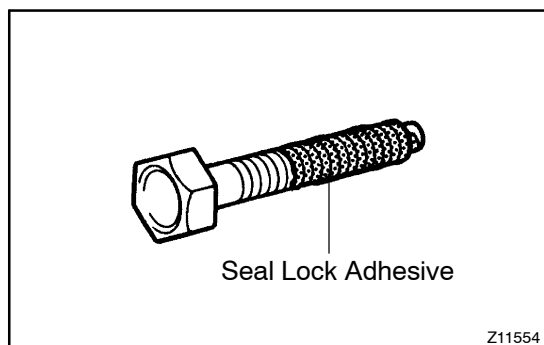


D25016

1	Looks	<ul style="list-style-type: none"> • Always wear a clean uniform for a engineer. • Must wear a hat and safety shoes.
2	Vehicle protection	<ul style="list-style-type: none"> • Install a grill cover, fender cover, seat cover and floor mat before starting operation.
3	Safe operation	<ul style="list-style-type: none"> • In case of working with more than 2 persons, be sure to check safety each other. • When operating with the engine running, pay attention to the ventilation. • In case of operating on a high-temperature position, rotating, moving and vibrating positions, pay attention to a burn or injury. • In case of jacking up, be sure to support the specified location with a rigid rack. • In case of lifting up, apply a safety equipment.
4	Preparation of tools and measuring gauge	<ul style="list-style-type: none"> • Before starting operation, prepare a tool stand, SST, gauge, oil, shop rag and parts for replacement.
5	Removal & Installation, Disassembly and Assembly operations	<ul style="list-style-type: none"> • Diagnose with a thorough understanding of a trouble phenomenon and perform effective operations. • Before removing the parts, check the assembly condition, deformation and damage condition. • When the structure is complicated, take a note or put matchmarks so as not to make functional effects. • Clean and wash the removed parts if necessary, and assemble after checking.
6	Removed parts	<ul style="list-style-type: none"> • Put the removed parts in order for not causing mixing up or making them dirty. • As for non-reusable parts such as gasket, O-ring, and self lock nut, change them to new ones following the instruction of this text. • Sort out the parts for replacement in a box or the likes and show them to a customer.

(b) JACKING UP AND SUPPORTING VEHICLE

- (1) Care must be taken when jacking up and supporting the vehicle. Be sure to lift and support the vehicle at the proper locations (See page 01-17).



(c) PRECOATED PARTS

- (1) Precoated parts are bolts, nuts, etc. that are coated with a seal lock adhesive at the factory.
- (2) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.
- (3) When reusing precoated parts, clean off the old adhesive and dry it with compressed air. Then apply the specified seal lock adhesive to the bolt, nut or threads.

NOTICE:

Do the torque checking with the lower limit value of the torque tolerance.

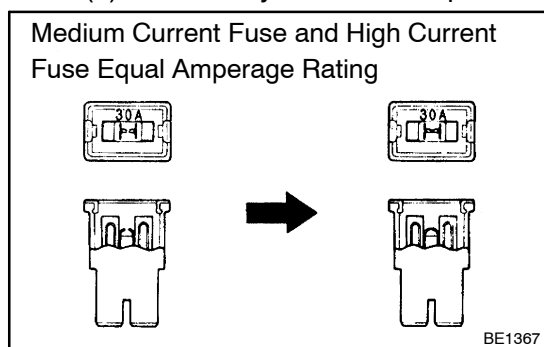
- (4) Depending on the seal lock agent to apply, there may be a case where it is necessary to leave it for a specified time until it hardens.

(d) GASKETS

- (1) When necessary, use a sealer on gaskets to prevent leaks.

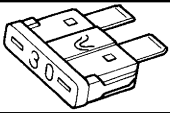

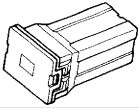

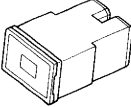

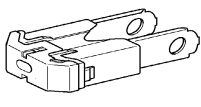

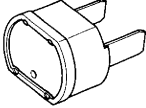

(e) BOLTS, NUTS AND SCREWS

- (1) Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.



(f) FUSES

- (1) When replacing fuses, be sure that a new fuse has the correct amperage rating. **DO NOT** exceed the rating nor use one with a lower rating.

