SFI SYSTEM

SF0N1-08

PRECAUTION

HINT:

Any diagnostic trouble code retained by the ECM 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.

1. BEFORE WORKING ON FUEL SYSTEM, DISCONNECT NEGATIVE (-) TERMINAL CABLE FROM 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 heated 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.

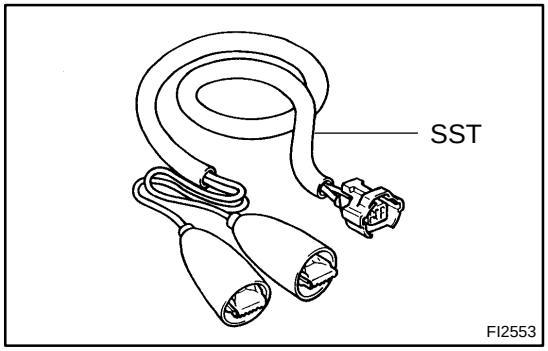
(b) Disconnection, looseness or cracks in the parts of the air induction system between the throttle body and cylinder head will cause air suction and cause the engine to run out of tune.

7. ELECTRONIC CONTROL SYSTEM

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

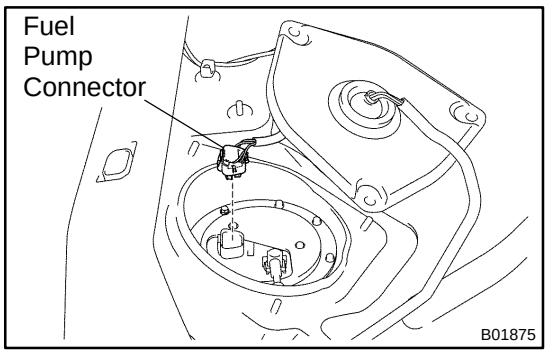
HINT:
Always check the diagnostic trouble code before disconnecting the negative (-) terminal cable from the battery.

(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 SFI parts carefully, especially the ECM.
(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 ECM 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 SFI 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.



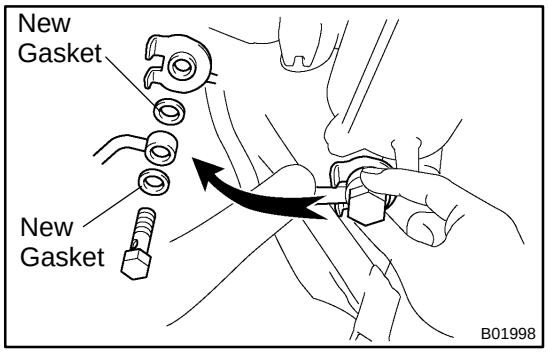
(5) Use SST for inspection or test of the injector or its wiring connector.

SST 09842-30070

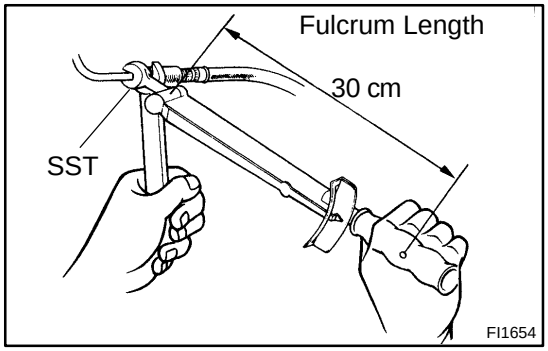


8. FUEL SYSTEM

(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 09023-12701

NOTICE:

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

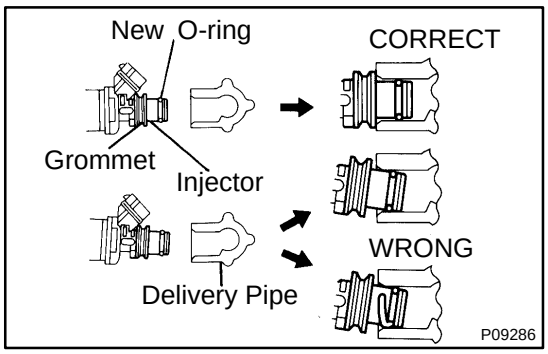
Torque:

30 N·m (310 kgf·cm, 22 ft·lbf) for using SST

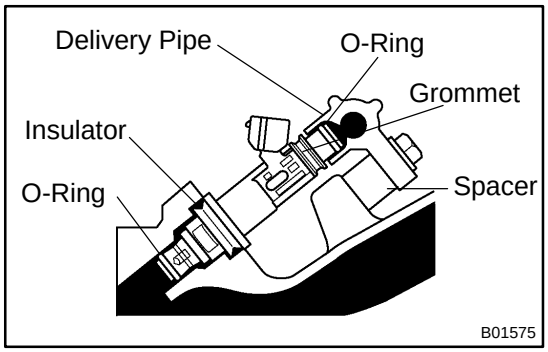
38 N·m (387 kgf·cm, 28 ft·lbf)

HINT:

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

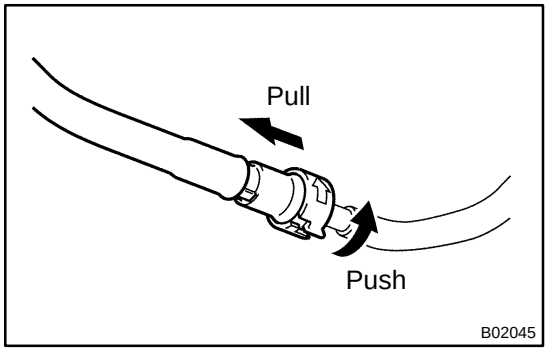


(c) Observe these precautions when removing and installing the injectors.
(1) Never reuse the O-ring.
(2) When placing a new O-ring on the injector, take care not to damage it in any way.
(3) Coat a new O-ring with spindle oil or gasoline before installing-never use engine, gear or brake oil.

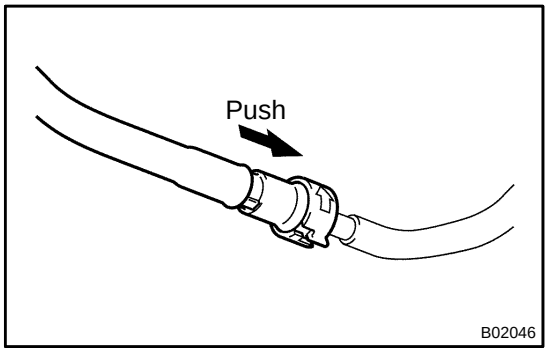


(d) Install the injector to the delivery pipe and intake manifold as shown in the illustration.
Before installing the injector, must apply spindle oil or gasoline on the place where a delivery pipe or an intake manifold touches an O-ring of the injector.

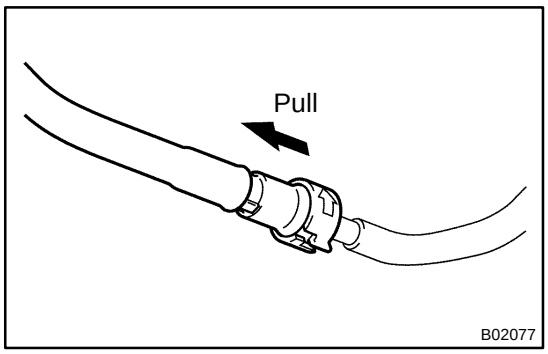
(e) Quick Type:
Observe these precautions when disconnecting the fuel tube connector:
(1) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.
(2) Be sure to disconnect with hands.



(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.

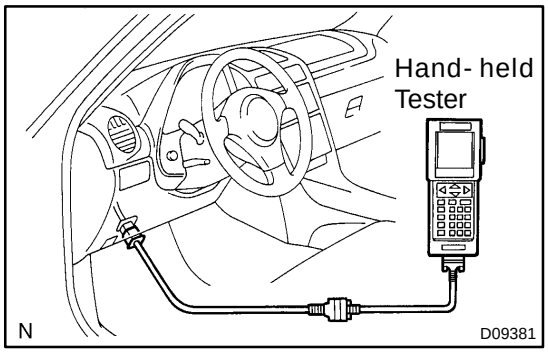


(f) Quick Type:
Observe these precautions when connecting the fuel tube connector:
(1) Check if there is any damage or foreign objects on the connected part of the pipe.
(2) Match the axis of the connector with axis of the pipe, and push in the connector until the connector makes a ”click” sound. In 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.



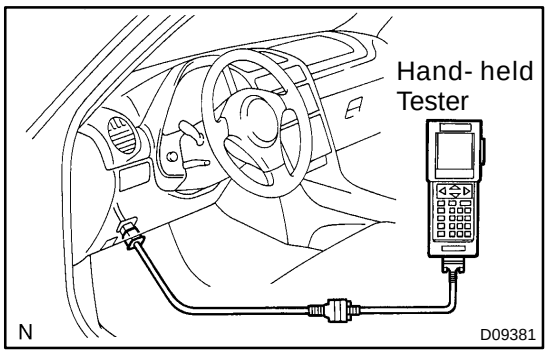
(h) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.
(1) Connect a hand-held tester to the DLC3.
(2) Connect the hand-held tester to the DLC3.
(3) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD.

NOTICE:
Do not start the engine.

(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 SF-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

SF0N2-10

ON-VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

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

(b) Turn the ignition switch ON and hand-held tester main switch ON.

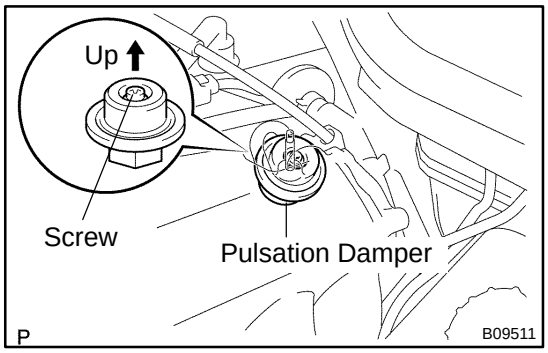
NOTICE:

Do not start the engine.

(c) Select the following menu items: DIAGNOSIS/ENHANCED OBD ll / ACTIVE TEST / FUEL PUMP / SPD.

(d) Please refer to the hand-held tester operator's manual for further details.

(e) If you have no hand-held tester, connect the positive (+) and negative (-) leads from the battery to the fuel pump connector (See step 3).

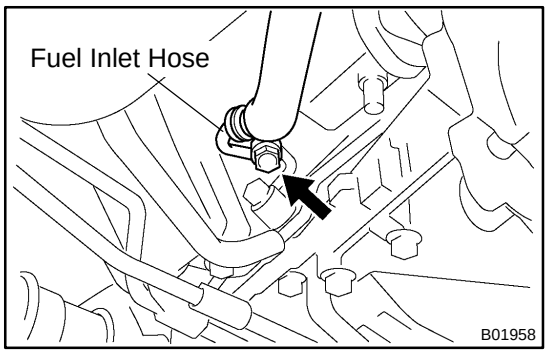


(f) Check that the pulsation damper screw rises up when the fuel pump operates.

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

(g) Turn the ignition switch OFF.

(h) Disconnect the hand-held tester from the DLC3.



2. CHECK FUEL PRESSURE

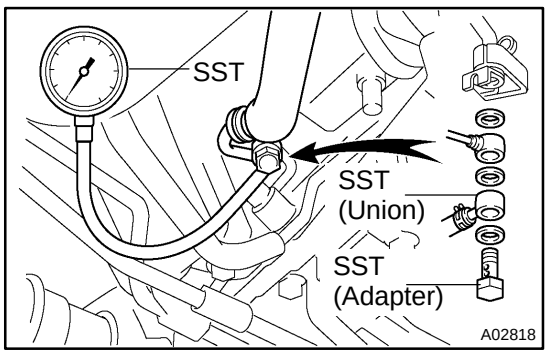
(a) Check the battery positive voltage is above 12 V.

(b) Disconnect the negative (-) terminal cable from the battery.

(c) 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.**

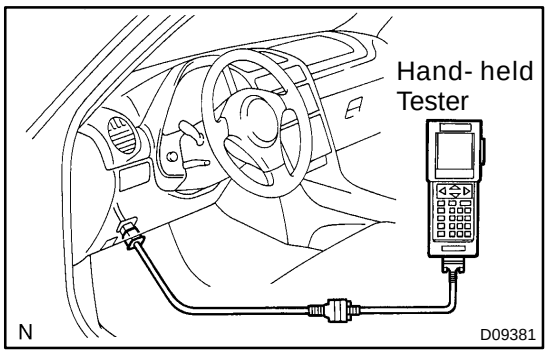


(d) Install the fuel inlet hose and SST (pressure gauge) to the fuel pipe support with the 3 gaskets and SST (union and adapter).

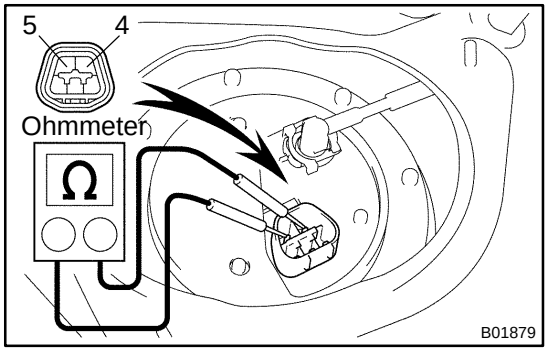
SST 09268-45014 (09268-41190, 90405-06167)

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

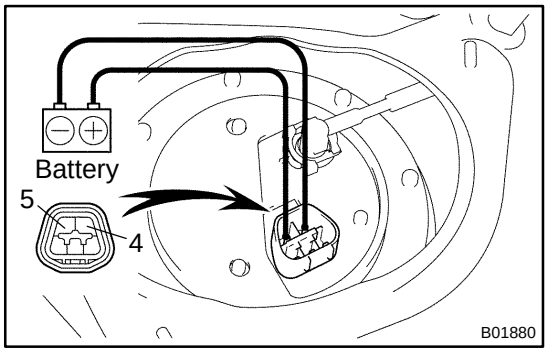
(e) Wipe off any splattered gasoline.



(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/cm^2, 44 - 50 psi)
If pressure is high, replace the fuel pressure regulator.
If pressure is low, check the fuel hoses and connections, fuel pump, fuel filter and 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/cm^2, 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/cm^2, 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.

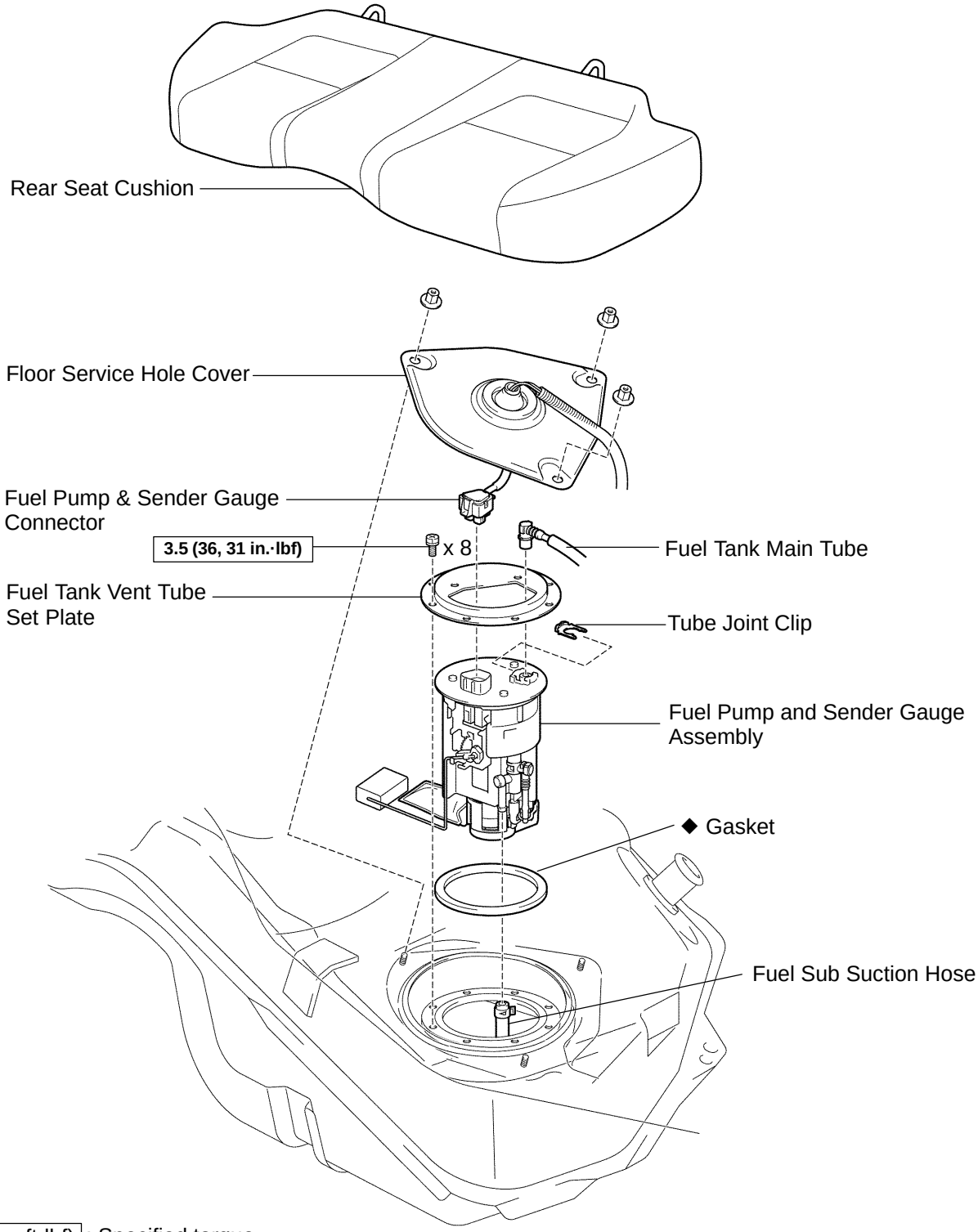
(f) Reconnect the fuel pump & sender gauge connector.

(g) Reinstall the floor service hole cover with the cap nuts.

(h) Reinstall the rear seat cushion.

SF0N3-10

COMPONENTS

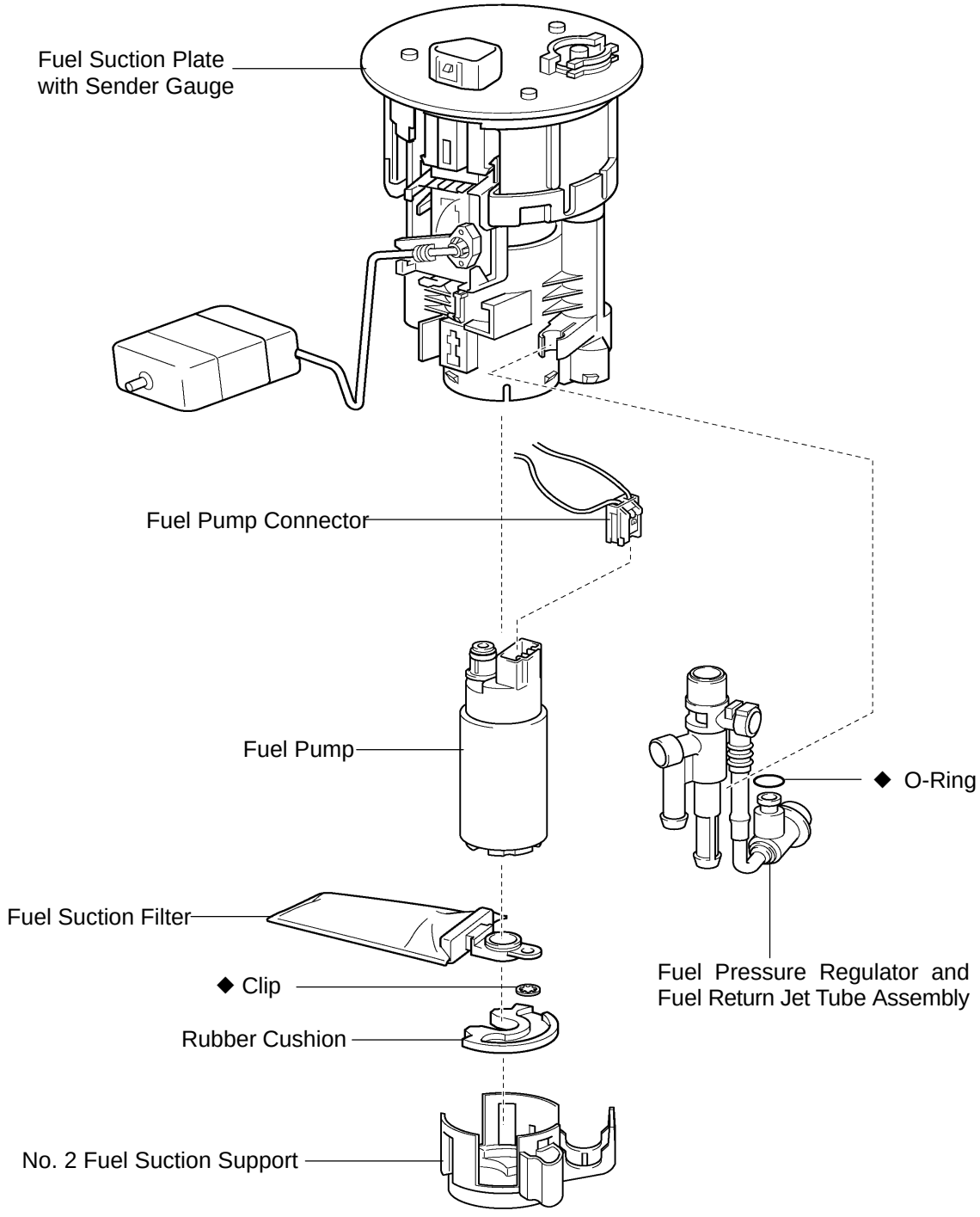


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

P

B11928



Y

◆ Non-reusable part

B10328

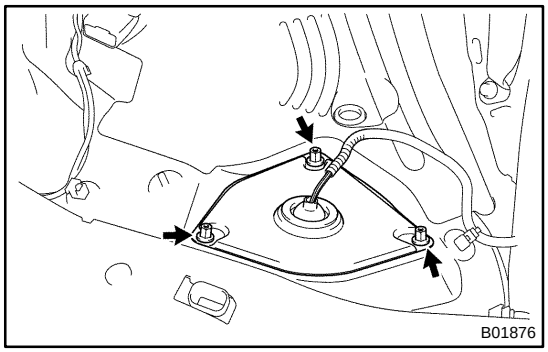
SF1LB-02

REMOVAL

CAUTION:

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

1. REMOVE REAR SEAT CUSHION



2. REMOVE FLOOR SERVICE HOLE COVER

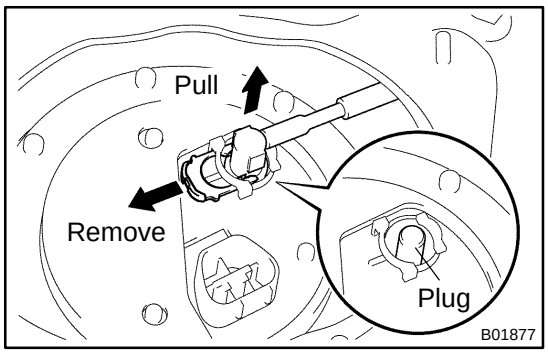
Remove the 3 cap nuts and service hole cover.

3. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

4. DISCONNECT FUEL TANK MAIN TUBE (FUEL TUBE CONNECTOR) FROM FUEL SECTION PLATE

CAUTION:

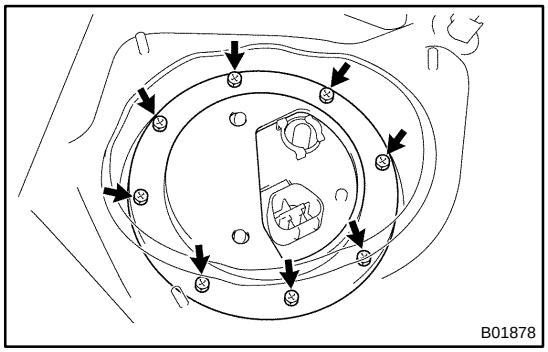
- **Perform disconnecting operation of the fuel tube connector (quick type) after observing precaution (See page SF-1).**
- **As there is retained pressure in the fuel line, prevent it from splashing inside the vehicle compartment.**



(a) Remove the tube joint clip.

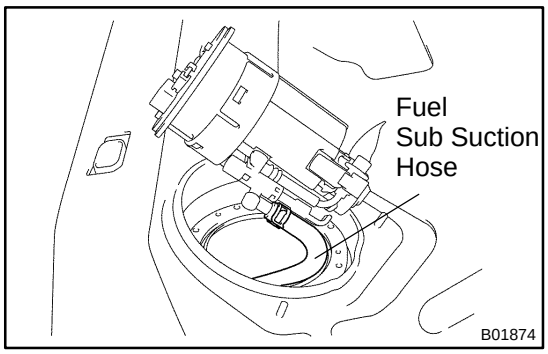
(b) Pull out the fuel main tube.

