

EFI SYSTEM PRECAUTION

SF0N1-07

1. BEFORE WORKING ON FUEL SYSTEM, DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY

HINT:

Any diagnostic trouble code retained by the engine ECU will be erased when the battery negative (–) terminal cable is removed from the battery.

Therefore, if necessary, read the diagnostic trouble code(s) before removing the negative (–) terminal cable from the battery.

2. DO NOT SMOKE OR WORK NEAR AN OPEN FLAME WHEN WORKING ON FUEL SYSTEM

3. KEEP GASOLINE AWAY FROM RUBBER OR LEATHER PARTS

4. MAINTENANCE PRECAUTIONS

- (a) Precaution when the connecting gauge.
Use battery as the power source for the timing light, etc.
- (b) In the event of engine misfire, these precautions should be taken.
 - (1) Check proper connection of battery terminals, etc.
 - (2) Handle high-tension cords carefully.
 - (3) After repair work, check that the ignition coil terminals and all other ignition system lines are reconnected securely.
 - (4) When cleaning the engine compartment, be especially careful to protect the electrical system from water.
- (c) Precautions when the handling oxygen sensors.
 - (1) Do not allow oxygen sensor to drop or hit against an object.
 - (2) Do not allow the sensor to come into contact with water.

5. IF VEHICLE IS EQUIPPED WITH MOBILE RADIO SYSTEM (HAM, CB, ETC.)

If the vehicle is equipped with a mobile communication system, refer to the precaution in the IN section.

6. AIR INDUCTION SYSTEM

- (a) Separation of the engine oil dipstick, oil filler cap, PCV hose, etc. may cause the engine to run out of tune.
- (b) Disconnection, looseness or cracks in the parts of the air induction system between the throttle body and cylinder head will cause air suction and cause the engine to run out of tune.

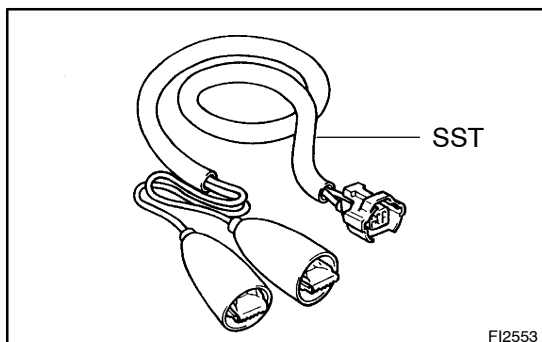
7. ELECTRONIC CONTROL SYSTEM

- (a) Before removing EFI wiring connectors, terminals, etc., first disconnect the power by either turning the ignition switch OFF or disconnecting the negative (–) terminal cable from the battery.

HINT:

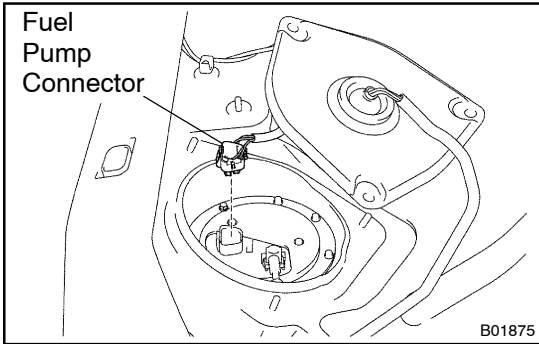
Always check the diagnostic trouble code before disconnecting the negative (–) terminal cable from the battery.

- (b) When installing the battery, be especially careful not to incorrectly connect the positive (+) and negative (–) cable terminals.
- (c) Do not permit parts to receive a severe impact during removal or installation. Handle all EFI parts carefully, especially the engine ECU.
- (d) Do not be careless during troubleshooting as there are numerous transistor circuits and even slight terminal contact can further troubles.
- (e) Do not open the ECU cover.
- (f) When inspecting during rainy weather, take care to prevent entry of water. Also, when washing the engine compartment, prevent water from getting on the EFI parts and wiring connectors.
- (g) Parts should be replaced as an assembly.
- (h) Care is required when pulling out and inserting wiring connectors.
 - (1) Release the lock and pull out the connector, pulling on the connectors.
 - (2) Fully insert the connector and check that it is locked.
- (i) When inspecting a connector with a volt/ohmmeter.
 - (1) Carefully take out the water-proofing rubber if it is a water-proof type connector.
 - (2) Insert the test probe into the connector from wiring side when checking the continuity, amperage or voltage.
 - (3) Do not apply unnecessary force to the terminal.
 - (4) After checking, install the water-proofing rubber on the connector securely.



- (5) Use SST for inspection or test of the injector or its wiring connector.

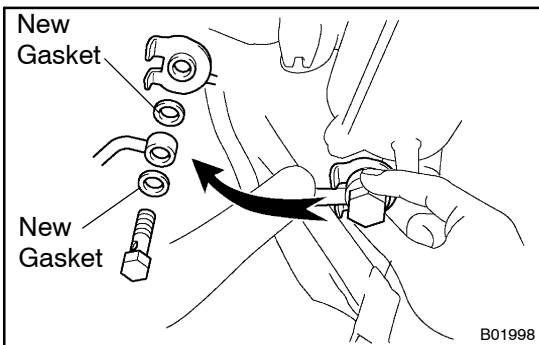
SST 09842-30070



8. FUEL SYSTEM

(a) When disconnecting the high pressure fuel line, a large amount of gasoline will spill out, so observe these procedures:

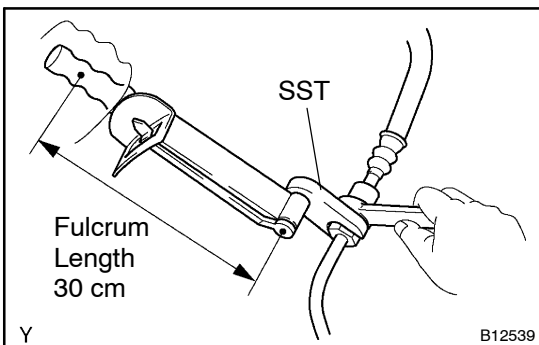
- (1) Disconnect the fuel pump connector.
- (2) Start the engine. After the engine has stopped on its own, turn the ignition switch OFF.
- (3) Put a container under the connection.
- (4) Slowly loosen the connection.
- (5) Disconnect the connection.
- (6) Plug the connection with a rubber plug.
- (7) Reconnect the fuel pump connector.



(b) When connecting the flare nut or union bolt on the high pressure pipe union, observe these procedures:

- (1) Union Bolt Type:
Always use a new gasket.
- (2) Union Bolt Type:
Tighten the union bolt by hand.
- (3) Union Bolt Type:
Tighten the union bolt to the specified torque.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



- (4) Flare Nut Type:
Apply a light coat of engine oil to the flare and tighten the flare nut by hand.
- (5) Flare Nut Type:
Using SST, tighten the flare nut to the specified torque.

SST 09023-38400

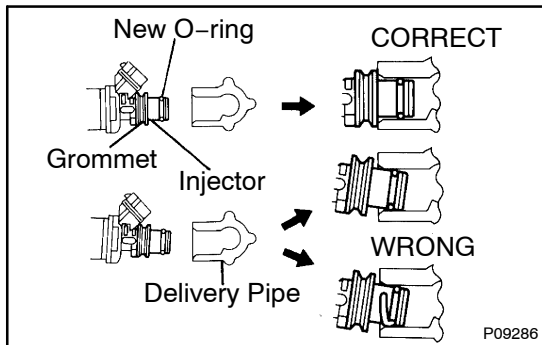
NOTICE:

Do not rotate the fuel pipe, when tightening the flare nut.

**Torque: 30 N·m (310 kgf·cm, 22 ft·lbf) for using SST
38 N·m (387 kgf·cm, 28 ft·lbf)**

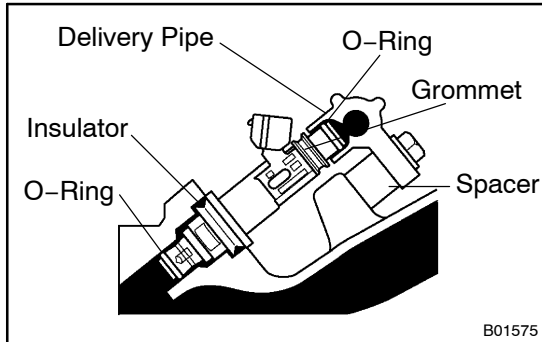
HINT:

Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).



(c) Observe these precautions when removing and installing the injectors.

- (1) Never reuse the O-ring.
- (2) When placing a new O-ring on the injector, take care not to damage it in any way.
- (3) Coat a new O-ring with spindle oil or gasoline before installing—never use engine, gear or brake oil.

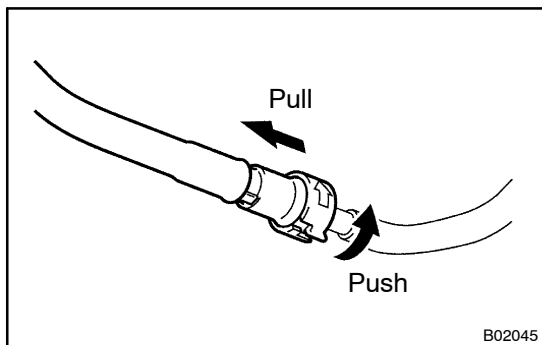


(d) Install the injector to the delivery pipe and intake manifold as shown in the illustration.

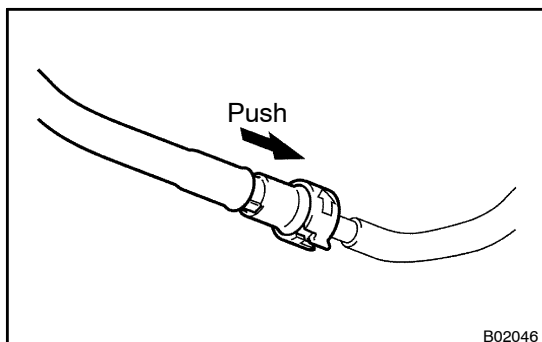
Before installing the injector, must apply spindle oil or gasoline on the place where a delivery pipe or an intake manifold touches an O-ring of the injector.

(e) Observe these precautions when disconnecting the fuel tube connector (quick type):

- (1) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.
- (2) Be sure to disconnect with hands.

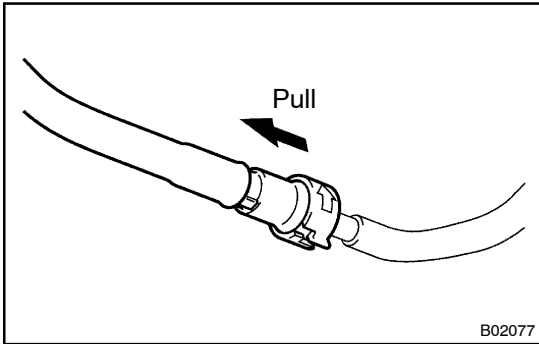


- (3) When the connector and the pipe are stuck, push and pull the connector to free to disconnect and pull it out. Do not use any tool at this time.
- (4) Inspect if there is any dirt or the likes on the seal surface of the disconnected pipe and clean it away.
- (5) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

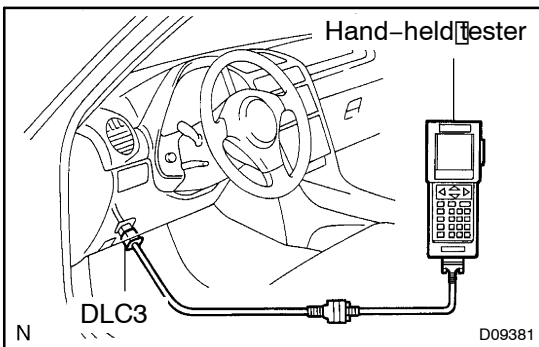


(f) Observe these precautions when connecting the fuel tube connector (quick type):

- (1) Check if there is any damage or foreign objects on the connected part of the pipe.
- (2) Match the axis of the connector with axis of the pipe, and push in the connector until the connector makes a "click" sound. In case the connections is tight, apply little amount of new engine oil on the tip of the pipe.



- (3) After having finished the connection, check if the pipe and the connector are securely connected by pulling them.
- (4) Check if there is any fuel leakage.
- (g) Observe these precautions when handling nylon tube.
 - (1) Pay attention not to turn the connected part of the nylon tube and quick connector with force when connecting them.
 - (2) Pay attention not to kink the nylon tube.
 - (3) Do not remove the EPDM protector on the outside of the nylon tube.
 - (4) Must not close the piping with the nylon tube by bending it.



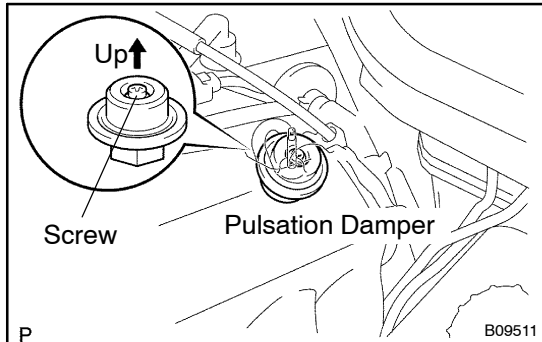
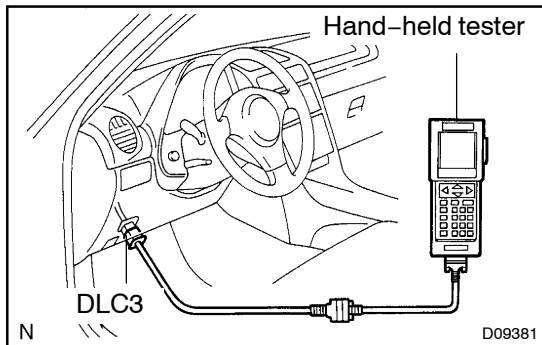
- (h) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.
 - (1) Connect a hand-held tester to the DLC3.
 - (2) Turn the ignition switch ON and push the hand-held tester main switch ON.

NOTICE:**Do not start the engine.**

- (3) Select the ACTIVE TEST mode on the hand-held tester.
- (4) Please refer to the hand-held tester operator's manual for further details.
- (5) If you have no hand-held tester, connect the positive (+) and negative (-) leads from the battery to the fuel pump connector (See page FI-6).
- (6) Check that there are no leaks from any part of the fuel system.
- (7) Turn the ignition switch OFF.
- (8) Disconnect the hand-held tester from the DLC3.
- (9) Start the engine.

NOTICE:**Keep cranking the engine until the air is removed from the fuel line.**

- (10) After the engine starts, check again that there are no fuel leaks.



FUEL PUMP

ON-VEHICLE INSPECTION

SF0N2-09

1. CHECK FUEL PUMP OPERATION

- Connect a hand-held tester to the DLC3.
- Turn the ignition switch ON and hand-held tester main switch ON.

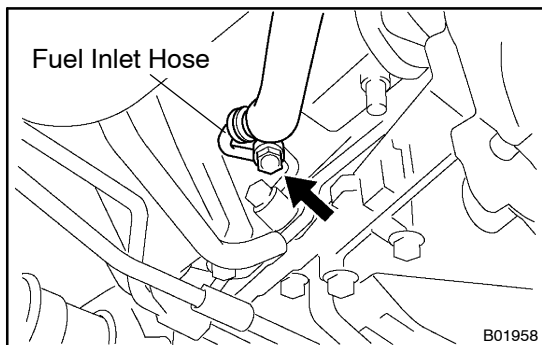
NOTICE:

Do not start the engine.

- Select the ACTIVE TEST mode on the hand-held tester.
- Please refer to the hand-held tester operator's manual for further details.
- If you have no hand-held tester, connect the positive (+) and negative (-) leads from the battery to the fuel pump connector. (See step 3)
- Check that the pulsation damper screw rises up when the fuel pump operates.

If there is no pressure, check the fusible link, fuses, EFI main relay, fuel pump ECU, fuel pump, ECM and wiring connections.

- Turn the ignition switch OFF.
- Disconnect the hand-held tester from the DLC3.

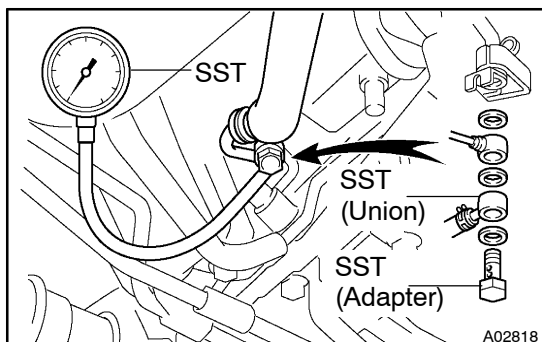


2. CHECK FUEL PRESSURE

- Check the battery positive voltage is above 12 V.
- Disconnect the negative (-) terminal cable from the battery.
- Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel pipe support.

NOTICE:

- Put a shop towel under the fuel pipe support.**
- Slowly loosen the union bolt.**

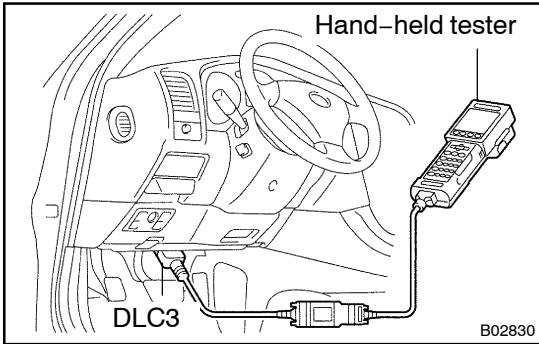


- Install the fuel inlet hose and SST (pressure gauge) to the fuel pipe support with the 3 gaskets and SST (union and adapter).

SST 09268-45014 (09268-41190, 90405-06167)

Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

- Wipe off any splattered gasoline.



- (f) Connect a hand-held tester to the DLC3.
(See step 1 in check fuel pump operation (a) to (e))
- (g) Measure the fuel pressure.

Fuel pressure:**304 – 343 kPa (3.1 – 3.5 kgf/cm², 44 – 50 psi)**

If pressure is high, replace the fuel pressure regulator.

If pressure is low, check these parts:

- Fuel hoses and connections
- Fuel pump
- Fuel filter
- Fuel pressure regulator

- (h) Disconnect the hand-held tester from the DLC3.
- (i) Start the engine.
- (j) Measure the fuel pressure at idle.

Fuel pressure:**304 – 343 kPa (3.1 – 3.5 kgf/cm², 44 – 50 psi)**

- (k) Stop the engine.

- (l) Check that the fuel pressure remains as specified for 5 minutes after the engine has stopped.

Fuel pressure: 147 kPa (1.5 kgf/cm², 21 psi) or more

If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

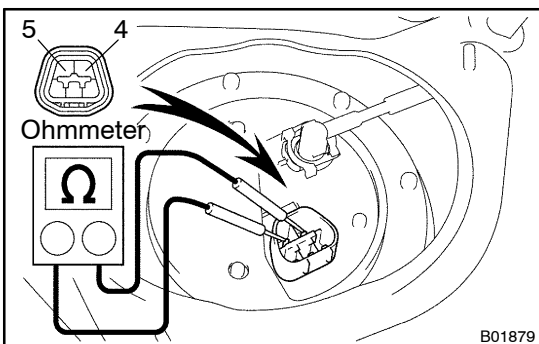
- (m) After checking fuel pressure, disconnect the negative (–) terminal cable from the battery and carefully remove SST to prevent gasoline from splashing.

SST 09268–45014

- (n) Reconnect the fuel inlet hose to the fuel pipe support with 2 new gaskets and the union bolt.

Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

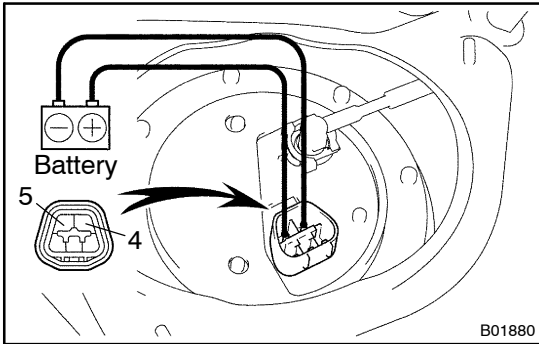
- (o) Reconnect the negative (–) terminal cable to the battery.
- (p) Check for fuel leaks.

**3. INSPECT FUEL PUMP**

- (a) Remove the rear seat cushion.
- (b) Remove the 3 cap nuts and floor service hole cover.
- (c) Disconnect the fuel pump & sender gauge connector.
- (d) Using an ohmmeter, measure the resistance between terminals 4 and 5.

Resistance: 0.2 – 3.0 Ω at 20°C (68°F)

If the resistance is not as specified, replace the fuel pump.



- (e) Inspect the fuel pump operation. Connect the positive (+) lead from the battery to terminal 4 of the connector, and the negative (-) lead to terminal 5. Check that the fuel pump operates.

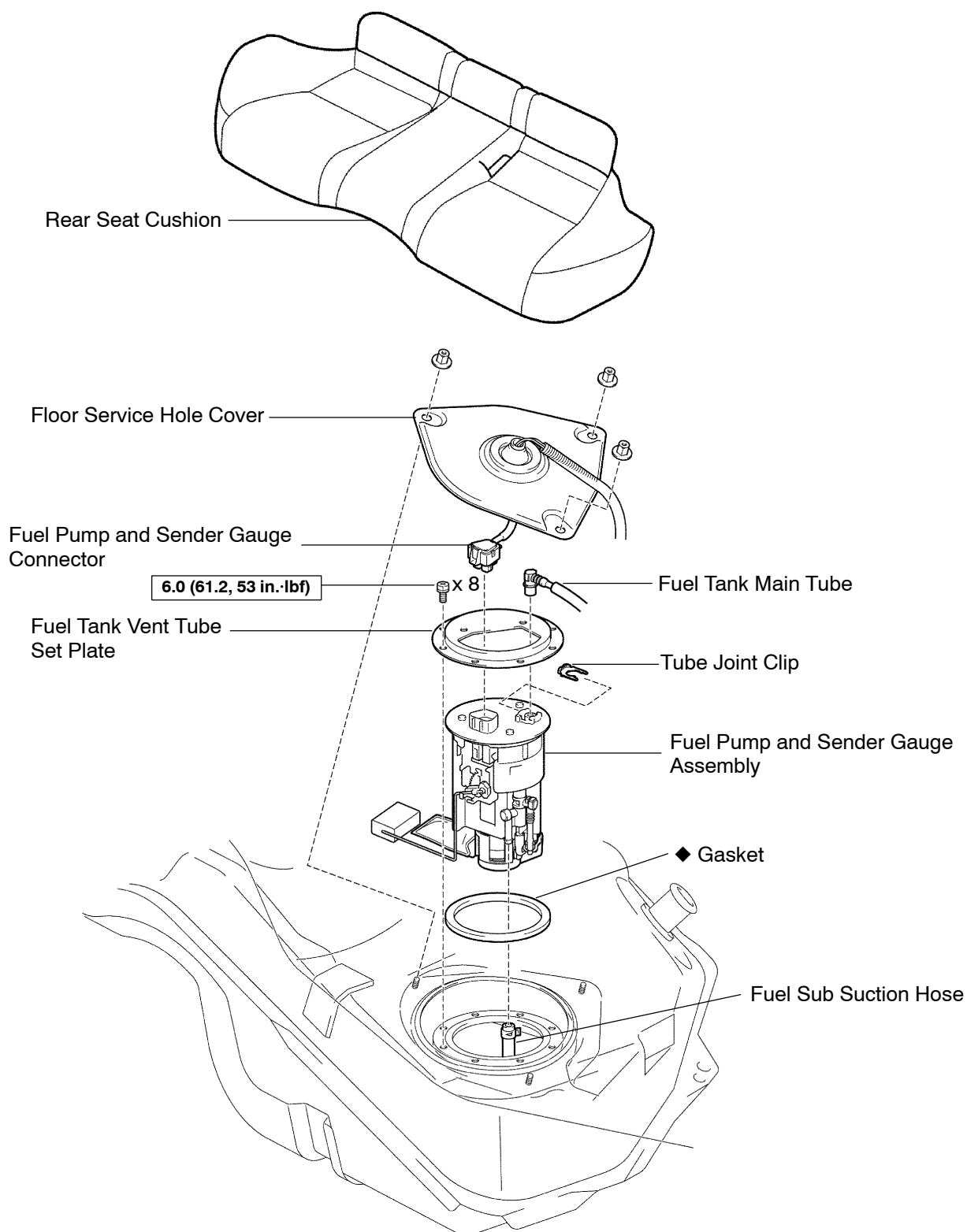
NOTICE:

- **These tests must be done quickly (within 10 seconds) to prevent the coil burning out.**
- **Keep the fuel pump as far away from the battery as possible.**
- **Always do the switching at the battery side.**

If operation is not as specified, replace the fuel pump.

- (f) Reconnect the fuel pump & sender gauge connector.
(g) Reinstall the floor service hole cover with the cap nuts.
(h) Reinstall the rear seat cushion.

