Identification Number Locations

Protection of the Vehicle

Always be sure to cover fenders, seats, and floor areas before servicing.

CAUTION

Insert the supportive rod into the hole at the edge of the hood whenever inspecting the engine compartment to prevent the hood from falling and causing possible injury.

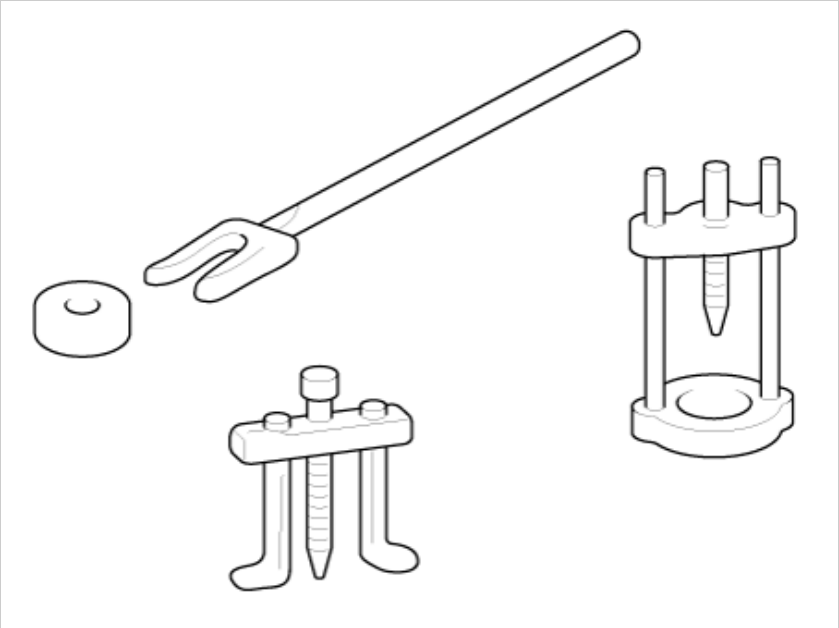
Make sure that the supportive rod has been released prior to closing the hood. Always check that hood is firmly latched before driving the vehicle.

Preparation of Tools and Measuring Equipment

Be sure that all necessary tools and measuring equipment are available before servicing.

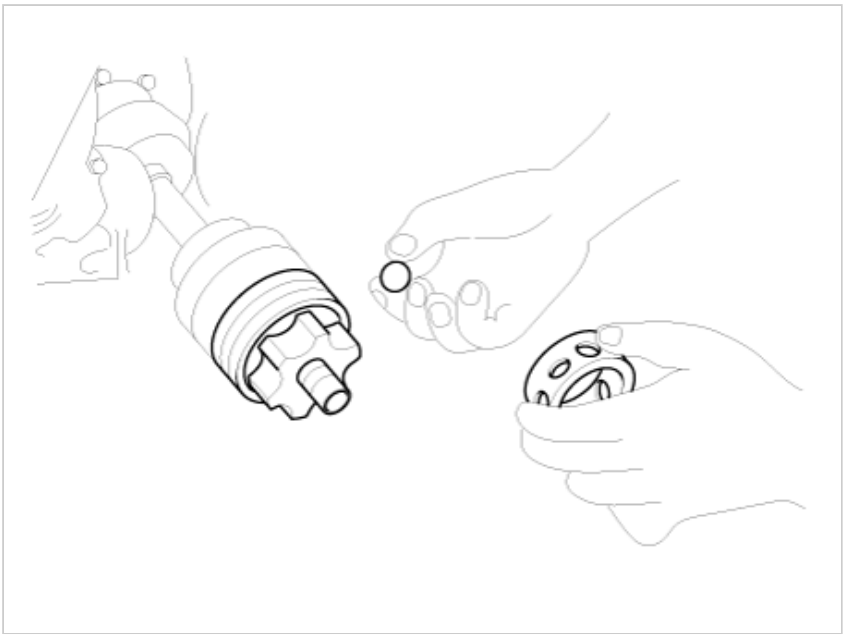
Special Service Tools

Use appropriate special service tools.



Removal of Parts

First, identify the cause of the problem, and then determine whether removal or disassembly is required before servicing.

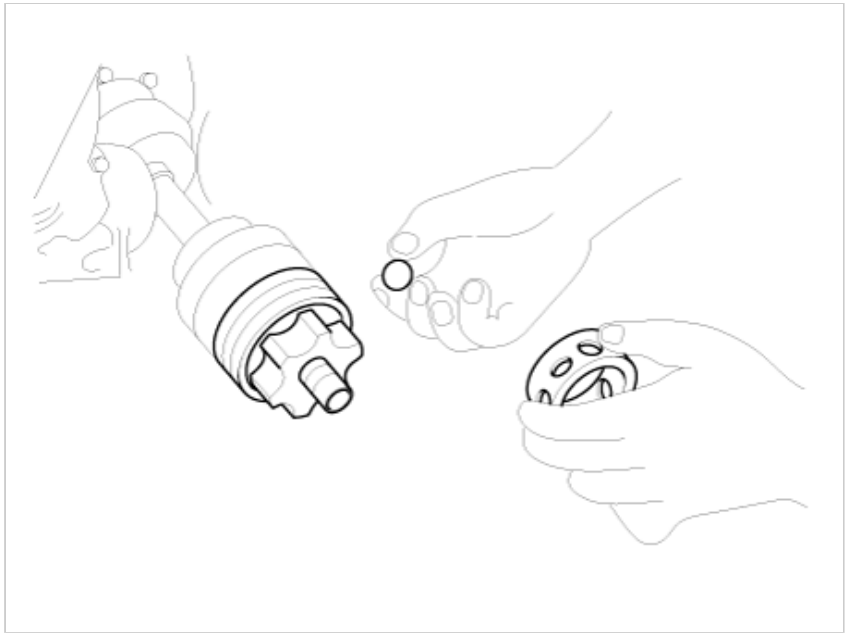


Disassembly

If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance.

