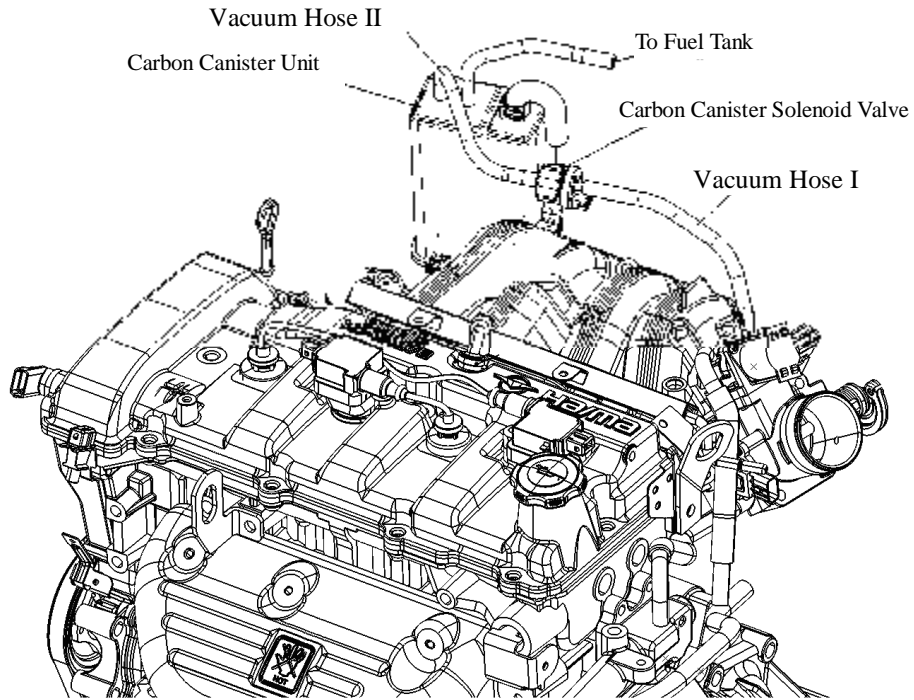


Fuel and Emission Control System

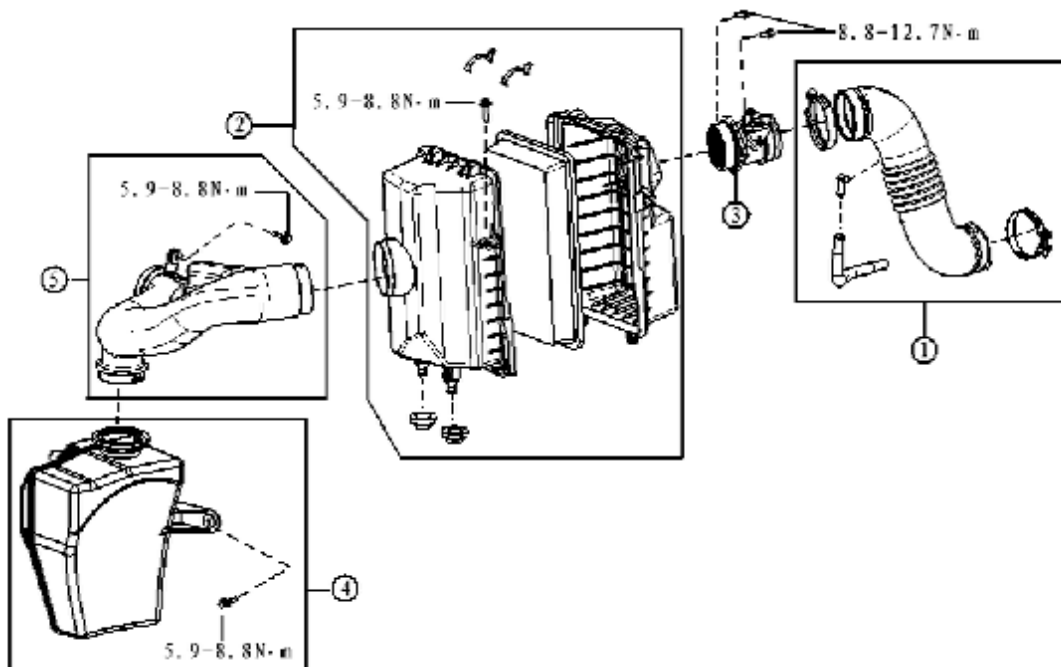
Air-intake System.....	F-1	Fuel Pump Assembly Removal/Installation .	F-6
Vacuum Hose Diagram	F-1	Inspection of Fuel Pump Assembly.....	F-6
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Removal/Installation of Accelerator Pedal...	F-2	Open/Short Circuit Inspection.....	F-7
Fuel System.....	F-3	Removal/Installation of Fuel filter	F-7
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Air-intake System