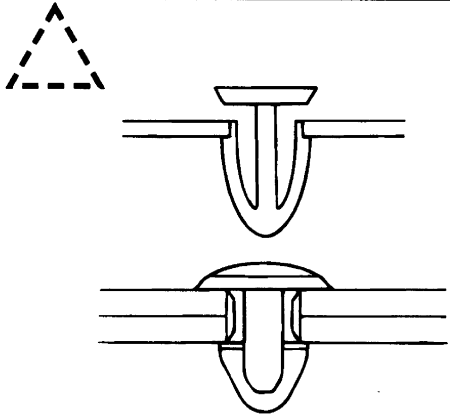
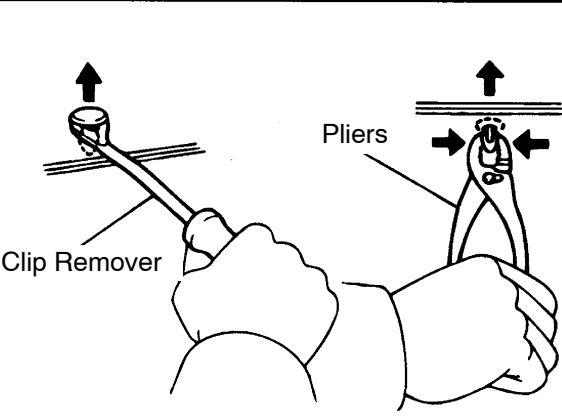
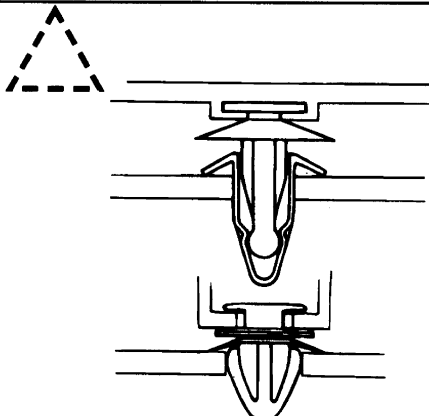
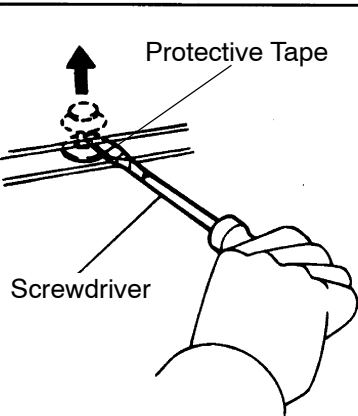
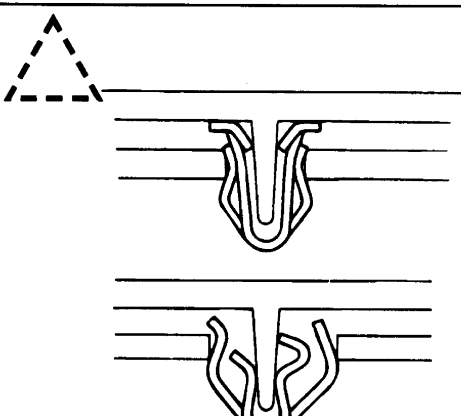
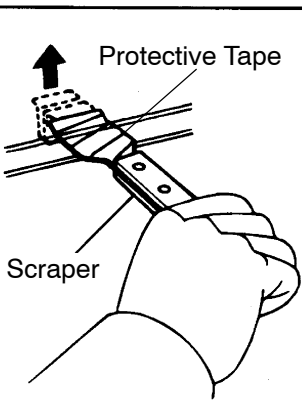
Illustration	Symbol	Part Name	Abbreviation
 BE5594	 IN0365	FUSE	FUSE
 BE5595	 IN0366	MEDIUM CURRENT FUSE	M-FUSE
 BE5596	 IN0367	HIGH CURRENT FUSE	H-FUSE
 D25628	 IN0367	FUSIBLE LINK	FL
 BE5598	 IN0368	CIRCUIT BREAKER	CB

(g) CLIPS

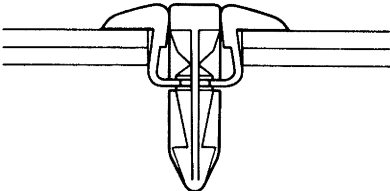
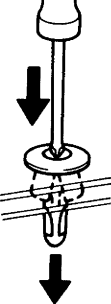
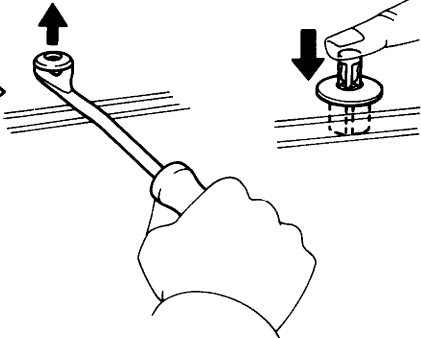
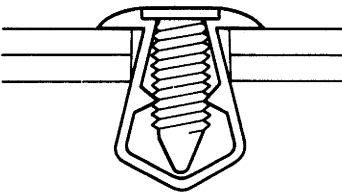
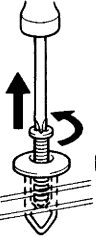
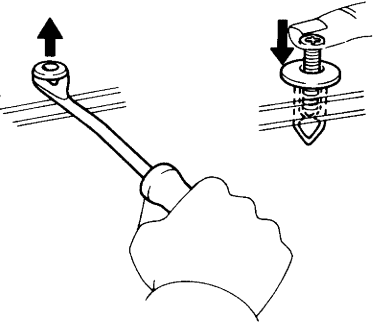
(1) The removal methods of typical clips used in body parts are shown in the table below.