(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

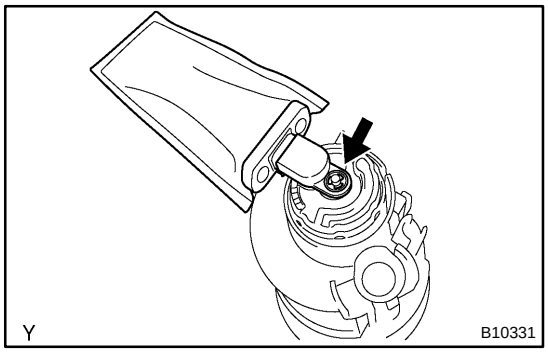
(a) Remove the 8 bolts and fuel tank vent tube set plate.



(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 SF-17)

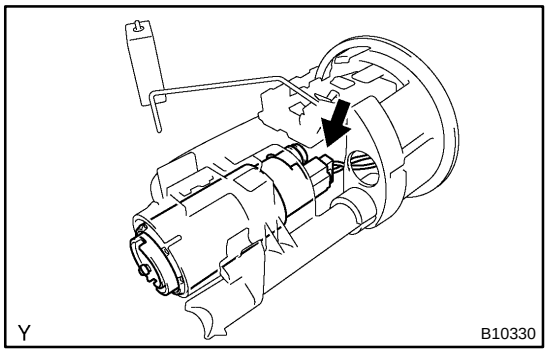
7. REMOVE FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY (See page SF-17)



8. REMOVE FUEL SUCTION FILTER

(a) Remove the clip.

(b) Pull out the suction filter.



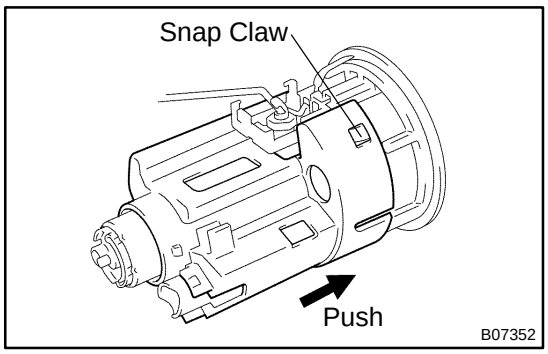
9. REMOVE FUEL PUMP

(a) Disconnect the fuel pump connector from the fuel pump.

(b) Pull out the fuel pump.

SF1LC-03

INSTALLATION

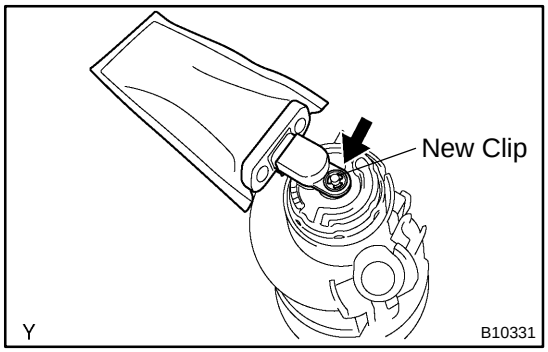


1. INSTALL FUEL PUMP

(a) Apply a light coat of gasoline to the O-ring.

(b) Push in the fuel pump.

(c) Connect the fuel pump connector.

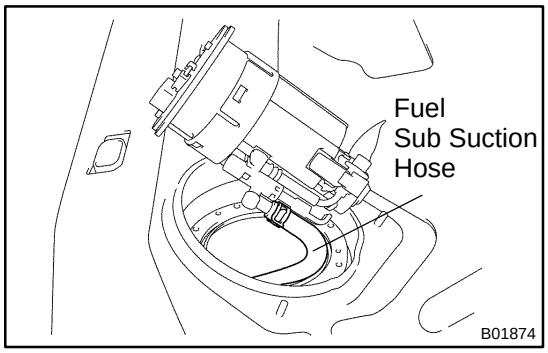


2. INSTALL FUEL SUCTION FILTER

Install the suction filter with a new clip.

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

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

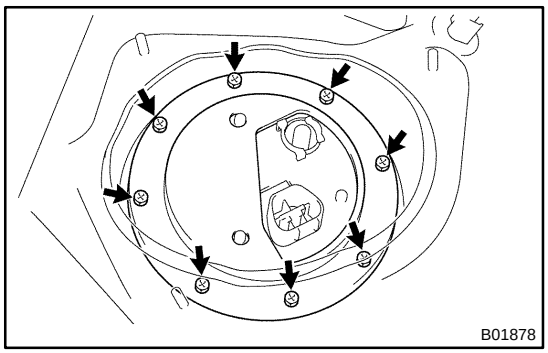


5. INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY TO FUEL TANK

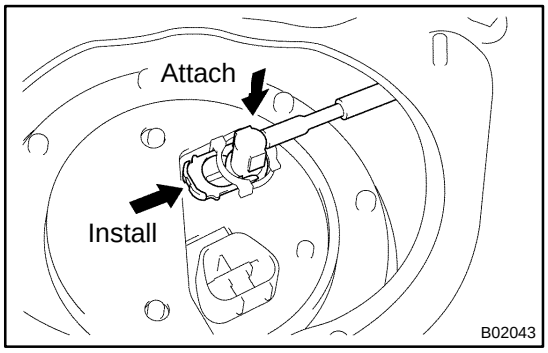
(a) Install a new gasket to the fuel suction plate.

(b) Connect the fuel sub suction hose to the fuel return jet tube.

(c) Attach the fuel pump and sender gauge assembly to the fuel tank.



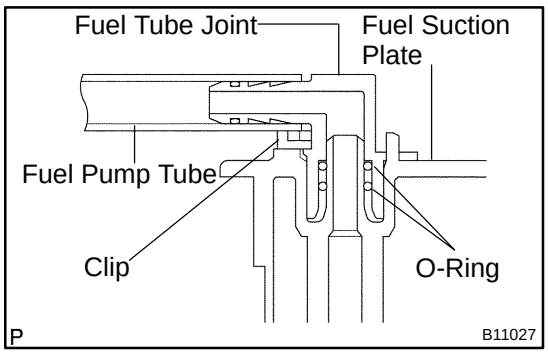
(d) Install the fuel tank vent tube set plate with the 8 bolts.
Torque: 3.5 N·m (36 kgf·cm, 31 in.·lbf)

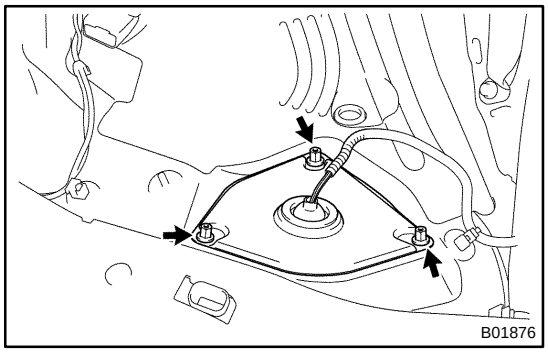


6. CONNECT FUEL TANK MAIN TUBE (FUEL TUBE CONNECTOR) TO FUEL SUCTION PLATE

(a) Attach the fuel tube connector to the port of the fuel suction plate.

(b) Install the tube joint clip.





NOTICE:

- **Check that the connector is inserted fully and securely.**
- **Check that the clip of the tube joint is on the collar of the connector.**
- **After installing the clip of the tube joint, check that the connector is not pulled off.**

7. CONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

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

9. INSTALL FLOOR SERVICE HOLE COVER

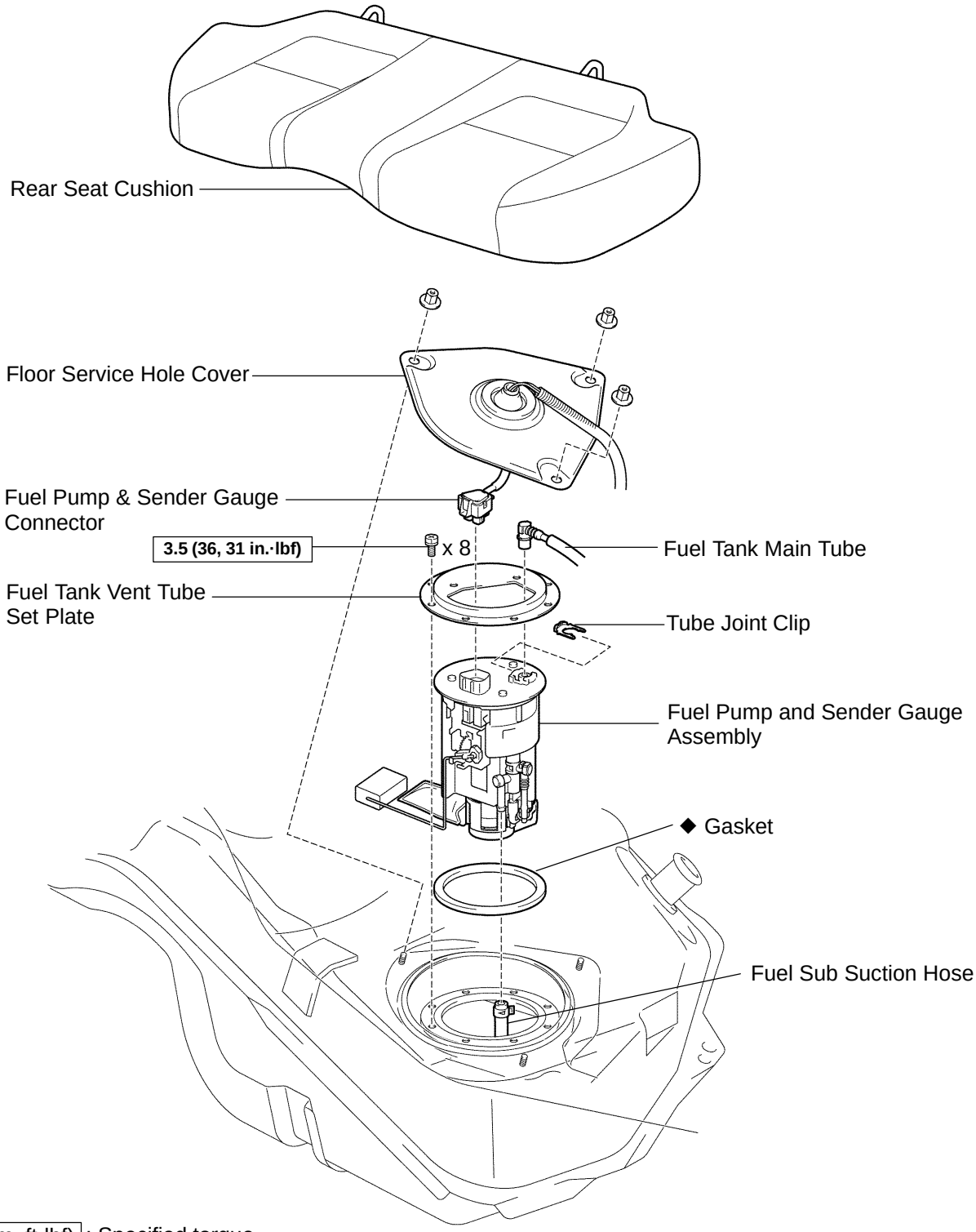
Install the service hole cover with the 3 cap nuts.

10. INSTALL REAR SEAT CUSHION

FUEL PRESSURE REGULATOR

SF0N6-07

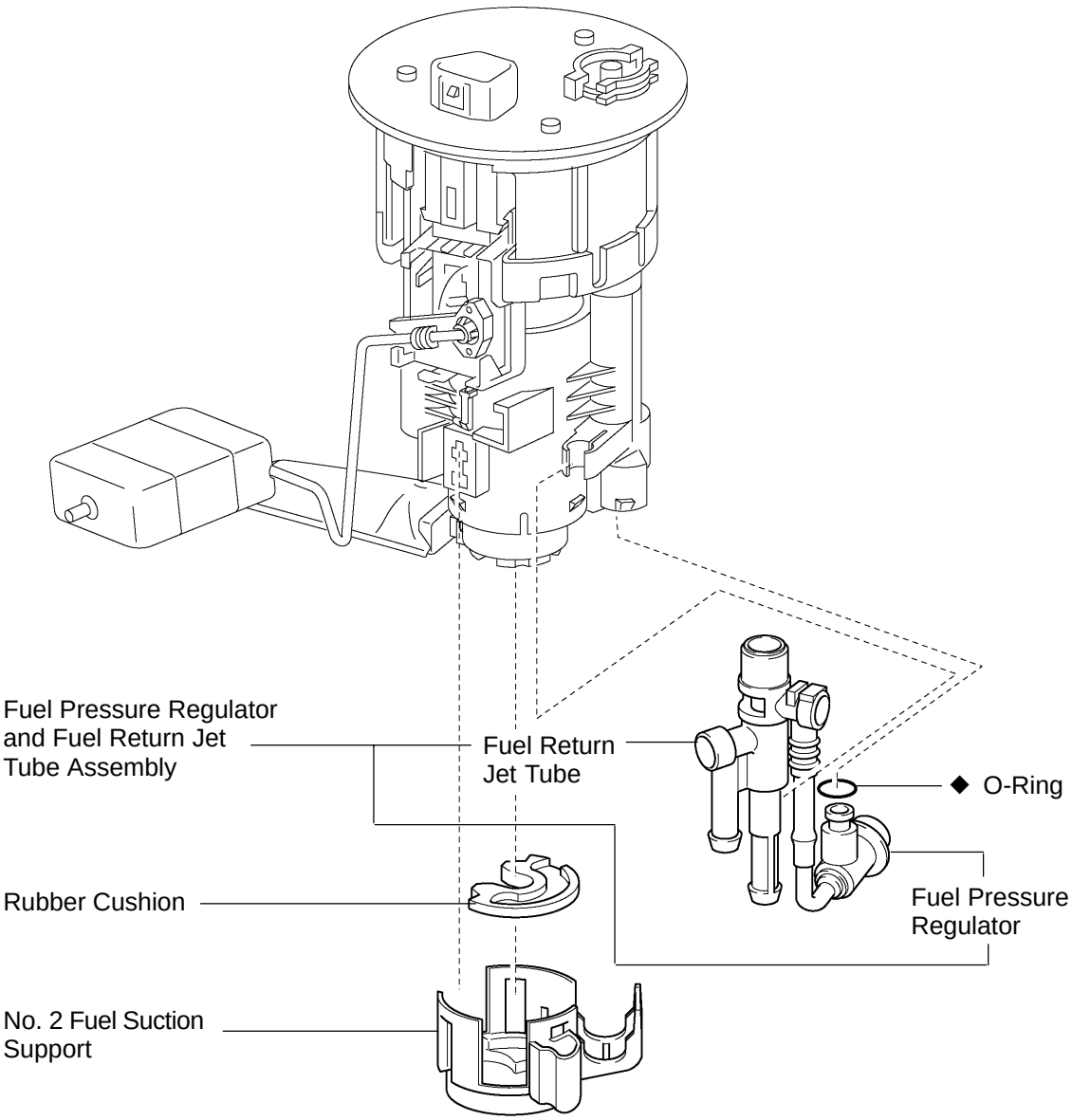
COMPONENTS



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

◆ Non-reusable part

B11928



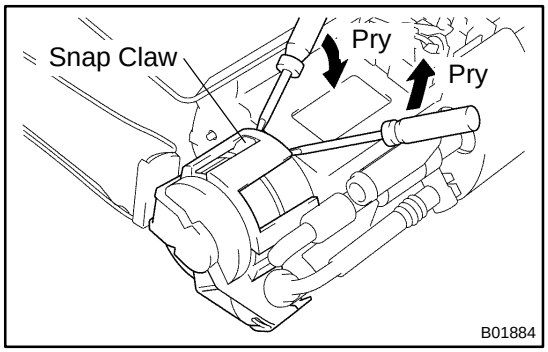
Y ◆ Non-reusable part

B10327

SF0N7-09

REMOVAL

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



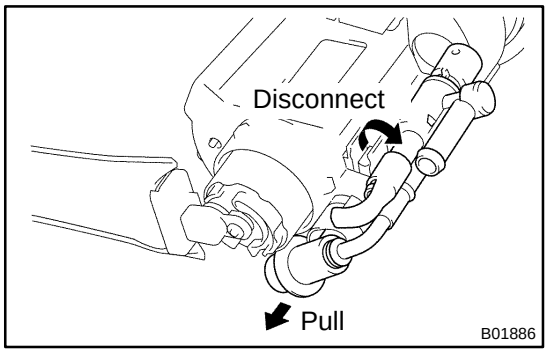
2. REMOVE NO. 2 FUEL SUCTION SUPPORT

(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

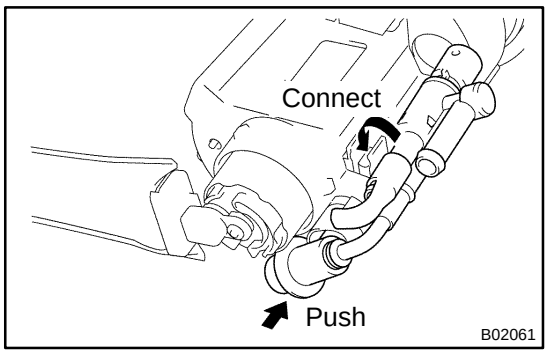
(a) Disconnect the fuel return jet tube from the clamp of the No.2 fuel suction support.

(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.

SF0N8-09

INSTALLATION



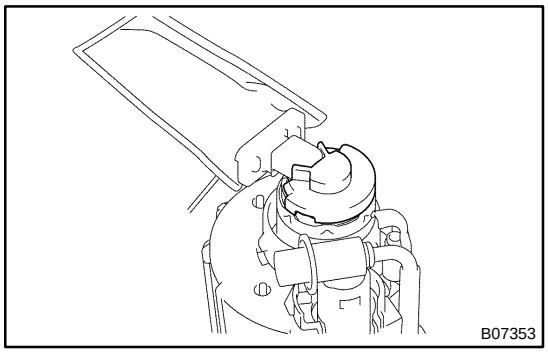
1. INSTALL FUEL PRESSURE REGULATOR AND FUEL RETURN JET TUBE ASSEMBLY

(a) Apply a light coat of gasoline to a new O-ring, and install it to the fuel pressure regulator.

(b) Push in the fuel pressure regulator to the fuel filter.

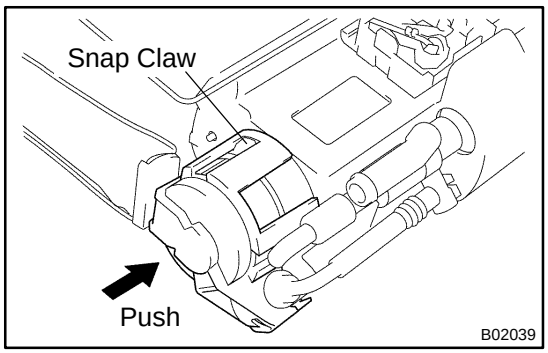
(c) Check that the fuel pressure regulator rotates smoothly. If it does not rotates smoothly, the O-ring may be pinched, so remove the fuel pressure regulator and perform again steps (b) and (c) above.

(d) Connect the fuel return jet tube to the clamp of the No. 2 fuel suction support.



2. INSTALL NO. 2 FUEL SUCTION SUPPORT

(a) Install the rubber cushion to the fuel pump.



(b) 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 SF-13)

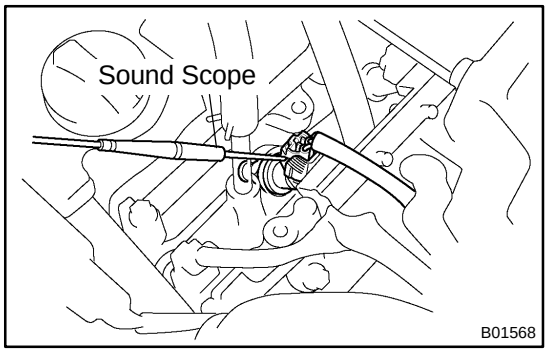
INJECTOR

SF0N9-10

ON-VEHICLE INSPECTION

1. REMOVE ENGINE COVER

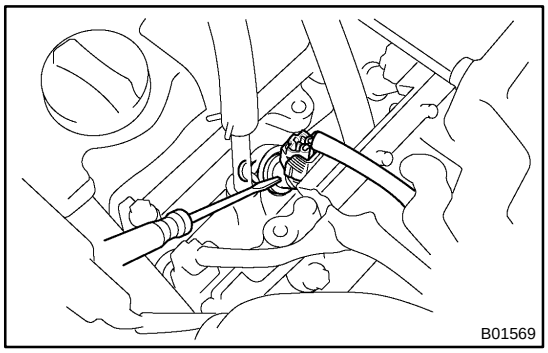
Remove 4 nuts and engine cover.



2. INSPECT INJECTOR OPERATION

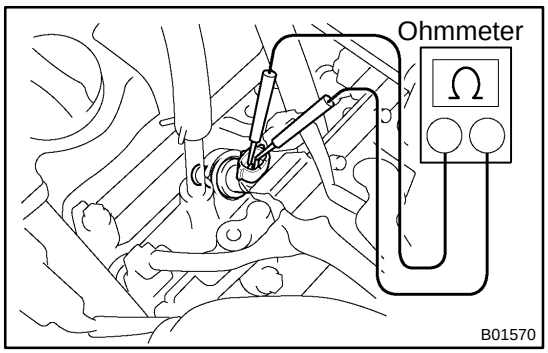
Check operation sound from each injector.

(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 ECM.



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.

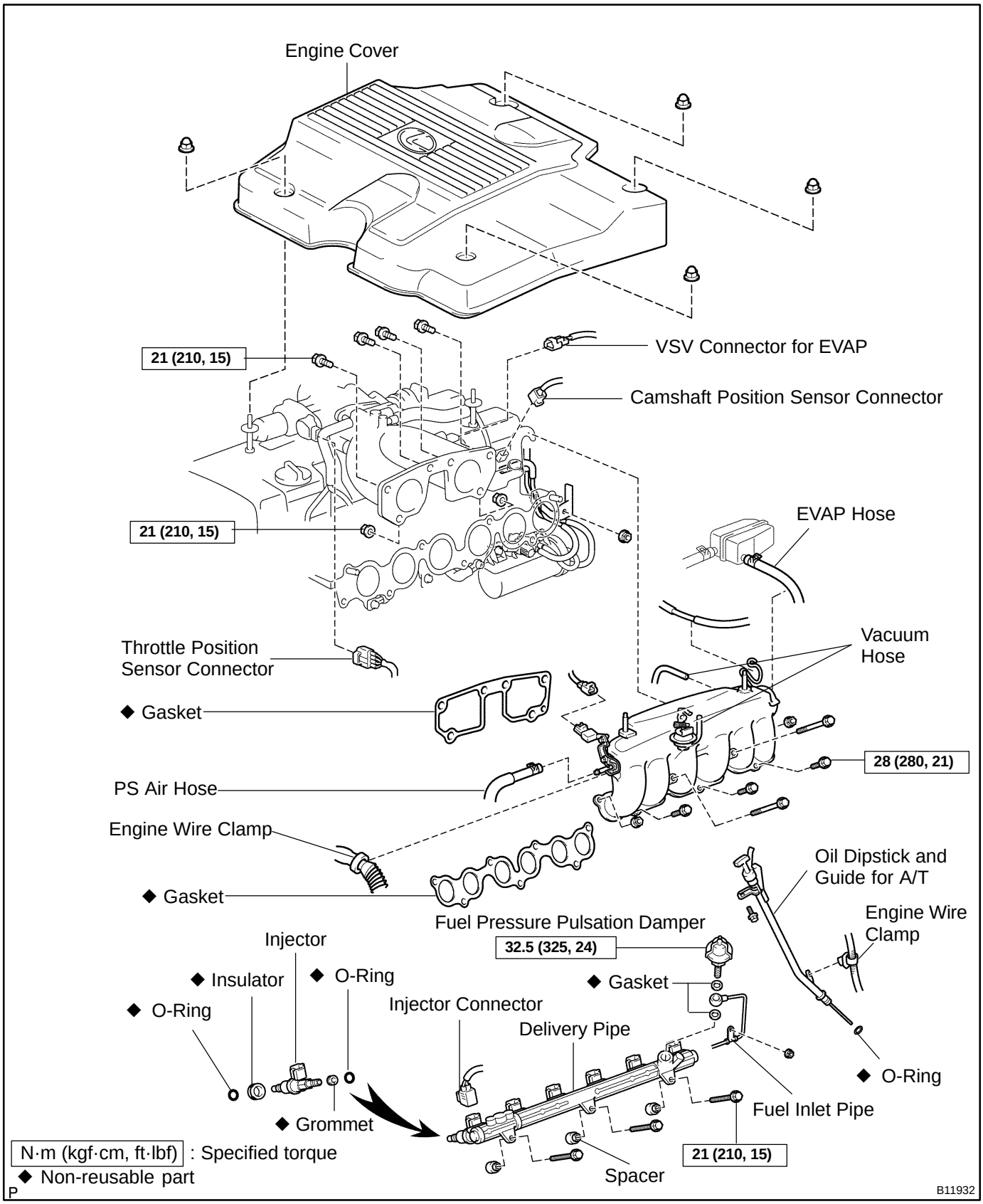
(c) Reconnect the injector connectors.

4. REINSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

SF151-05

COMPONENTS



SF0NB-08

REMOVAL

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.