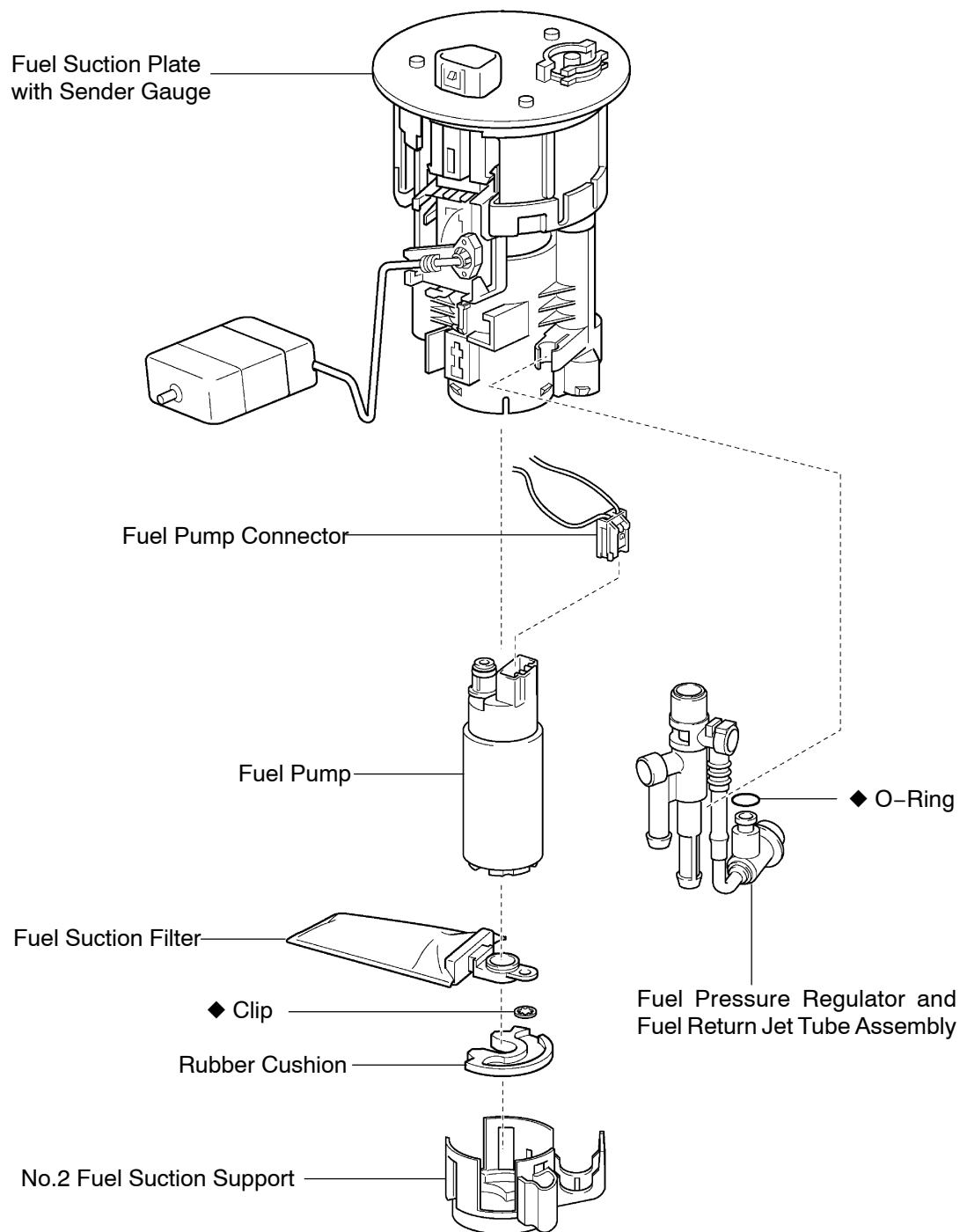
COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque

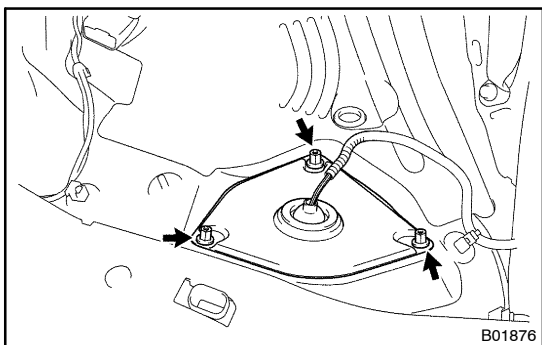
◆ Non-reusable part

B14799



◆ Non-reusable part

B10328



REMOVAL

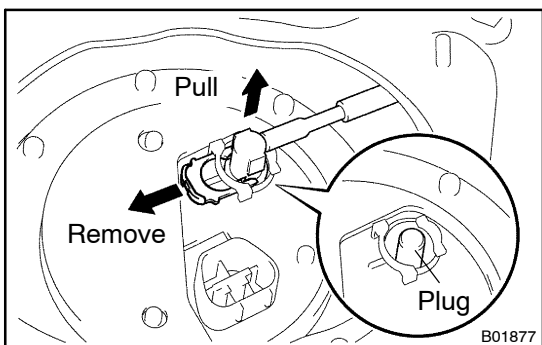
CAUTION:

Do not smoke or work near an open flame when working the fuel pump.

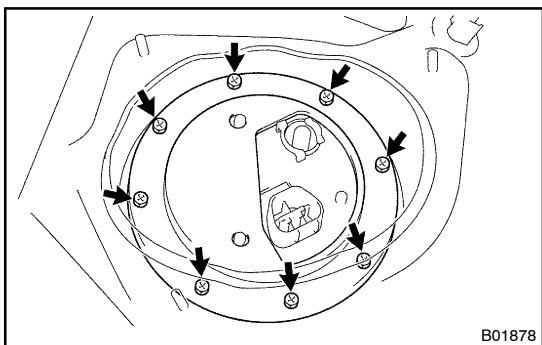
1. REMOVE REAR SEAT CUSHION
2. REMOVE FLOOR SERVICE HOLE COVER
Remove the 3 cap nuts and service hole cover.
3. DISCONNECT FUEL PUMP AND SENDER GAUGE CONNECTOR
4. DISCONNECT FUEL TANK MAIN TUBE (FUEL TUBE CONNECTOR) FROM FUEL SECTION PLATE

CAUTION:

- Perform disconnecting operation of the fuel tube connector (quick type) after observing precaution (See page FI-1).
- As there is retained pressure in the fuel line, prevent it from splashing inside the vehicle compartment.

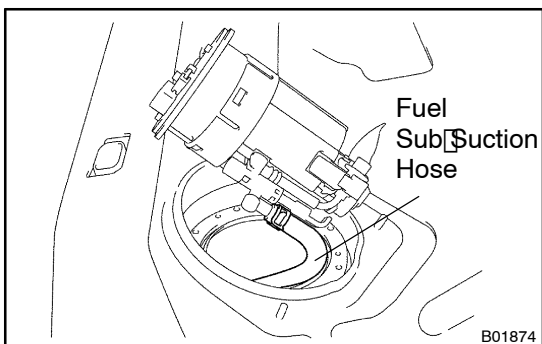


- (a) Remove the tube joint clip.
- (b) Pull out the fuel main tube.
- (c) Plug the port of the fuel suction plate with a clean rubber cap.



5. REMOVE FUEL PUMP AND SENDER GAUGE ASSEMBLY FROM FUEL TANK

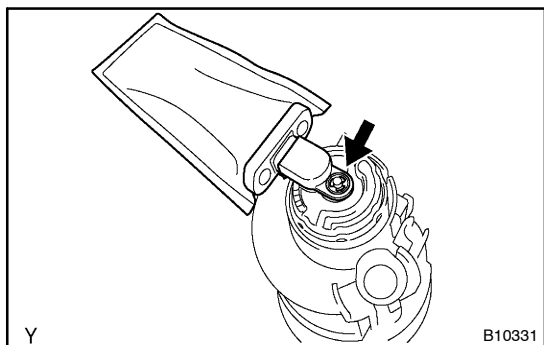
- (a) Remove the 8 bolts and fuel tank vent tube set plate.



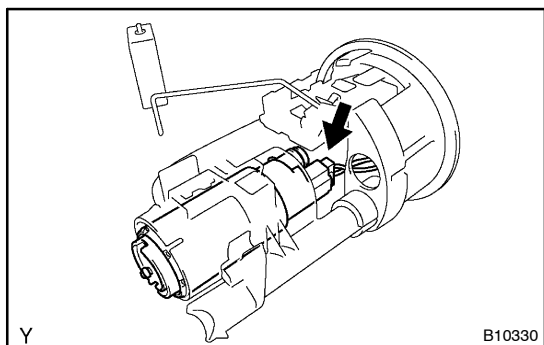
- (b) Lift up the fuel pump and sender gauge assembly, and disconnect the fuel sub suction hose from the fuel return jet tube and remove the fuel pump, sender gauge assembly and gasket.

6. REMOVE NO.2 FUEL SUCTION SUPPORT (See page FI-17)

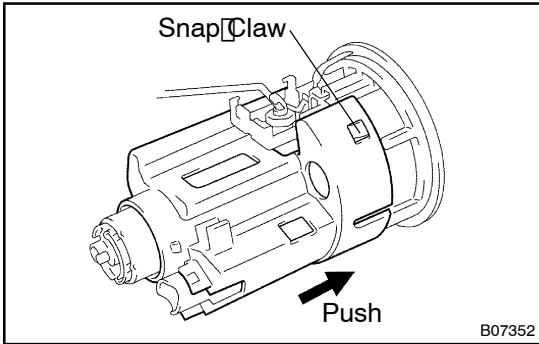
7. REMOVE FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY (See page FI-17)

**8. REMOVE FUEL SUCTION FILTER**

- (a) Remove the clip.
- (b) Pull out the suction filter.

**9. REMOVE FUEL PUMP**

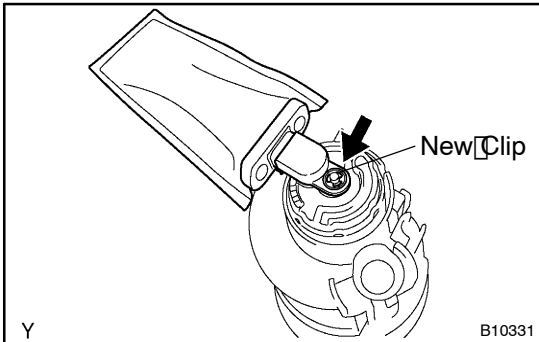
- (a) Disconnect the fuel pump connector from the fuel pump.
- (b) Pull out the fuel pump.



INSTALLATION

1. INSTALL FUEL PUMP

- Apply a light coat of gasoline to the O-ring.
- Push in the fuel pump.
- Connect the fuel pump connector.

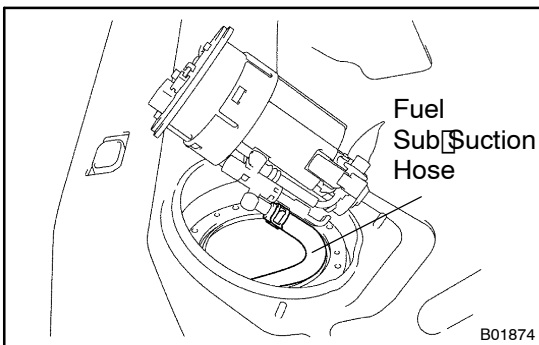


2. INSTALL FUEL SUCTION FILTER

Install the suction filter with a new clip.

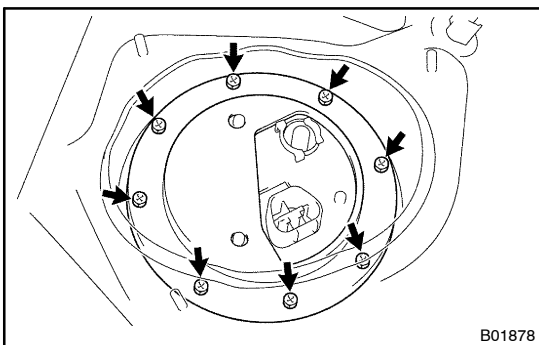
3. INSTALL FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY (See page FI-18)

4. INSTALL NO.2 FUEL SUCTION SUPPORT (See page FI-18)

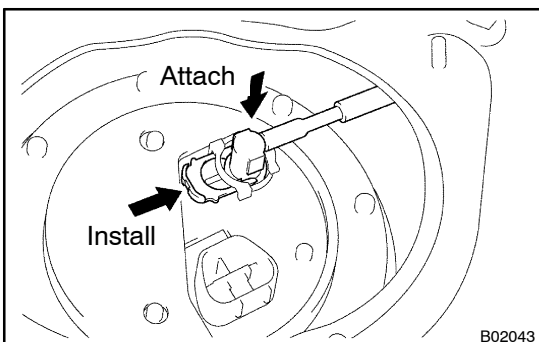


5. INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY TO FUEL TANK

- Install a new gasket to the fuel suction plate.
- Connect the fuel sub suction hose to the fuel return jet tube.
- Attach the fuel pump and sender gauge assembly to the fuel tank.



- Install the fuel tank vent tube set plate with the 8 bolts.
Torque: 6.0 N·m (61.2 kgf·cm, 53 in.·lbf)

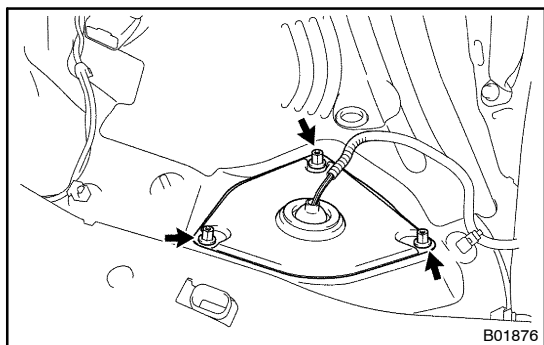


6. CONNECT FUEL TANK MAIN TUBE (FUEL TUBE CONNECTOR) TO FUEL SUCTION PLATE

- Attach the fuel tube connector to the port of the fuel suction plate.
- Install the tube joint clip.

7. CONNECT FUEL PUMP AND SENDER GAUGE CONNECTOR

8. CHECK FOR FUEL LEAKS (See page FI-1)

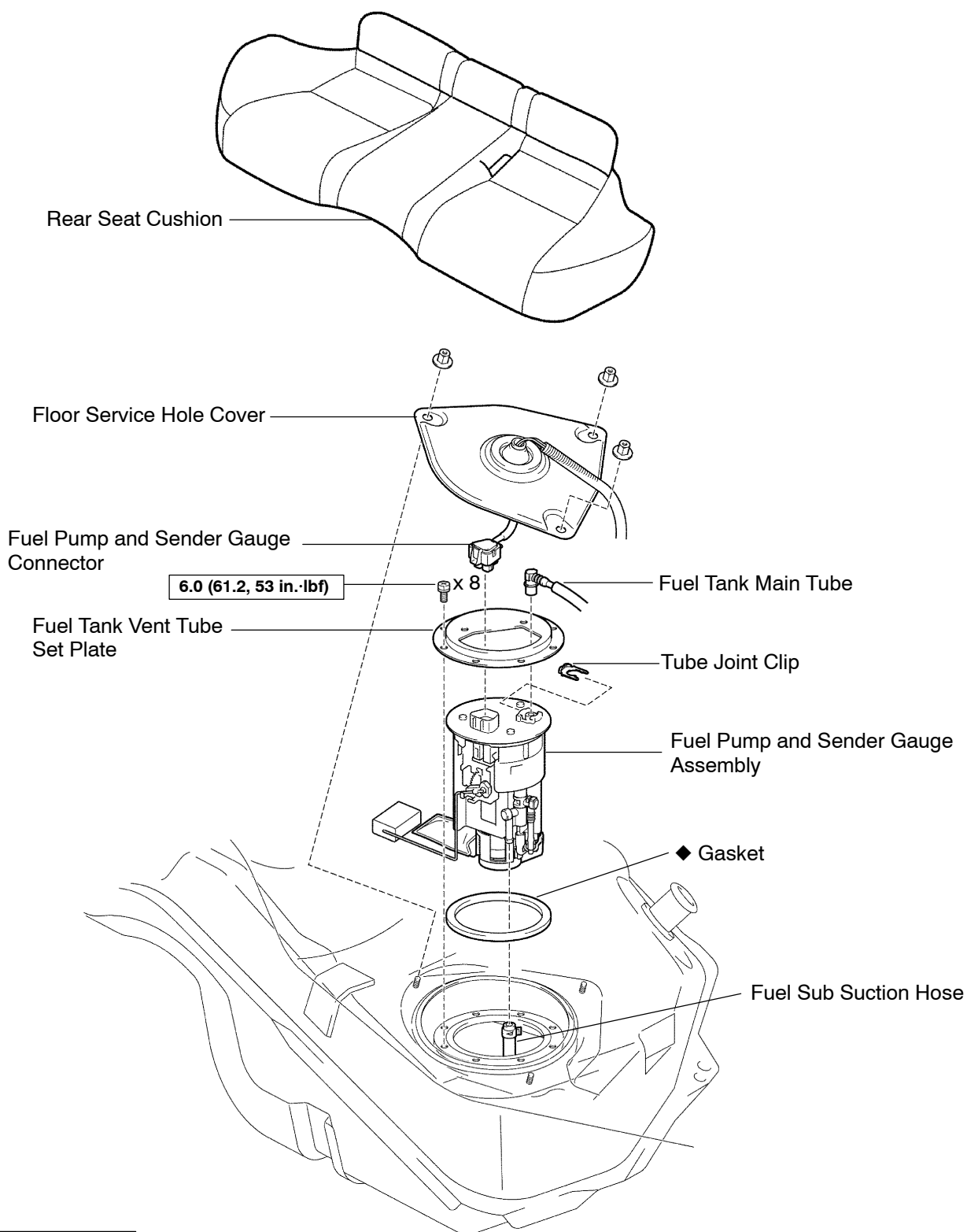
**9. INSTALL FLOOR SERVICE HOLE COVER**

Install the service hole cover with the 3 cap nuts.

10. INSTALL REAR SEAT CUSHION

FUEL PRESSURE REGULATOR COMPONENTS

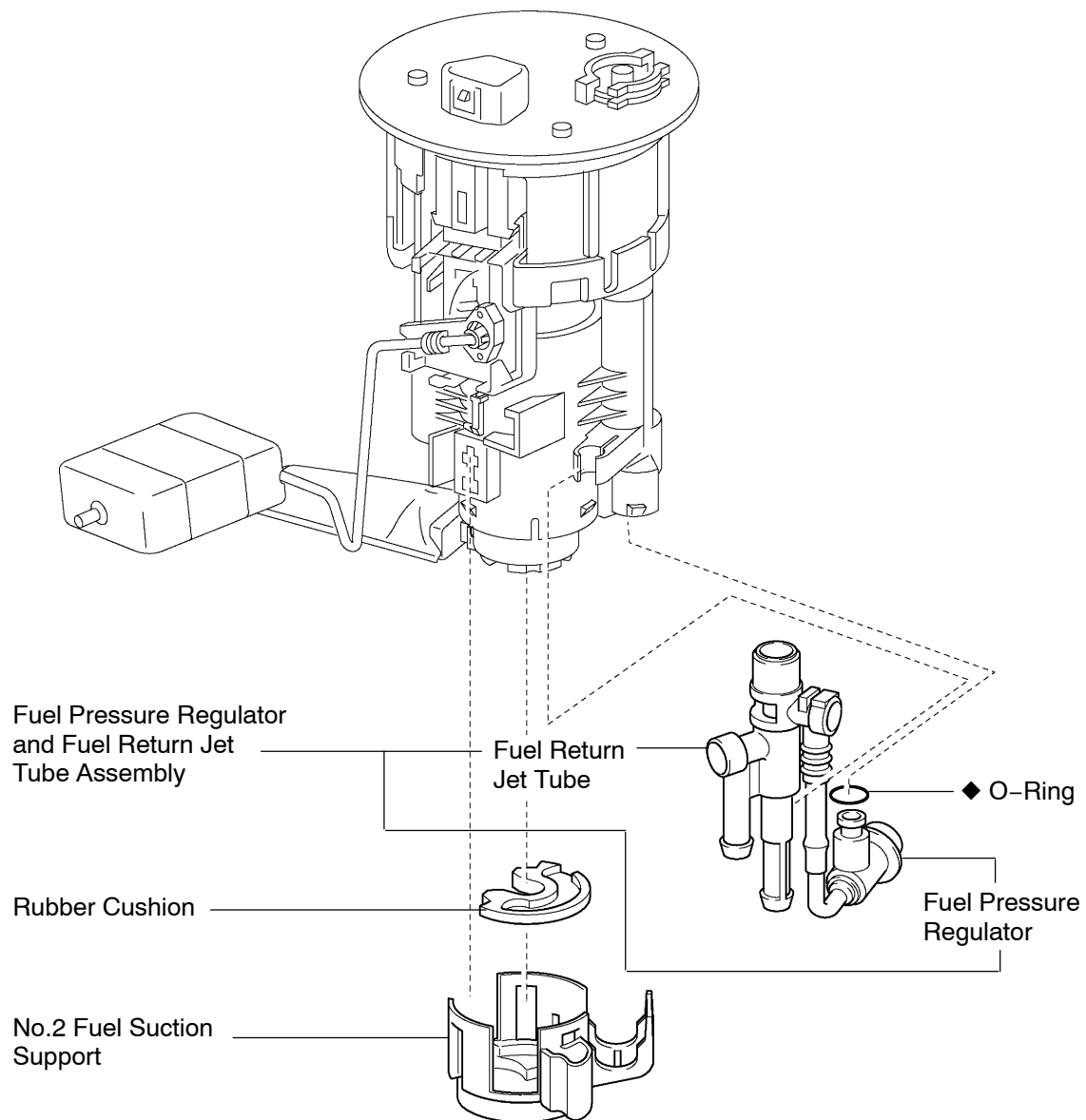
SF0N6-06



N·m (kgf·cm, ft·lbf) : Specified torque

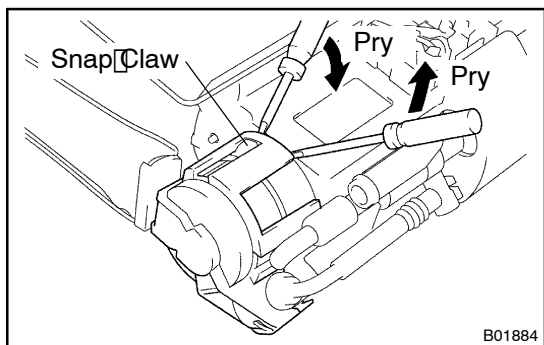
◆ Non-reusable part

B14799



REMOVAL

1. REMOVE FUEL PUMP AND SENDER GAUGE ASSEMBLY FROM FUEL TANK (See page FI-11)



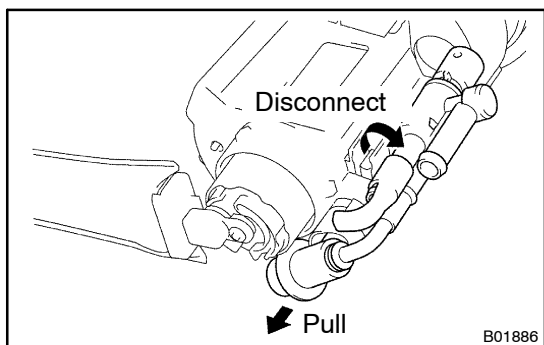
2. REMOVE NO.2 FUEL SUCTION SUPPORT

- (a) Using 2 screwdrivers, disconnect the 4 snap claws from the claw holes and remove the fuel suction support.

NOTICE:

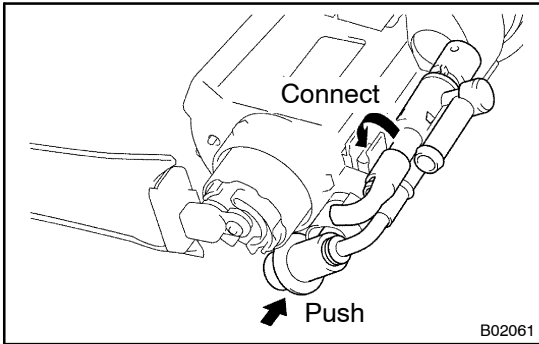
Be careful not to damage the suction supports.

- (b) Remove the rubber cushion.



3. REMOVE FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY

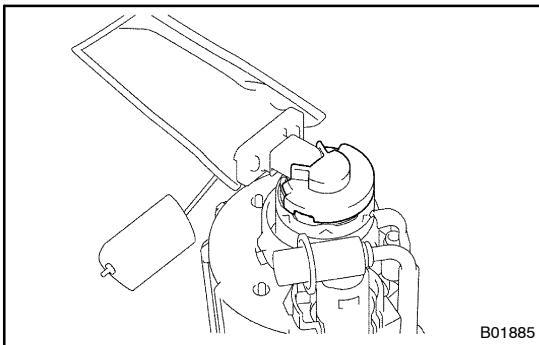
- (a) Disconnect the fuel return jet tube from the clamp of the No.2 fuel suction support.
- (b) Pull out the fuel pressure regulator from the fuel filter, and remove the fuel pressure regulator and fuel return jet tube assembly.
- (c) Remove the O-ring from the fuel pressure regulator.