1) **Inspection of parts**

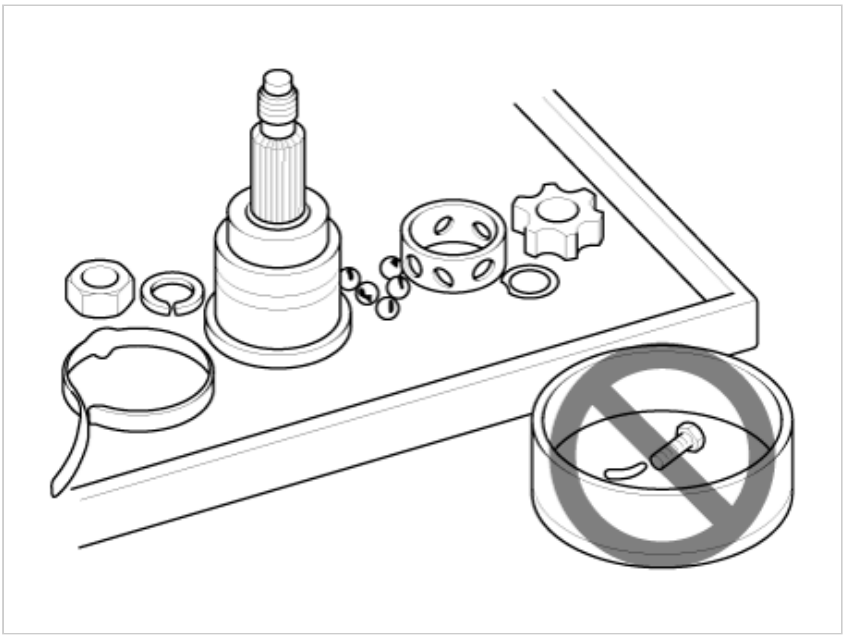
After removal, inspect each part carefully for malfunction, deformation, damage and other problems.



2) **Arrangement of parts**

All disassembled parts should be carefully arranged for effective reassembly.

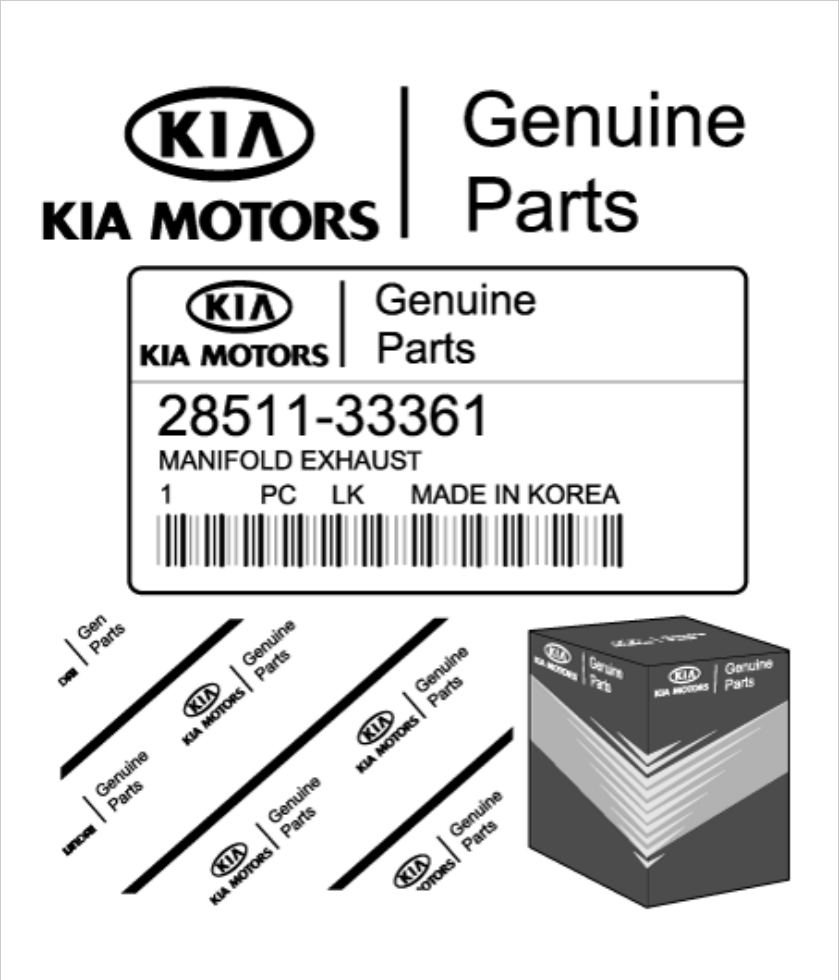
Be sure to separate and correctly identify the parts to be replaced from those that will be used again.



3) **Cleaning parts for reuse**
All reusable parts should be carefully and thoroughly cleaned in the appropriate method.

Parts

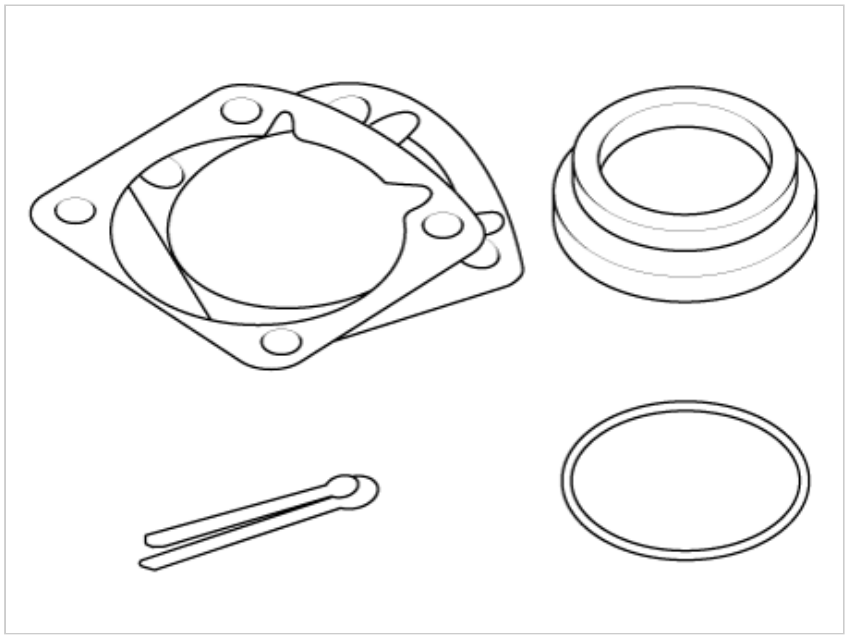
When replacing parts, use Kia Motors Genuine Parts or equal quality



