SFI SYSTEM

SF0D6–04

PRECAUTION

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

HINT:

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

Therefore, if necessary, read the diagnosis before removing the negative (–) terminal cable from the battery.

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

3. KEEP GASOLINE AWAY FROM RUBBER OR LEATHER PARTS

4. MAINTENANCE PRECAUTIONS

(a) In event of engine misfire, these precautions should be taken.
  (1) Check proper connection to battery terminals, etc.
  (2) After repair work, check that the ignition coil terminals and all other ignition system lines are reconnected securely.
  (3) When cleaning the engine compartment, be especially careful to protect the electrical system from water.

(b) Precautions when handling the oxygen sensor.
  (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 allow air suction and cause the engine to run out of tune.

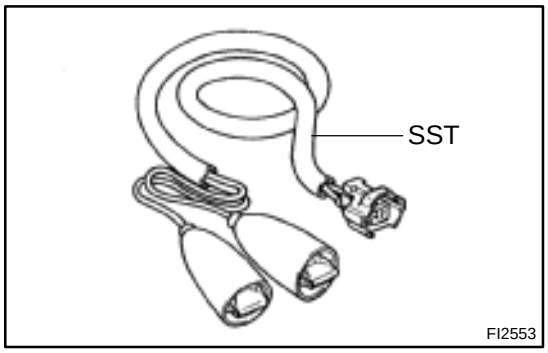
7. ELECTRONIC CONTROL SYSTEM

(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.

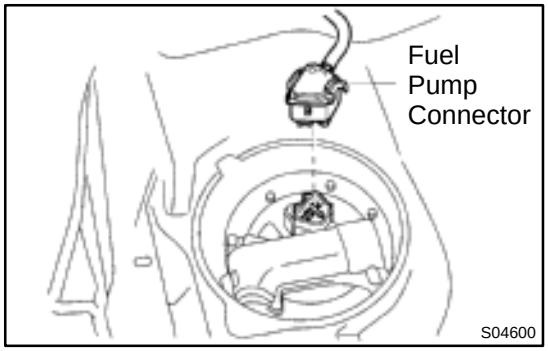
HINT:

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 (–) cables.
(c) Do not permit parts to receive a severe impact during removal or installation. Handle all SFI parts carefully, especially the ECM.
(d) Be careful during troubleshooting as there are numerous transistor circuit, and even slight terminal contact can cause 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 should be taken 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.

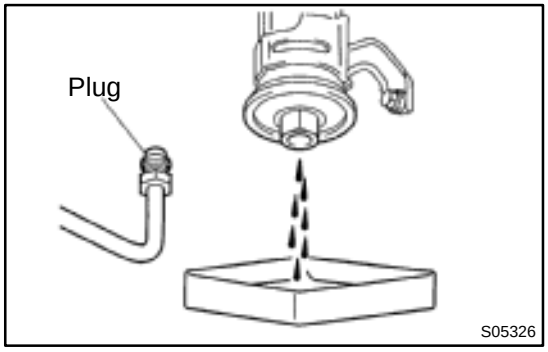


(i) Use SST for inspection or test of the injector or its wiring connector.
SST 09842–30070

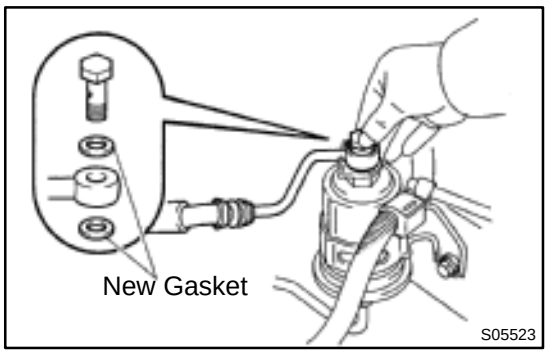


8. FUEL SYSTEM

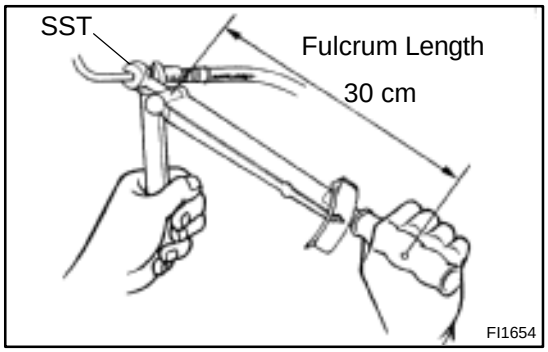
(a) When disconnecting the high fuel pressure line, a large amount of gasoline will spill out, so observe these procedures:
  (1) Disconnect the fuel pump connector.
  (2) Start the engine. After the engine has stopped on its own, turn the ignition switch OFF.



  (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.

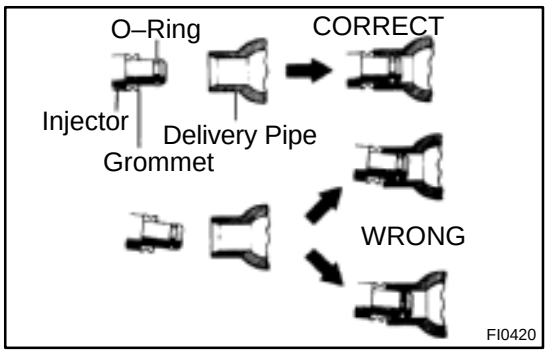


(b) When connecting the union bolt on the high pressure pipe union, observe these procedures:
(1) Always use 2 new gaskets.
(2) Tighten the union bolt by hand.
(3) Tighten the union bolt to the specified torque.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

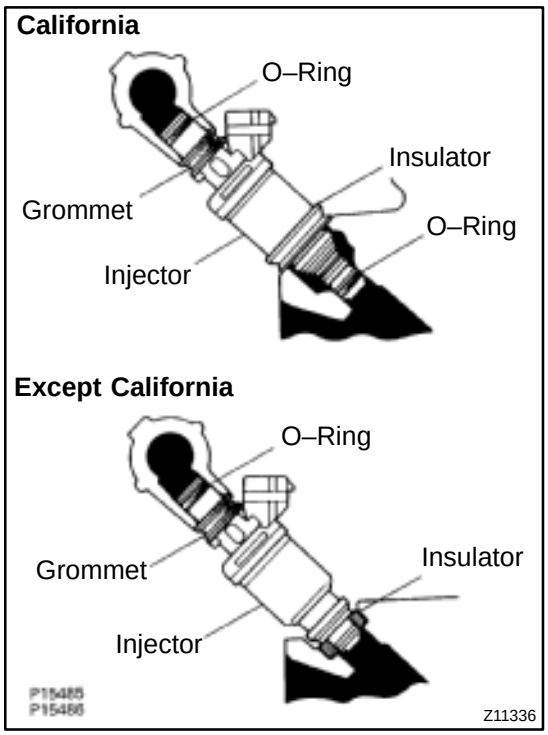


(c) When connecting the flare nut on the high pressure pipe union, observe these procedures:
(1) Apply a light coat of engine oil to the flare nut, and tighten the flare nut by hand.
(2) Using SST, tighten the flare nut to specified torque.
SST 09631–22020

NOTICE:
Do not rotate the fuel pipe, when tightening the flare nut.
Torque: 28 N·m (285 kgf·cm, 21 ft·lbf) for using SST
HINT:
Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

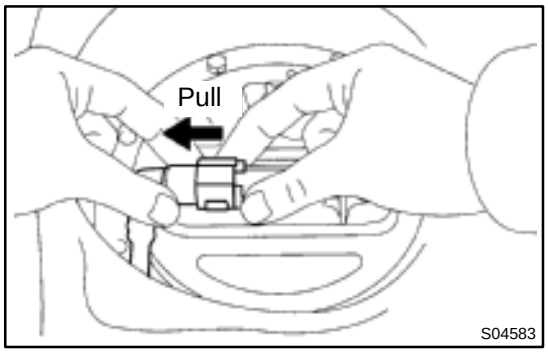


(d) Observe these precautions when removing and installing the injectors.
(1) Never reuse the O–ring.
(2) When placing a new O–ring on the injector, take care not to damage it in any way.
(3) Coat a new O–ring with spindle oil or gasoline before installing–never use engine, gear or brake oil.

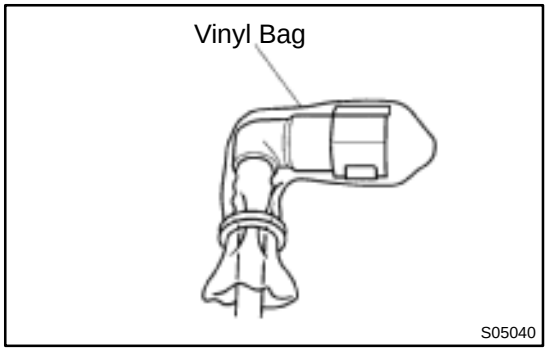


(e) Install the injector to the delivery pipe and cylinder head, as shown in the illustration.
Before installing the injector, must apply spindle oil or gasoline on the place where a delivery pipe or an intake manifold touches an O–ring of the injector.

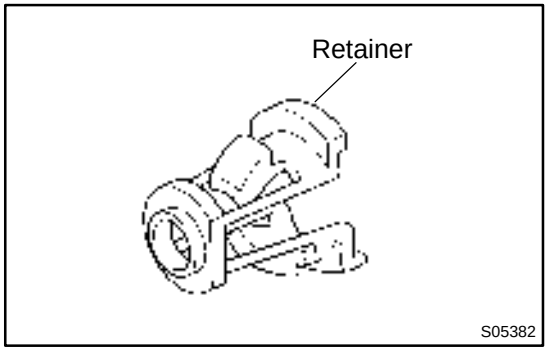
(f) Observe these precautions when disconnecting the fuel tube connector (quick type):
(1) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.
(2) Be sure to disconnect with hands.



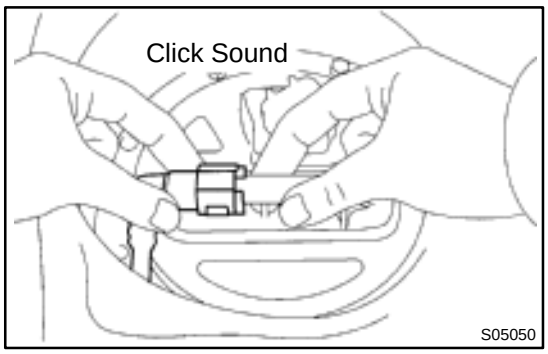
(3) When the connector and the pipe are stuck, pinch the retainer between the hands, push and pull the connector to free to disconnect and pull it out. Do not use any tool at this time.
(4) Inspect if there is any dirt or the likes on the seal surface of the disconnected pipe and clean it away.



(5) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

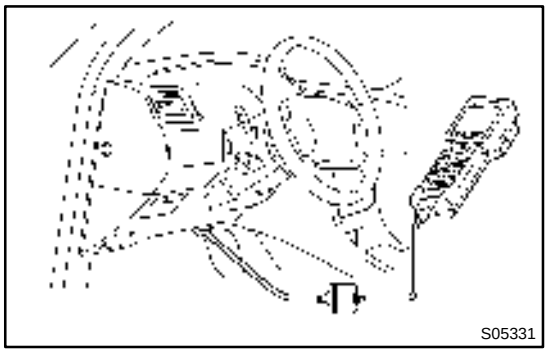


(g) Observe these precautions when connecting the fuel tube connector (quick type):
(1) Do not reuse the retainer removed from the pipe.
(2) Must use hands without using tools when to remove the retainer from the pipe.
(3) Check if there is any damage or foreign objects on the connected part of the pipe.



(4) Match the axis of the connector with axis of the pipe, and push in the connector until the retainer makes a ”click” sound. In case that the connections is tight, apply little amount of new engine oil on the tip of the pipe.
(5) After having finished the connection, check if the pipe and the connector are securely connected by pulling them.
(6) Check if there is any fuel leakage.

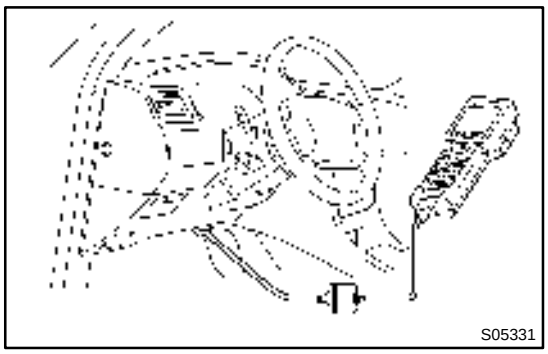
(h) Observe these precautions when handling nylon tube.
(1) Pay attention not to turn the connected part of the nylon tube and the quick connector with force when connecting them.
(2) Pay attention not to kink the nylon tube.
(3) Do not remove the EPDM protector on the outside of the nylon tube.
(4) Must not close the piping with the nylon tube by bending it.



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

NOTICE:
Do not start the engine.

(3) Select the active test mode on the TOYOTA hand–held tester.
(4) Please refer to the TOYOTA hand–held tester operator’s manual for further details.
(5) If you have no TOYOTA 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 TOYOTA hand–held tester from the DLC3.


S05331

FUEL PUMP

SF0D7–03

ON–VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

(a) Connect a TOYOTA hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the TOYOTA hand–held tester main switch ON.

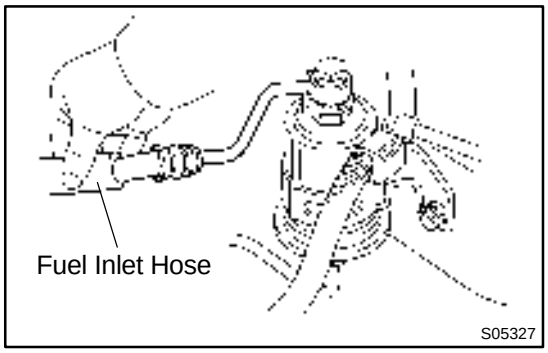
NOTICE:

Do not start the engine.

(c) Select the ACTIVE TEST mode on the TOYOTA hand–held tester.

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

(e) If you have no TOYOTA hand–held tester, connect the positive (+) and negative (–) leads from the battery to the fuel pump connector. (See step 7)



S05327

(f) Check that there is pressure in the fuel inlet hose from the fuel filter.

HINT:

If there is fuel pressure, you will hear the sound of fuel flowing. If there is no pressure, check the fusible link, fuses, EFI main relay, fuel pump, ECM and wiring connections.

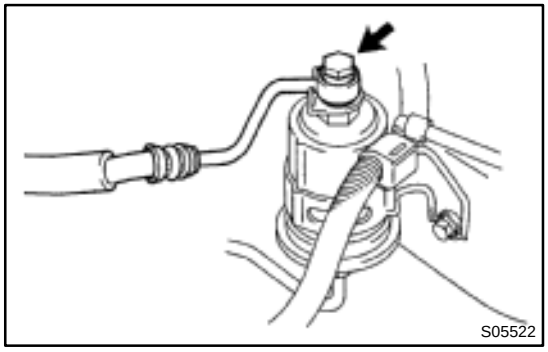
(g) Turn the ignition switch OFF.

(h) Disconnect the TOYOTA hand–held tester from the DLC3.

2. CHECK FUEL PRESSURE

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

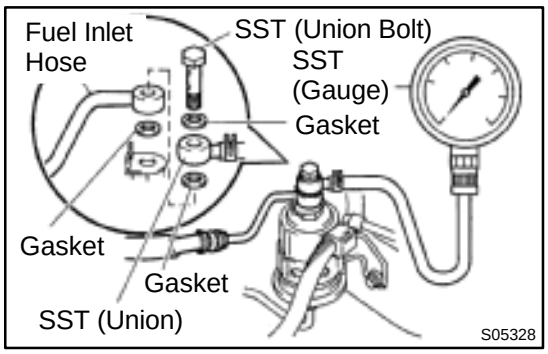
(b) Disconnect the negative (–) terminal cable from the battery.


S05522

(c) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.

CAUTION:

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



(d) Install the fuel inlet hose and SST (pressure gauge) to the fuel filter outlet with the 3 gaskets and SST (union bolt).
SST 09268–45014 (09268–41190, 90405–06167)
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)
(e) Wipe off any splattered gasoline.
(f) Reconnect the negative (–) terminal cable to the battery.
(g) Connect a TOYOTA hand–held tester to the DLC3.
(See step 1 in check fuel pump operation (a) to (e))
(h) Measure the fuel pressure.
Fuel pressure:
301 – 347 kPa (3.1 – 3.5 kgf/cm^2, 44 – 50 psi)

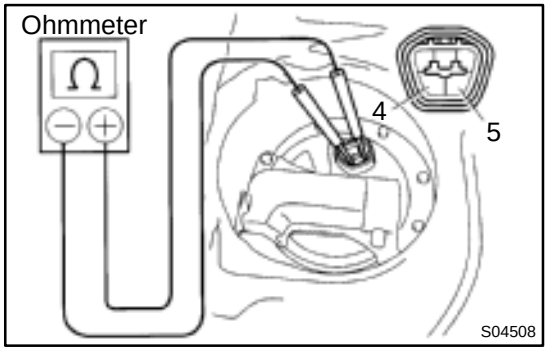
If pressure is high, replace the fuel pressure regulator.
If pressure is low, check the fuel hoses, fuel hose connections, fuel pump, fuel filter and fuel pressure regulator.

(i) Disconnect the TOYOTA hand–held tester from the DLC3.
(j) Start the engine.
(k) Measure the fuel pressure at idle.
Fuel pressure:
301 – 347 kPa (3.1 – 3.5 kgf/cm^2, 44 – 50 psi)
(l) Stop the engine.
(m) 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

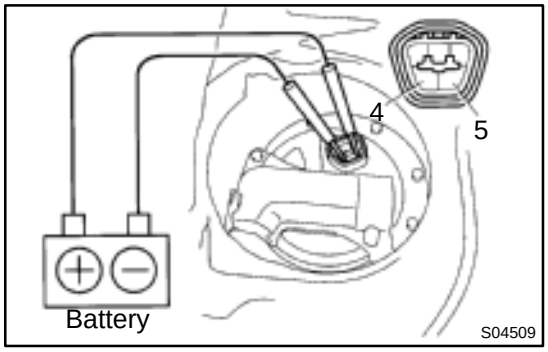
If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

(n) After checking fuel pressure, disconnect the negative (–) terminal cable from the battery and carefully remove the SST to prevent gasoline from splashing.
SST 09268–45014
(o) Reconnect the fuel inlet hose with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)
(p) Reconnect the negative (–) terminal cable to the battery.
(q) Check for fuel leaks. (See page SF–1)

3. REMOVE REAR SEAT CUSHION
4. REMOVE FLOOR SERVICE HOLE COVER
5. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR
6. INSPECT FUEL PUMP RESISTANCE



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.



7. INSPECT 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 or lead wire.

8. RECONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

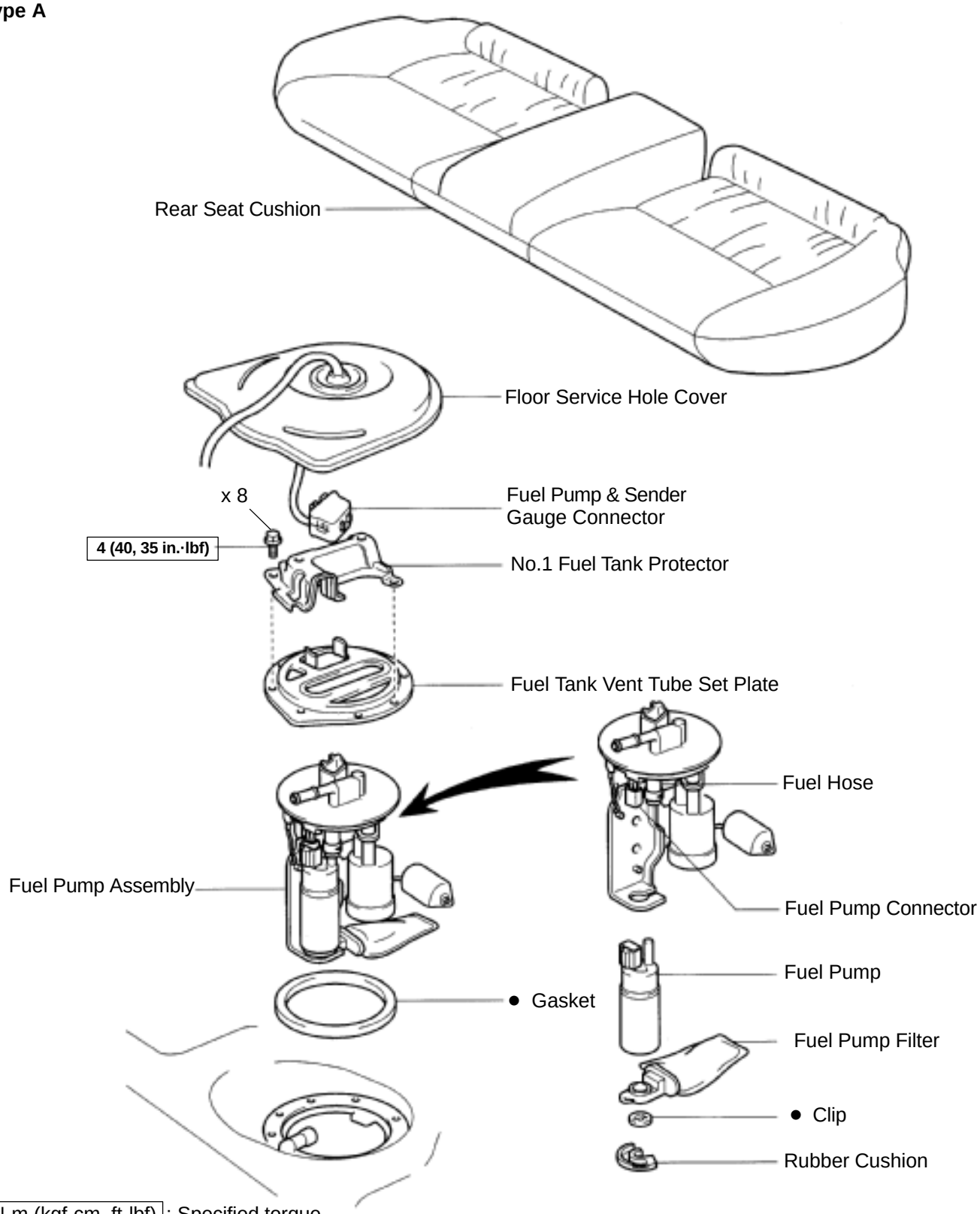
9. REINSTALL FLOOR SERVICE HOLE COVER

10. REINSTALL REAR SEAT CUSHION

SF0D8–02

COMPONENTS

Type A

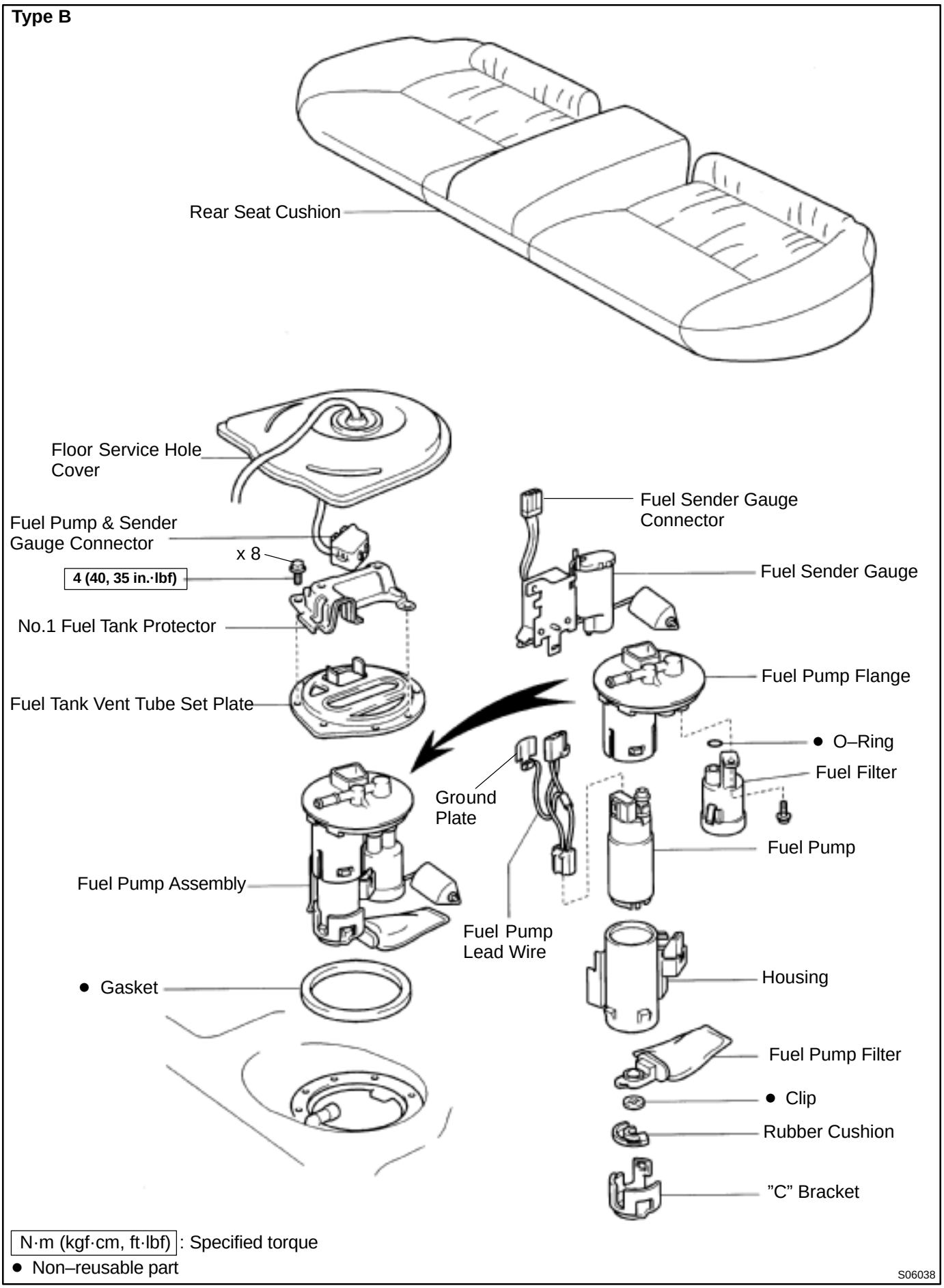


N·m (kgf·cm, ft·lbf) : Specified torque

● Non–reusable part

Z19025

Type B



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

● Non–reusable part

S06038

SF0D9–03

REMOVAL

CAUTION:

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

1. REMOVE REAR SEAT CUSHION

2. REMOVE FLOOR SERVICE HOLE COVER

(a) Take out the floor carpet.

(b) Remove the service hole cover.

HINT:

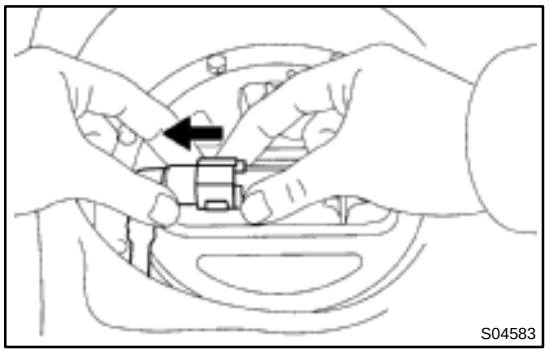
At the time of installation, please refer to the following items. Check for fuel leakage.

3. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

4. REMOVE NO.1 FUEL TANK PROTECTOR

Remove the 2 bolts and No.1 fuel tank protector.

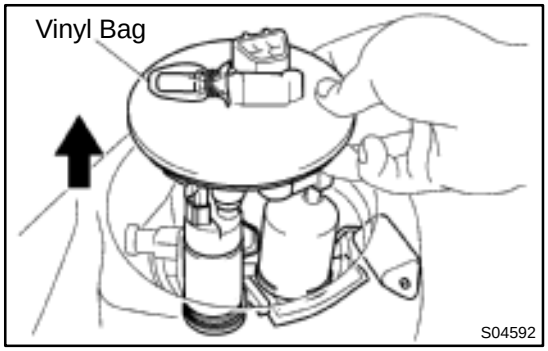
Torque: 4 N·m (40 kgf·cm, 35 in.·lbf)



5. DISCONNECT FUEL TUBE (FUEL TUBE CONNECTOR)

CAUTION:

- **Perform disconnecting and connecting operations of the fuel tube connector (quick type) after observing the precautions.**
- **As there is retained pressure in the fuel pipe line, prevent it from splashing inside the vehicle compartment.**



6. REMOVE FUEL PUMP ASSEMBLY FROM FUEL TANK

(a) Remove the 6 bolts and fuel tank vent tube set plate.
Torque: 4 N·m (40 kgf·cm, 35 in.·lbf)

(b) Pull out the fuel pump assembly.

(c) Remove the gasket from the pump assembly.

NOTICE:

- **Do not damage the fuel pump filter.**
- **Be careful that the arm of the sender gauge should not bent.**

HINT:

At the time of installation, please refer to the following items. Install a new gasket to the pump assembly.

SF0DA–02

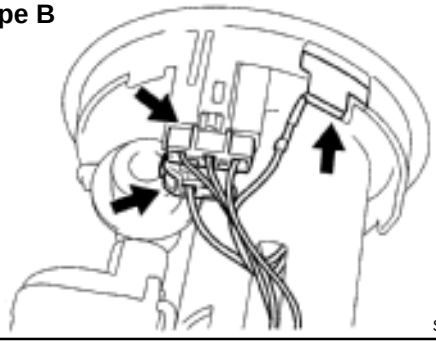
DISASSEMBLY

1. DISCONNECT FUEL PUMP CONNECTOR

2. Type B:
DISCONNECT GROUND PLATE

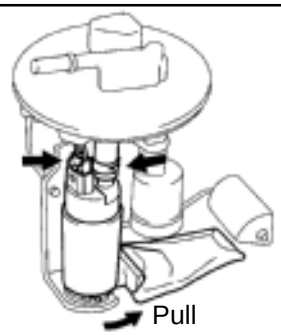
3. Type B:
DISCONNECT FUEL SENDER GAUGE CONNECTOR

Type B



S06028

Type A



S04603

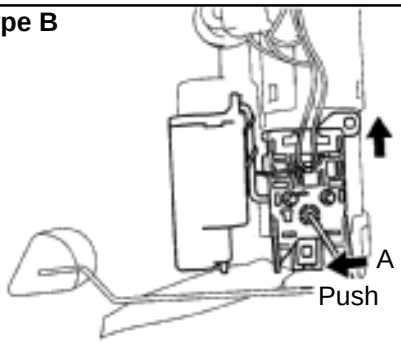
4. Type A:
REMOVE FUEL PUMP FROM FUEL PUMP BRACKET

(a) Pull off the lower side of the fuel pump from the pump bracket.

(b) Disconnect the fuel hose from the fuel pump, and remove the fuel pump.

(c) Remove the rubber cushion from the fuel pump.

Type B



S06033

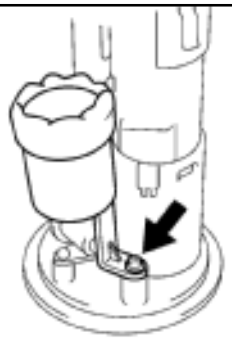
5. Type B:
REMOVE FUEL SENDER GAUGE.

Push down the portion of A with a finger, and push up the sender gauge.

NOTICE:

Be careful that the arm of the sender gauge should not bent.

Type B



S06050

6. Type B:
REMOVE FUEL FILTER

(a) Remove the screw, and pull out the fuel filter.

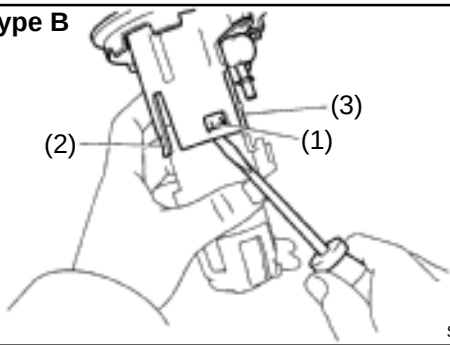
(b) Remove the O–ring from the fuel filter.

HINT:

At the time of installation, please refer to the following items. Apply a light coat of gasoline to a new O–ring, and install it to the fuel filter.

Torque: 2.0 N·m (20 kgf·cm, 17 in.·lbf)

Type B



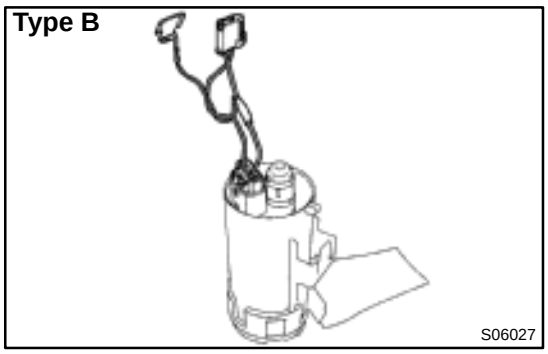
S06030

7. Type B:
REMOVE FUEL PUMP FLANGE

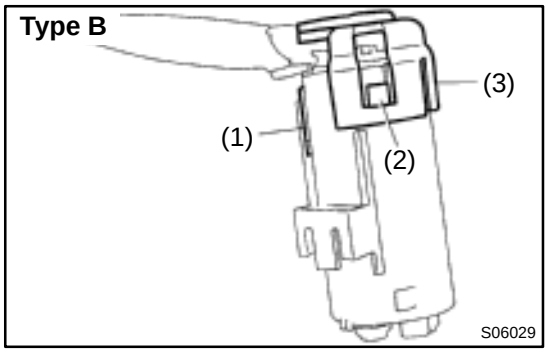
Using a screwdriver, remove the snap fit portion in the order of 1, 2 and 3 as shown in the illustration.

HINT:

At the time of installation, please refer to the following items. Apply a light coat of gasoline to a new O–ring of the fuel pump.

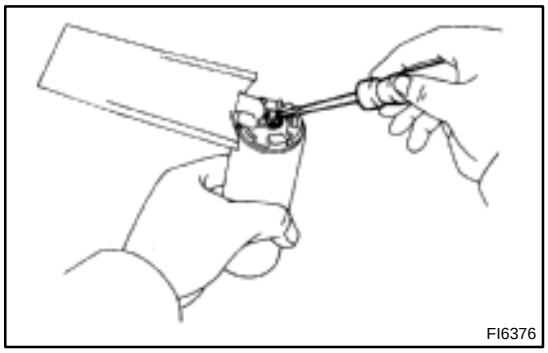


8. Type B:
REMOVE FUEL PUMP LEAD WIRE.



9. Type B:
REMOVE ”C” BRACKET, RUBBER CUSHION AND FUEL PUMP

Using a screwdriver, remove the snap fit portion in the order of 1, 2 and 3 as shown in the illustration.



10. REMOVE FUEL PUMP FILTER FROM FUEL PUMP

(a) Using a small screwdriver, remove the clip.

(b) Pull out the pump filter.

HINT:

At the time of installation, please refer to the following items. Install the pump filter with a new clip.

SF0DB–01

REASSEMBLY

Reassembly is in the reverse order of disassembly. (See page SF–12)

SF0DC–01

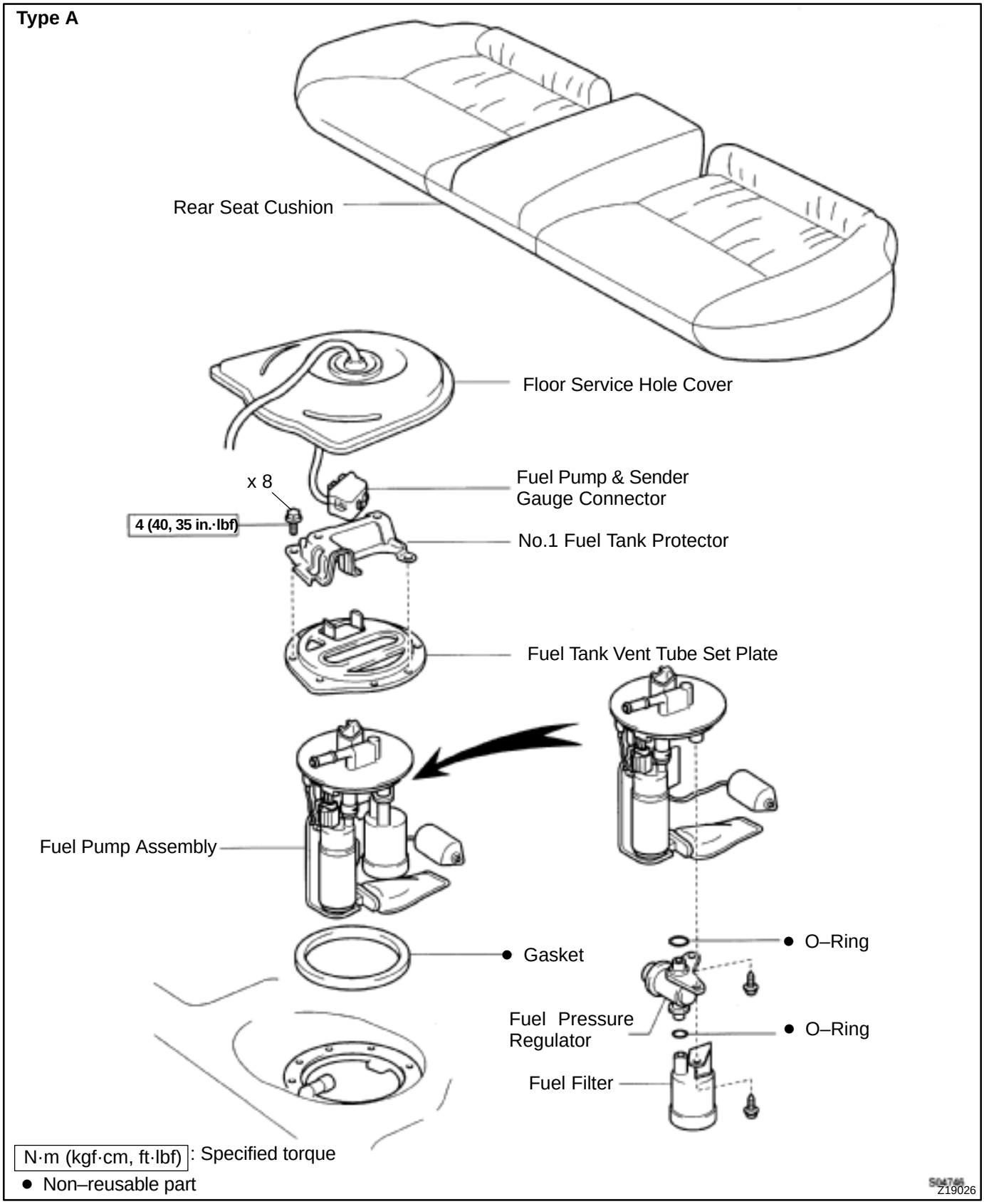
INSTALLATION

Installation is in the reverse order of removal. (See page SF–11)

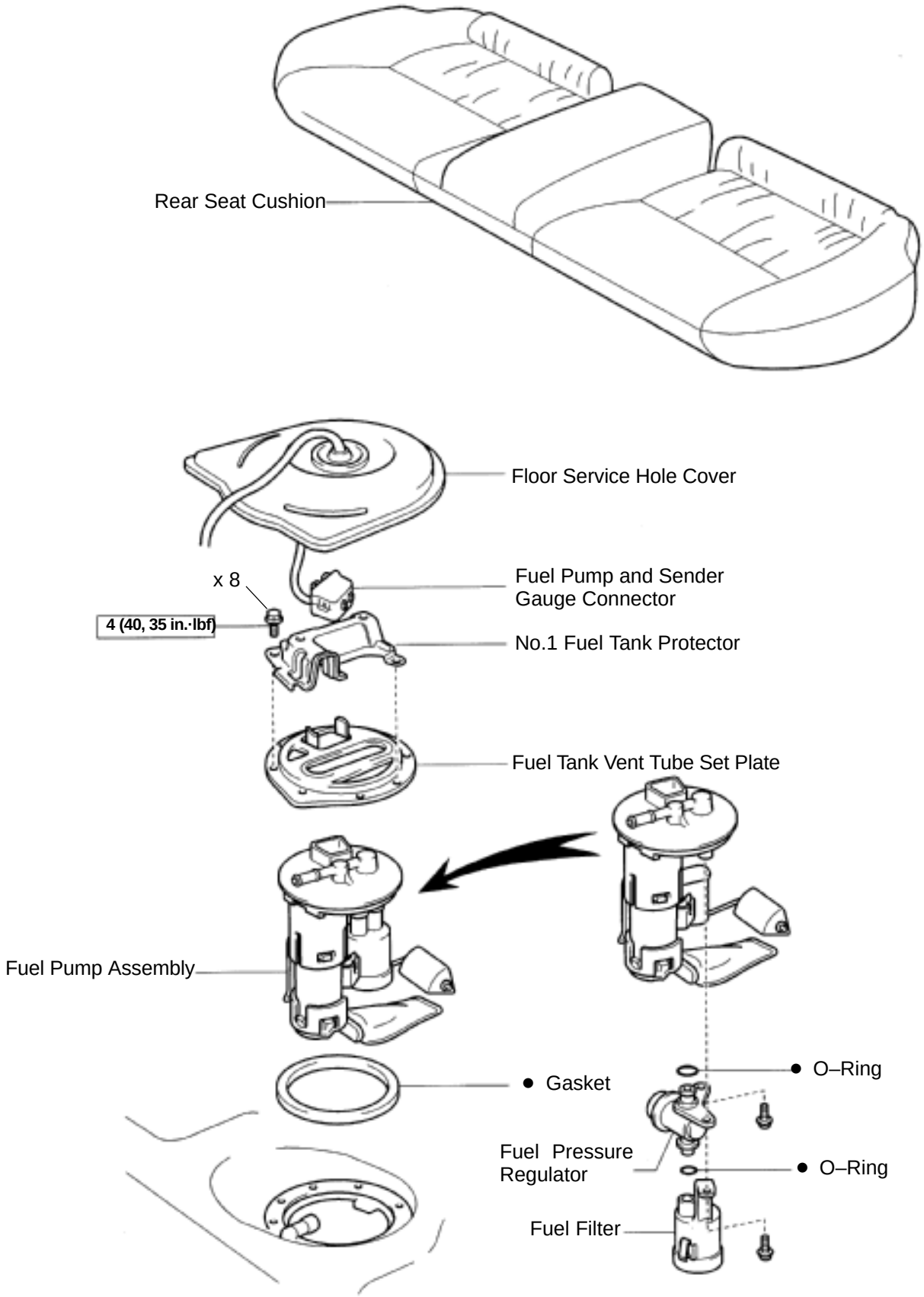
FUEL PRESSURE REGULATOR

SF0DD–02

COMPONENTS



Type B



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

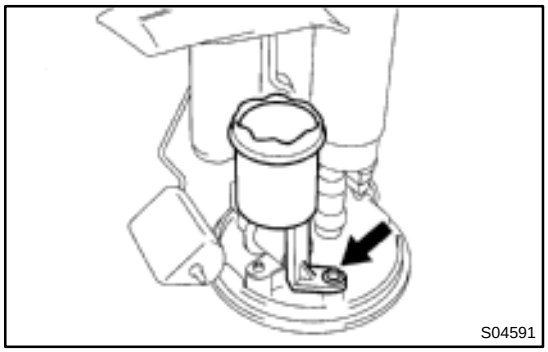
● Non–reusable part

S06037

SF0DE–03

REMOVAL

1. REMOVE FUEL PUMP ASSEMBLY FROM FUEL TANK
(See page SF–11)



2. REMOVE FUEL FILTER

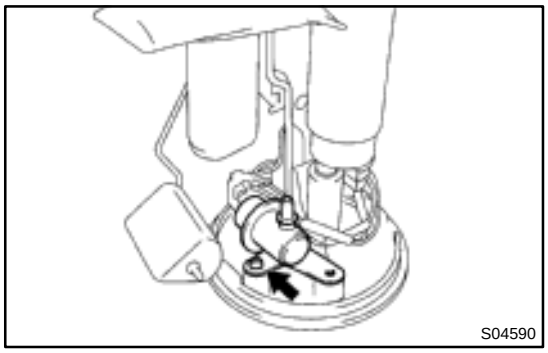
(a) Remove the screw, and pull out the fuel filter.