INSTALLATION

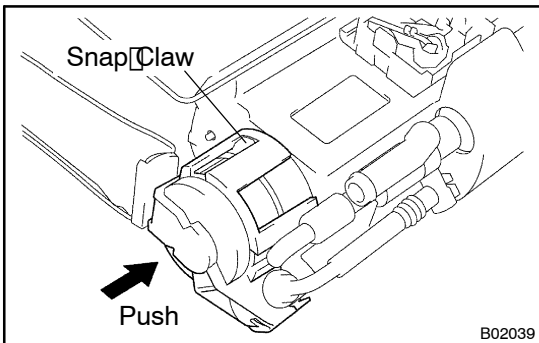
1. INSTALL FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY

- Apply a tight coat of gasoline to a new O-ring, and install it to the fuel pressure regulator.
- Push in the fuel pressure regulator to the fuel filter.
- Check that the fuel pressure regulator rotates smoothly. If it does not rotate smoothly, the O-ring may be pinched, so remove the fuel pressure regulator and perform again steps (b) and (c) above.
- Connect the fuel return jet tube to the clamp of the No.2 fuel suction support.



2. INSTALL NO.2 FUEL SUCTION SUPPORT

- Install the rubber cushion to the fuel pump.



- Push the fuel suction support and attach the 4 snap claws to the claw holes.

3. INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY TO FUEL TANK (See page FI-19)

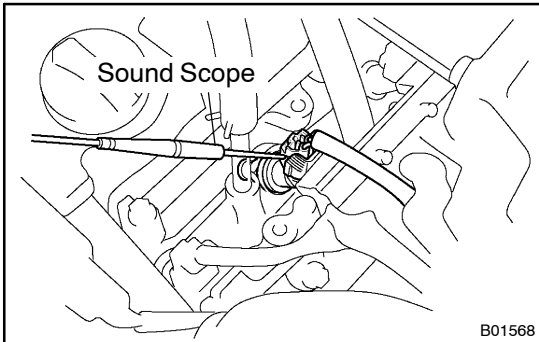
INJECTOR

ON-VEHICLE INSPECTION

SF0N9-09

1. REMOVE ENGINE COVER

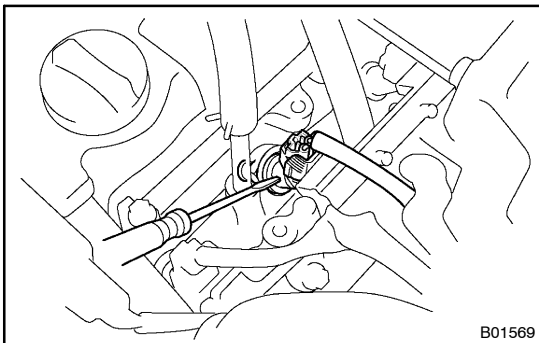
Remove 4 nuts and engine cover.



2. INSPECT INJECTOR OPERATION

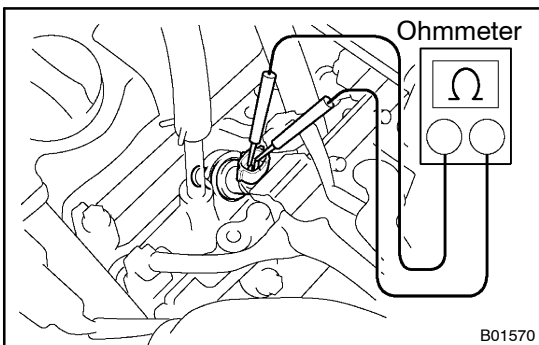
Check operation sound from each injector.

- (1) With the engine running or cranking, use a sound scope to check that there is normal operating noise in proportion to engine speed.



- (2) If you have no sound scope, you can check the injector transmission operation with a screwdriver.

If no sound or an unusual sound is heard, check the wiring connector, injector or injection signal from the ECU.



3. INSPECT INJECTOR RESISTANCE

- (a) Disconnect the injector connectors.
- (b) Using an ohmmeter, measure the resistance between the terminals.

Resistance: 13.4 – 14.2 Ω at 20°C (68°F)

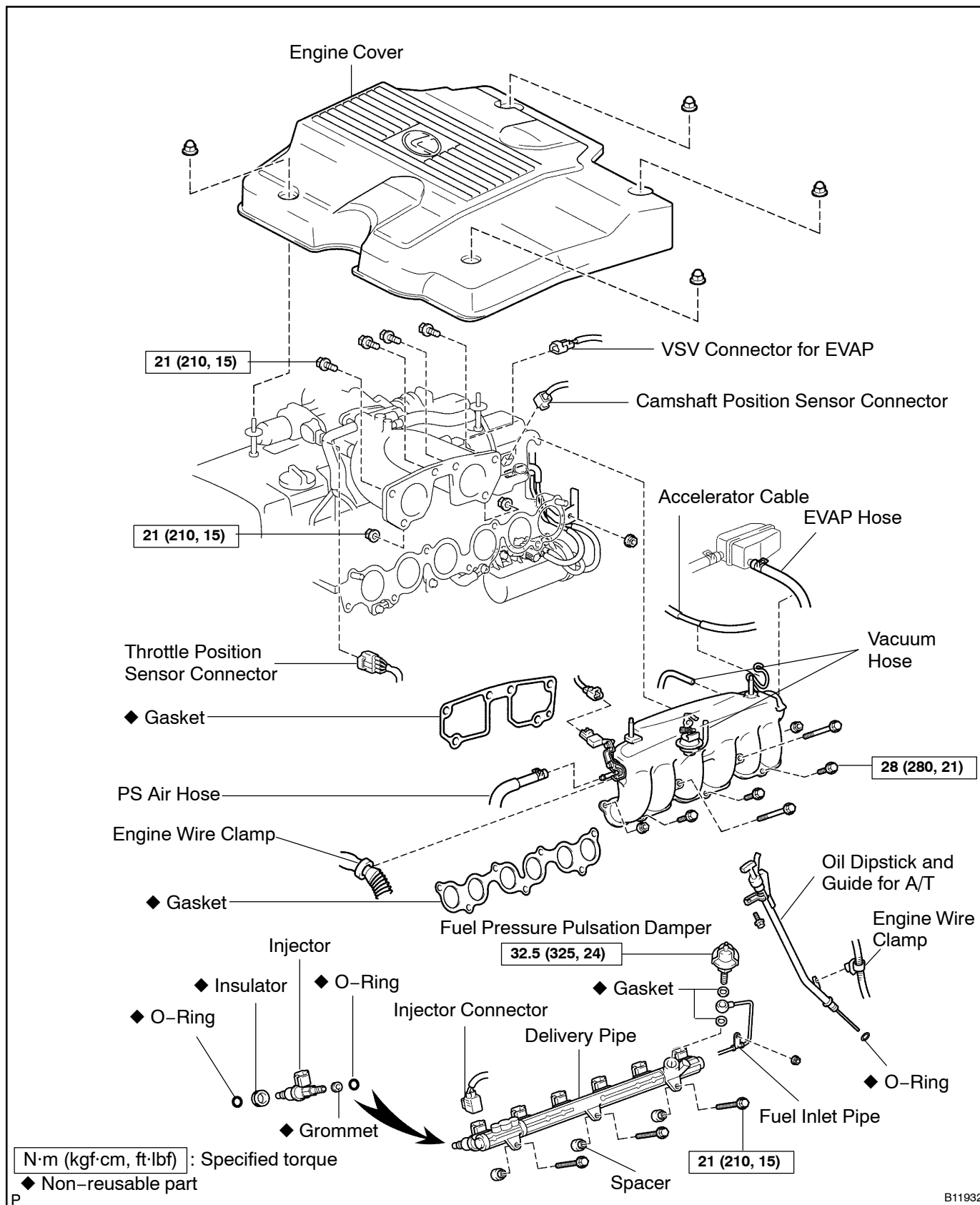
If the resistance is not as specified, replace the injector.

- (c) Reconnect the injector connectors.

4. REINSTALL ENGINE COVER

Reinstall the 4 engine cover with the 4 nuts.

COMPONENTS



B11932

REMOVAL

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.

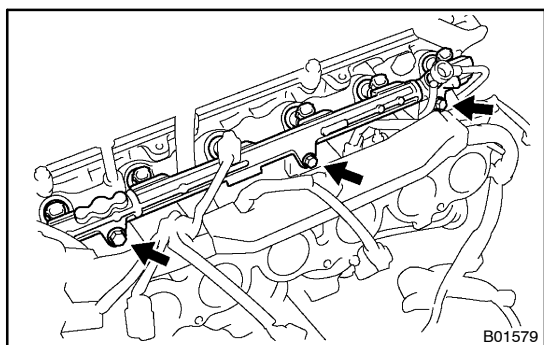
2. REMOVE AIR INTAKE CHAMBER (See page FI-46)

3. REMOVE FUEL PRESSURE PULSATION DAMPER (See page FI-26)

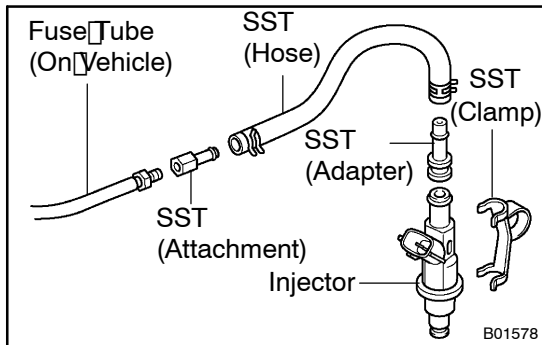
4. REMOVE DELIVERY PIPE AND INJECTORS

NOTICE:

- Be careful not to drop the injectors when removing the delivery pipe.
 - Pay attention to put any hung load on the injector to and from the side direction.
- (a) Disconnect the 6 injector connectors.
 - (b) Disconnect the camshaft position sensor connector.
 - (c) Disconnect the throttle position sensor connector.
 - (d) Disconnect the VSV connector for EVAP.
 - (e) Remove the 3 bolts and delivery pipe together with the 6 injectors.
 - (f) Pull out the 6 injectors from the delivery pipe.
 - (g) Remove the O-rings, grommet and insulator from each injector.
 - (h) Remove the 3 spacers from the intake manifold.



B01579

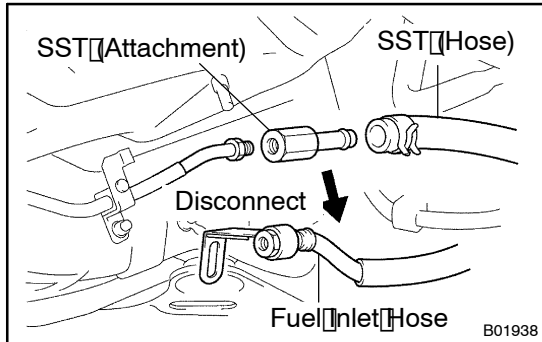


INSPECTION

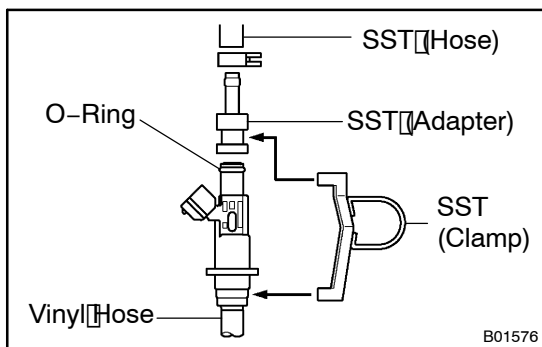
1. INSPECT INJECTOR INJECTION

CAUTION:

Keep injector clear of sparks during the test.



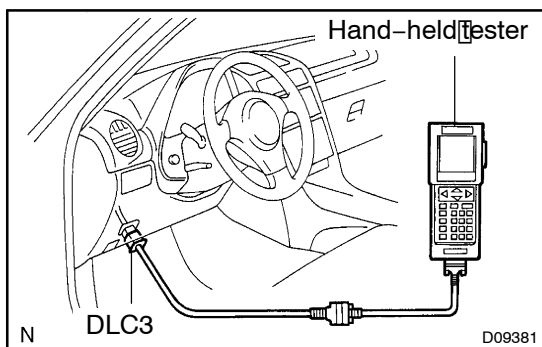
- Remove the nut, and disconnect the fuel inlet hose from the fuel main tube.
- Temporarily install SST (Attachment) to the fuel main tube.
SST 09268-41047 (09268-52011)
- Tighten the flare nut on the fuel main tube (See page FI-1).
- Connect SST (hose) to the SST (attachment).
SST 09268-41047



- Install the O-ring to the injector.
- Connect SST (hose) to the injector with SST (adapter), and hold the injector and adapter with SST (clamp).
SST 09268-41047 (09268-41110, 09268-41300)
- Put the injector into the graduated cylinder.

CAUTION:

Install a suitable vinyl hose onto the injector to prevent gasoline from splashing out.

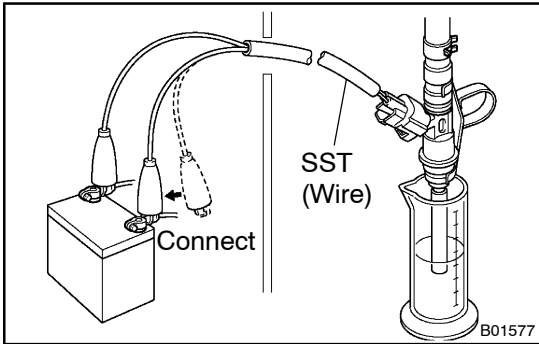


- Connect the hand-held tester to the DLC3.
- Connect the battery negative (-) terminal cable to the battery.
- Turn the ignition switch ON and hand-held tester main switch ON.

NOTICE:

Do not start the engine.

- Select the ACTIVE TEST mode on the hand-held tester.
- Please refer to the hand-held tester operator's manual for further details.
- If you have no hand-held tester, connect the positive (+) and negative (-) leads from the battery to the fuel pump connector (See page FI-6).



- (n) Connect SST (wire) to the injector and battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector 2 or 3 times.

SST 09842-30070

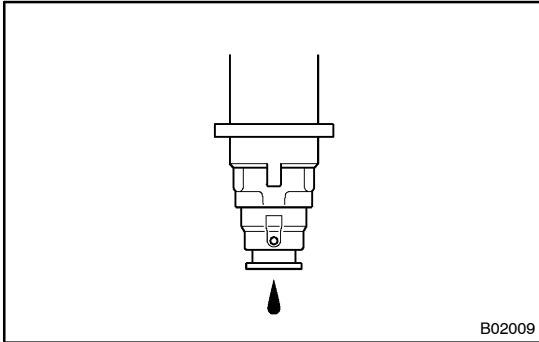
Injection volume:

60 - 73 cm³ (3.7 - 4.5 cu in.) per 15 seconds

Difference between each injector:

13 cm³ (0.8 cu in.) or less

If the injection volume is not as specified, replace the injector.



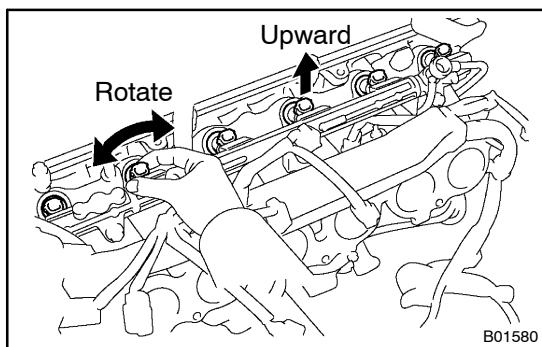
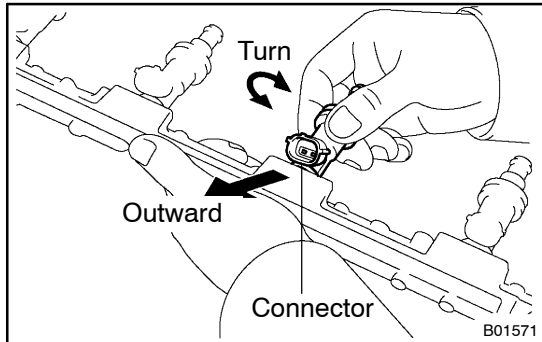
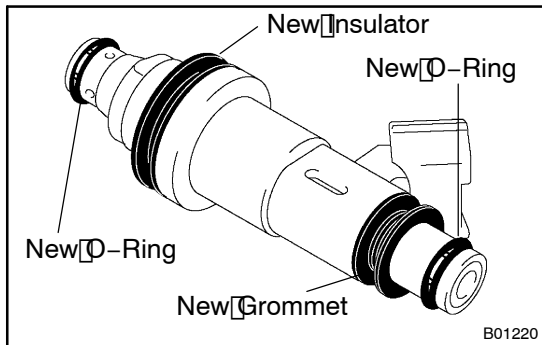
2. INSPECT LEAKAGE

- (a) In the condition above, disconnect the test probes of SST (wire) from the battery and check the fuel leakage from the injector.

SST 09842-30070

Fuel drop: 1 drop or less per 12 minutes

- (b) Turn the ignition switch OFF.
- (c) Disconnect the negative (-) terminal cable from the battery.
- (d) Remove the SST.
SST 09268-41047, 09842-30070
- (e) Reconnect the fuel inlet hose to the fuel main tube (See page FI-1)
- (f) Install the fuel inlet hose with the nut.
Torque: 9 N·m (90 kgf·cm, 80 in·lbf)
- (g) Disconnect the hand-held tester from the DLC3.



INSTALLATION

1. INSTALL INJECTORS AND DELIVERY PIPE

- Install new insulator and grommet to each injector.
- Apply a light coat of spindle oil or gasoline to 2 new O-rings and install them to each injector.
- Apply a light coat of spindle oil or gasoline on the place where a delivery pipe touches an O-ring of the injector.

- While turning the injector clockwise and counter-clockwise, push it to the delivery pipe. Install the 6 injectors.
- Position the injector connector outward.
- Place the 3 spacers in position on the intake manifold.
- Apply a light coat of spindle oil or gasoline on the place where an intake manifold touches an O-ring of the injector.
- Place the 6 injectors together with the delivery pipe and 3 bolts in position on the intake manifold.
- Temporarily install the 3 bolts holding the delivery pipe to the intake manifold.
- Check that the injectors rotate smoothly.

HINT:

If injectors do not rotate smoothly, the probable cause is incorrect installation of O-rings. Replace the O-rings.

- Position the injector connector upward.
- Connect the 6 injector connectors.

HINT:

The Nos. 1, 3, 5 injector connectors are dark gray, and the Nos. 2, 4, 6 injector connectors are brown.

- Tighten the 3 bolts holding the delivery pipe to the intake manifold.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

- Connect these connectors:

- Camshaft position sensor connector
- Throttle position sensor connector
- VSV connector for EVAP

2. INSTALL FUEL PRESSURE PULSATION DAMPER (See page FI-27)

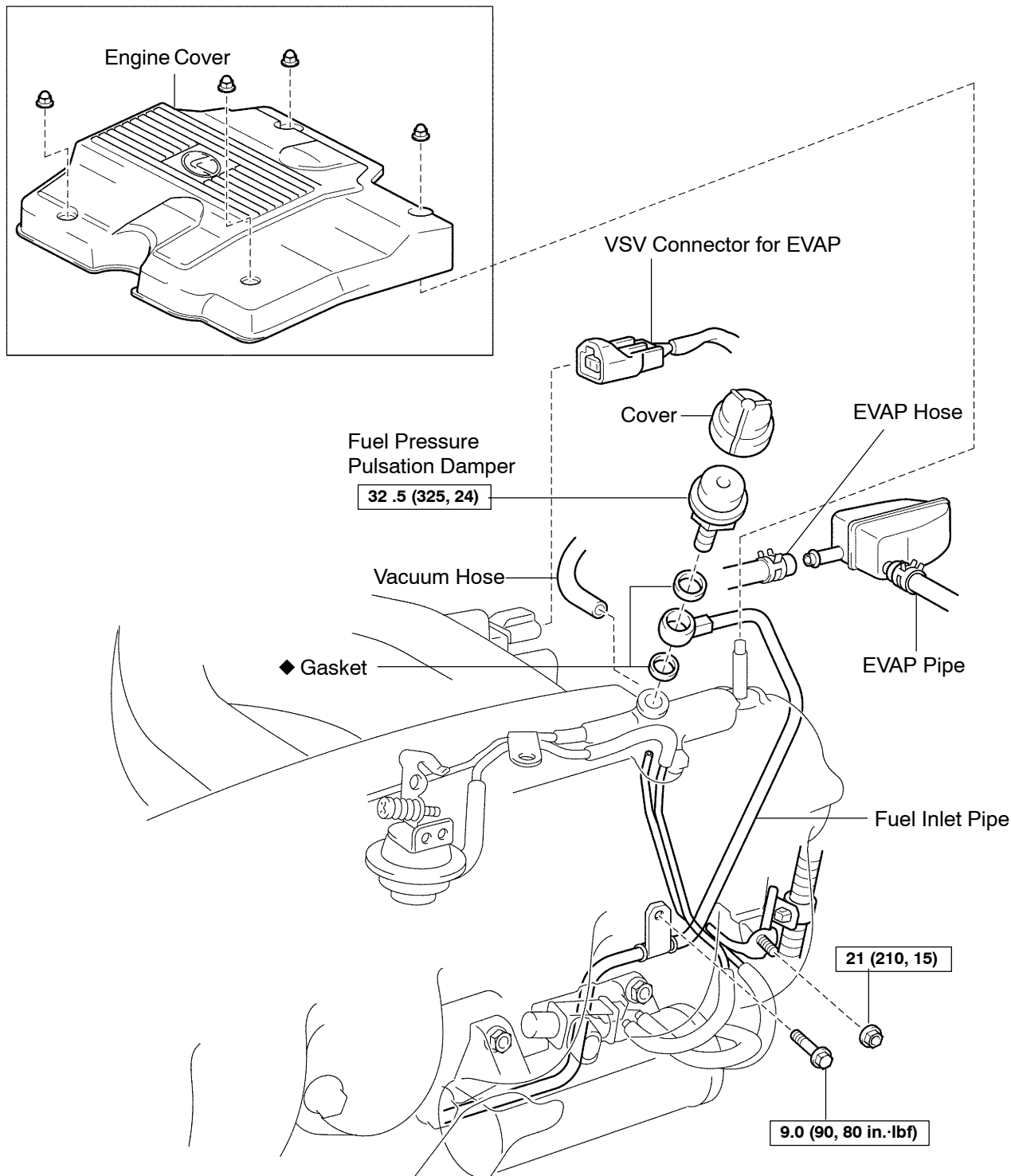
3. INSTALL AIR INTAKE CHAMBER (See page FI-49)

4. INSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

FUEL PRESSURE PULSATION DAMPER COMPONENTS

SF0NE-09



N·m (kgf·cm, ft·lbf) : Specified torque

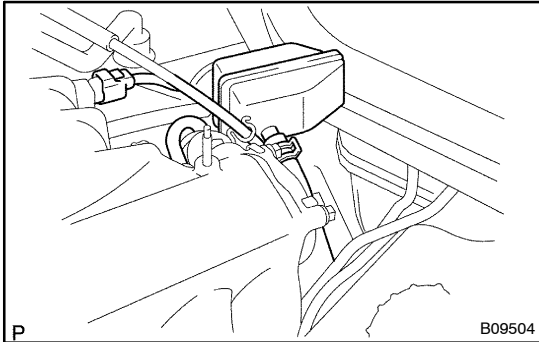
◆ Non-reusable part

B11933

REMOVAL

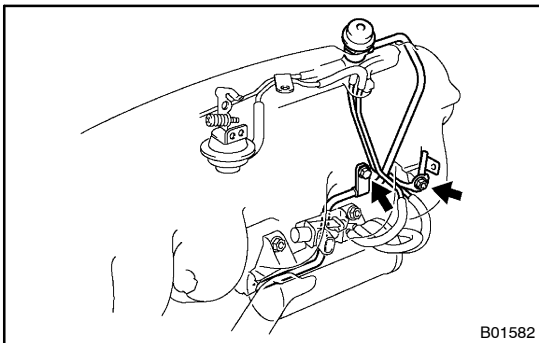
1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



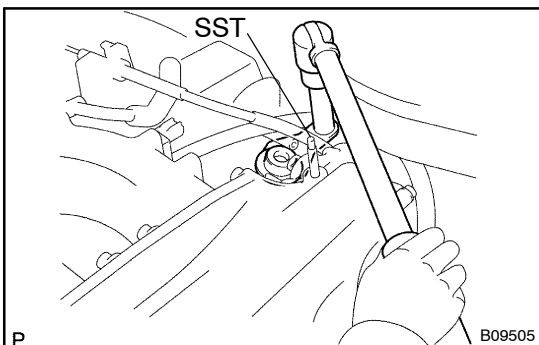
2. DISCONNECT CONNECTOR AND HOSES

- Disconnect the VSV connector for the EVAP.
- Disconnect the EVAP hose from the EVAP pipe.
- Disconnect the vacuum hose (from No.2 vacuum pipe) from the air intake chamber.



3. REMOVE FUEL PRESSURE PULSATION DAMPER

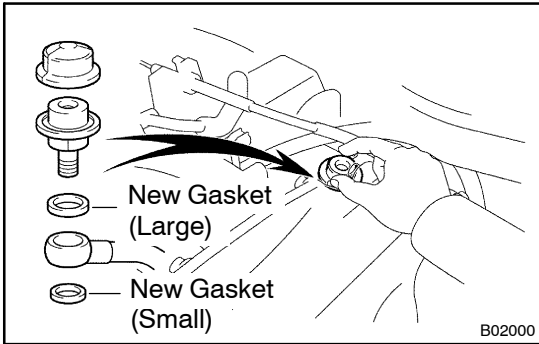
- Remove the nut holding the No.2 vacuum pipe to the intake manifold.
- Remove the bolt holding the fuel inlet pipe to the intake manifold.