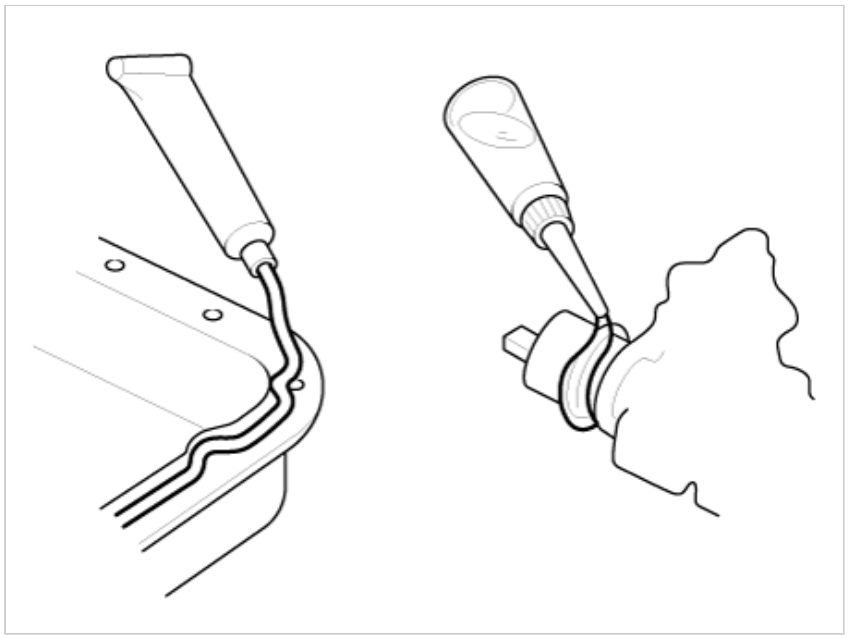
Replacement

Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.
Once removed, replace the following parts with new ones.

1) Oil seals
2) Gaskets
3) O-rings
4) Lock washers
5) Cotter pins (split pins)
6) Plastic nuts



7) Apply sealant to gaskets.
8) Apply oil to moving components of parts.
9) Apply specified oil or grease to the prescribed locations (oil seals, etc.) before assembly.

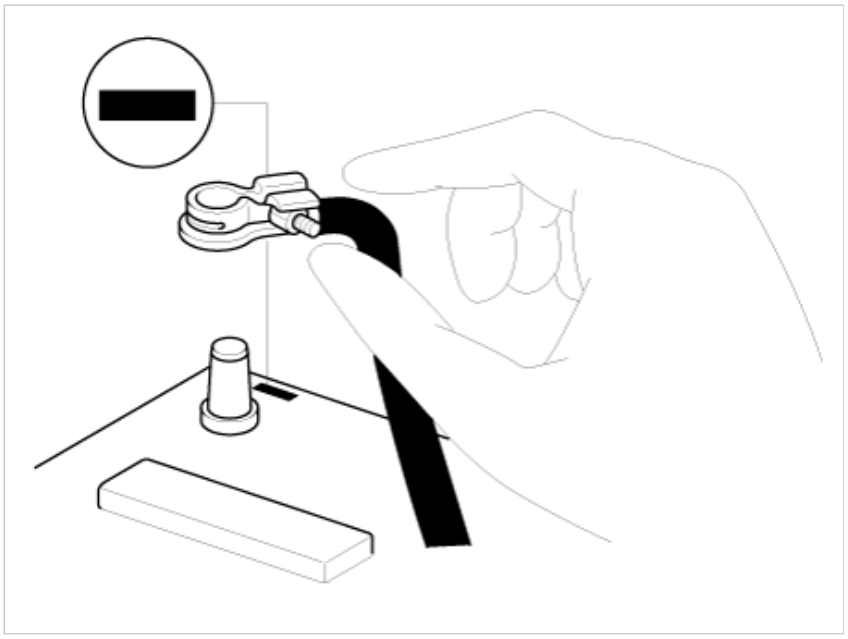


Adjustment

Use gauges and testers to correctly adjust the parts to standard values.

Electrical System

1. Disconnect the negative (-) battery terminal before working on electrical system to prevent damage from short circuit.
2. Never pull on the wires when disconnecting connectors.
3. Locking connectors will click when the connector is secured.
4. Handle sensors and relays carefully. Be careful not to drop them against other parts.



Rubber Parts and Tubes

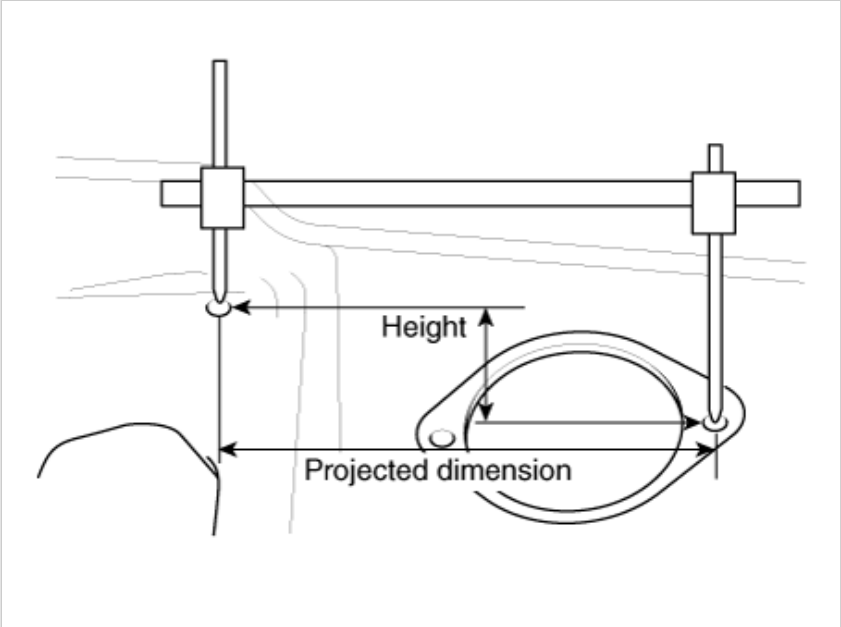
Keep gasoline away from rubber parts or tubing at all times.