(b) Remove the O–ring from the fuel filter.

HINT:

At the time of installation, please refer to the following items. Apply a light coat of gasoline to a new O–ring, and install it to the fuel filter.

Torque: 2.0 N·m (20 kgf·cm, 17 in.·lbf)



3. REMOVE FUEL PRESSURE REGULATOR

(a) Remove the screw, and pull out the pressure regulator.

Torque: 2.0 N·m (20 kgf·cm, 17 in.·lbf)

(b) Remove the O–ring from the pressure regulator.

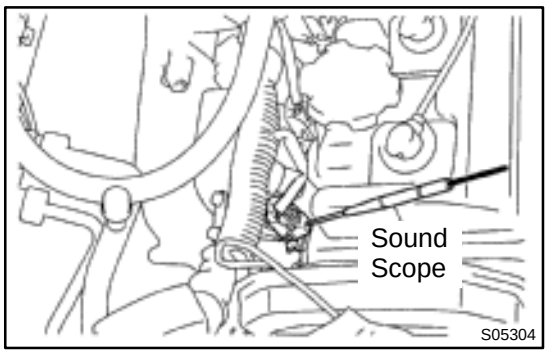
HINT:

At the time of installation, please refer to the following items. Apply a light coat of gasoline to a new O–ring, and install it to the pressure regulator.

SF0DF–01

INSTALLATION

Installation is in the reverse order of removal. (See page SF–18)



INJECTOR

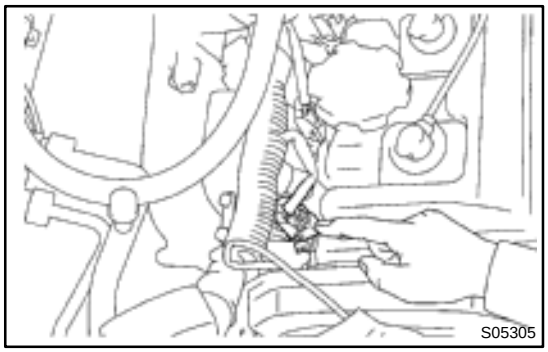
SF0DG–03

ON–VEHICLE INSPECTION

1. INSPECT INJECTOR OPERATION

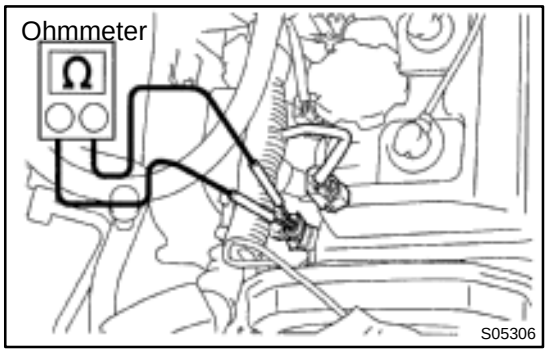
Check operation sound from each injector.

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



(b) If you have no sound scope, you can check the injector transmission operation with your finger.

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



2. INSPECT INJECTOR RESISTANCE

(a) Disconnect the injector connector.

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

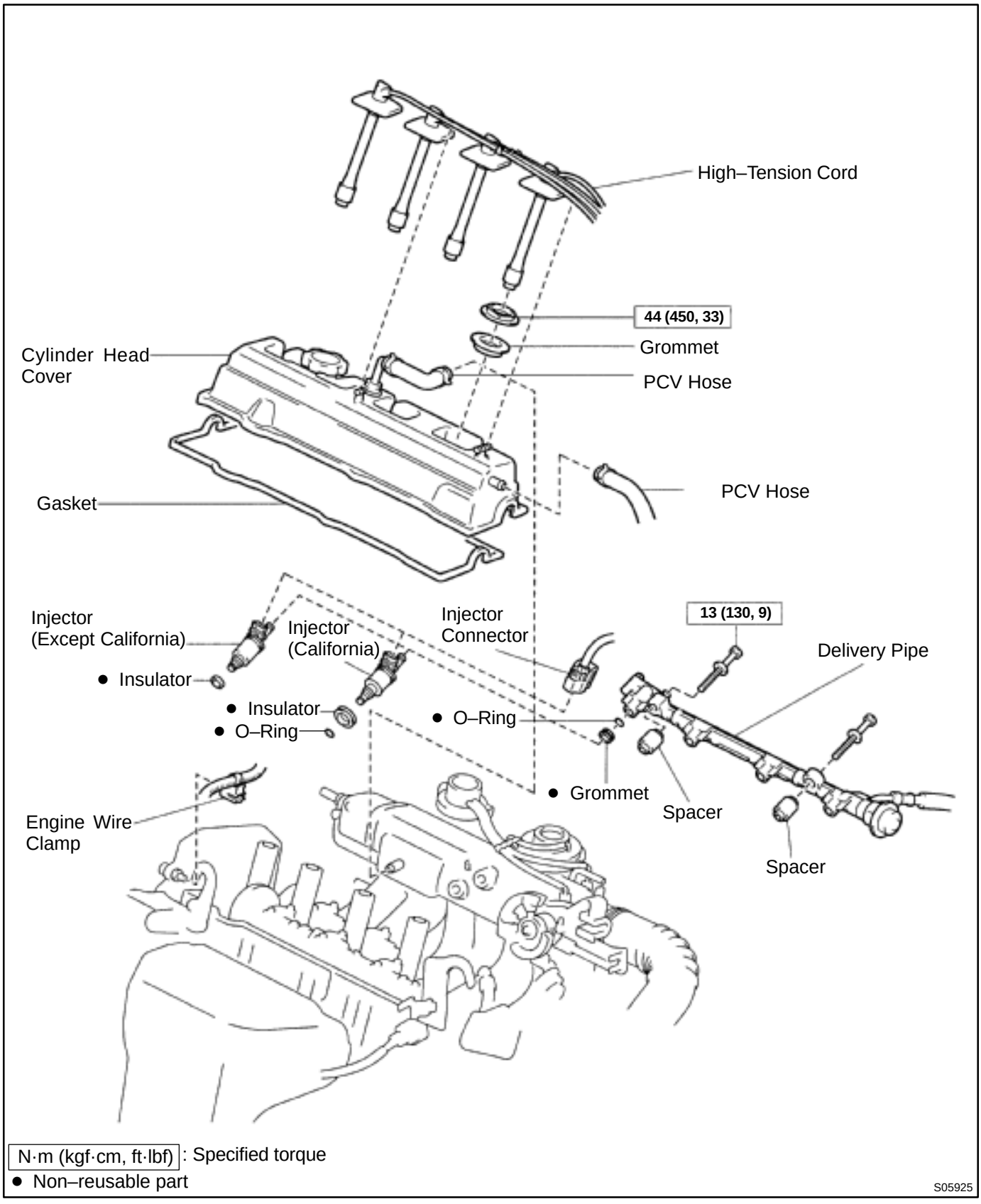
Resistance: 13.4 – 14.2 Ω at 20˚C (68˚F)

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

(c) Reconnect the injector connector.

SF0DH–03

COMPONENTS



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

S05925

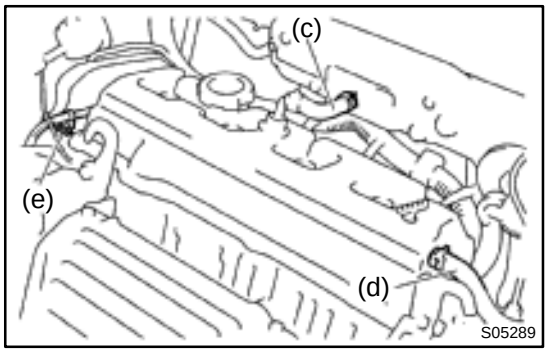
SF0DI–03

REMOVAL

1. REMOVE CYLINDER HEAD COVER

(a) Disconnect the 4 high–tension cords from the clamps on the cylinder head cover.

(b) Disconnect the 4 high–tension cords from the spark plugs.



(c) Disconnect the PCV hose from the intake manifold.

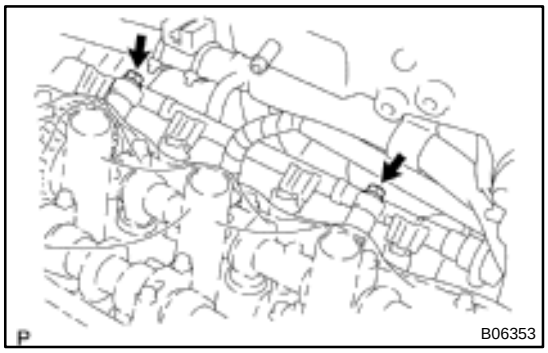
(d) Disconnect the PCV hose from the cylinder head cover.

(e) Disconnect the engine wire clamp from the mounting bolt of the No.2 timing belt cover.

(f) Remove the cylinder head cover. (See page EM–33)

NOTICE:

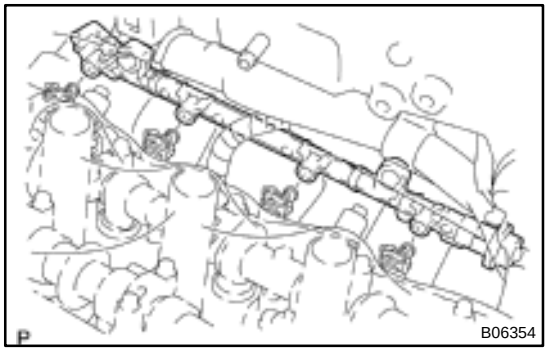
Cover the cylinder head with a clean cloth to prevent dirt, etc. getting into the cylinder head.



2. REMOVE DELIVERY PIPE AND INJECTORS

(a) Disconnect the 4 injector connectors.

(b) Remove the 2 bolts holding the delivery pipe to the cylinder head.



(c) Disconnect the delivery pipe from the 4 injectors.

(d) Pull out the 4 injectors.

NOTICE:

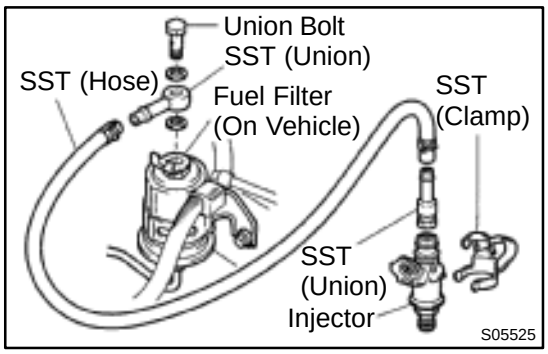
Be careful not to drop the injectors.

(e) Remove the 4 insulators (Except California) and 2 spacers from the cylinder head.

(f) California:
Remove the 2 O–rings, insulator and grommet from each injector.

(g) Except California:
Remove the O–ring and grommet from each injector.

SF0DJ–03

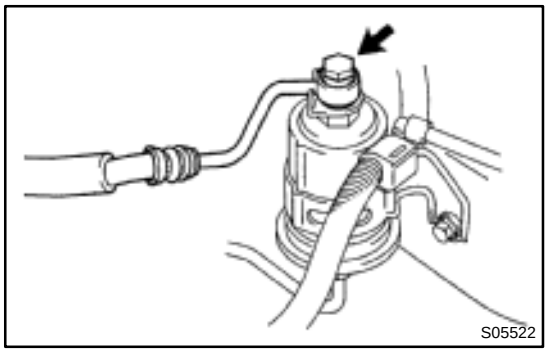


INSPECTION

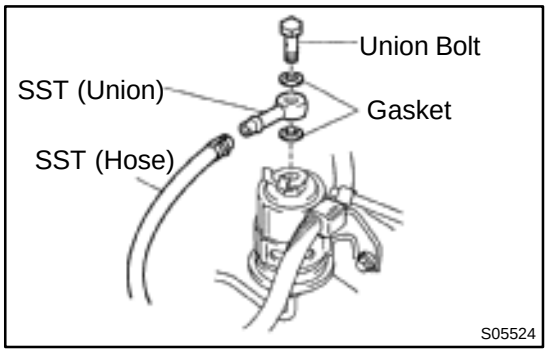
1. INSPECT INJECTOR INJECTION

CAUTION:

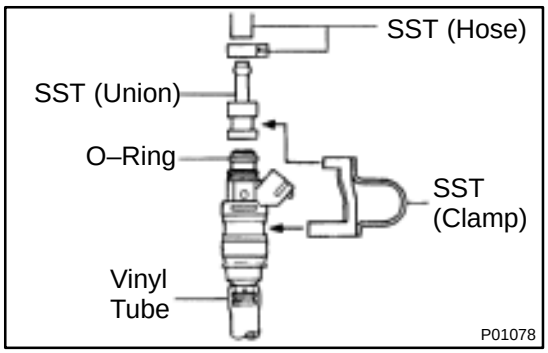
Keep injector clean of sparks during the test.



(a) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.



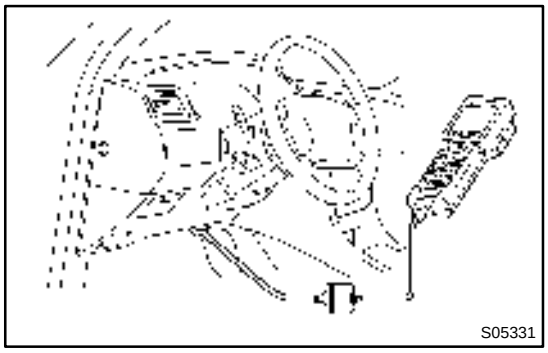
(b) Connect SST (union and hose) to the fuel filter outlet with the 2 gaskets and union bolts.
SST 09268–41047 (90405–09015)
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)



(c) Install the grommet and O–ring to the injector.
(d) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp).
SST 09268–41047 (09268–41100, 09268–41110)
(e) Put the injector into the graduated cylinder.

CAUTION:

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



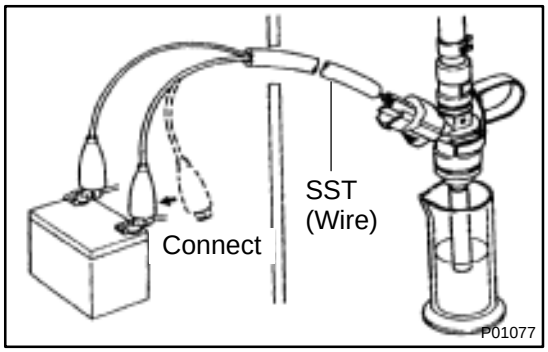
(f) Connect a TOYOTA hand–held tester to the DLC3.
(g) Connect the battery negative (–) cable to the battery.
(h) Turn the ignition switch ON and push the TOYOTA hand–held tester main switch ON.

NOTICE:

Do not start the engine.

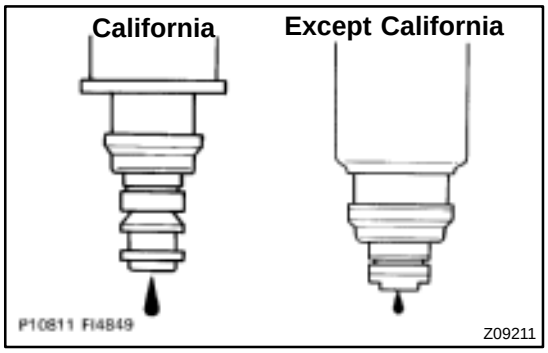
(i) Select the ACTIVE TEST mode on the TOYOTA hand–held tester.
(j) Please refer to the TOYOTA hand–held tester operator's manual for further details.

(k) If you have no TOYOTA hand–held tester, connect the positive (+) and negative (–) leads from the battery to the fuel pump connector. (See page SF–6)



(l) 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
Volume: 51 – 63 cm^3 (3.2 – 3.8 cu in.) per 15 seconds
Difference between each injector:
12 cm^3 (0.7 cu in.) or less

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



2. INSPECT LEAKAGE

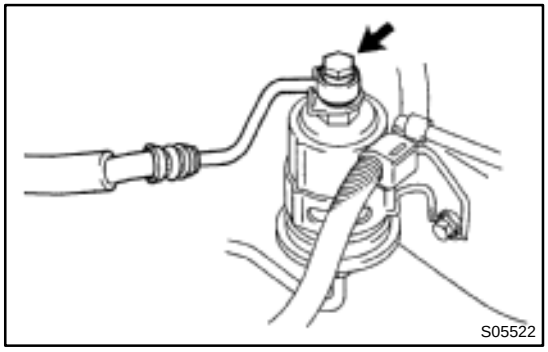
(a) In the condition above, disconnect the tester probes of SST (wire) from the battery and check the fuel leakage from the injector.
SST 09842–30070
Fuel drop: 1 drop or less per 3 minutes

(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) Disconnect the TOYOTA hand–held tester from the DLC3.



(f) Reconnect the fuel inlet hose to the fuel filter outlet with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

SF0Z8–01

INSTALLATION

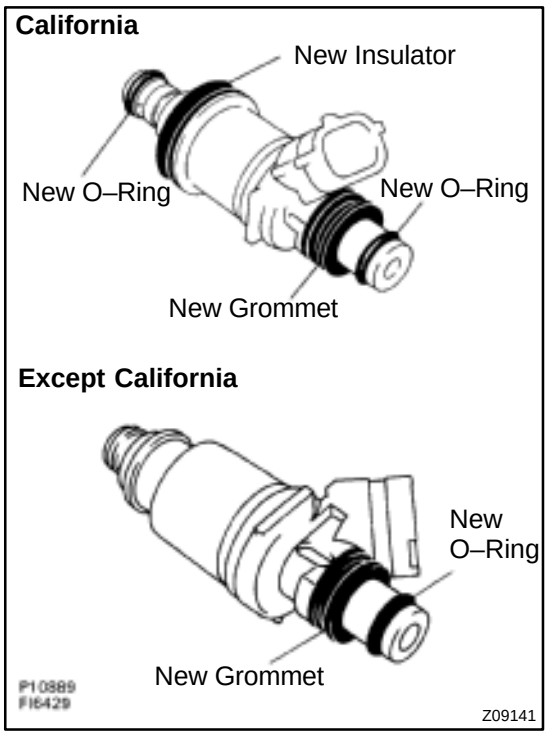
1. INSTALL INJECTORS AND DELIVERY PIPE

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

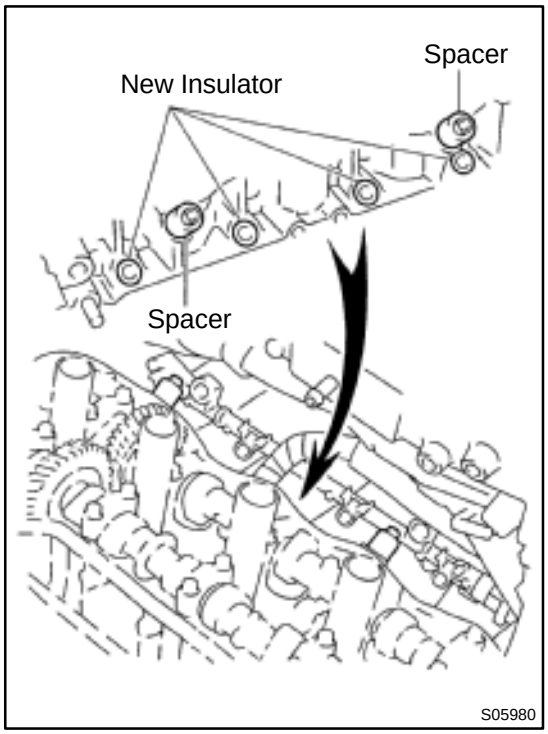
(b) Except California:
Install a new grommet to each injector.

(c) California:
Apply a light coat of gasoline onto 2 new O–rings, and install them to each injector.

(d) Except California:
Apply a light coat of gasoline onto a new O–ring, and install it to each injector.

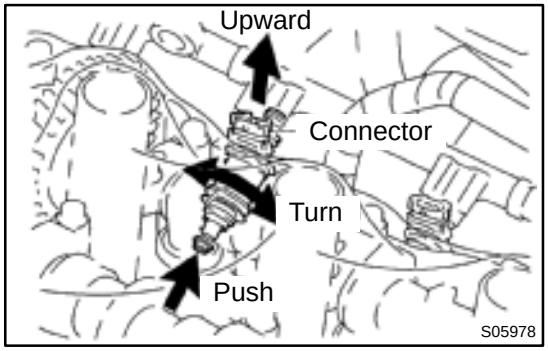


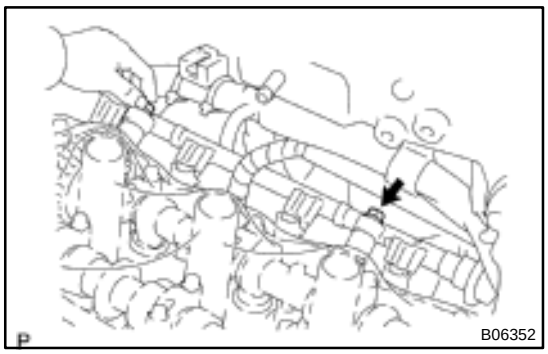
(e) Install the 2 spacers and 4 new insulators to the cylinder head.



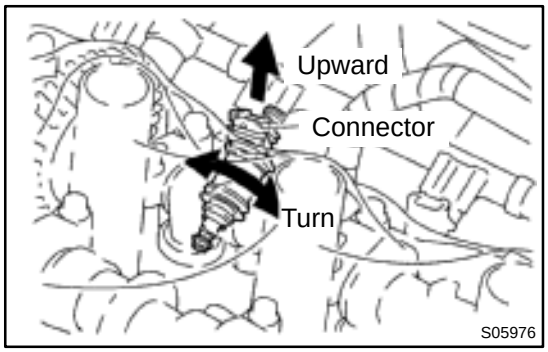
(f) While turning the injector left and right, install it to the delivery pipe. Install the 4 injectors.

(g) Position the injector connector upward.

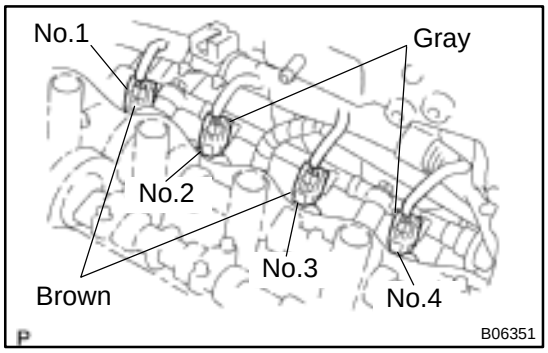




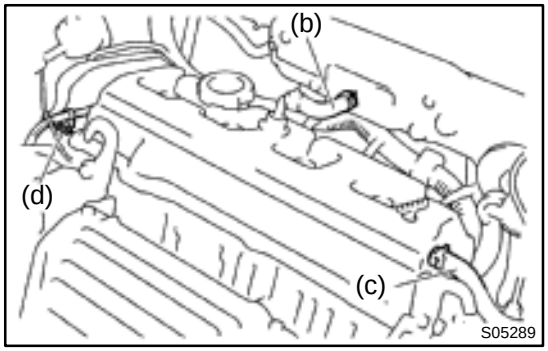
(h) Attach the 4 injectors and delivery pipe assembly to the cylinder head.
(i) Temporarily install the 2 bolts holding the delivery pipe to the cylinder head.



(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) Tighten the 2 bolts holding the delivery pipe to the cylinder head.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



(m) Connect the 4 injector connectors.
HINT:
The No.1 and No.3 injector connectors are brown, and the No.2 and No.4 injector connectors are gray.



2. INSTALL CYLINDER HEAD COVER
(a) Install the cylinder head cover. (See page EM–53)
(b) Connect the PCV hose to the intake manifold.
(c) Connect the PCV hose to the cylinder head cover.
(d) Install the engine wire clamp to the mounting bolt of the No.2 timing belt cover.
(e) Connect the 4 high–tension cords to the spark plugs.
(f) Install the 4 high–tension cords to the clamps on the cylinder head cover.
3. CHECK FOR FUEL LEAKS (See page SF–1)

FUEL TANK AND LINE

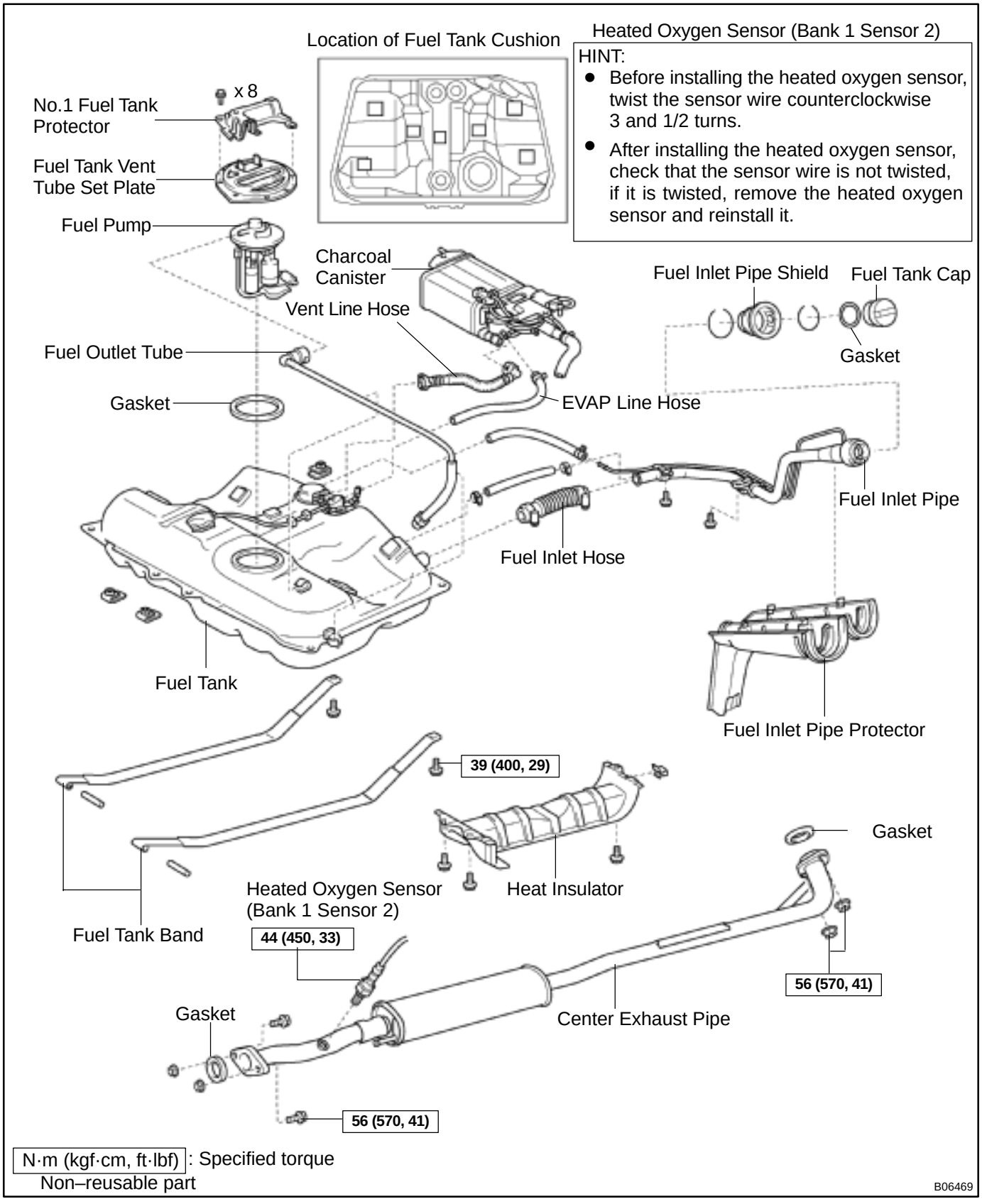
SF0DL–03

COMPONENTS

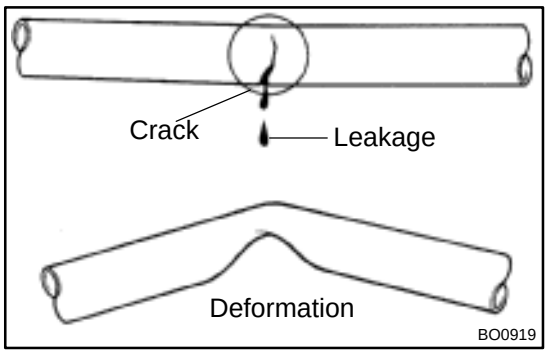
CAUTION:

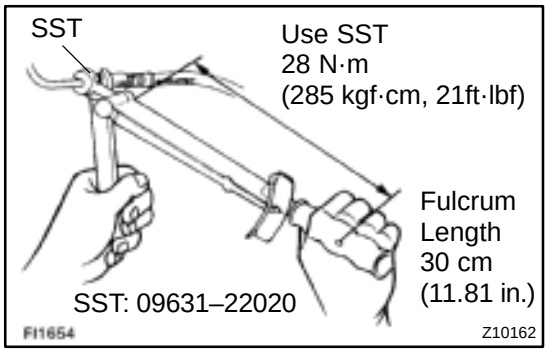
Always use new gaskets when replacing the fuel tank or component parts.

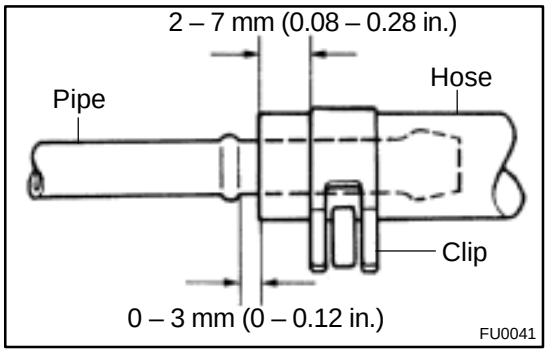
Apply the proper torque to all parts tightened



SF0DM–03







INSPECTION

INSPECT FUEL TANK AND LINE

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

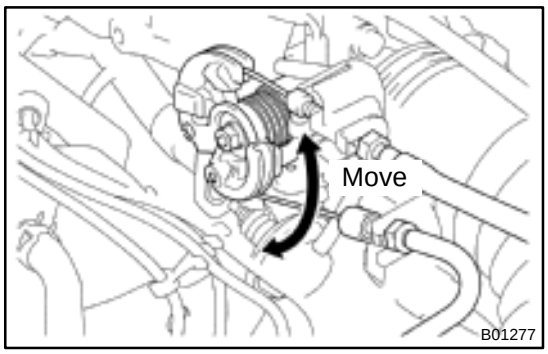
(b) Check the fuel tank vapor vent system hoses and connections for looseness, sharp bends or damage.

(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.



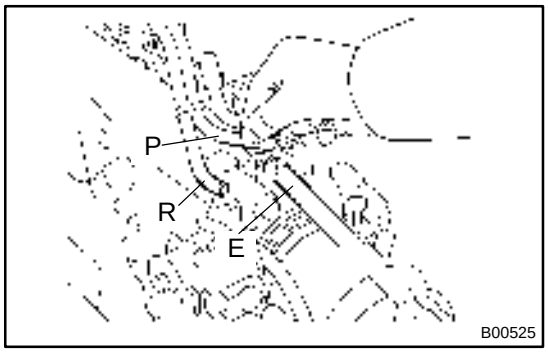
THROTTLE BODY

SF0DN–03

ON–VEHICLE INSPECTION

1. INSPECT THROTTLE BODY

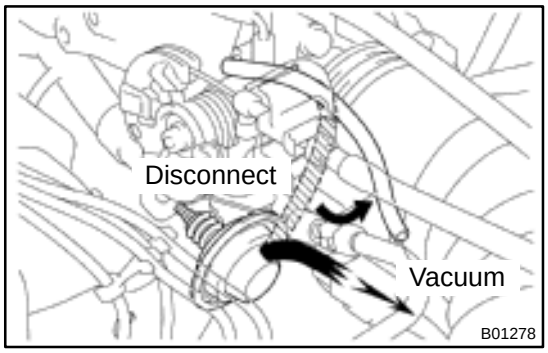
(a) Check that the throttle linkage moves smoothly.



(b) Check the vacuum at each port.

- Start the engine.
- Check the vacuum with your finger.

Port name	At idle	Other than idle
Mark E	Vacuum	Vacuum
Mark P	No vacuum	Vacuum
Mark R	No vacuum	No vacuum

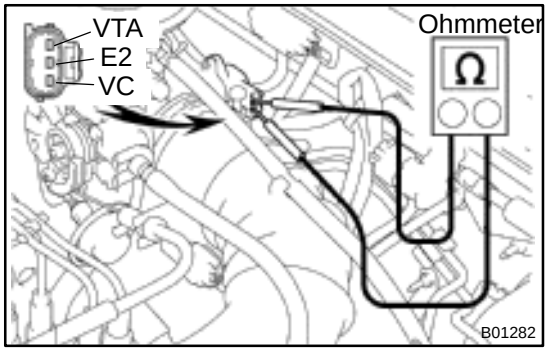


2. INSPECT THROTTLE POSITION SENSOR

(a) Disconnect the sensor connector.

(b) Disconnect the vacuum hose from the throttle opener.

(c) Apply vacuum to the throttle opener.



(d) Using an ohmmeter, measure the resistance between each terminal.

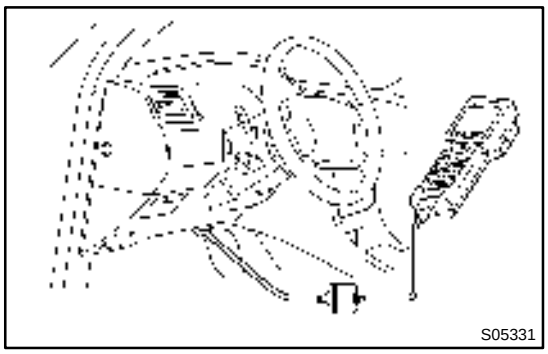
Clearance between lever and stop screw	Between terminals	Resistance
0 mm (0 in.)	VTA – E2	0.2 – 5.7 kΩ
Throttle valve fully open	VTA – E2	2.0 – 10.2 kΩ
–	VC – E2	2.5 – 5.9 kΩ

(e) Reconnect the vacuum hose to the throttle opener.

(f) Reconnect the sensor connector.

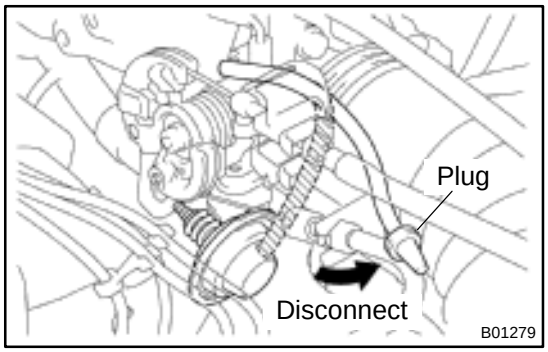
3. INSPECT THROTTLE OPENER

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

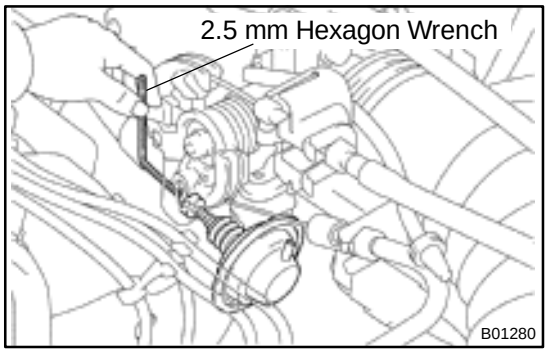


(b) Connect a TOYOTA hand–held tester or OBDII scan tool.
(1) Remove the fuse cover on the instrument panel.
(2) Connect a TOYOTA hand–held tester or OBDII scan tool to the DLC3.
(3) Please refer to the TOYOTA hand–held tester or OBDII scan tool operator's manual for further details.

(c) Check the idle speed.
Idle speed: 700 ± 50 rpm



(d) Check and adjust the throttle opener setting speed.
(1) Disconnect the vacuum hose from the throttle opener, and plug the hose end.
(2) Maintain the engine speed at 2,500 rpm.
(3) Release the throttle valve.
(4) Check that the throttle opener is set.
Throttle opener setting speed:
1,300 – 1,500 rpm (w/ Cooling fan OFF)

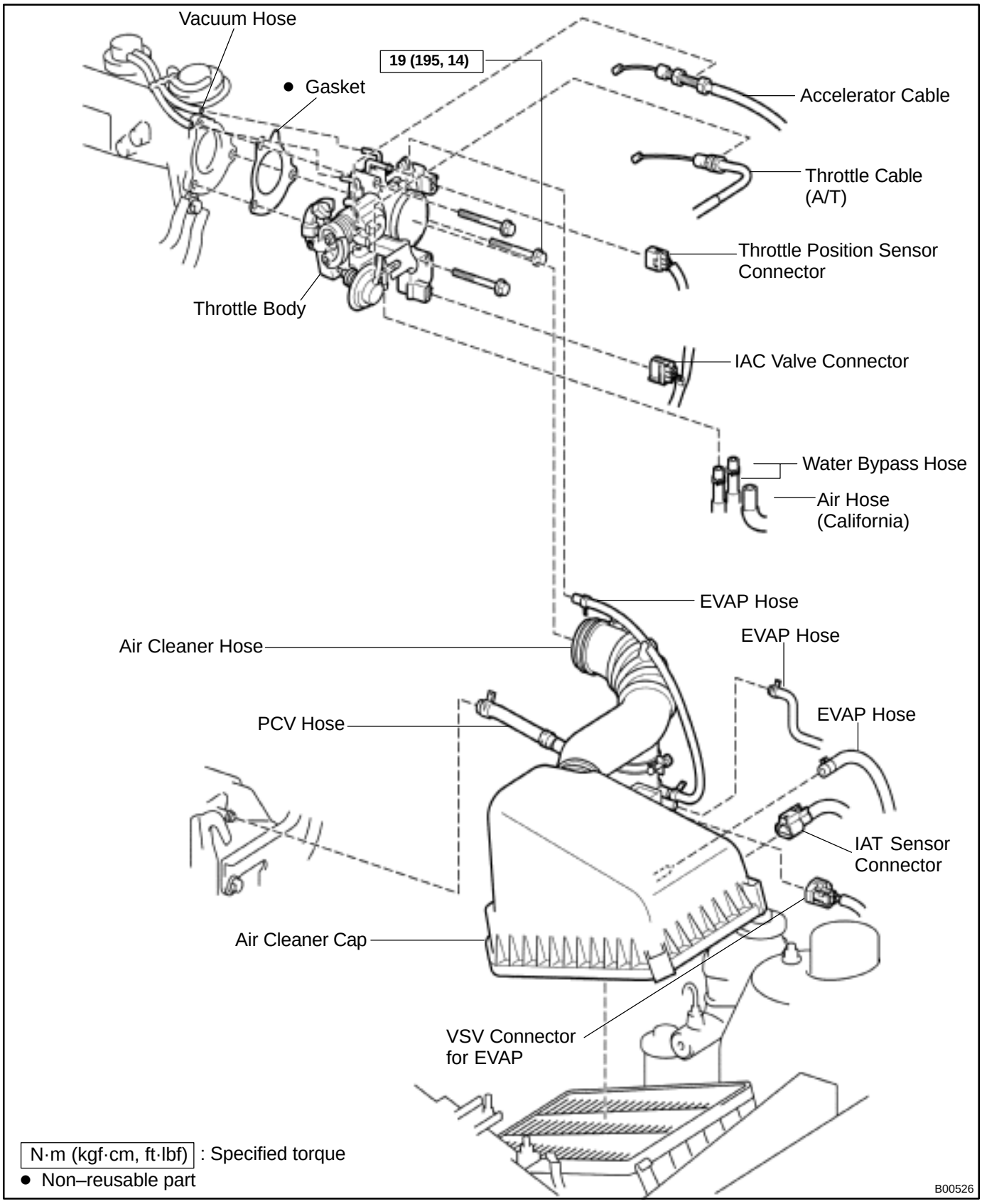


(5) Using a 2.5 mm hexagon wrench, loosen the lock nut and adjust the throttle opener setting speed by turning the throttle opener adjusting screw. Tighten the lock nut.
(6) Reconnect the vacuum hose to the throttle opener.