HINT:

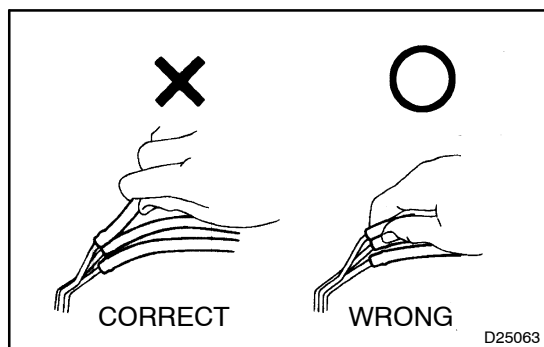
If the clip is damaged during the operation, always replace it with a new clip.

Shape (Example)	Removal/Installation
	
	
	

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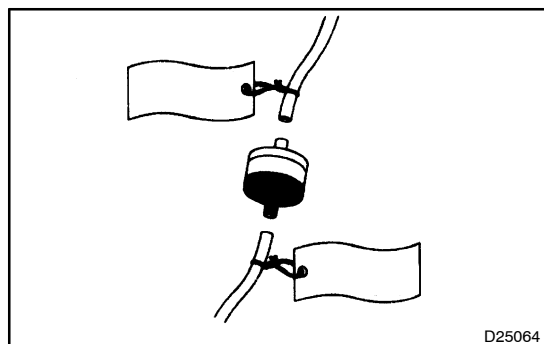
Shape (Example)	Removal/Installation
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Removal</p>  </div> <div style="text-align: center;"> <p>Installation</p>  </div> </div>
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Removal</p>  </div> <div style="text-align: center;"> <p>Installation</p>  </div> </div>

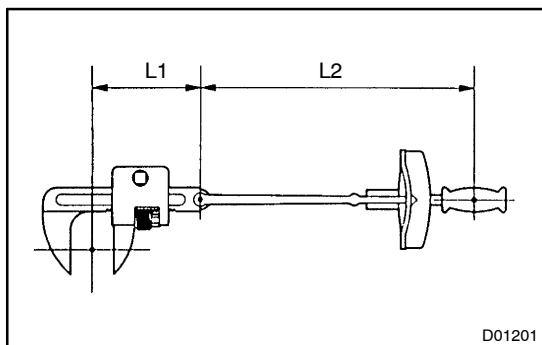
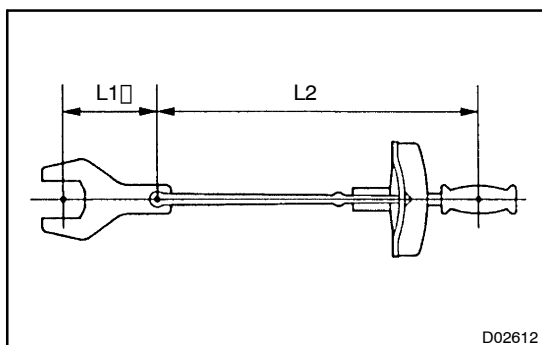
V00012



(h) REMOVAL AND INSTALLATION OF VACUUM HOSES

- (1) To disconnect vacuum hoses, pull them by holding the end, not the middle of the hose.
- (2) When disconnecting vacuum hoses, use tags to identify where they should be reconnected.
- (3) After completing the job, make a double check whether the vacuum hoses are properly connected. A label under the hood shows the proper layout.
- (4) When using a vacuum gauge, never force the hose onto a connector that is too large. Use a step-down adapter for adjustment. Once the hose has been stretched, it may leak air.





(i) TORQUE WHEN USING TORQUE WRENCH WITH EXTENSION TOOL

- (1) In case of tightening by a torque wrench which entire length is extended by combined the torque wrench with SST or tool, if you tighten until the reading of the torque wrench reached the specified torque value, the actual torque becomes excessive.
- (2) In this text, only the specified torque is described. In case of using SST or extension tool, find the reading of the torque wrench by the formula.
- (3) Formula $T' = T \times L2 / (L1 + L2)$

T'	Reading of torque wrench [N·m (kgf·cm) (lbf·ft)]
T	Torque [N·m (kgf·cm) (lbf·ft)]
L1	Length of SST or tool [cm]
L2	Length of torque wrench [cm]

2. FOR VEHICLES EQUIPPED WITH SRS AIRBAG AND SEAT BELT PRETENSIONER

HINT:

The AVENSIS VERSO/PICNIC is equipped with an SRS (Supplemental Restraint System), such as the driver airbag, front passenger airbag, side airbag, curtain shield airbag and seat belt pretensioner.

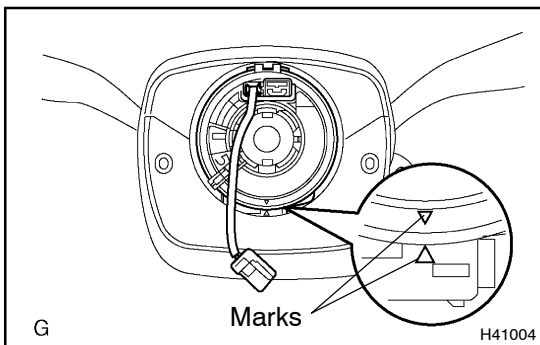
Failure to carry out the service operations in the correct sequence could cause the supplemental restraint system to unexpectedly deploy during servicing. It may possibly lead to a serious accident.