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

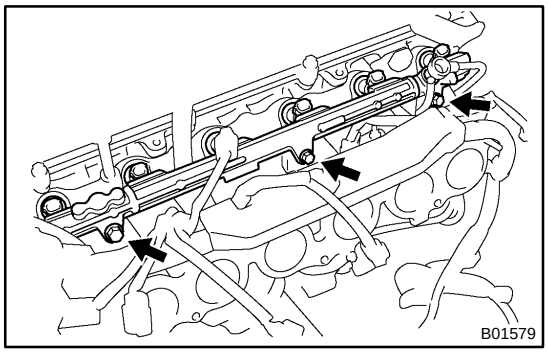
3. REMOVE FUEL PRESSURE PULSATION DAMPER (See page SF-26)

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.**

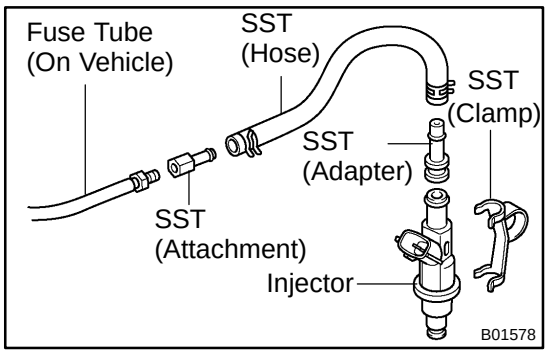
(a) Disconnect the 6 injector connectors.
(b) Disconnect the camshaft position sensor connector.
(c) Disconnect the throttle position sensor connector.
(d) Disconnect the VSV connector for EVAP.



(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 2 O-rings, grommet and insulator from each injector.
(h) Remove the 3 spacers from the intake manifold.

SF0NC-09

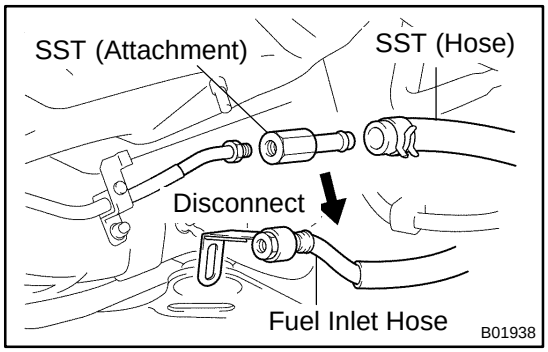
INSPECTION



1. INSPECT INJECTOR INJECTION

CAUTION:

Keep injector clear of sparks during the test.

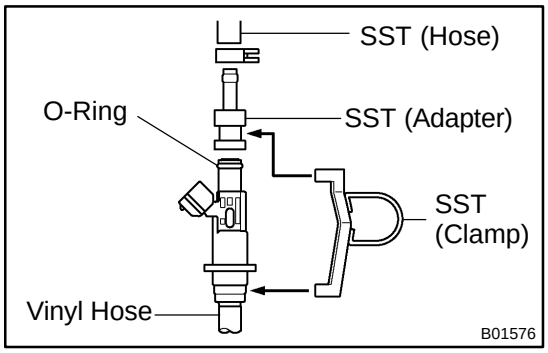


(a) Remove the nut, and disconnect the fuel inlet hose from the fuel main tube.

(b) Temporarily install SST (attachment) to the fuel main tube.
SST 09268-41047 (09268-52011)

(c) Tighten the flare nut on the fuel main tube (See page SF-1).

(d) Connect SST (hose) to the SST (attachment).
SST 09268-41047



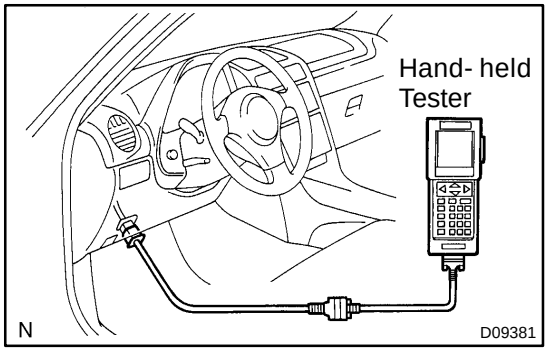
(e) Install the O-ring to the injector.

(f) 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)

(g) Put the injector into the graduated cylinder.

CAUTION:

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



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

(i) Connect the battery negative (-) terminal cable to the battery.

(j) Turn the ignition switch ON and hand-held tester main switch ON.

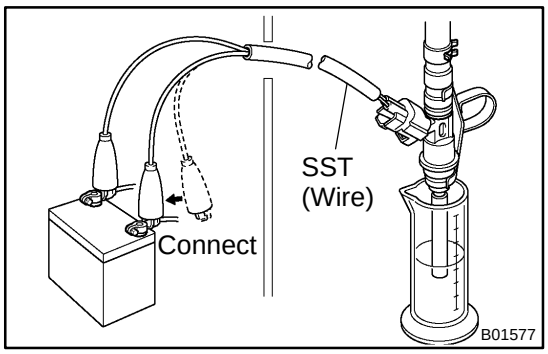
NOTICE:

Do not start the engine.

(k) Select the ACTIVE TEST mode on the hand-held tester.

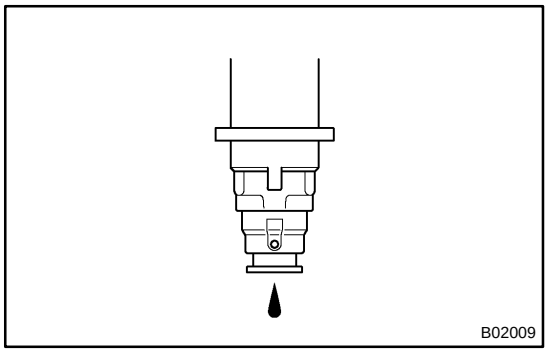
(l) Please refer to the hand-held tester operator's manual for further details.

(m) If you have no hand-held tester, connect the positive (+) and negative (-) leads from the battery to the fuel pump connector (See page SF-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 cm^3 (3.7 - 4.5 cu in.) per 15 sec.
Difference between each injector:
13 cm^3 (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 min.

(b) Turn the ignition switch OFF.

(c) Disconnect the negative (-) terminal cable from the battery.

(d) Remove the SST.
SST 09268-41047, 09842-30070

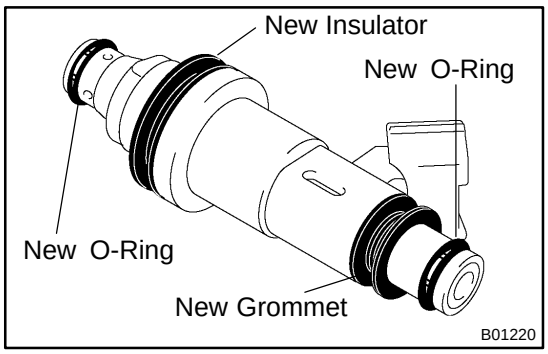
(e) Reconnect the fuel inlet hose to the fuel main tube (See page SF-1).

(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.

SF0ND-08

INSTALLATION

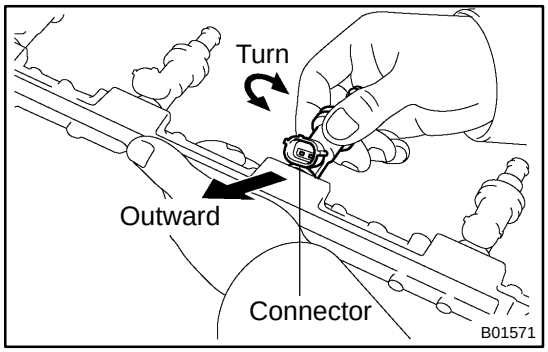


1. INSTALL INJECTORS AND DELIVERY PIPE

(a) Install new insulator and grommet to each injector.

(b) Apply a light coat of spindle oil or gasoline to 2 new O-rings and install them to each injector.

(c) Apply a light coat of spindle oil or gasoline on the place where a delivery pipe touches an O-ring of the injector.



(d) While turning the injector clockwise and counterclockwise, push it to the delivery pipe. Install the 6 injectors.

(e) Position the injector connector outward.

(f) Place the 3 spacers in position on the intake manifold.

(g) Apply a light coat of spindle oil or gasoline on the place where a intake manifold touches an O-ring of the injector.

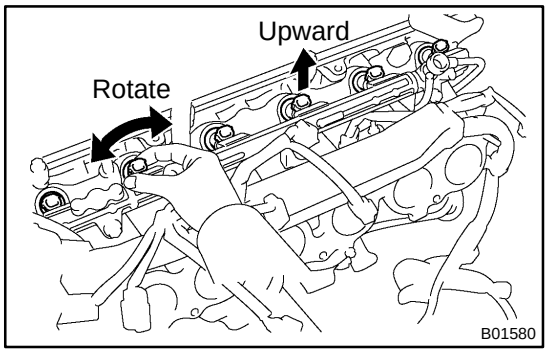
(h) Place the 6 injectors together with the delivery pipe and 3 bolts in position on the intake manifold.

(i) Temporarily install the 3 bolts holding the delivery pipe to the intake manifold.

(j) 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.



(k) Position the injector connector upward.

(l) Connect the 6 injector connectors.

HINT:

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

(m) Tighten the 3 bolts holding the delivery pipe to the intake manifold.

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

(n) Connect the camshaft position sensor connector.

(o) Connect the throttle position sensor connector.

(p) Connect the VSV connector for EVAP.

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

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

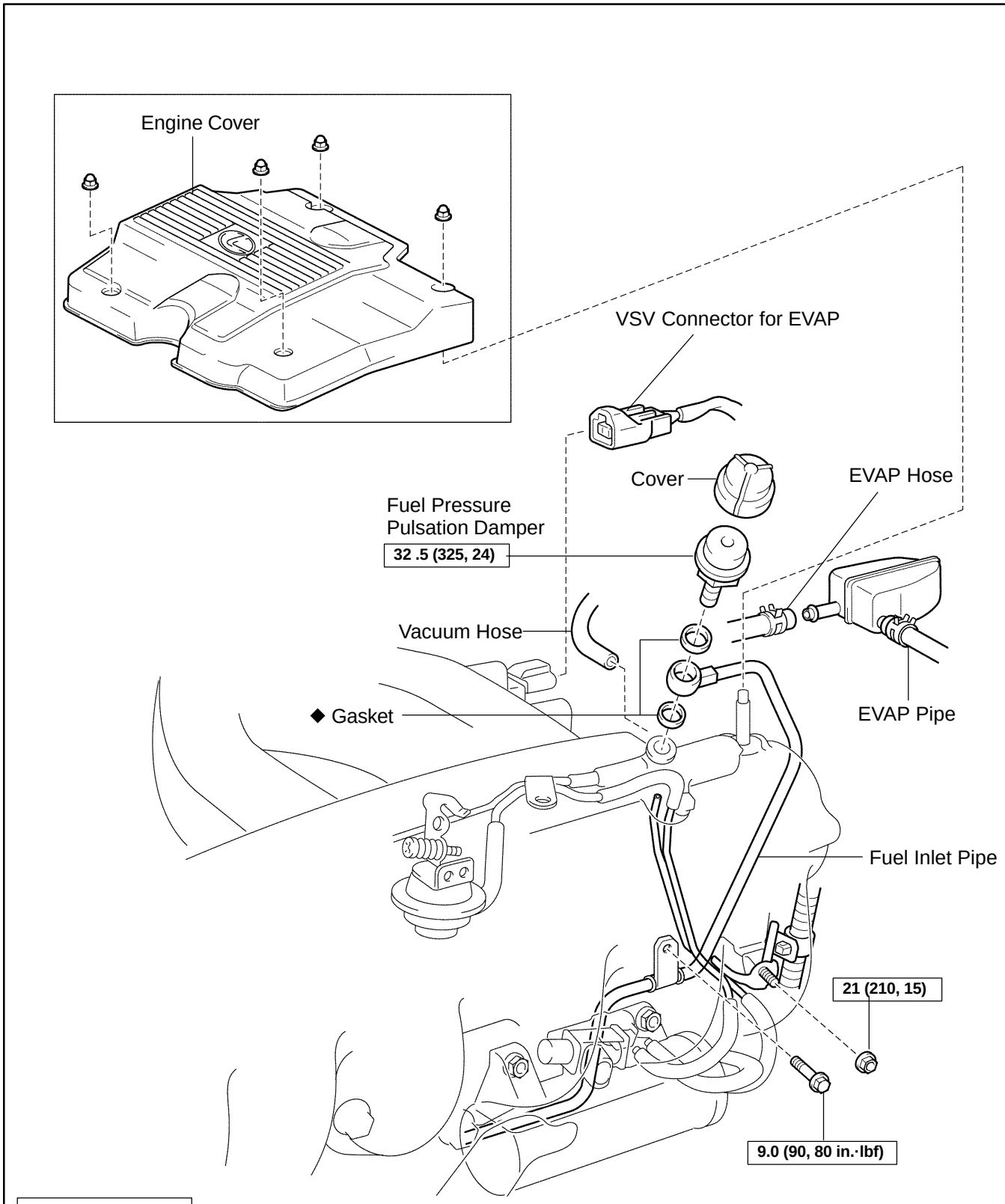
4. INSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

FUEL PRESSURE PULSATION DAMPER

COMPONENTS

SF0NE-10

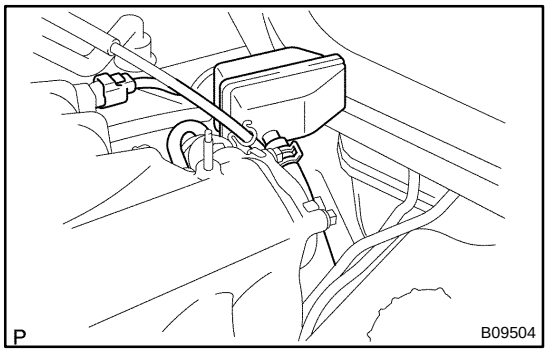


SF0NF-07

REMOVAL

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.

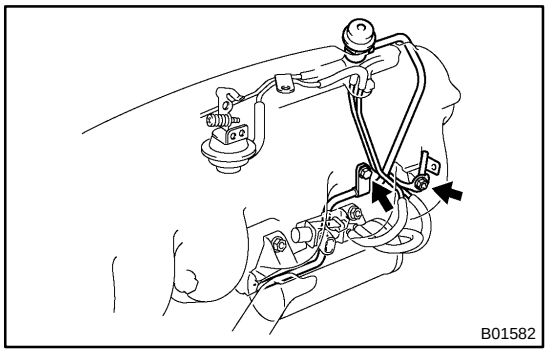


2. DISCONNECT CONNECTOR AND HOSES

(a) Disconnect the VSV connector for the EVAP.

(b) Disconnect the EVAP hose from the EVAP pipe.

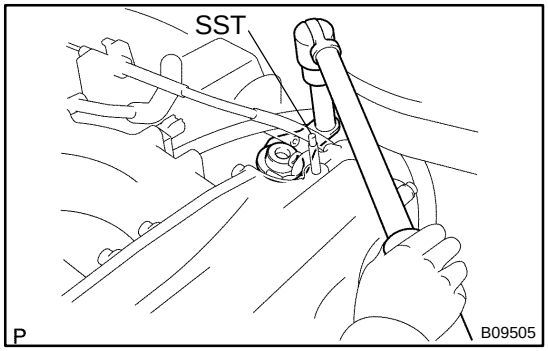
(c) Disconnect the vacuum hose (from No. 2 vacuum pipe) from the air intake chamber.



3. REMOVE FUEL PRESSURE PULSATION DAMPER

(a) Remove the nut holding the No. 2 vacuum pipe to the intake manifold.

(b) Remove the bolt holding the fuel inlet pipe to the intake manifold.



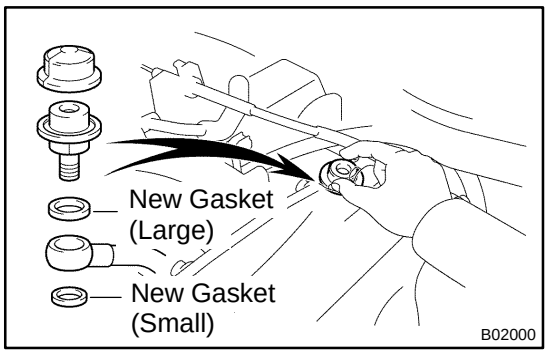
(c) Using SST, remove the pulsation damper and 2 gaskets.
SST 09612-24014 (09617-24011)

CAUTION:

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

SF0NG-08

INSTALLATION

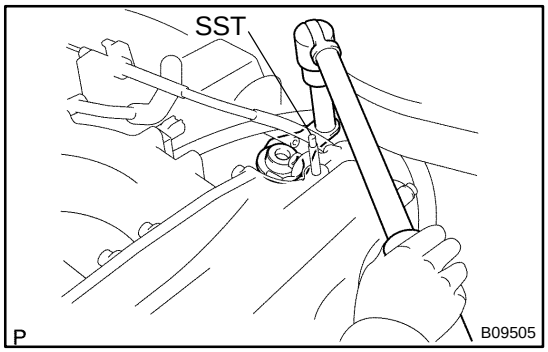


1. INSTALL FUEL PRESSURE PULSATION DAMPER

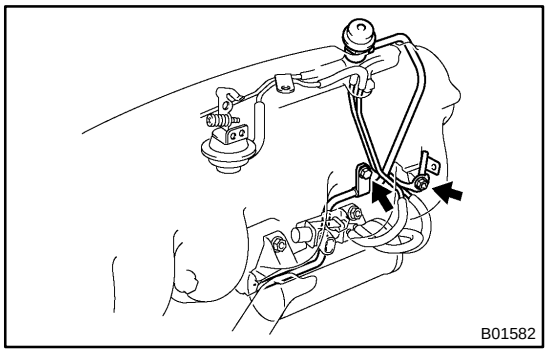
(a) Install the fuel inlet pipe and pulsation damper with 2 new gaskets.

HINT:

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

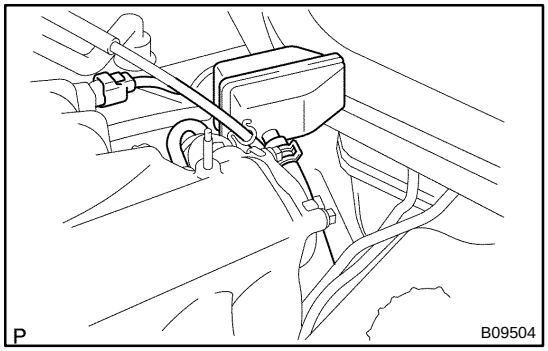


(b) Using SST, tighten the pulsation damper.
SST 09612-24014 (09617-24011)
Torque: 32.5 N·m (325 kgf·cm, 24 ft·lbf)



(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.

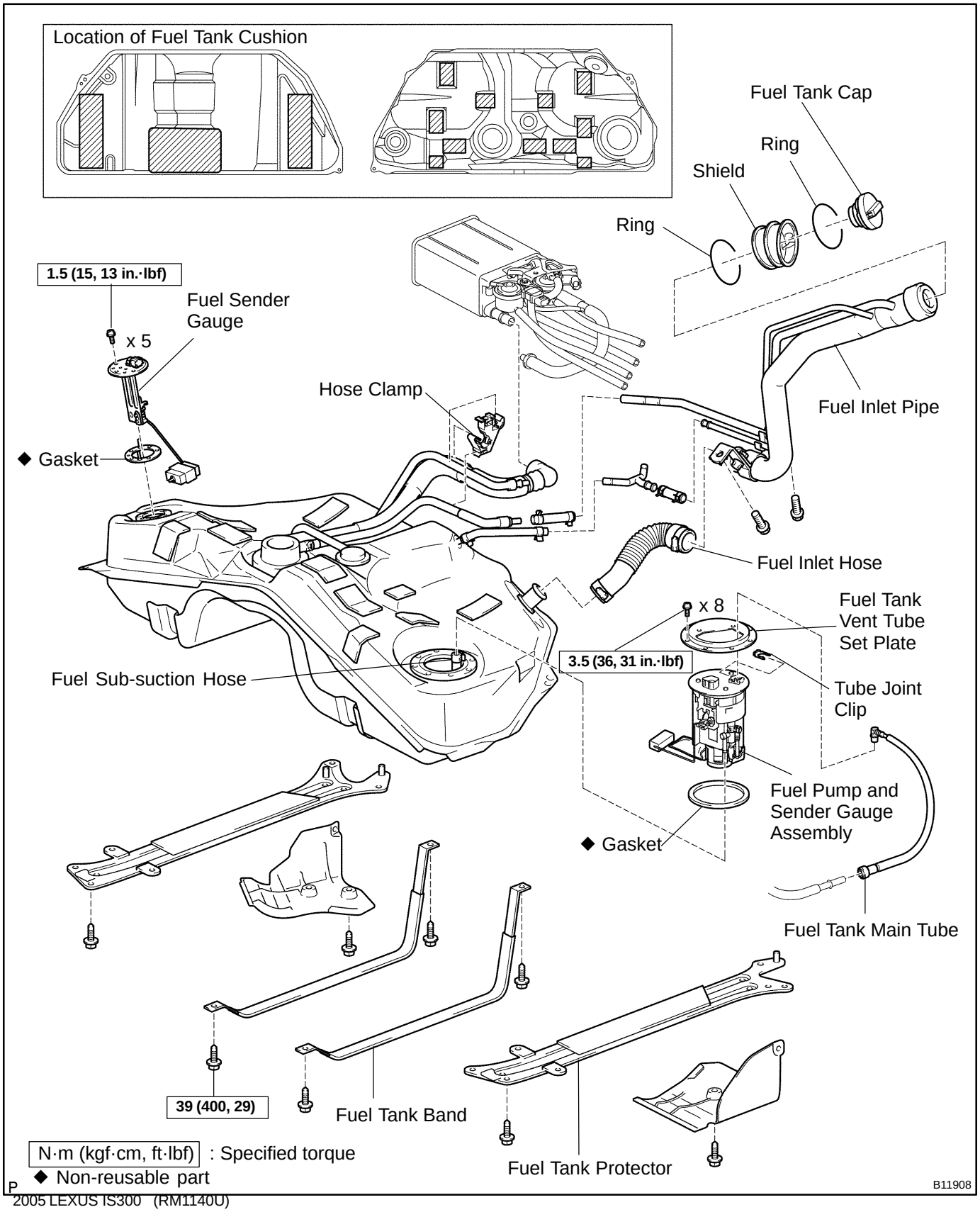
FUEL TANK AND LINE

SF0NH-07

COMPONENTS

CAUTION:

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



SF0NI-10

INSPECTION

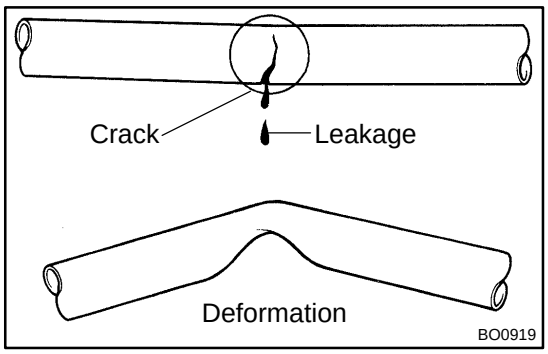
INSPECT FUEL TANK AND LINE

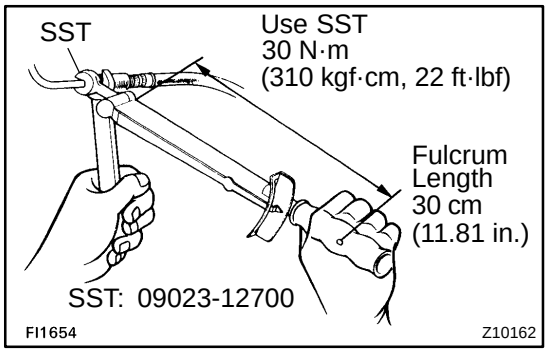
(a) Check the fuel lines for cracks or leakage, and all connections for deformation.

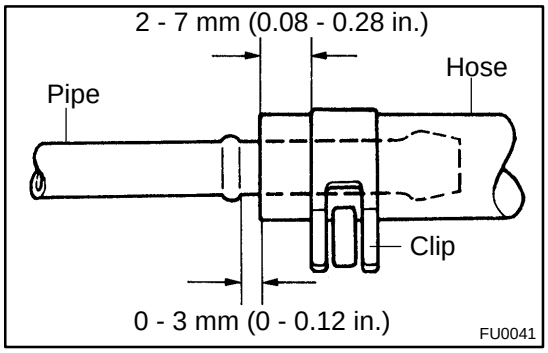
(b) Check the fuel tank vapor vent system hoses and connections for looseness, sharp bends or damage.

(c) Check the fuel tank for deformation, cracks, fuel leakage or tank band looseness.

(d) Check the filler neck for damage or fuel leakage.