(e) Disconnect the TOYOTA hand–held tester or OBDII scan tool.

SF0DO–03

COMPONENTS



SF0DP–03

REMOVAL

1. DRAIN ENGINE COOLANT

2. REMOVE AIR CLEANER CAP (See page EM–69)

3. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

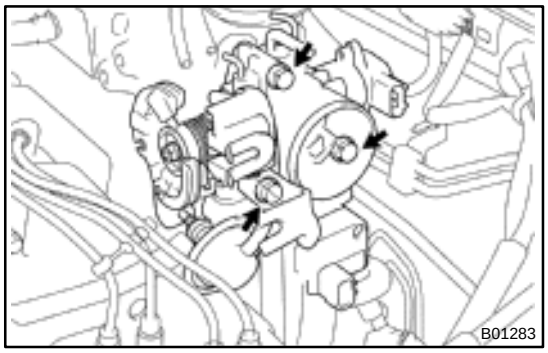
4. A/T:
DISCONNECT THROTTLE CABLE FROM THROTTLE BODY

5. REMOVE THROTTLE BODY

(a) Disconnect the throttle position sensor connector.

(b) Disconnect the IAC valve connector.

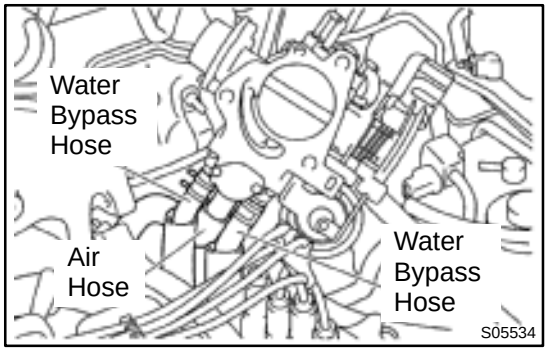
(c) Disconnect the 2 vacuum hoses from the throttle body.



(d) Remove the 3 bolts.

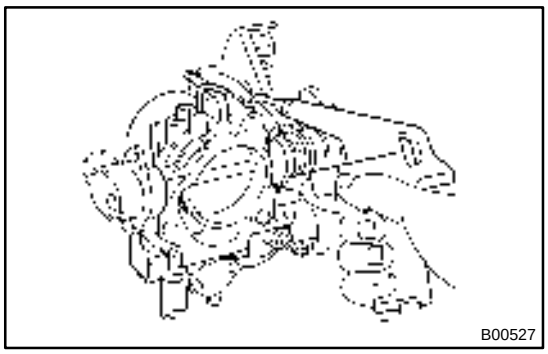
(e) Disconnect the throttle body from the intake manifold.

(f) Remove the gasket.



(g) Disconnect the air hose for air assist system (California) and the 2 water bypass hoses from the throttle body, and remove the throttle body.

SF0DQ–03



INSPECTION

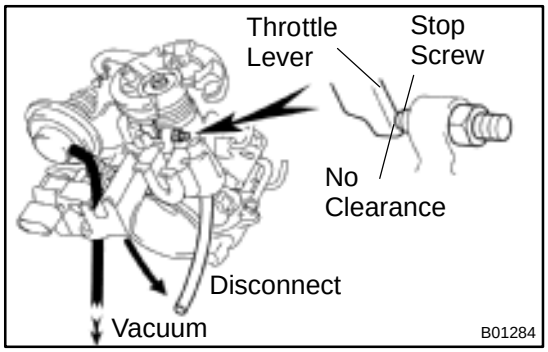
1. CLEAN THROTTLE BODY

(a) Using a soft brush and carburetor cleaner, clean the cast parts.

(b) Using compressed air, clean all the passages and apertures.

NOTICE:

To prevent deterioration, do not clean the throttle position sensor and throttle opener.



2. INSPECT THROTTLE BODY

(a) Disconnect the throttle opener vacuum hose from the throttle body.

(b) Apply vacuum to the throttle opener.

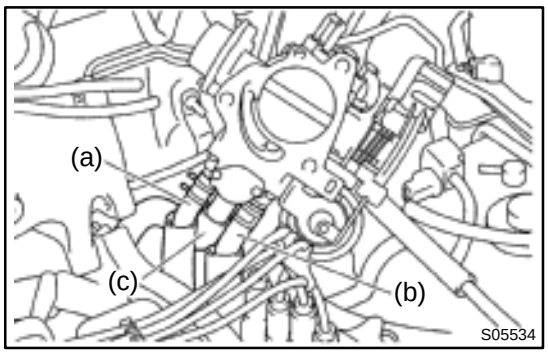
(c) Check that there is no clearance between the throttle stop screw and throttle lever when the throttle valve is fully closed.

(d) Reconnect the throttle opener vacuum hose to the throttle body.

3. INSPECT THROTTLE POSITION SENSOR

(See page SF–29)

SF0DR–03



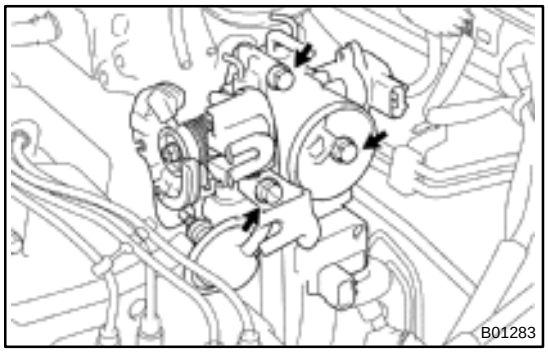
INSTALLATION

1. INSTALL THROTTLE BODY

(a) Connect the water bypass hose (from the water bypass pipe) to the throttle body.

(b) Connect the water bypass hose (from the water outlet) to the throttle body.

(c) California:
Connect the air hose (from the intake manifold) for air assist system to the throttle body.



(d) Install a new gasket and the throttle body with the 3 bolts.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

(e) Connect the 2 vacuum hoses to the throttle body.

(f) Connect the throttle position sensor connector.

(g) Connect the IAC valve connector.

2. CONNECT ACCELERATOR CABLE TO THROTTLE BODY

3. A/T:
CONNECT THROTTLE CABLE TO THROTTLE BODY

4. INSTALL AIR CLEANER CAP (See page EM–75)

5. FILL WITH ENGINE COOLANT

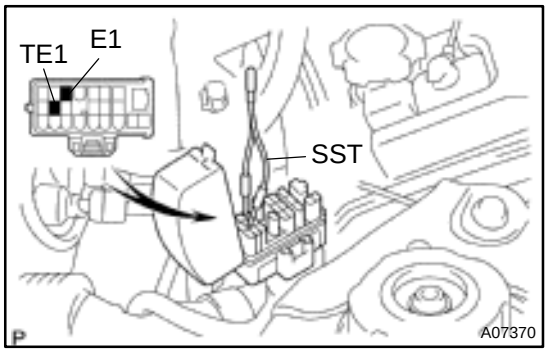
IDLE AIR CONTROL (IAC) VALVE

SF0DS–03

ON–VEHICLE INSPECTION

1. INSPECT IAC VALVE OPERATION

(a) Initial conditions:
- Engine at normal operating temperature
- Idle speed set correctly
- Transmission in neutral position

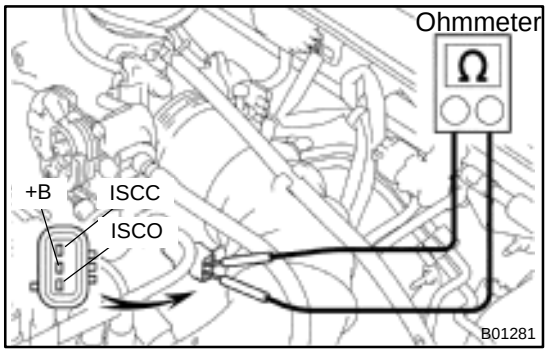


(b) Using SST, connect terminals TE1 and E1 of the DLC1.
SST 09843–18020

(c) After the engine speed is kept at 900 – 1,300 rpm for 5 seconds, check that it returns to idle speed.

If the engine speed operation is not as specified, check the IAC valve, wiring and ECM.

(d) Remove the SST from the DLC1.
SST 09843–18020



2. INSPECT IAC VALVE RESISTANCE

NOTICE:

"Cold" and "Hot" in these sentences express the temperature of the coils themselves. "Cold" is from –10˚C (14˚F) to 50˚C (122˚F) and "Hot" is from 50˚C (122˚F) to 100˚C (212˚F).

(a) Disconnect the IAC valve connector.

(b) Using an ohmmeter, measure the resistance between terminal +B and other terminals (ISCC, ISCO).

Resistance:

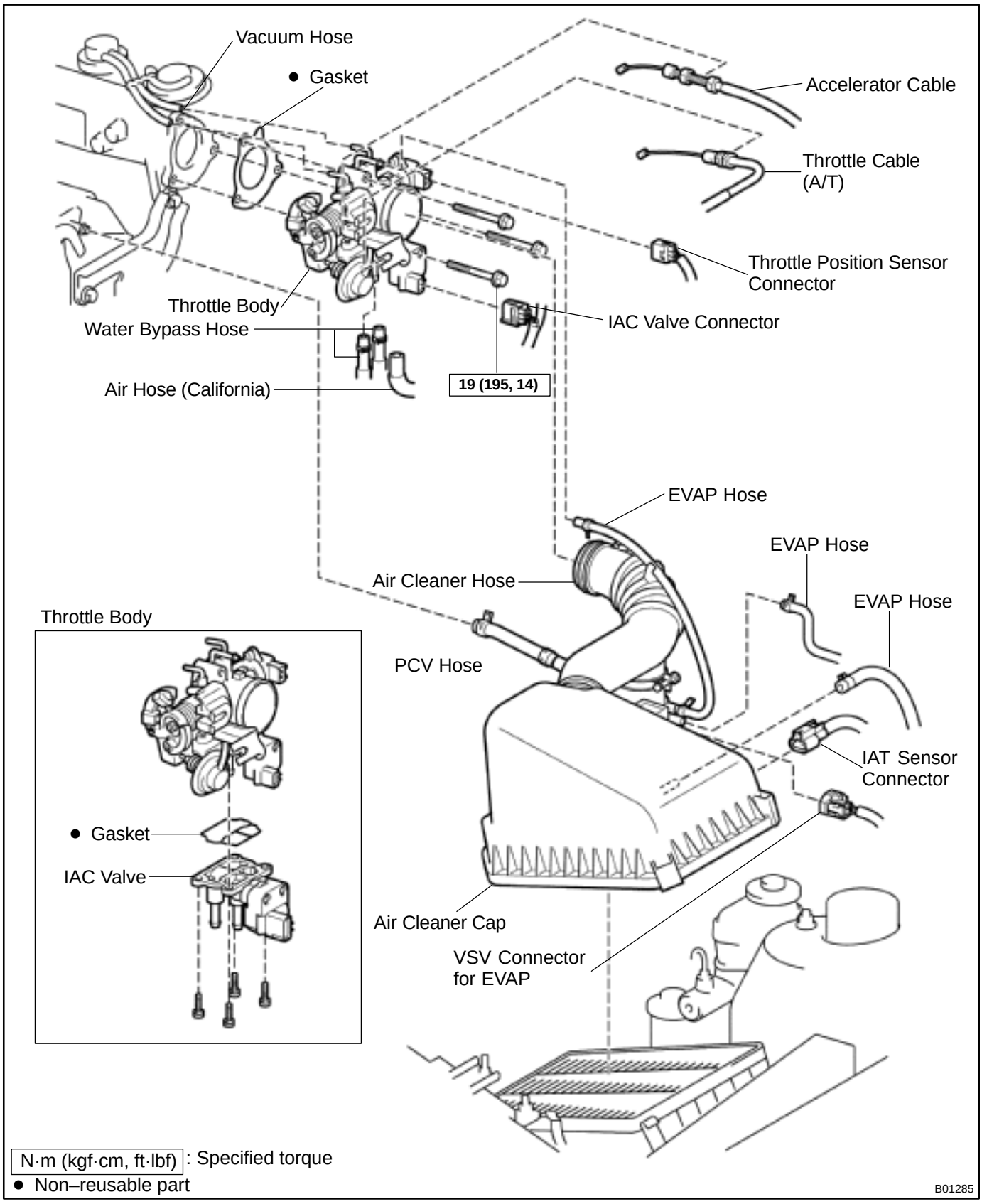
Cold	17.0 – 24.5 Ω
Hot	21.5 – 28.5 Ω

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

(c) Reconnect the IAC valve connector.

SF0DT–03

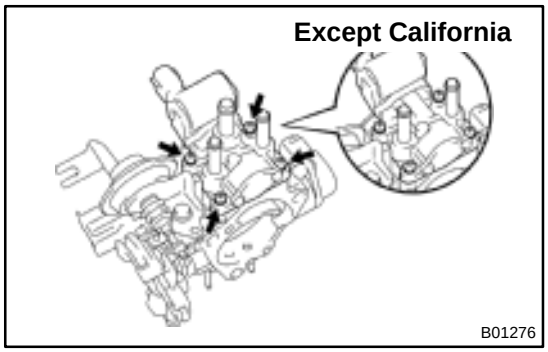
COMPONENTS



SF0DU–03

REMOVAL

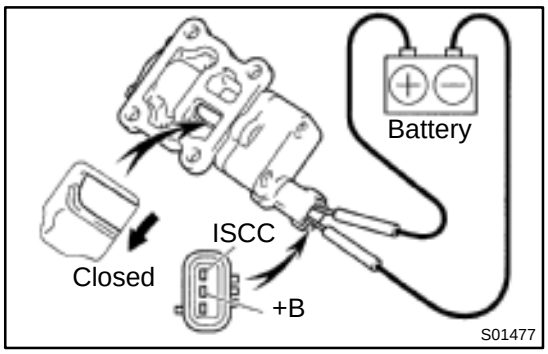
1. REMOVE THROTTLE BODY (See page SF–32)



2. REMOVE IAC VALVE

Remove the 4 screws, IAC valve and gasket.

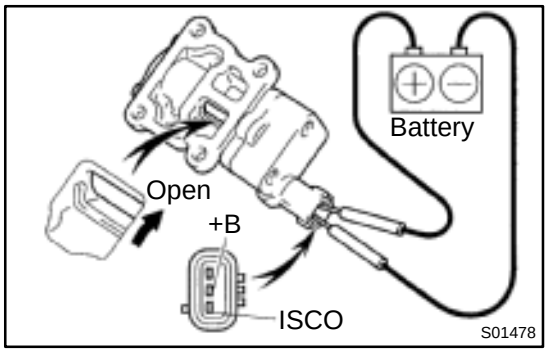
SF0DV–03



INSPECTION

INSPECT IAC VALVE OPERATION

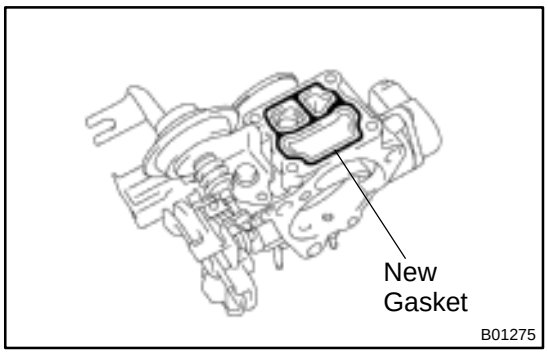
(a) Connect the positive (+) lead from the battery to terminal +B and negative (–) lead to terminal ISCC, and check that the valve is closed.



(b) Connect the positive (+) lead from the battery to terminal +B and negative (–) lead to terminal ISCO, and check that the valve is open.

If operation is not as specified, replace the IAC valve.

SF0DW–03



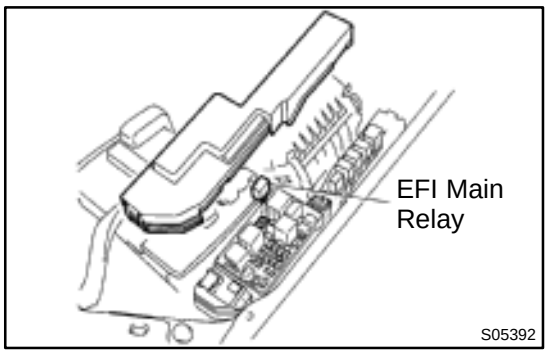
INSTALLATION

1. INSTALL IAC VALVE

(a) Place a new gasket on the throttle body.

(b) Install the IAC valve with the 4 screws.

2. INSTALL THROTTLE BODY (See page SF–34)



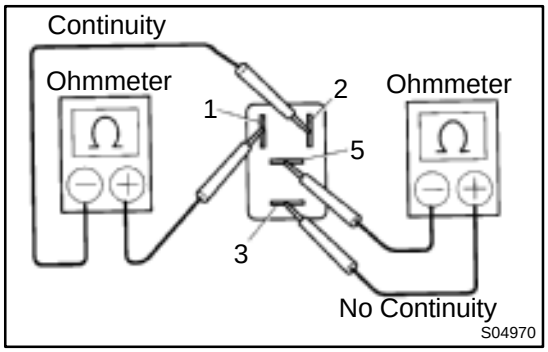
EFI MAIN RELAY

SF0DX–03

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE EFI MAIN RELAY (Marking: EFI)



3. INSPECT EFI MAIN RELAY

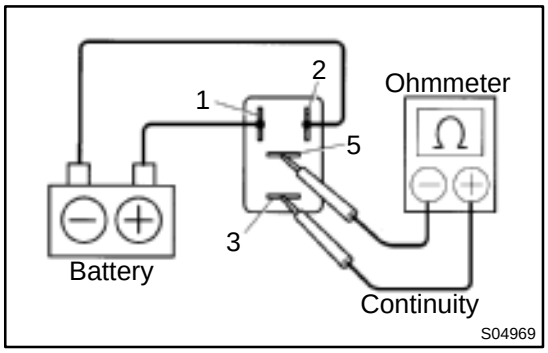
(a) Inspect the relay continuity.

(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.

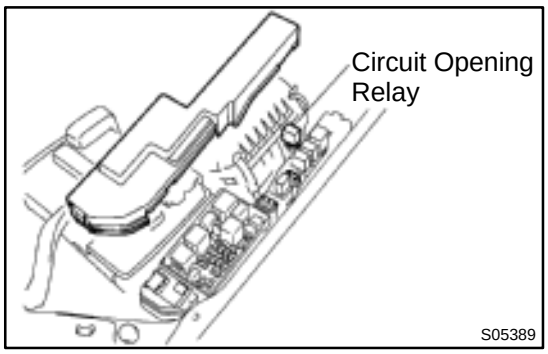
(1) Apply battery positive voltage across terminals 1 and 2.

(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



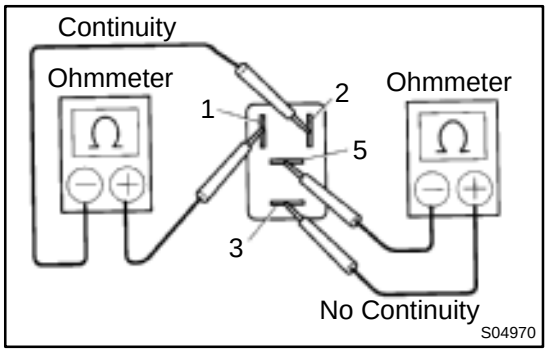
CIRCUIT OPENING RELAY

SF0DY–03

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE CIRCUIT OPENING RELAY (Marking: CIR OPN)



3. INSPECT CIRCUIT OPENING RELAY

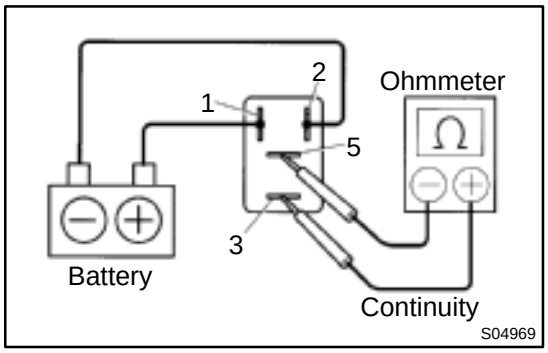
(a) Inspect the relay continuity.

(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.

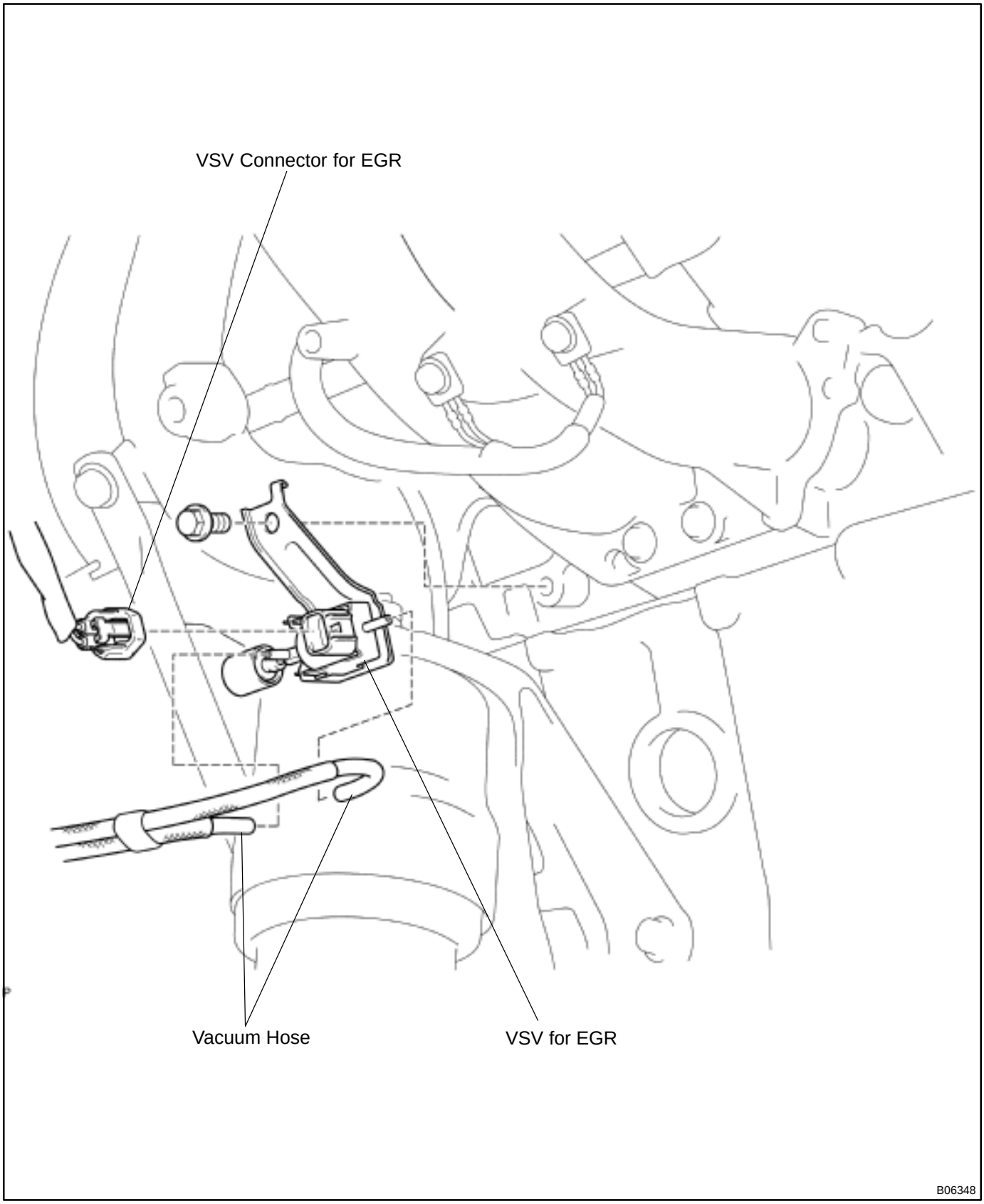
4. REINSTALL CIRCUIT OPENING RELAY

5. REINSTALL RELAY BOX COVER

VSV FOR EXHAUST GAS RECIRCULATION (EGR)

SF0DZ–03

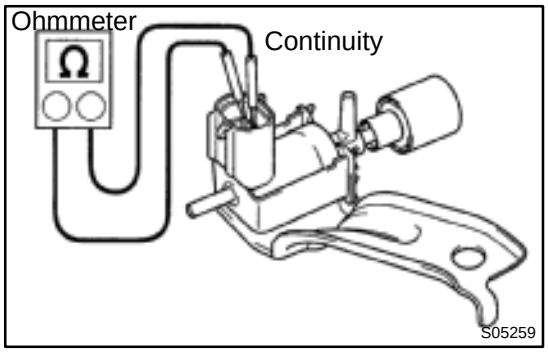
COMPONENTS



SF0E0–03

INSPECTION

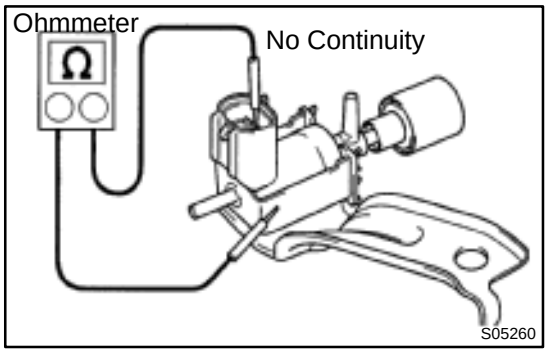
1. REMOVE VSV



2. INSPECT VSV

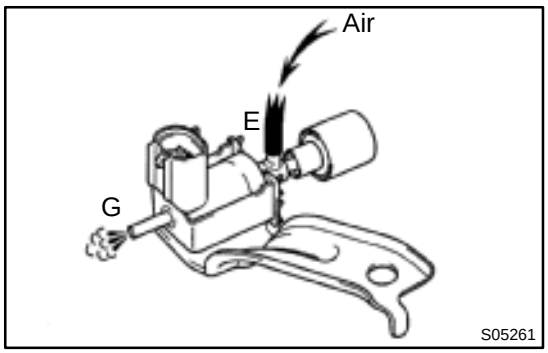
(a) Inspect the VSV for open circuit.
Using an ohmmeter, check that there is continuity between the terminals.
Resistance: 33 – 39 Ω at 20˚C (68˚F)

If there is no continuity, replace the VSV.

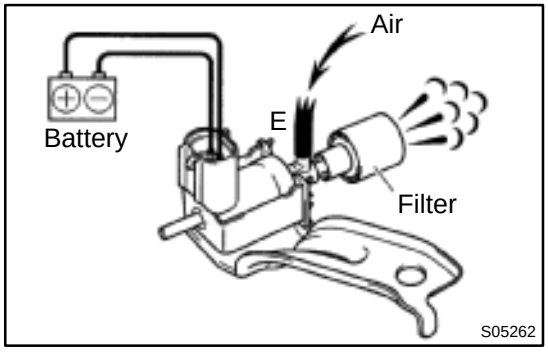


(b) Inspect the VSV for ground.
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.
(1) Check that air flows from ports E to G.



(2) Apply battery positive voltage across the terminals.
(3) Check that air flows from port E to filter.

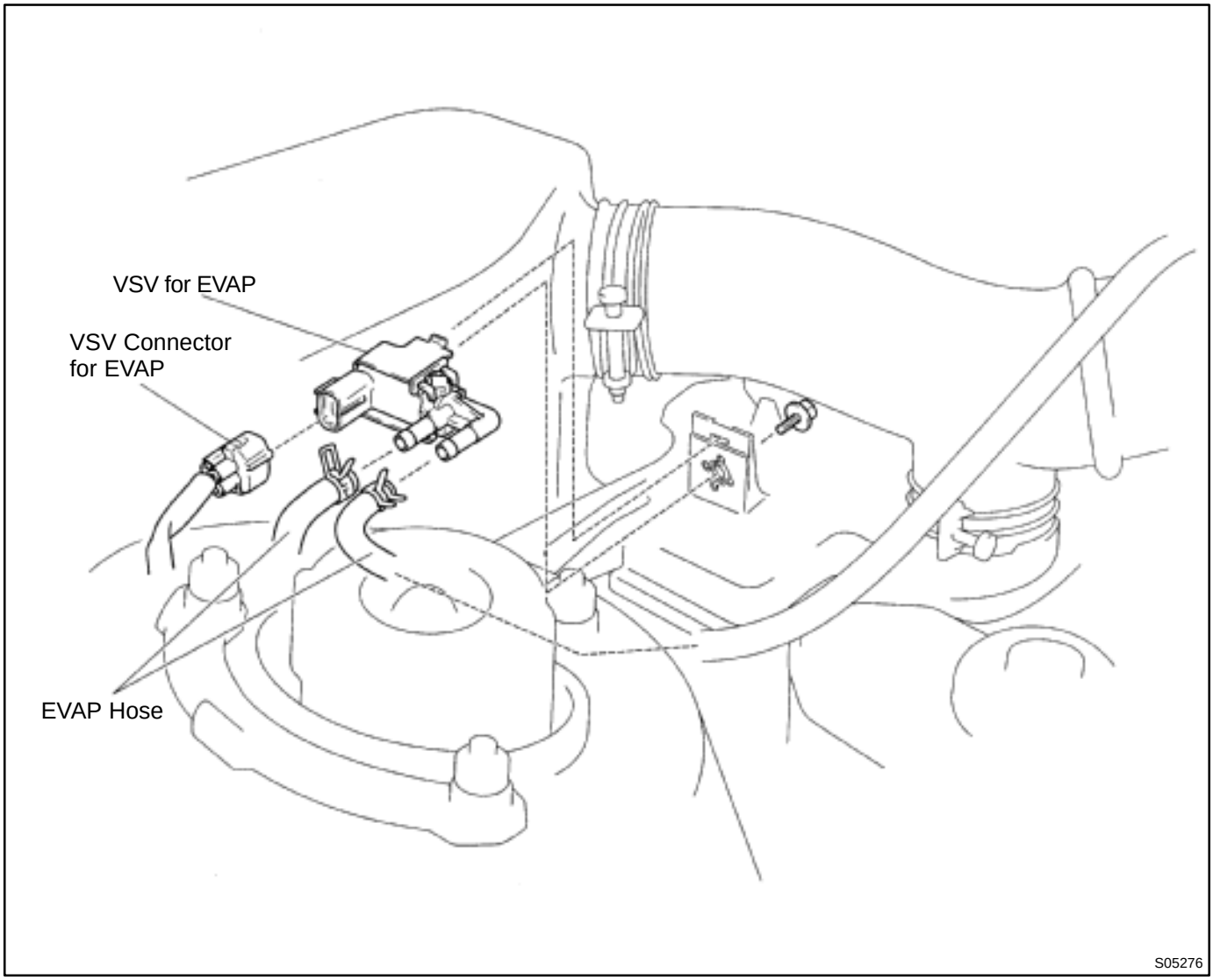
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

VSV FOR EVAPORATIVE EMISSION (EVAP)

COMPONENTS

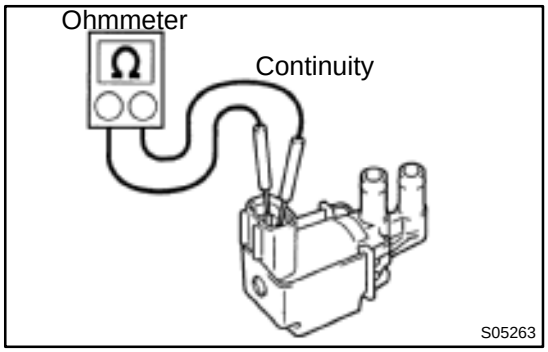
SF0E1–03



SF0E2–03

INSPECTION

1. REMOVE VSV



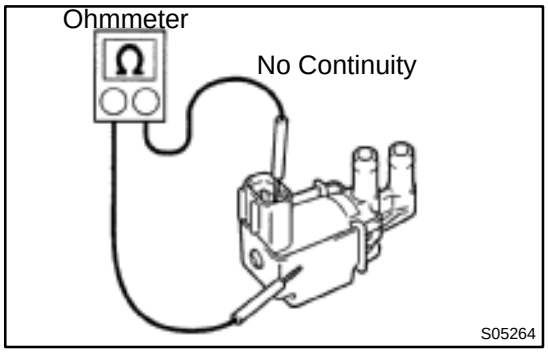
2. INSPECT VSV

(a) Inspect the VSV for open circuit.

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

Resistance: 30 – 34 Ω at 20˚C (68˚F)

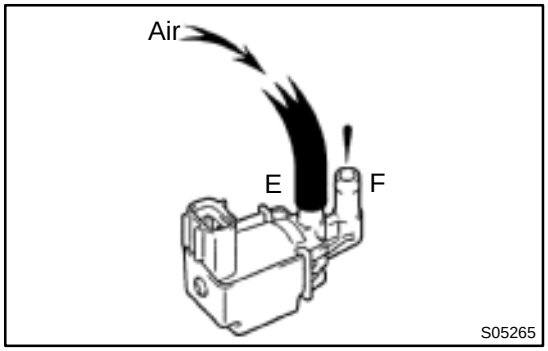
If there is no continuity, replace the VSV.



(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.

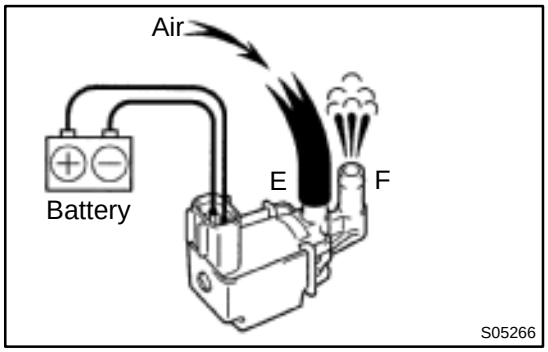


(c) Inspect the VSV operation.

(1) Check that air dose not flow from ports E to F.

NOTICE:

Never apply more than 93 kPa (0.95 kgf/cm^2, 13.5 psi) of pressure compressed air to the VSV.



(2) Apply battery positive voltage across the terminals.

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

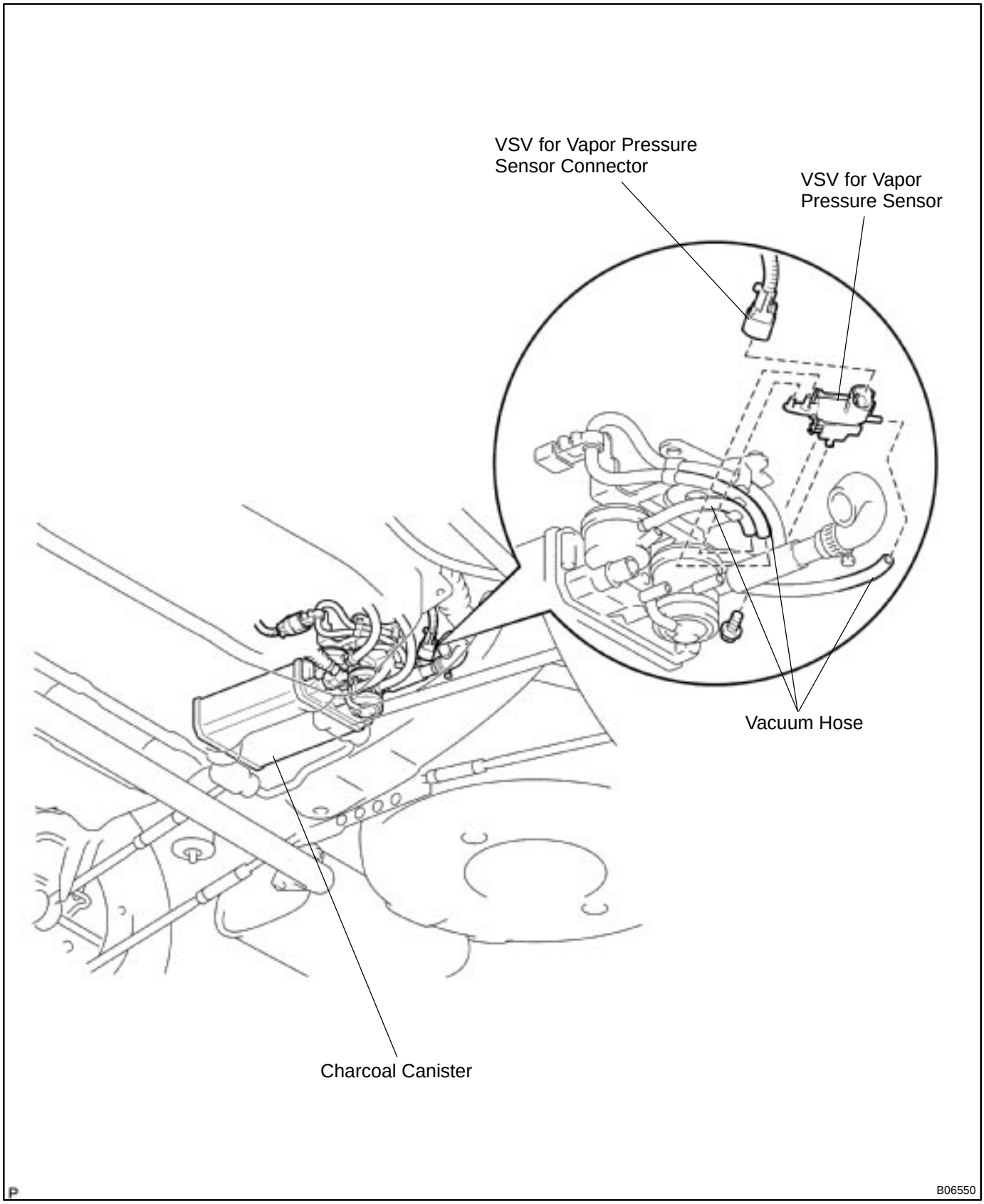
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

VSV FOR VAPOR PRESSURE SENSOR

SF0E3–03

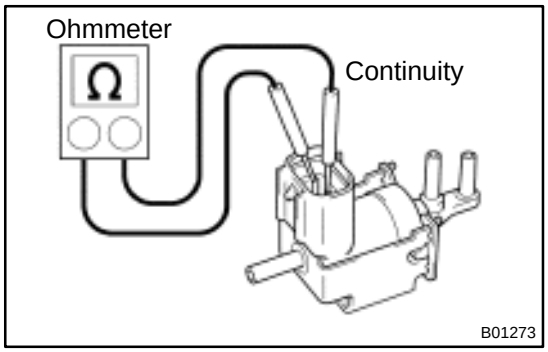
COMPONENTS



SF0E4–04

INSPECTION

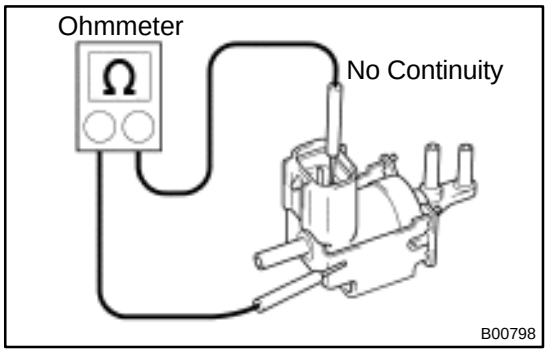
1. REMOVE VSV



2. INSPECT VSV

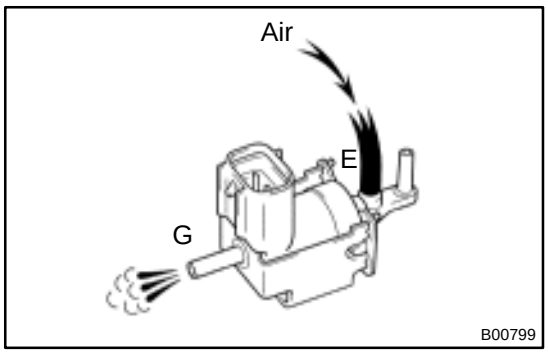
(a) Inspect the VSV for open circuit.
Using an ohmmeter, check that there is continuity between the terminals.
Resistance: 33 – 39 Ω at 20˚C (68˚F)

If there is no continuity, replace the VSV.