Vacuum Hose Diagram



Air-intake System Removal/Installation



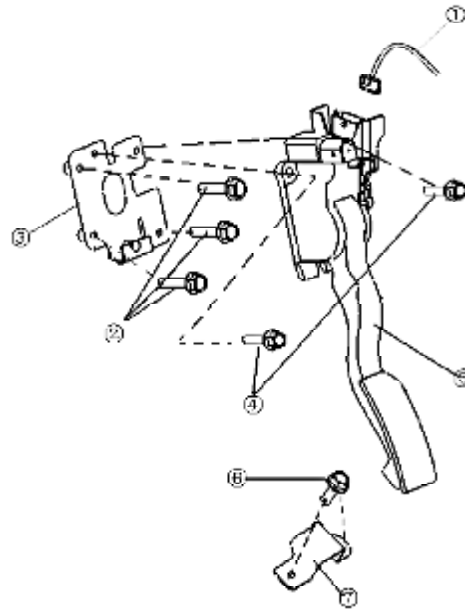
Warning

- 1 When the temperature of engine and intake system is too high, it will burn people. Therefore, the intake system can be removed only after the engine and intake system have been turned off and cooled down.
 - 1 Fuel vapor is too dangerous and it ignites easily, which will cause personal injury or property damages. Therefore, fuel should be stored far away from sparks or fire.
 - 1 Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Furthermore, fuel has negative effects on the skin and eyes. Therefore, safety regulations must be followed during operation (refer to Fuel System - Preparation for Maintenance).
1. Disconnect negative battery cable.
 2. Remove with sequence indicated in the figure.
 3. Install in reversed order of removal.

1	Air intake hose assembly
2	Air filter assembly
3	Air intake flow sensor
4	Resonance Chamber assembly
5	Air Duct assembly

Removal/Installation of Accelerator Pedal

1. Remove with sequence shown in the figure;
2. Installation sequence:
7 → 6 → 3 → 2 → 5 → 4 → 1



1	Wiring harness of accelerator pedal
2	Bolt
3	Bracket assembly
4	Bolt
5	Accelerator pedal
6	Bolt
7	Check bracket of accelerator pedal

Caution:

Insert the wiring harness to the accelerator pedal carefully and don't make the joint crooked.

Fuel System

Preparation for Maintenance

Warning

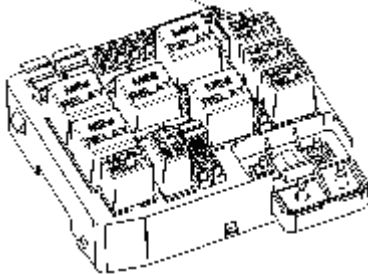
- 1 Fuel vapor is too dangerous and it ignites easily, which will cause personal injury or property damages. Therefore, fuel should be stored far away from sparks or fire.
- 1 Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Furthermore, fuel has negative effects on the skin and eyes. Therefore, safety regulations must be followed during operation.

Safe Operation Procedures

Attention:

- 1 Even if the engine is not running, fuel in fuel system is still in a state of high pressure.
1. Remove the fuel tank cap and release the pressure in the tank.
 2. Remove the fuel pump relay.

Fuel pump relay



3. Start engine.
4. Start several times when the engine stalls.
5. Turn the ignition switch to position "OFF".
6. Install the fuel pump relay back.