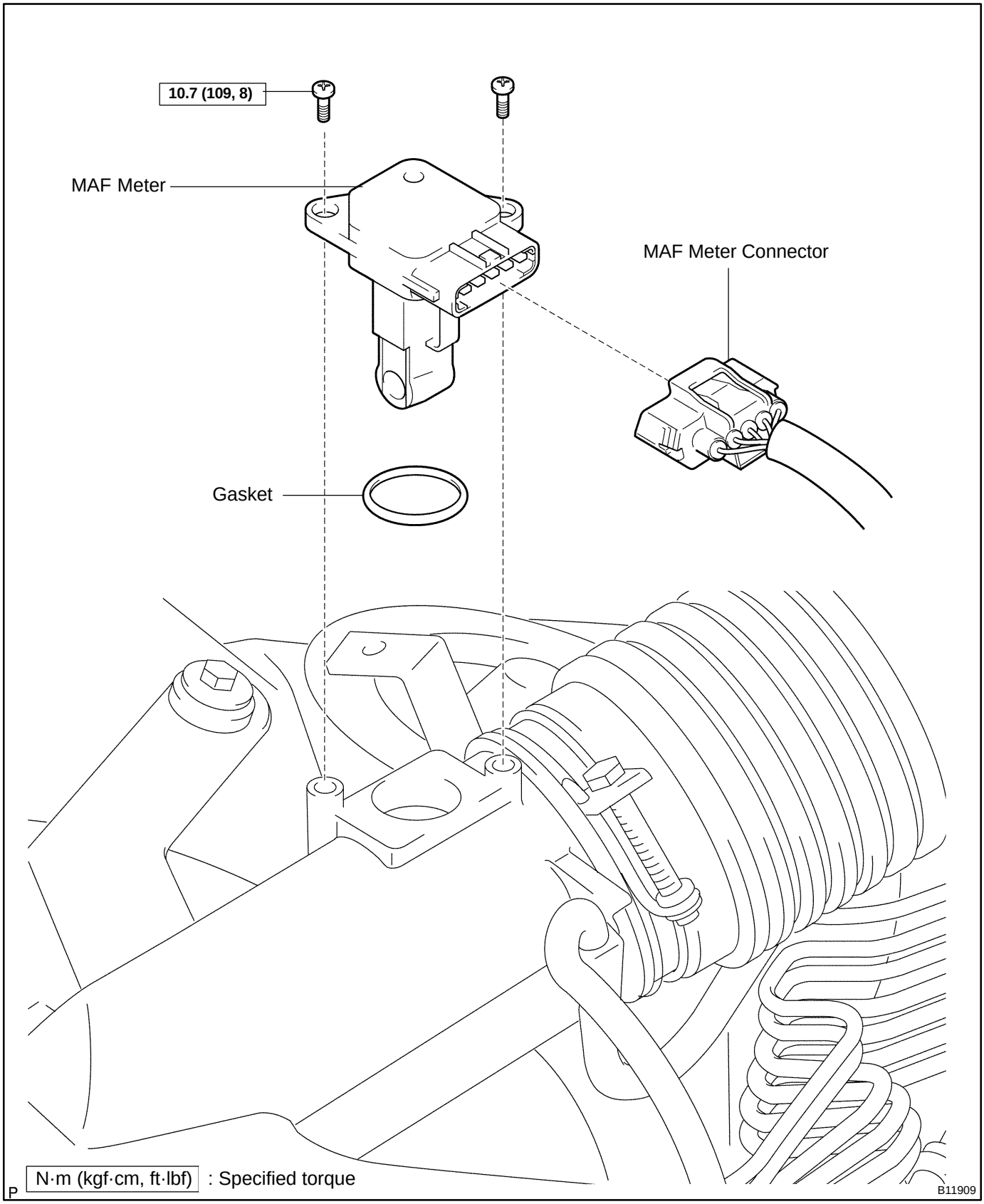
(e) Hose and pipe connections are as shown in the illustration.

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

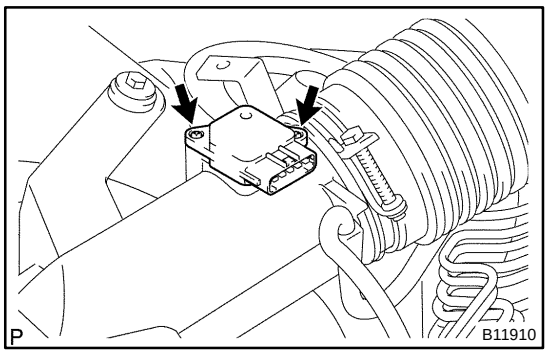
MASS AIR FLOW (MAF) METER

COMPONENTS

SF0NJ-11



SF0NK-07

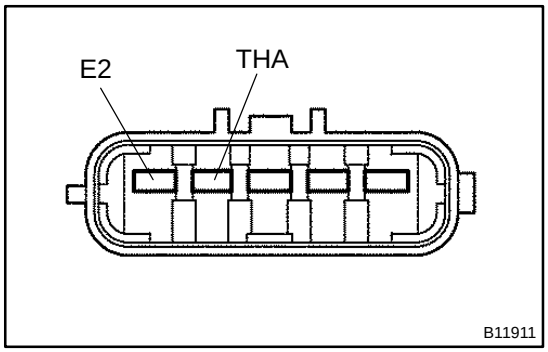


INSPECTION

1. REMOVE MAF METER

(a) Disconnect the MAF meter connector.

(b) Remove the 2 screws, MAF meter and gasket.

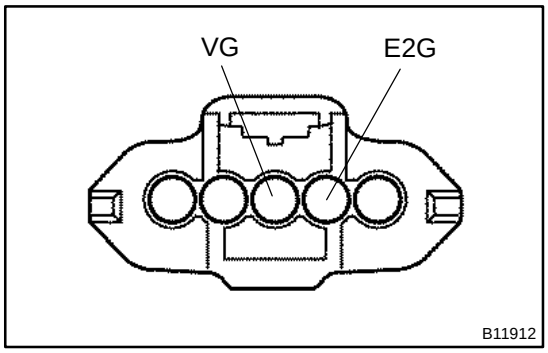


2. INSPECT MAF METER RESISTANCE

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

Resistance	Temperature
13.6 - 18.4 kΩ	-20˚C (-4˚F)
2.21 - 2.69 kΩ	20˚C (68˚F)
0.493 - 0.667 kΩ	60˚C (140˚F)

If the resistance is not as specified, replace the MAF meter.



3. INSPECT MAF METER OPERATION

(a) Connect the MAF meter connector.

(b) Connect the negative (-) terminal cable to the battery.

(c) Turn the ignition switch ON.

(d) Using a voltmeter, connect the positive (+) tester probe to terminal VG, and negative (-) tester probe to terminal E2G.

(e) Blow air into the MAF meter, and check that the voltage fluctuates.

If operation is not as specified, replace the MAF meter.

(f) Turn the ignition switch OFF.

(g) Disconnect the negative (-) terminal cable from the battery.

(h) Disconnect the MAF meter connector.

4. REINSTALL MAF METER

(a) Install the gasket to the MAF meter.

(b) Install the MAF meter with the 2 screws.

Torque: 10.7 N·m (109 kgf·cm 8 ft·lbf)

(c) Connect the MAF meter connector.

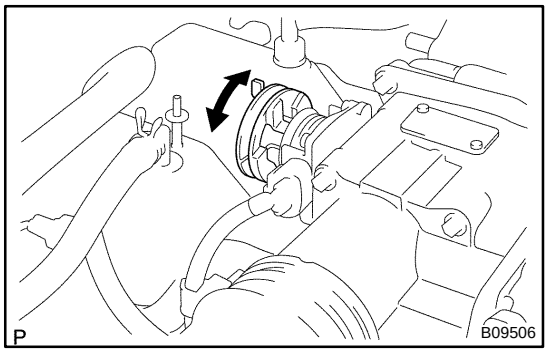
THROTTLE BODY

SF0NL-10

ON-VEHICLE INSPECTION

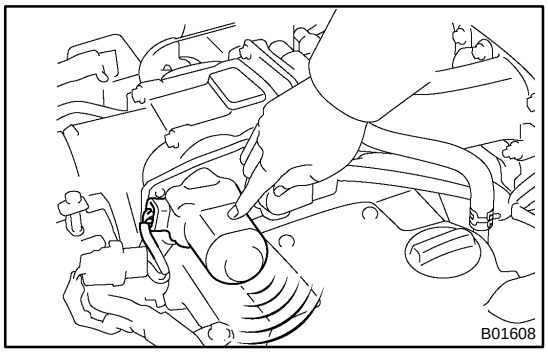
1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



2. INSPECT SYSTEM OPERATION

(a) Check that the throttle linkage moves smoothly.

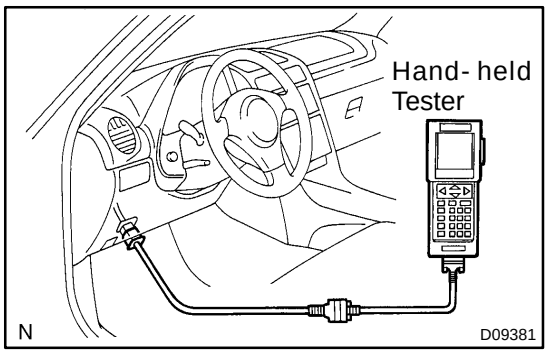


(b) Inspect the throttle control motor for operating sound.

(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 ECM.



(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.

(3) Select the following menu, DIAGNOSIS / ENHANCED OBD ll / DATA LIST / THROTTLE POS.

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 ECM.

(d) Start the engine, and check that the Malfunction Indicator Lamp (MIL) does not light up.

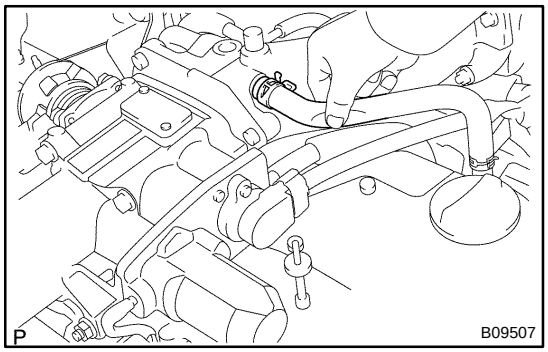
(e) Inspect the air assist system.

(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)

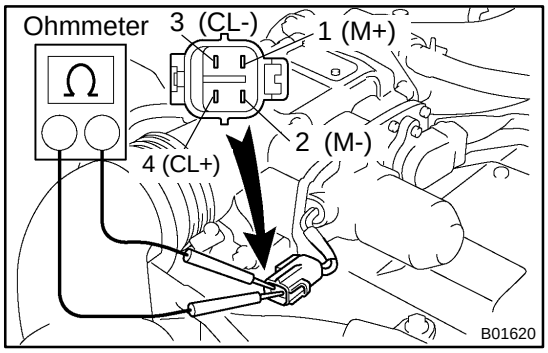
NOTICE:
Perform inspection under condition without electrical load.



(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 ECM.

(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+).

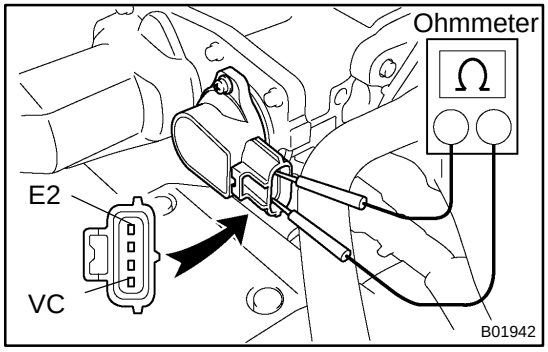
Resistance: 4.2 - 5.2 Ω at 20˚C (68˚F)

(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 SF-37).

(d) Reconnect the throttle control motor connector.



4. INSPECT THROTTLE POSITION SENSOR

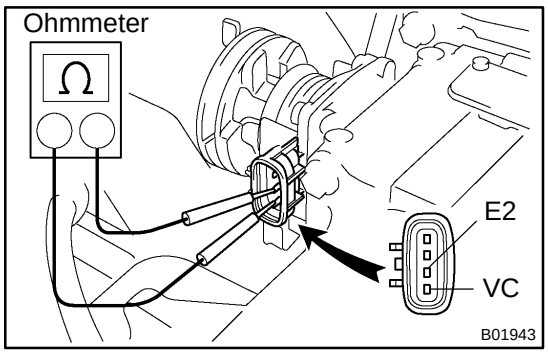
(a) Disconnect the throttle position sensor connector.

(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 SF-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 SF-37).

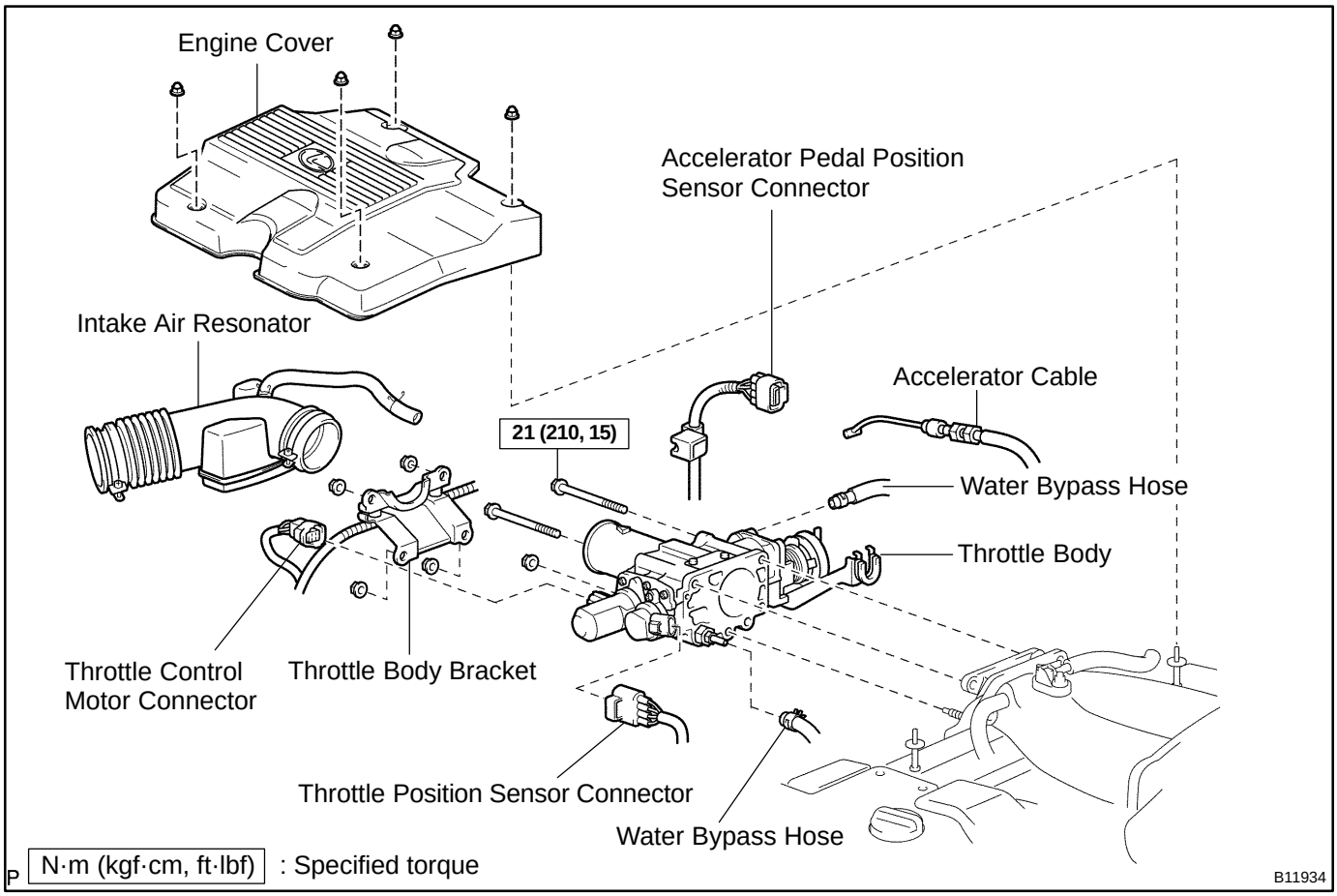
(c) Reconnect the accelerator pedal position sensor connector.

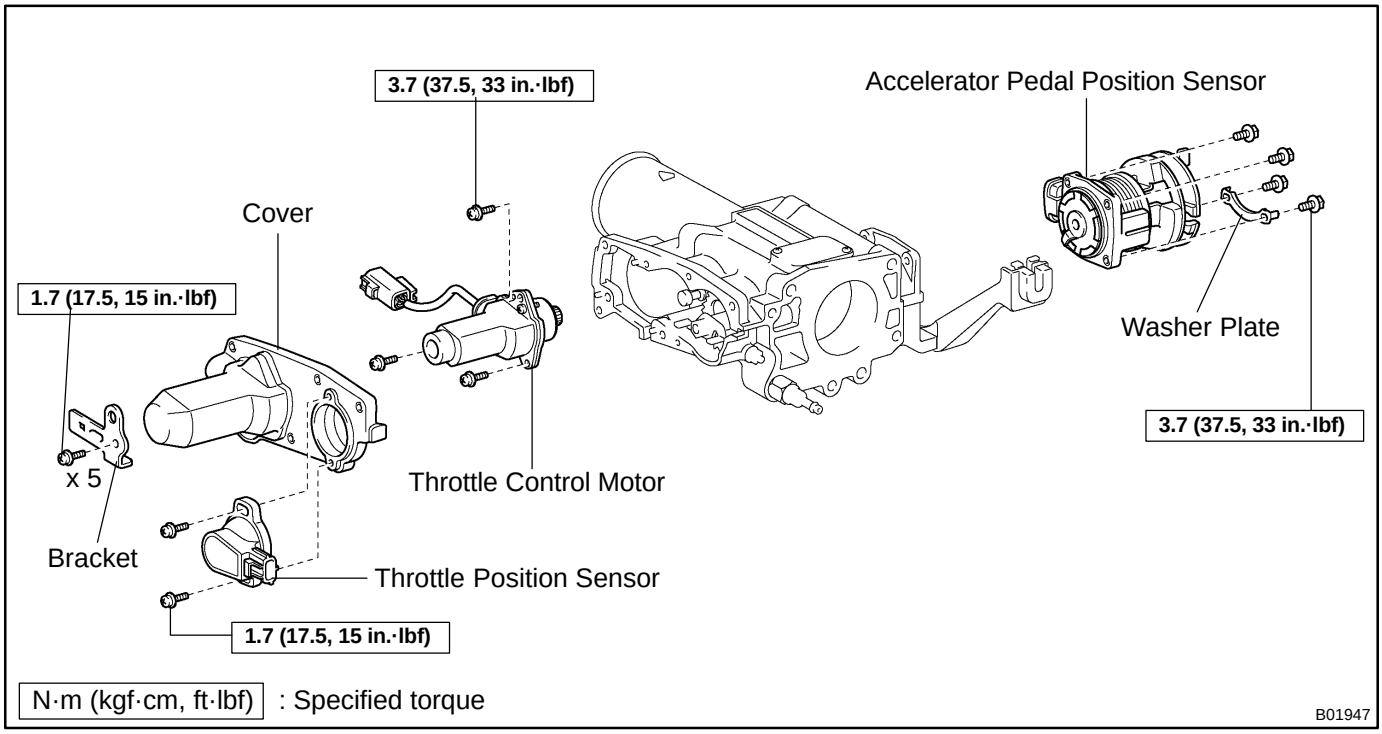
6. REINSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

SF0NM-13

COMPONENTS





SF0NN-08

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

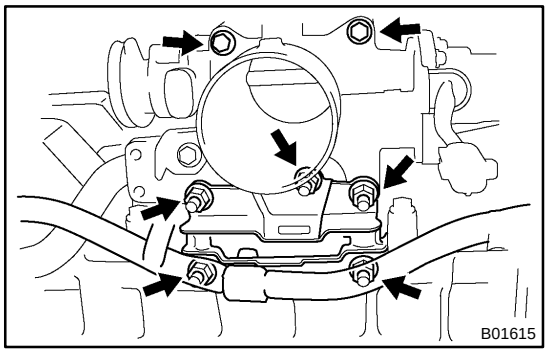
(a) Disconnect the accelerator cable.

(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)

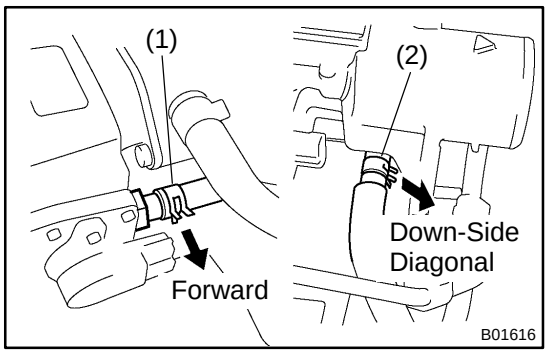
(g) Remove the 4 nuts and throttle body bracket.

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:

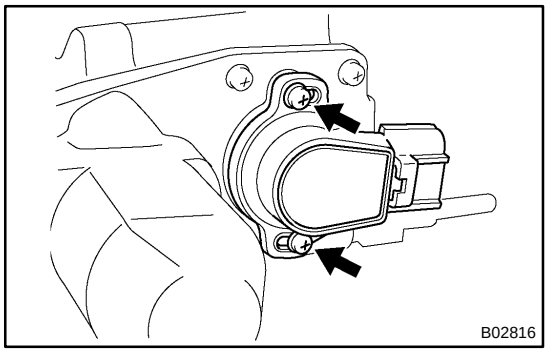
- At the time of installation, please refer to the following items.
- Connect the water bypass hose with its discrimination mark downward.
- Install the with its craw direction for (1) forward and down-side diagonal (engine side about 45˚) for (2).

SF0NO-09

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.**

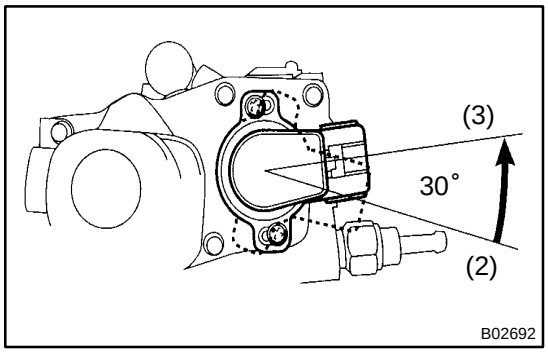


1. REPLACE THROTTLE POSITION SENSOR

(a) Remove the 2 set screws and throttle position sensor.

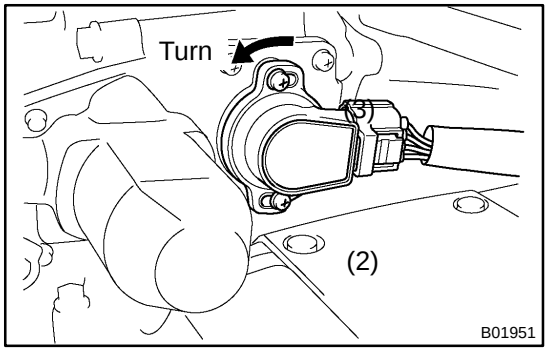
(b) Reinstall the throttle position sensor.

(1) Check that the throttle valve is under the condition of the opener opening angle (about 3.5˚).



(2) Install the sensor to the place where is at 30˚ rotated to the right from the specified installation position.

(3) Gradually turn sensor counterclockwise until it touches the throttle valve shaft and temporarily torque the 2 set screws.



(c) Adjust the throttle position sensor.

(1) Connect the throttle position sensor connector.

NOTICE:

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

(2) Connect the hand-held tester or OBD II scan tool to the DLC3.

(3) Turn the ignition switch ON.

NOTICE:

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

(4) 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 or OBD II scan tool from the DLC3.

(9) Disconnect the throttle position sensor connector.

2. REPLACE THROTTLE CONTROL MOTOR

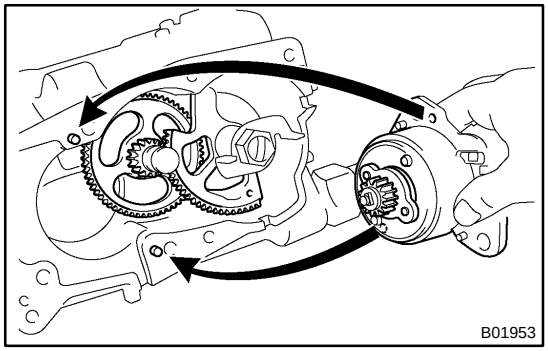
(a) Remove the throttle position sensor.

(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.



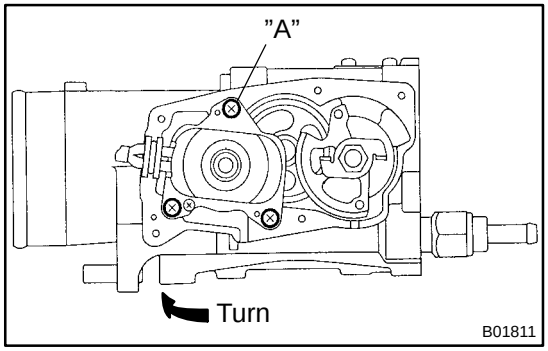
(c) Reinstall the throttle control motor.

(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.

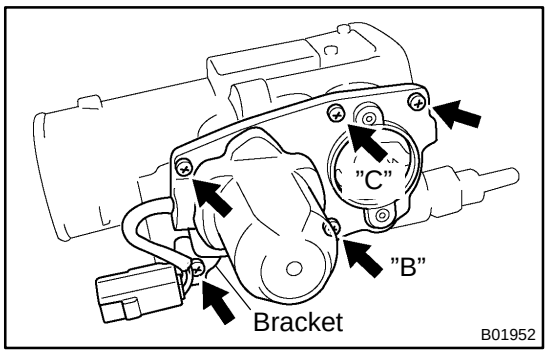
(2) Align the protrusions of the motor with the positioning pin holes of the throttle body.



(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.

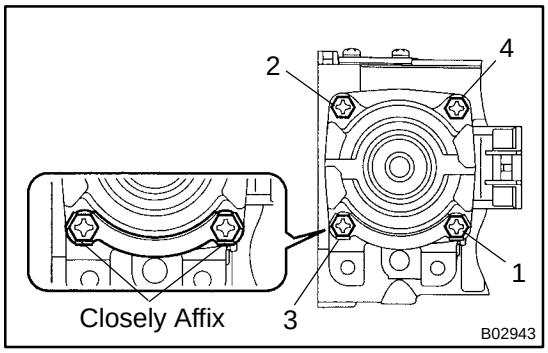
(d) Reinstall and adjust the throttle position sensor (See step 1).