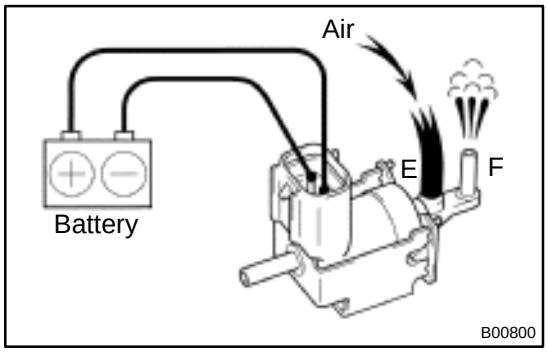


(b) Inspect the VSV for ground.
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



(c) Inspect the VSV operation.
(1) Check that air flows from ports E to G.



(2) Apply battery positive voltage across the terminals.
(3) Check that air flows from ports E to F.

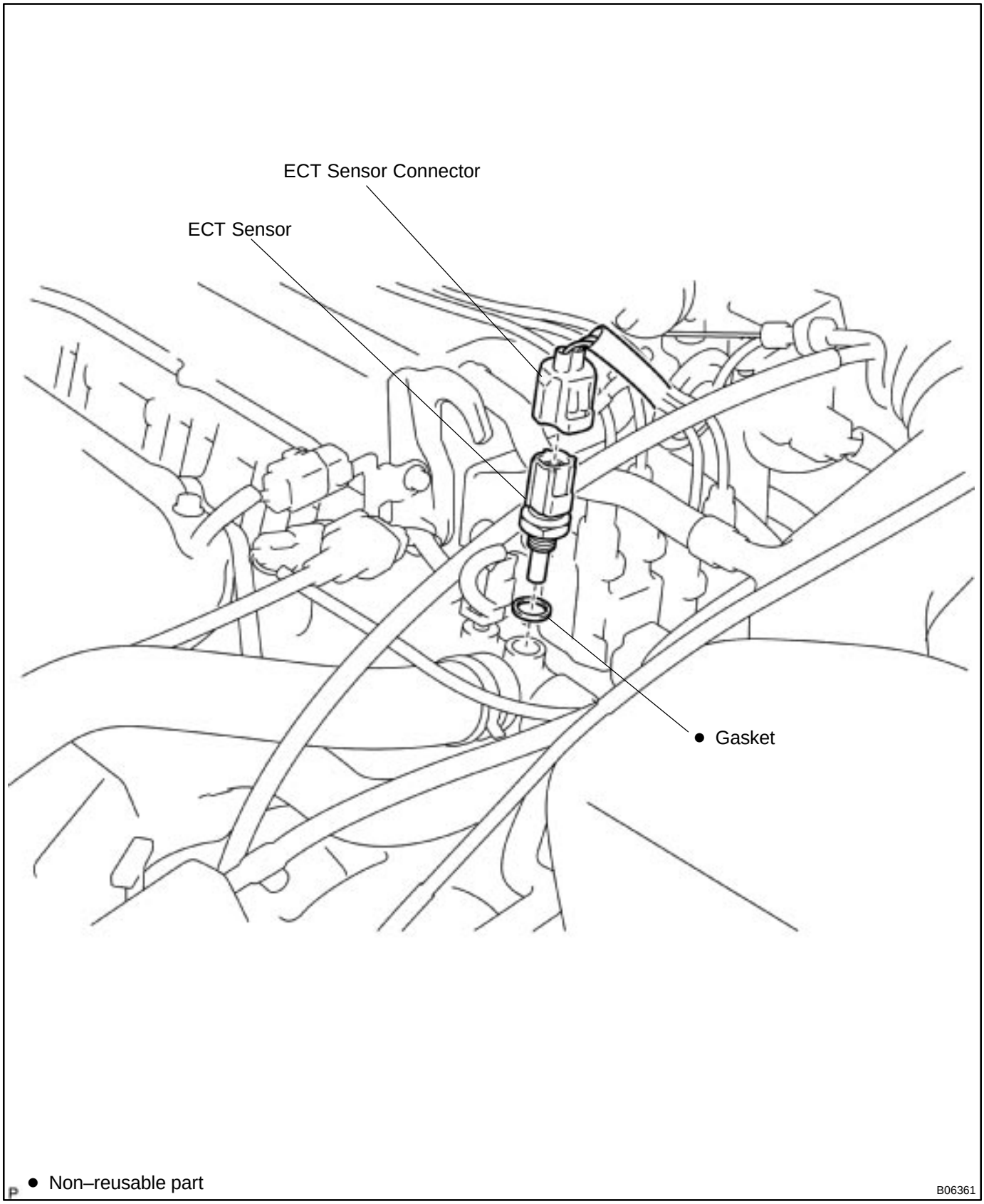
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

ENGINE COOLANT TEMPERATURE (ECT) SENSOR

SF0E5–03

COMPONENTS

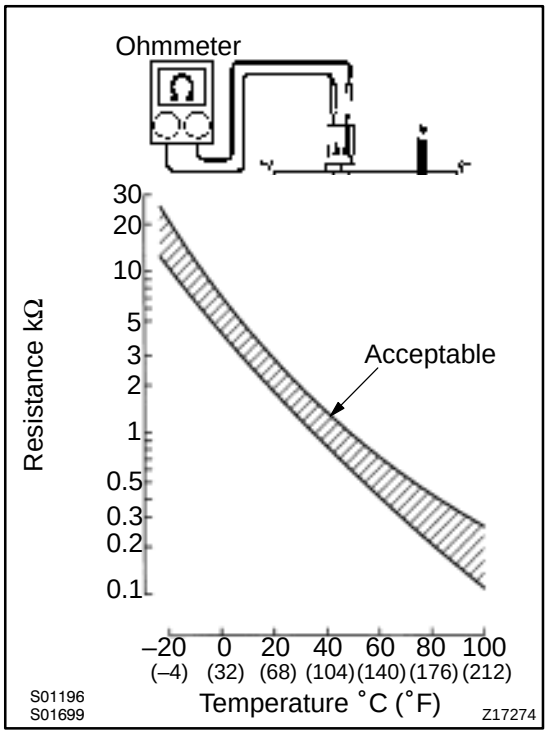


SF0E6–03

INSPECTION

1. DRAIN ENGINE COOLANT

2. REMOVE ECT SENSOR



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.

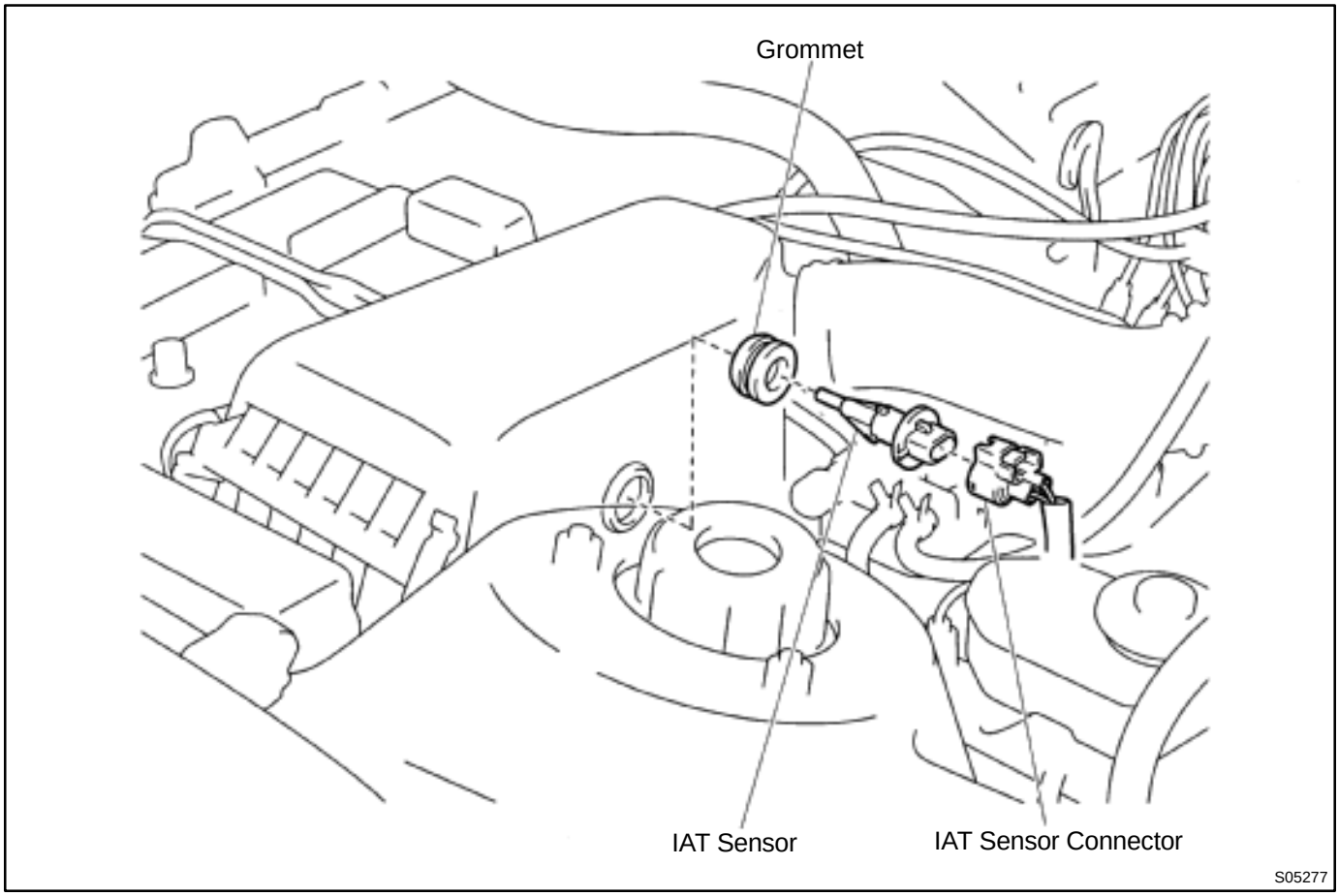
4. REINSTALL ECT SENSOR

5. REFILL WITH ENGINE COOLANT

INTAKE AIR TEMPERATURE (IAT) SENSOR

SF0E7–03

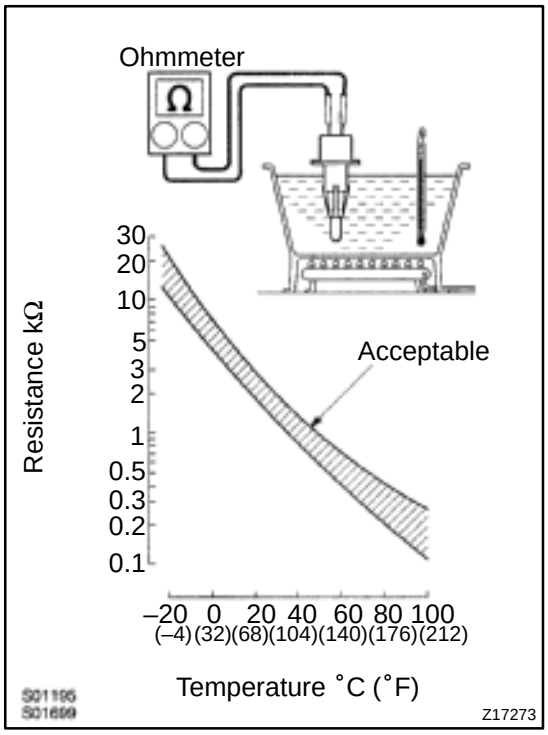
COMPONENTS



SF0E8–03

INSPECTION

1. REMOVE IAT SENSOR



2. INSPECT IAT SENSOR

Using an ohmmeter, measure the resistance between the terminals.

Resistance: Refer to the graph

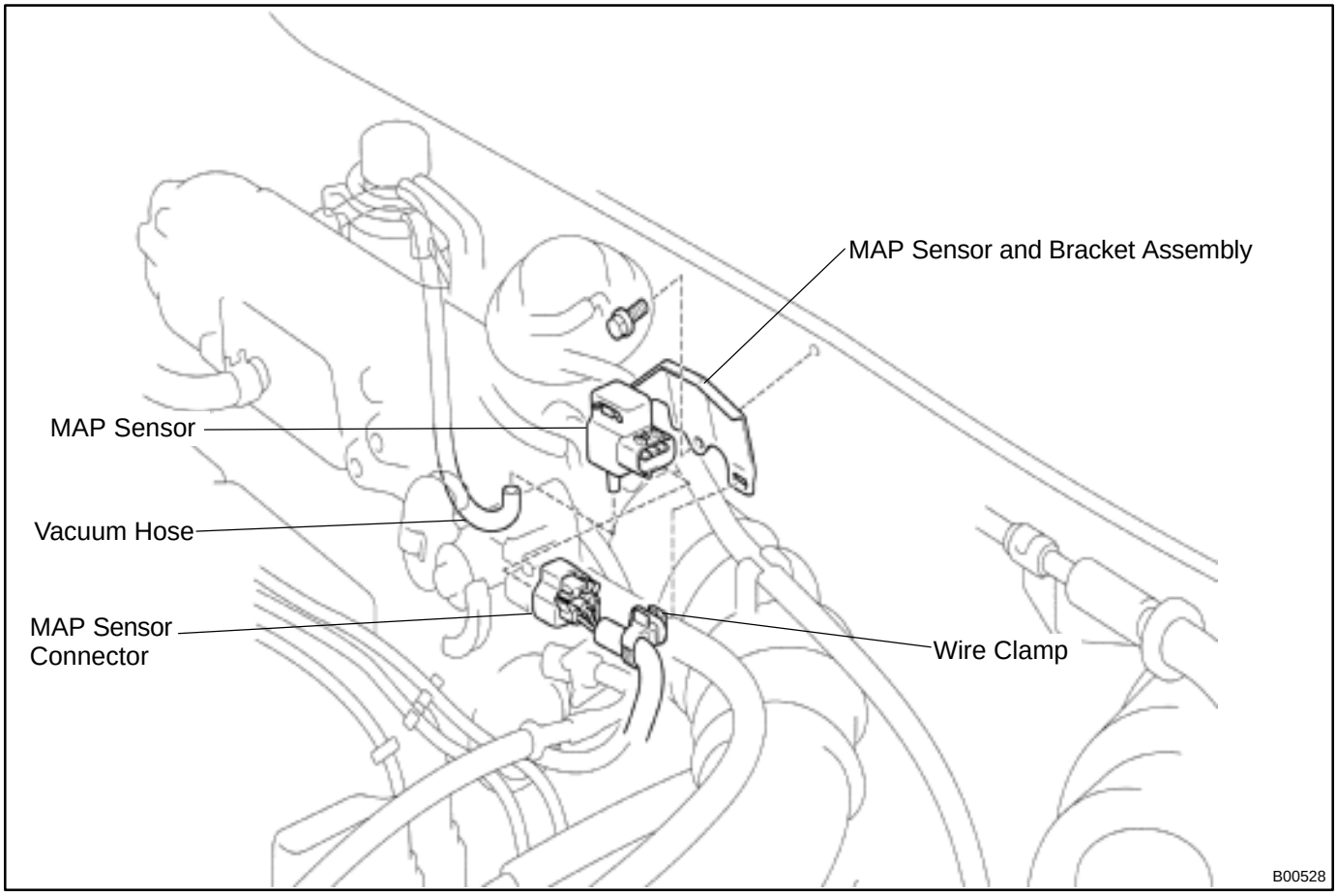
If the resistance is not as specified, replace the sensor.

3. REINSTALL IAT SENSOR

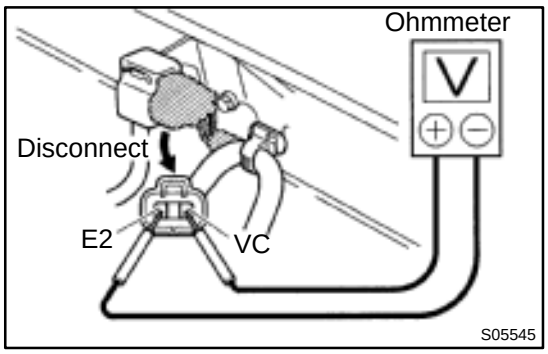
MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

COMPONENTS

SF0E9–03



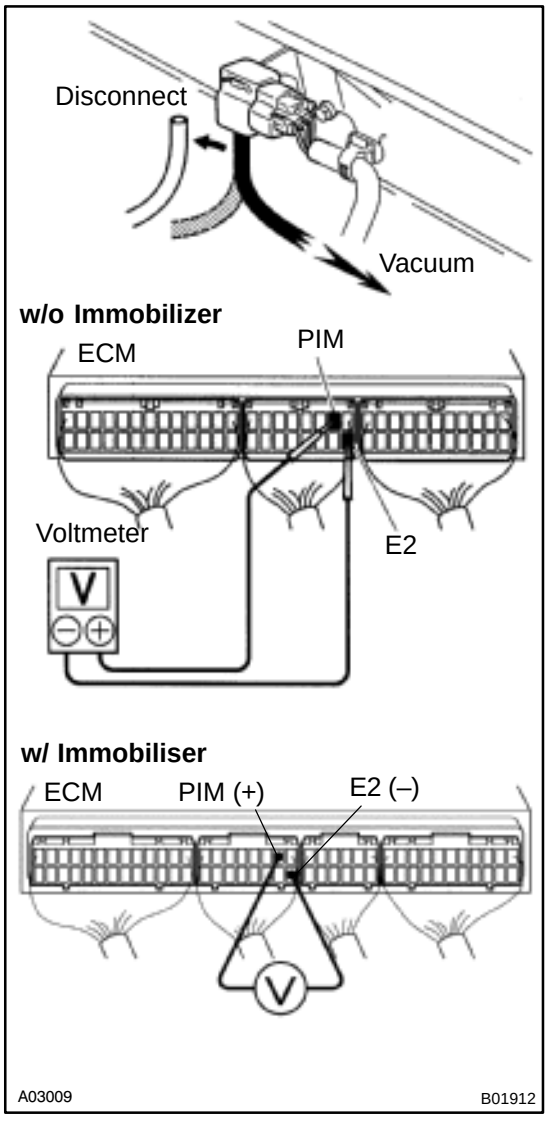
SF0EA–03



INSPECTION

1. INSPECT POWER SOURCE VOLTAGE OF MAP SENSOR

(a) Disconnect the MAP 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 MAP sensor connector.



2. INSPECT POWER OUTPUT OF MAP SENSOR

(a) Turn the ignition switch ON.
(b) Disconnect the vacuum hose from the MAP sensor.
(c) Connect a voltmeter to terminals PIM and E2 of the ECM, and measure the output voltage under ambient atmospheric pressure.
(d) Apply vacuum to the MAP sensor in 13.3 kPa (100 mmHg, 3.94 in.Hg) segments to 66.7 kPa (500 mmHg, 19.69 in.Hg).
(e) Measure the voltage drop from step (c) above for each segment.

Voltage Drop:

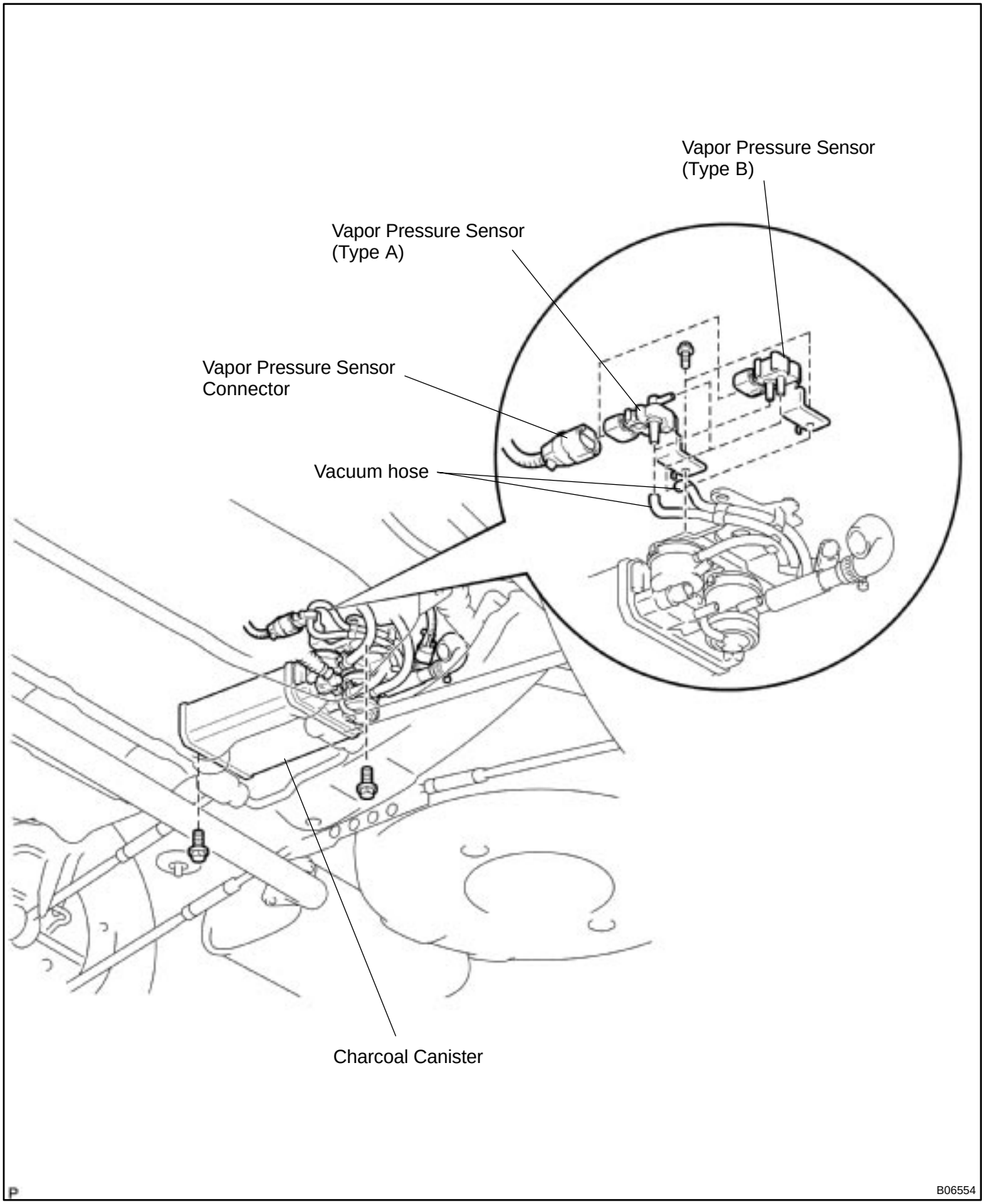
Applied Vacuum kPa (mmHg, in.Hg)	13.3 (100, 3.94)	26.7 (200, 7.87)	40.0 (300, 11.81)	53.5 (400, 15.75)	66.7 (500, 19.69)
Voltage drop V	0.3 – 0.5	0.7 – 0.9	1.1 – 1.3	1.5 – 1.7	1.9 – 2.1

(f) Turn the ignition switch OFF.
(g) Reconnect the vacuum hose to the MAP sensor.

VAPOR PRESSURE SENSOR

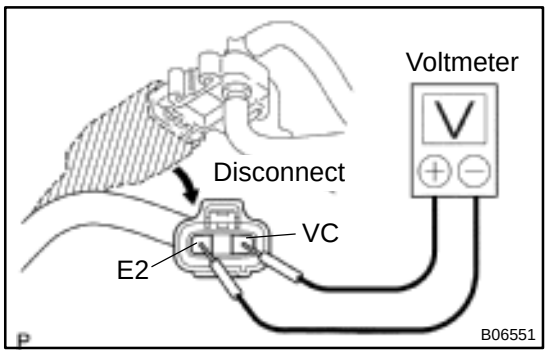
SF0EF–04

COMPONENTS



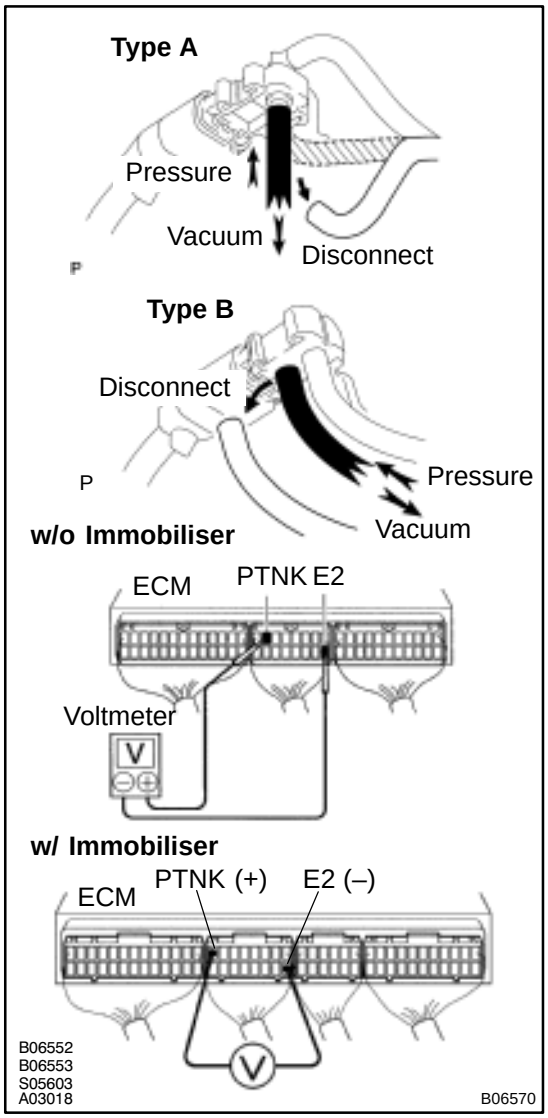
SF0EG–03

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.



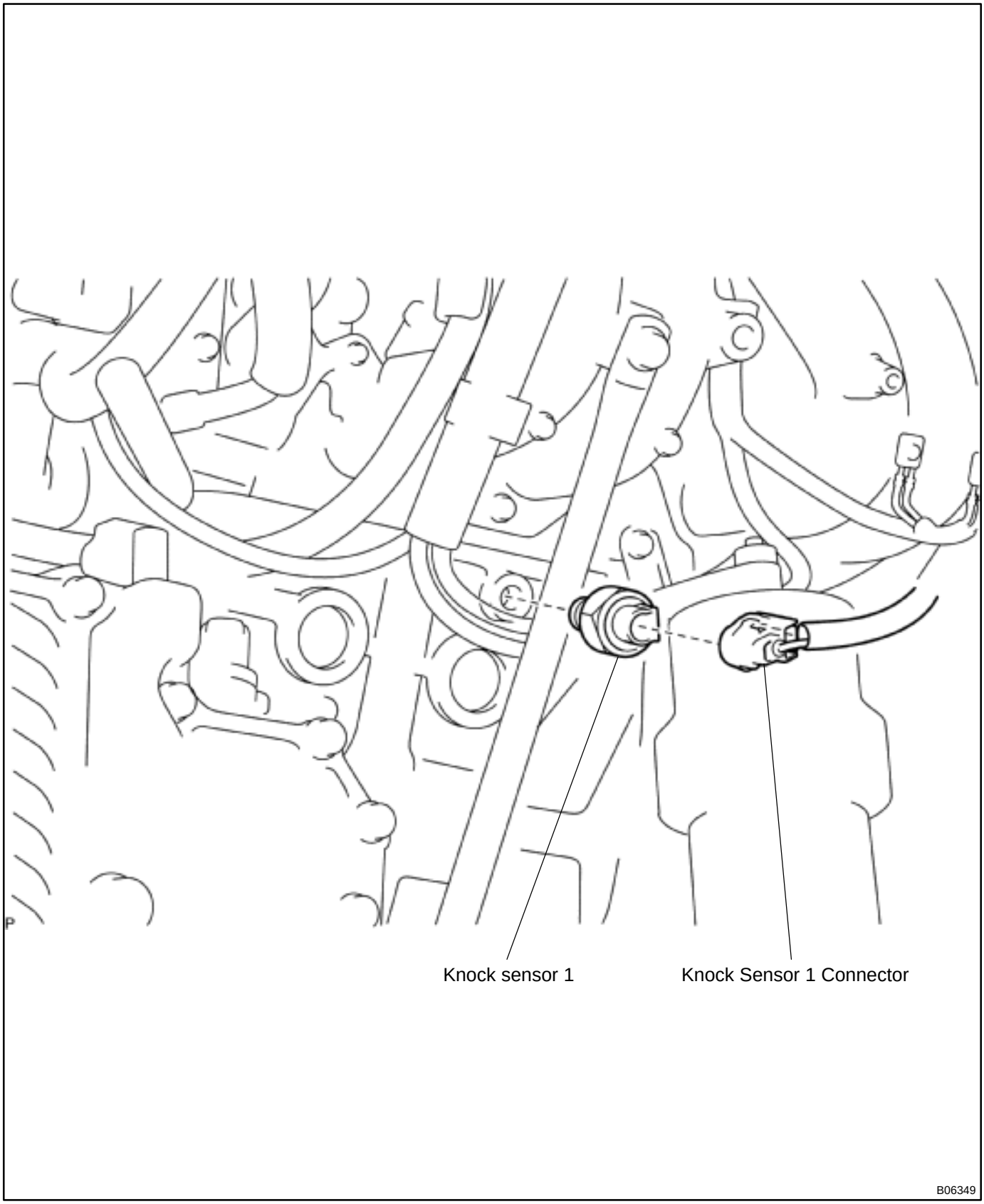
2. INSPECT POWER OUTPUT OF VAPOR PRESSURE SENSOR

(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 the following 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.

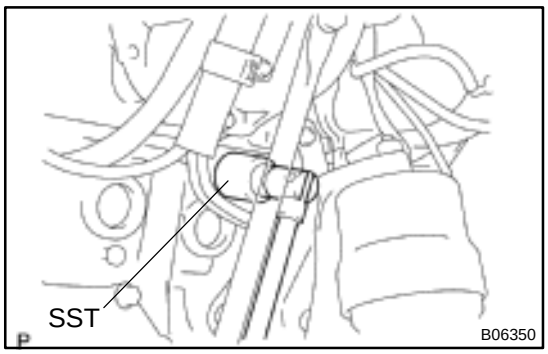
KNOCK SENSOR

SF0ED–03

COMPONENTS



SF0EE–03



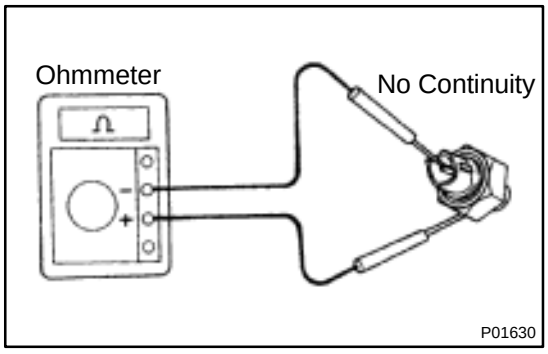
INSPECTION

1. REMOVE KNOCK SENSOR 1

(a) Disconnect the knock sensor connector.

(b) Using SST, remove the knock sensor.

SST 09816–30010



2. INSPECT KNOCK SENSOR 1

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

If there is continuity, replace the sensor.

3. REINSTALL KNOCK SENSOR 1

(a) Using SST, install the knock sensor.

SST 09816–30010

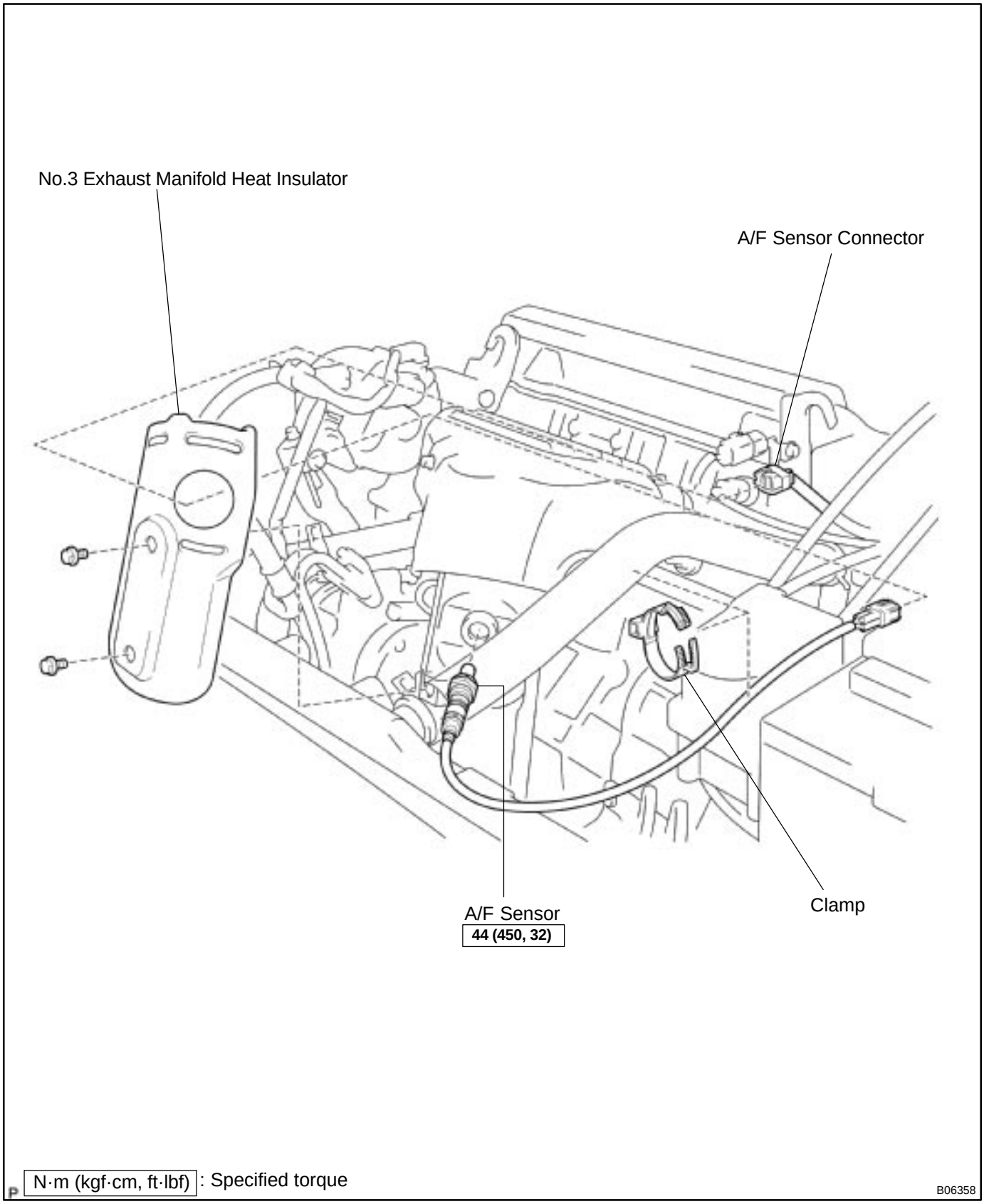
Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

(b) Connect the knock sensor connector.

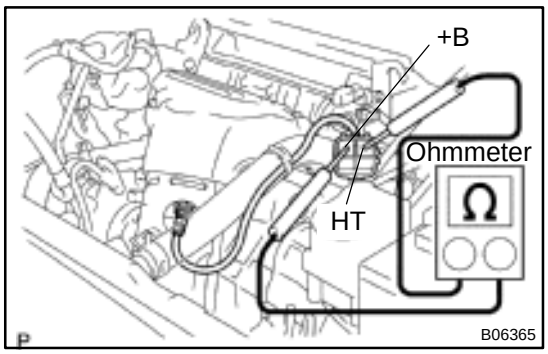
AIR–FUEL RATIO (A/F) SENSOR (California)

COMPONENTS

SF0EB–03



SF0EC–04



INSPECTION

1. INSPECT HEATER RESISTANCE OF A/F SENSOR

(a) Disconnect the A/F sensor connector.

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

Resistance: 0.8 – 1.4 Ω at 20˚C (68˚F)

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

Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

(c) Reconnect the A/F sensor connector.

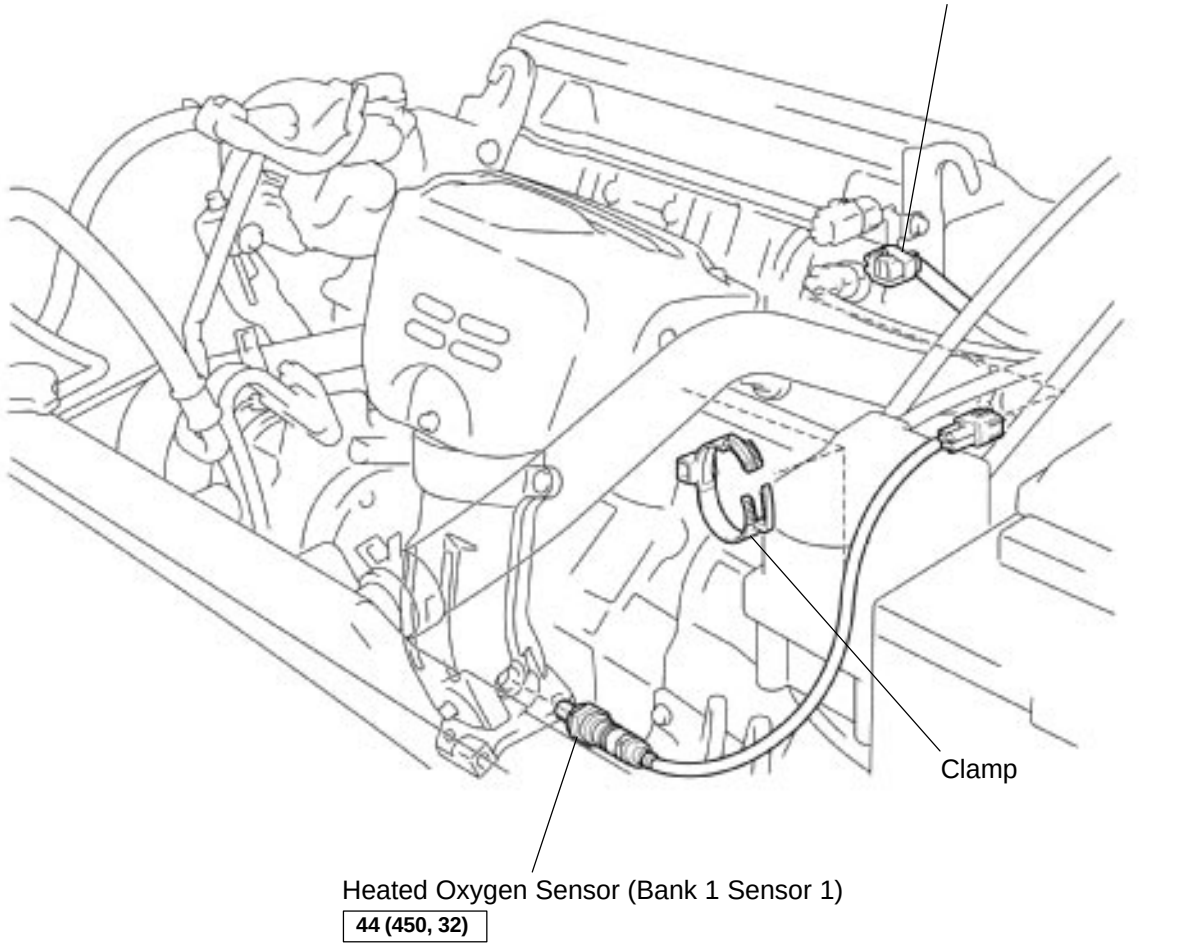
2. INSPECT OPERATION OF A/F SENSOR

(See page DI–152)

HEATED OXYGEN SENSOR (Bank 1 Sensor 1/Except Calif.)

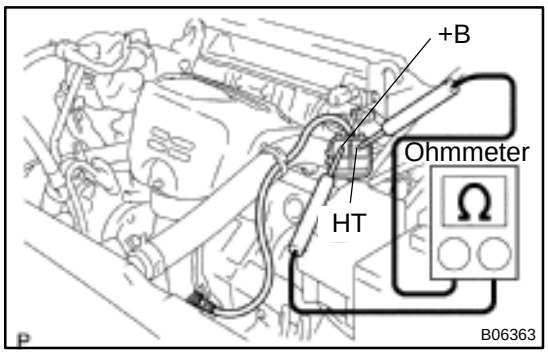
SF0EH–03

COMPONENTS



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

B06359



SF0EI–03

INSPECTION

1. INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSOR

(a) Disconnect the oxygen sensor connector.