Inspection after Maintenance

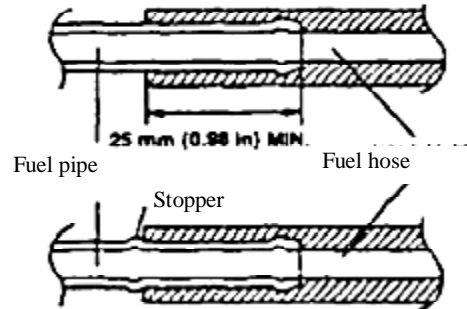
Warning

- 1 Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Therefore, perform inspection as per "Fuel Leakage Inspection" after the fuel hose has been installed back.

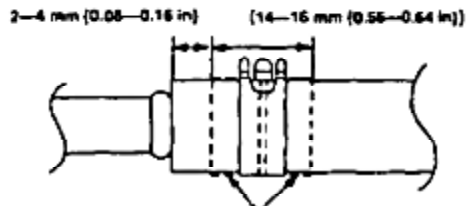
Installation of Fuel Hose

1. The damaged and distorted fuel hose, fuel pipe and pipe clamp should be replaced.

2. The fuel hose should be put into the fuel pipe with the length of more than 25mm { 0.98in }. If there is an inhibiting device on the fuel pipe, hose should be fitted into fuel pipe until it touches the inhibiting device.



3. As shown in the figure, fuel hose should be clump tightly within the installation range by using pipe clamp and meanwhile, to clamp it at the position same as the last time should be avoided.



To clamp it at the position same as the last time should be avoided.

Fuel Leakage Inspection

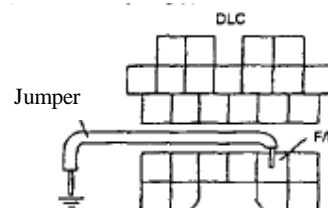
Warning

- 1 Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Therefore, please always check for oil leaks after parking.

Caution:

- 1 Malfunction shall be resulted if it is connected wrongly to another pole. Therefore please carefully connect it to the specified pole.

1. DLC terminal F/P and car body (GND ground) are short connected by jumper.



2. Turn the ignition switch to the position “ON” so that the oil pump can work.
3. Oil conduit should be pressurized at least 5 minutes by using the above-mentioned method to check for any leakage.

I If fuel leaks, please check for any damage on the sealing surface of fuel hose and fuel pipe. Replace it if necessary.

4. Repeat steps 1 to 3 after inspection and installation.

Removal/Installation of Fuel Tank

Warning

I Unwashed fuel tank is too dangerous, for example, burning or explosion will cause serious injury. Therefore, clean it with vapor before maintenance.

I Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Therefore, do not damage the sealing surface when removing/installing fuel pump assembly.

Caution

I If fuel pipe and quick release connectors are not cleaned before removal and installation, they will be damaged during removal or installation. Therefore, clean them before removal or installation and make sure no foreign objects access the fuel pipe and the connectors.

2. Finish the preparation work before maintenance (see Preparation for Maintenance)
3. Loosen negative battery cable
4. Disassemble the second-row seats (see part S, Seat, Removal/Installation of the Second-row Seats)
5. Partially uncover the carpet
6. Remove the fuel pump gland.
7. Remove the fuel pipe on the fuel pump assembly and the assembly itself.
8. Extract fuel from fuel tank
9. Remove with sequence shown in the figure
10. Installation is in the reverse order as of removal

1	Fuel evaporation tube
2	Fuel delivery pipe
3	Fuel pump
4	Vent hose
5	Fuel-filler hose
6	Fuel tank tie
7	Insulation board of fuel tank
8	Fuel tank
9	Fuel-filler tube
10	Fuel-filler tube cap

Fuel Tank Inspection

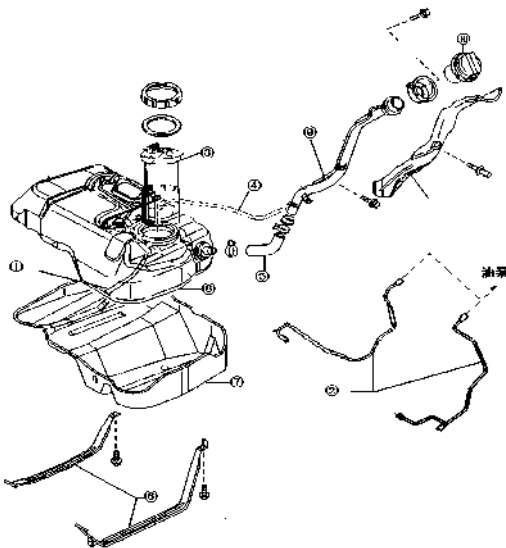
Attention

I This inspection is mainly for the double-way air breather integrated in the fuel tank.