Furthermore, if a mistake is made in servicing the supplemental restraint system, it is possible the SRS may fail to operate when required. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedure described in this manual.

(a) GENERAL NOTICE

- (1) Malfunction symptoms of the supplemental restraint system are difficult to confirm, so the diagnostic trouble codes become the most important source of information when troubleshooting. When troubleshooting the supplemental restraint system, always inspect the diagnostic trouble codes before disconnecting the battery (See page 05-409).
- (2) Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery. (The supplemental restraint system is equipped with a back-up power source, so if work is started within 90 seconds after disconnecting the negative (-) terminal cable from the battery, the SRS may deploy.)
When the negative (-) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the memorized contents in each memory system. Then, when work is finished, reset the clock and audio systems as before. To avoid erasing the memory in each memory system, never use a back-up power supply from another battery.
- (3) Even in case of a minor collision where the SRS does not deploy, the horn button assembly, instrument panel passenger airbag assembly, front seat airbag assembly, curtain shield airbag assembly and seat belt pretensioner should be inspected (See pages 60-16, 60-28, 60-34, 60-43 and 61-2).

- (4) Never use SRS relating parts from another vehicle. When replacing parts, replace them with new parts.
- (5) Before repairs, remove the airbag sensor if shocks are likely to be applied to the sensor during repairs.
- (6) Never disassemble and repair the airbag sensor assembly, horn button assembly, instrument panel passenger airbag assembly, front seat airbag assembly, curtain shield airbag assembly or seat belt pretensioner.
- (7) If the airbag sensor assembly, horn button assembly, instrument panel passenger airbag assembly, front seat airbag assembly, curtain shield airbag assembly has been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
- (8) Do not directly expose the airbag sensor assembly, horn button assembly, instrument panel passenger airbag assembly, front seat airbag assembly, curtain shield airbag assembly or seat belt pretensioner to hot air or flames.
- (9) Use a volt/ohmmeter with high impedance (10 k Ω /V minimum) for a troubleshooting of an electrical circuit.
- (10) Information labels are attached to the periphery of the SRS components. Follow the instructions on the notices.
- (11) After work on the supplemental restraint system is completed, check the SRS warning light (See [page 05-403](#)).



(b) SPIRAL CABLE (in Combination Switch)

- (1) The steering wheel must be fitted correctly to the steering column with the spiral cable at the neutral position, otherwise cable disconnection and other troubles may occur. Refer to [60-24](#) of this manual concerning the correct installation of steering wheel.

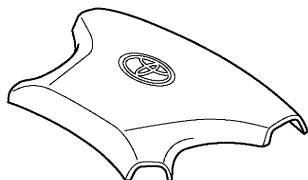
(c) HORN BUTTON ASSEMBLY (with Airbag)

- (1) When removing the horn button assembly or handling a new horn button, it should be placed with the pad top surface facing upward.
Storing the pad with its metallic surface facing upward may lead to a serious accident if the airbag deploys for some reason. In addition do not store a horn button placed on another one.
- (2) Never measure the resistance of the airbag squib. (This may cause the airbag to deploy, which is very dangerous.)
- (3) Grease should not be applied to the horn button assembly and the pad should not be cleaned with detergents of any kinds.
- (4) Store the horn button assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
- (5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) under the steering column near the combination switch connector before starting work.

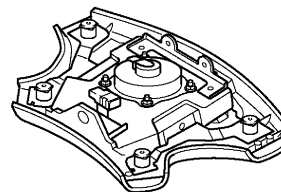
- (6) When disposing of a vehicle or the horn button assembly alone, the airbag should be deployed using an SST before disposal (See page 60-16).
Perform the operation in a safe place away from electrical noise.

Example:

○ CORRECT

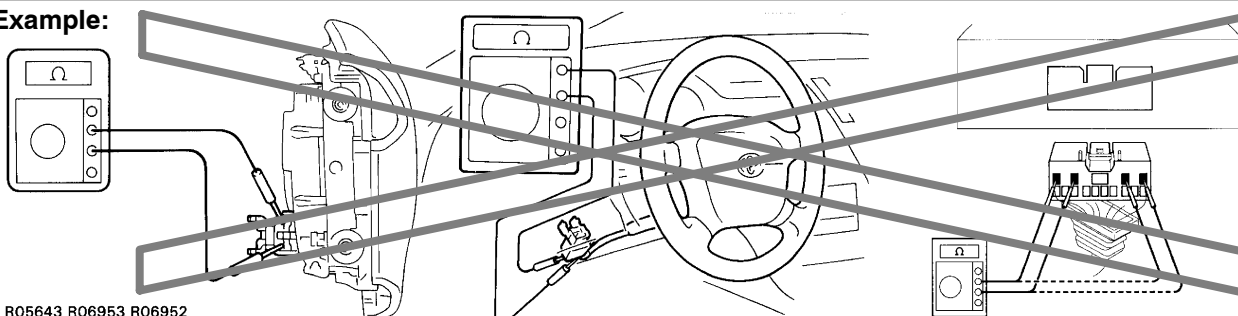


✗ WRONG



Y

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Example:

R05643 R06953 R06952

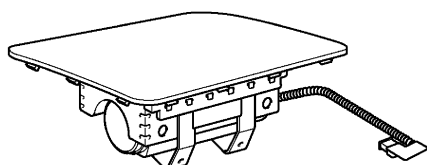
Z13950

(d) INSTRUMENT PANEL PASSENGER AIRBAG ASSEMBLY

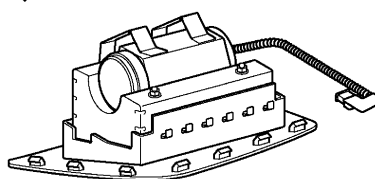
- (1) Always store a removed or new instrument panel passenger airbag assembly with the airbag deployment direction facing upward.
Storing the airbag assembly with the airbag deployment direction facing downward could cause a serious accident if the airbag inflates.
- (2) Never measure the resistance of the airbag squib.
(This may cause the airbag to deploy, which is very dangerous.)
- (3) Grease should not be applied to the instrument panel passenger airbag assembly and the airbag door should not be cleaned with detergents of any kind.
- (4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
- (5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) installed on the assembly before starting work.
- (6) When disposing of a vehicle or the airbag assembly alone, the airbag should be deployed using an SST before disposal (See page 60-28).
Perform the operation in a safe place away from electrical noise.

Example:

○ CORRECT

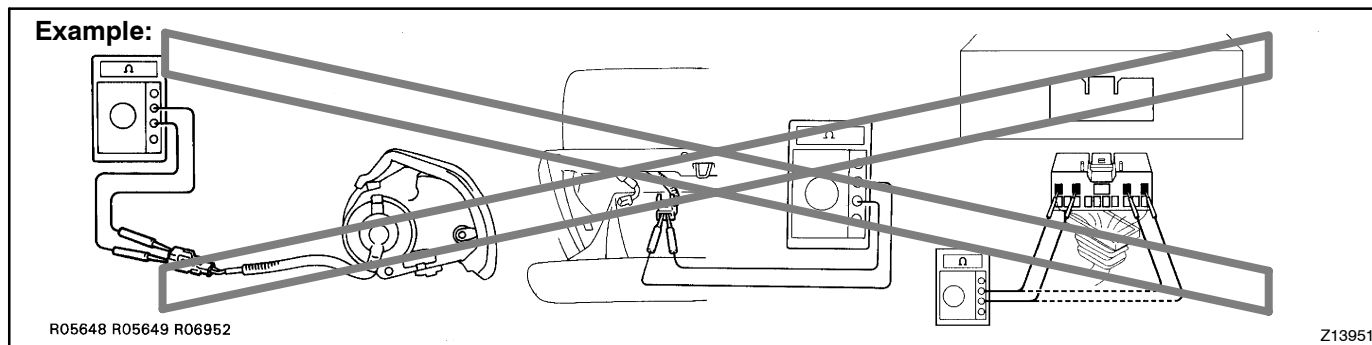


✗ WRONG



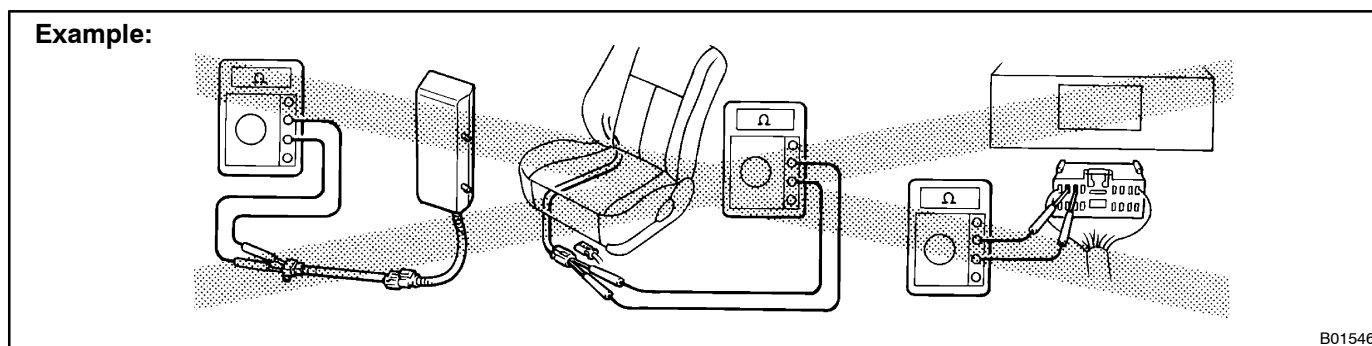
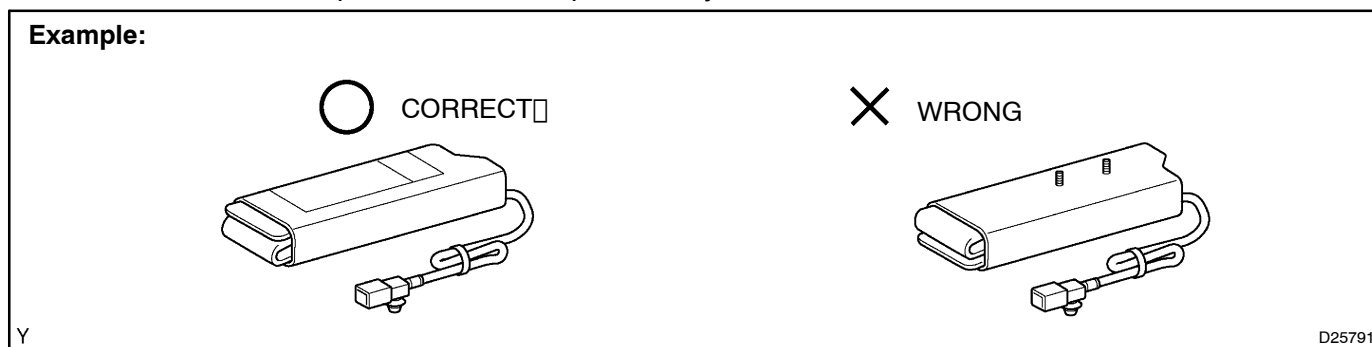
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(e) FRONT SEAT AIRBAG ASSEMBLY