Measuring Body Dimensions

1. Basically, all measurements in this manual are taken with a tracking gauge.
2. When using a tape measure, be sure that there is no elongation, twisting or bending of the tape.
3. For measuring dimensions, both the projected dimensions and the dimensions by actual measurement are used in this manual.

Projected Dimensions

1. These are the dimensions measured when the measurement points are projected from the vehicle"s surface, and are the reference dimensions used for body alterations.
2. If the length of the tracking gauge probes can be adjusted, measure it by lengthening one of the two probes as long as the difference in height of the two surfaces.

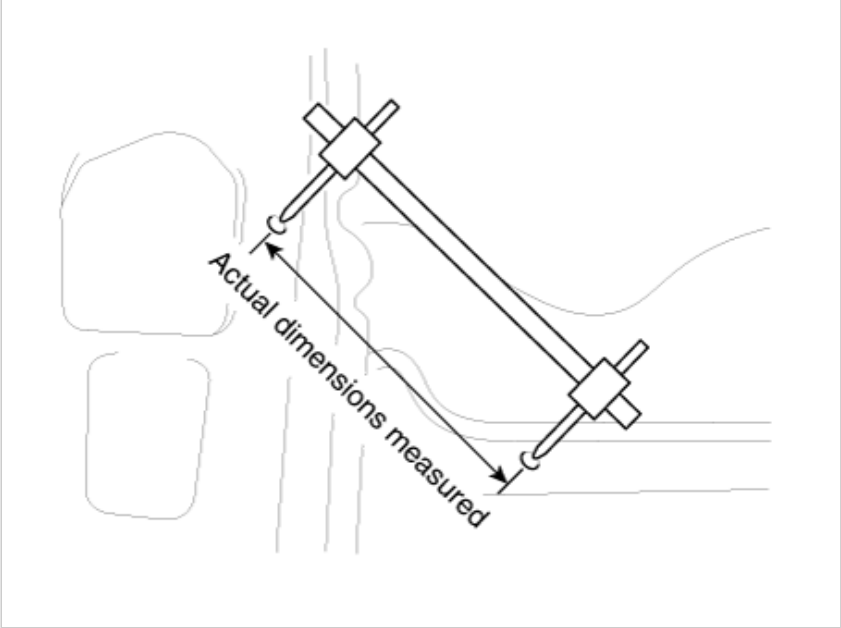


Measuring Actual Dimensions

1. These dimensions indicate the actual linear distance between measurement points, and are used as the reference dimensions when a tracking gauge is used for measurement.
2. First adjust both probes to the same length (A=A") before measurement.

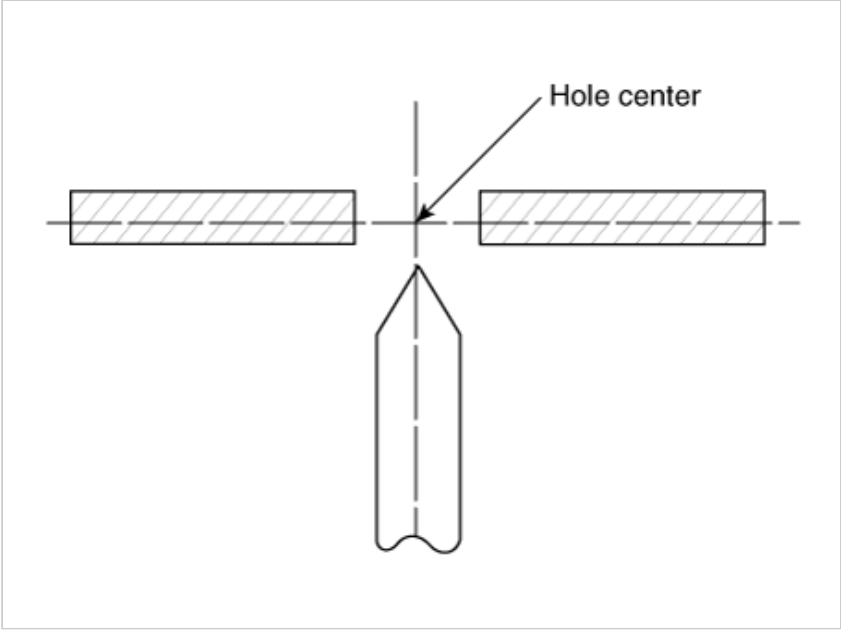
NOTICE

Check the probes and gauge to make sure that there is no free play.



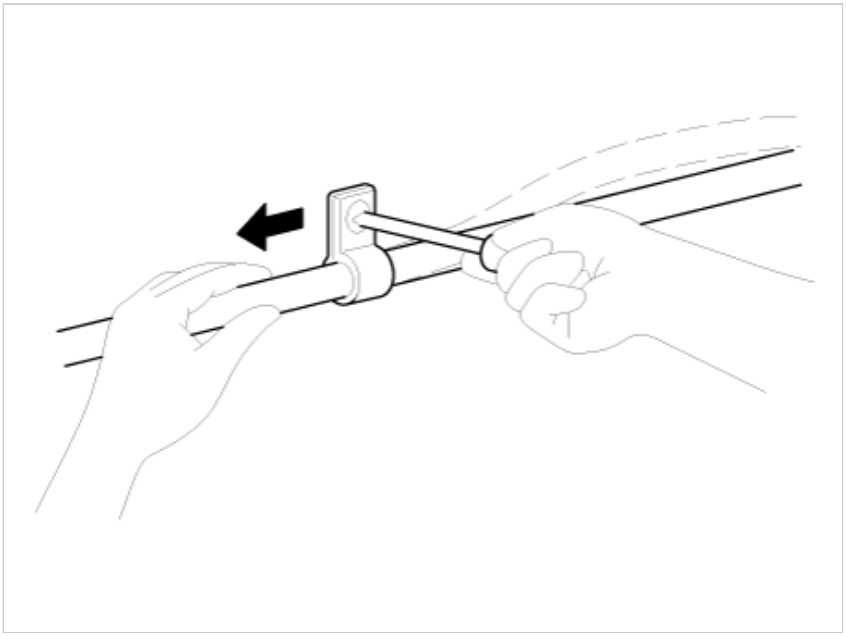
Measurement Point

Measurements should be taken at the center of the hole.