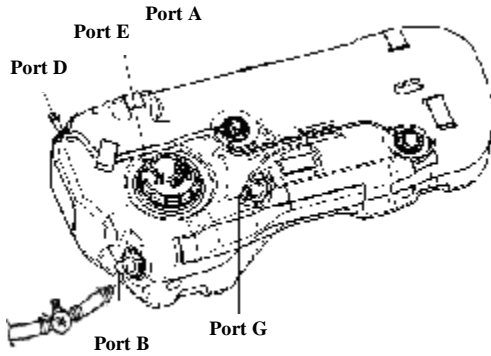
1. Remove fuel tank. (Refer to Fuel Tank Removal/Installation.)
2. Connect SST (49V014 001) to air compressor.
3. Plug up port A and E on the fuel pump assembly.
4. Connect the other end of SST (49V014 001) to port B with port C plugged.
5. Place fuel tank on level stand.
6. Apply pressure to +3.5-4.5kpa and inspect whether there is airflow from port D.

I If there is no airflow, replace fuel pump. (Refer to Fuel pump Removal / Installation)

I If there is airflow, connect SST to port D with port A/E/C plugged.



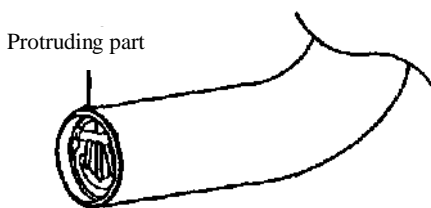
1. Park the car on flat ground



7. Apply pressure to +2.0kpa (15mmHg, 0.5inHg), inspect whether there is airflow from port B.
 - ⓘ **If there is no airflow, replace fuel pump. (Refer to Fuel Pump Removal /Installation.)**
 - ⓘ **If there is airflow, connect SST to port B and turn the fuel tank upside down.**
8. Apply pressure to +15kpa and inspect the airflow from port D.
 - ⓘ **If the airflow $\geq 30\text{ml/min}$, replace fuel pump. (Refer to Fuel Pump Removal /Installation.)**

Check Valve Inspection

1. Remove fuel-filler tube. (Refer to Fuel Tank Removal /Installation)
2. Make sure that the protruding on the check valve is aligned with notch on fuel-filler tube.
 - ⓘ **If not, remove the check valve and then reinstall with protruding aligned with the notch.**



3. Make sure that the check valve is closed when picked up.
 - ⓘ **If not, replace the check valve. (Refer to Fuel Tank Removal /Installation)**
4. Make sure that the check valve open under its own weight.
 - ⓘ **If not, replace the check valve. (Refer to Fuel Tank Removal /Installation)**

Inspection of Fuel Line Pressure

Warning

- ⓘ **Fuel spill and leakage are dangerous for it can be easily ignited resulting in personal injury or property damages. Furthermore, it can also irritate skin and eyes.**

Caution

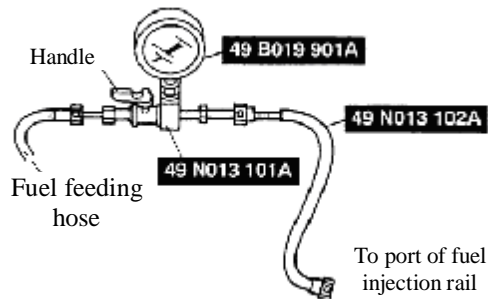
- ⓘ **If fuel pipe and quick release connectors are not cleaned before removal and installation, they will be damaged during removal or installation. Therefore, clean them before removal or installation and make sure no foreign objects access the fuel pipe and the connectors.**

Attention:

- ⓘ **Perform the following test only when necessary.**
 1. Complete "Preparation for Maintenance". (Refer to Preparation for Maintenance)
 2. Disconnect negative battery cable.