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 or OBD II scan tool 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:

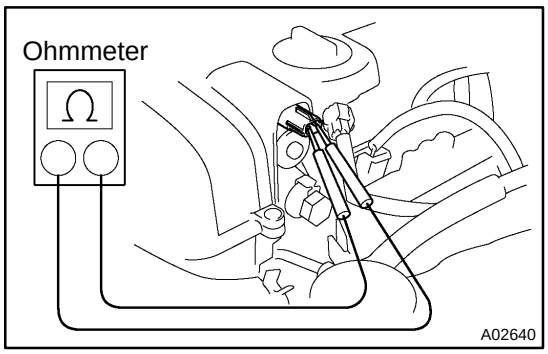
0.3 - 0.9 V

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

SF0NP-09

INSTALLATION

Installation is in the reverse order of removal (See page SF-36).



CAMSHAFT TIMING OIL CONTROL VALVE

SF0NR-10

ON-VEHICLE INSPECTION

1. INSPECT 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

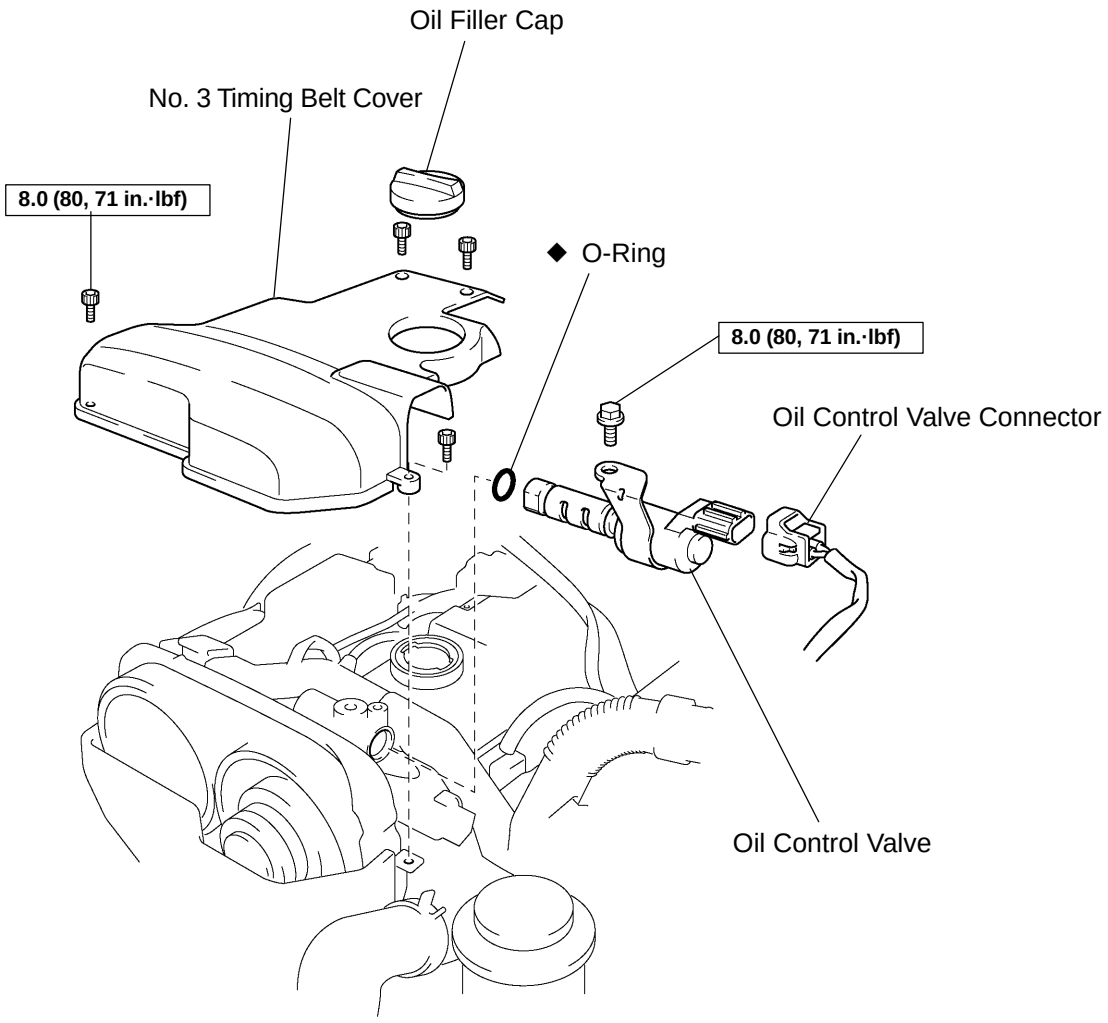
(a) Allow the engine to warm up to normal operating temperature.

(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 SF-43), VVT-i pulley, intake camshaft, wiring and ECM.

SF0NQ-10

COMPONENTS



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

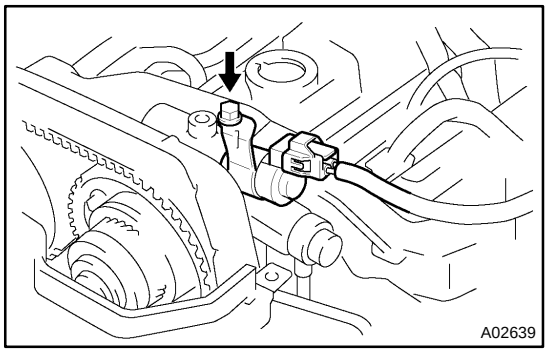
◆ Non-reusable part

B11945

SF0NS-05

INSPECTION

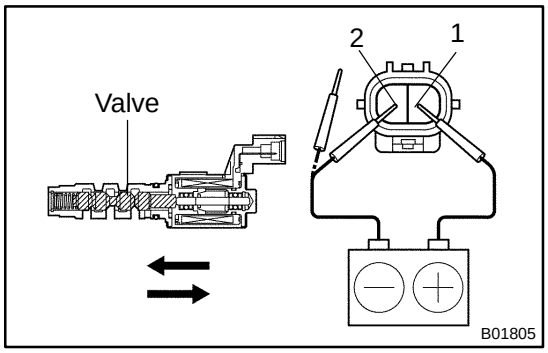
1. REMOVE NO. 3 TIMING BELT COVER



2. REMOVE OIL CONTROL VALVE

(a) Disconnect the oil control valve connector.

(b) Remove the bolt, oil control valve and O-ring.



3. INSPECT 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 OIL CONTROL VALVE

(a) Install a new O-ring to the oil control valve.

(b) Install the oil control valve with the bolt.

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

(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)

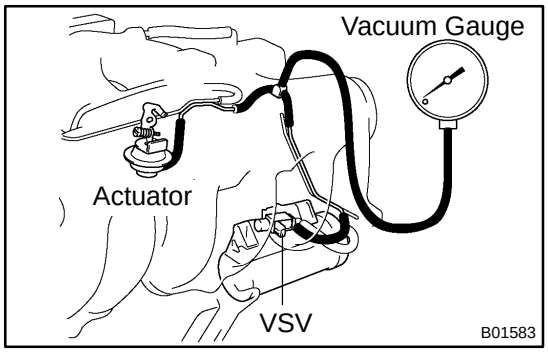
ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS)

SF0NT-07

ON-VEHICLE INSPECTION

1. REMOVE ENGINE COVER

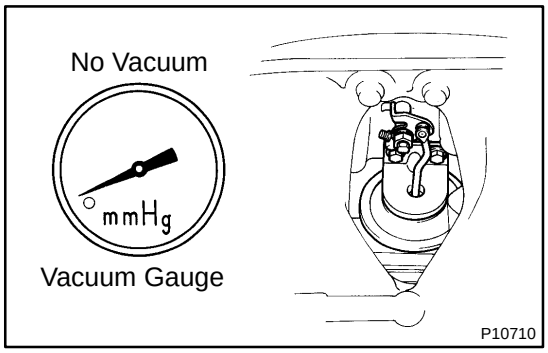
Remove the 4 nuts and engine cover.



2. CONNECT VACUUM GAUGE

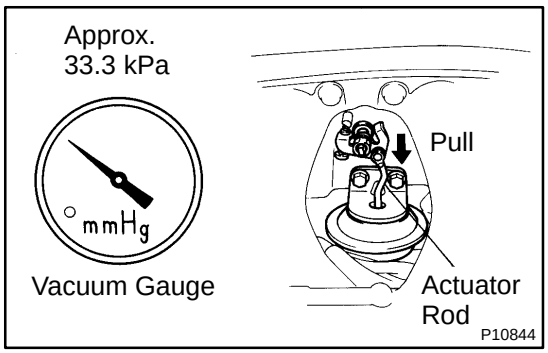
Using a 3-way connector, connect vacuum gauge to the hose between the actuator and VSV.

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

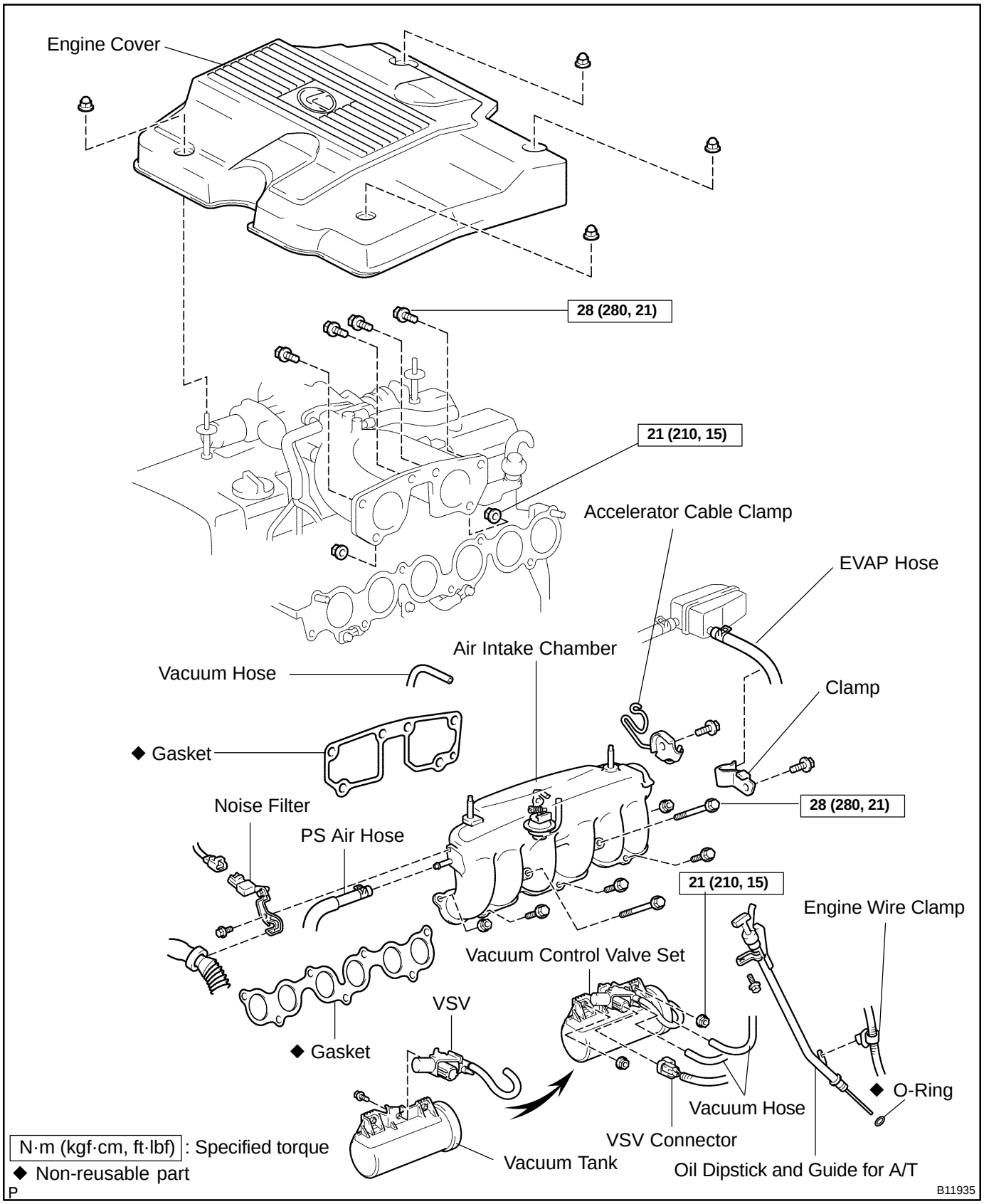
Remove the vacuum gauge, and reconnect the vacuum hoses to their proper locations.

6. REINSTALL ENGINE COVER

Reinstall the engine cover with the 4 nuts.

SF0NU-07

COMPONENTS

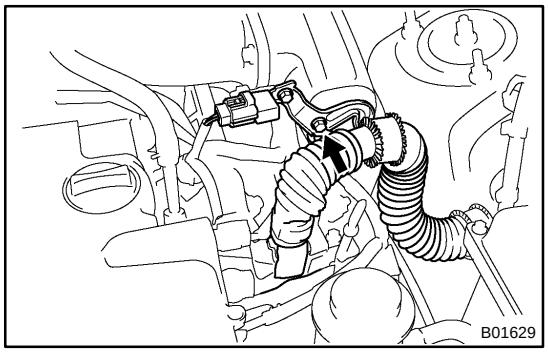


SF0NV-07

REMOVAL

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.



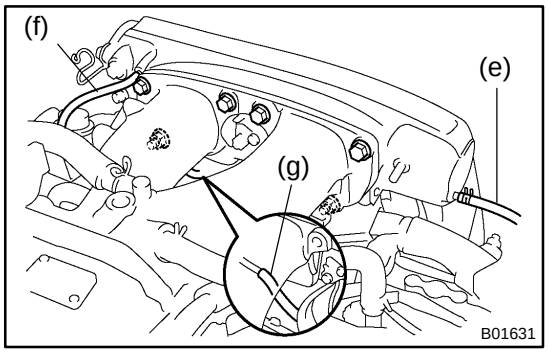
2. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-65)

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

(a) Disconnect the noise filter connector.

(b) Disconnect the engine wire clamp from the bracket.

(c) Remove the bolt, bracket and noise filter.



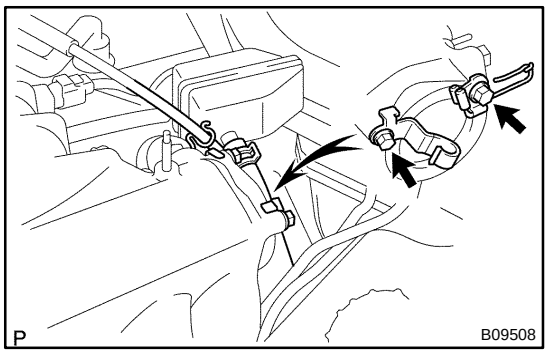
(d) Remove the 4 bolts and 2 nuts holding the intake air connector to the air intake chamber,

Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)

(e) Disconnect the PS air hose from the air intake chamber.

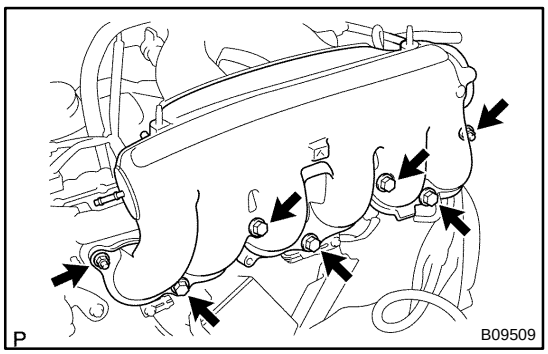
(f) Disconnect the vacuum hose (from No.2 vacuum pipe) from the air intake chamber.

(g) Disconnect the vacuum hose (from actuator for ACIS) from the No. 1 vacuum pipe.



(h) Disconnect the accelerator cable, and remove the bolt and accelerator cable clamp.

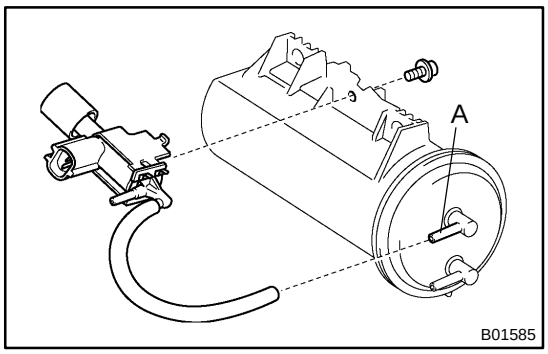
(i) Disconnect the EVAP hose, and remove the bolt and clamp.



(j) Remove the 5 bolts, 2 nuts, air intake chamber and 2 gaskets.

Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)

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



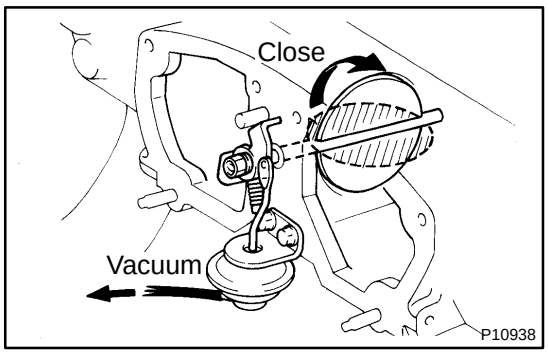
5. REMOVE VSV FROM VACUUM TANK

(a) Disconnect the vacuum hose from port A of the vacuum tank.

(b) Remove the screw and VSV.

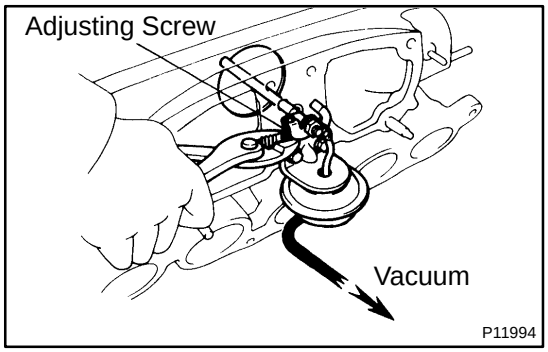
SF0NW-06

INSPECTION



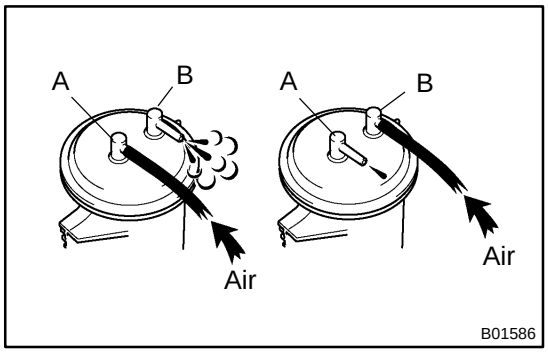
1. INSPECT INTAKE AIR CONTROL VALVE

(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.

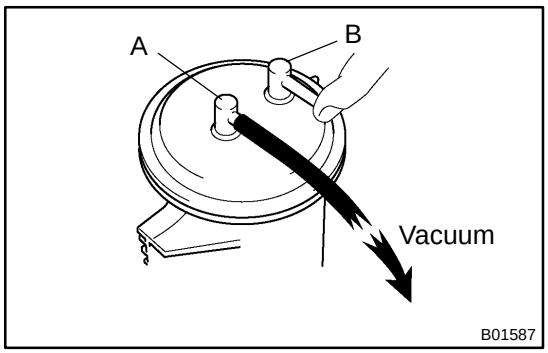
(b) 1 minute after applying the vacuum in (a), check that the actuator rod does not return.



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.

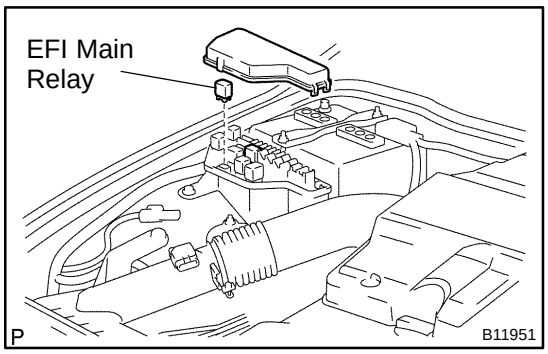
If operation is not as specified, replace the vacuum tank.

3. INSPECT VSV (See page SF-48)

SF0NX-04

INSTALLATION

Installation is in the reverse order of removal (See page SF-46).



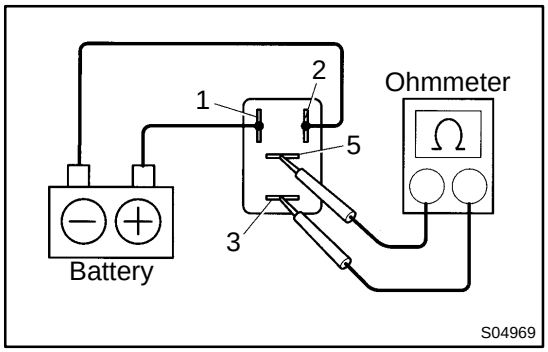
EFI MAIN RELAY

SF1ZJ-01

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE EFI MAIN RELAY (Marking: EFI)



3. INSPECT EFI MAIN RELAY

(1) Using an ohmmeter, measure the resistance between the terminals.

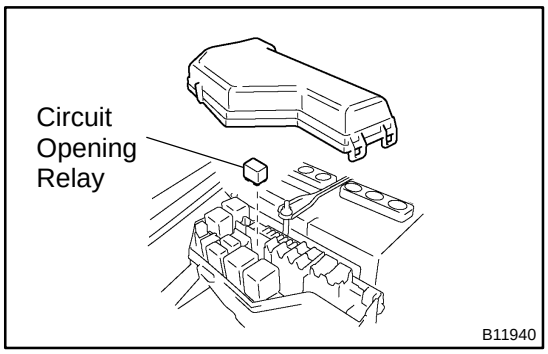
Standard:

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (Apply battery voltage to terminals 1 and 2)

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

4. REINSTALL EFI MAIN RELAY

5. REINSTALL RELAY BOX COVER



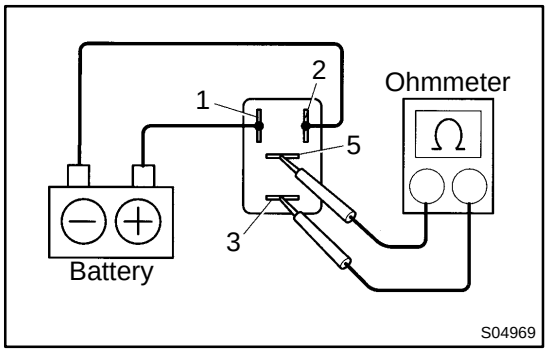
CIRCUIT OPENING RELAY

SF1ZK-01

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE CIRCUIT OPENING RELAY



3. INSPECT CIRCUIT OPENING RELAY

(2) Using an ohmmeter, measure the resistance between the terminals.

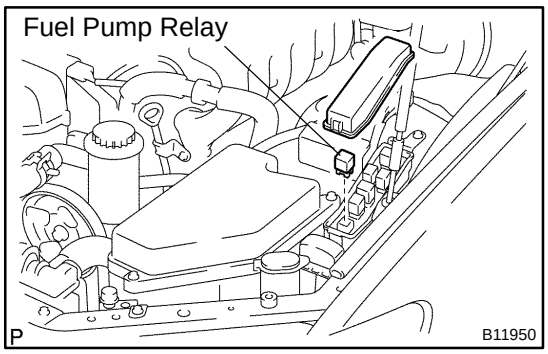
Standard:

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (Apply battery voltage to terminals 1 and 2)

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

4. REINSTALL CIRCUIT OPENING RELAY

5. REINSTALL RELAY BOX COVER



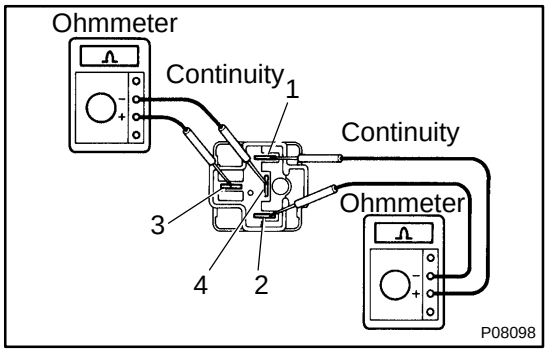
FUEL PUMP RELAY

SF1LG-04

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE FUEL PUMP RELAY (Marking: FUEL PMP)



3. INSPECT FUEL PUMP RELAY

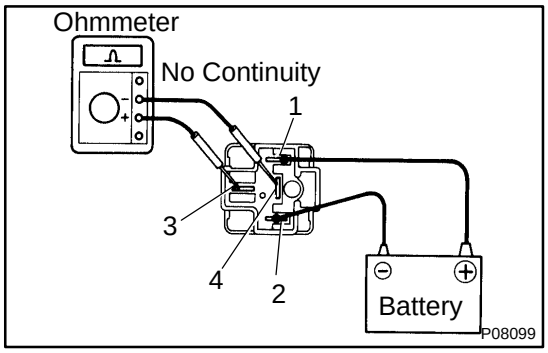
(a) Inspect the relay continuity.