- (1) Always store a removed or new front seat airbag assembly with the airbag deployment direction facing upward.
Storing the airbag assembly with the airbag deployment direction facing downward could cause a serious accident if the airbag inflates.
- (2) Never measure the resistance of the airbag squib.
(This may cause the airbag to deploy, which is very dangerous.)
- (3) Grease should not be applied to the front seat airbag assembly and the airbag door should not be cleaned with detergents of any kind.
- (4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
- (5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) installed on the assembly before starting work.
- (6) When disposing of a vehicle or the side airbag assembly alone, the airbag should be deployed using an SST before disposal (See page 60-34).
Perform the operation in a safe place away from electrical noise.



(f) CURTAIN SHIELD AIRBAG ASSEMBLY

- (1) Always store a removed or new curtain shield airbag assembly in a clear plastic bag, and keep it in a safe place.

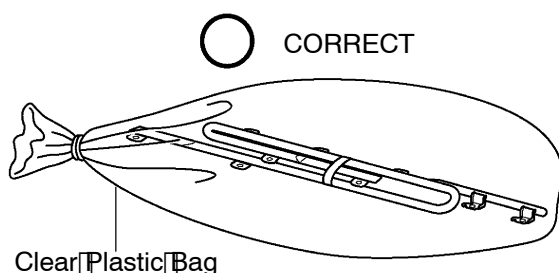
NOTICE:

Protection bag is not reuse.

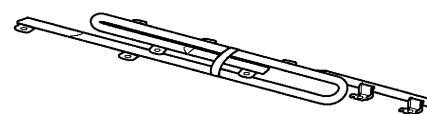
CAUTION:

Never disassemble the curtain shield airbag assembly.

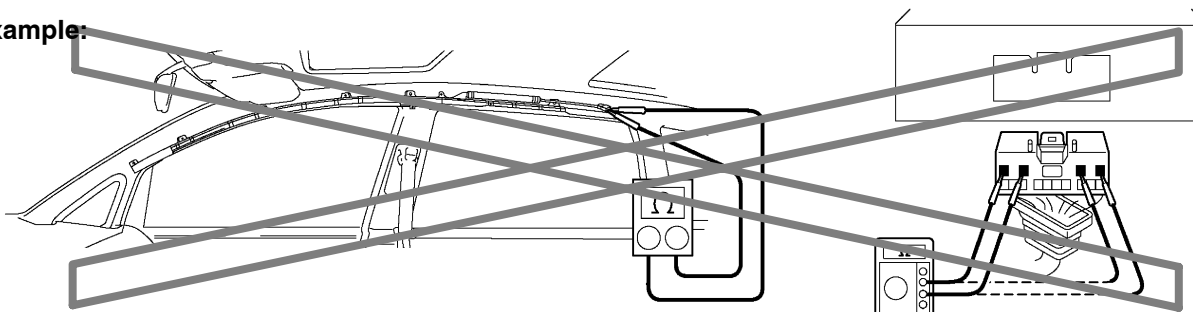
- (2) Never measure the resistance of the airbag squib (This may cause the airbag to deploy, which is very dangerous.).
- (3) Grease should not be attached to the curtain shield airbag assembly and the surface should not be cleared with detergents of any kind.
- (4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.
- (5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) into the instrument panel before starting work.
- (6) When disposing of a vehicle or the curtain shield airbag assembly alone, the airbag should be deployed using an SST before disposal (See page 60-43). Perform the operation in a safe place away from electrical noise.