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

Resistance: 11 – 16 Ω at 20˚C (68˚F)

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

Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

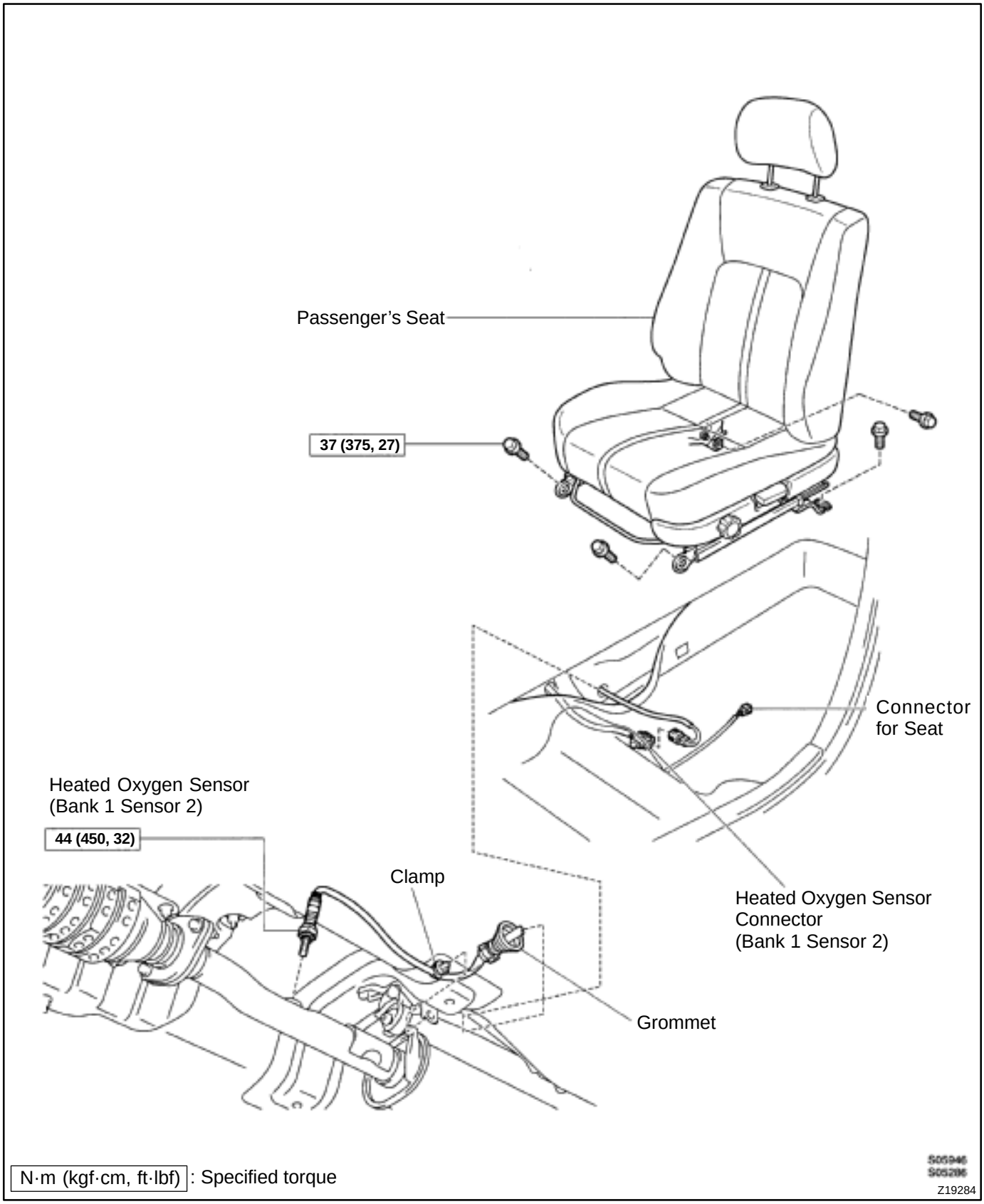
(c) Reconnect the oxygen sensor connector.

2. INSPECT OPERATION OF HEATED OXYGEN SENSOR (See page DI–66)

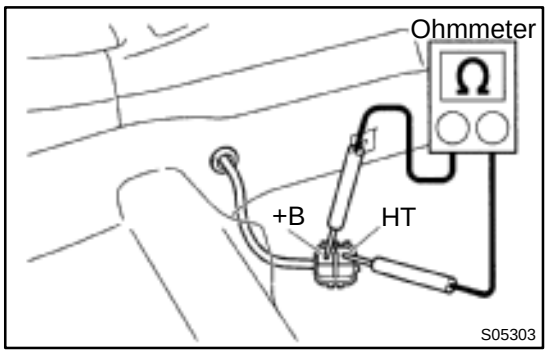
HEATED OXYGEN SENSOR (Bank 1 Sensor 2)

SF0EJ–03

COMPONENTS



SF0EK–03



INSPECTION

1. INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSOR

(a) Disconnect the oxygen sensor connector.

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

Resistance: 11 – 16 Ω at 20˚C (68˚F)

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

Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

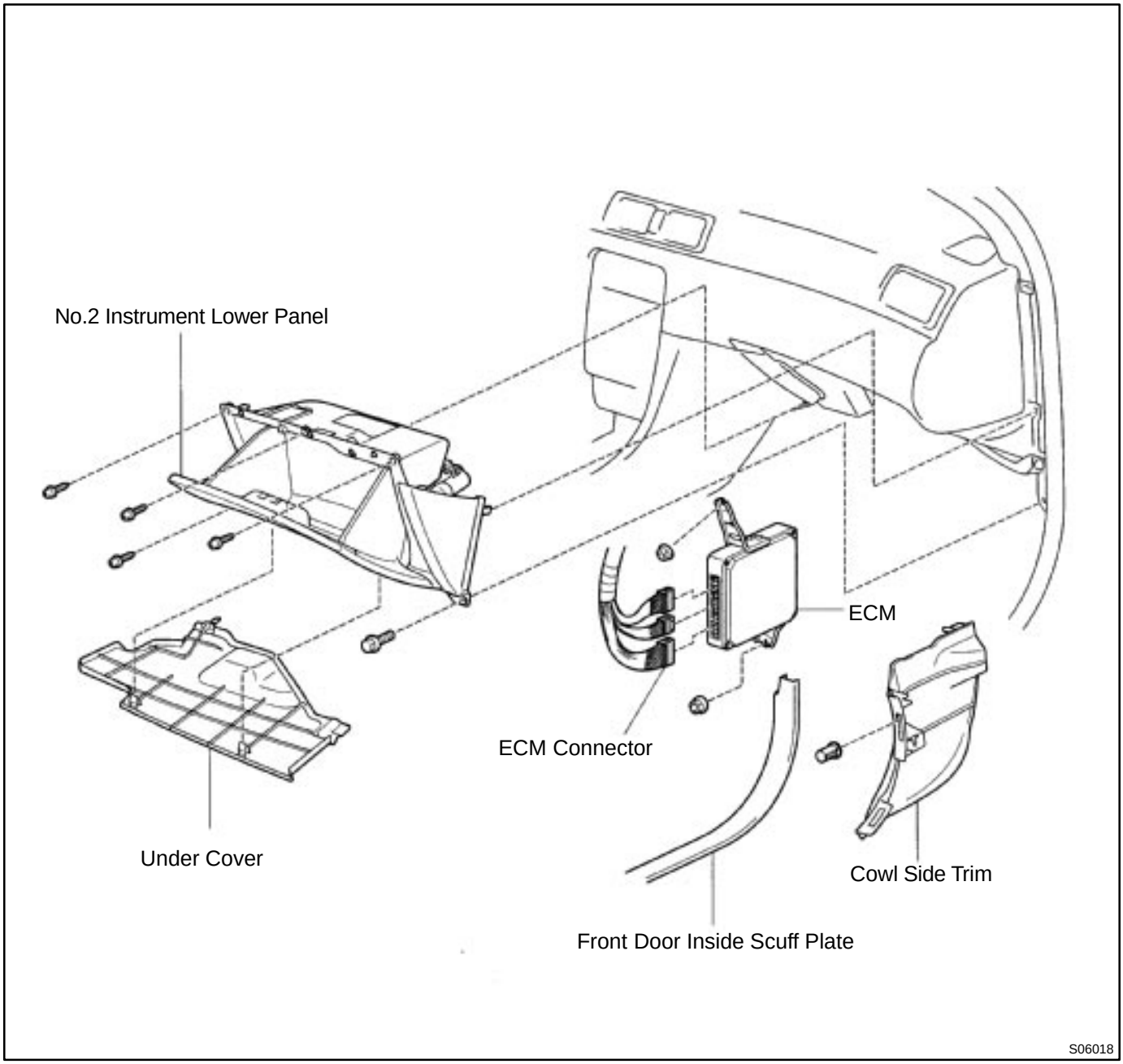
(c) Reconnect the oxygen sensor connector.

2. INSPECT OPERATION OF HEATED OXYGEN SENSOR (See page DI–75)

ENGINE CONTROL MODULE (ECM)

SF0EL–03

COMPONENTS



SF0EM–03

INSPECTION

1. REMOVE ECM
2. INSPECT ECM (See page DI–22)
3. REINSTALL ECM

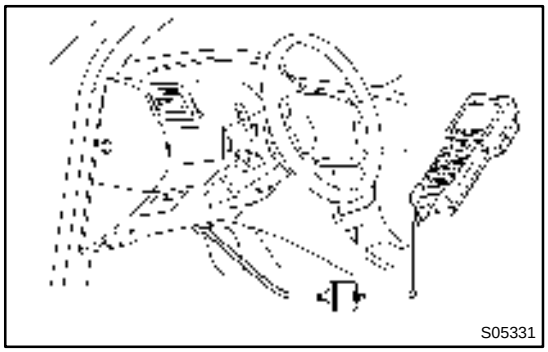
FUEL CUT RPM

SF0EN–03

INSPECTION

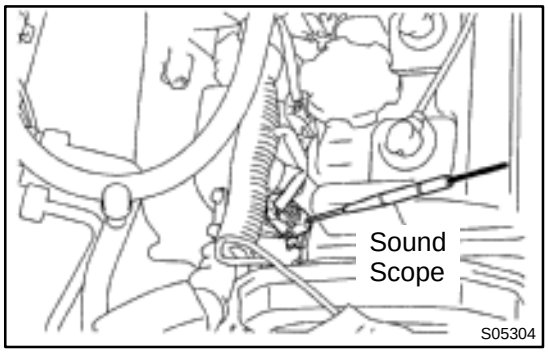
1. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.



2. CONNECT TOYOTA HAND–HELD TESTER OR OBDII SCAN TOOL

(a) Remove the fuse cover on the instrument panel.
(b) Connect a TOYOTA hand–held tester or OBDII scan tool to the DLC3.
(c) Please refer to the TOYOTA hand–held tester or OBDII scan tool operator's manual for further details.



3. INSPECT FUEL CUT RPM OPERATION

(a) Increase the engine speed to at least 2,500 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 speed: 1,500 rpm

4. DISCONNECT TOYOTA HAND–HELD TESTER OR OBDII SCAN TOOL

SFI SYSTEM

SF078–03

PRECAUTION

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

HINT:

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

Therefore, if necessary, read the diagnosis 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) In event of engine misfire, these precautions should be taken.
  (1) Check proper connection to battery terminals, etc.
  (2) After repair work, check that the ignition coil terminals and all other ignition system lines are reconnected securely.
  (3) When cleaning the engine compartment, be especially careful to protect the electrical system from water.

(b) Precautions when handling the oxygen sensor.
  (1) Do not allow the 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 A 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 allow air suction and cause the engine to run out of tune.

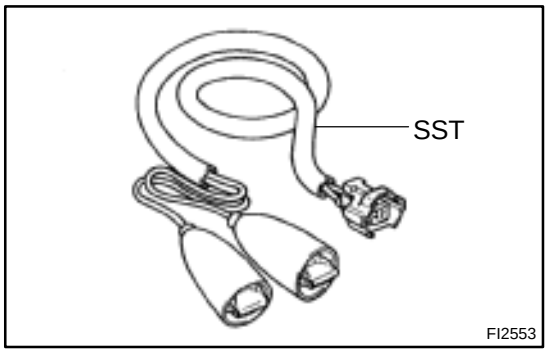
7. ELECTRONIC CONTROL SYSTEM

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

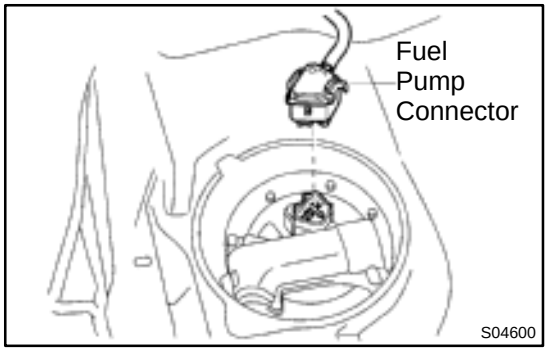
HINT:

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 (–) cables.
(c) Do not permit parts to receive a severe impact during removal or installation. Handle all SFI parts carefully, especially the ECM.
(d) Be careful during troubleshooting as there are numerous transistor circuit, and even slight terminal contact can cause 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 should be taken 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.

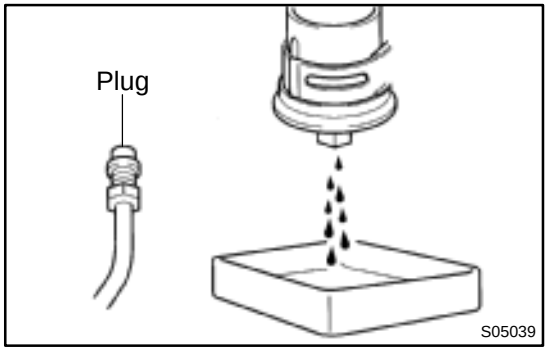


(i) Use SST for inspection or test of the injector or its wiring connector.
SST 09842–30070

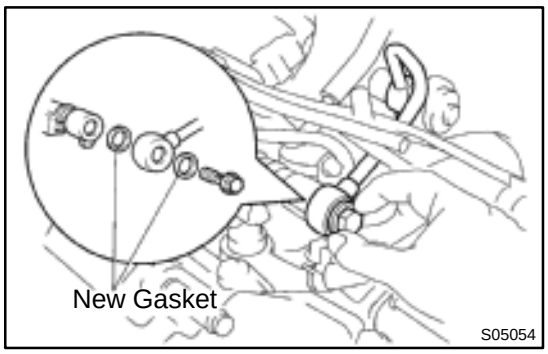


8. FUEL SYSTEM

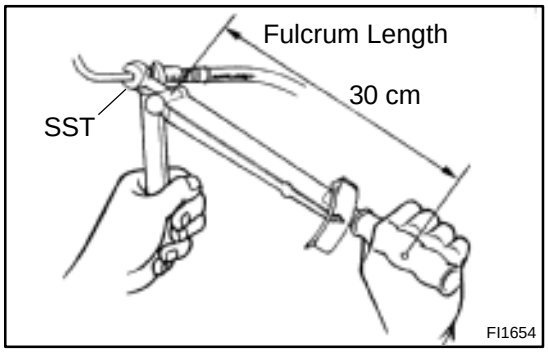
(a) When disconnecting the high fuel pressure line, a large amount of gasoline will spill out, so observe these procedures:
  (1) Disconnect the fuel pump connector.
  (2) Start the engine. After the engine has stopped on its own, turn the ignition switch to LOCK.



  (3) Put a container under the connection.
  (4) Slowly loosen the connection.
  (5) Disconnect the connection.
  (6) Plug the connection with a rubber plug.

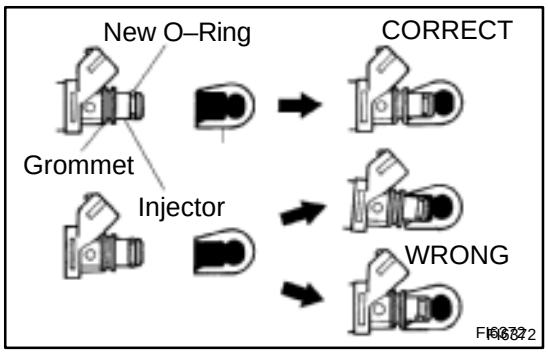


(b) When connecting the union bolt on the high pressure pipe union, observe these procedures:
(1) Always use 2 new gaskets.
(2) Tighten the union bolt by hand.
(3) Tighten the union bolt to the specified torque.
Torque: 32.5 N·m (330 kgf·cm, 24 ft·lbf)

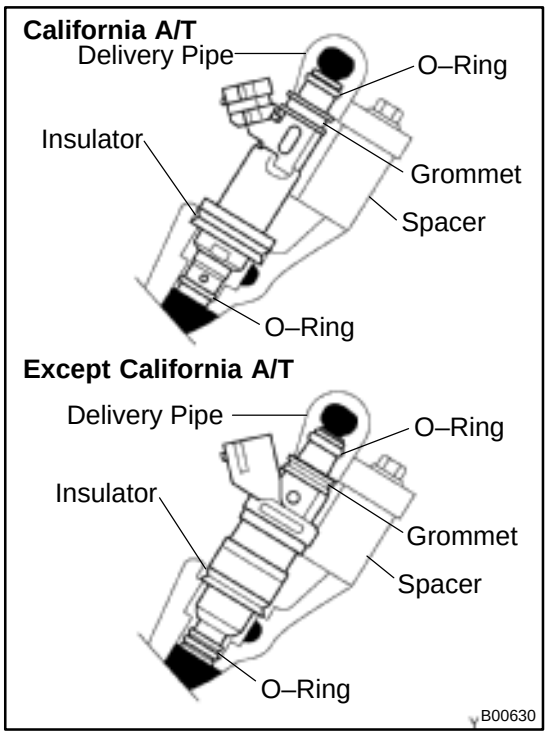


(c) When connecting the flare nut on the high pressure pipe union, observe these procedures:
(1) Apply a light coat of engine oil to the flare nut, and tighten the flare nut by hand.
(2) Using SST, tighten the flare nut to specified torque.
SST 09631–22020

NOTICE:
Do not rotate the fuel pipe, when tightening the flare nut.
Torque: 28 N·m (285 kgf·cm, 21 ft·lbf) for using SST
HINT:
Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

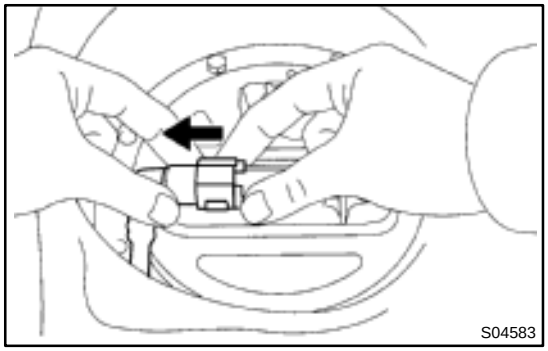


(d) Observe these precautions when removing and installing the injectors.
(1) Never reuse the O–ring.
(2) When placing a new O–ring on the injector, take care not to damage it in any way.
(3) Coat a new O–ring with spindle oil or gasoline before installing–never use engine, gear or brake oil.

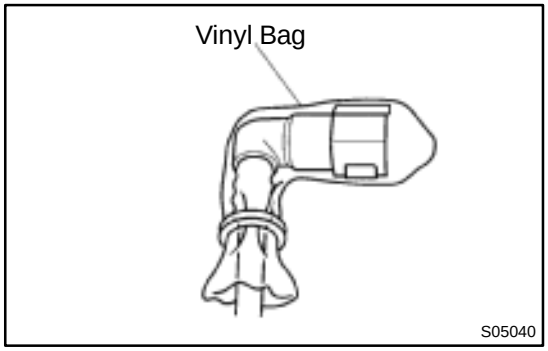


(e) Install the injector to the delivery pipe and intake manifold, as shown in the illustration.
Before installing the injector, must apply spindle oil or gasoline on the place where a delivery pipe or an intake manifold touches an O–ring of the injector.

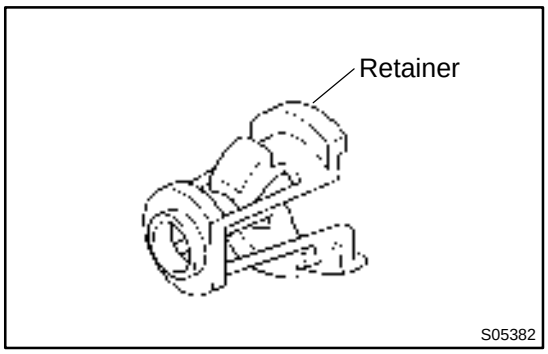
(f) Observe these precautions when disconnecting the fuel tube connector (quick type).
(1) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.
(2) Be sure to disconnect with hands.



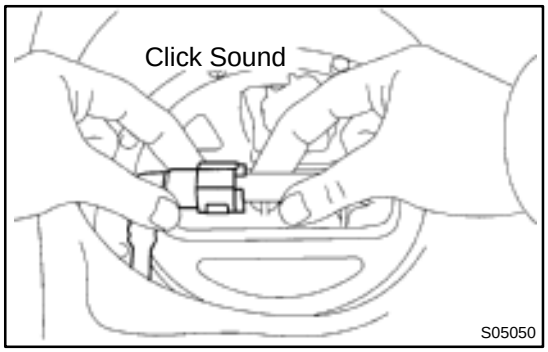
(3) When the connector and the pipe are stuck, pinch the retainer between the hands, push and pull the connector to free to disconnect and pull it out. Do not use any tool at this time.
(4) Inspect if there is any dirt or the likes on the seal surface of the disconnected pipe and clean it away.



(5) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

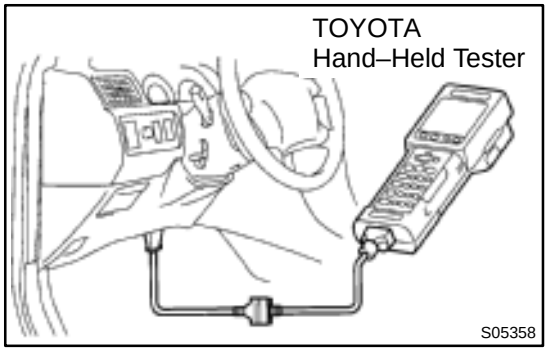


(g) Observe these precautions when connecting the fuel tube connector (quick type).
(1) Do not reuse the retainer removed from the pipe.
(2) Must use hands without using tools when to remove the retainer from the pipe.
(3) Check if there is any damage or foreign objects on the connected part of the pipe.



(4) Match the axis of the connector with axis of the pipe, and push in the connector until the retainer makes a ”click” sound. In case that the connections is tight, apply little amount of new engine oil on the tip of the pipe.
(5) After having finished the connection, check if the pipe and the connector are securely connected by pulling them.
(6) Check if there is any fuel leakage.

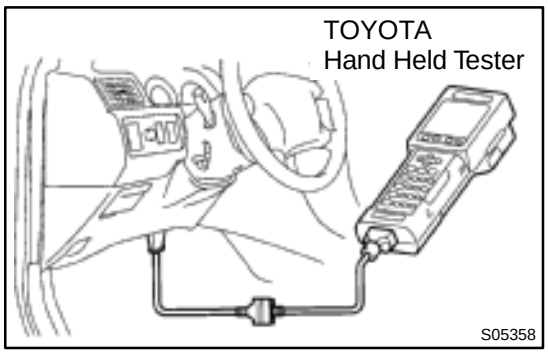
(h) Observe these precautions when handling nylon tube.
(1) Pay attention not to turn the connected part of the nylon tube and the quick connector with force when connecting them.
(2) Pay attention not to kink the nylon tube.
(3) Do not remove the EPDM protector on the outside of the nylon tube.
(4) Must not close the piping with the nylon tube by bending it.



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

NOTICE:
Do not start the engine.

(3) Select the active test mode on the TOYOTA hand–held tester.
(4) Please refer to the TOYOTA hand–held tester operator’s manual for further details.
(5) If you have no TOYOTA 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 to LOCK.
(8) Disconnect the TOYOTA hand–held tester from the DLC3.



FUEL PUMP

SF079–04

ON–VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

(a) Connect a TOYOTA hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the TOYOTA hand–held tester main switch ON.

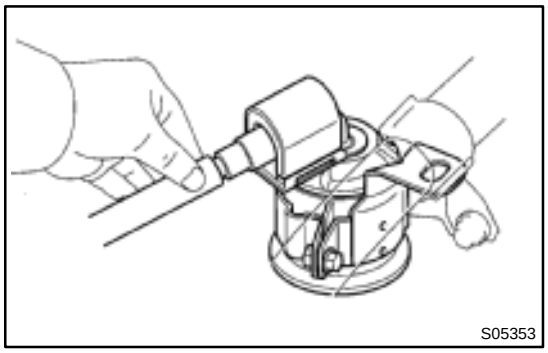
NOTICE:

Do not start the engine.

(c) Select the ACTIVE TEST mode on the TOYOTA hand–held tester.

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

(e) If you have no TOYOTA hand–held tester, connect the positive (+) and negative (–) leads from the battery to the fuel pump connector. (See step 7)



(f) Check that there is pressure in the fuel inlet hose from the fuel filter.

HINT:

If there is fuel pressure, you will hear the sound of fuel flowing.

If there is no pressure, check these parts:

Fusible link

Fuses

EFI main relay

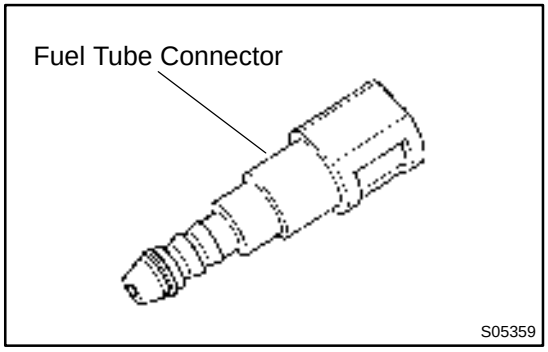
Fuel pump

ECM

Wiring connections

(g) Turn the ignition switch OFF.

(h) Disconnect the TOYOTA hand–held tester from the DLC3.

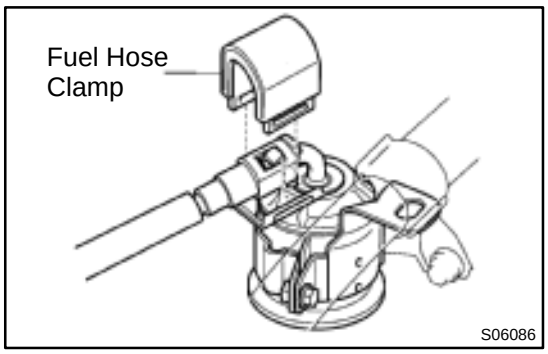


2. CHECK FUEL PRESSURE

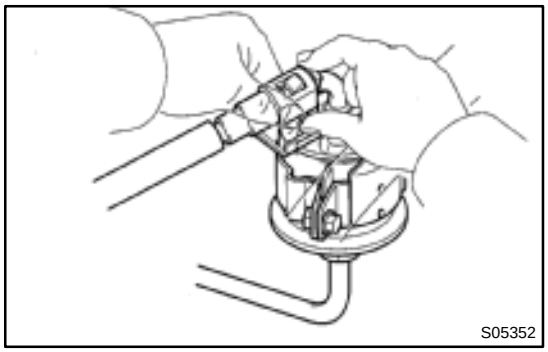
(a) Check the battery positive voltage is above 12 V.

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

(c) Purchase the new No.1 fuel pipe and take out the fuel tube connector from its pipe.
Part No. 23801–20041



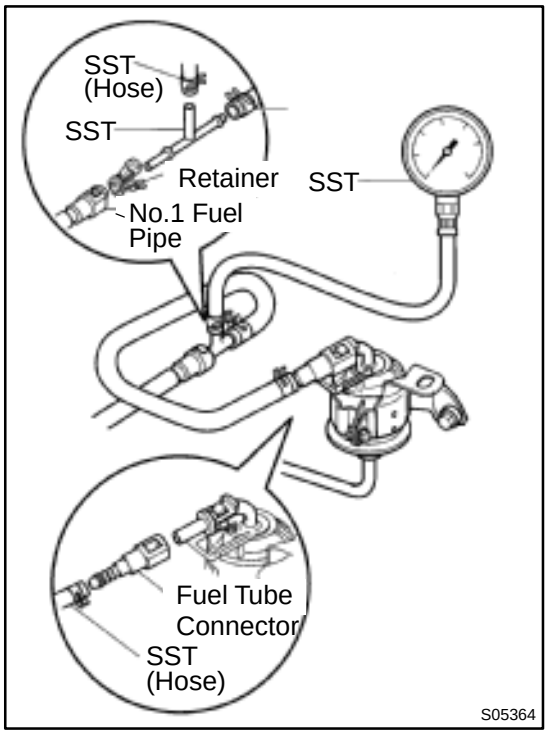
(d) Remove the fuel hose clamp.



(e) Disconnect the No.1 fuel pipe (fuel tube connector) from the fuel filter outlet.

CAUTION:

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



(f) Install SST (pressure gauge) as shown in the illustration by using SST and fuel tube connector.
SST 09268–41047, 09268–41250, 09268–45012

(g) Wipe off any splattered gasoline.

(h) Reconnect the negative (–) terminal cable to the battery.

(i) Connect the TOYOTA hand held tester to the DLC3.
(See step 1. check fuel pump operation (a) to (e))

(j) Measure the fuel pressure.
Fuel pressure:
301 – 347 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 these parts:
Fuel hoses and connections
Fuel pump
Fuel filter
Fuel pressure regulator

(k) Disconnect the TOYOTA hand–held tester from the DLC3.

(l) Start the engine.

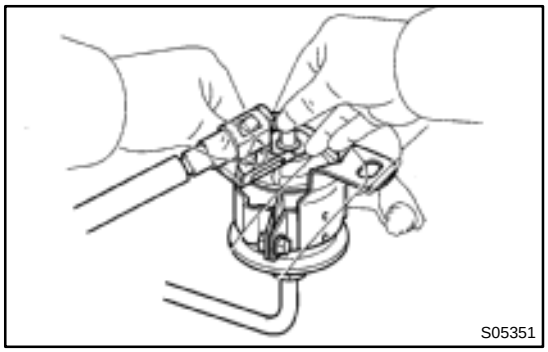
(m) Measure the fuel pressure at idle.
Fuel pressure:
301 – 347 kPa (3.1 – 3.5 kgf/cm^2, 44 – 50 psi)

(n) Stop the engine.

(o) 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

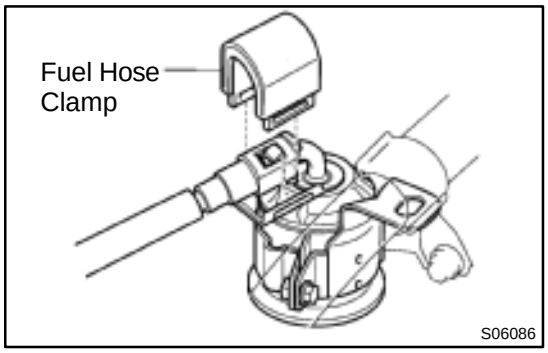
If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

(p) After checking fuel pressure, disconnect the negative (–) terminal cable from the battery and carefully remove the SST and fuel tube connector to prevent gasoline from splashing.
SST 09268–41047, 09268–41250, 09268–45012



(q) Reconnect the No.1 fuel pipe (fuel tube connector).

CAUTION:
Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.
(See page SF–1)

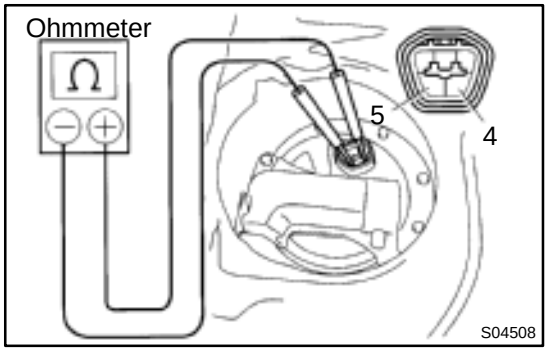


(r) Surely install the fuel hose clamp to the fuel filter with ”click” sound.
(s) After installing the clamp, check that the clamp is fixed by pulling up the clamp.
(t) Reconnect the negative (–) terminal cable to the battery.
(u) Check for fuel leaks.

3. REMOVE REAR SEAT CUSHION

4. REMOVE FLOOR SERVICE HOLE COVER

5. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

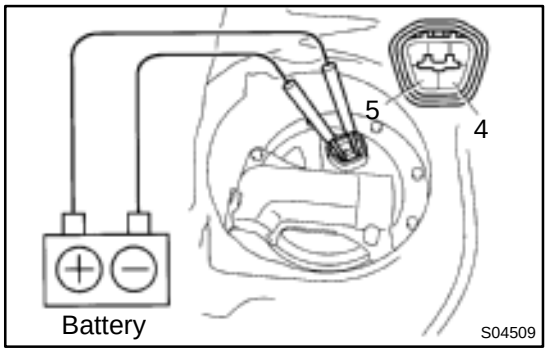


6. INSPECT FUEL PUMP RESISTANCE

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.



7. INSPECT 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.**

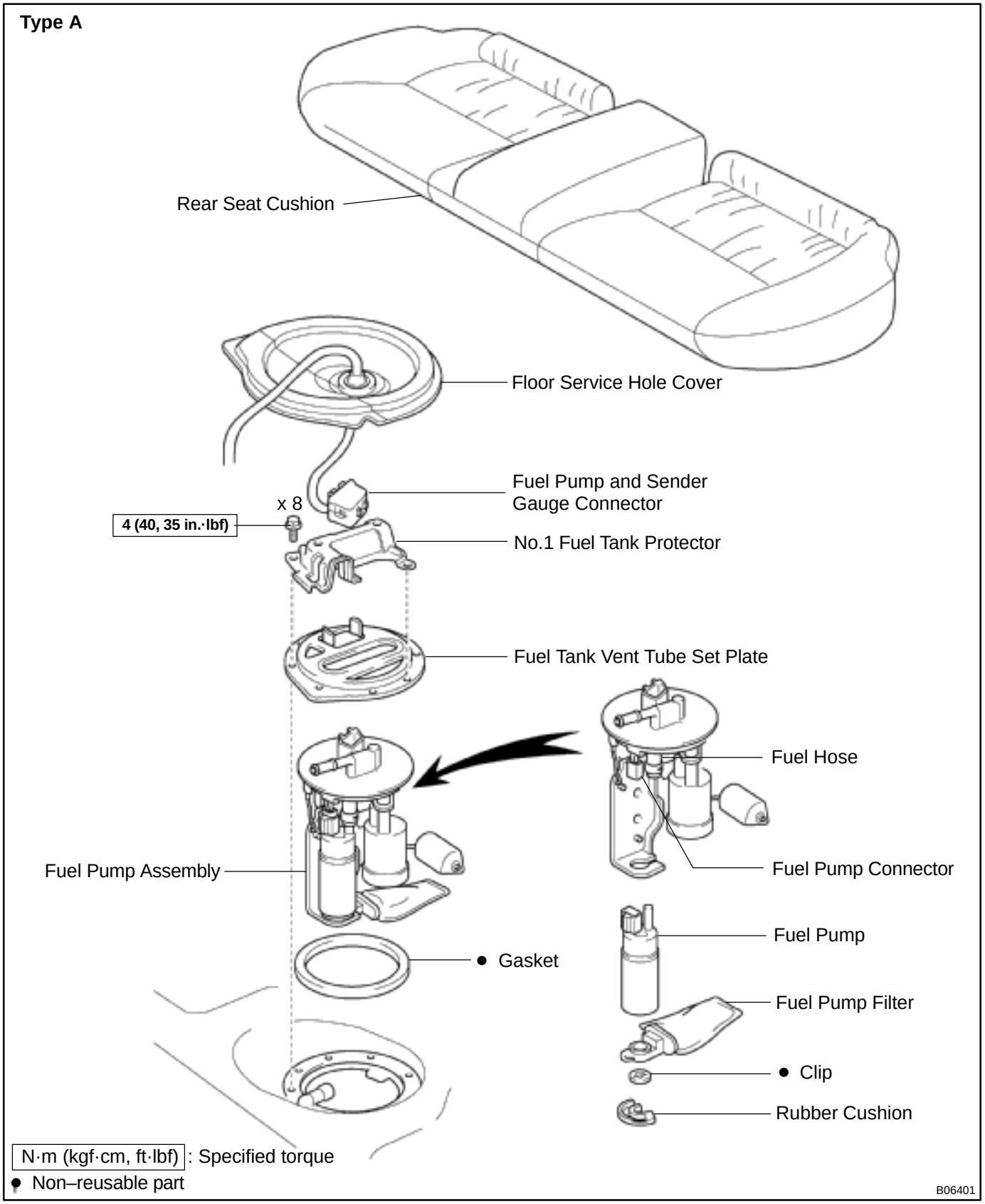
If operation is not as specified, replace the fuel pump or lead wire.

8. **RECONNECT FUEL PUMP & SENDER GAUGE CONNECTOR**
9. **REINSTALL FLOOR SERVICE HOLE COVER**
10. **REINSTALL REAR SEAT CUSHION**

SF07A–02

COMPONENTS

Type A

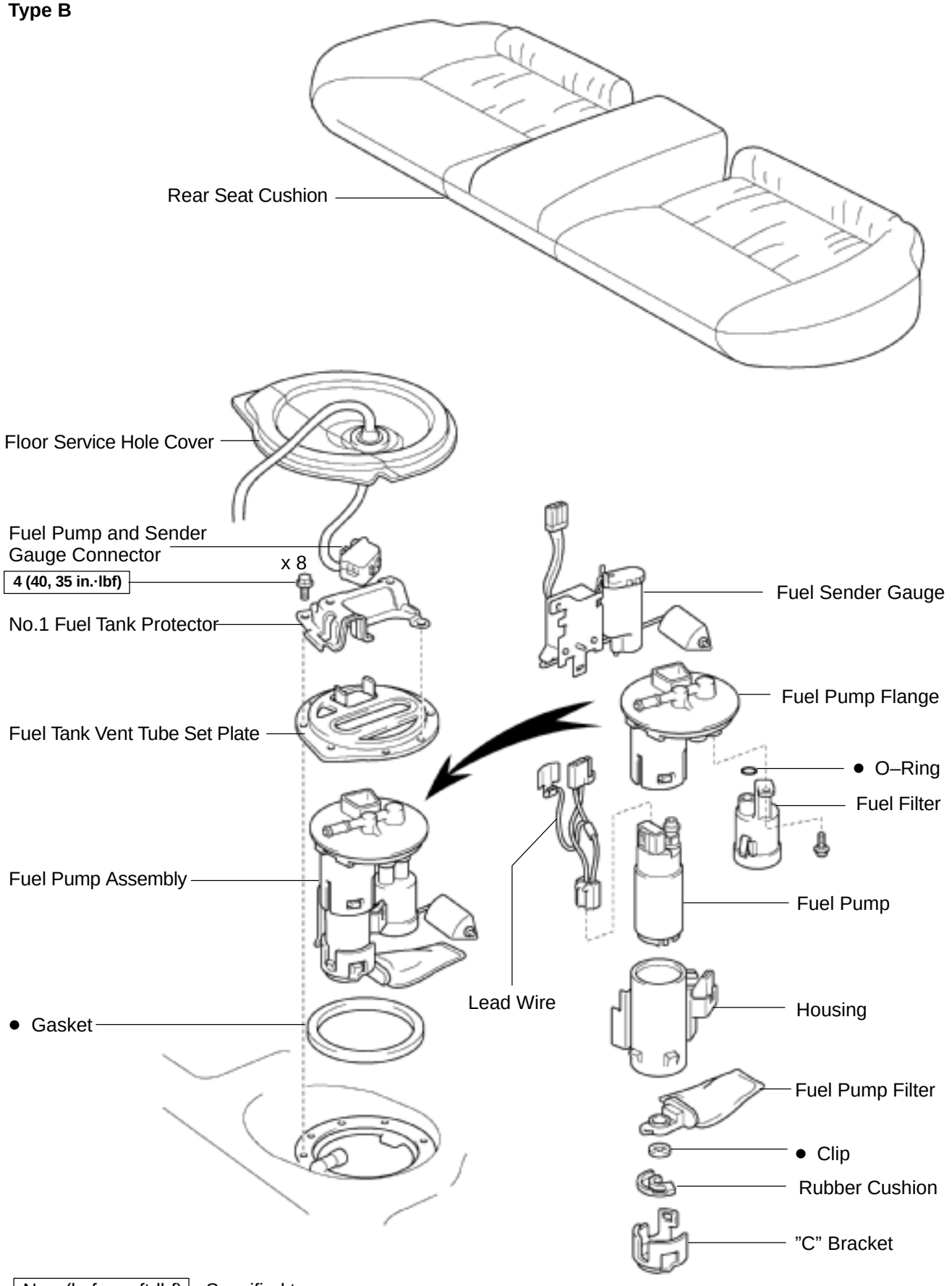


N·m (kgf·cm, ft·lbf) : Specified torque

● Non–reusable part

B06401

Type B



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

B06394

SF07B–04

REMOVAL

CAUTION:

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

1. REMOVE REAR SEAT CUSHION

2. REMOVE FLOOR SERVICE HOLE COVER

(a) Take out the floor carpet.