(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 continuity between terminals 3 and 4.

If there is no 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 no continuity between terminals 3 and 4.

If there is continuity, replace the relay.

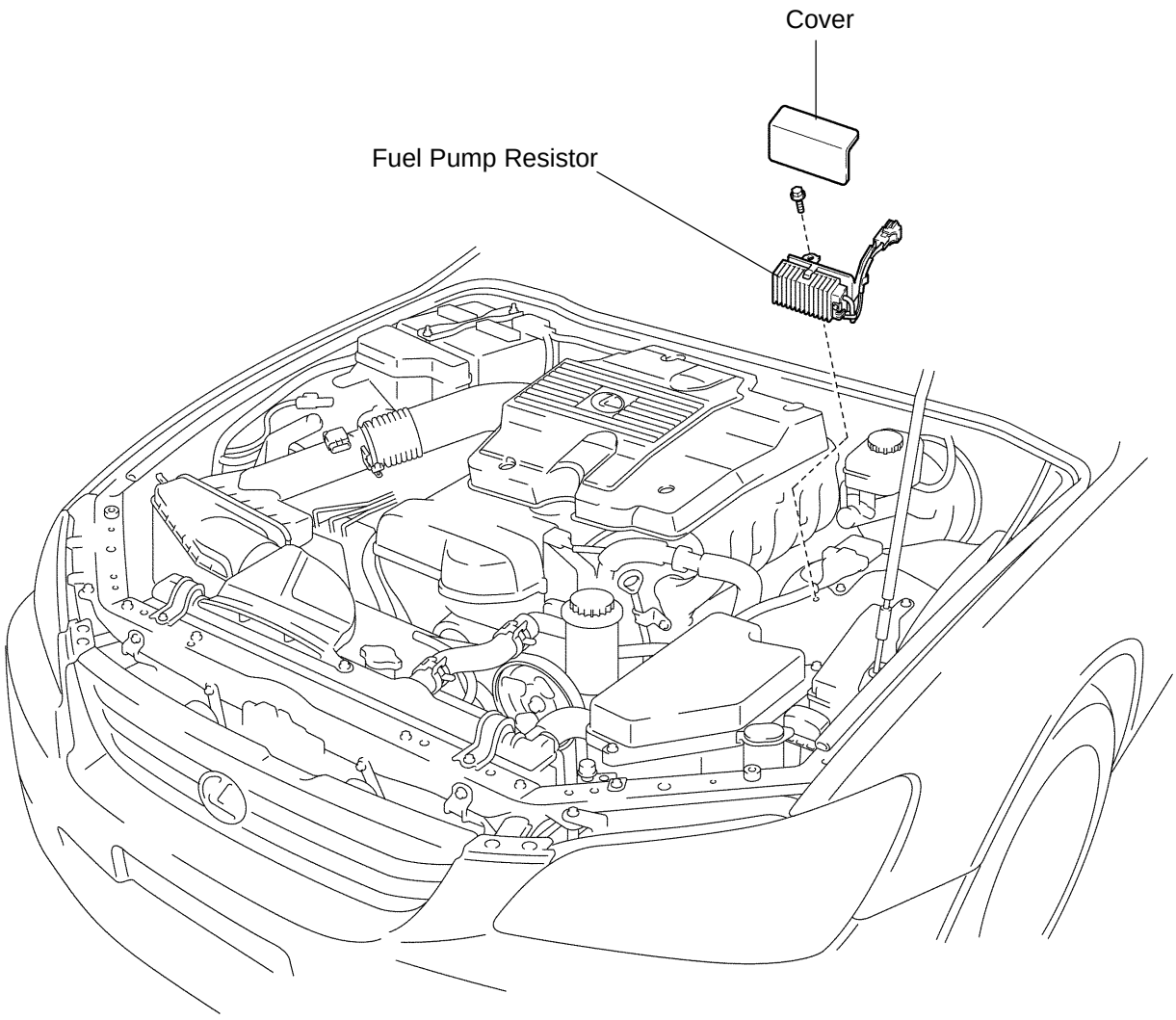
4. REINSTALL FUEL PUMP RELAY

5. REINSTALL RELAY BOX COVER

FUEL PUMP RESISTOR

COMPONENTS

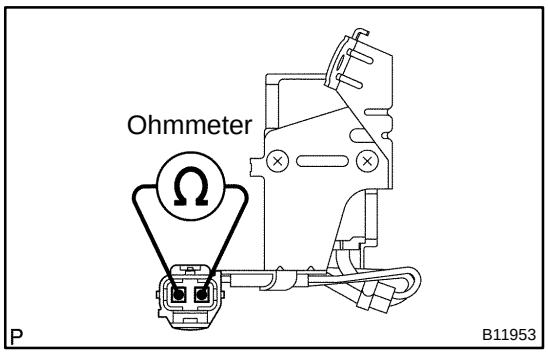
SF1LF-03



P

B11952

SF0FX-09



INSPECTION

INSPECT FUEL PUMP RESISTOR

Using an ohmmeter, measure the resistance between the terminals.

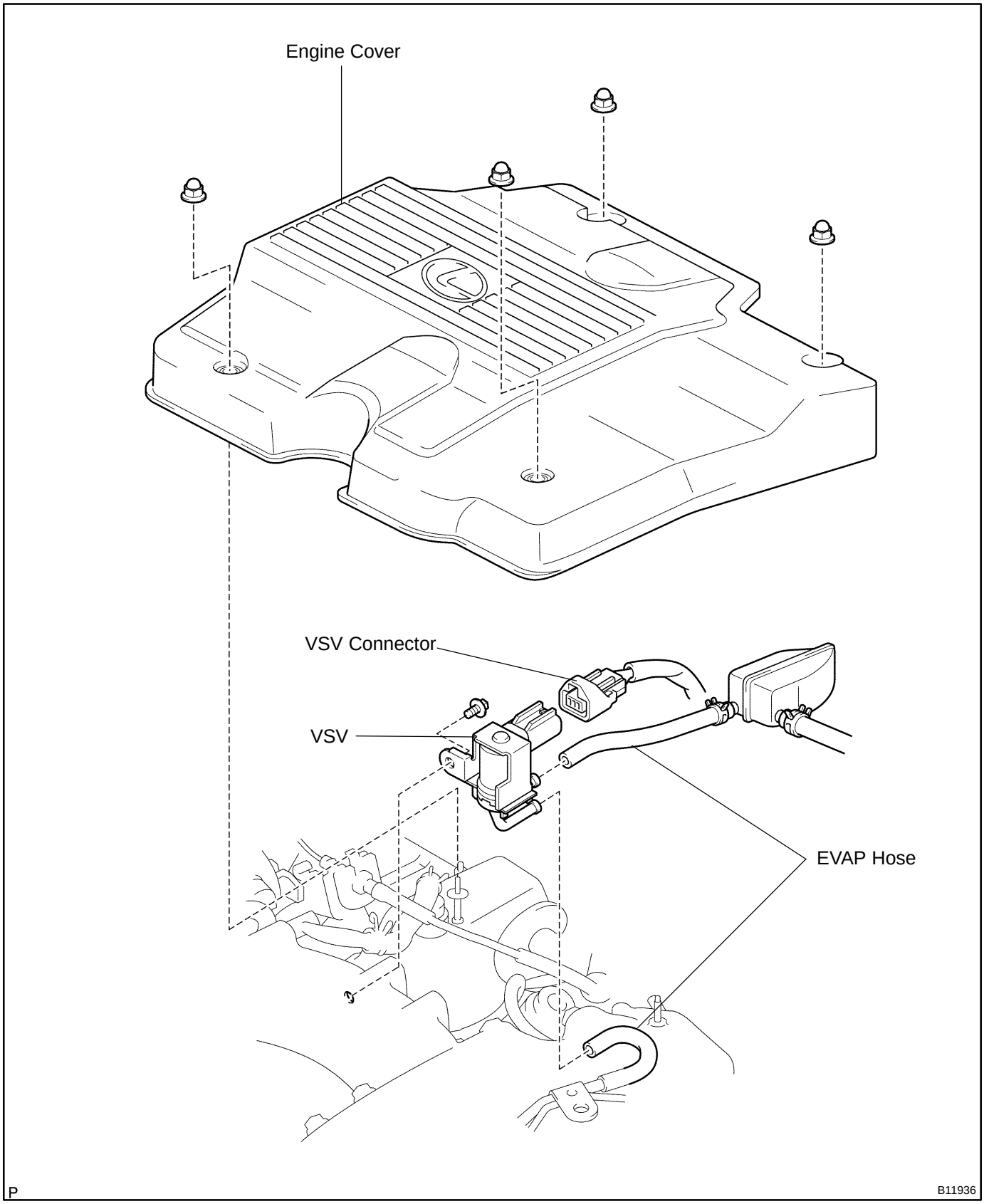
Resistance: 0.30 - 0.35 Ω at 20˚C (68˚F)

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

VSV FOR EVAPORATIVE EMISSION (EVAP)

SF0NZ-07

COMPONENTS



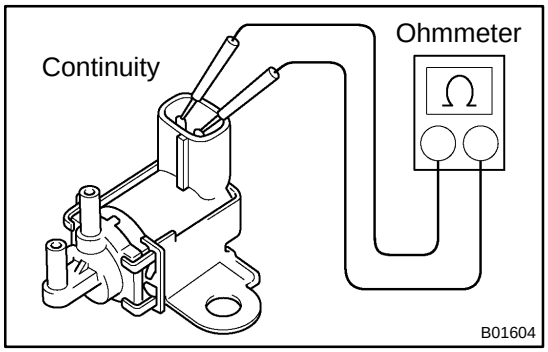
SF0O0-08

INSPECTION

1. REMOVE ENGINE COVER

Remove the 4 nuts and engine cover.

2. REMOVE VSV



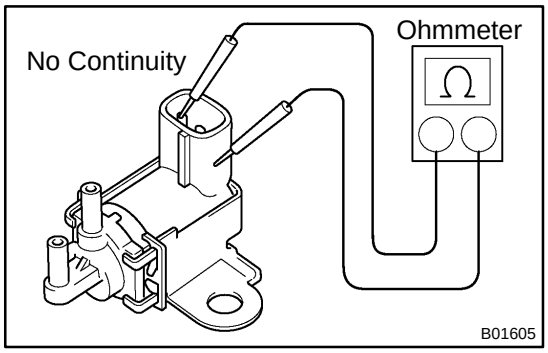
3. INSPECT VSV

(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)

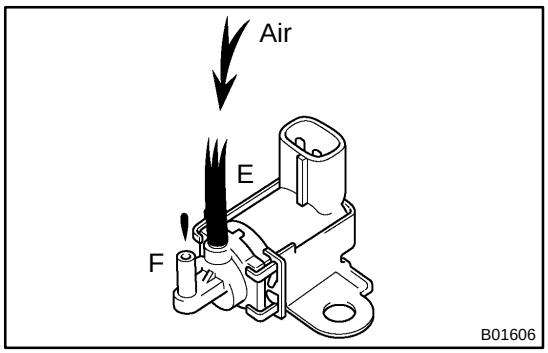
If there is no continuity, replace the VSV.



(b) Inspect the VSV for ground.

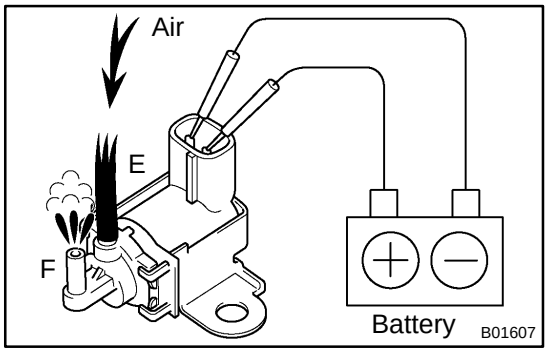
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.

(1) Check that air does not flows from port E to F.



(2) Apply battery positive voltage across the terminals.

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

If operation is not specified, replace the VSV.

4. REINSTALL VSV

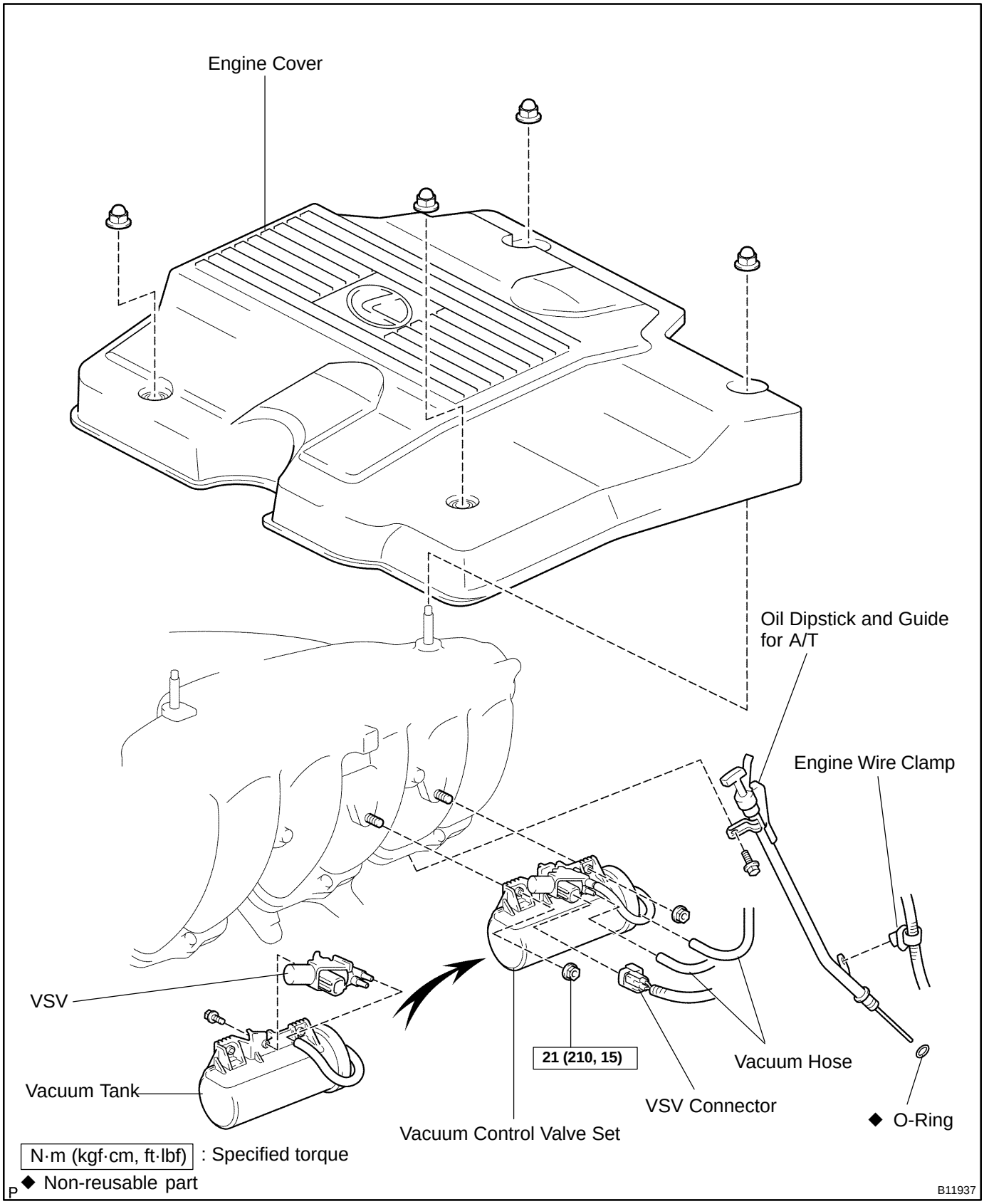
5. REINSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

VSV FOR ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS)

SF0O1-06

COMPONENTS



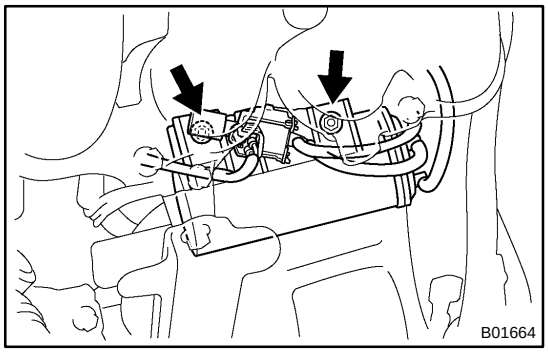
SF0O2-08

INSPECTION

1. REMOVE ENGINE COVER

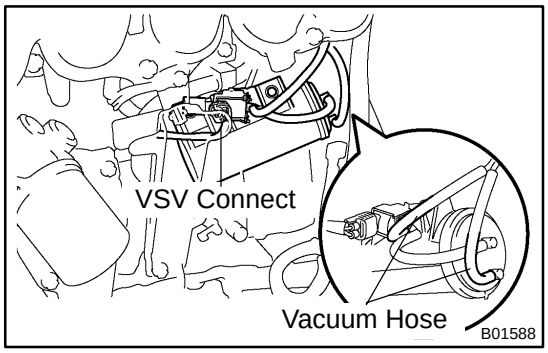
Remove the 4 nuts and engine cover.

2. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-65)



3. REMOVE VACUUM CONTROL VALVE SET

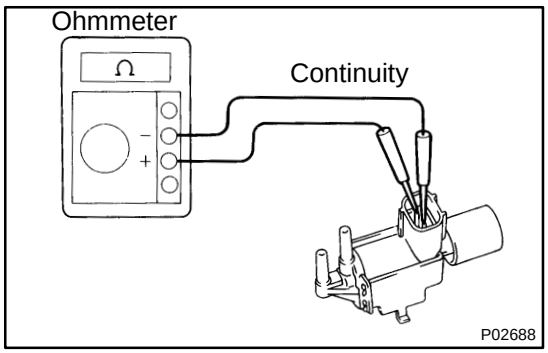
(a) Remove the 2 nuts, and disconnect the vacuum tank from the intake manifold.



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

4. REMOVE VSV

Remove the screw, vacuum hose and VSV.



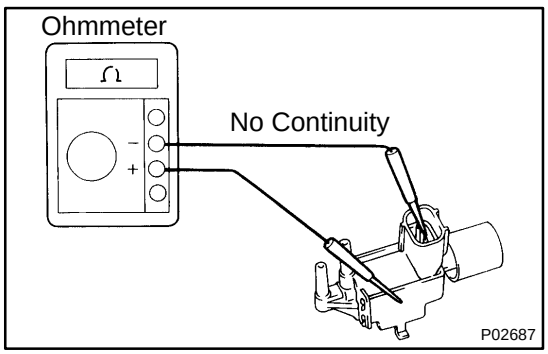
5. INSPECT VSV

(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)

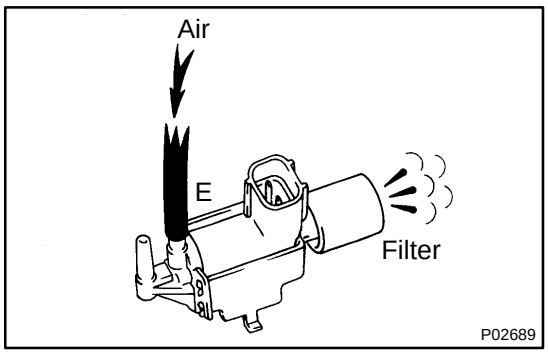
If there is no continuity, replace the VSV.



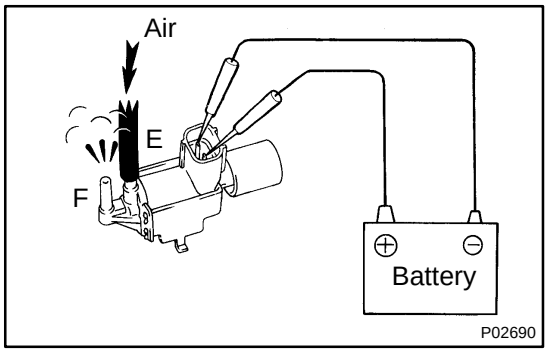
(b) Inspect the VSV for ground.

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 port 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.

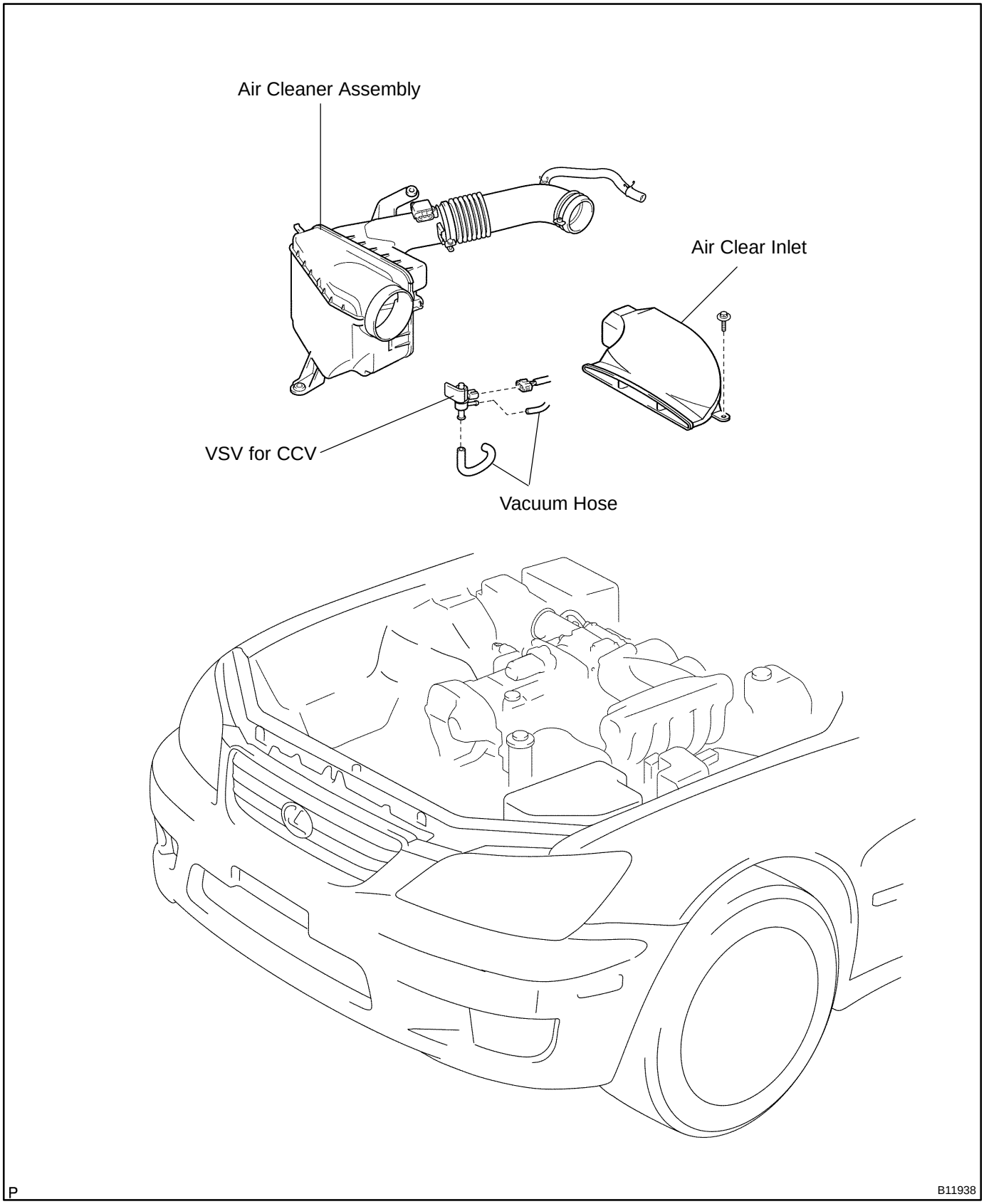
9. REINSTALL ENGINE COVER

Reinstall the engine cover with the 4 nuts.

VSV FOR CANISTER CLOSED VALVE (CCV)

COMPONENTS

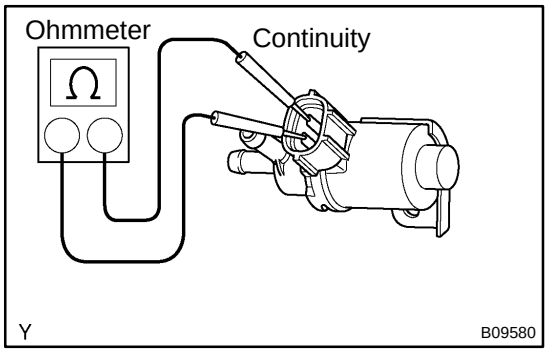
SF1LD-03



SF1LE-03

INSPECTION

1. REMOVE VSV



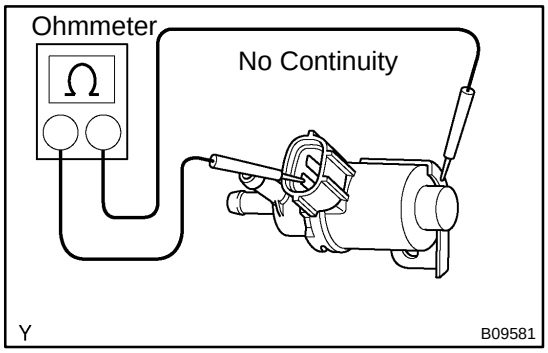
2. INSPECT VSV

(a) Inspect the VSV for open circuit.