Example:

✗ WRONG



D25792

Example:

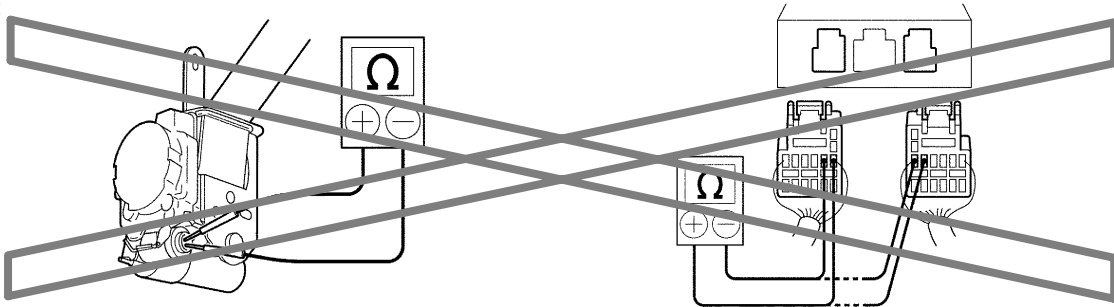
D26140

(g) SEAT BELT PRETENSIONER

- (1) Never measure the resistance of the seat belt pretensioner (This may cause the seat belt pretensioner to activate, which is very dangerous.).
- (2) Never disassemble the seat belt pretensioner.
- (3) Never install the seat belt pretensioner in another vehicle.
- (4) Store the seat belt pretensioner where the ambient temperature remains below 80°C (176°F) and away from electrical noise without high humidity.
- (5) When using electric welding, first disconnect the connector (yellow color and 2 pins) before starting work.

- (6) When disposing of a vehicle or the seat belt pretensioner alone, the seat belt pretensioner should be activated before disposal (See page 61-2). Perform the operation in a safe place away from electrical noise.
- (7) The seat belt pretensioner is hot after activation, so let it cool down sufficiently before the disposal. However never apply water to the seat belt pretensioner.
- (8) Oil or water should not be put on the front seat outer belt and the front seat outer belt should be cleaned with detergents of kind.

Example:



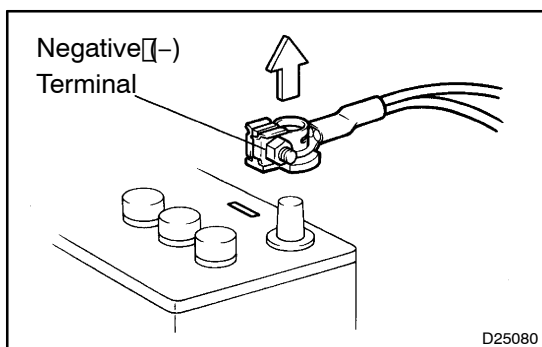
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(h) AIRBAG SENSOR ASSEMBLY

- (1) Never reuse the airbag sensor assembly involved in a collision when the SRS has deployed.
- (2) The connectors to the airbag sensor assembly should be connected or disconnected with the sensor mounted on the floor. If the connectors are connected or disconnected while the airbag sensor assembly is not mounted to the floor, it could cause an undesired ignition of the supplemental restraint system.
- (3) Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery, even if only losing the set bolts of the airbag sensor assembly.

(i) WIRE HARNESS AND CONNECTOR

- (1) The SRS wire harness is integrated with the instrument panel wire harness assembly. All the connectors in the system are a standard yellow color. If the SRS wire harness becomes disconnected or the connector becomes broken due to an accident, etc., repair or replace it.



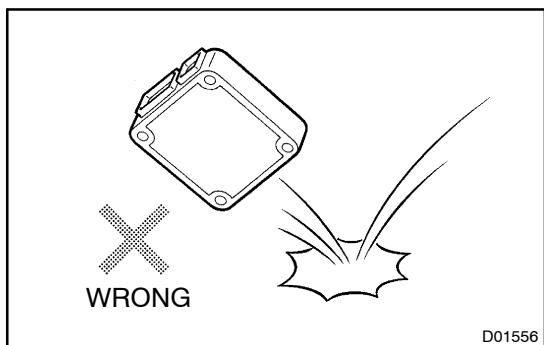
D25080

3. ELECTRONIC CONTROL

(a) REMOVAL AND INSTALLATION OF BATTERY TERMINAL

- (1) Before performing electrical work, disconnect the battery negative (-) terminal cable beforehand so as to prevent burnt-out damage by short.
- (2) When disconnecting and installing the terminal cable, turn the ignition switch and lighting switch OFF, and loosen the terminal nut completely. Perform these operations without twisting or prying the terminal.
- (3) When the battery terminal is removed, all the memories of the clock, radio, DTCs, etc. will be erased.

So before removing it, check them and note them down.



(b) HANDLING OF ELECTRONIC PARTS

- (1) Do not open the cover or case of the ECU unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)
- (2) To pull apart electrical connectors, pull the connector itself, not the wires.
- (3) Be careful not to drop electrical components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced and not reused.
- (4) When cleaning the engine with steam, protect the electronic components, air filter and emission-related components from water.
- (5) Never use an impact wrench to remove or install temperature switches or temperature sensors.
- (6) When checking the continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.