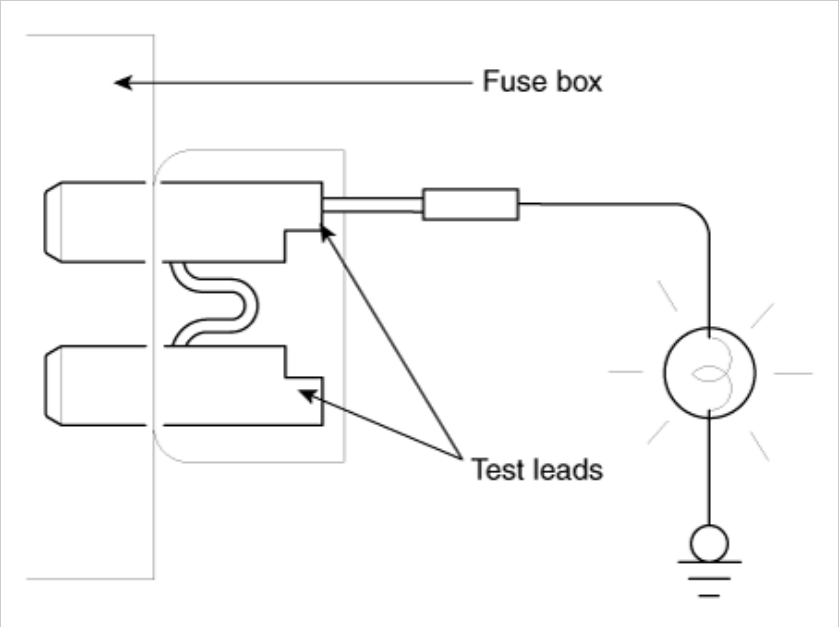
Checking Cables and Wires

1. Check the terminal for tightness.
2. Check terminals and wires for corrosion from battery electrolyte, etc.
3. Check terminals and wires for open circuits.
4. Check wire insulation and coating for damage, cracks and degrading.
5. Check the conductive parts of terminals for contact with other metallic parts (vehicle body and other parts).
6. Check grounded parts to verify that there is complete continuity between their attaching bolt(s) and the vehicle''s body.
7. Check for incorrect wiring.
8. Check that the wiring is clamped so as to prevent contact with sharp corners of the vehicle body or hot parts (exhaust manifold, etc.).
9. Check that the wiring is clamped firmly to provide enough clearance from the fan pulley, fan belt and other rotating or moving parts.
10. Check that the wiring has a little space so that it can vibrate between fixed and moving parts such as the vehicle body and the engine.



Check Fuses

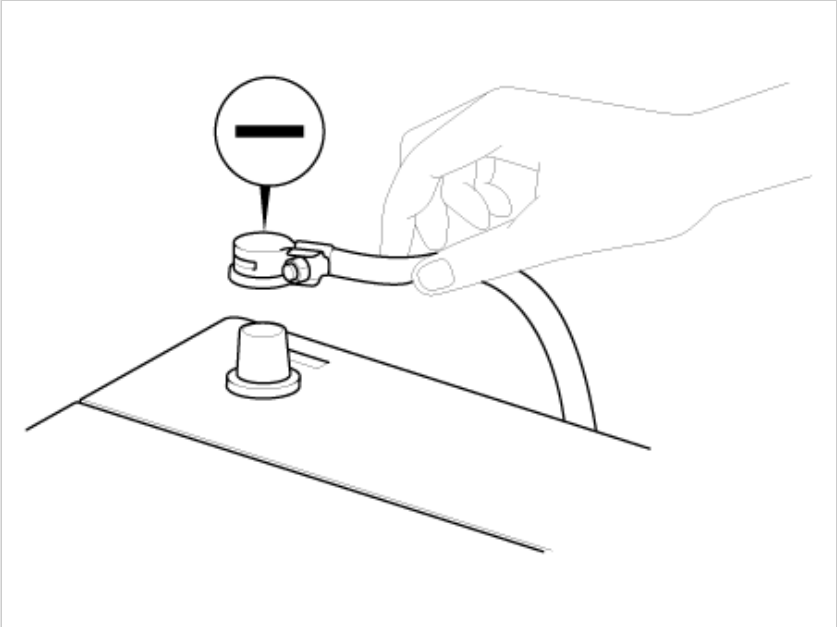
A blade type fuse test taps are provided for checking the fuse itself without removing it from the fuse box. The fuse is good if the test lamp lights up when one lead is connected to the test taps (one at a time) and the other lead is grounded. (Switch "ON" the ignition to make the fuse circuit operative.)