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

Resistance: 24 - 30 Ω at 20˚C (68˚F)

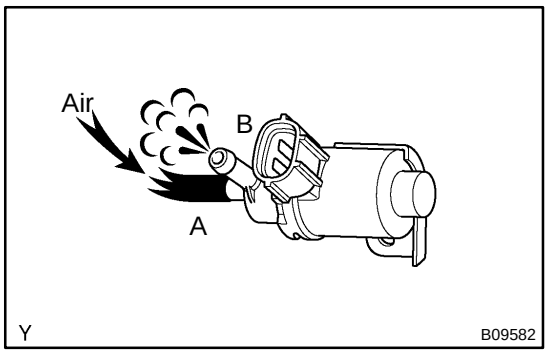
If there is no continuity, replace the VSV.



(b) Inspect the VSV for ground.

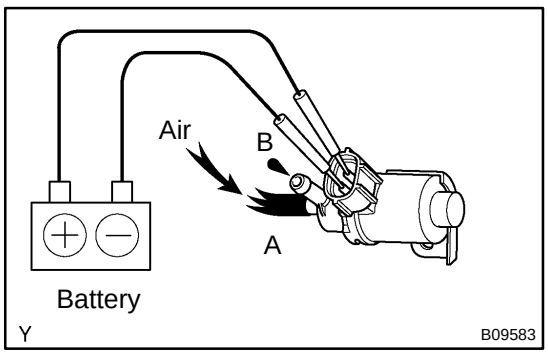
Check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.

(1) Check that air flows from port B to A.



(2) Apply battery positive voltage across the terminals.

(3) Check that air flows with difficulty from port B to A.

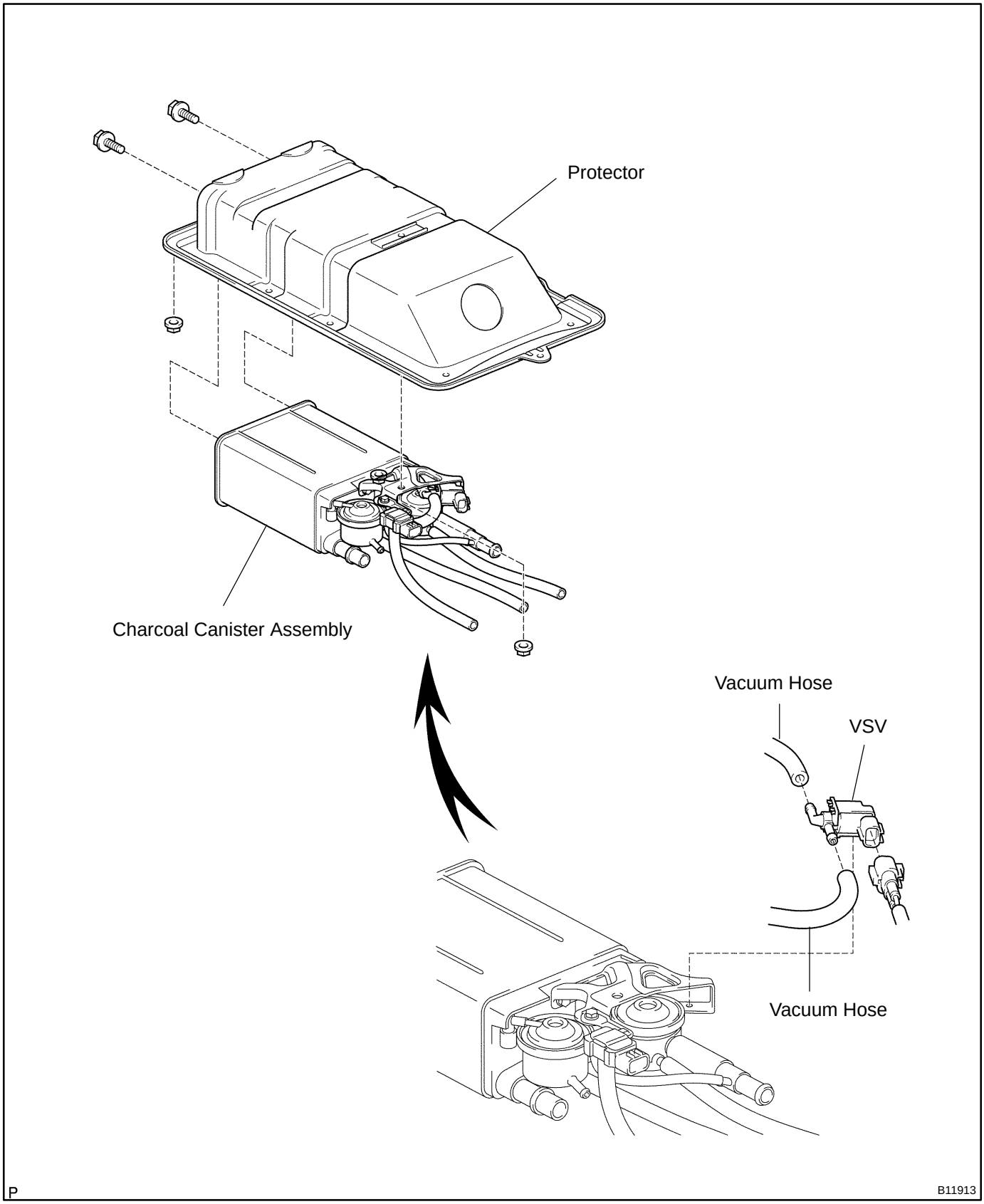
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

VSV FOR PRESSURE SWITCHING VALVE

SF0O3-06

COMPONENTS

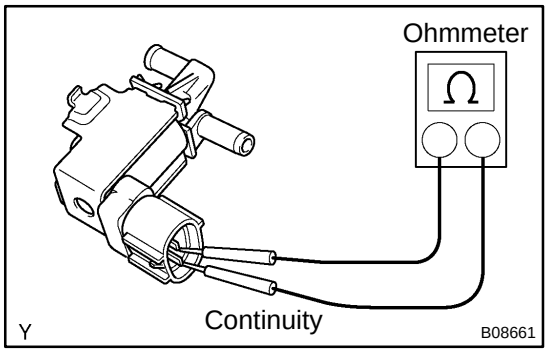


SF0O4-03

INSPECTION

1. REMOVE CHARCOAL CANISTER ASSEMBLY

2. REMOVE VSV FROM CHARCOAL CANISTER



3. INSPECT VSV

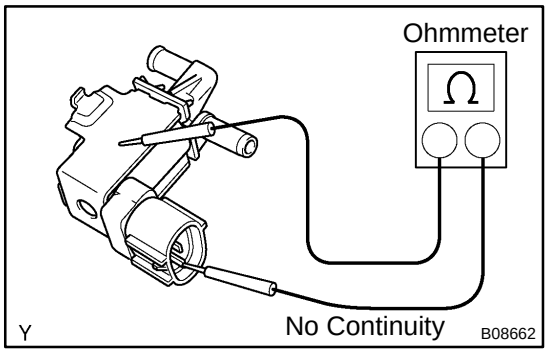
(a) Inspect the VSV for open circuit.

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

Resistance:

20˚C (68˚F)	37 - 44 Ω
120˚C (248˚F)	51 - 62 Ω

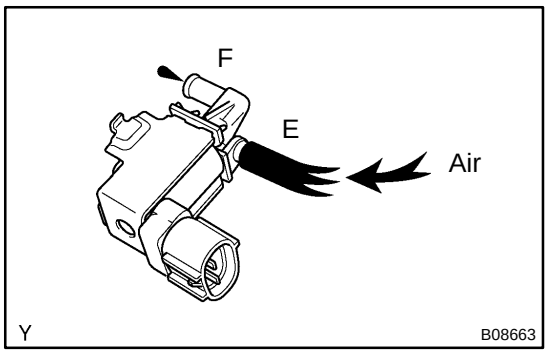
If there is no continuity, replace the VSV.



(b) Inspect the VSV for ground.

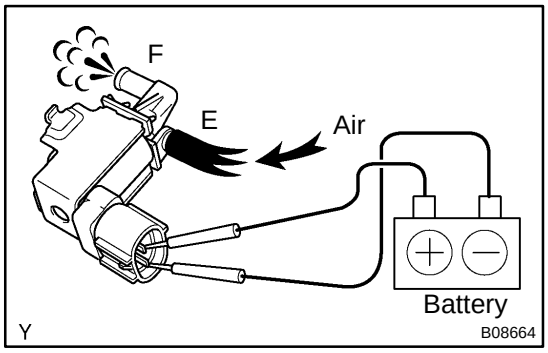
Check that there is no continuity between each terminals and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.

(1) Check that the air does not from port E to F.



(2) Apply battery positive voltage across the terminals.

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

If operation is not specified, replace the VSV.

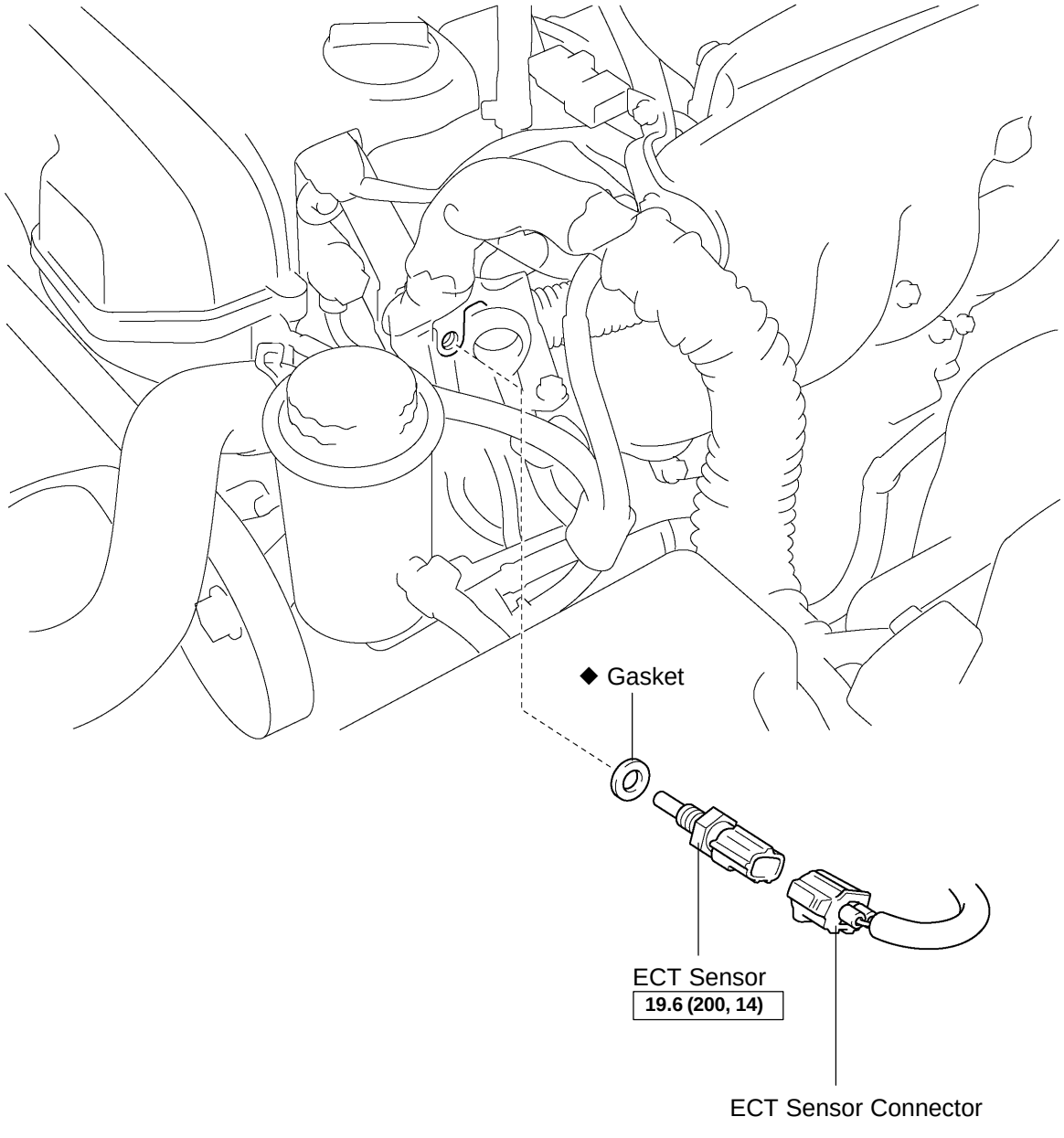
4. REINSTALL VSV TO CHARCOAL CANISTER

5. REINSTALL CHARCOAL CANISTER ASSEMBLY

ENGINE COOLANT TEMPERATURE (ECT) SENSOR

SF0O5-08

COMPONENTS

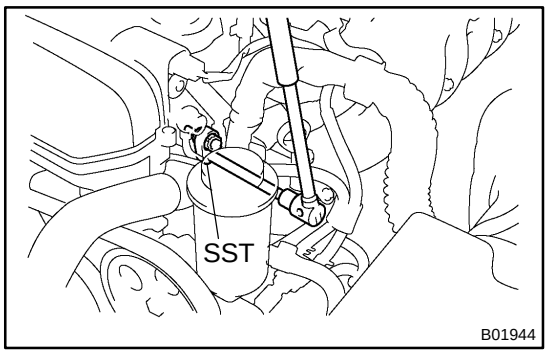


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

B02006

SF0O6-06



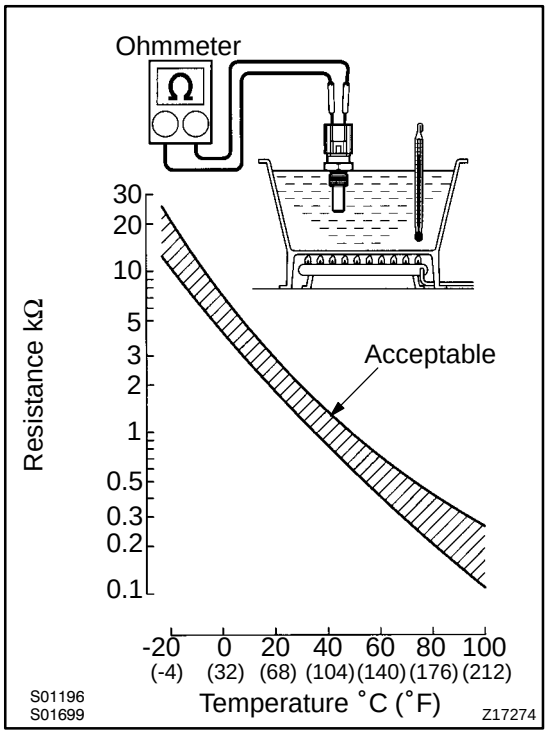
INSPECTION

1. DRAIN ENGINE COOLANT

2. REMOVE ECT SENSOR

(a) Disconnect the ECT sensor connector.

(b) Using SST, remove the ECT sensor and gasket.
SST 09205-76030



3. INSPECT ECT SENSOR

Using an ohmmeter, measure the resistance between the terminals.

Resistance: Refer to the graph

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

4. REINSTALL ECT SENSOR

(a) Install a new gasket to the ECT sensor.

(b) Using SST, install the ECT sensor.
SST 09205-76030
Torque: 19.6 N·m (200 kgf·cm, 14 ft·lbf)

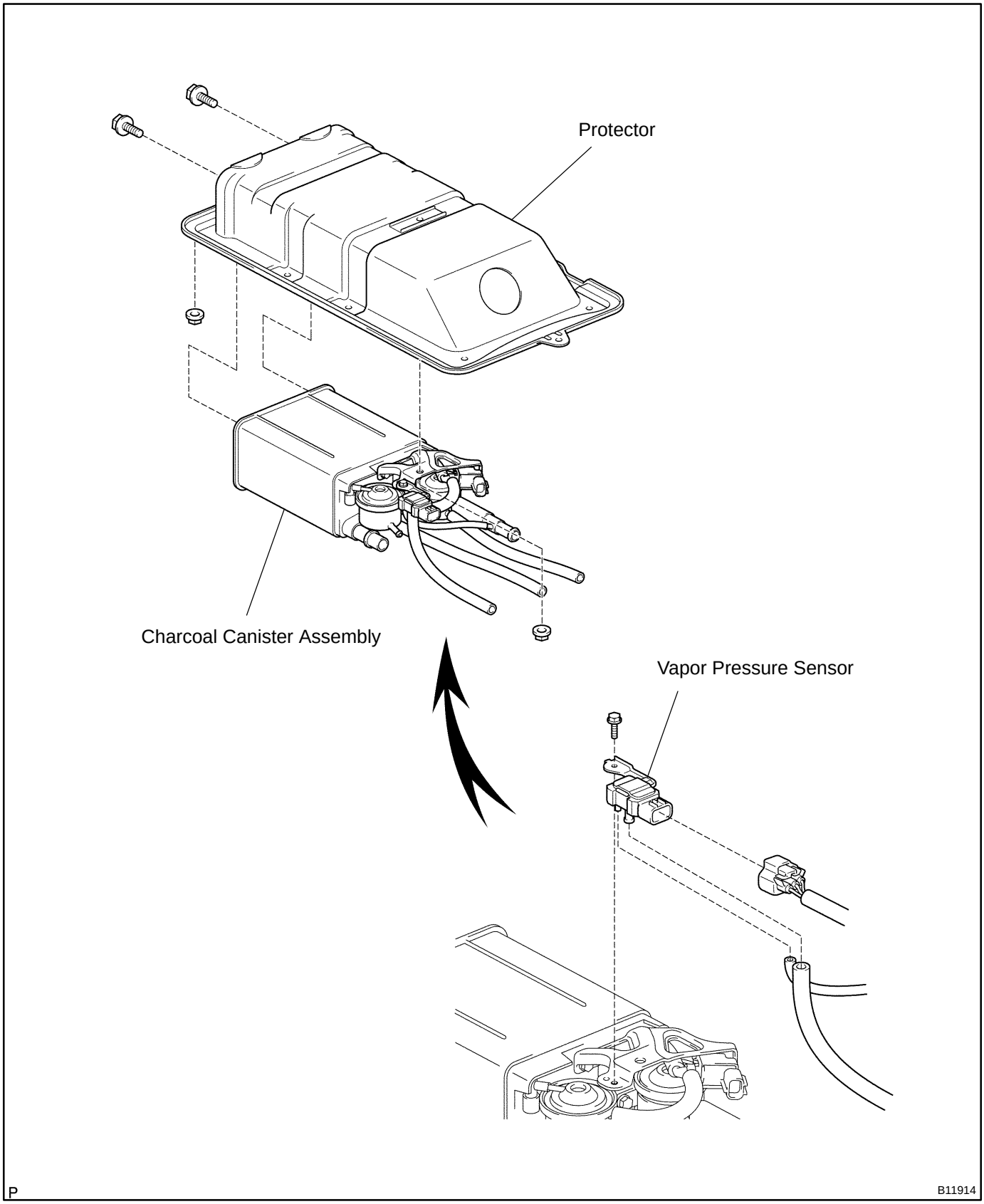
(c) Connect the ECT sensor connector.

5. REFILL WITH ENGINE COOLANT

VAPOR PRESSURE SENSOR

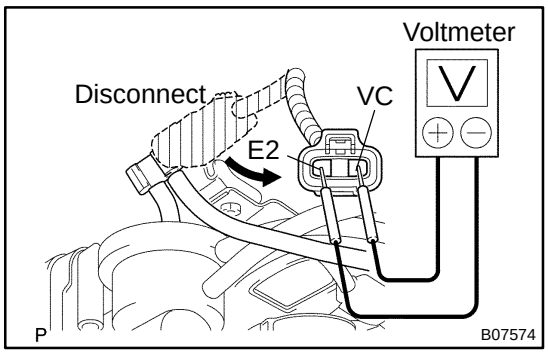
COMPONENTS

SF0ZQ-05



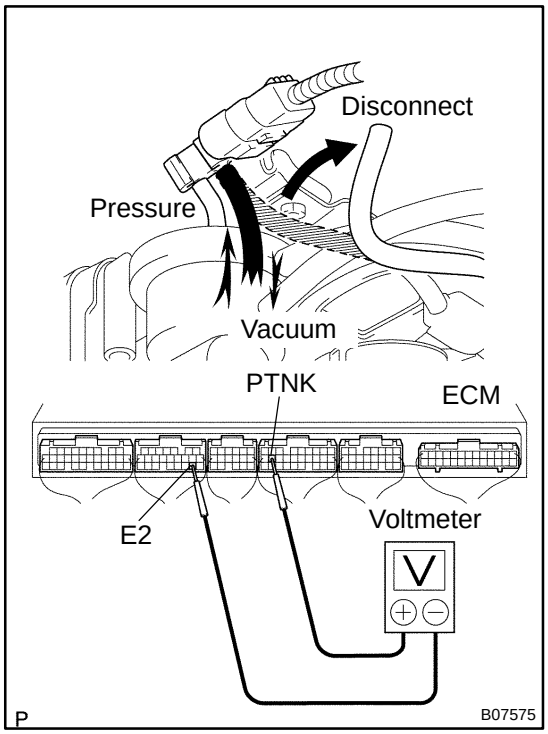
SF0O8-03

INSPECTION



1. INSPECT POWER SOURCE VOLTAGE OF VAPOR PRESSURE SENSOR

(a) Disconnect the vapor pressure sensor connector.
(b) Turn the ignition switch ON.
(c) Using a voltmeter, measure the voltage between connector terminals VC and E2 of the wiring harness side.
Voltage: 4.5 - 5.5 V
(d) Turn the ignition switch OFF.
(e) Reconnect the vapor pressure sensor connector.



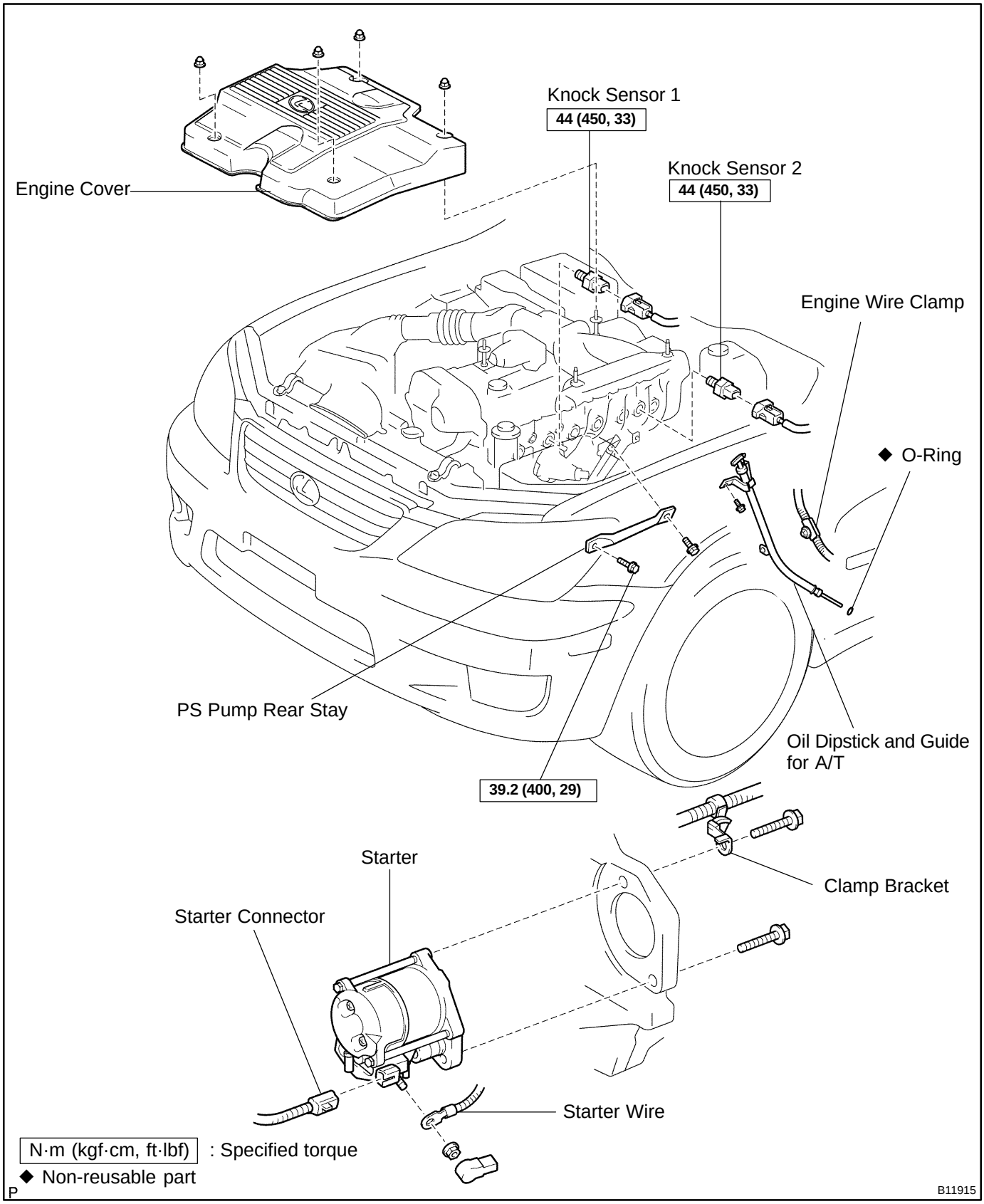
2. INSPECT POWER OUTPUT OF VAPOR PRESSURE SENSOR

(a) Turn the ignition switch ON.
(b) Disconnect the vacuum hose from the vapor pressure sensor.
(c) Connect a voltmeter to terminals PTNK and E2 of the ECM, and measure the output voltage under these conditions:
(1) Apply vacuum (2.0 kPa (15 mmHg, 0.59 in.Hg)) to the vapor pressure sensor.
Voltage: 1.3 - 2.1 V
(2) Release the vacuum from the vapor pressure sensor.
Voltage: 3.0 - 3.6 V
(3) Apply pressure (1.5 kPa (15 gf/cm^2, 0.22 psi)) to the vapor pressure sensor.
Voltage: 4.2 - 4.8 V
(d) Turn the ignition switch OFF.
(e) Reconnect the vacuum hose to the vapor pressure sensor.