Caution

- ⓘ **To avoid damage to quick release connector or fuel leakage, perform the following procedure according to the "Fuel Tank Removal Instruction". (Refer to Fuel Tank Removal/Installation, Fuel Tank Removal Instruction.)**
 3. Remove the fuel feeding hose from the injection rail.
 4. Connect the SST quick release connector with the feeding port of fuel injection rails and fit fuel feeding hose into SST port.

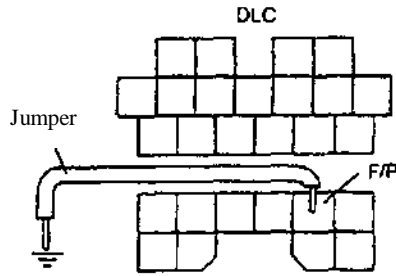


5. Connect negative battery cable.

Caution

- ⓘ **Connecting to wrong pole may cause malfunction. Carefully connect to the specified pole.**

6. DLC terminal F/P and car body (GND ground) are short connected by jumper.



7. Turn ignition switch “ON” to operate the fuel pump. Measure maximum pressure of fuel line.

Standard:

380~420kpa (3.9~4.1kgf/cm²)

8. Turn off ignition switch and disconnect jumper.

If the pressure is higher than the standard, check the pressure regulating valve.

If the pressure is lower than the standard, check the pressure regulating valve by displacement method. If the abnormal still exist, replace the whole fuel pump.

9. Disconnect SST.

Caution

1. To avoid damage to quick release connector or fuel leakage, perform the following procedure according to “Fuel Tank Removal Instruction”. (Refer to Fuel Tank Removal/Installation, Fuel Tank Removal Instruction.)

10. Connect the fuel feeding hose with the injection rail.

11. Complete inspection after maintenance”. (Refer to Inspection after Maintenance)

Fuel Pump Assembly Removal/Installation

1. Remove and install the fuel pump assembly. (Refer to Fuel Tank Removal/Installation)

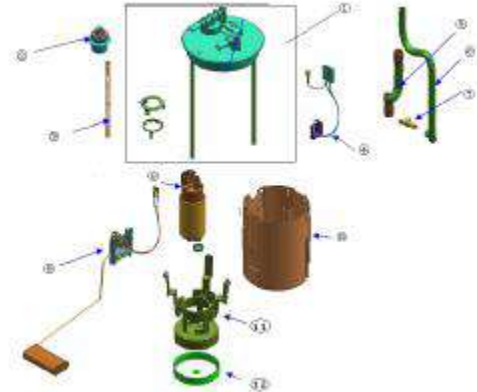
Fuel pump Disassembly/Assembly

Warning:

1. Fuel spill and leakage are dangerous for it can be ignited resulting in serious injuries or death and damage. To avoid this, be sure not to damage the sealing surface of the fuel pump assembly when disassembling and assembling.

1. Disassemble with sequence indicated in the figure.

2. Assemble in reversed order of disassembly.



1	Flange Unit
2	Pressure Regulating Valve
3	spring
4	Harness
5	Corrugated Pipe
6	Scavenge Pipe
7	Injection Pump
8	Fuel pump
9	Fuel Level Sensor
10	Fuel Reservoir
11	Bracket
12	Prefilter

Inspection of Fuel Pump Assembly

Simulation Test

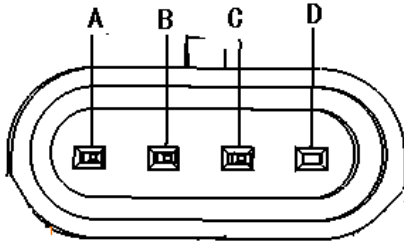
1. Carry out the inspection of fuel pump operation. (Refer to Troubleshooting, Inspection of Engine Control System Operation, Fuel Pump Operation Inspection)
2. If it is not as specified, perform the further inspection for the fuel pump.