(b) Remove the service hole cover.

HINT:

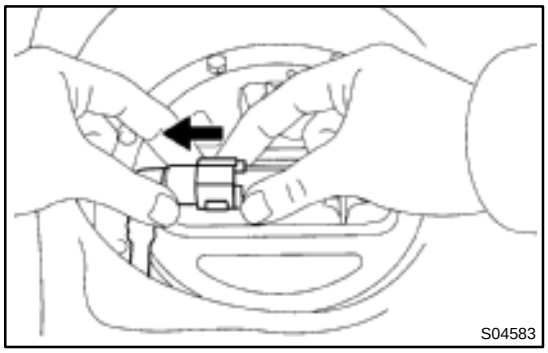
At the time of installation, plaese refer to the following items. Check for fuel leakage.

3. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

4. REMOVE NO.1 FUEL TANK PROTECTOR

Remove the 2 bolts and No.1 fuel tank protector.

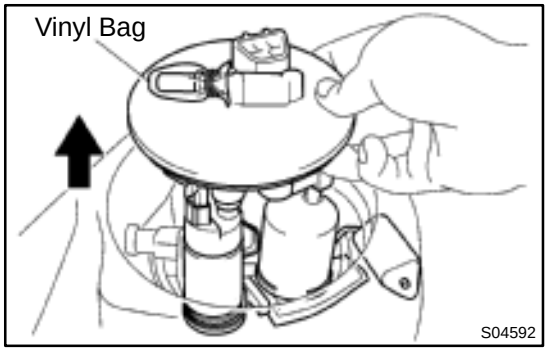
Torque: 4 N·m (40 kgf·cm, 35 in.·lbf)



5. DISCONNECT FUEL TUBE (FUEL TUBE CONNECTOR)

CAUTION:

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



6. REMOVE FUEL PUMP ASSEMBLY FROM FUEL TANK

(a) Remove the 6 bolts and fuel tank vent tube set plate.
Torque: 4 N·m (40 kgf·cm, 35 in.·lbf)

(b) Pull out the fuel pump assembly.

(c) Remove the gasket from the pump assembly.

NOTICE:

- **Do not damage the fuel pump filter.**
- **Be careful that the arm of the sender gauge should not bent.**

HINT:

At the time of installation, plaese refer to the following items. Install a new gasket to the pump assembly.

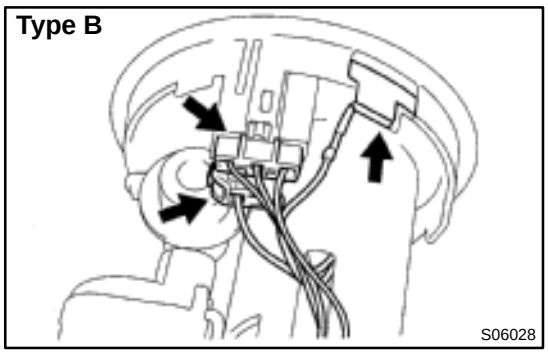
SF07C–03

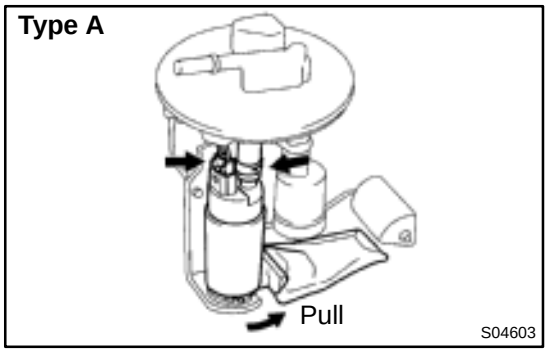
DISASSEMBLY

1. DISCONNECT FUEL PUMP CONNECTOR

2. TYPE B:
DISCONNECT GROUND PLATE

3. TYPE B:
DISCONNECT FUEL SENDER GAUGE CONNECTOR



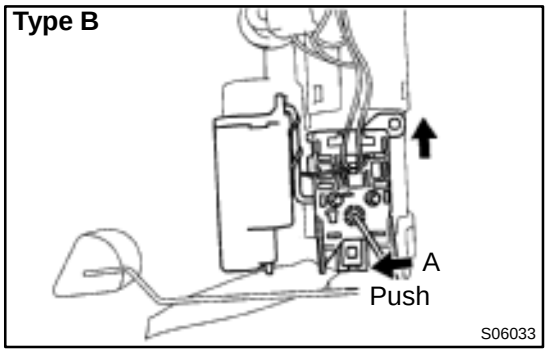


4. Type A:
REMOVE FUEL PUMP FROM FUEL PUMP BRACKET

(a) Pull off the lower side of the fuel pump from the pump bracket.

(b) Disconnect the fuel hose from the fuel pump, and remove the fuel pump.

(c) Remove the rubber cushion from the fuel pump.

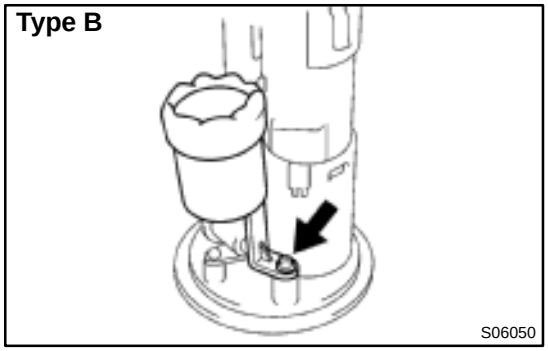


5. Type B:
REMOVE FUEL SENDER GAUGE

Push down the portion of A with a finger, and push up the sender gauge.

NOTICE:

Be careful that the arm of the sender gauge should not bent.



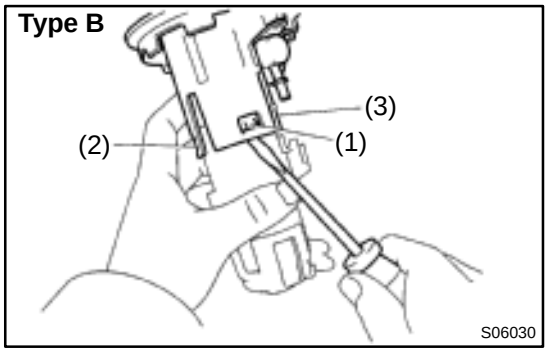
6. Type B:
REMOVE FUEL FILTER

(a) Remove the screw, and pull out the fuel filter.

(b) Remove the O–ring from the fuel filter.

HINT:

At the time of installation, please refer to the following items. Install the pump filter with a new clip.

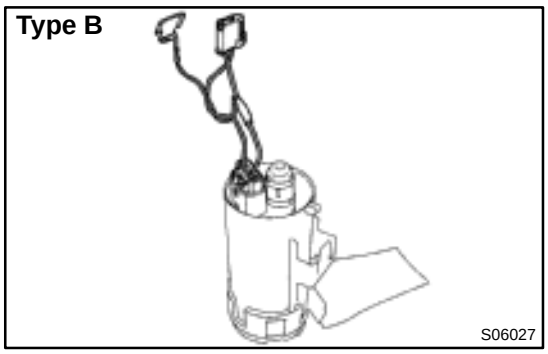


7. TYPE B:
REMOVE FUEL PUMP FLANGE

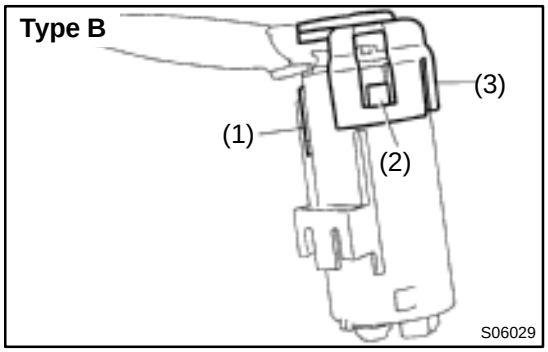
Using a screwdriver, remove the snap fit portion in the order of 1, 2 and 3 as shown in the illustration.

HINT:

At the time of installation, please refer to the following items. Apply a light coat of gasoline to a new O–ring, and install it to the fuel filter.

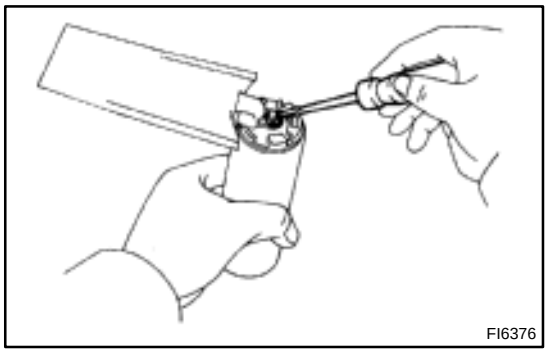


8. Type B:
REMOVE FUEL PUMP LEAD WIRE



9. Type B:
REMOVE ”C” BRACKET, RUBBER CUSHION AND FUEL PUMP

Using a screwdriver, remove the snap fit portion in the order of 1, 2 and 3 as shown in the illustration.



10. REMOVE FUEL PUMP FILTER FROM FUEL PUMP

(a) Using a small screwdriver, remove the clip.

(b) Pull out the pump filter.

HINT:

At the time of installation, please refer to the following items. Install the pump filter with a new clip.

SF07D–01

REASSEMBLY

Reassembly is in the reverse order of disassembly. (See page SF–13)

SF07E–01

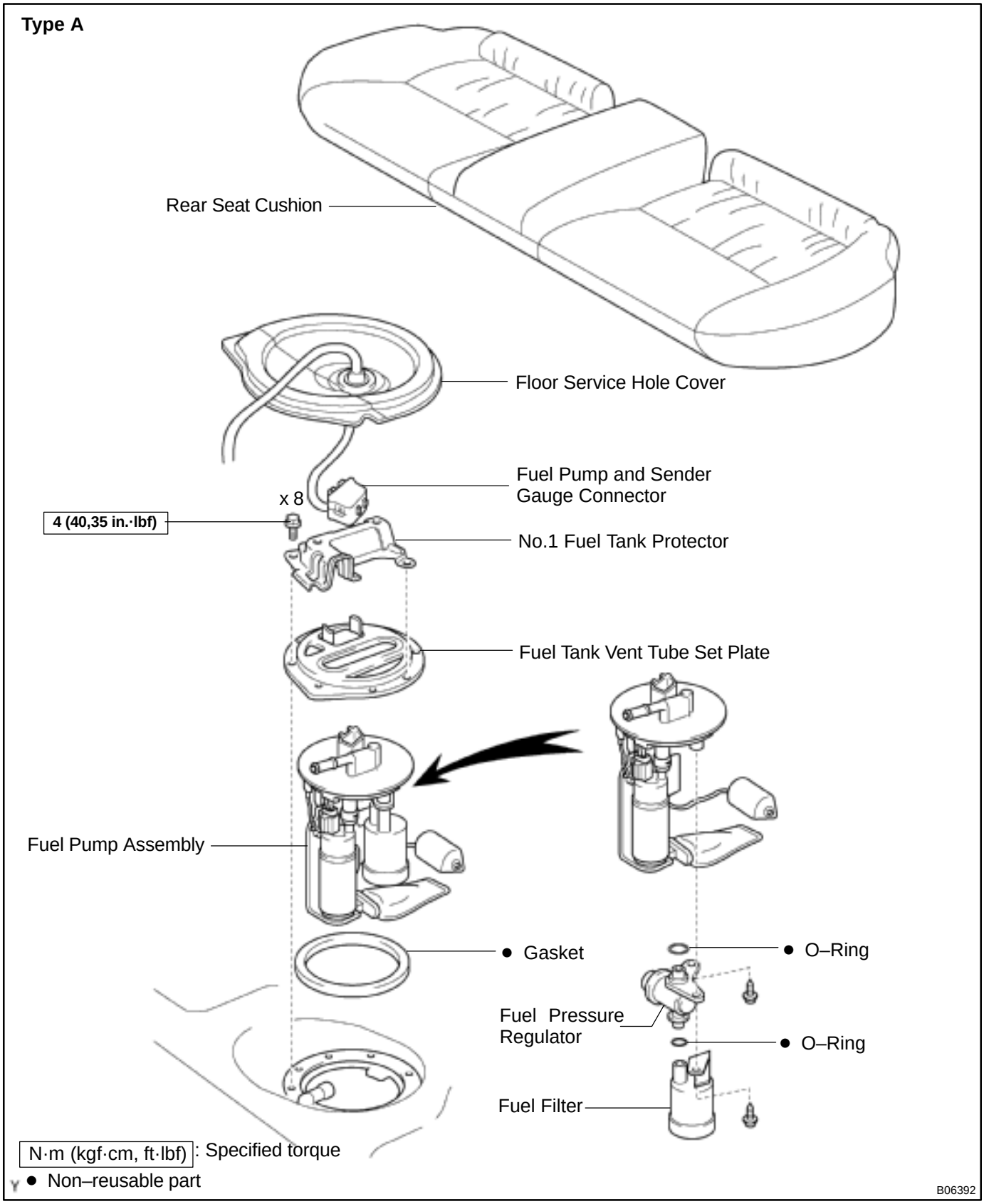
INSTALLATION

Installation is in the reverse order of removal. (See page SF–12)

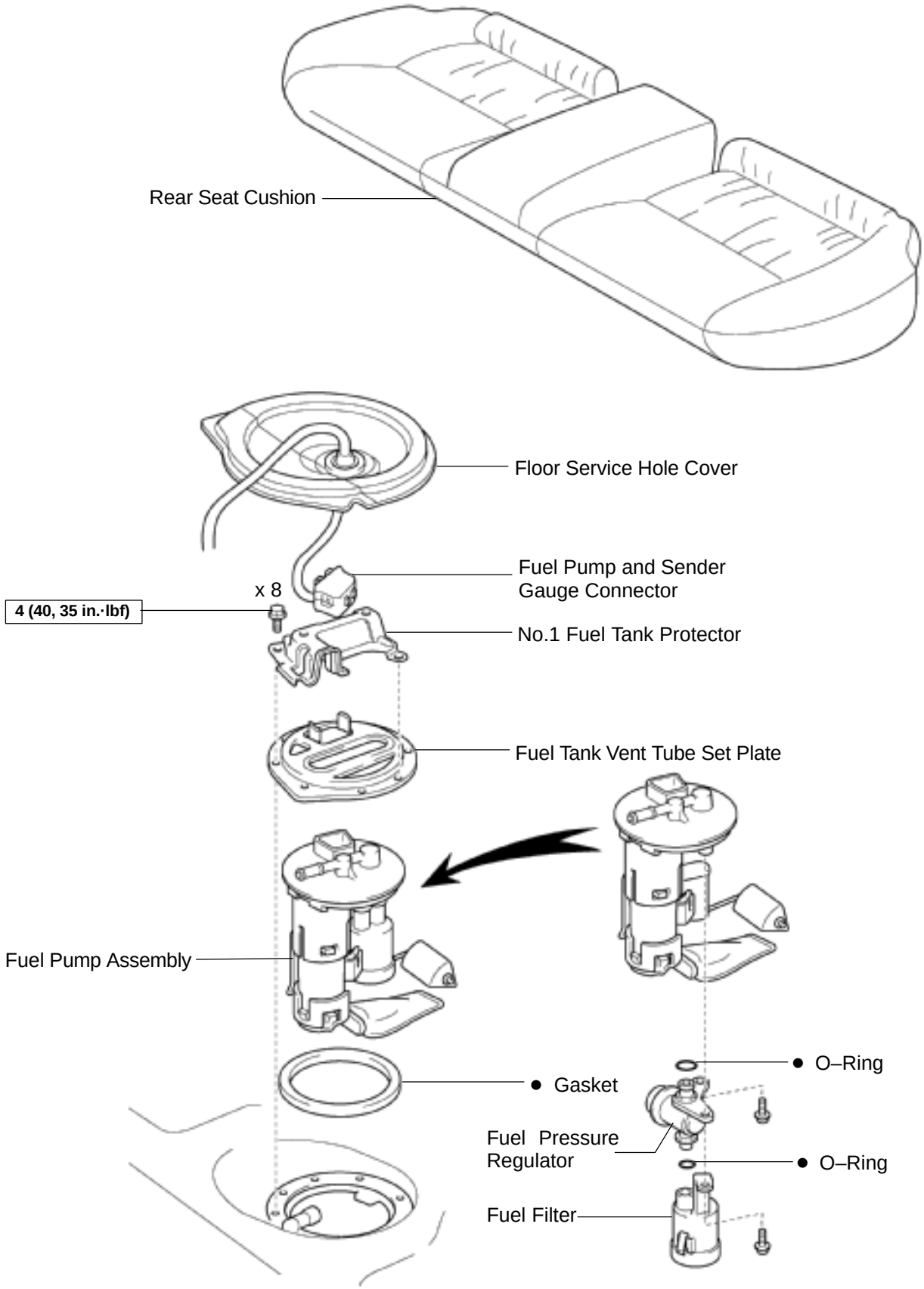
FUEL PRESSURE REGULATOR

SF07F–03

COMPONENTS



Type B



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

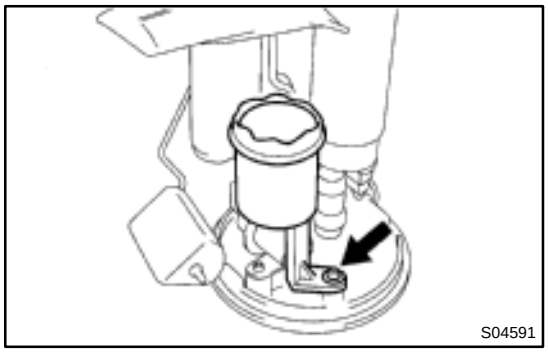
● Non–reusable part

B06393

SF07G–03

REMOVAL

1. REMOVE FUEL PUMP ASSEMBLY FROM FUEL TANK
(See page SF–12)



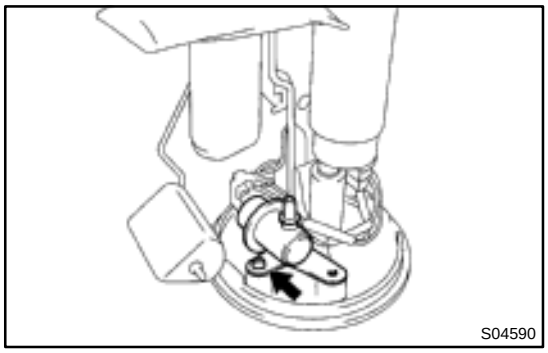
2. REMOVE FUEL FILTER

(a) Remove the screw, and pull out the fuel filter.
Torque: 2.0 N·m (20 kgf·cm, 17 in.·lbf)

(b) Remove the O–ring from the fuel filter.

HINT:

At the time of installation, please refer to the following items.
Apply a light coat of gasoline to a new O–ring, and install it to the fuel filter.



3. REMOVE FUEL PRESSURE REGULATOR

(a) Remove the screw, and pull out the pressure regulator.
Torque: 2.0 N·m (20 kgf·cm, 17 in.·lbf)

(b) Remove the O–ring from the pressure regulator.

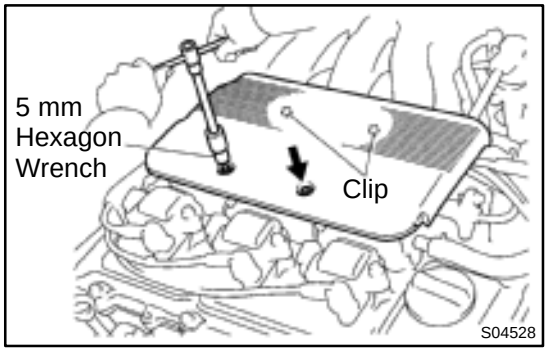
HINT:

At the time of installation, please refer to the following items.
Apply a light coat of gasoline to a new O–ring, and install it to the pressure regulator.

SF07H–01

INSTALLATION

Installation is in the reverse order of removal. (See page SF–19)



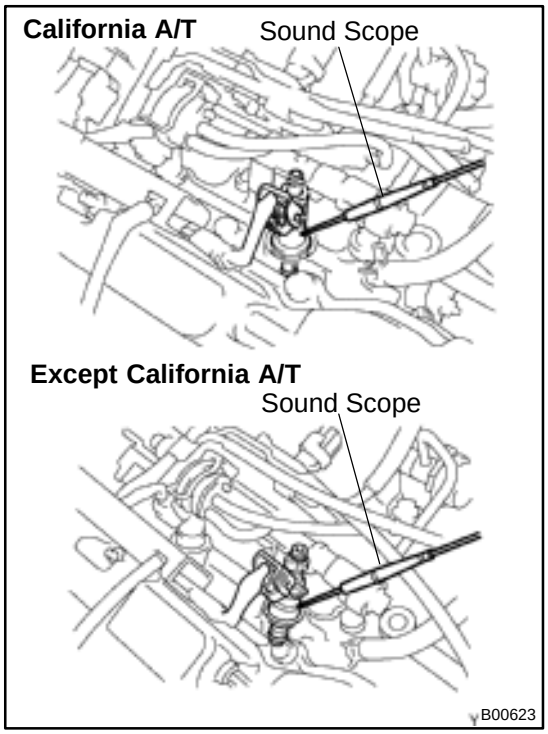
INJECTOR

SF07I–03

ON–VEHICLE INSPECTION

1. REMOVE V–BANK COVER

(a) Using a 5 mm hexagon wrench, remove the 2 cap nuts.
(b) Disconnect the 2 clips, and remove the V–bank cover.

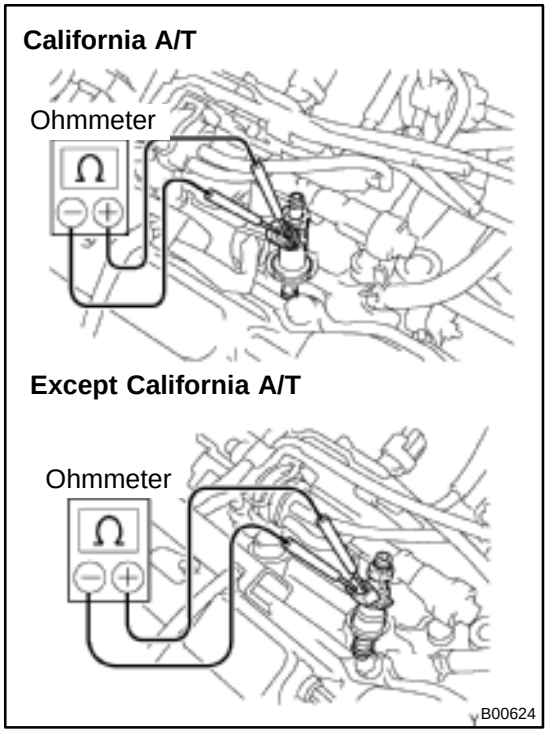


2. INSPECT INJECTOR OPERATION

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 operating vibration with your finger.

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



3. INSPECT INJECTOR RESISTANCE

(a) Disconnect the injector connector.
(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 connector.

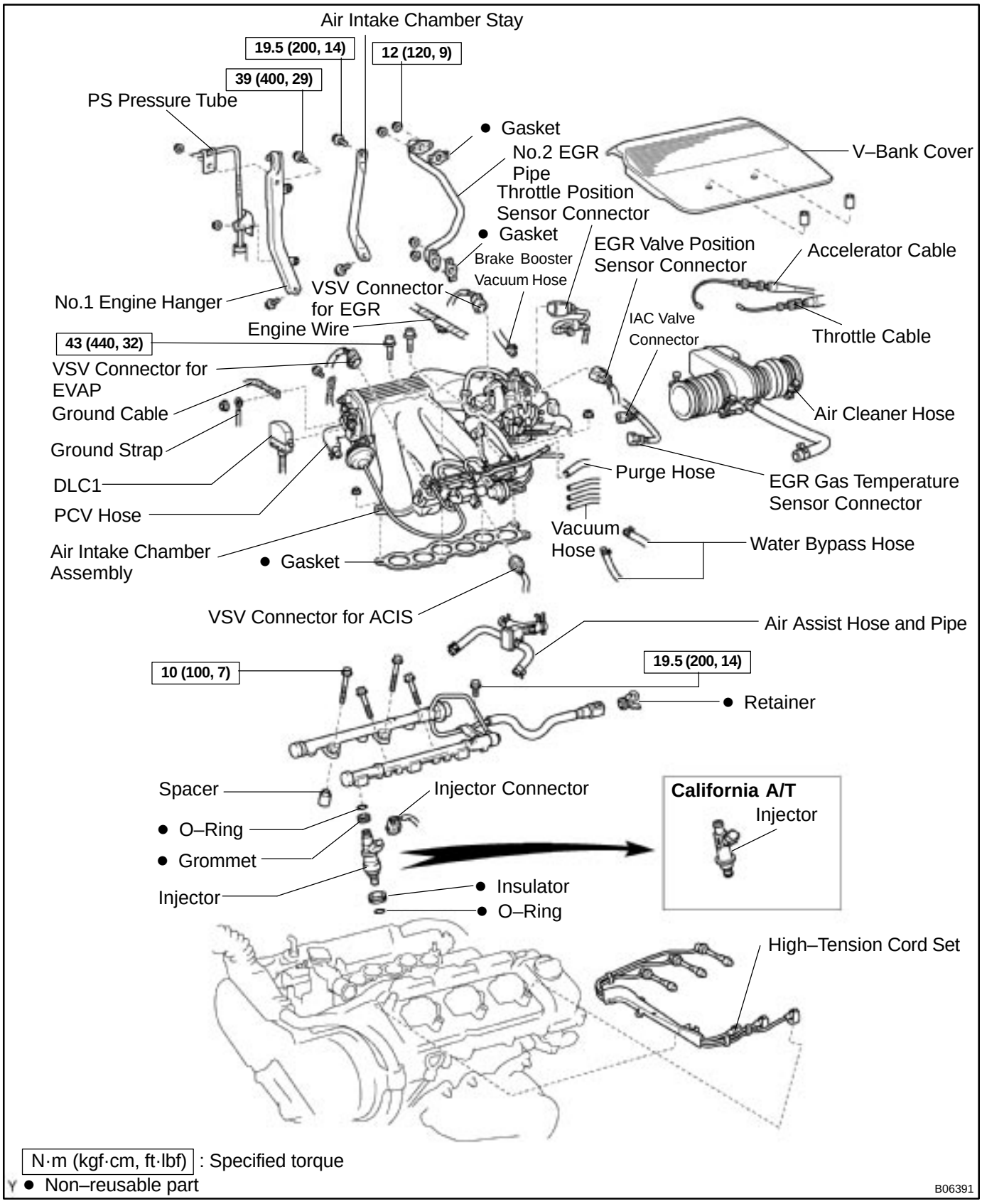
4. REINSTALL V–BANK COVER

HINT:

For fixing the V–bank cover, push on the cover until a ”click” is felt.

SF07J–03

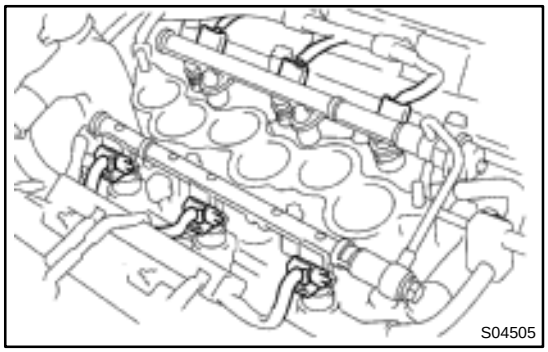
COMPONENTS



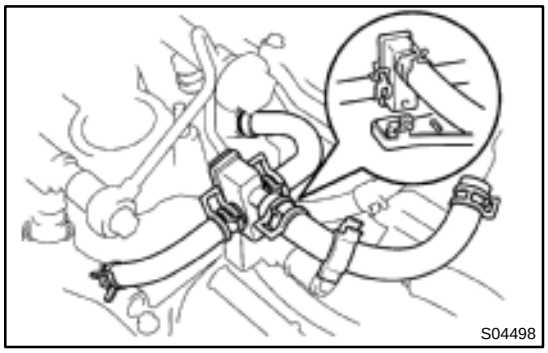
SF07K–04

REMOVAL

1. **REMOVE AIR CLEANER HOSE**
2. **REMOVE AIR INTAKE CHAMBER ASSEMBLY (See page EM–32)**



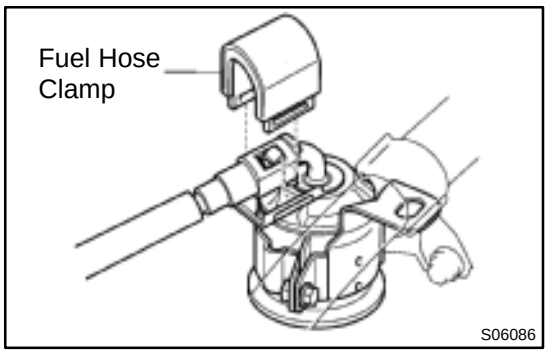
3. **DISCONNECT INJECTOR CONNECTORS**



4. **REMOVE AIR ASSIST HOSES AND PIPE**

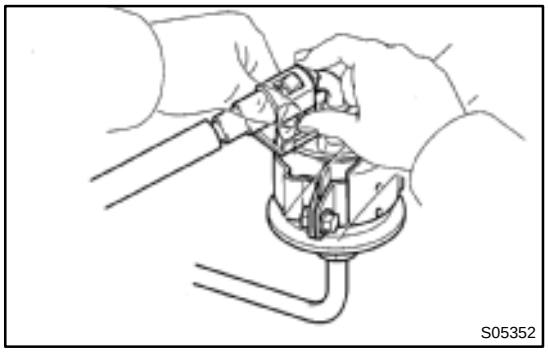
(a) Disconnect the air assist pipe from the bracket on the No.1 fuel pipe.

(b) Remove the air assist hoses from the intake manifold.



5. **DISCONNECT NO.1 FUEL PIPE**

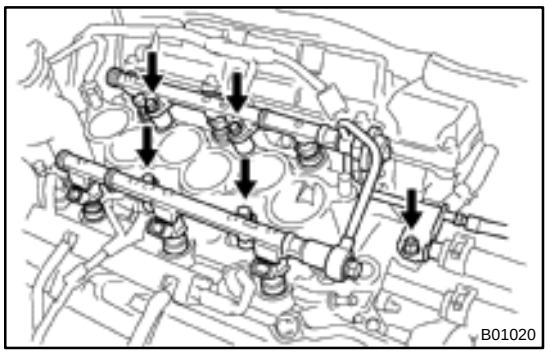
(a) Remove the fuel hose clamp.



(b) Disconnect the No.1 fuel pipe (fuel tube connector) from the fuel filter outlet.

CAUTION:

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



6. REMOVE DELIVERY PIPES AND INJECTORS

NOTICE:

- **Be careful not to drop the injectors when removing the delivery pipes.**
- **Pay attention to put any hung load on the injector to and from the side direction.**

(a) Remove the 5 bolts and delivery pipes together with the 6 injectors and No.1 fuel pipe.

(b) Remove the 4 spacers from the intake manifold.

(c) Pull out the 6 injectors from the delivery pipes.

(d) Remove the 2 O–rings and 2 grommets from each injector.

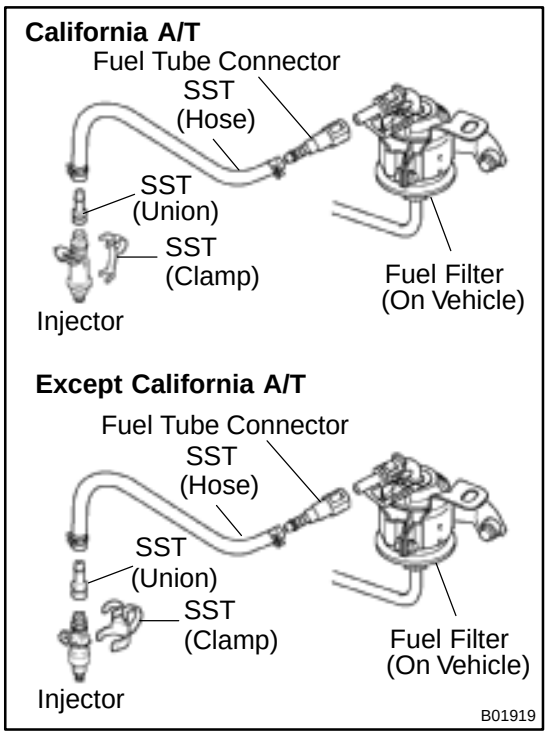
SF07L–04

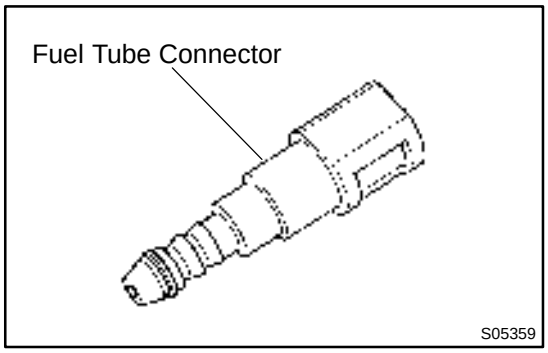
INSPECTION

1. INSPECT INJECTOR INJECTION

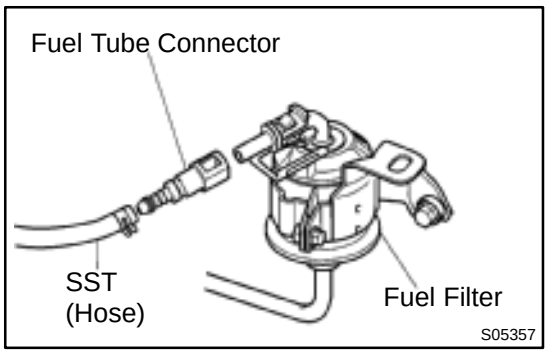
CAUTION:

Keep injector clear of sparks during the test.





(a) Purchase the new No.1 fuel pipe and take out the fuel tube connector from its pipe.
Part No. 23801–20041



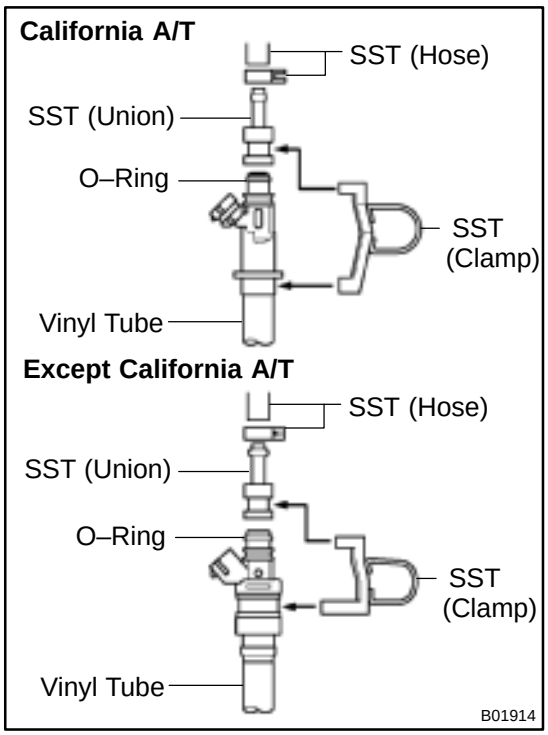
(b) Connect SST (hose) and fuel tube connector to the fuel filter outlet.
SST 09268–41047

CAUTION:

Preform connecting operations of the fuel tube connector (quick type) after observing the precautions.
(See page SF–1)

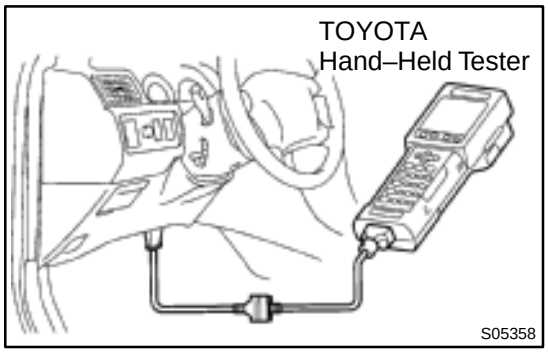
HINT:

Use the vehicle fuel filter.



(c) Install the grommet and O–Ring to the injector.
(d) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp).
SST 09268–41047
(e) Put the injector into a graduated cylinder.

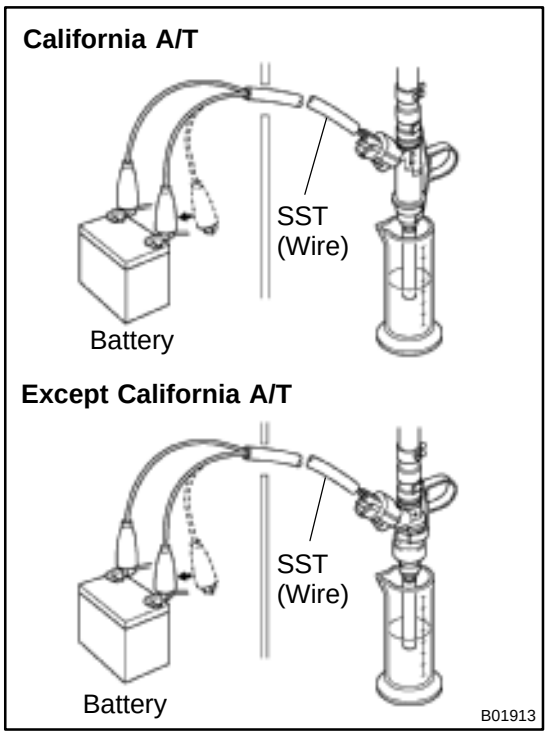
HINT:
Install a suitable vinyl hose onto the injector to prevent gasoline from splashing out.



(f) Connect a TOYOTA hand–held tester to the DLC3.
(g) Turn the ignition switch ON and push the TOYOTA hand–held tester main switch ON.

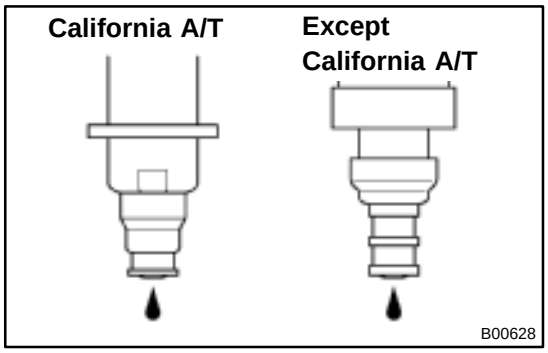
NOTICE:
Do not start the engine.

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



(k) 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
Volume:
60 – 73 cm^3 (3.4 – 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 minutes

(b) Turn the ignition switch OFF.

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

(d) Remove the SST and fuel tube connector.
SST 09268–41047, 09842–30070

CAUTION:
- **Perform disconnecting operations of the fuel tube connector (quick type) after observing the precautions. (See page SF–1)**
- **As there is retained pressure in the fuel pipe line, prevent it from splashing inside the engine compartment.**

(e) Disconnect the TOYOTA hand–held tester from the DLC3.

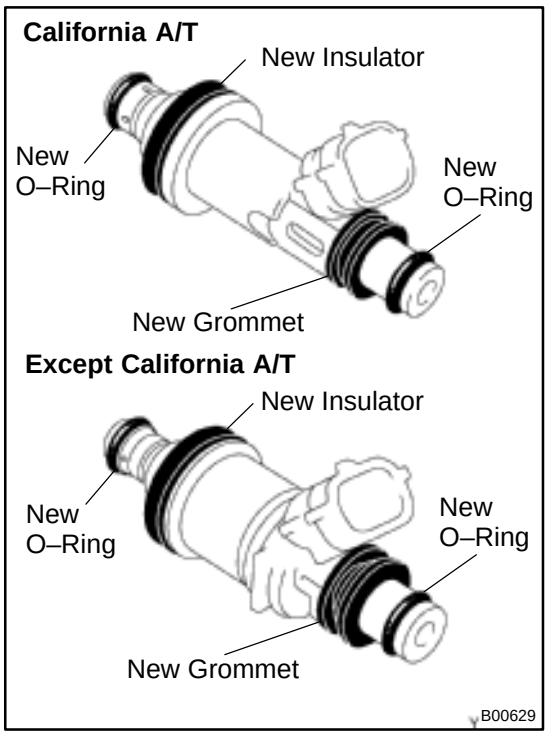
SF07M–04

INSTALLATION

1. INSTALL INJECTORS AND DELIVERY PIPES

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

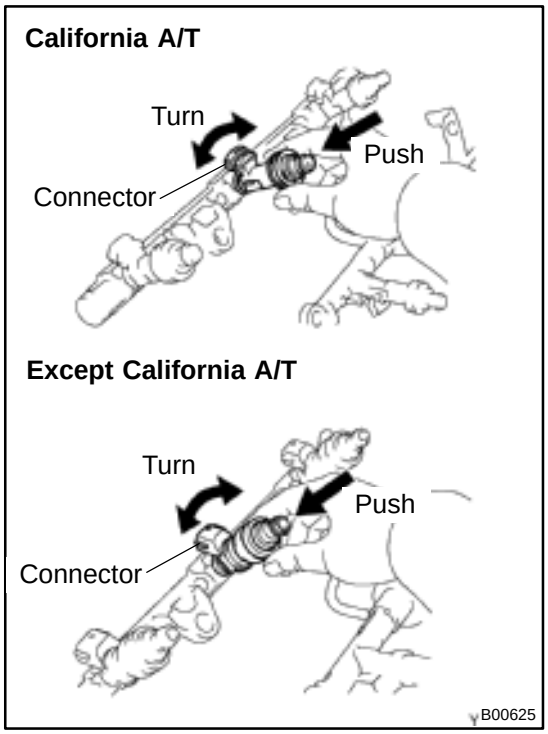
(b) Apply a light coat of spindle oil or gasoline to 2 new O–rings and install them to each injector.