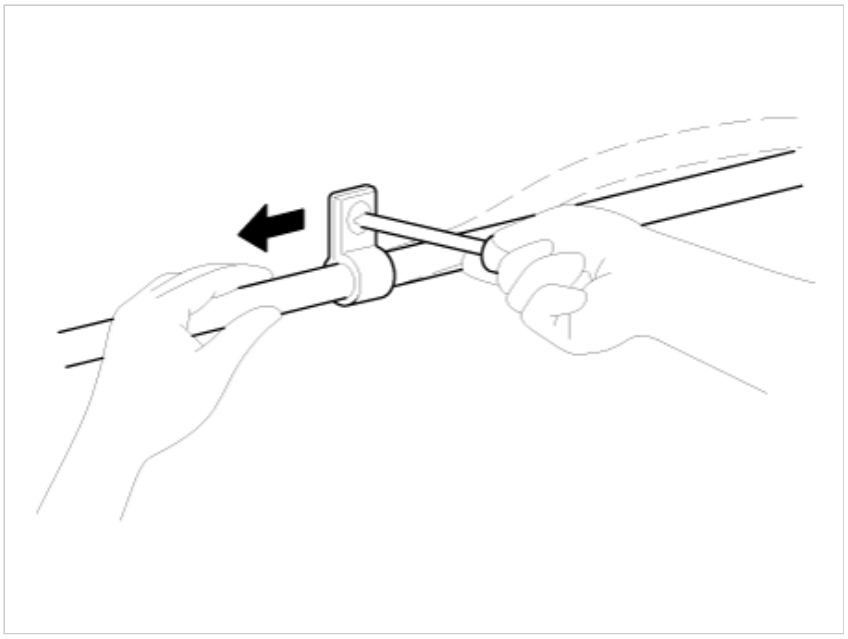
Servicing the Electrical System

1. Prior to servicing the electrical system, be sure to turn off the ignition switch and disconnect the battery ground cable.

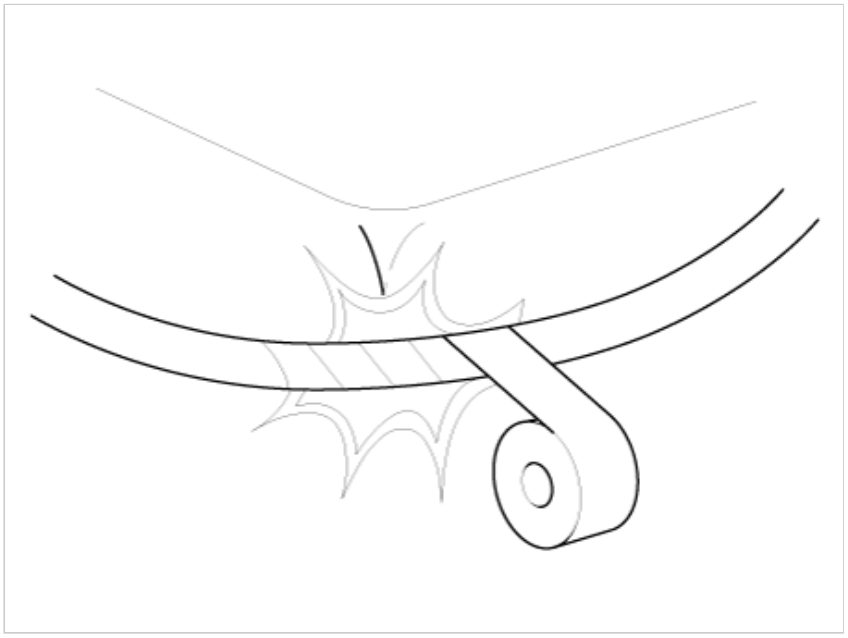
> **NOTICE**
> If the battery cable is removed during MFI or ELC diagnosis, any diagnostic trouble code saved by the computer will be cleared. Therefore, if necessary, record the diagnostic data before disconnecting the battery cable.



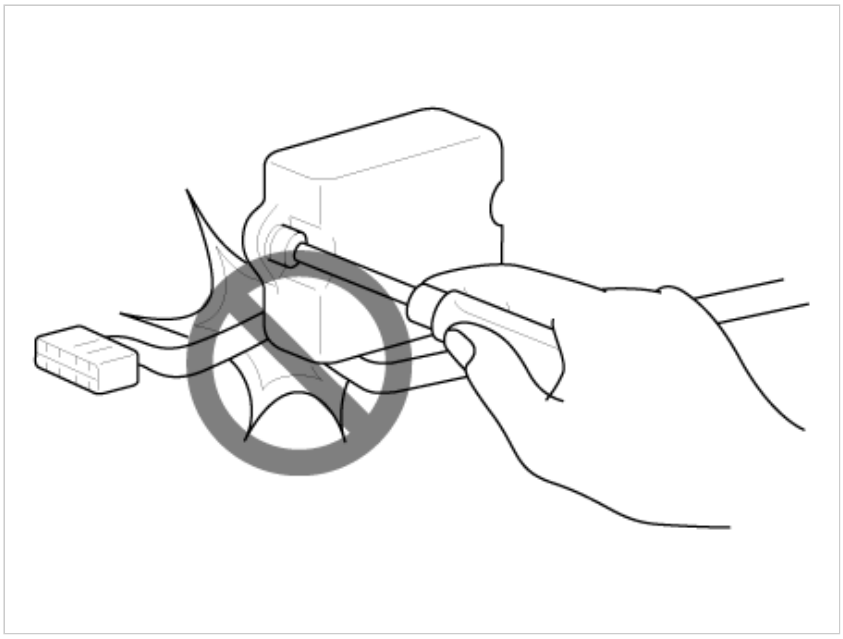
2. Attach the wiring harnesses with clamps so that there is no slack. However, for any harness which passes the engine or other vibrating parts of the vehicle, allow some slack within a range that does not allow the engine vibrations to cause the harness to come into contact with any of the surrounding parts and then secure the harness by using a clamp.