- Using SST, remove the pulsation damper and 2 gaskets.
SST 09612-24014 (09617-24011)

CAUTION:

- Put a shop towel under the delivery pipe.
- Slowly loosen the pulsation damper.



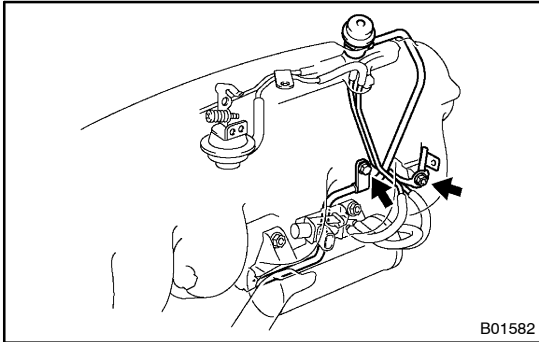
INSTALLATION

1. INSTALL FUEL PRESSURE PULSATION DAMPER

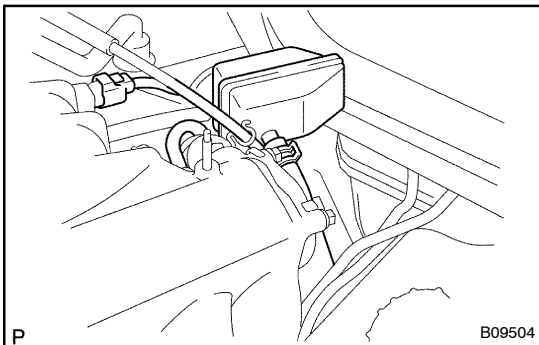
- (a) Install the fuel inlet pipe and pulsation damper with 2 new gaskets.

HINT:

Different the gaskets are used for the upper (large side) and lower (small side).



- (b) Using SST, tighten the pulsation damper.
SST 09612 – 24014 (09617 – 24011)
Torque: 32.5 N·m (325 kgf·cm, 24 ft·lbf)
- (c) Install the bolt holding the fuel inlet pipe to the intake manifold.
Torque: 9.0 N·m (90 kgf·cm, 80 in·lbf)
- (d) Install the nut holding the No. 2 vacuum pipe to the intake manifold.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)



2. CONNECT CONNECTOR AND HOSES

- (a) Connect the vacuum hose (from No.2 vacuum pipe) to the air intake chamber.
- (b) Connect the EVAP hose to the EVAP pipe.
- (c) Connect the VSV connector for the EVAP.

3. INSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

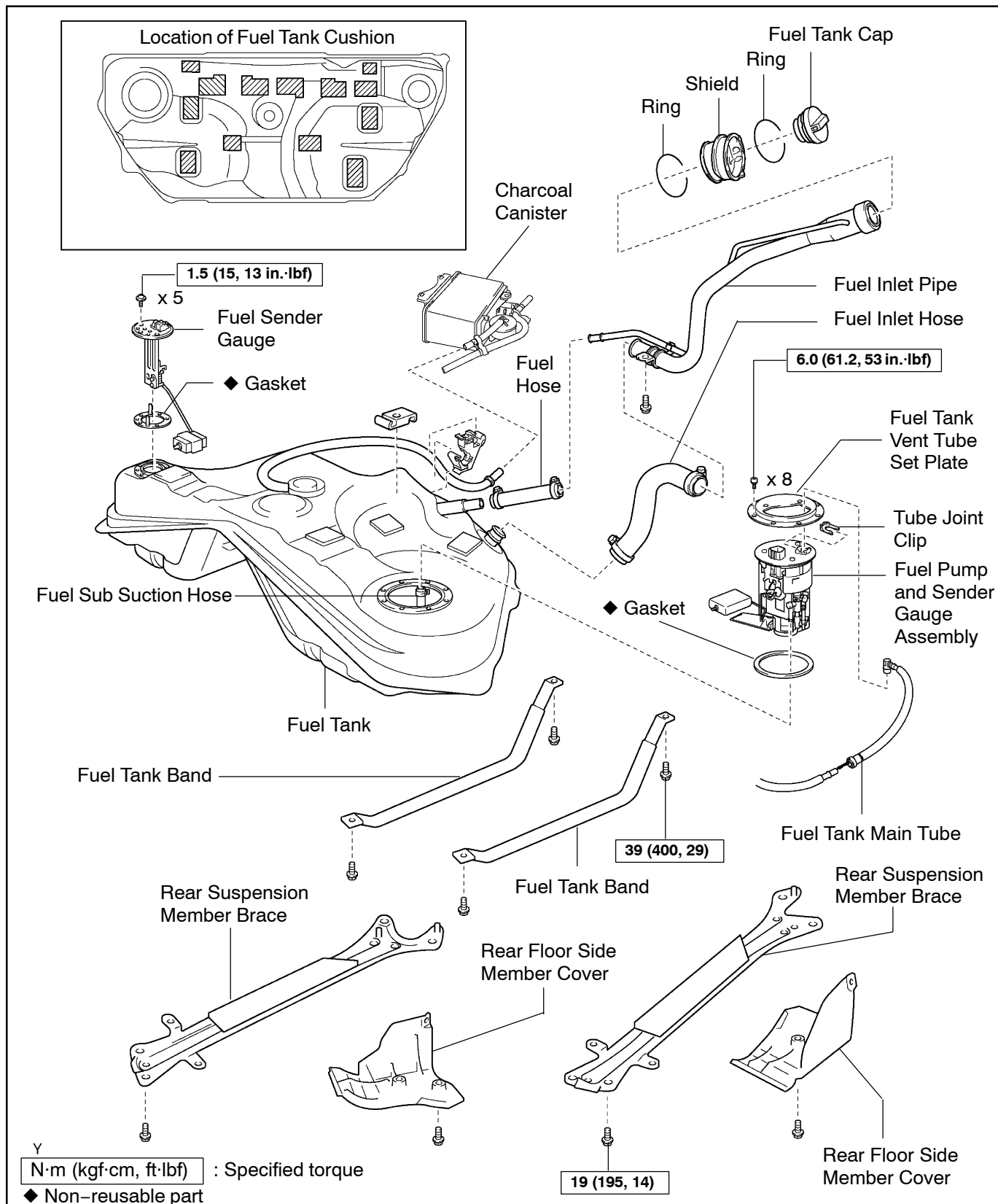
FUEL TANK AND LINE

COMPONENTS

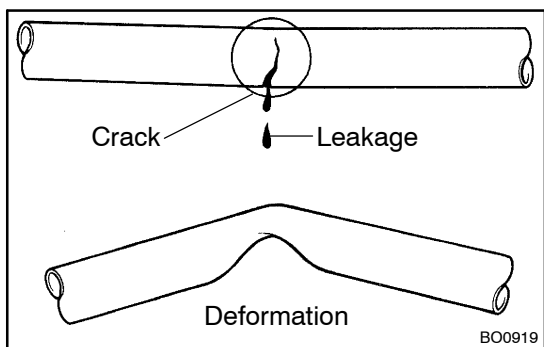
FI026-03

CAUTION:

- Always use new gasket when replacing the fuel tank or component parts.
- Apply proper torque to all parts tightened.



B06158

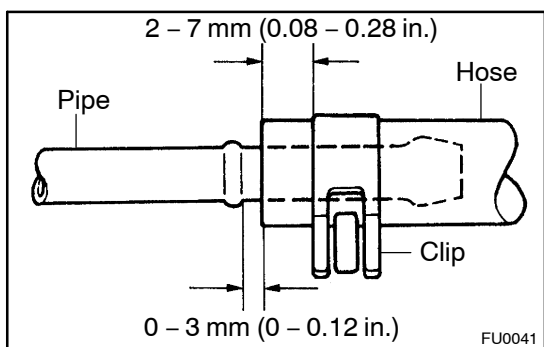
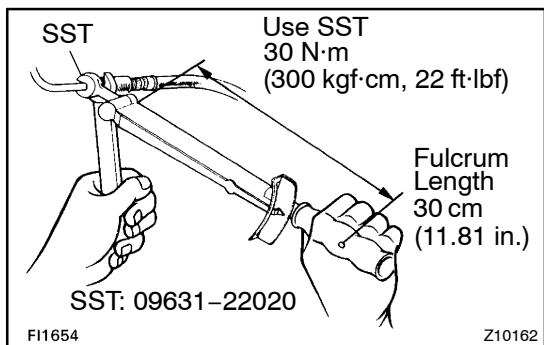


INSPECTION

INSPECT FUEL TANK AND LINE

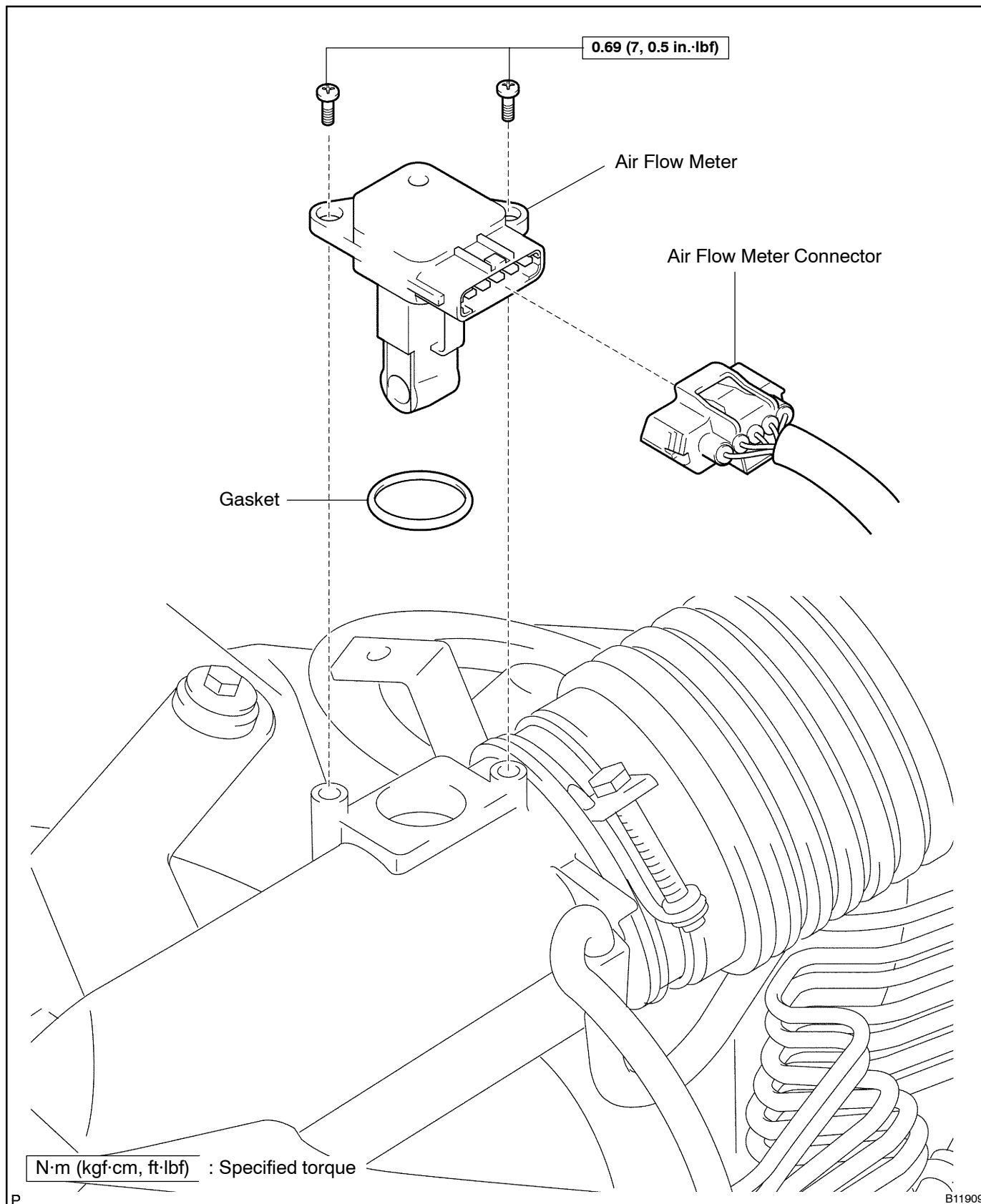
- Check the fuel lines for cracks or leakage, and all connections for deformation.
- Check the fuel tank vapor vent system hoses and connections for looseness, sharp bends or damage.
- Check the fuel tank for deformation, cracks, fuel leakage or tank band looseness.
- Check the filler neck for damage or fuel leakage.
- Hose and pipe connections are as shown in the illustration.

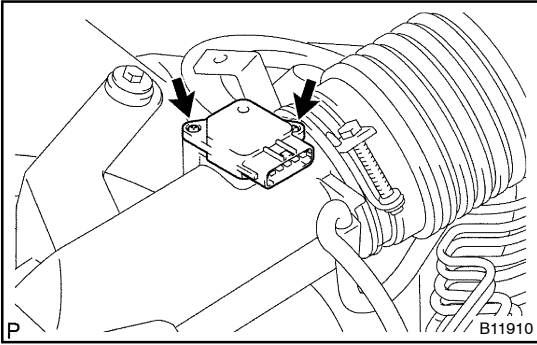
If a problem is found, repair or replace the parts as necessary.



AIR FLOW METER COMPONENTS

SF0NJ-10

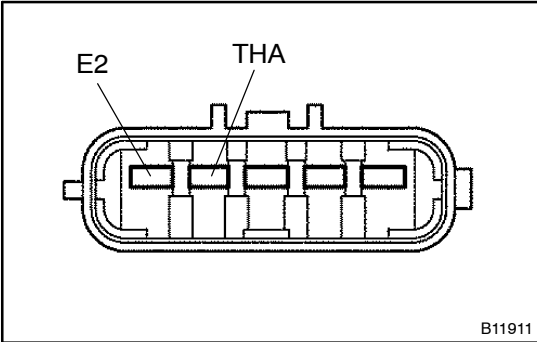




INSPECTION

1. REMOVE AIR FLOW METER METER

- Disconnect the air flow meter connector.
- Remove the 2 screws, air flow meter and gasket.

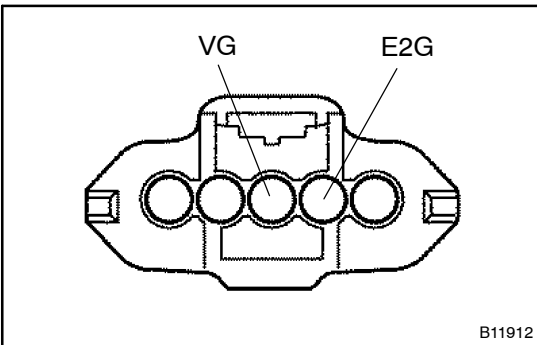


2. INSPECT AIR FLOW METER RESISTANCE

Using an ohmmeter, measure the resistance between terminals THA and E2.

Terminals	Resistance	Temperature
THA-E2	13.6 – 18.4 k Ω	-20°C (-4°F)
THA-E2	2.21 – 2.69 k Ω	20°C (68°F)
THA-E2	0.493 – 0.667 k Ω	60°C (140°F)

If the resistance is not as specified, replace the air flow meter.



3. INSPECT AIR FLOW METER OPERATION

- Connect the air flow meter connector.
- Connect the negative (-) terminal cable to the battery.
- Turn the ignition switch ON.
- Using a voltmeter, connect the positive (+) tester probe to terminal VG, and negative (-) tester probe to terminal E2G.
- Blow air into the air flow meter, and check that the voltage fluctuates.

If operation is not as specified, replace the air flow meter.

- Turn the ignition switch OFF.
- Disconnect the negative (-) terminal cable from the battery.
- Disconnect the air flow meter connector.

4. REINSTALL AIR FLOW METER

- Install the gasket to the air flow meter.
- Install the air flow meter with the 2 screws.

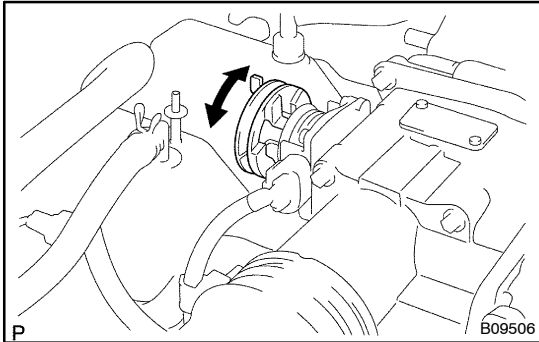
Torque: 0.69 N·m (7 kgf·cm 0.5 in.·lbf)

- Connect the air flow meter connector.

THROTTLE BODY ON-VEHICLE INSPECTION

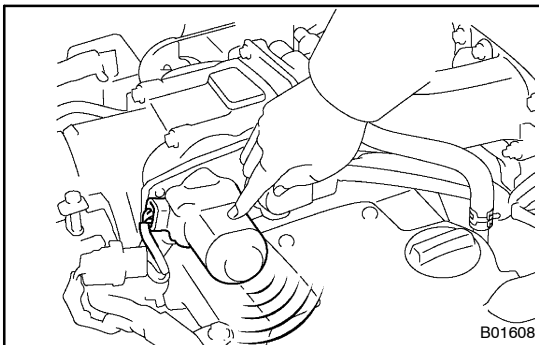
1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



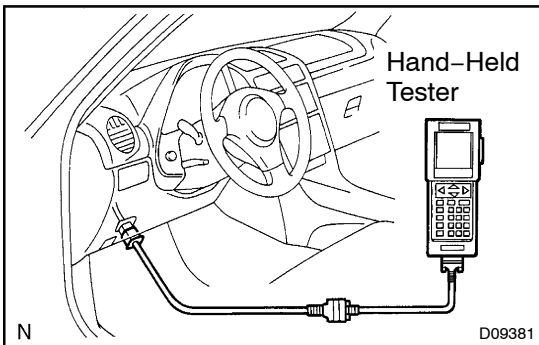
2. INSPECT SYSTEM OPERATION

- (a) Check that the throttle linkage moves smoothly.



- (b) Inspect the throttle control motor for operating sound.
- (1) Turn the ignition switch ON.
 - (2) When turning the accelerator pedal position sensor lever, check the running sound of the motor. Also, check that there is no friction sound.

If operation is not as specified, check the throttle control motor, wiring and engine ECU.



- (c) Inspect the throttle position sensor and accelerator pedal position sensor function.
- (1) Connect the hand-held tester to the DLC3.
 - (2) When turning the accelerator pedal position sensor lever to the full-open position, check that the throttle valve opening percentage (THROTTLE POS) of the CURRENT DATA shows the standard value.

Throttle valve opening percentage: 60 % or more

If operation is not as specified, check that the throttle position sensor, accelerator pedal position sensor, wiring and engine ECU.

- (d) Start the engine, and check that the malfunction indicator Lamp (MIL) does not light up.
- (e) Inspect the air assist system.
- (1) Allow the engine to warm up to normal operating temperature.

- (2) Turn the A/C switch ON and OFF, and check the idle speed.

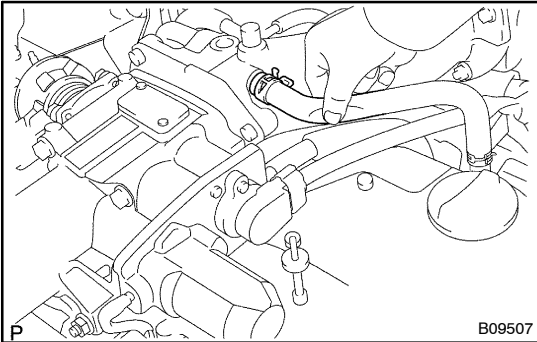
Idle speed (Transmission in neutral):

700 ± 50 rpm (A/C OFF)

750 ± 50 rpm (A/C ON)

NOTICE:

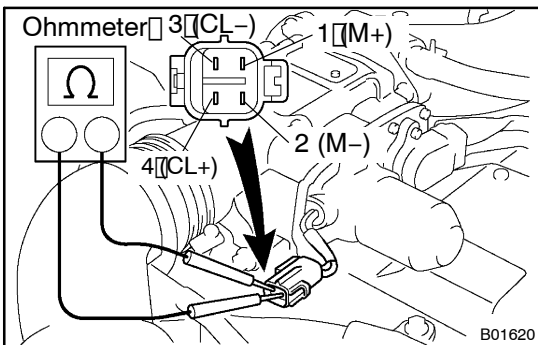
Perform inspection under condition without electrical load.



- (3) With engine idling, pinch the air assist hose and check that engine speed drops, and then returns back up to idle speed.

If operation is not as specified, check the throttle body, wiring and engine ECU.

- (f) After checking the above (b) to (e), perform the diving test and check that there is no sense of incongruity.



3. INSPECT THROTTLE CONTROL MOTOR

- (a) Disconnect the throttle control motor connector.

- (b) Using an ohmmeter, measure the resistance between terminal 3 (CL-) and 4 (CL+).

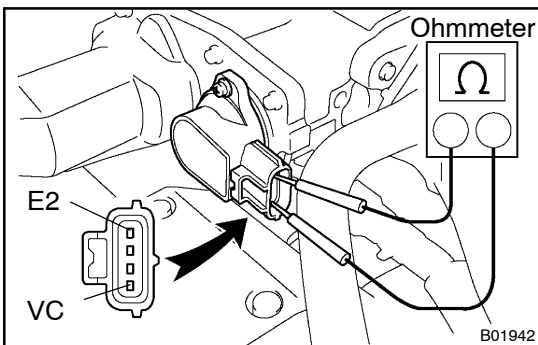
Resistance: 4.2 – 5.2 Ω at 20°C (68°F)

- (c) Using an ohmmeter, measure the resistance between terminal 1 (M+) and 2 (M-).

Resistance: 0.3 – 100 Ω at 20°C (68°F)

If the resistance is not as specified, replace the throttle control motor (See page FI-37).

- (d) Reconnect the throttle control motor connector.



4. INSPECT THROTTLE POSITION SENSOR

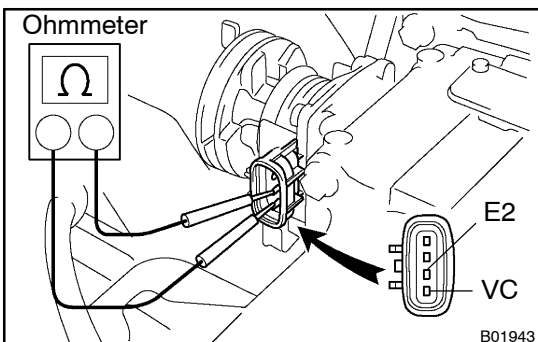
- (a) Disconnect the throttle position sensor connector.

- (b) Using an ohmmeter, measure the resistance between terminals VC and E2.

Resistance: 1.2 – 3.2 kΩ at 20°C (68°F)

If the resistance is not as specified, replace the throttle position sensor (See page FI-37).

- (c) Reconnect the throttle position sensor connector.



5. INSPECT ACCELERATOR PEDAL POSITION SENSOR

- (a) Disconnect the accelerator pedal position sensor connector.

- (b) Using an ohmmeter, measure the resistance between terminals VC and E2.