Continuity Inspection

Attention

1. Perform the following test only when necessary.
3. Disconnect negative battery cable.
4. Remove the second-row seat. (Refer to Seat, Second-Row Seat Removal/Installation)

5. Partially uncover the carpet.
 6. Remove cover of service hole.
 7. Release connector of fuel pump assy.
 8. Inspect continuity between terminals B and D of fuel pump connector.
- ⓘ If the continuity is good but the Simulation Test is failed, inspect for Circuit Open/Short.
- ⓘ If open, replace the fuel pump body.

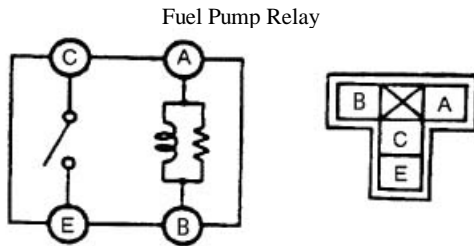


Open/Short Circuit Inspection

1. Inspect for an open or short circuit in the following wiring harnesses.
- ⓘ **If there is open or short circuit, repair or replace wiring harnesses.**

Open circuit

- ⓘ **GND circuit (between connector D of fuel pump and vehicle body GND)**
- ⓘ **Power circuit (fuel pump relay connector terminal E and fuel pump assembly connector terminal B through common connector)**



Short Circuit

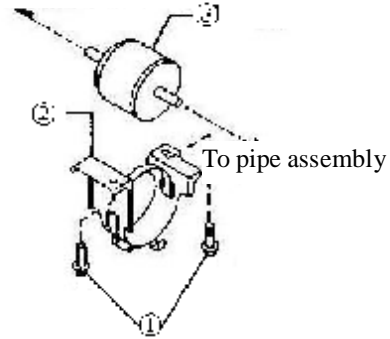
- A. **Circuit between fuel pump assembly connector B and terminal E between connectors of fuel pump relay, through common connectors is short circuit to ground (GND).**
2. Reconnect the fuel pump assembly connector.
3. Install cover of service hole.

4. Refit carpet.
5. Install second-row seat. (Refer to Second-Row Seat Removal/ Installation)
6. Reconnect negative battery cable.

Removal/Installation of Fuel filter

1. Remove with sequence shown in the figure
2. Installation is in the reverse order as of removal.

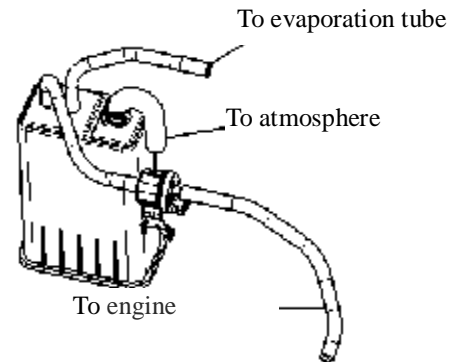
To fuel-filler tube



1	Bolt
2	Fuel filter bracket
3	Fuel filter assembly

Carbon Canister Inspection

1. Remove carbon canister.
 2. Block both side of air port and side interface of carbon canister solenoid valve.
 3. Blow air into the interface through which carbon canister can access the fuel tank and verify that there is no air leakage.
- ⓘ **If any, replace carbon canister.**



Carbon Canister Solenoid Valve Inspection

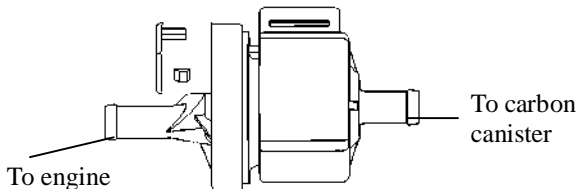
Simulation Test

1. Inspect carbon canister solenoid valve. (Refer to Troubleshooting, Inspection of Engine Control System, Inspection of Carbon Canister Solenoid Valve)
- 1 If it is not as specified, perform further inspection for the carbon canister solenoid valve.

Airflow Inspection

Attention:

- 1 Perform the following test only when necessary.
1. Disconnect negative battery cable.
2. Remove carbon canister solenoid valve.
3. Inspect airflow of carbon canister solenoid valve under the following conditions.
- 1 If normal, inspect for open/short circuit, improper layout of vacuum hose, deformation or leakage.
- 1 If abnormal, replace carbon canister solenoid valve.