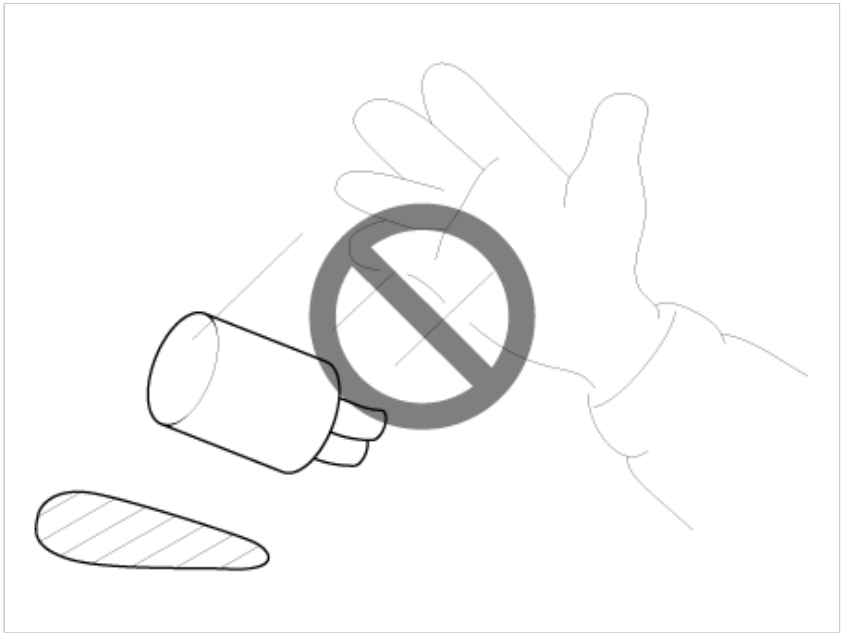
3. If any section of a wiring harness interferes with the edge of parts, or a corner, wrap the section of the harness with tape or equivalent to protect it from damage.



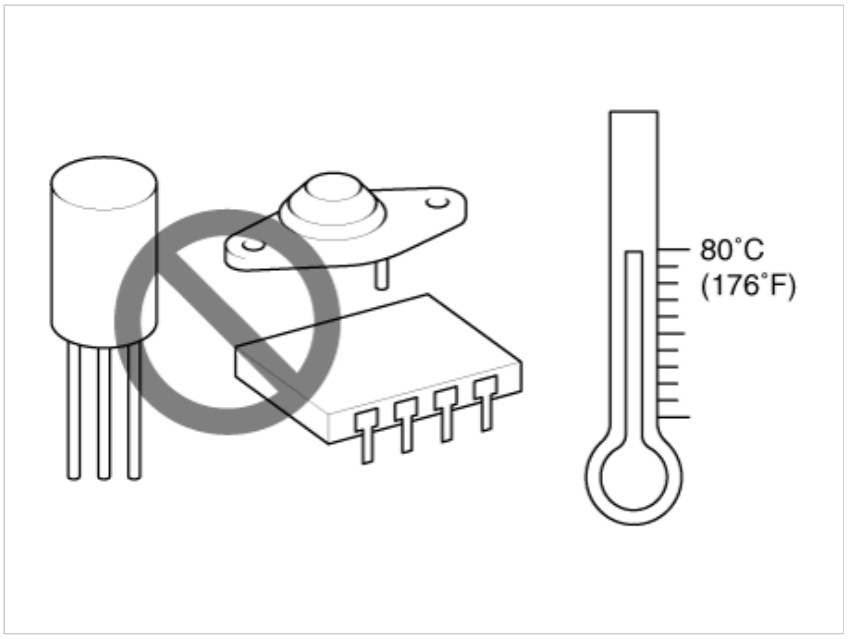
4. When installing any parts, be careful not to pinch or damage any of the wiring harness.



5. Never throw relays, sensors or electrical parts, or expose them to strong shock.

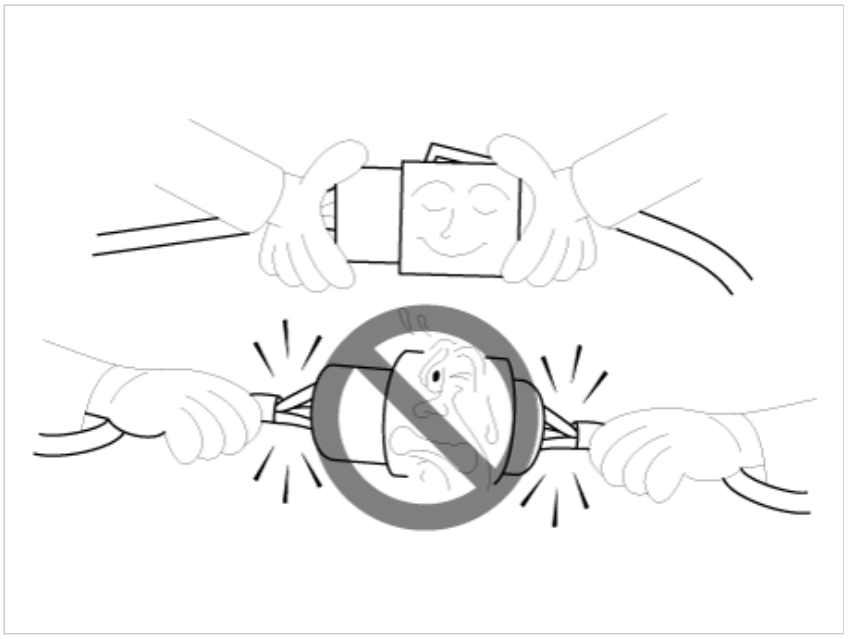


6. The electronic parts used in the computer, relays, etc. are readily damaged by heat. If there is a need for service operations that may raise the temperature above 80°C (176°F), remove the electronic parts beforehand.