Resistance: 1.2 – 3.2 kΩ at 20°C (68°F)

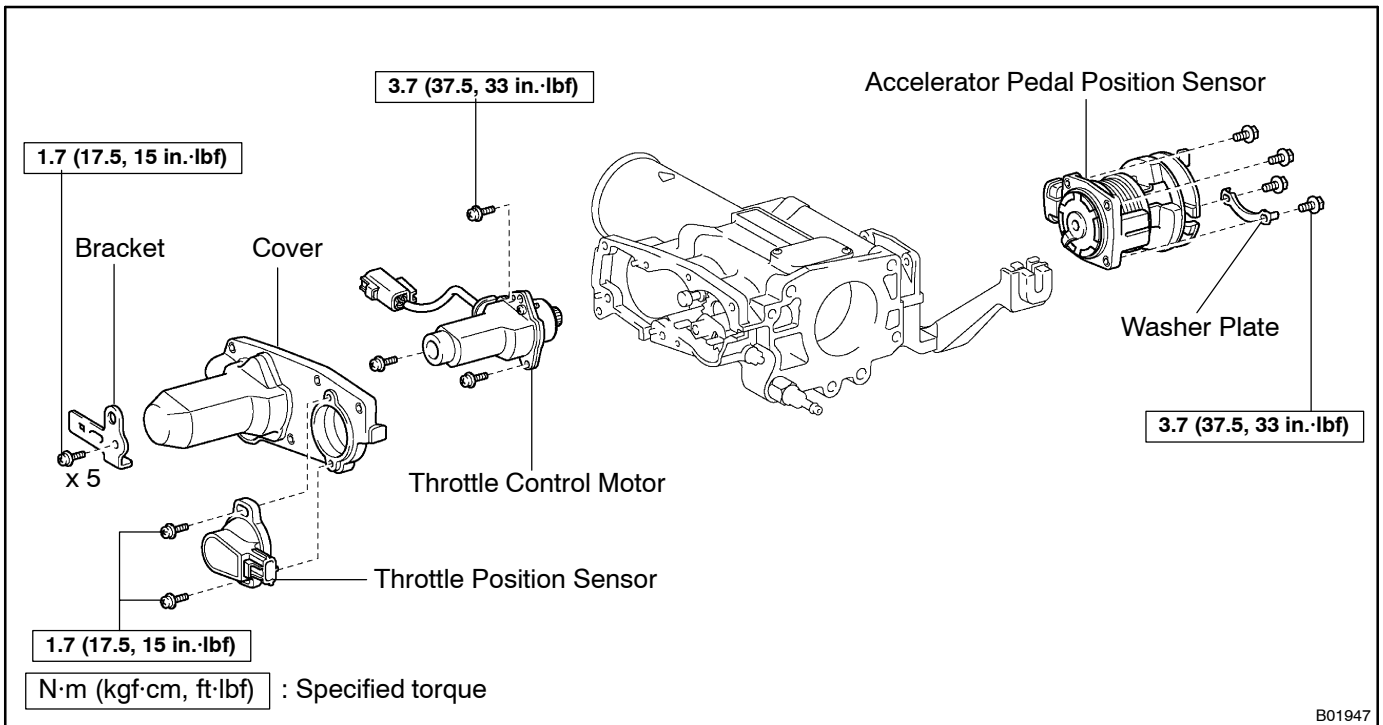
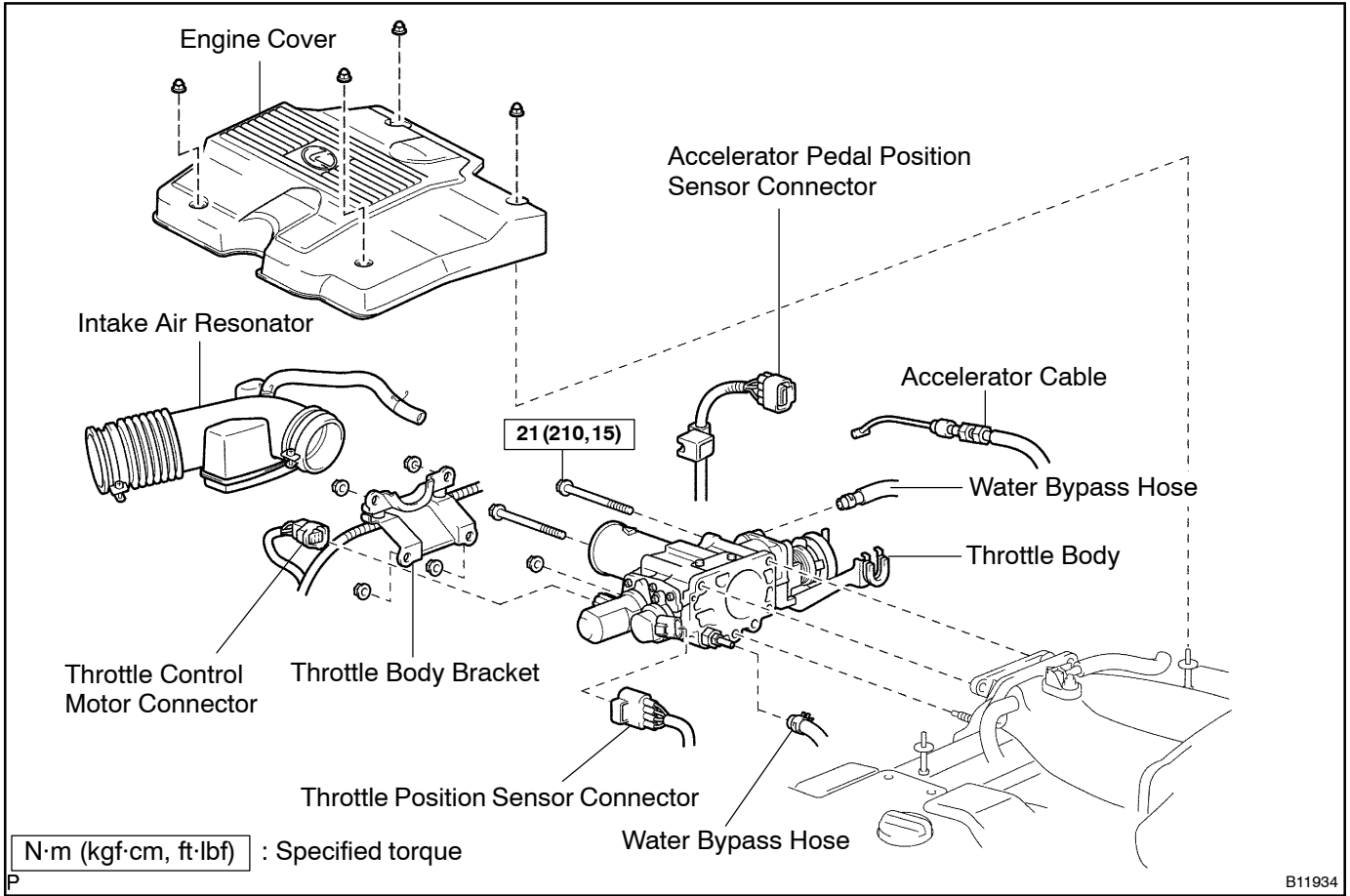
If the resistance is not as specified, replace the accelerator pedal position sensor (See page FI-37).

- (c) Reconnect the accelerator pedal position sensor connector.

6. REINSTALL ENGINE COVER

Reinstall the engine cover with the 4 nuts.

COMPONENTS



REMOVAL

1. DRAIN ENGINE COOLANT

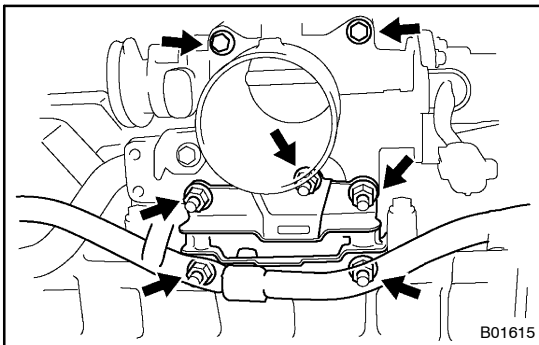
2. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.

3. REMOVE INTAKE AIR RESONATOR

4. REMOVE THROTTLE BODY BRACKET AND THROTTLE BODY

- (a) Disconnect the accelerator cable.
- (b) Disconnect the throttle position sensor connector.
- (c) Disconnect the throttle control motor connector.
- (d) Disconnect the accelerator pedal position sensor connector.
- (e) Disconnect the engine wire clamp from the clamp bracket of throttle body.



- (f) Remove the 2 bolts and nut holding the throttle body to the intake air connector.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

- (g) Remove the 4 nuts and throttle body bracket.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

- (h) Slightly slide the throttle body away from the intake air connector.

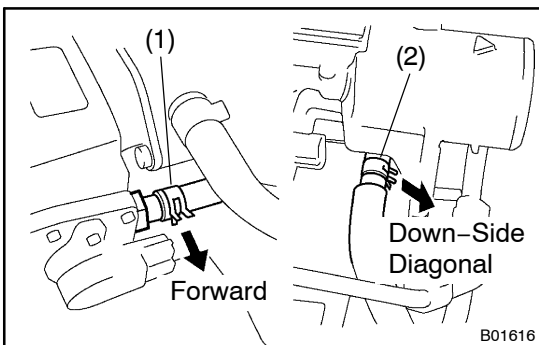
NOTICE:

When putting up the throttle body, do not hold the motor part.

- (i) Disconnect the 2 water bypass hoses from the throttle body, and remove the throttle body.

HINT:

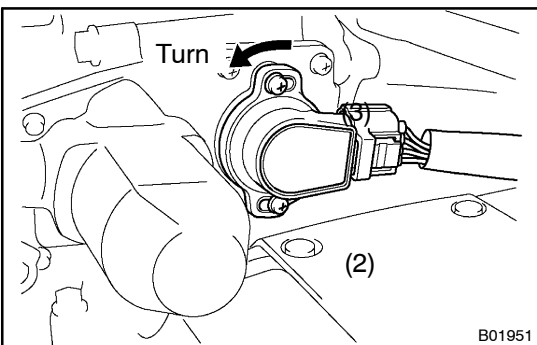
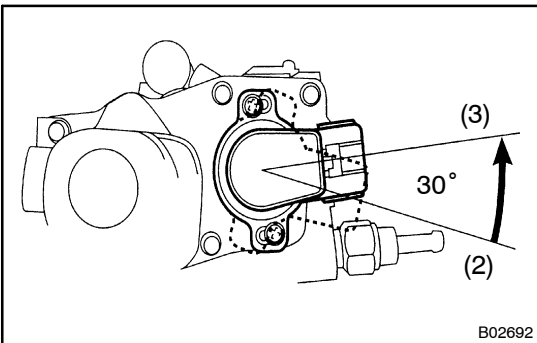
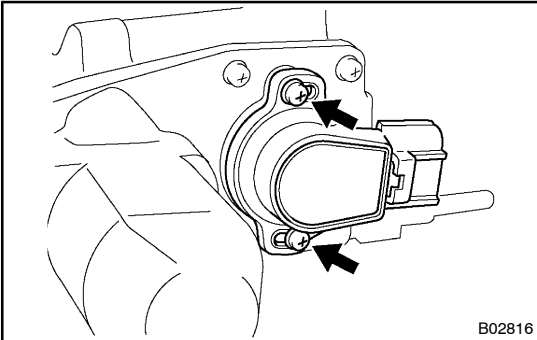
- At the time of installation, please refer to the following items.
- Connect the water bypass hose with its discrimination mark downward.
- Install the with its crawl direction for (1) forward and down-side diagonal (engine side about 45°) for (2).



REPLACEMENT

NOTICE:

- To prevent deterioration, do not shock the throttle position sensor and accelerator pedal position sensor.
- Mixing of the foreign objects may cause the gear locking, so thoroughly check that there is no stuck of any foreign objects and clean up if any.



1. REPLACE THROTTLE POSITION SENSOR

- Remove the 2 set screws and throttle position sensor.
- Reinstall the throttle position sensor.
 - Check that the throttle valve is under the condition of the opener opening angle (about 3.5°).

- Install the sensor to the place where is at 30° rotated to the right from the specified installation position.
- Gradually turn sensor counterclockwise until it touches the throttle valve shaft and temporarily torque the 2 set screws.

- Adjust the throttle position sensor.
 - Connect the throttle position sensor connector.

NOTICE:

At this time, do not connect the throttle control motor connector.

- Connect the hand-held tester to the DLC3.
- Turn the ignition switch ON.

NOTICE:

After turning the ignition switch ON, do not depress the accelerator pedal.

- While reading the value of the throttle valve opening percentage (THROTTLE POS) of the CURRENT DATA, turn the throttle position sensor slowly to left and set the sensor at the center value of the standard value, and then torque the screws.

Torque: 1.7 N·m (17.5 kgf·cm, 15 in.·lbf)

Standard throttle valve opening percentage:

14.8 ± 0.8 %

NOTICE:

At the time of tightening the screw, as the sensor itself tends to turn causing to slanting, check that it is within the standard value after having finished the torque.

- (5) Fully close the throttle valve with a screwdriver and check that the value of the throttle valve opening percentage (THROTTLE POS) of the CURRENT DATA stays with the standard value.

Standard throttle valve opening percentage:

10 – 14 %

If the throttle valve opening percentage is not as specified, repeat steps (4) through (5).

- (6) Paint the sensor set screws.
- (7) Turn the ignition switch OFF.
- (8) Disconnect the hand-held tester from the DLC3.
- (9) Disconnect the throttle position sensor connector.

2. REPLACE THROTTLE CONTROL MOTOR

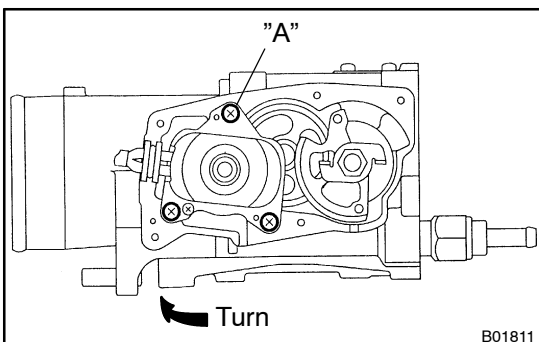
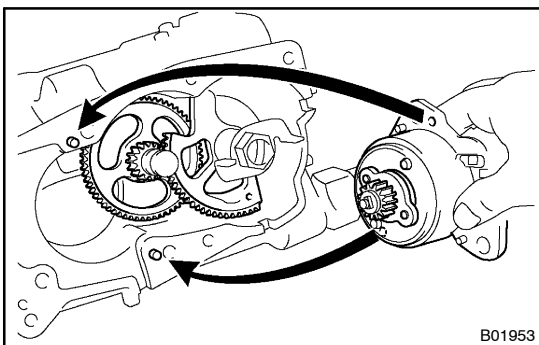
- (a) Remove the throttle position sensor.
- (b) Remove the throttle control motor.
 - (1) Disconnect the connector from the bracket.
 - (2) Remove the 5 screws, bracket and cover.
 - (3) Remove the 3 screws and throttle control motor.
- (c) Reinstall the throttle control motor.
 - (1) Apply the grease thinly on the whole surface of the gear teeth.

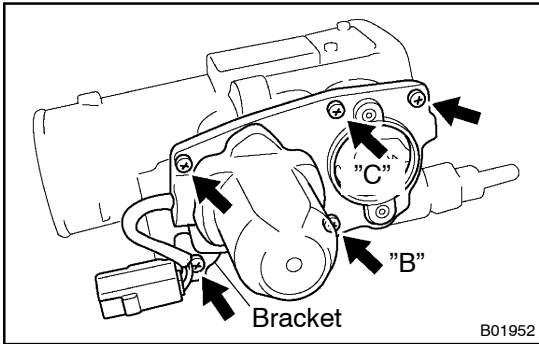
NOTICE:

Do not apply the grease other than specified because grease has been already applied to the component to be replaced.

- (2) Align the protrusions of the motor with the positioning pin holes of the throttle body.
- (3) Rotate the motor to the direction marked with an arrow and temporarily install the set screw "A" under the condition that there is no wobbles in the motor and the positioning pin.
- (4) Tighten the 3 set screws.

Torque: 3.7 N·m (37.5 kgf·cm, 33 in·lbf)





- (5) Temporarily install the cover with the 2 screws "B" and "C".

NOTICE:

The grommet of motor not be caught.

- (6) Tighten the 5 screws.

Torque: 1.7 N·m (17.5 kgf·cm, 15 in.·lbf)

- (7) Connect the connector to the bracket.

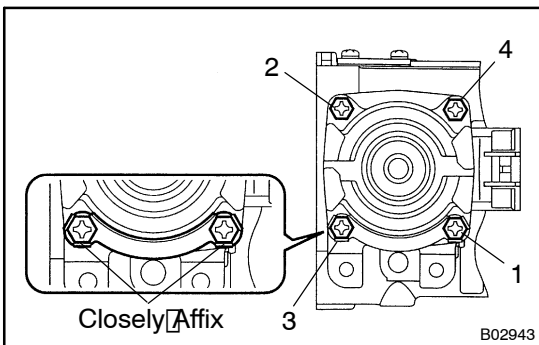
- (d) Reinstall and adjust the throttle position sensor. (See step 1)

3. REPLACE ACCELERATOR PEDAL POSITION SENSOR

- (a) Remove the accelerator pedal position sensor.

- (1) Using a small screwdriver, pry the 4 stoppers of the washer plate.

- (2) Remove the 4 set bolts, washer plate and accelerator pedal position sensor.



- (b) Reinstall the accelerator pedal position sensor.

- (1) Install the accelerator pedal position sensor to the throttle body.

- (2) Torque the 4 bolts in the order shown in the illustration through the washer plate.

Torque: 3.7 N·m (37.5 kgf·cm, 33 in.·lbf)

- (3) Bend the stopper of the washer plate and closely affix to the bolts.

- (c) Inspect the accelerator pedal position sensor.

- (1) Connect the accelerator pedal position sensor connector.

- (2) Connect the hand-held tester to the DLC3.

- (3) Turn the ignition switch ON.

NOTICE:

After turning the ignition switch ON, do not depress the accelerator pedal.

- (4) Check that the ACCEL POS #1 (VPA) voltage of the CURRENT DATA shows the standard value.

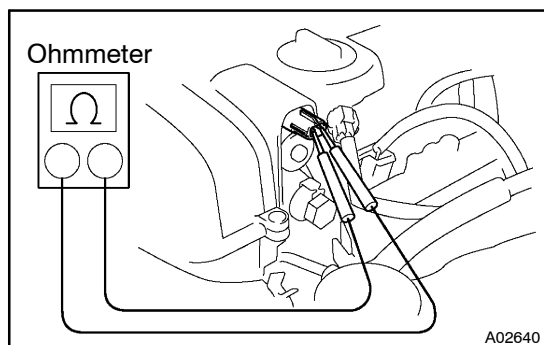
Standard accelerator pedal position voltage:

0.3 – 0.9 V

4. AFTER INSTALL THROTTLE BODY, INSPECT SYSTEM OPERATION (See page FI-32)

INSTALLATION

Installation is in the reverse order of removal (See [page FI-36](#)).



CAMSHAFT TIMING OIL CONTROL VALVE

SF0NR-07

ON-VEHICLE INSPECTION

1. INSPECT CAMSHAFT TIMING OIL CONTROL VALVE RESISTANCE

- (a) Disconnect the oil control valve connector.
- (b) Using an ohmmeter, measure the resistance between the terminals.

Resistance: 5.5 – 12 Ω at 20°C (68°F)

If the resistance is not as specified, replace the valve.

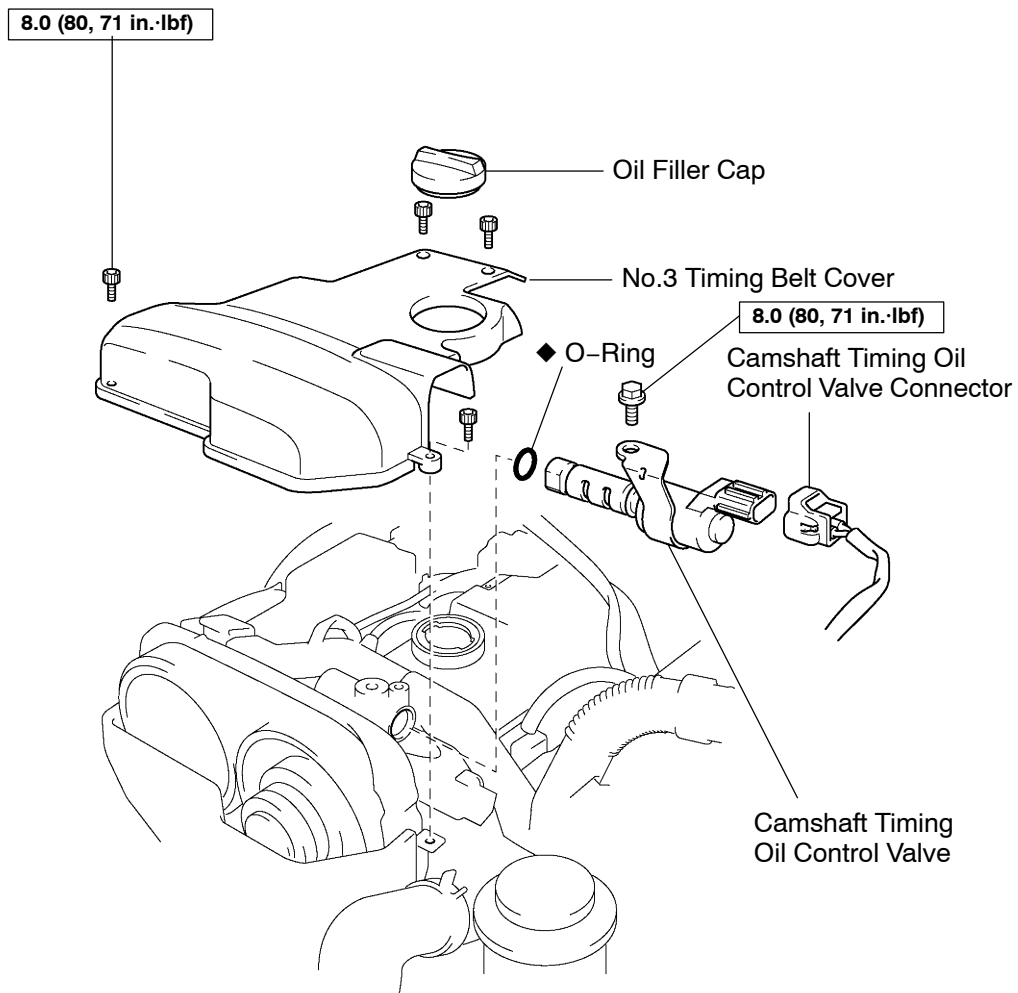
- (c) Reconnect the oil control valve connector.

2. INSPECT VVT-i OPERATION

- (a) Allow the engine to warm up to normal operating temperature.
- (b) Check that the engine stalls or becomes in rough-idling state when the battery positive voltage is applied to the oil control valve with the engine idling.

If operation is not as specified, check the oil control valve ([see page FI-43](#)), VVT-i pulley, intake camshaft, wiring and engine ECU.

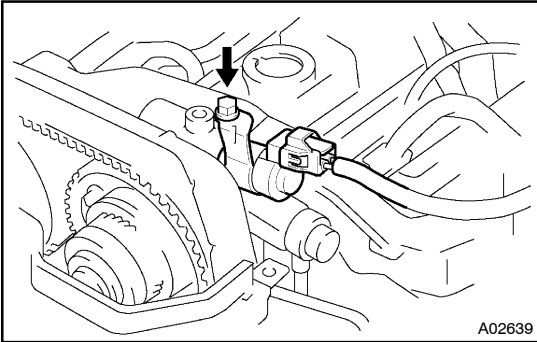
COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque

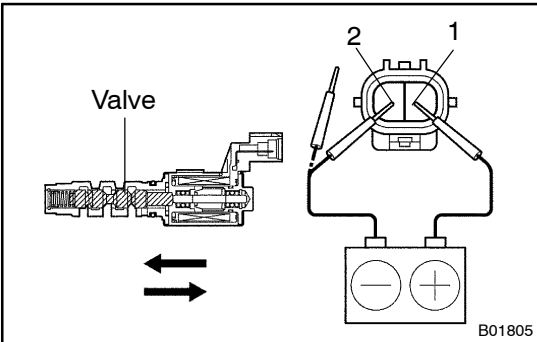
◆ Non-reusable part

B11945



INSPECTION

1. **REMOVE NO.3 TIMING BELT COVER**
2. **REMOVE CAMSHAFT TIMING OIL CONTROL VALVE**
 - (a) Disconnect the oil control valve connector.
 - (b) Remove the bolt, oil control valve and O-ring.



3. INSPECT CAMSHAFT TIMING OIL CONTROL VALVE OPERATION

Connect positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 2, and check the movement of the valve.

Battery positive voltage is applied	Valve moves in  direction
Battery positive voltage is cut off	Valve moves in  direction

If operation is not as specified, replace the valve.

4. REINSTALL CAMSHAFT TIMING OIL CONTROL VALVE

- (a) Install a new O-ring to the oil control valve.
- (b) Install the oil control valve with the bolt.
- (c) Connect the oil control valve connector.

5. REINSTALL NO.3 TIMING BELT COVER

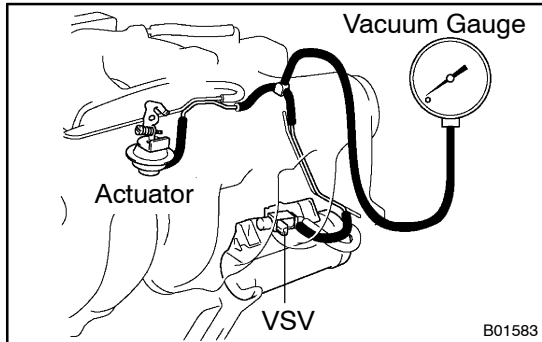
Torque: 8.0 N·m (80 kgf·cm, 71 in.·lbf)

ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS) ON-VEHICLE INSPECTION

SFONT-06

1. REMOVE ENGINE COVER

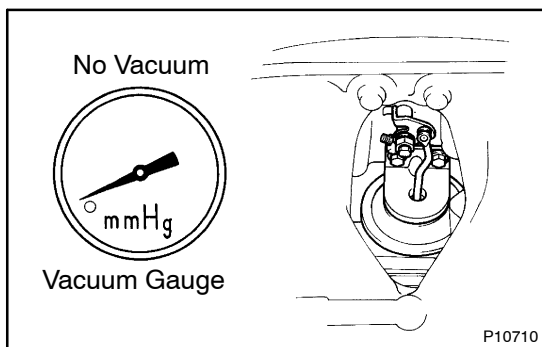
Remove the 4 nuts and engine cover.



2. CONNECT VACUUM GAUGE

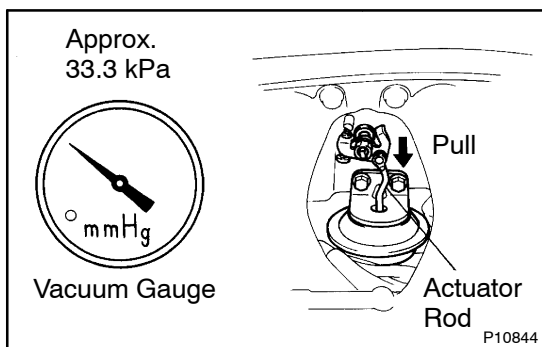
Using a 3-way connector, connect vacuum gauge to the hose between the actuator and VSV.

3. START ENGINE



4. INSPECT INTAKE AIR CONTROL VALVE

- (a) While the engine is idling, check that the vacuum gauge needle does not move.