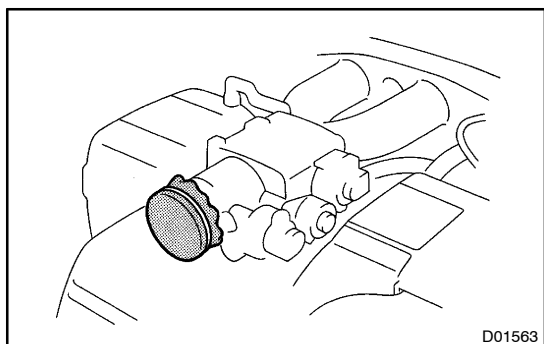
4. REMOVAL AND INSTALLATION OF FUEL CONTROL PARTS

(a) PLACE FOR REMOVING AND INSTALLING FUEL SYSTEM PARTS

- (1) Place with good air ventilation and without anything flammable such as welder, grinder, drill, electric motor or stove in the surroundings.
- (2) Never work in a place like a pit or nearby pit as there is a possibility that vaporized fuel fills those places.

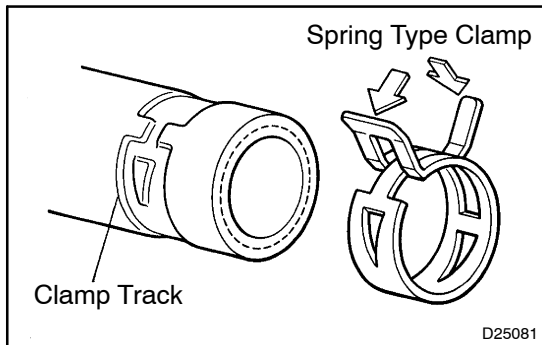
(b) REMOVING AND INSTALLING OF FUEL SYSTEM PARTS

- (1) Prepare a fire extinguisher before starting the operation.
- (2) For prevention of the static electricity, install a ground on the fuel changer, vehicle and fuel tank, and do not spray much water so as to prevent slipping.
- (3) Never use any electric equipment like an electric motor or a working light as they may cause spark or high temperature.
- (4) Never use an iron hammer as it may cause spark.
- (5) Dispose the shop rag separately from any fuel deposit.



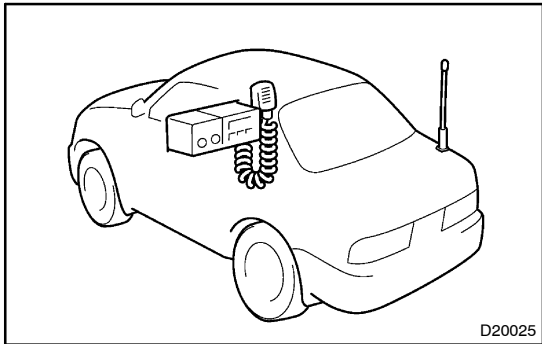
5. REMOVAL AND INSTALLATION OF ENGINE INTAKE PARTS

- (a) If any metal tip is mixed in the inlet pass, that may give a bad effect to the engine and turbocharger.
- (b) When removing and installing the inlet system parts, close the opening of the removed inlet system parts and the engine with a clean shop rag or gummed tape.
- (c) When installing the inlet system parts, check that there is no mixing of a metal tip.



6. HANDLING OF HOSE CLAMPS

- (a) Before removing the hose, check the depth of inserting portion and the clamp position to restore it surely.
- (b) Change a deformed or dented clamp into a new one.
- (c) In case of reusing the hose, install the clamp on the hose where it has a clamp track.
- (d) For a spring type clamp, make it adjust by adding force to the arrow mark direction after the installation.



7. FOR VEHICLES EQUIPPED WITH MOBILE COMMUNICATION SYSTEM

- (a) Install an antenna as far as possible away from the ECU and sensors of the vehicle's electronic systems.
- (b) Install an antenna feeder at least 20 cm (7.87 in.) away from the ECU and sensors of the vehicle's electronic systems. For details of the ECU and sensors locations, refer to the section on the applicable component.
- (c) Prevent the antenna feeder from getting entangled in the other wirings and keep the antenna feeder apart from the other wirings as much as possible.
- (d) Check that the antenna and feeder are correctly adjusted.
- (e) Do not install any powerful mobile communication system.

8. FOR VEHICLES EQUIPPED WITH CATALYTIC CONVERTER

CAUTION:

If large amount of unburned gasoline flows into the converter, it may cause overheating and a fire hazard. To prevent this, observe the following precautions and explain them to your customer.

- (a) Use only unleaded gasoline.
- (b) Avoid prolonged idling.
Avoid running the engine at idle speed for more than 20 minutes.
- (c) Avoid a spark jump test.
 - (1) Perform a spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
 - (2) While testing, never race the engine.
- (d) Avoid a prolonged engine compression measurement.
Engine compression measurements must be done as rapidly as possible.
- (e) Do not run the engine when fuel tank is nearly empty.
This may cause the engine to misfire and create an extra load on the converter.