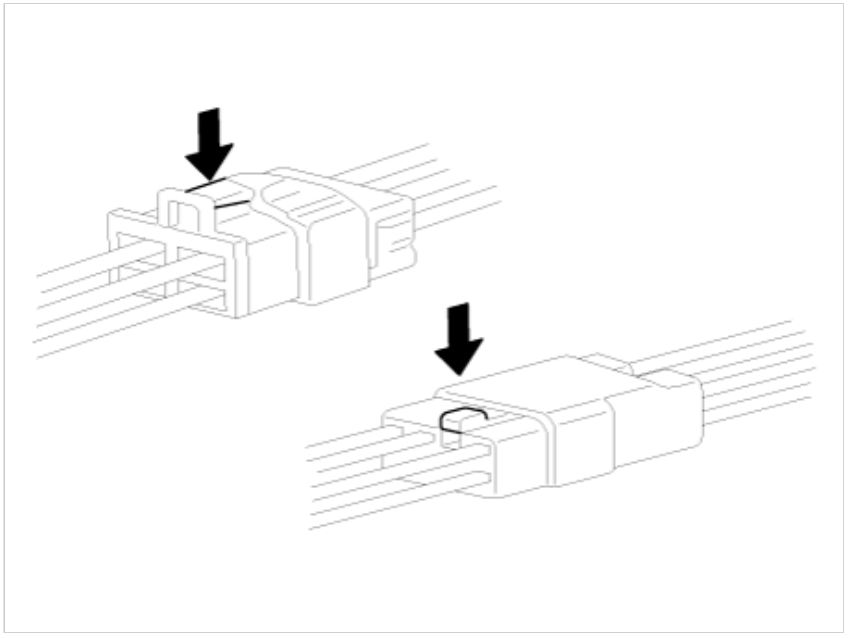


7. Loose connectors cause problems. Make sure that the connectors are always securely fastened.

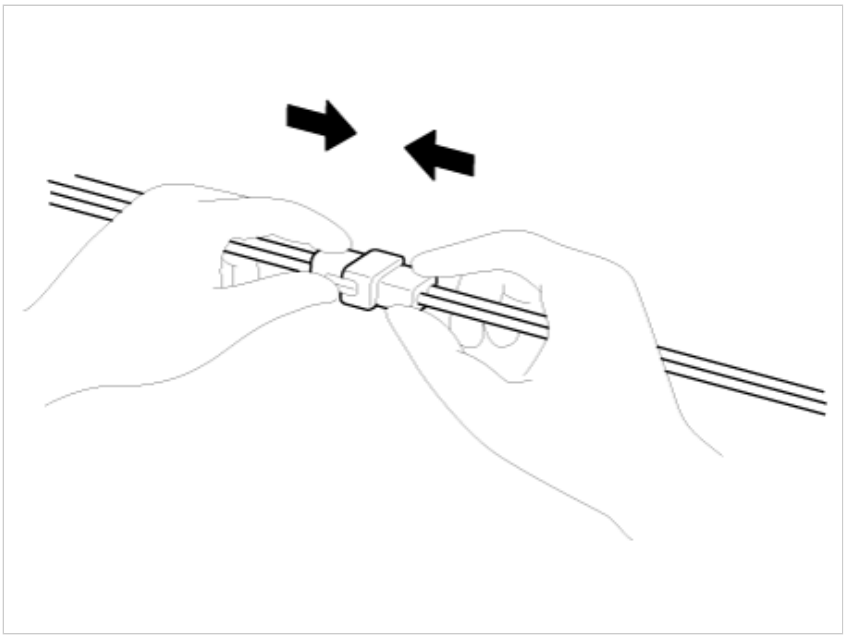
8. When disconnecting a connector, hold the connector halves instead of pulling on the wires.



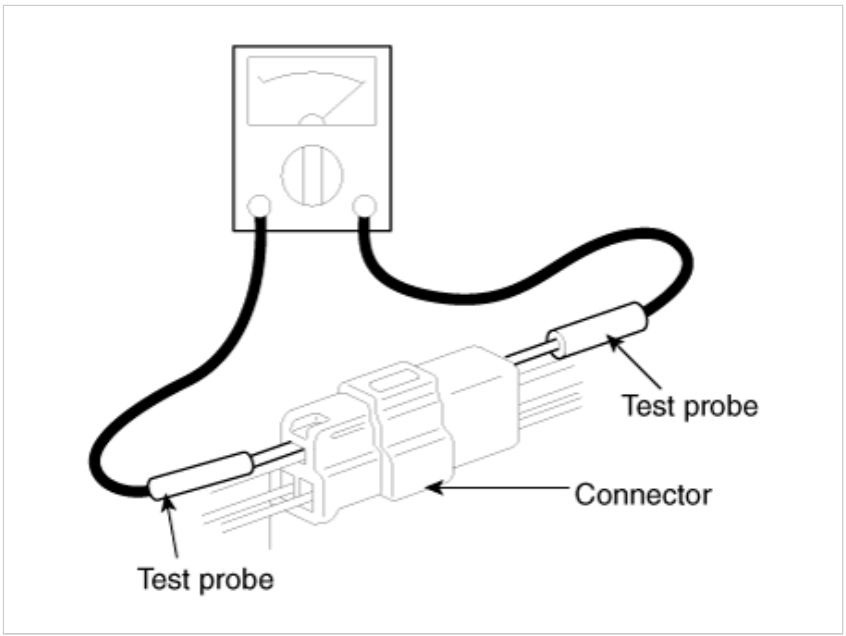
9. Disconnect connector with a latch by pressing in the direction of the arrows shown in the illustration.



10. Connect connector with a latch by inserting it until a click sound is heard.



11. When using a circuit tester to check continuity or voltage on connector terminals, insert the test probe into the harness side. If the connector is a sealed connector, insert the test probe through the hole in the rubber cap until it reaches the terminal. During this, be careful not to damage the insulation of the wires.



12. To avoid overloading the wiring, select the appropriate wire size based on the electrical current load of the optional equipment.

Nominal size	SAE gauge No.	Permissible current	
		In engine compartment	Other areas
0.3mm²	AWG 22	-	5A
0.5mm²	AWG 20	7A	13A
0.85mm²	AWG 18	9A	17A
1.25mm²	AWG 16	12A	22A
2.0mm²	AWG 14	16A	30A
3.0mm²	AWG 12	21A	40A
5.0mm²	AWG 10	31A	54A

Precautions for Catalytic Converter

⚠ CAUTION

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

1. Use unleaded gasoline only.
2. Do not run the engine if the vehicle has not been used for a long time. Avoid running the engine at fast idle for more than 10 minutes and idle speed for more than 20 minutes.
3. Do not measure engine compression for an extended time. Engine compression tests must be made as rapidly as possible. Remove the fuel pump relay before performing a compression test.
4. Do not dispose of used catalytic converter together with parts contaminated with gasoline or oil.