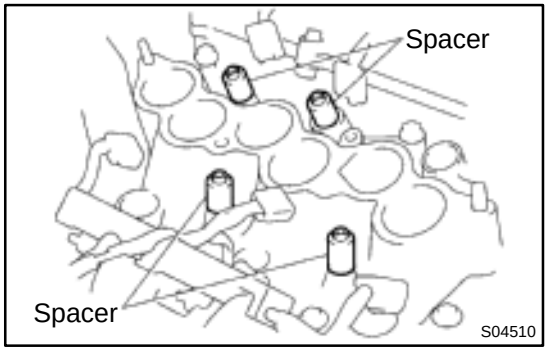
(c) Apply a light coat of spindle oil or gasoline on the place where a delivery pipe touches an O–ring of the injector.

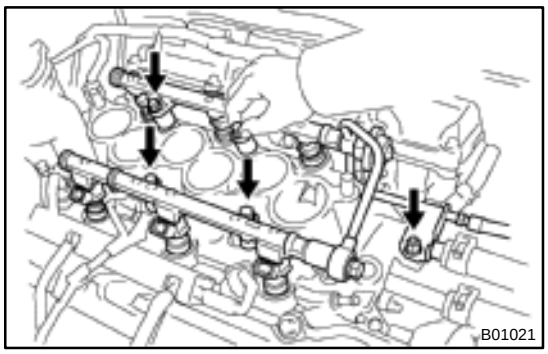
(d) While turning the injector clockwise and counterclockwise, push it to the delivery pipes. Install the 6 injectors.

(e) Position the injector connector outward.

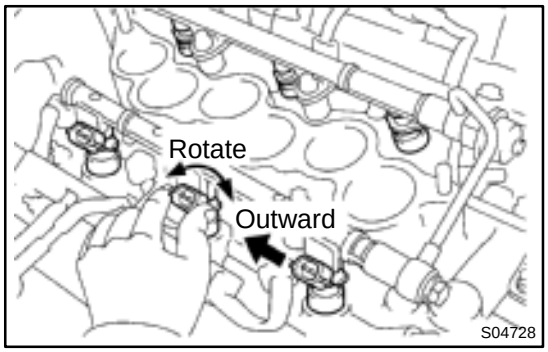


(f) Place the 4 spacers in position on the intake manifold.





(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 delivery pipes and fuel pipe together with the 6 injectors in position on the intake manifold.
(i) Temporarily install the 4 bolts holding the delivery pipes to the intake manifold.
(j) Temporarily install the bolt holding the No.1 fuel pipe to the intake manifold.

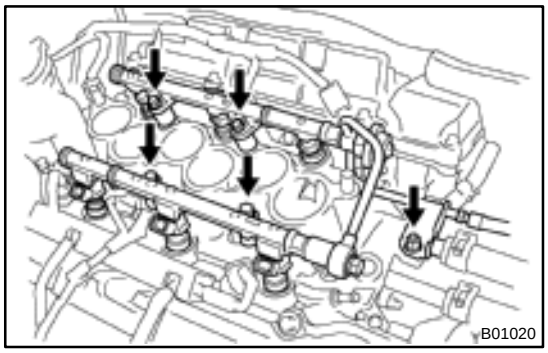


(k) Check that the injectors rotate smoothly.

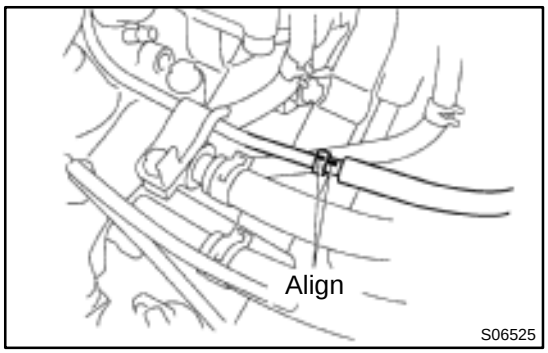
HINT:

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

(l) Position the injector connector outward.

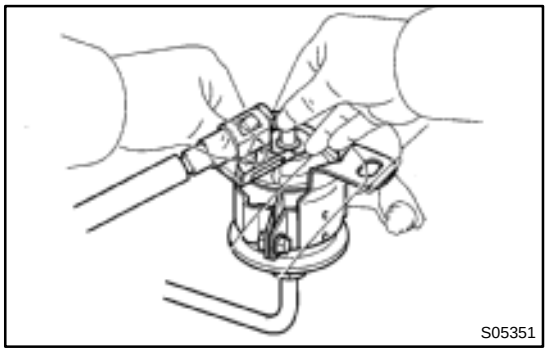


(m) Tighten the 4 bolts holding the delivery pipes to the intake manifold.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
(n) Tighten the bolt holding the No.1 fuel pipe to the intake manifold.
Torque: 19.5 N·m (200 kgf·cm, 14 ft·lbf)



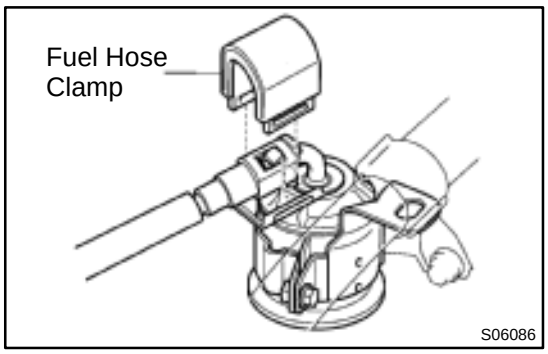
2. CONNECT NO.1 FUEL PIPE

(a) Align the alignment marks (white paint) on the No.1 fuel pipe.

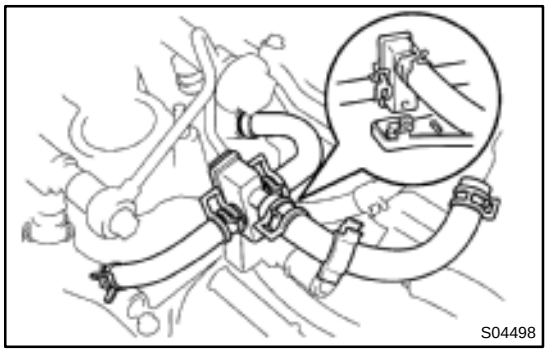


(b) Connect the No.1 fuel pipe (fuel tube connector) to the fuel filter.

CAUTION:
Perform connecting operations of the fuel tube connector (quick type) after observing the precaution.
(See page SF–1)



(c) Surely install the fuel hose clamp to the fuel filter with ”click” sound.
(d) After installing the clamp, check that the clamp is fixed by pulling up the clamp.



3. INSTALL AIR ASSIST HOSES AND PIPE
(a) Connect the air assist hoses to the intake manifold.
(b) Install the air assist pipe to the bracket on the No.1 fuel pipe.
4. CONNECT INJECTOR CONNECTORS
5. INSTALL AIR INTAKE CHAMBER ASSEMBLY (See page EM–57)
6. INSTALL AIR CLEANER HOSE
7. CHECK FOR FUEL LEAKS

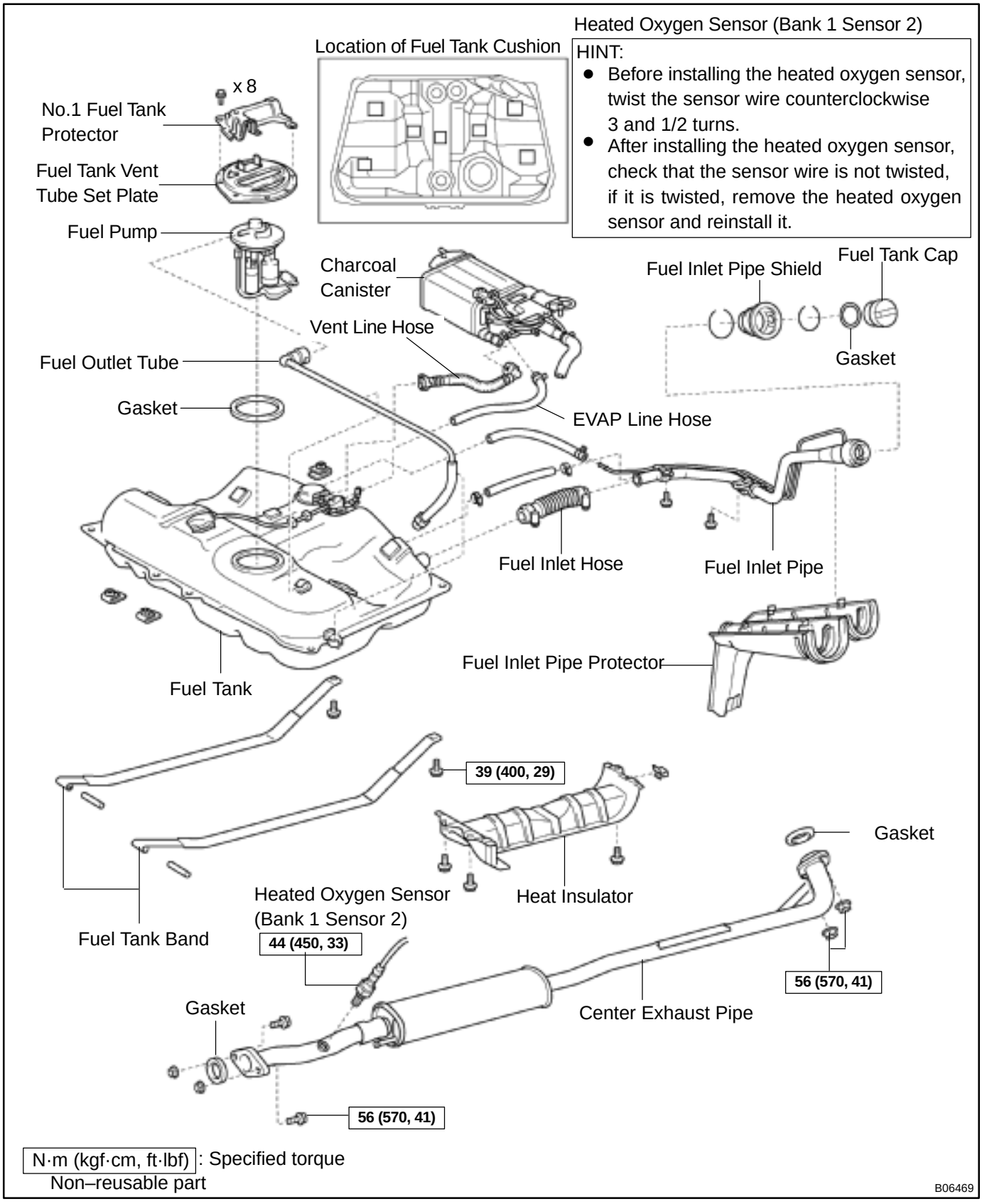
FUEL TANK AND LINE

SF07N–03

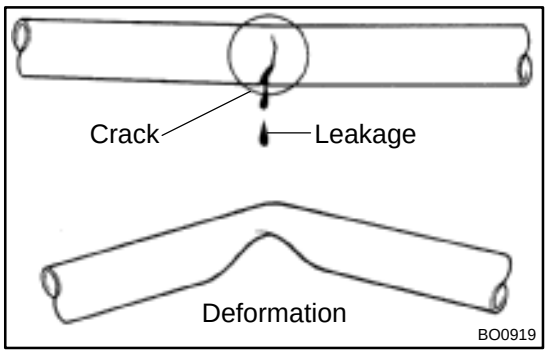
COMPONENTS

CAUTION:

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



SF07O–03

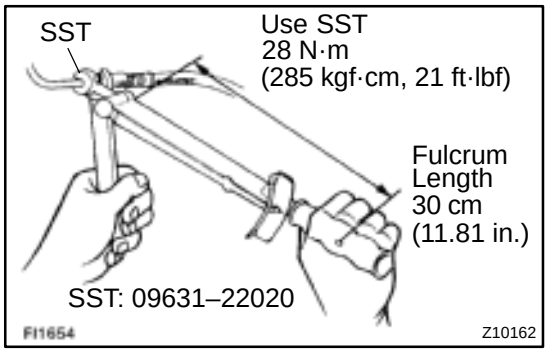


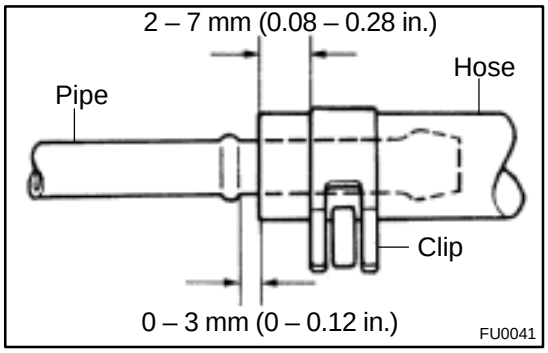
INSPECTION

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.

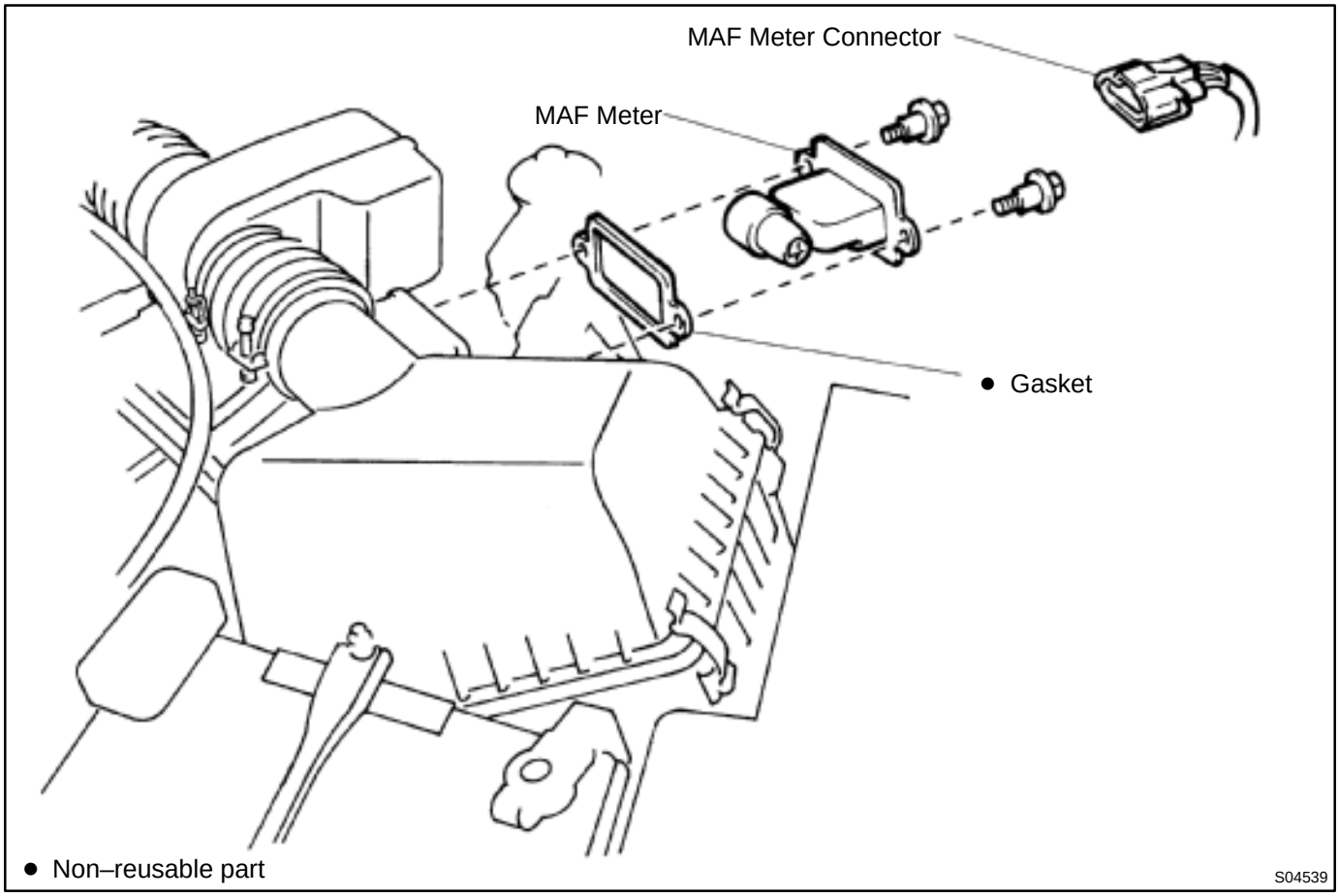




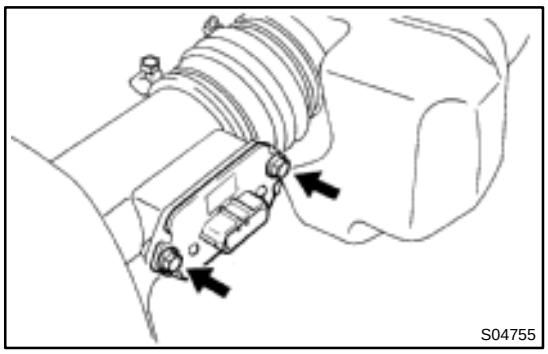
MASS AIR FLOW (MAF) METER

COMPONENTS

SF07P–04



SF07Q–03



REMOVAL

REMOVE MAF METER

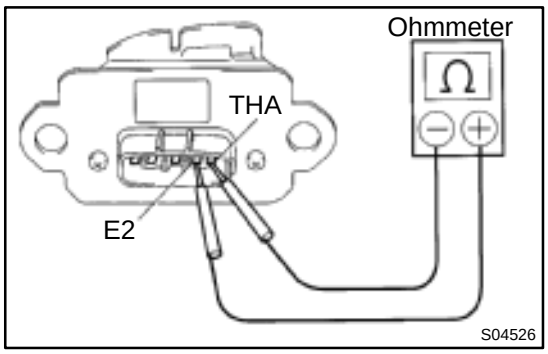
(a) Disconnect the MAF meter connector.

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

HINT:

At the time of installation, please refer to the following items. Install a new gasket to the MAF meter.

SF07R–03



INSPECTION

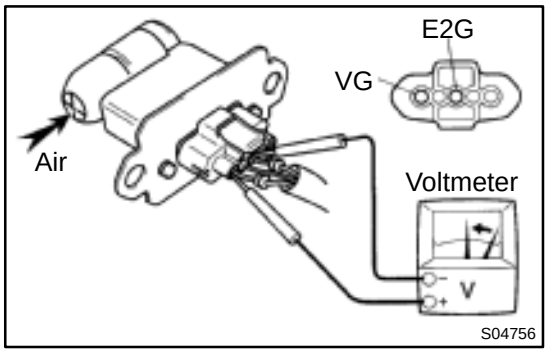
1. INSPECT MAF METER RESISTANCE

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

Resistance:

Terminals	Resistance	Temperature
THA – E2	14.6 – 17.8 kΩ	–20˚C (–4˚F)
THA – E2	2.21 – 2.69 kΩ	20˚C (68˚F)
THA – E2	0.29 – 0.35 kΩ	60˚C (140˚F)

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



2. INSPECT MAF METER OPERATION

(a) Connect the MAF meter connector.
(b) Turn the ignition switch ON.
(c) Using a voltmeter, connect the positive (+) tester probe to terminal VG, and negative (–) tester probe to terminal E2G.
(d) Blow air into the MAF meter, and check that the voltage fluctuates.

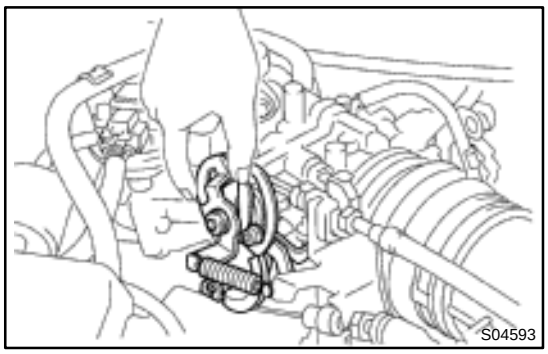
If operation is not as specified, replace the MAF meter.

(e) Turn the ignition switch OFF.
(f) Disconnect the MAF meter connector.

SF07S–01

INSTALLATION

Installation is in the reverse order of removal. (See page SF–34)



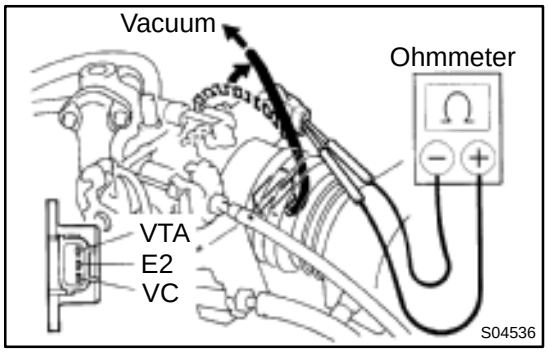
THROTTLE BODY

SF07T–03

ON–VEHICLE INSPECTION

1. INSPECT THROTTLE BODY

Check that the throttle linkage moves smoothly.



2. INSPECT THROTTLE POSITION SENSOR

(a) Disconnect the sensor connector.
(b) Disconnect the vacuum hose from the throttle body.
(c) Apply vacuum to the throttle opener.
(d) Using an ohmmeter, measure the resistance between each terminal.

Resistance:

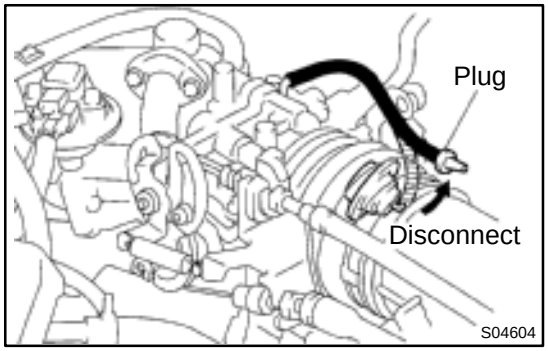
Throttle valve condition	Between terminals	Resistance
Fully closed	VTA – E2	0.2 – 6.3 kΩ
Fully open	VTA – E2	2.0 – 10.2 kΩ
–	VC – E2	2.5 – 5.9 kΩ

(e) Reconnect the vacuum hose to the throttle body.
(f) Reconnect the sensor connector.

3. INSPECT THROTTLE OPENER

(a) Allow the engine to warm up to normal operating temperature.
(b) Check idle speed.

Idle speed: 700 ± 50 rpm



(c) Disconnect the vacuum hose from the throttle opener, and plug the hose end.
(d) Check the throttle opener setting speed.

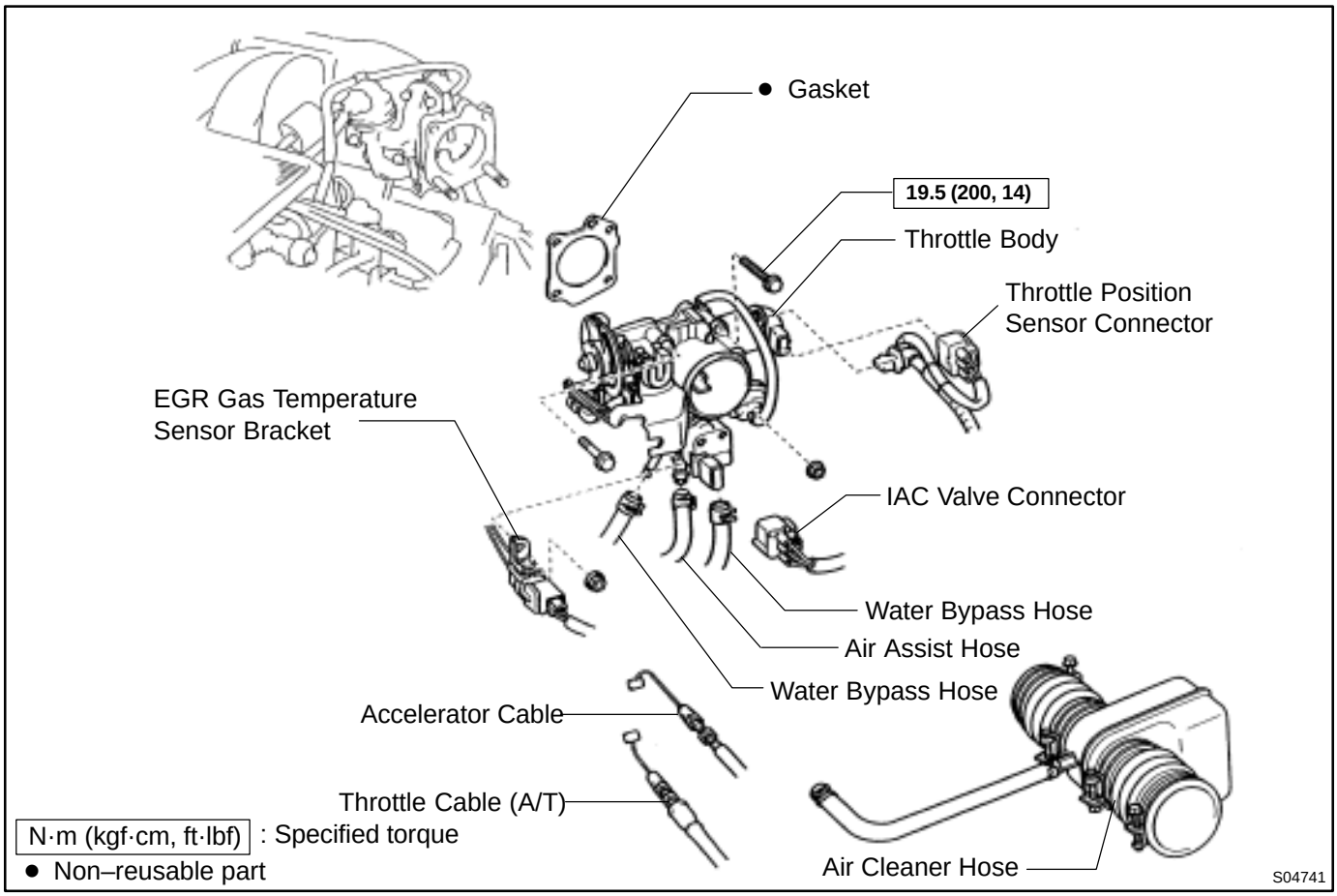
Throttle opener setting speed: 900 – 1,950 rpm

If the throttle opener setting is not as specified, replace the throttle body.

(e) Stop the engine.
(f) Reconnect the vacuum hose to the throttle opener.
(g) Start the engine and check that the idle speed returns to the correct speed.

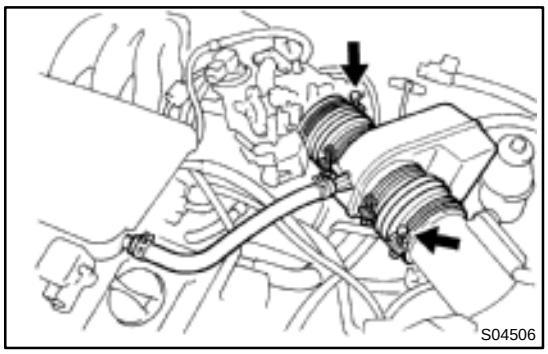
SF07U–03

COMPONENTS



SF07V–03

REMOVAL



1. DRAIN ENGINE COOLANT

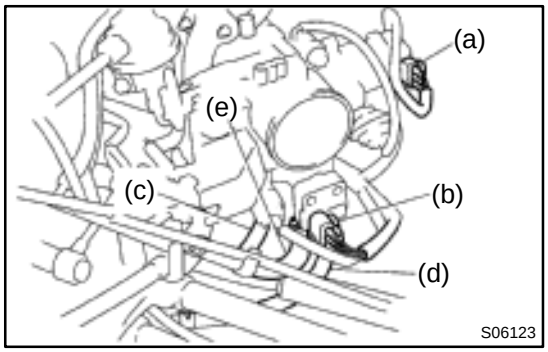
2. DISCONNECT ACCELERATOR CABLE

3. A/T:
DISCONNECT THROTTLE CABLE

4. REMOVE AIR CLEANER HOSE

(a) Disconnect the PCV hose.

(b) Loosen the 2 hose clamps, and remove the air cleaner hose.



5. REMOVE THROTTLE BODY

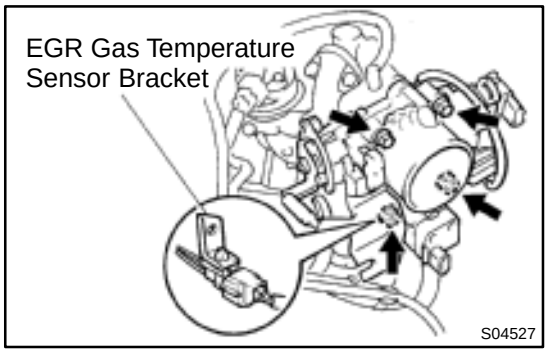
(a) Disconnect the throttle position sensor connector.

(b) Disconnect the IAC valve connector.

(c) Disconnect the water bypass hose (from the intake manifold).

(d) Disconnect the water bypass hose (from the water inlet housing).

(e) Disconnect the air assist hose.



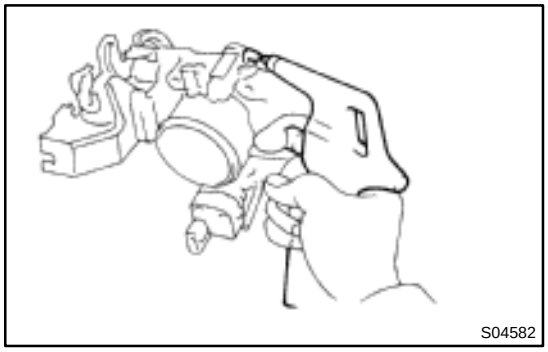
(f) Remove the 2 bolts, 2 nuts, EGR gas temperature sensor bracket, throttle body and gasket.

HINT:

At the time of installation, please refer to the following items. Place a new gasket on the air intake chamber.

Torque: 19.5 N·m (200 kgf·cm, 14 ft·lbf)

SF07W–03



INSPECTION

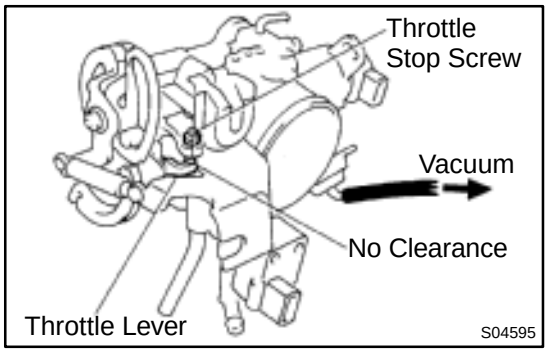
1. CLEAN THROTTLE BODY

(a) Using a soft brush and carburetor cleaner, clean the cast parts.

(b) Using compressed air, clean all the passages and apertures.

NOTICE:

To prevent deterioration, do not clean the throttle position sensor and IAC valve.



2. INSPECT THROTTLE VALVE

(a) Apply vacuum to the throttle opener.

(b) Check that there is no clearance between the throttle stop screw and throttle lever when the throttle valve is fully closed.

3. INSPECT THROTTLE POSITION SENSOR

(See page SF–37)

SF07X–01

INSTALLATION

Installation is in the reverse order of removal. (See page SF–39)

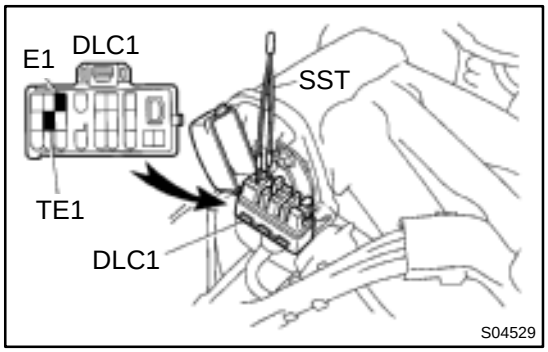
IDLE AIR CONTROL (IAC) VALVE

SF07Y–03

ON–VEHICLE INSPECTION

1. INSPECT IAC VALVE OPERATION

(a) Initial conditions:
- Engine at normal operating temperature
- Idle speed checked correctly
- Transmission in neutral position
- A/C switch OFF

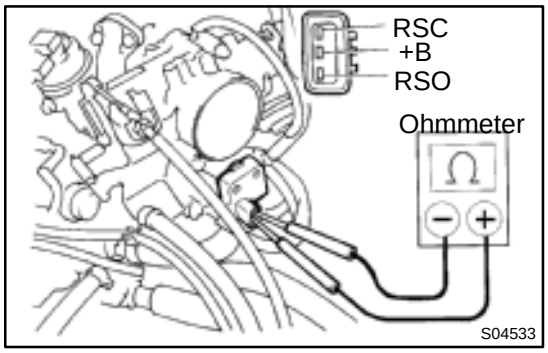


(b) Using SST, connect terminals TE1 and E1 of the DLC1.
SST 09843–18020

(c) After engine speed is kept at approx. 1,000 rpm for 5 seconds, check that it returns to idle speed.

If the engine speed operation is not as specified, check the IAC valve, wiring and ECM.

(d) Remove the SST from the DLC1.
SST 09843–18020



2. INSPECT IAC VALVE RESISTANCE

NOTICE:

"Cold" and "Hot" in the following sentences express the temperature of the coils themselves. "Cold" is from –10˚C (14˚F) to 50˚C (122˚F) and "Hot" is from 50˚C (122˚F) to 100˚C (212˚F).

(a) Disconnect the IAC valve connector.

(b) Using an ohmmeter, measure the resistance between terminal +B and other terminals (RSC, RSO).
Resistance:

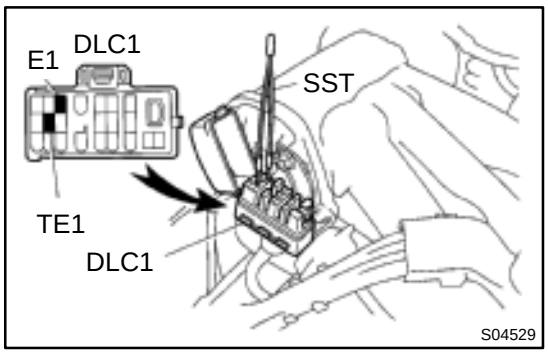
Cold	17.0 – 25.0 Ω
Hot	21.5 – 29.5 Ω

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

(c) Reconnect the IAC valve connector.

3. INSPECT AIR ASSIST SYSTEM

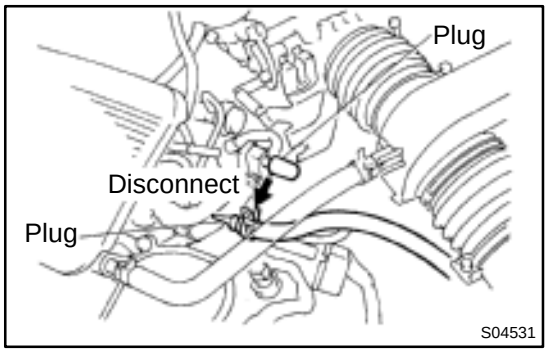
(a) Initial conditions:
- Engine at normal operating temperature
- Idle speed checked correctly
- Transmission in neutral position
- A/C switch OFF



(b) Using SST, connect terminals TE1 and E1 of the DLC1.
SST 09843–18020

(c) After engine speed is kept at 900 – 1,300 rpm for 10 seconds, check that it returns to idle speed.

(d) Stop the engine.



(e) Disconnect the air assist hose from the air pipe, and block off the IAC valve exit and the entry to the pipe.

(f) Start the engine and check that the idle speed reaches 500 rpm or below (the engine may stall).

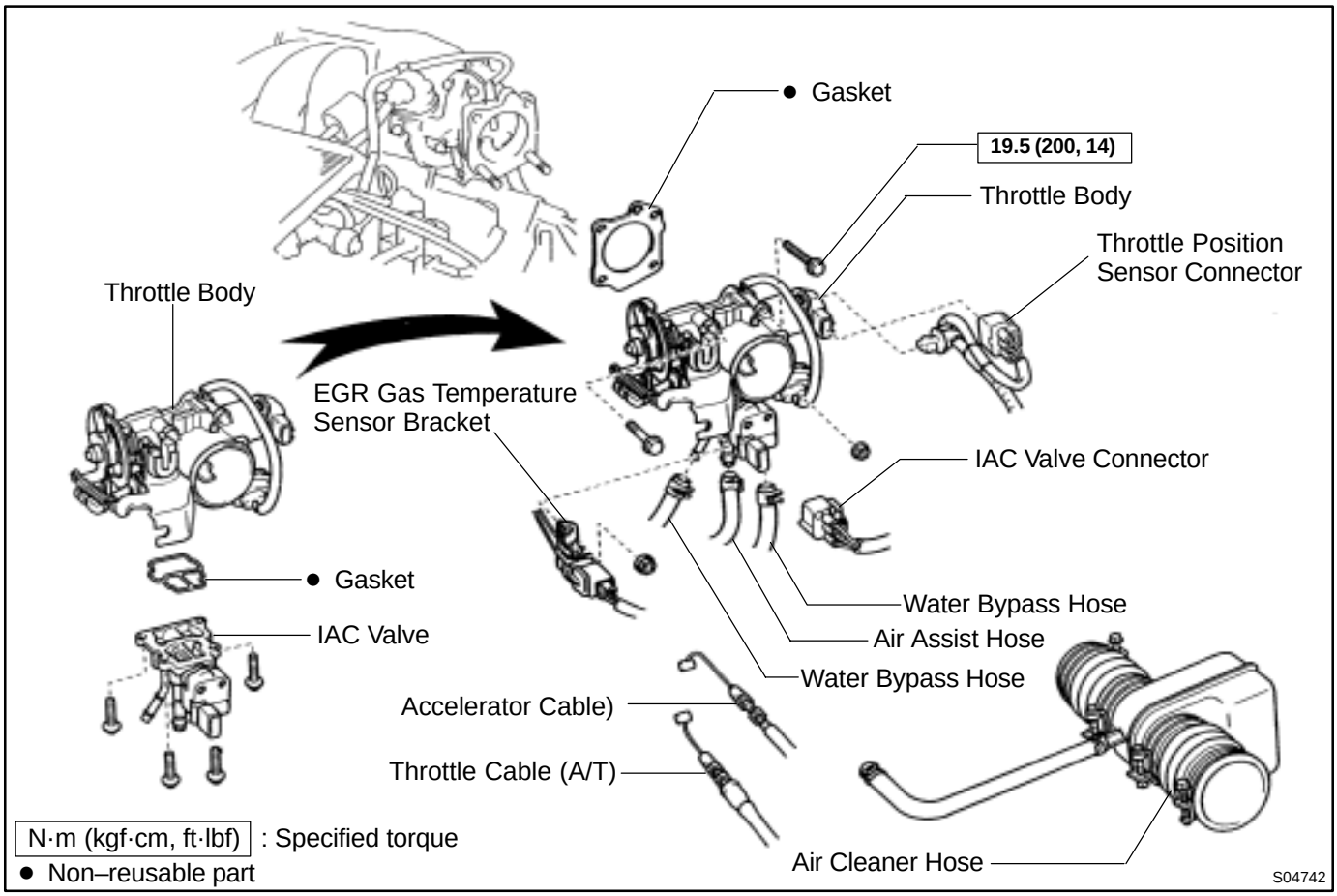
If the idle does not reach 500 rpm or below, check for a leak between the air assist hoses, pipe and injectors.

(g) Remove the SST from the DLC1.
SST 09843–18020

(h) Reconnect the air assist hose to the air pipe.