- (b) Rapidly depress the accelerator pedal to fully open position and check that the vacuum gauge needle momentarily fluctuates approx. 33.3 kPa (250 mmHg, 9.84 in.Hg) or more. (The actuator rod is pulled down.)

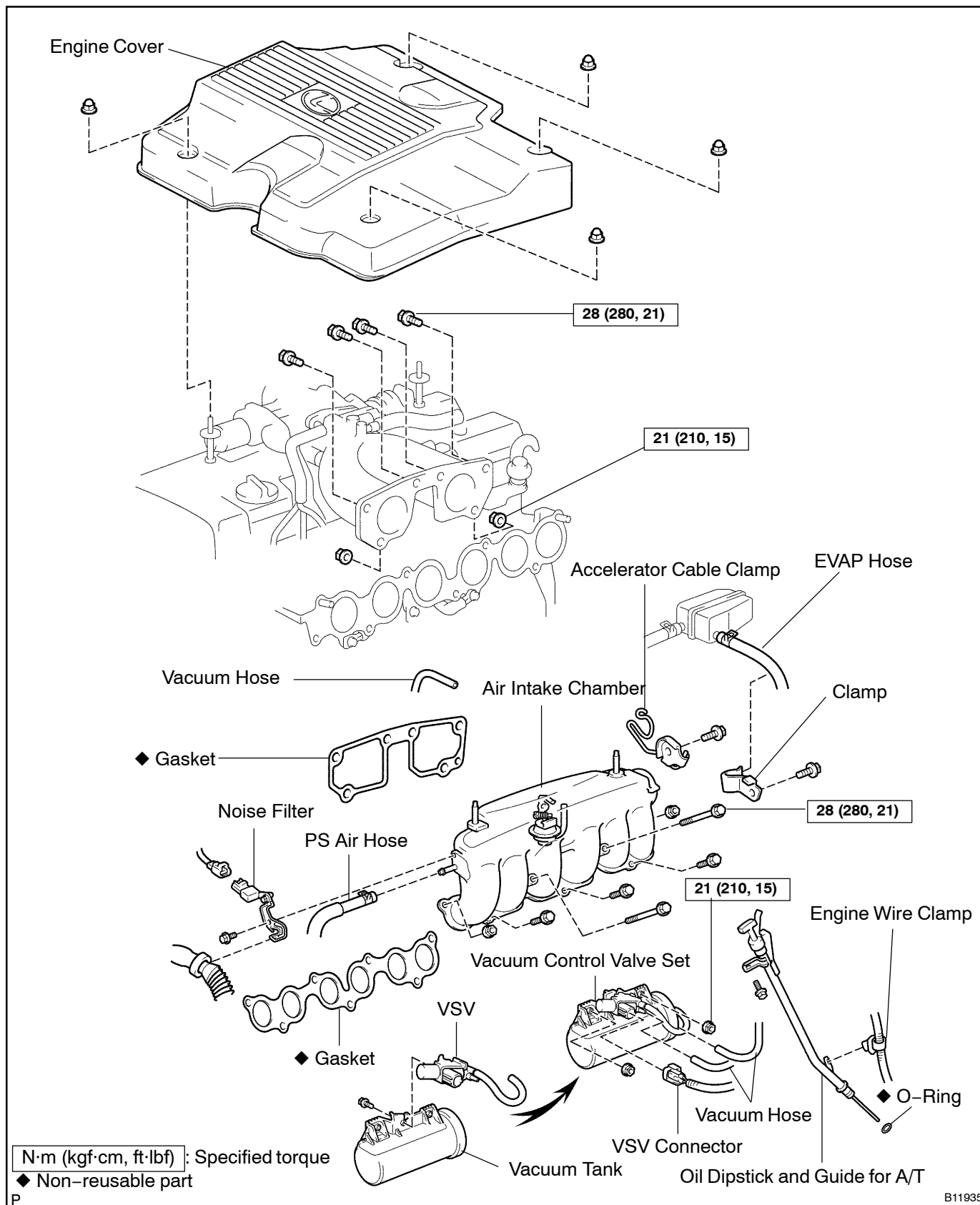
5. REMOVE VACUUM GAUGE

Remove the vacuum gauge, and reconnect the vacuum hoses to their proper locations.

6. REINSTALL ENGINE COVER

Reinstall the engine cover with the 4 nuts.

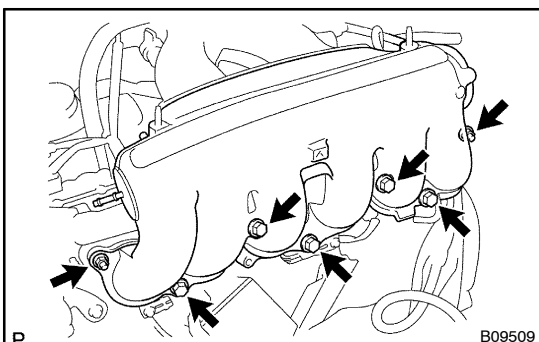
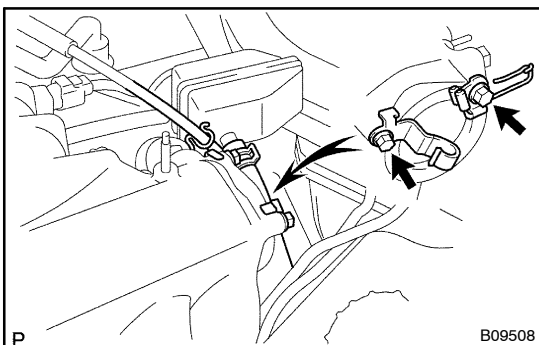
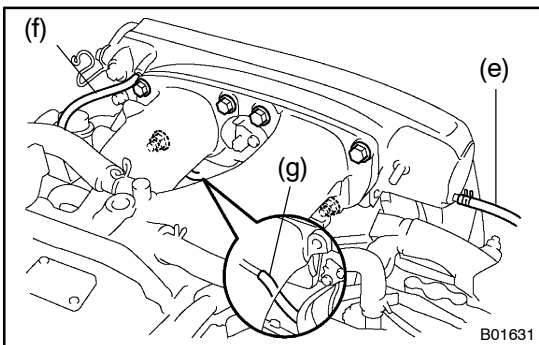
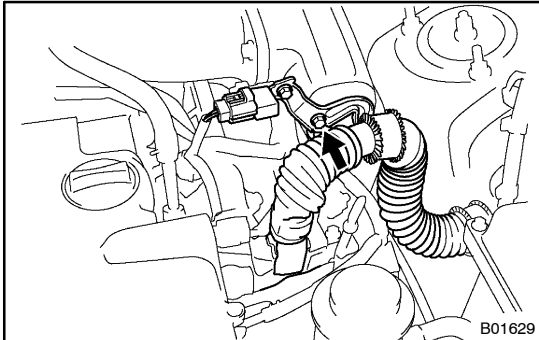
COMPONENTS



REMOVAL

1. REMOVE ENGINE COVER

Remove the engine cover and 4 nuts.

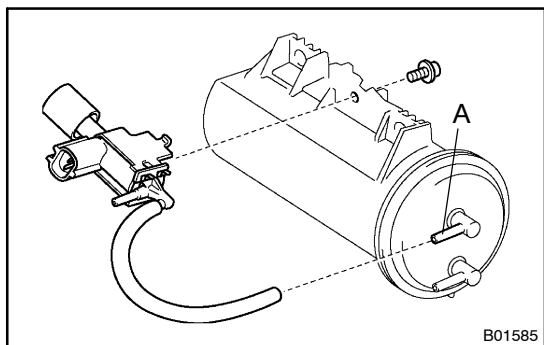


2. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-64)

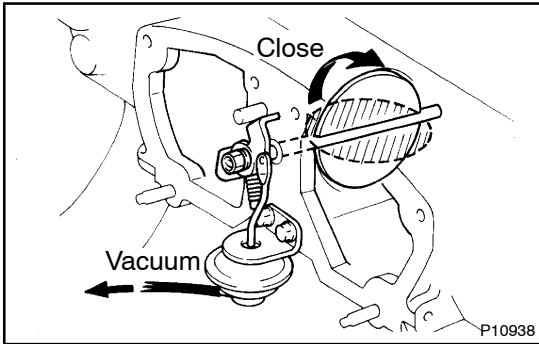
3. REMOVE AIR INTAKE CHAMBER (WITH INTAKE AIR CONTROL VALVE)

- Disconnect the noise filter connector.
- Disconnect the engine wire clamp from the bracket.
- Remove the bolt, bracket and noise filter.
- Remove the 4 bolts and 2 nuts holding the intake air connector to the air intake chamber,
Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)
- Disconnect the PS air hose from the air intake chamber.
- Disconnect the vacuum hose (from No.2 vacuum pipe) from the air intake chamber.
- Disconnect the vacuum hose (from actuator for ACIS) from the No.1 vacuum pipe.
- Disconnect the accelerator cable, and remove the bolt and accelerator cable clamp.
- Disconnect the EVAP hose, and remove the bolt and clamp.
- Remove the 5 bolts, 2 nuts, air intake chamber and 2 gas-kets.
Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)

4. REMOVE VACUUM CONTROL VALVE SET (See page FI-48)

**5. REMOVE VSV FROM VACUUM TANK**

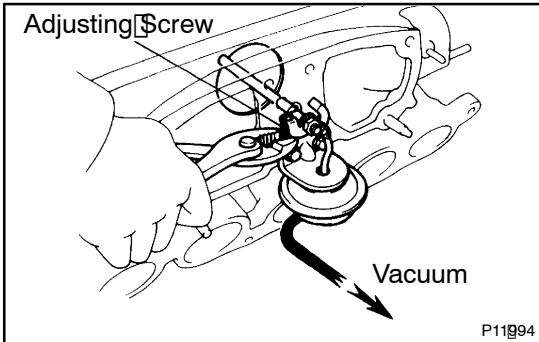
- (a) Disconnect the vacuum hose from port A of the vacuum tank.
- (b) Remove the screw and VSV.



INSPECTION

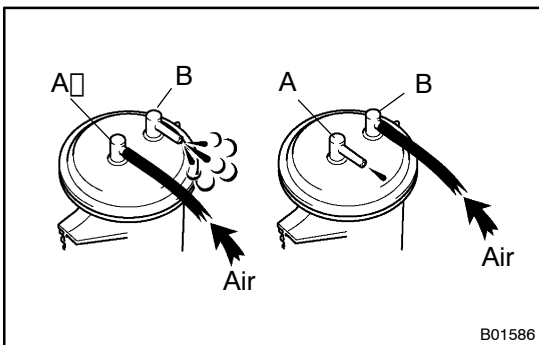
1. INSPECT INTAKE AIR CONTROL VALVE

- (a) With 53.3 kPa (400 mmHg, 15.75 in.Hg) of vacuum applied to the actuator, check that the actuator rod moves.



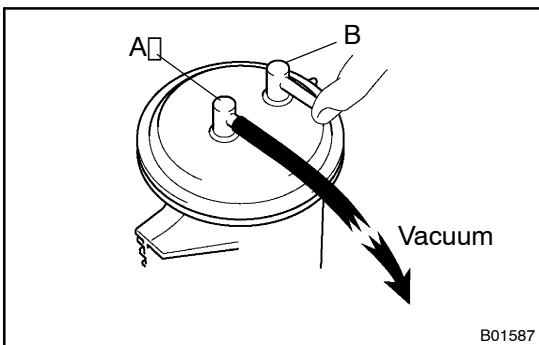
If operation is not as specified, turn the adjusting screw.

- (b) 1 minute after applying the vacuum in (a), check that the actuator rod does not return.



2. INSPECT VACUUM TANK

- (a) Check that air flows from ports A to B.
(b) Check that air does not flow ports B to A.



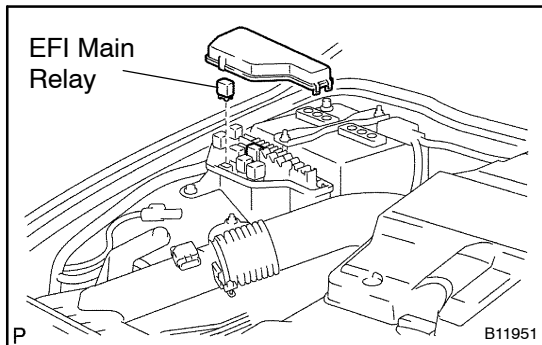
- (c) Plug port B with your finger, and apply 53.3 kPa (400 mmHg, 15.75 in.Hg) of vacuum to port A, and check that there is no change in vacuum after 1 minute.

If operation is not as specified, replace the vacuum tank.

3. INSPECT VSV (See page FI-48)

INSTALLATION

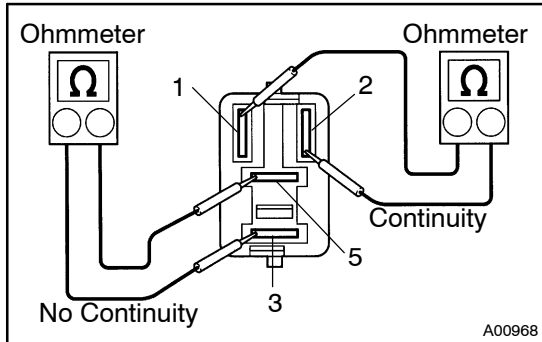
Installation is in the reverse order of removal (See page FI-49).



EFI MAIN RELAY INSPECTION

SFQNY-08

1. REMOVE RELAY BOX COVER
2. REMOVE EFI MAIN RELAY (Marking:EFI)



3. INSPECT EFI MAIN RELAY

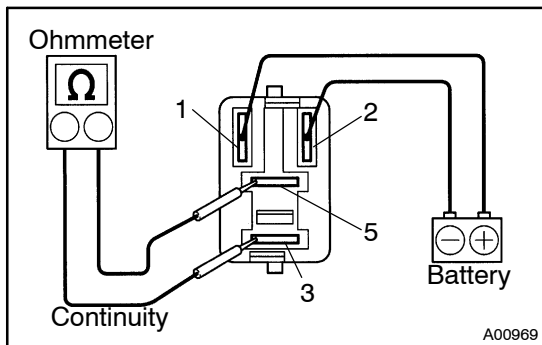
- (a) Inspect the relay continuity.

- (1) Using an ohmmeter, check that there is continuity between terminals 1 and 2.

If there is no continuity, replace the relay.

- (2) Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.



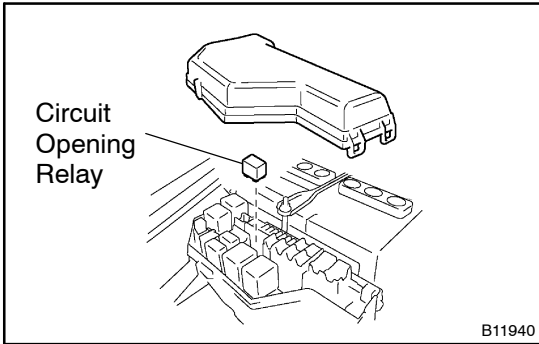
- (b) Inspect the relay operation.

- (1) Apply battery positive voltage across terminals 1 and 2.

- (2) Using an ohmmeter, check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

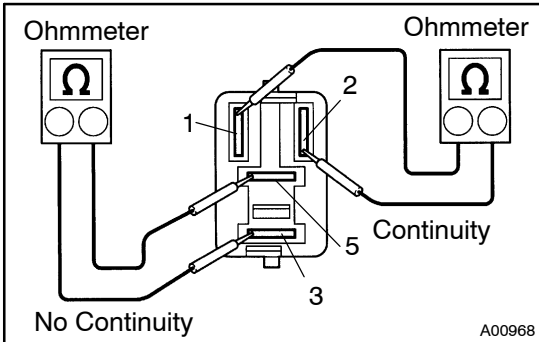
4. REINSTALL EFI MAIN RELAY
5. REINSTALL RELAY BOX COVER



CIRCUIT OPENING RELAY INSPECTION

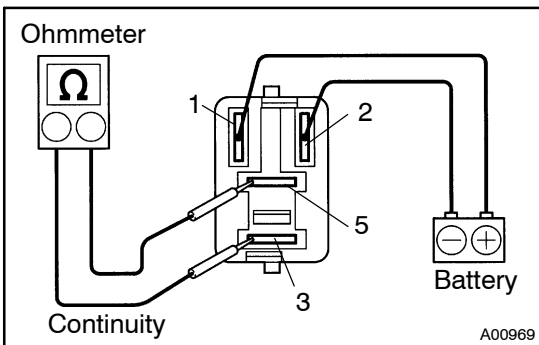
SF0A0-15

1. REMOVE RELAY BOX COVER
2. REMOVE EFI MAIN RELAY (Marking CIR OPN)

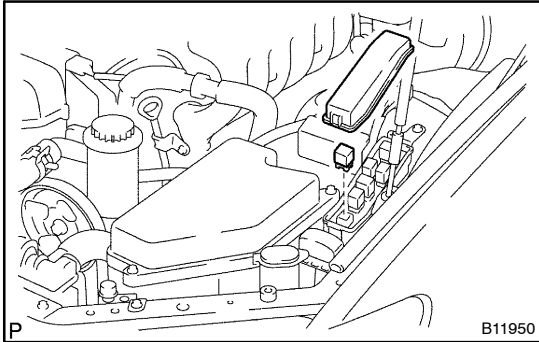


3. INSPECT CIRCUIT OPENING RELAY

- (a) Inspect the relay continuity.
 - (1) Using an ohmmeter, check that there is continuity between terminals 1 and 2.
If there is no continuity, replace the relay.
 - (2) Check that there is no continuity between terminals 3 and 5.
If there is continuity, replace the relay.



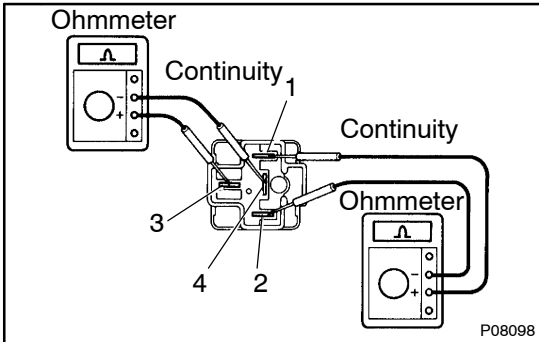
- (b) Inspect the relay operation.
 - (1) Apply battery positive voltage across terminals 1 and 2.
 - (2) Using an ohmmeter, check that there is continuity between terminals 3 and 5.
If there is no continuity, replace the relay.
4. REINSTALL CIRCUIT OPENING MAIN RELAY
5. REINSTALL RELAY BOX COVER



FUEL PUMP RELAY INSPECTION

SF1LG-02

1. REMOVE RELAY BOX COVER
2. REMOVE FUEL PUMP RELAY (Marking: FUEL PUMP)



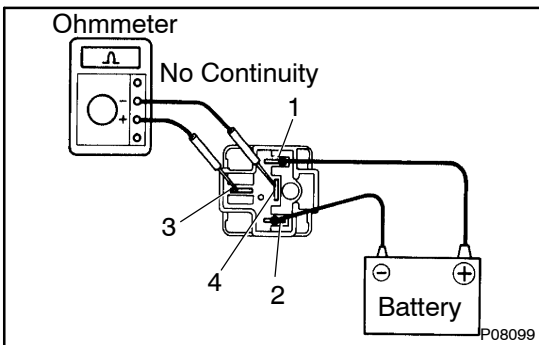
3. INSPECT FUEL PUMP RELAY CONTINUITY

- (a) Using an ohmmeter, check that continuity exists between terminals 1 and 2.

If no continuity exists, replace the relay.

- (b) Check that there is continuity between terminals 3 and 4.

If no continuity exists, replace the relay.



4. INSPECT FUEL PUMP RELAY OPERATION

- (a) Apply battery voltage across terminals 1 and 2.

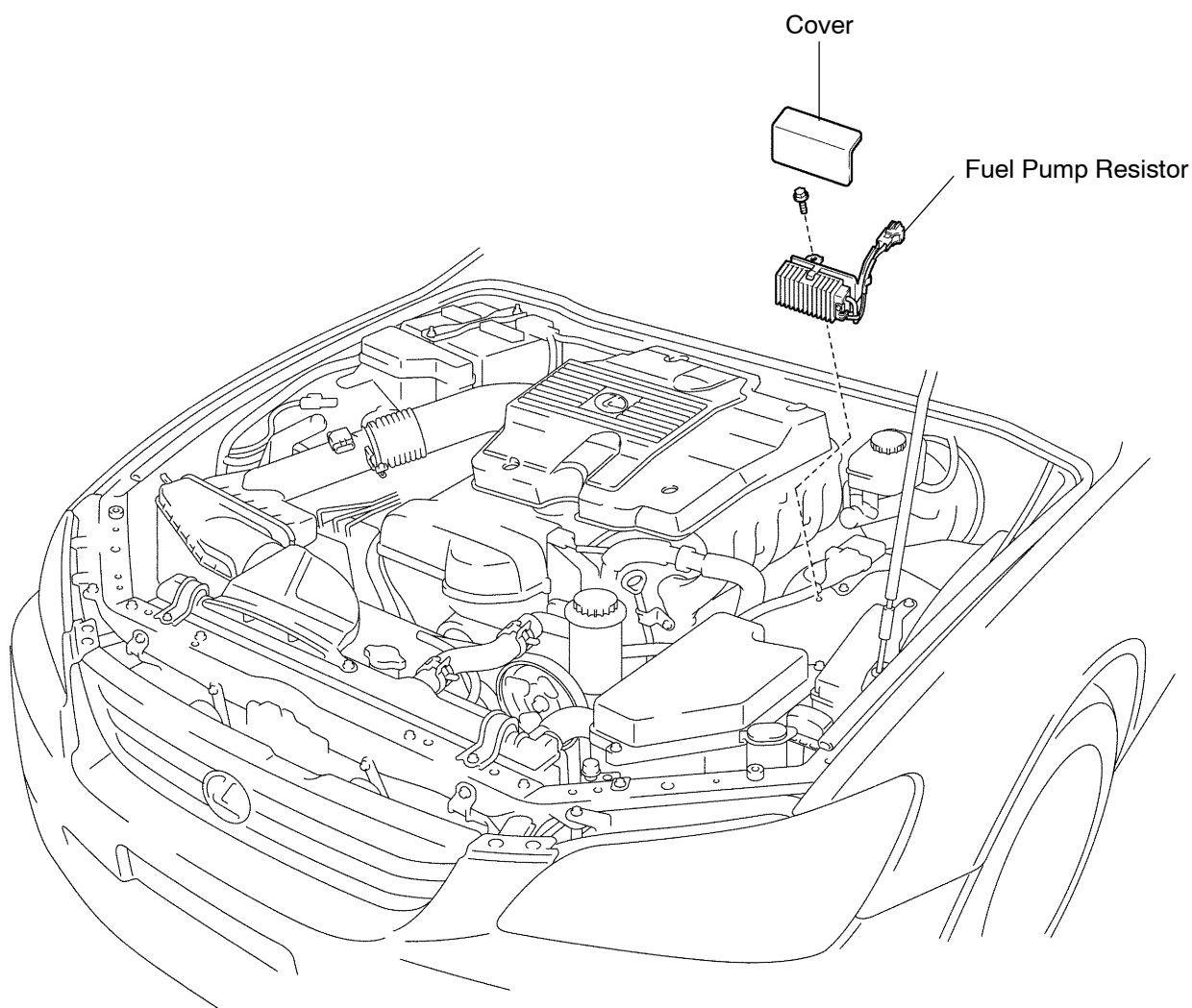
- (b) Using an ohmmeter, check that no continuity exists between terminals 3 and 4.

If continuity exists, replace the relay.

5. REINSTALL FUEL PUMP RELAY

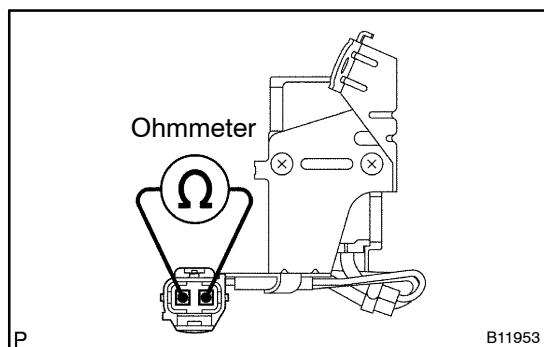
FUEL PUMP RESISTOR COMPONENTS

SF1LF-02



P

B11952



INSPECTION

INSPECT FUEL PUMP RESISTOR

Using an ohmmeter, measure the resistance between the terminals.