KNOCK SENSOR

COMPONENTS

SF0O9-08

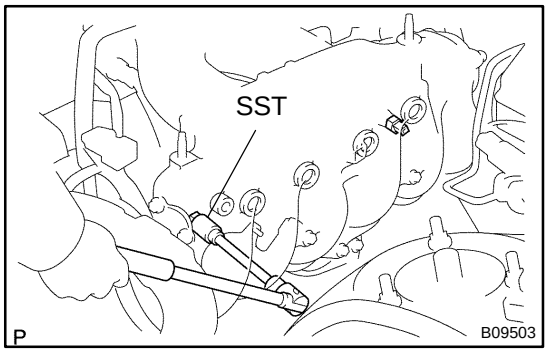


SF0OA-07

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.

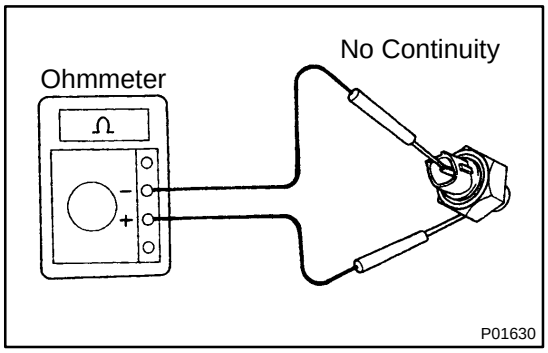
(b) Using SST, remove the knock sensor.

SST 09816-30010

4. REMOVE OIL DIPSTICK AND GUIDE FOR A/T (See page EM-65)

5. REMOVE STARTER (See page ST-4)

6. REMOVE KNOCK SENSOR 2 (See step 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-16)

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)

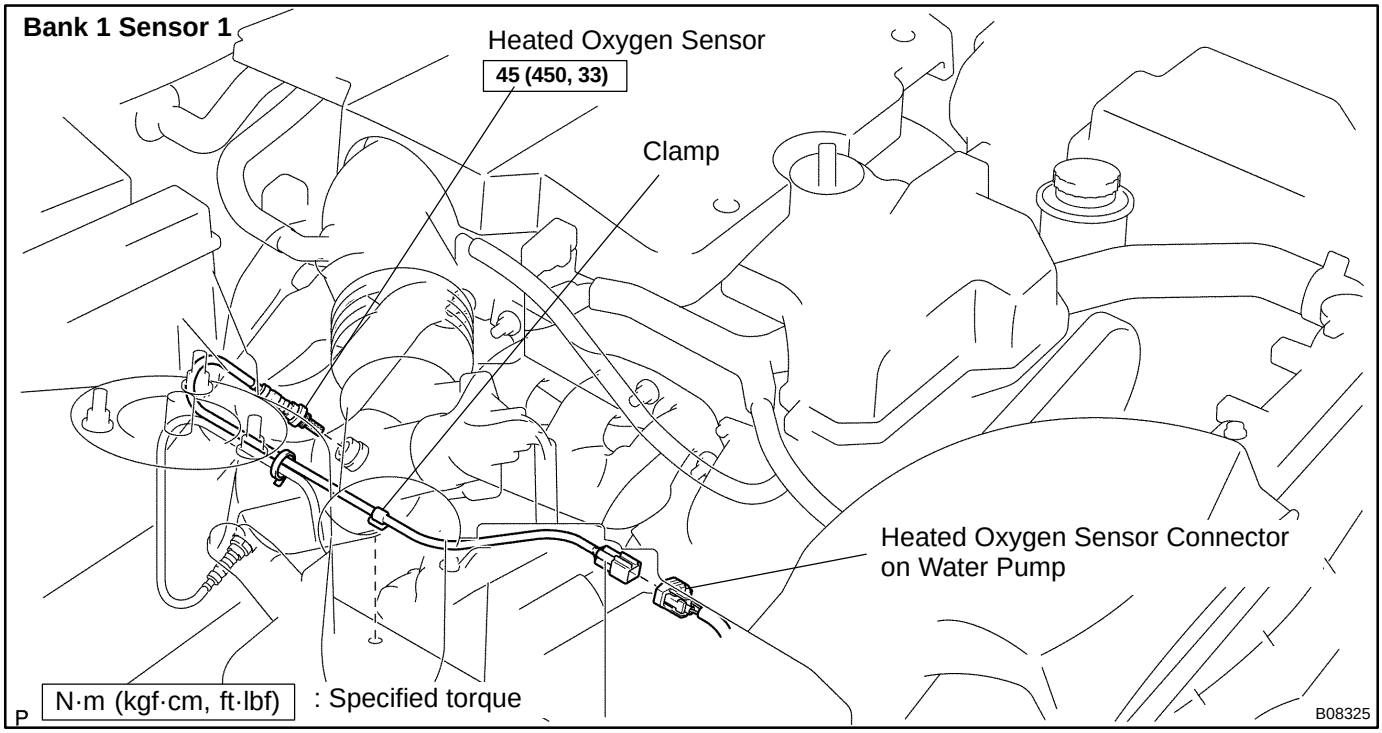
12. REINSTALL ENGINE COVER

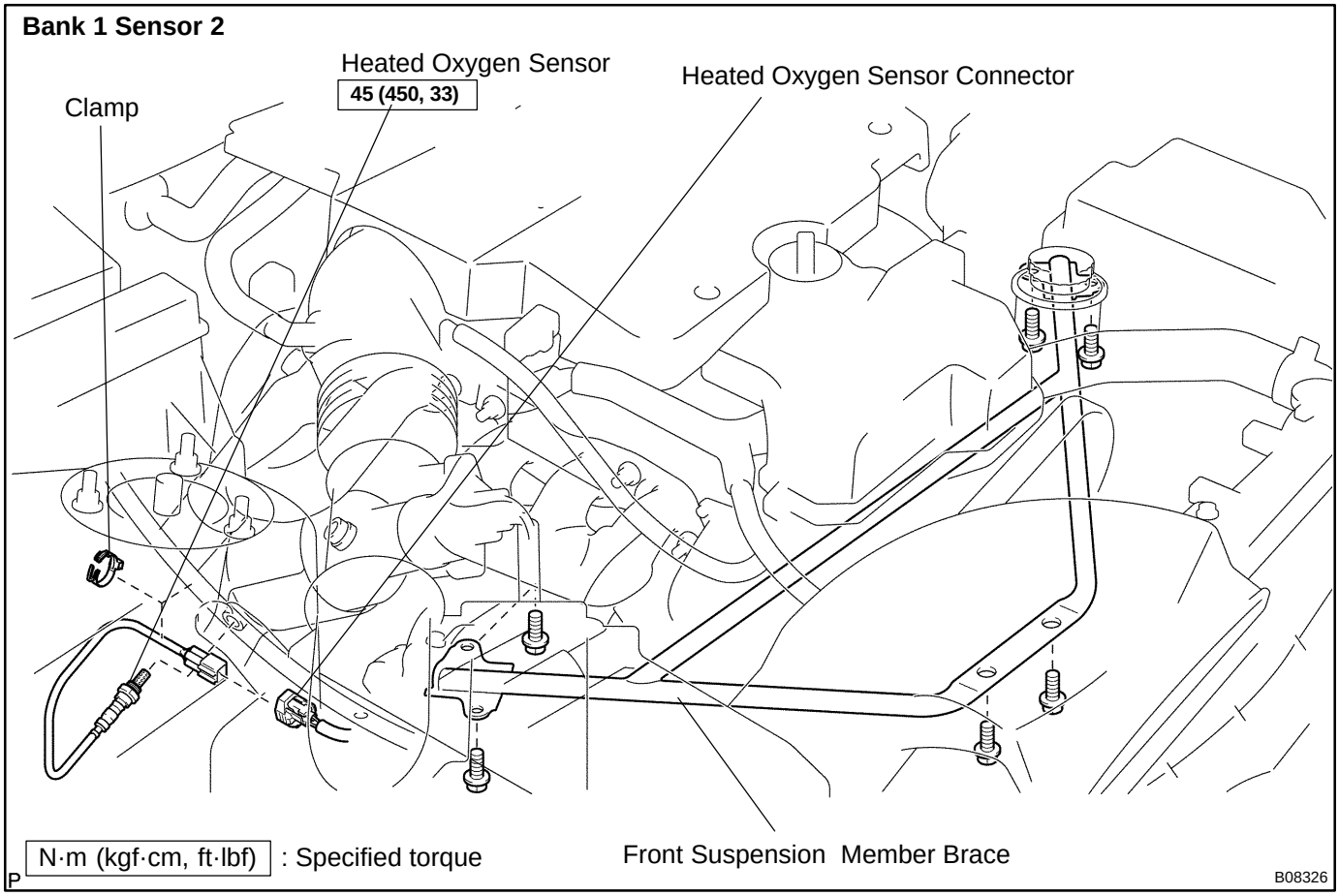
Reinstall the engine cover with the 4 nuts.

HEATED OXYGEN SENSOR

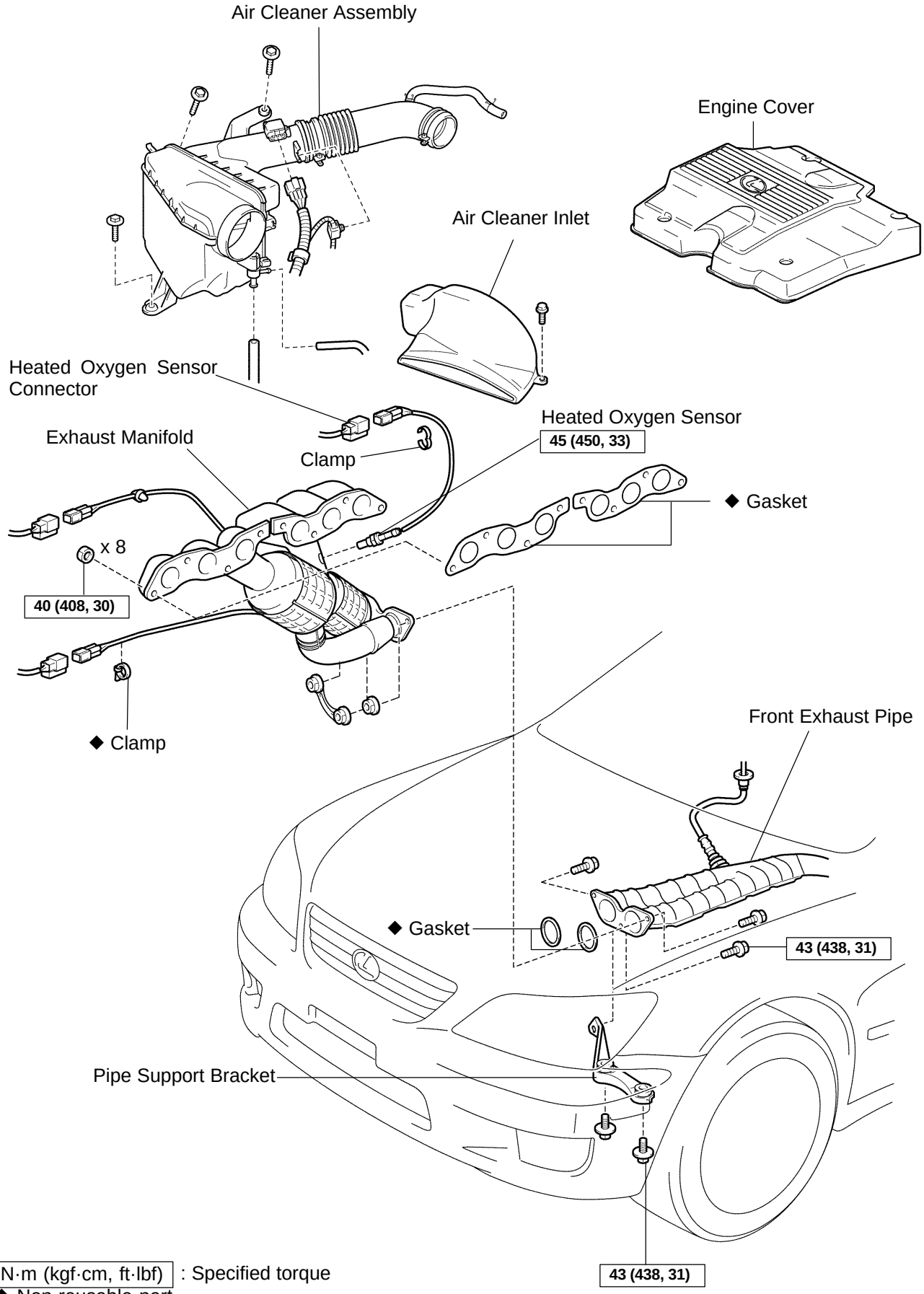
SF0OB-07

COMPONENTS





Bank 2 Sensor 1

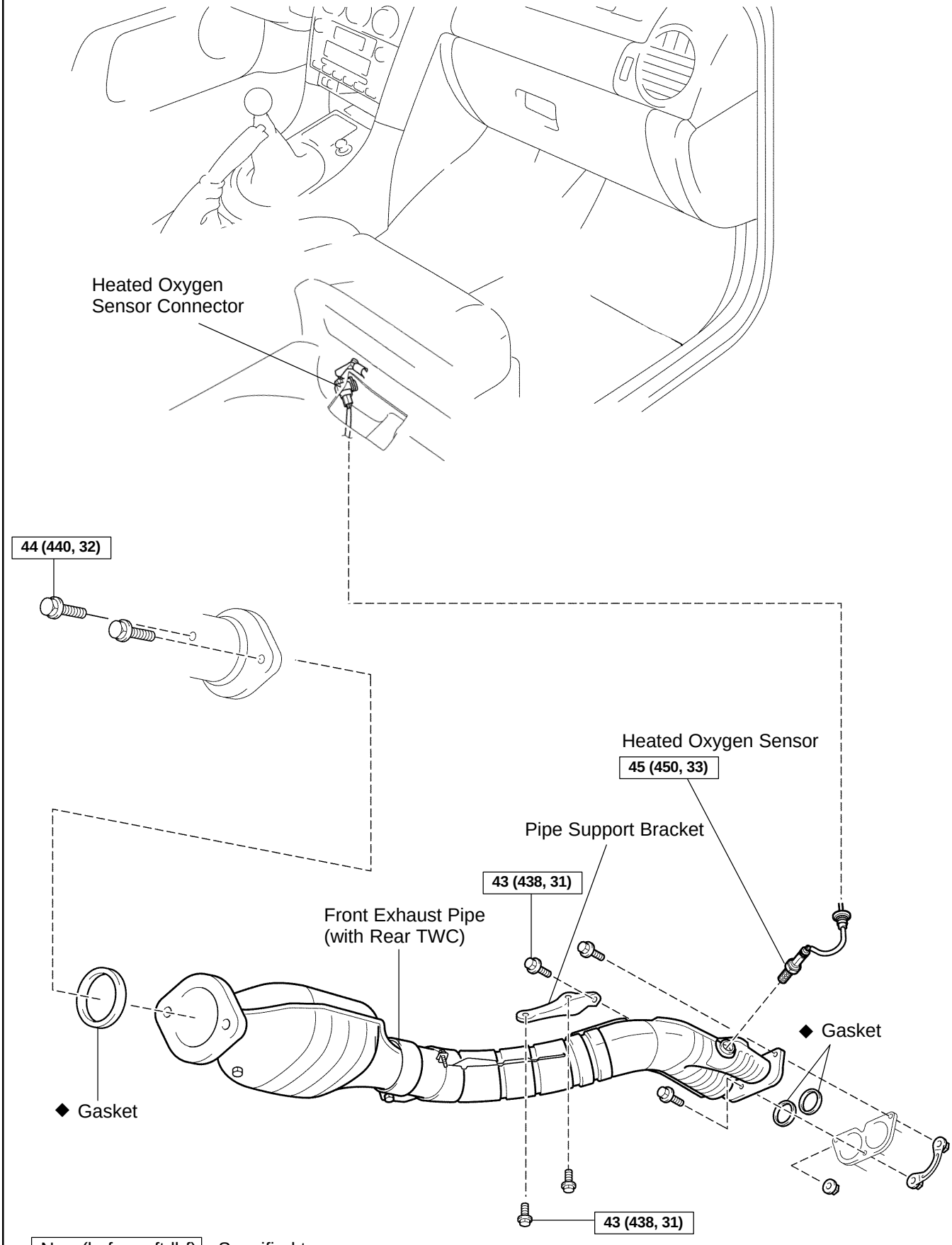


P

N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

B11916

Bank 2 Sensor 2



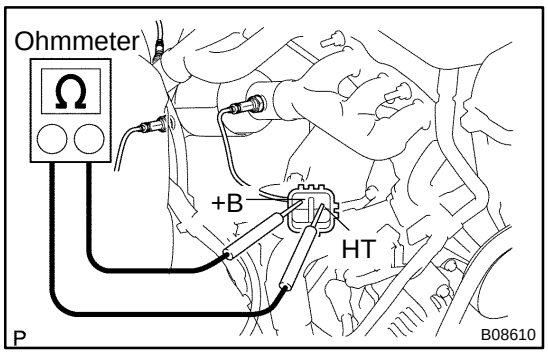
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

P

F20085

SF0OC-11



INSPECTION

1. Bank 1, 2 Sensor 1, and Bank 1 Sensor 2:
INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSORS

(a) Disconnect the oxygen sensor connectors.

(b) Using an ohmmeter, measure the resistance between the terminals +B and HT.

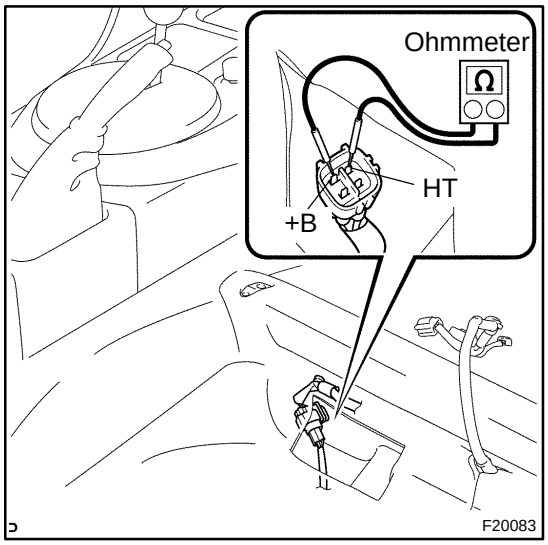
Resistance:

20˚C (68˚F)	11 - 16 Ω
800˚C (1,472˚F)	23 - 32 Ω

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

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

(c) Reconnect the oxygen sensor connectors.



2. Bank 2 Sensor 2:
INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSOR

(a) Remove the front seat assembly RH.

(b) Remove the air duct guide rear RH.

(c) Disconnect the oxygen sensor connector.

(d) Using an ohmmeter, measure the resistance between the terminals +B and HT.

Resistance:

20˚C (68˚F)	11 - 16 Ω
800˚C (1,472˚F)	23 - 32 Ω

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

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

(e) Reconnect the oxygen sensor connector.

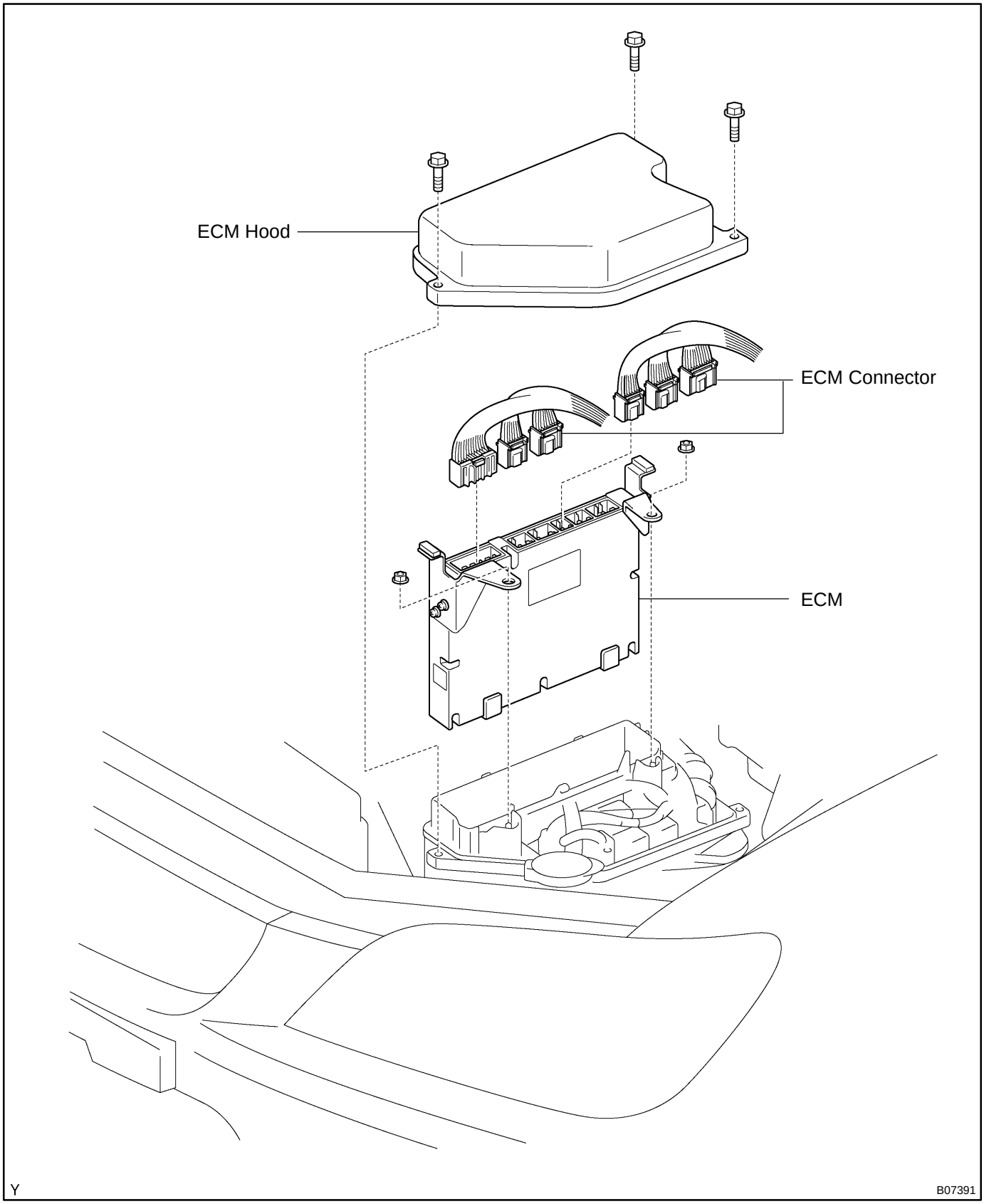
(f) Install the air duct guide rear RH.

(g) Install the front seat assembly RH.

ENGINE CONTROL MODULE (ECM)

SF0OF-14

COMPONENTS



SF0OG-04

INSPECTION

1. REMOVE ECM
2. INSPECT ECM (See page DI-41)
3. REINSTALL ECM

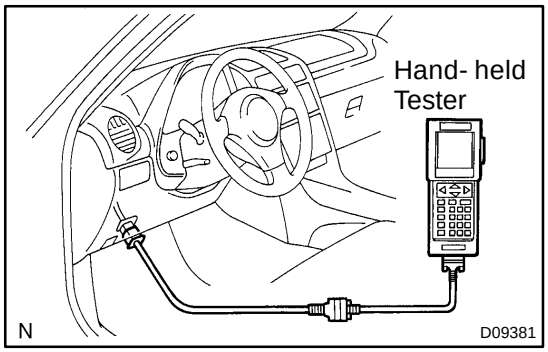
FUEL CUT RPM

SF0OH-09

INSPECTION

1. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.

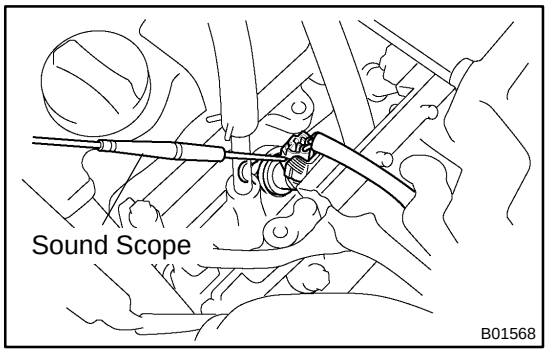


2. CONNECT HAND-HELD TESTER OR OBD II SCAN TOOL

(a) Connect the hand-held tester or OBD II scan tool to the DLC3.

(b) Select the following menu items: DIAGNOSIS / ENHANCED OBD ll / DATA LIST / ENGINE SPD.

(c) Please refer to the hand-held tester or OBD II scan tool operator's manual for further details.



3. INSPECT FUEL CUT-OFF OPERATION

(a) Increase the engine speed to at least 3,000 rpm.

(b) Check for injector operating noise.

(c) 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 OBD II SCAN TOOL