Open/Short Circuit Inspection

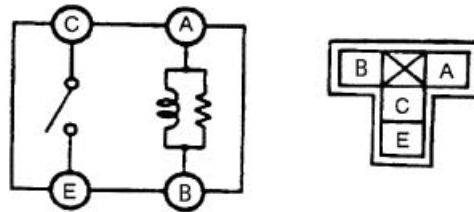
1. Inspect for any open or short circuit in the following wiring harnesses.

1 If any, repair or replace relevant wiring harnesses.

Open Circuit

- 1 GND circuit (between connector terminal 1 of carbon canister solenoid valve and ECU connector terminal 46 through common connector).
- 1 Power circuit (between connector terminal 2 of carbon canister solenoid valve and connector terminal E of main relay through common connector).

Main relay



Short Circuit

- 1 Circuit between carbon canister solenoid valve connector terminal 2 and ECU connector terminal 46 through common connector.
2. Connect carbon canister solenoid valve.
3. Reconnect negative battery cable.

Exhaust System

Inspection of Exhaust System

1. Start engine to inspect leakage of exhaust gas pipeline

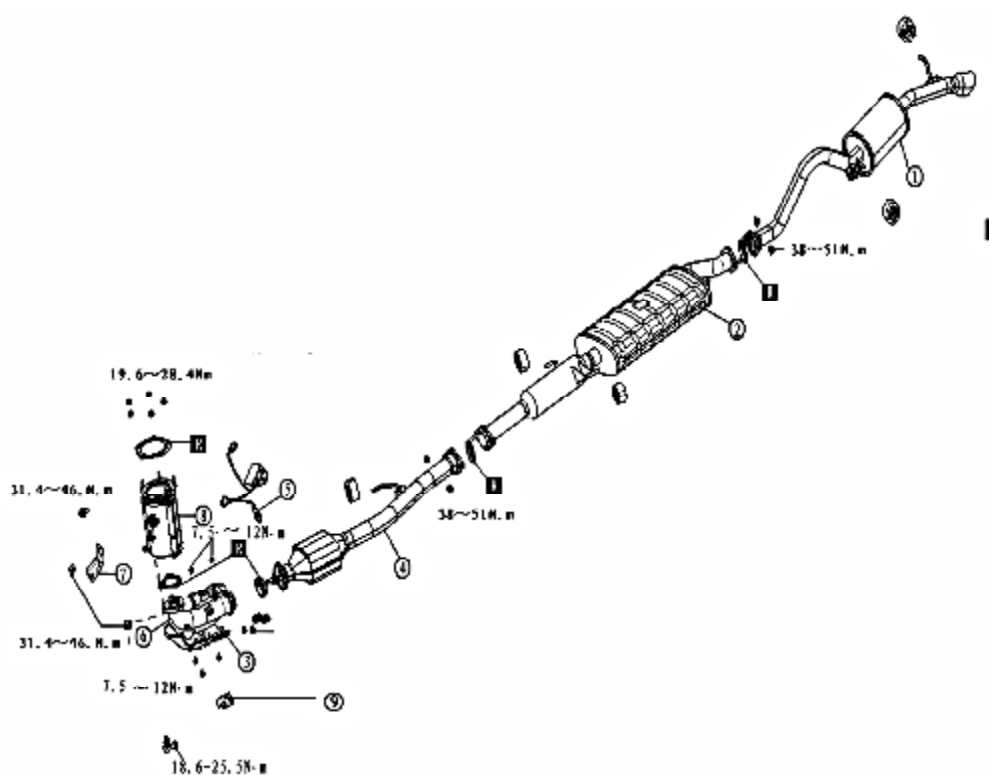
I If there is any leakage, check and replace as required.

Exhaust System Removal/Installation

Warning

I As hot engine and exhaust system components may cause scalding, any removal operation should be conducted with engine cooled down.

1. Disconnect negative battery cable.
2. Remove system with sequence indicated in the figure.
3. Install in reversed order of removal.



1	Auxiliary silencer assembly
2	Main silencer assembly
3	Front exhaust pipe protector assembly
4	Rear three-way catalytic converter assembly
5	Oxygen sensor
6	Front exhaust pipe assembly
7	Front hanger
8	Front three-way catalytic converter
9	Rear hanger