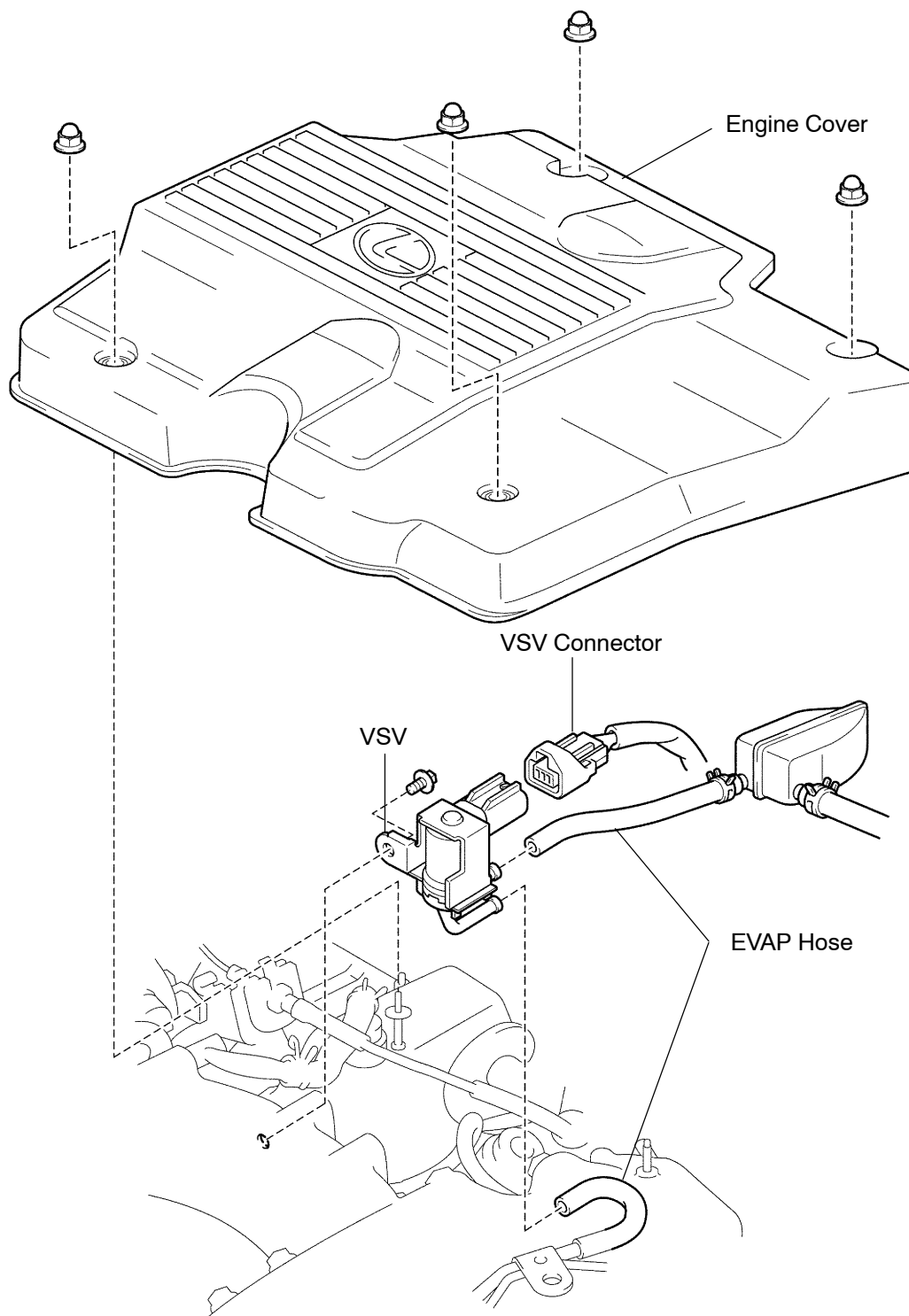
Resistance:

0.30 – 0.35 Ω at 20°C (68°F)

If the resistance is not as specified, replace the resistor.

VSV FOR EVAPORATIVE EMISSION (EVAP) COMPONENTS

SF0NZ-06



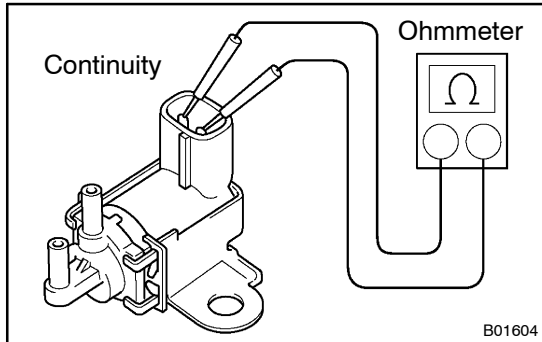
P

B11936

INSPECTION

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



2. REMOVE VSV

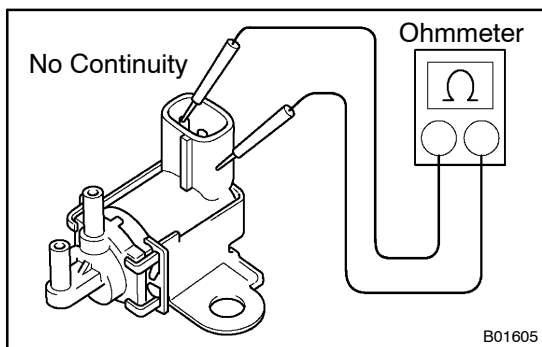
3. INSPECT VSV

- (a) Inspect the VSV for open circuit.

Using an ohmmeter, check that there is continuity between the terminals.

Resistance: 27 – 33 Ω at 20°C (68°F)

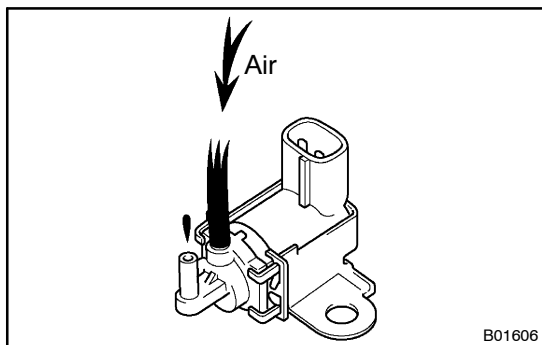
If there is no continuity, replace the VSV.



- (b) Inspect the VSV for ground.

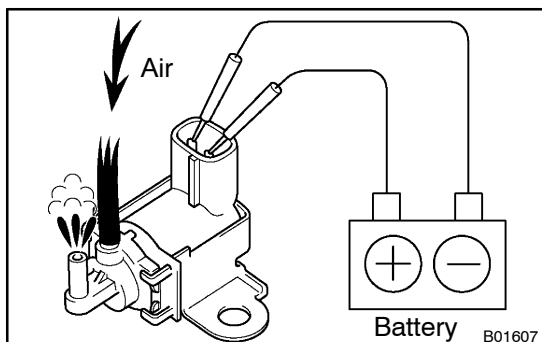
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



- (c) Inspect the VSV operation.

- (1) Check that air does not flow from the ports.



- (2) Apply battery positive voltage across the terminals.

- (3) Check that air flows from the ports.

If operation is not specified, replace the VSV.

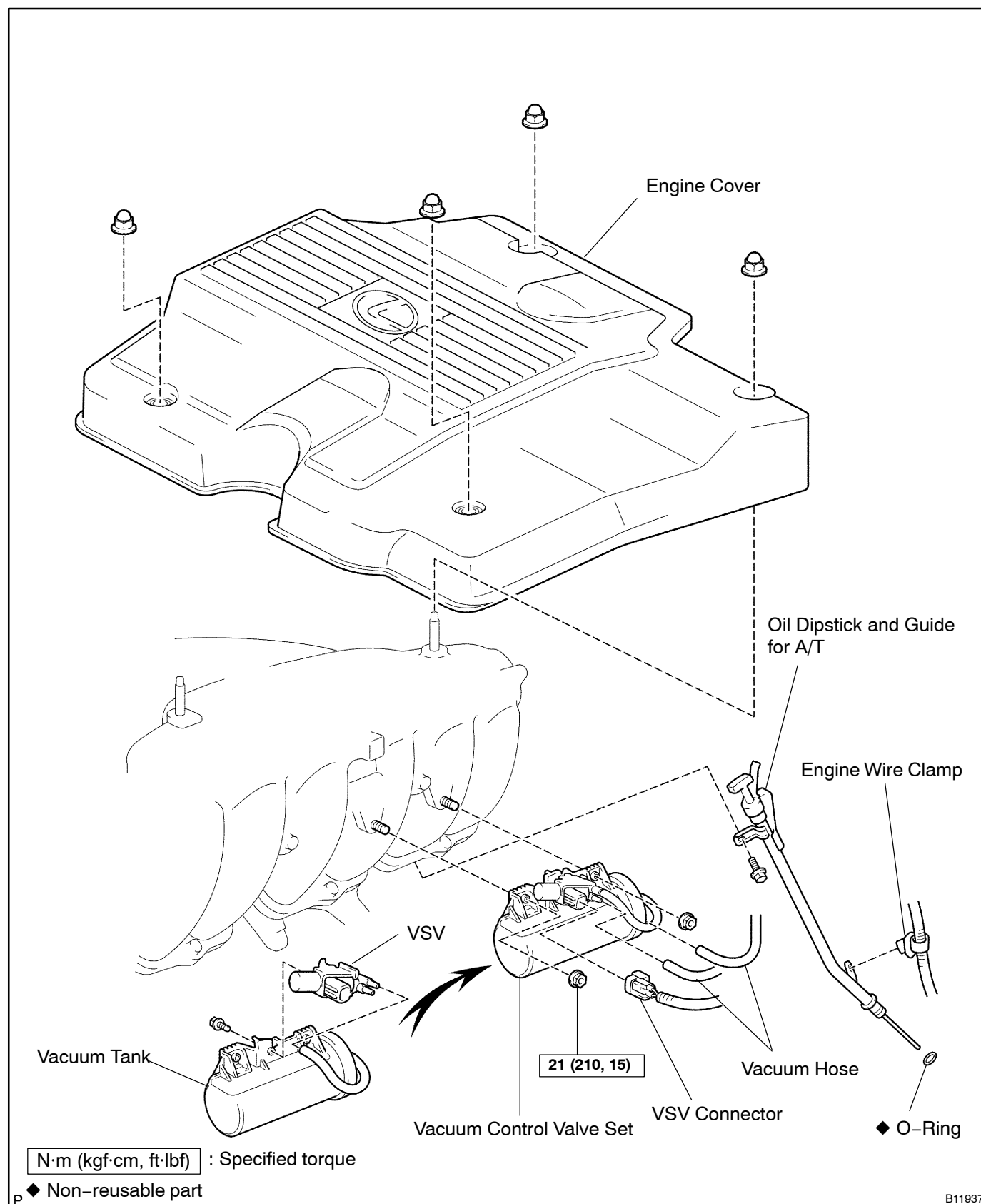
4. REINSTALL VSV

5. REINSTALL ENGINE COVER

Reinstall the engine cover with the 4 nuts.

VSV FOR ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS) COMPONENTS

SF001-05



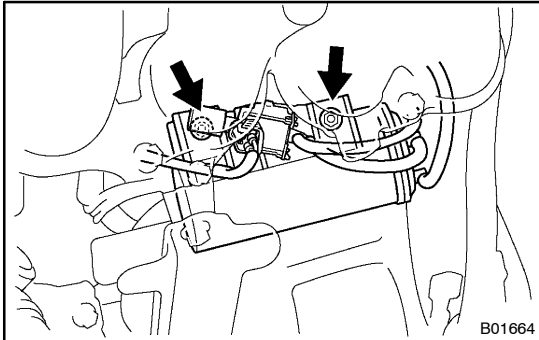
B11937

INSPECTION

1. REMOVE ENGINE COVER

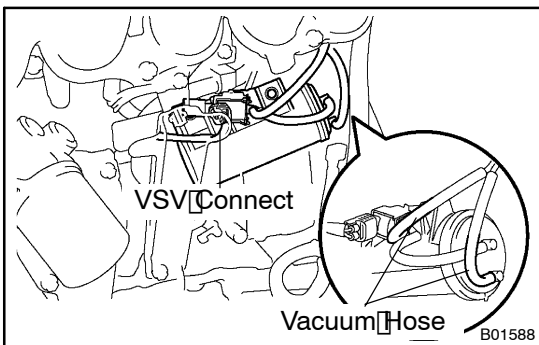
Remove the 4 nuts and engine cover.

2. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-64)



3. REMOVE VACUUM CONTROL VALVE SET

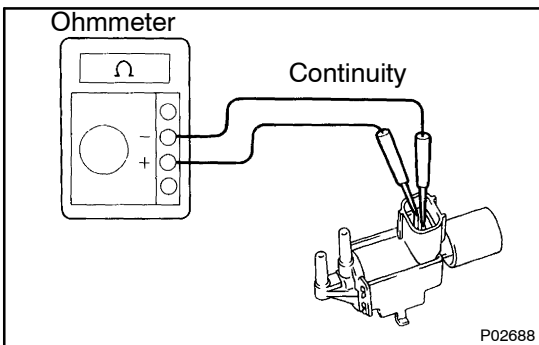
(a) Remove the 2 nuts, and disconnect the vacuum tank from the intake manifold.



(b) Disconnect VSV connector and vacuum hoses, and remove the vacuum control valve set.

4. REMOVE VSV

Remove the screw, vacuum hose and VSV.



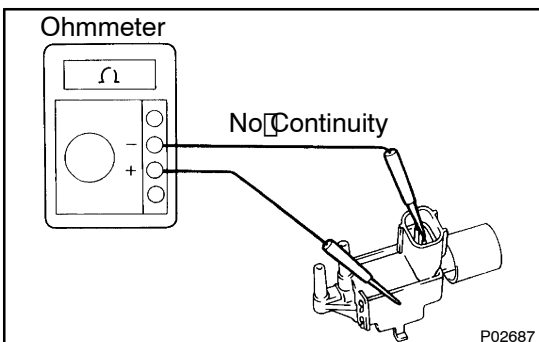
5. INSPECT VSV

(a) Inspect the VSV for open circuit.

Using an ohmmeter, check that there is continuity between the terminals.

Resistance: 38.5 – 44.5 Ω at 20°C (68°F)

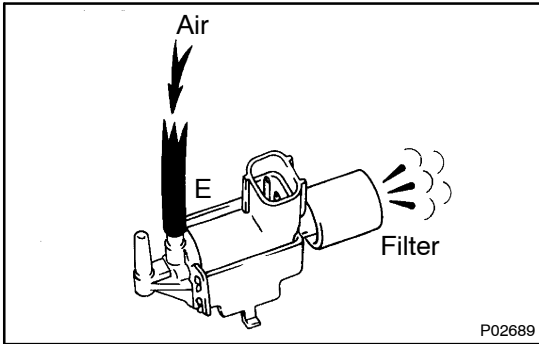
If there is no continuity, replace the VSV.



(b) Inspect the VSV for ground.

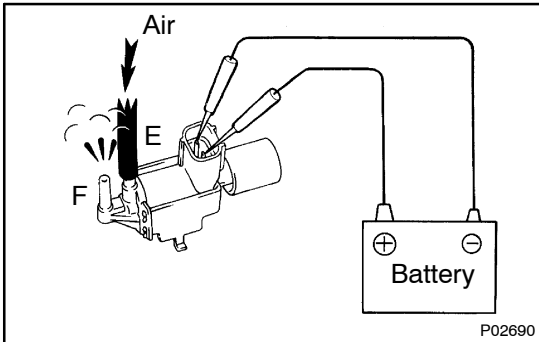
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.

(1) Check that air flows from port E to the filter.



(2) Apply battery positive voltage across the terminals.

(3) Check that air flows from ports E to F.

6. REINSTALL VSV

(a) Install the VSV with the screw to the vacuum tank.

(b) Install the vacuum hose.

7. REINSTALL VACUUM CONTROL VALVE SET

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

8. REINSTALL OIL DIPSTICK AND GUIDE FOR A/T

HINT:

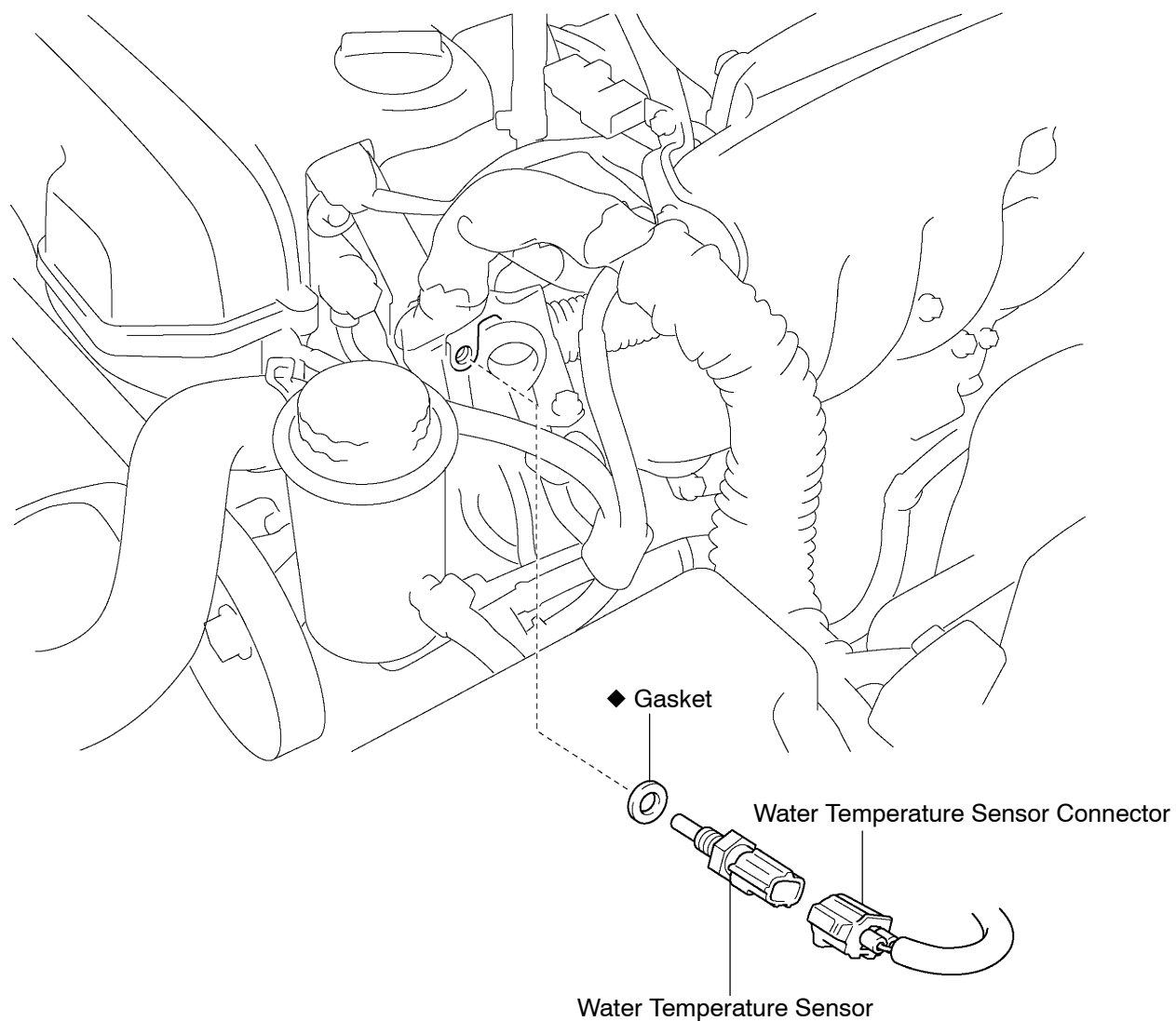
Using a new O-ring.

9. REINSTALL SEGINE COVER

Reinstall the engine cover with the 4 nuts.

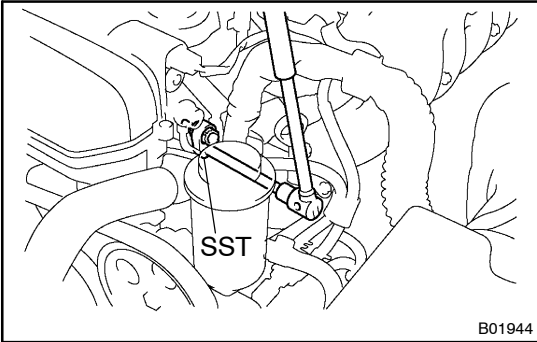
WATER TEMPERATURE SENSOR COMPONENTS

SF005-07



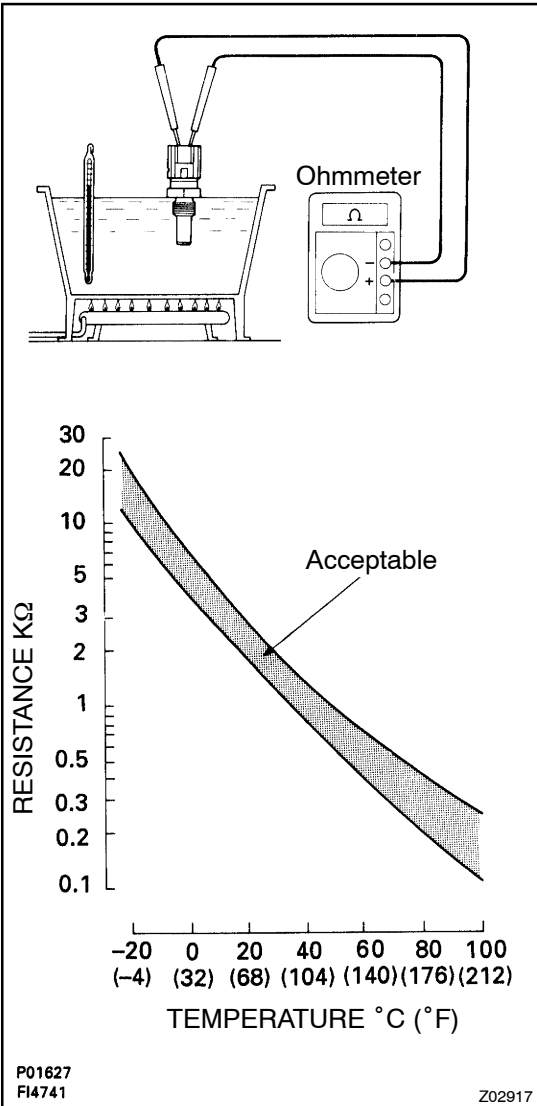
◆ Non-reusable part

B02006



INSPECTION

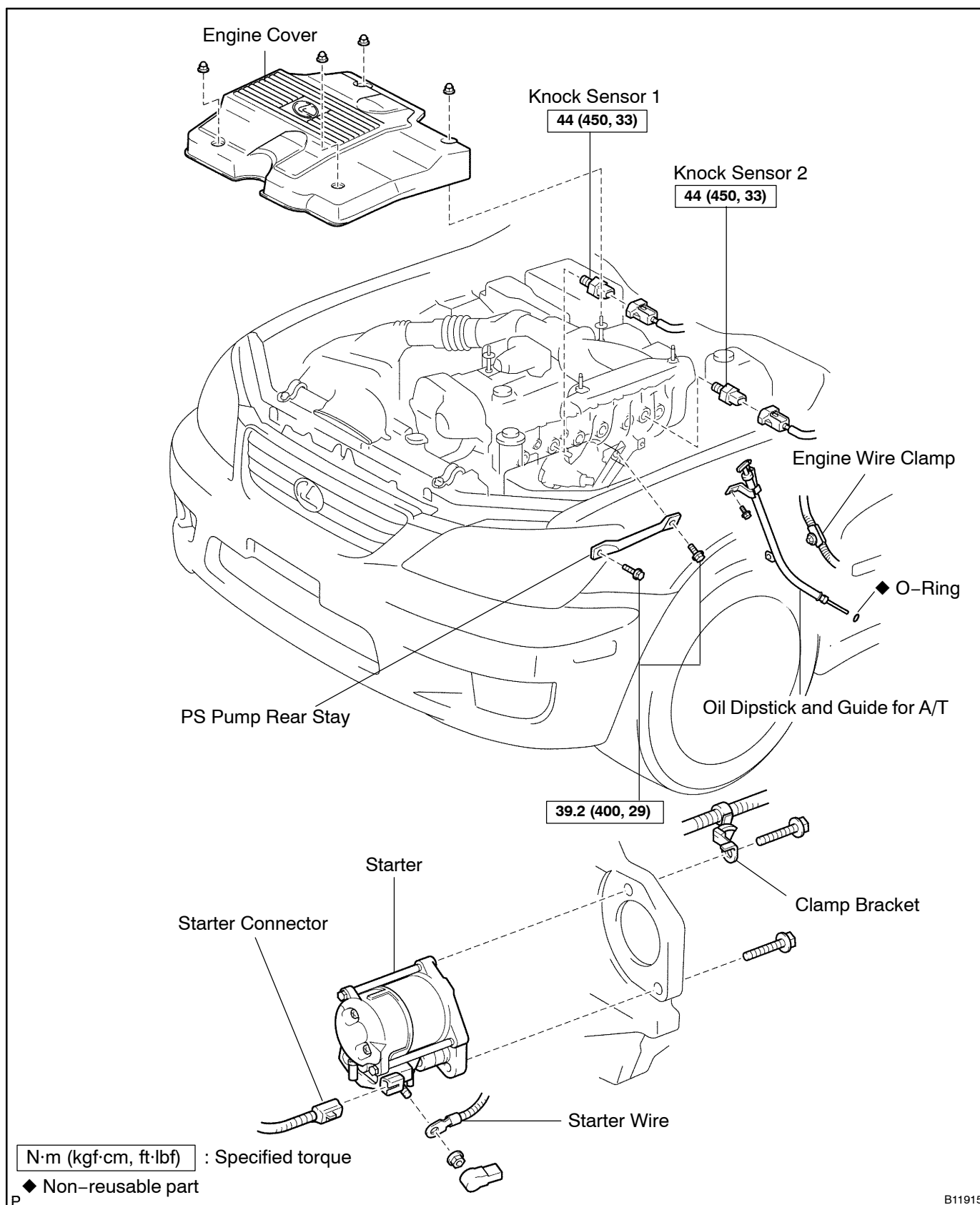
1. **DRAIN ENGINE COOLANT**
2. **REMOVE WATER TEMPERATURE SENSOR**
 - (a) Disconnect the water temperature sensor connector.
 - (b) Using SST, remove the water temperature sensor and gasket.
SST 09205-76030


P01627
FI4741

Z02917

KNOCK SENSOR COMPONENTS

SF008-07

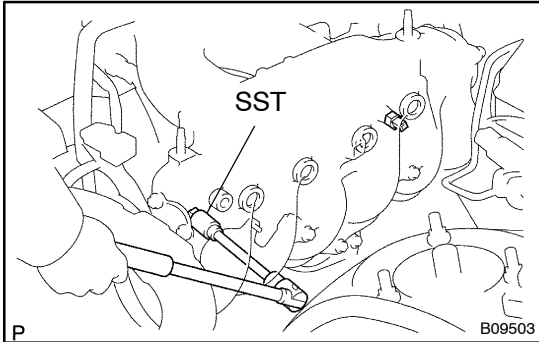


B11915

INSPECTION

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



2. REMOVE PS PUMP REAR STAY

3. REMOVE KNOCK SENSOR 1

(a) Disconnect the knock sensor connector.

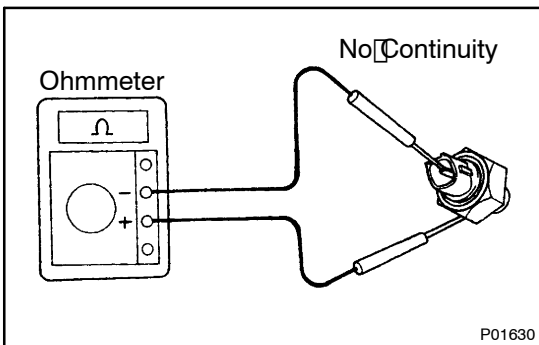
(b) Using SST, remove the knock sensor.

SST 09816-30010

4. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-64)

5. REMOVE STARTER (See page ST-3)

6. REMOVE KNOCK SENSOR 2



7. INSPECT KNOCK SENSORS

Using an ohmmeter, check that there is no continuity between the terminal and body.

If there is continuity, replace the sensor.

8. REINSTALL KNOCK SENSORS

(a) Using SST, install the knock sensor.

SST 09816-30010

Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)

(b) Connect the knock sensor connector.

9. REINSTALL STARTER (See page ST-15)

10. REINSTALL OIL DIPSTICK AND GUIDE FOR A/T

HINT:

Use a new O-ring.

11. REINSTALL PS PUMP REAR STAY

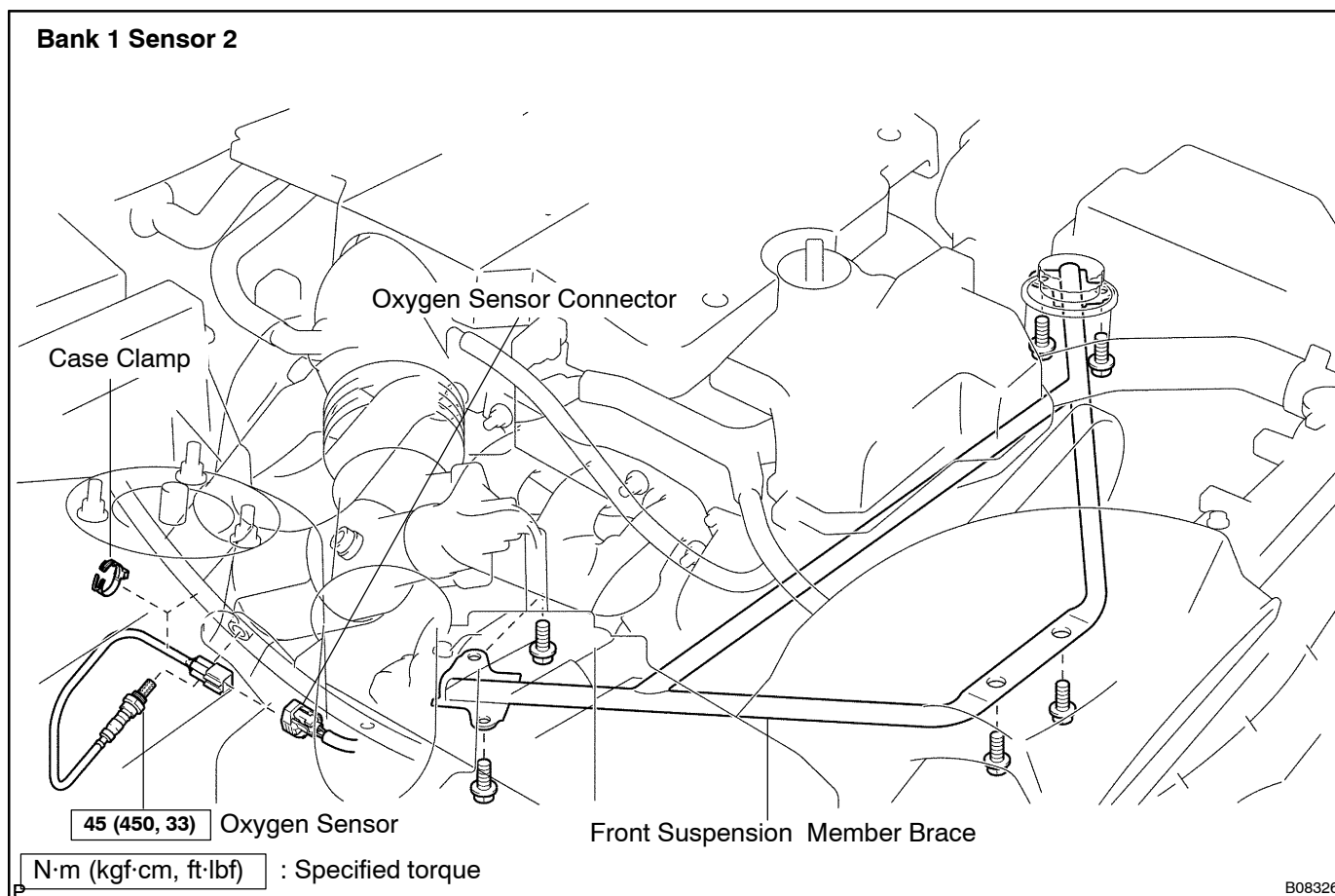
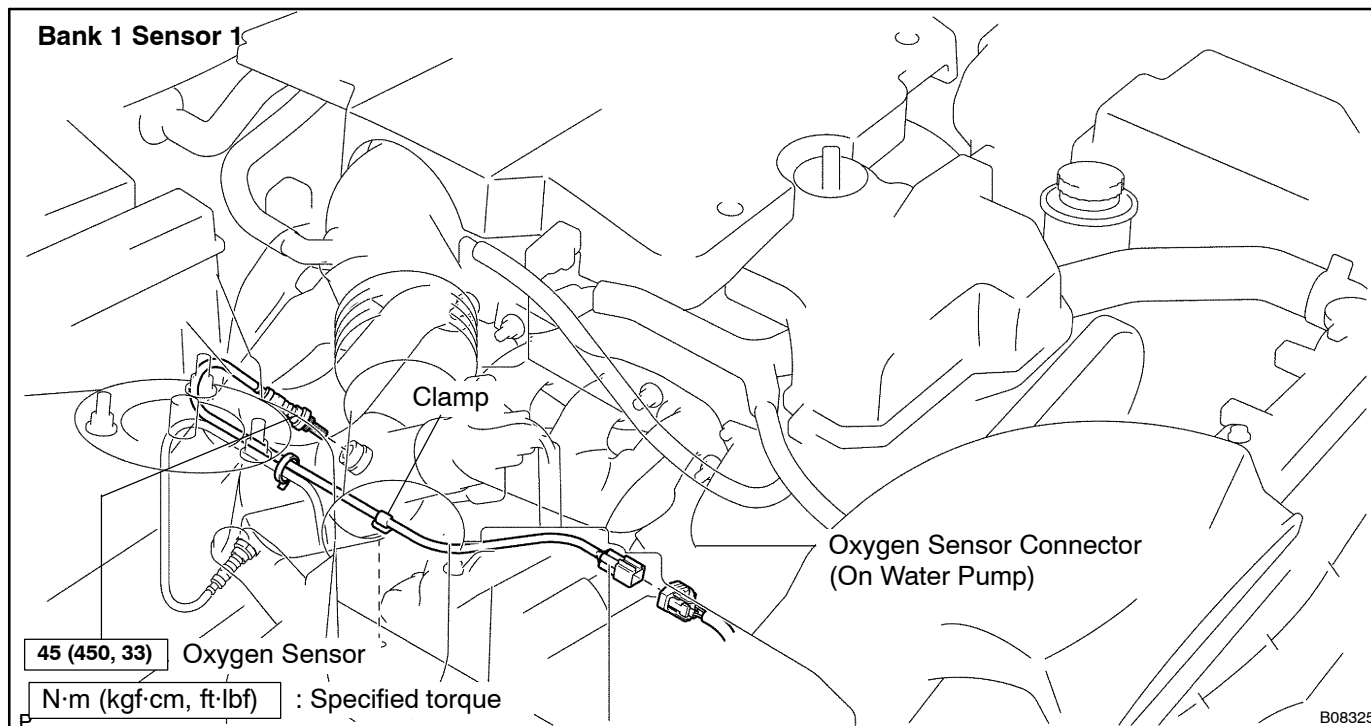
Torque: 39.2 N·m (400 kgf·cm, 29 ft·lbf)

12. REINSTALL ENGINE COVER

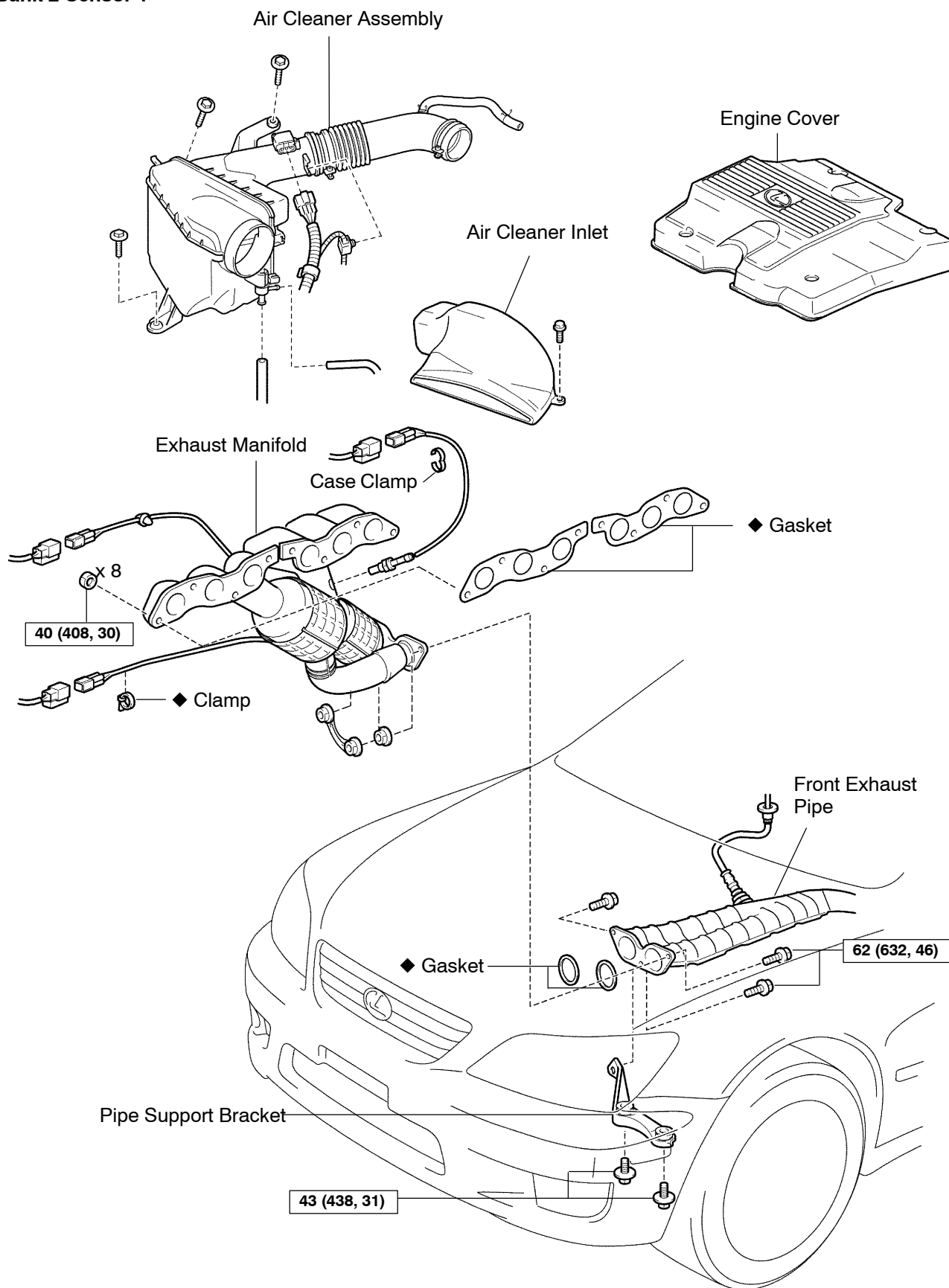
Reinstall the engine cover with the 4 nuts.

OXYGEN SENSOR COMPONENTS

SF00B-06



Bank 2 Sensor 1

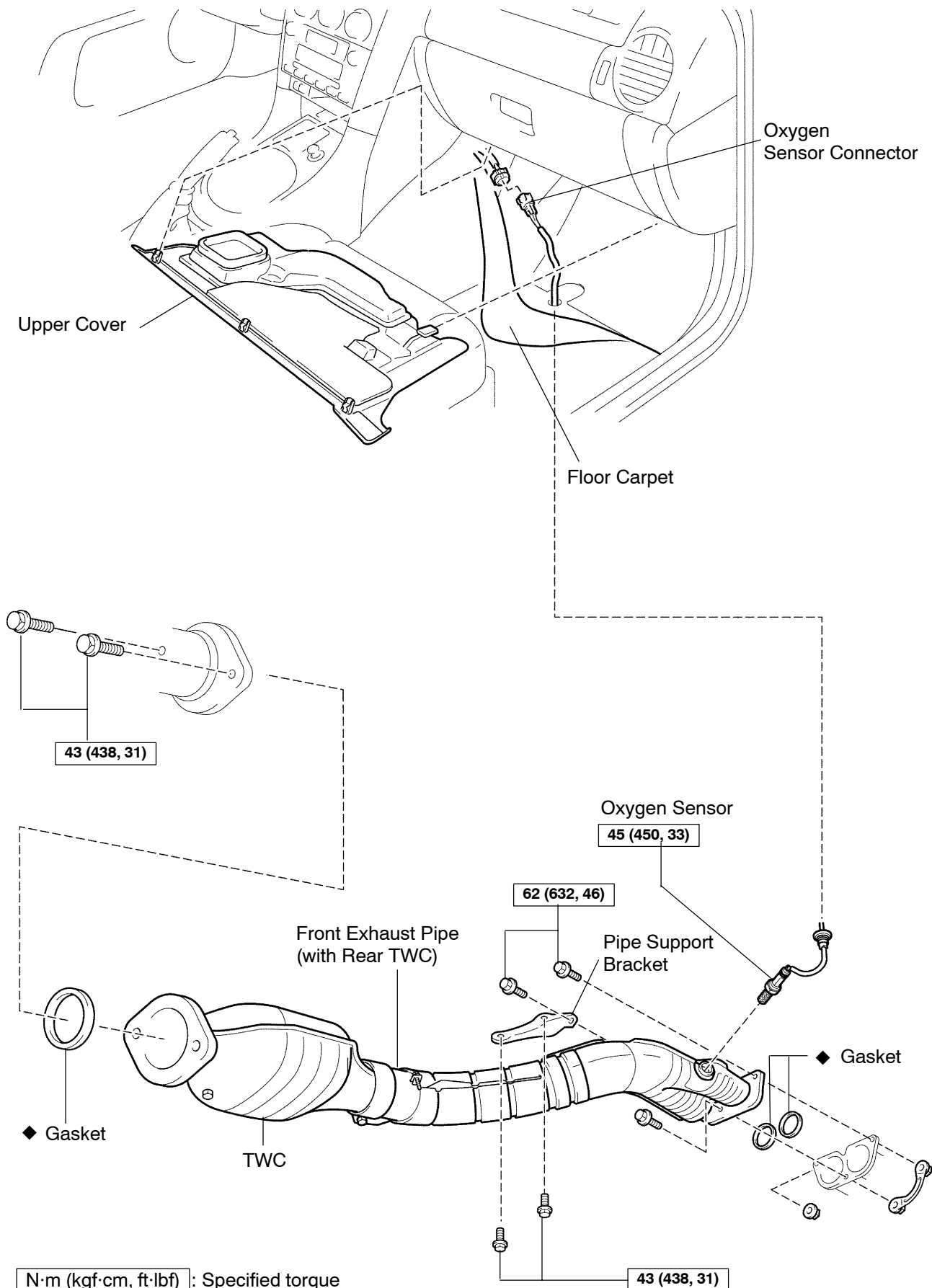


P

N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

B11916

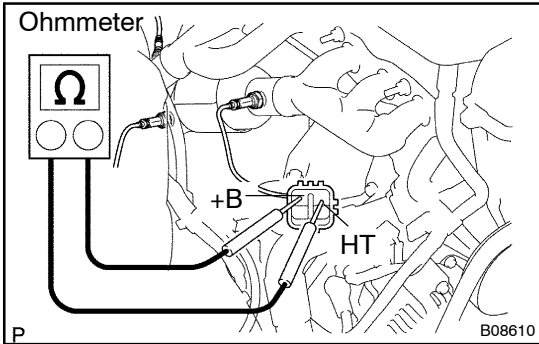
Bank 2 Sensor 2

N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

P

B14798



INSPECTION

1. INSPECT HEATER RESISTANCE OF OXYGEN SENSORS (BANK 1, 2 SENSOR 1 AND BANK 1 SENSOR 2)

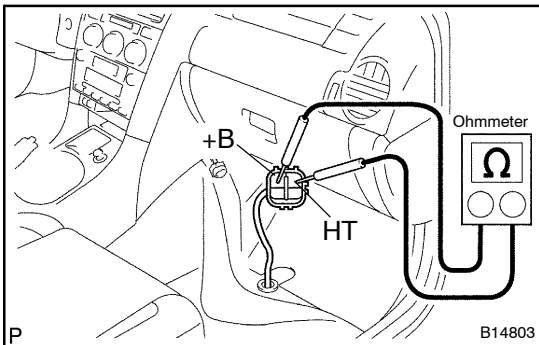
- Disconnect the oxygen sensor connectors.
- Using an ohmmeter, measure the resistance between the terminals +B and HT.

Resistance: 11 – 16 Ω at 20°C (68°F)

If the resistance is not as specified, replace the sensor.

Torque: 45 N·m (450 kgf·cm, 33 ft·lbf)

- Reconnect the oxygen sensor connectors.



2. INSPECT HEATER RESISTANCE OF OXYGEN SENSOR (BANK 2 SENSOR 2)

- Take out the front side of the floor carpet.
- Disconnect the oxygen sensor connector. Using an ohmmeter, measure the resistance between the terminals +B and HT.

Resistance: 11 – 16 Ω at 20°C (68°F)

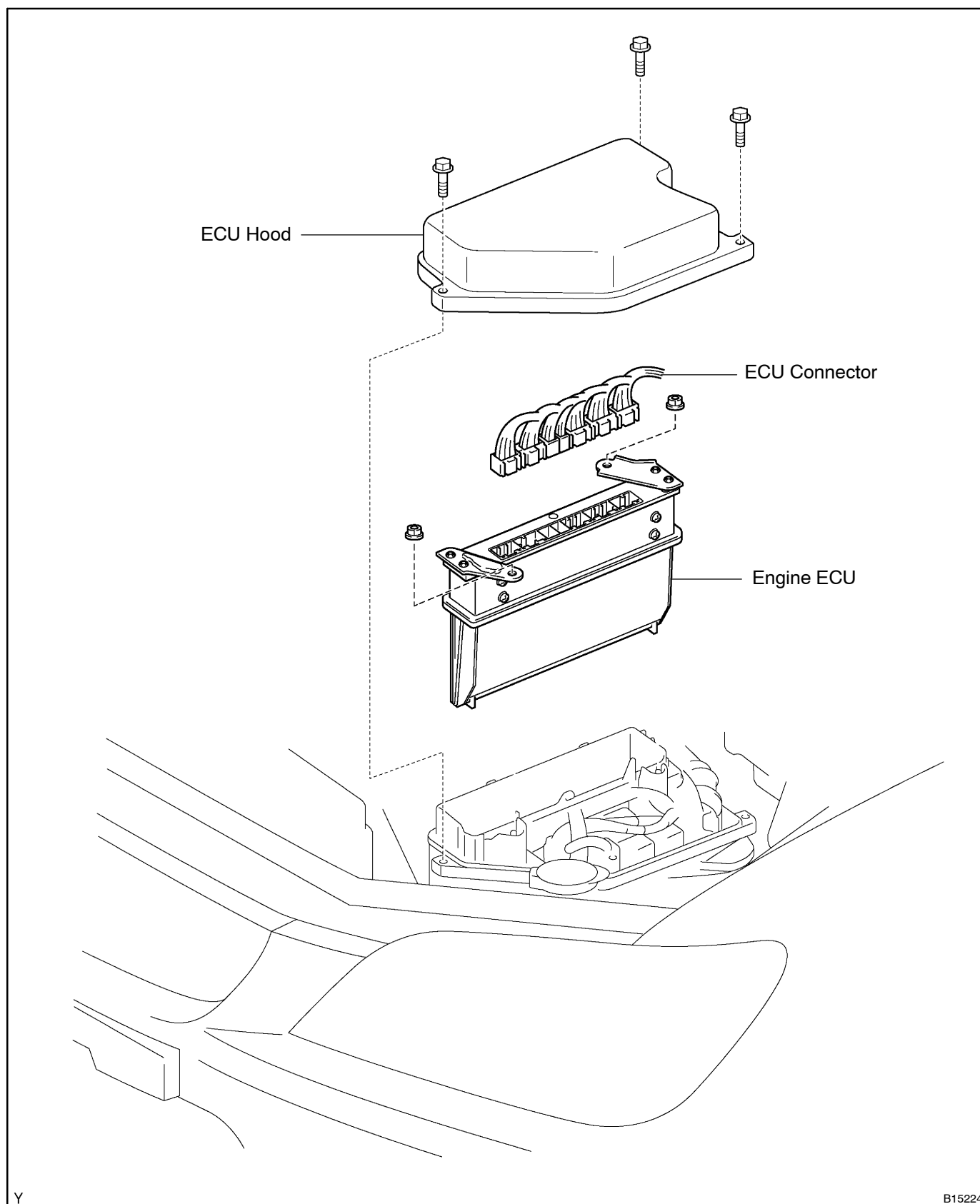
If the resistance is not as specified, replace the sensor.

Torque: 45 N·m (450 kgf·cm, 33 ft·lbf)

- Reconnect the oxygen sensor connector.
 - Reinstall the floor carpet.
- ### 3. INSPECT OPERATION OF OXYGEN SENSOR (See page DI-49)

ENGINE ECU COMPONENTS

SF00F-10



Y

B15224

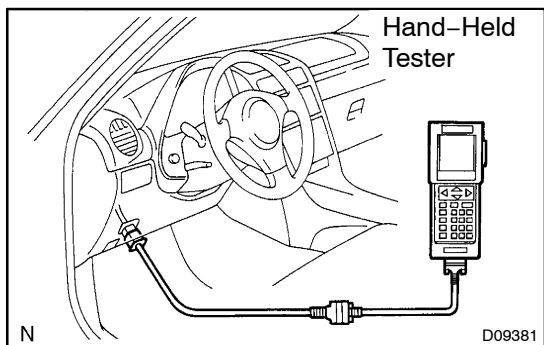
INSPECTION

1. REMOVE ENGINE ECU
2. INSPECT ENGINE ECU ([See page DI-22](#))
3. REINSTALL ENGINE ECU

FUEL CUT RPM INSPECTION

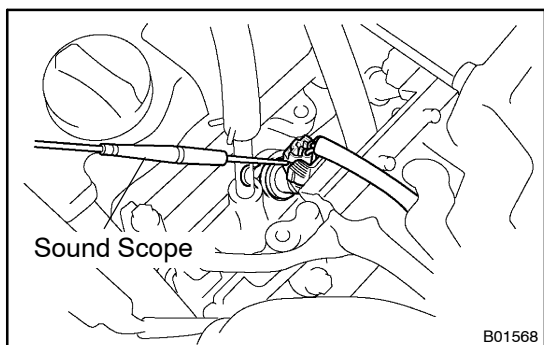
1. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.



2. CONNECT LEXUS HAND-HELD TESTER TO DLC3

- Connect the hand-held tester to the DLC3.
- Please refer to the hand-held tester operator's manual for further details.



3. INSPECT FUEL CUT-OFF OPERATION

- Increase the engine speed to at least 3,000 rpm.
- Check for injector operating noise.
- Check that when the throttle lever is released, injector operation noise stops momentarily and then resumes.

HINT:

Measure with the A/C OFF.

Fuel return rpm: 1,000 rpm

4. DISCONNECT HAND-HELD TESTER OR OBDII SCAN TOOL