SF07Z–03

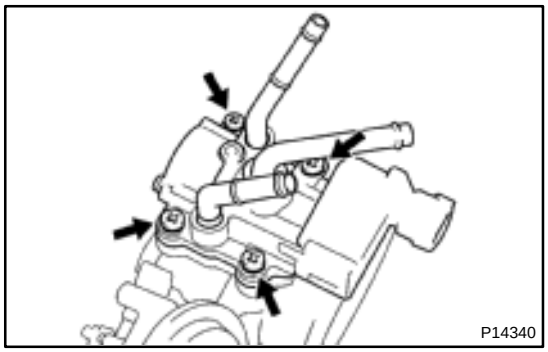
COMPONENTS



SF080–03

REMOVAL

1. REMOVE THROTTLE BODY (See page SF–39)



2. REMOVE IAC VALVE

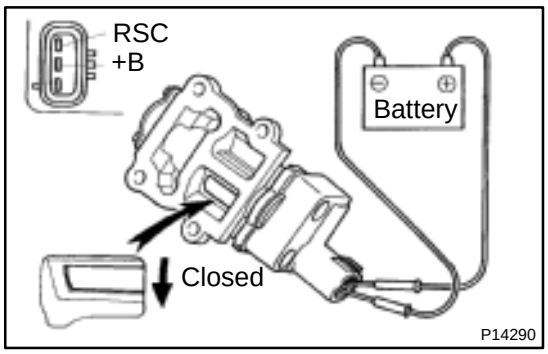
Remove the 4 screws, IAC valve and gasket.

HINT:

At the time of installation, please refer to the following items.

Place a new gasket on the throttle body.

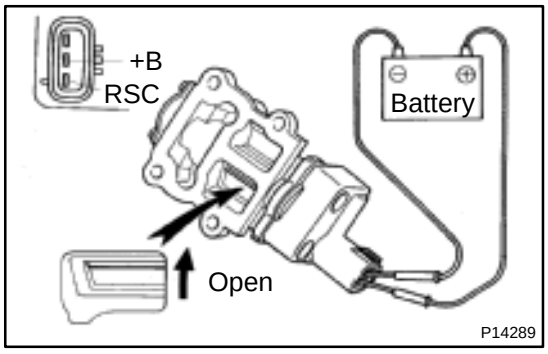
SF081–03



INSPECTION

INSPECT IAC VALVE OPERATION

(a) Connect the positive (+) lead from the battery to terminal +B and negative (–) lead to terminal RSC, and check that the valve is closed.



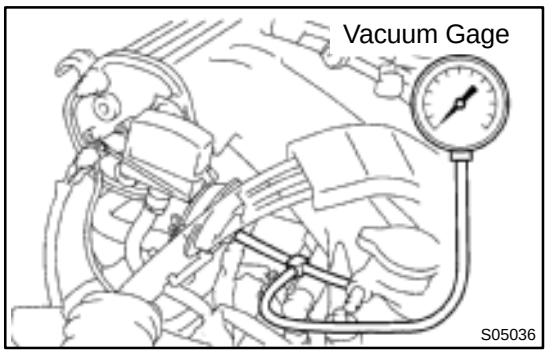
(b) Connect the positive (+) lead from the battery to terminal +B and negative (–) lead to terminal RSO, and check that the valve is open.

If operation is not as specified, replace the IAC valve.

SF082–01

INSTALLATION

Installation is in the reverse order of removal. (See page SF–45)



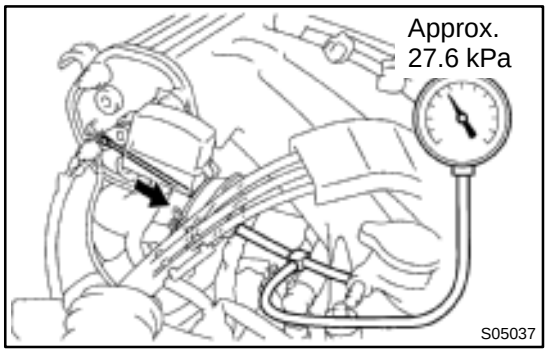
ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS)

SF083–03

ON–VEHICLE INSPECTION

INSPECT INTAKE AIR CONTROL VALVE

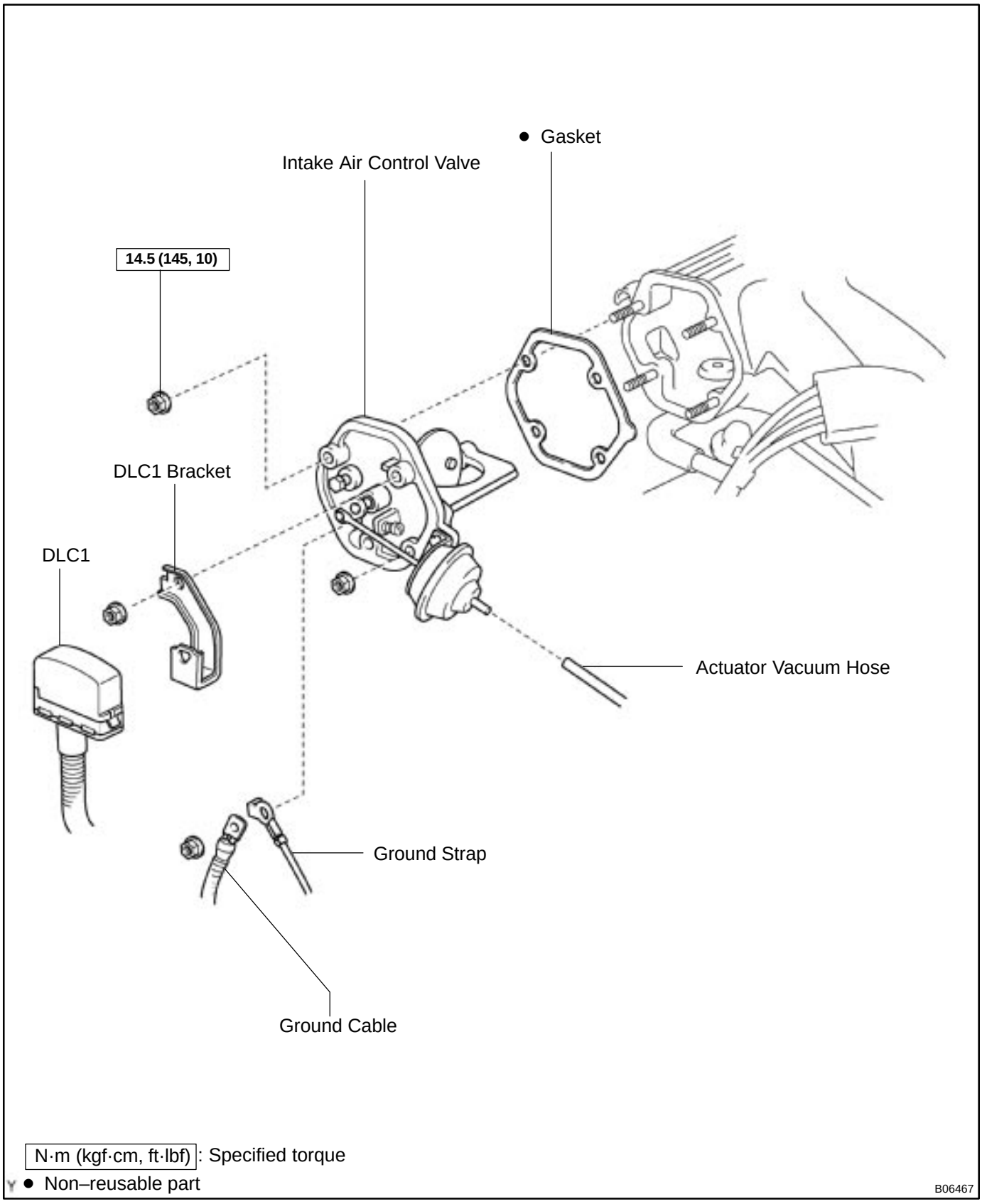
(a) Using a 3–way connector, connect vacuum gauge to the actuator hose.
(b) Start the engine.
(c) While the engine is idling, check that the vacuum gauge needle does not move.



(d) Rapidly depress the accelerator pedal to fully open position and check that the vacuum gauge needle momentarily fluctuates up to approx. 26.7 kPa (200 mmHg, 7.9 in.Hg). (The actuator rod is pulled out.)

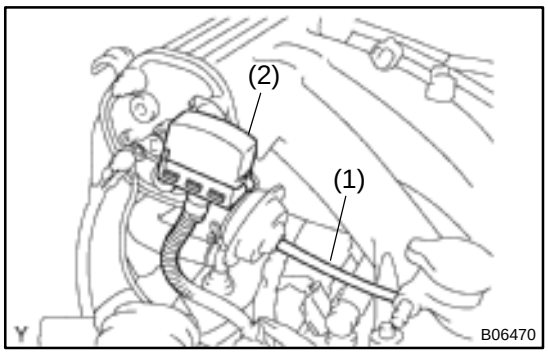
SF084–03

COMPONENTS



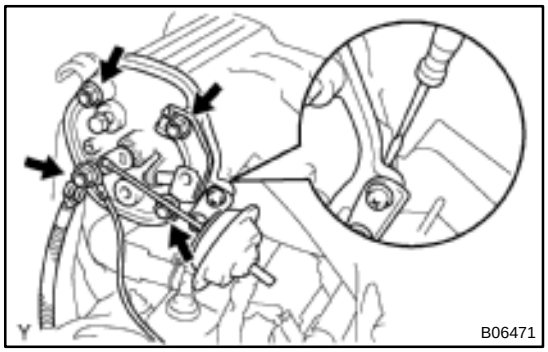
SF085–02

REMOVAL



1. DISCONNECT ACTUATOR VACUUM HOSE

2. DISCONNECT DLC1 FROM DLC1 BRACKET



3. REMOVE INTAKE AIR CONTROL VALVE

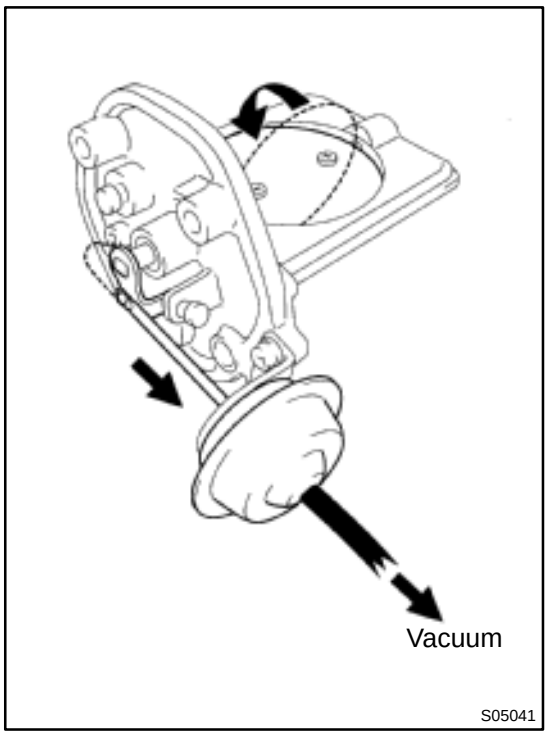
(a) Remove the 4 nuts and DLC1 bracket, and disconnect the ground strap and cable.

(b) Remove the intake air control valve by prying a screwdriver between the intake air control valve and air intake chamber.

(c) Remove the gasket.

SF086–03

INSPECTION

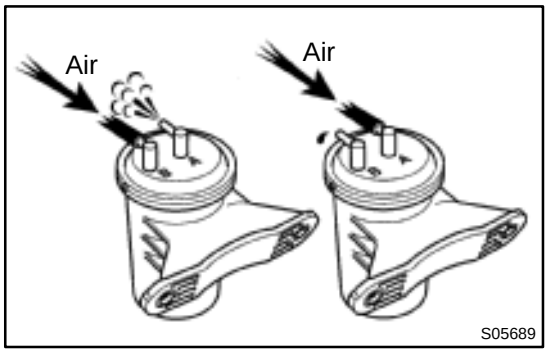


1. INSPECT INTAKE AIR CONTROL VALVE

(a) With 26.7 kPa (200 mmHg, 7.9 in.Hg) of vacuum applied to the actuator, check that the actuator rod moves.

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

If the operation is not as specified, replace the intake air control valve.

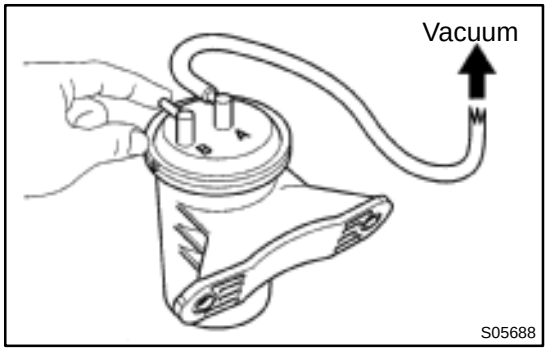


2. INSPECT VACUUM TANK

LOCATION: The LH side member under the battery tray.

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

(b) Check that air does not flow from port A to port B.



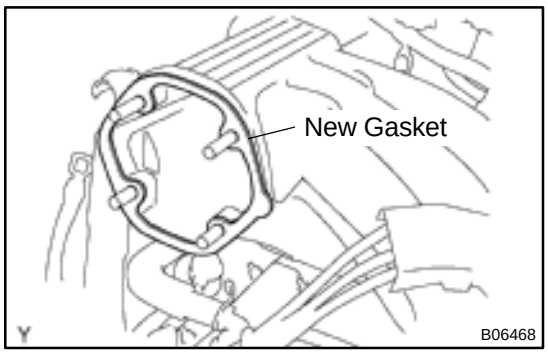
(c) Plug port B with your finger, and apply 26.7 kPa (200 mmHg, 7.9 in.Hg) of vacuum to port A, and check that there is no change is vacuum after one minute.

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

3. INSPECT VSV (See page SF–60)

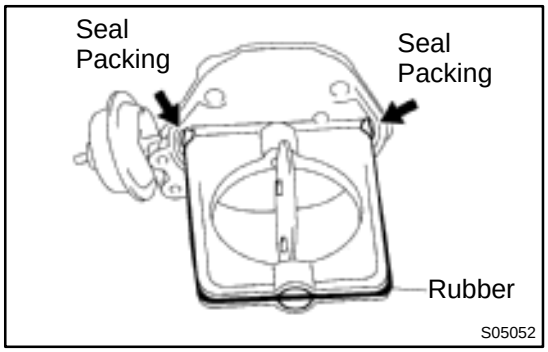
SF087–03

INSTALLATION



1. INSTALL INTAKE AIR CONTROL VALVE

(a) Install a new gasket to the air intake chamber.



(b) Apply a light coat of engine oil to the rubber portions.

(c) Apply seal packing to the positions of the intake air control valve shown in the illustration.

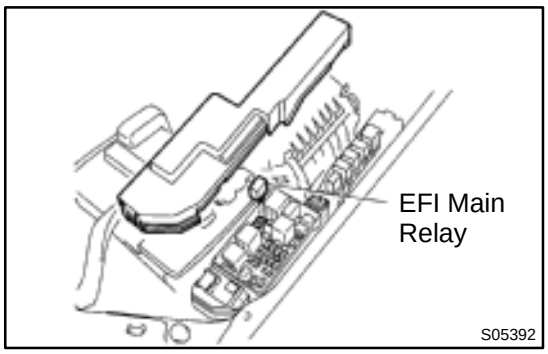
Seal packing: Part No. 08826–00080 or equivalent

(d) Install the intake air control valve, DLC1 bracket, ground strap and cable with the 4 nuts.

Torque: 14.5 N·m (145 kgf·cm, 10 ft·lbf)

2. CONNECT DLC1

3. CONNECT ACTUATOR VACUUM HOSE

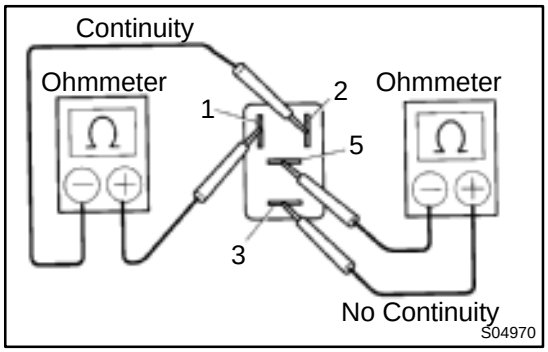


EFI MAIN RELAY

SF088–03

INSPECTION

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



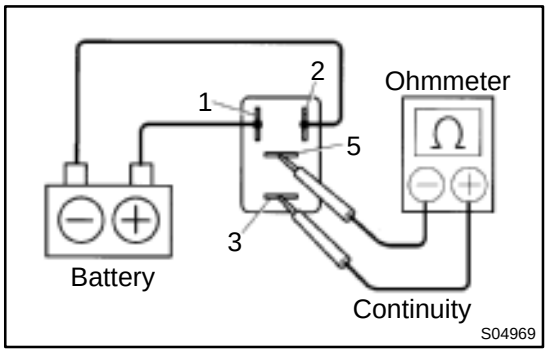
3. **INSPECT EFI MAIN RELAY CONTINUITY**

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

If there is no continuity, replace the relay.

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

If there is continuity, replace the relay.



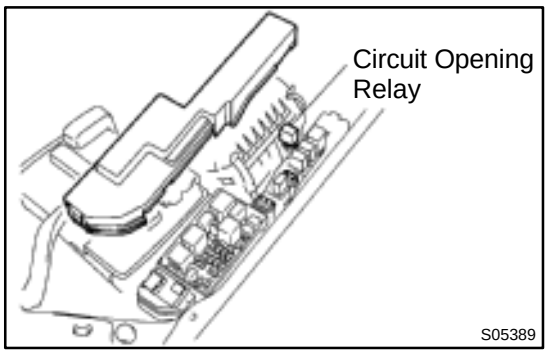
4. **INSPECT EFI MAIN RELAY OPERATION**

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

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

If there is no continuity, replace the relay.

5. **REINSTALL EFI MAIN RELAY**
6. **REINSTALL RELAY BOX COVER**



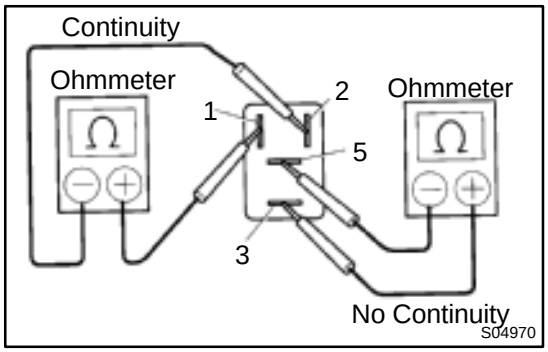
CIRCUIT OPENING RELAY

SF089–03

INSPECTION

1. REMOVE RELAY BOX COVER

2. REMOVE CIRCUIT OPENING RELAY (Marking: CIR OPN)



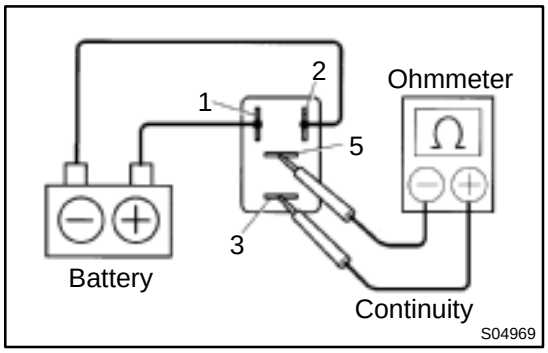
3. INSPECT CIRCUIT OPENING RELAY CONTINUITY

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

If there is no continuity, replace the relay.

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

If there is continuity, replace the relay.



4. INSPECT CIRCUIT OPENING RELAY OPERATION

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

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

If there is no continuity, replace the relay.

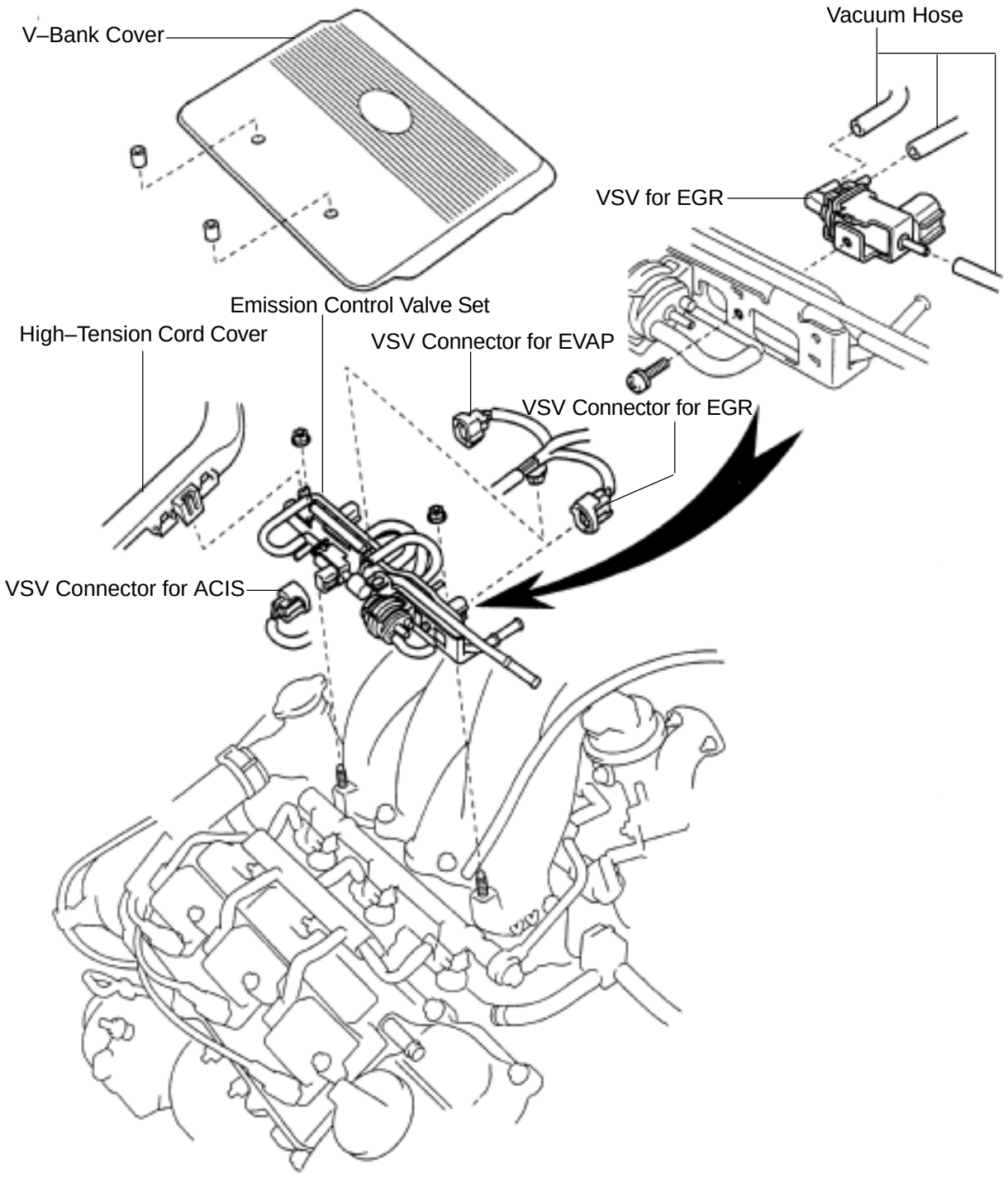
5. REINSTALL CIRCUIT OPENING RELAY

6. REINSTALL RELAY BOX COVER

VSV FOR EXHAUST GAS RECIRCULATION (EGR)

SF08A–03

COMPONENTS



SF08B–03

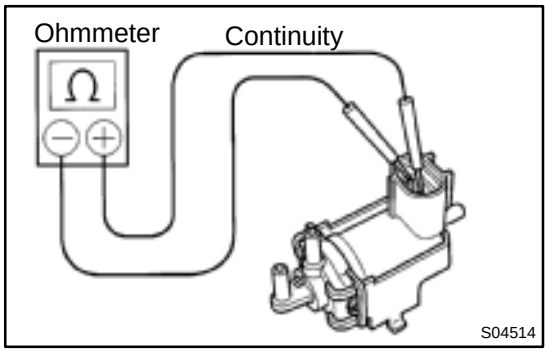
INSPECTION

1. REMOVE V–BANK COVER, HIGH–TENSION CORD COVER AND EMISSION CONTROL VALVE SET

2. REMOVE VSV

(a) Disconnect the 3 vacuum hoses from the VSV.

(b) Remove the screw and VSV.

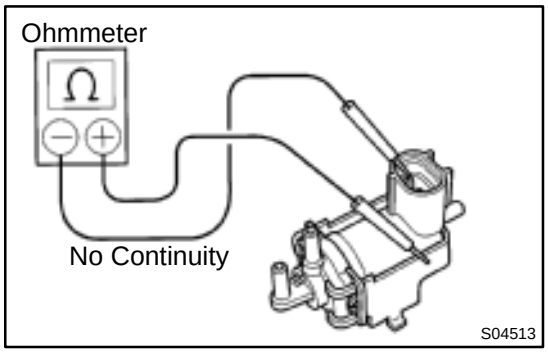


3. INSPECT VSV FOR OPEN CIRCUIT

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

Resistance: 27 – 33 Ω at 20˚C (68˚F)

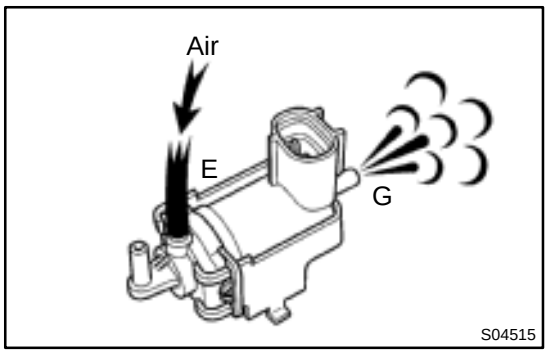
If there is no continuity, replace the VSV.



4. INSPECT VSV FOR GROUND

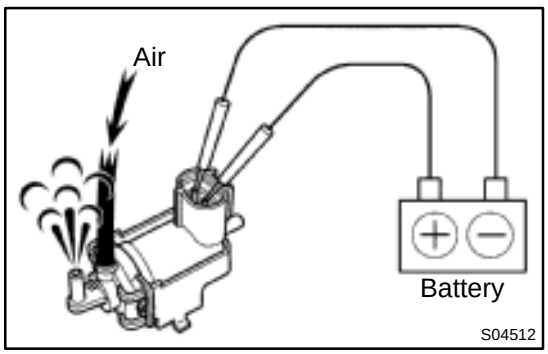
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



5. INSPECT VSV OPERATION

(a) Check that air flows from port E to port G.



(b) Apply battery positive voltage across the terminals.

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

If operation is not as specified, replace the VSV.

6. REINSTALL VSV

(a) Install the VSV with the screw.

(b) Connect the 3 vacuum hoses to the VSV.

7. REINSTALL EMISSION CONTROL VALVE SET

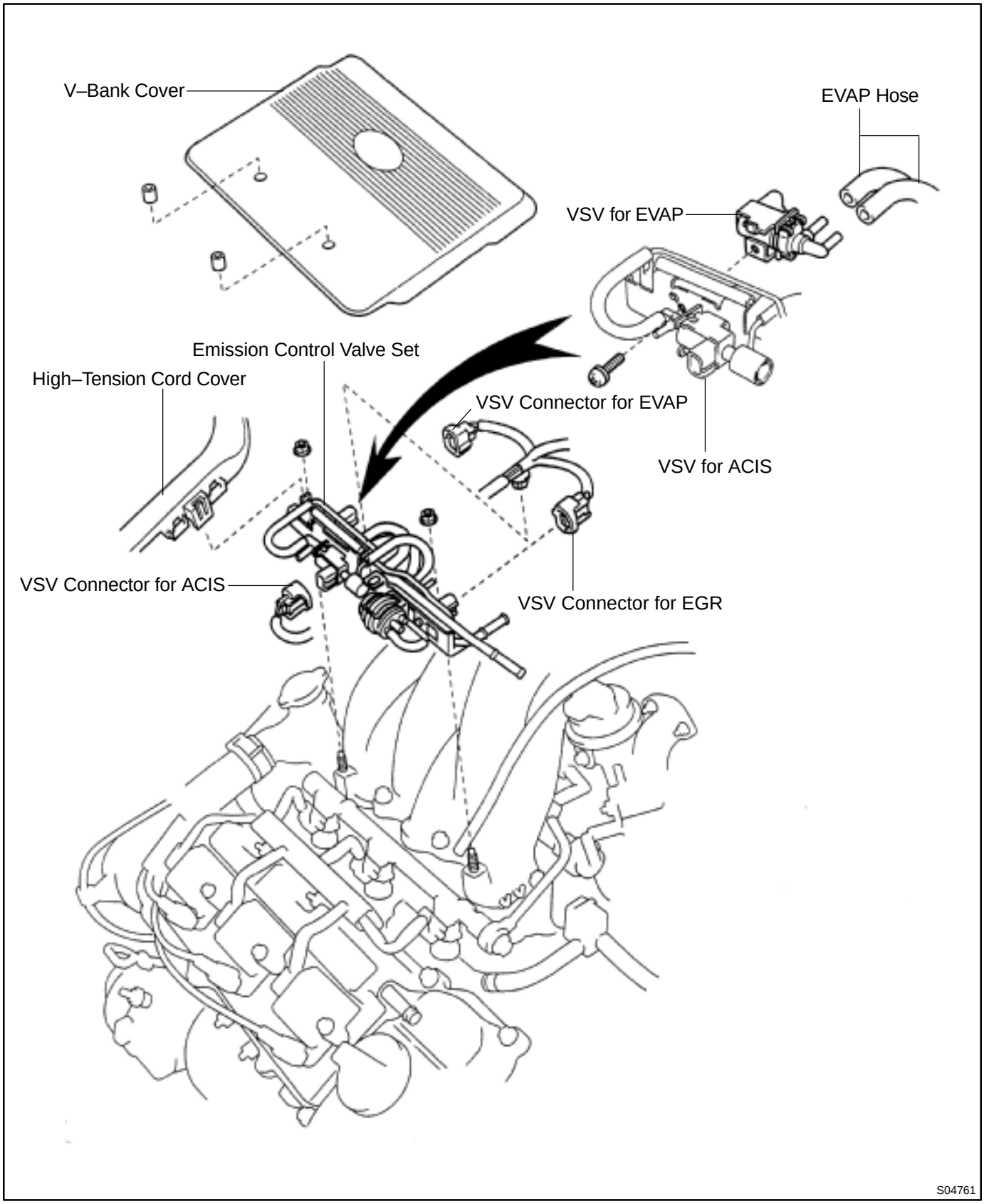
8. REINSTALL HIGH–TENSION CORD COVER

9. REINSTALL V–BANK COVER

VSV FOR EVAPORATIVE EMISSION (EVAP)

SF08C–03

COMPONENTS



SF08D–03

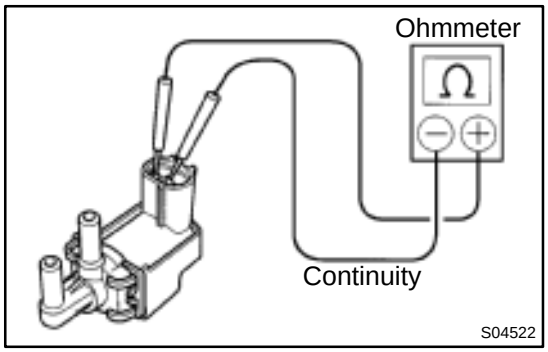
INSPECTION

1. REMOVE V–BANK COVER, HIGH–TENSION CORD COVER AND EMISSION CONTROL VALVE SET

2. REMOVE VSV

(a) Disconnect the 2 EVAP hoses from the VSV.

(b) Remove the screw and VSV.

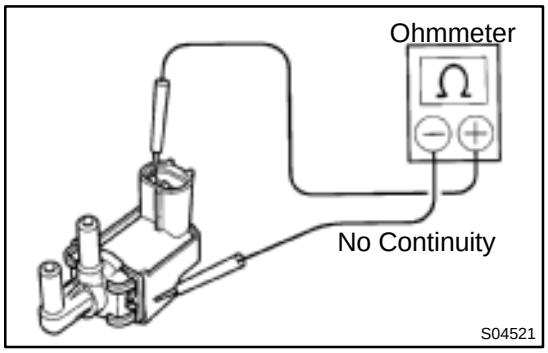


3. INSPECT VSV FOR OPEN CIRCUIT

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

Resistance: 27 – 33 Ω at 20˚C (68˚F)

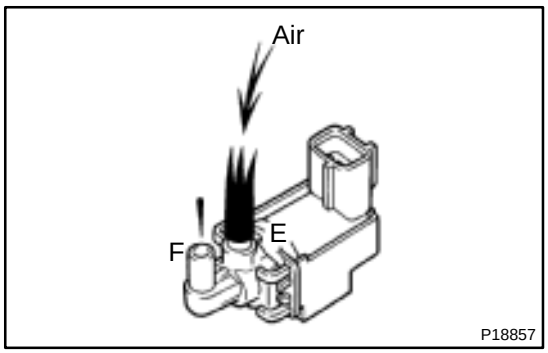
If there is no continuity, replace the VSV.



4. INSPECT VSV FOR GROUND

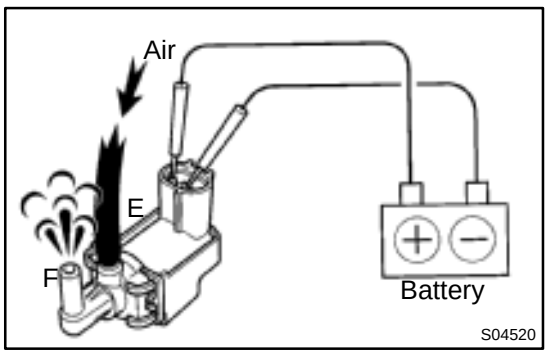
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



5. INSPECT VSV OPERATION

(a) Check that air flows with difficulty from port E to port F.



(b) Apply battery positive voltage across the terminals.

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

If operation is not as specified, replace the VSV.

6. REINSTALL VSV

(a) Install the VSV with the screw.

(b) Connect the 2 EVAP hoses to the VSV.

7. REINSTALL EMISSION CONTROL VALVE SET

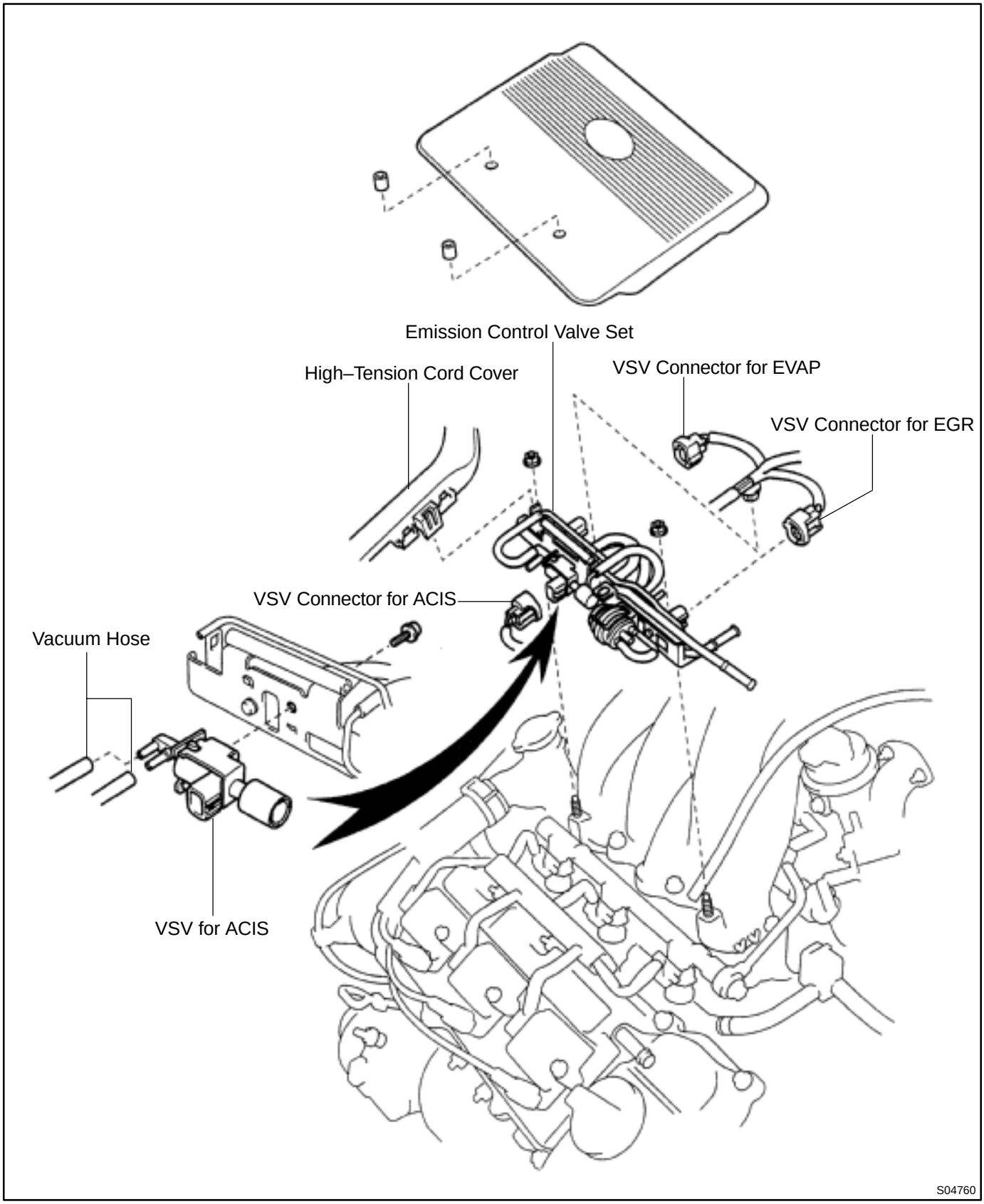
8. REINSTALL HIGH–TENSION CORD COVER

9. REINSTALL V–BANK COVER

VSV FOR ACOUSTIC CONTROL INDUCTION SYSTEM (ACIS)

SF08E–03

COMPONENTS



SF08F–04

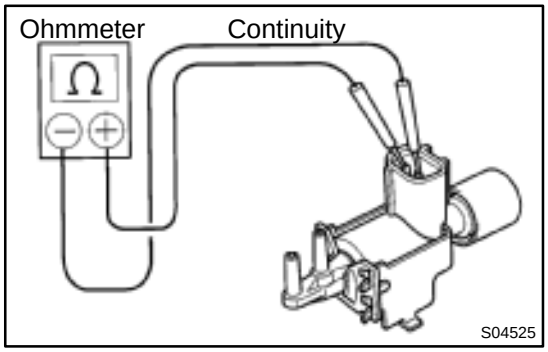
INSPECTION

1. REMOVE V–BANK COVER, HIGH–TENSION CORD COVER AND EMISSION CONTROL VALVE SET

2. REMOVE VSV

(a) Disconnect the 2 vacuum hoses from the VSV.

(b) Remove the screw and VSV.

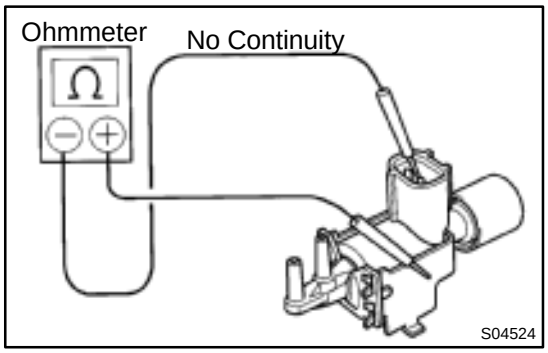


3. INSPECT VSV FOR OPEN CIRCUIT

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

Resistance: 33 – 39 Ω at 20˚C (68˚F)

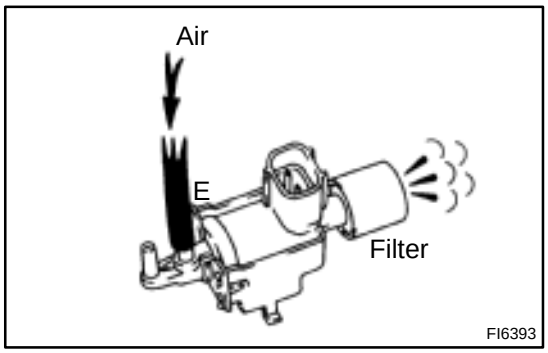
If there is no continuity, replace the VSV.



4. INSPECT VSV FOR GROUND

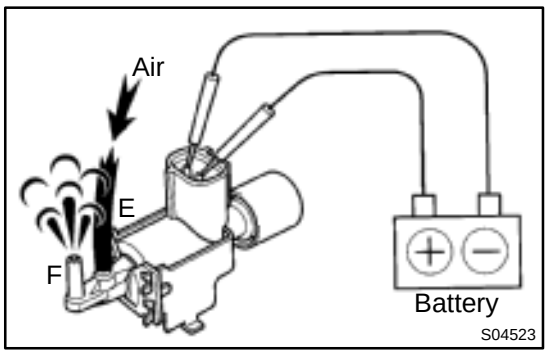
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



5. INSPECT VSV OPERATION

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



(b) Apply battery positive voltage across the terminals.

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

If operation is not as specified, replace the VSV.

6. REINSTALL VSV

(a) Install the VSV with the screw.

(b) Connect the 2 vacuum to the VSV.

7. REINSTALL EMISSION CONTROL VALVE SET

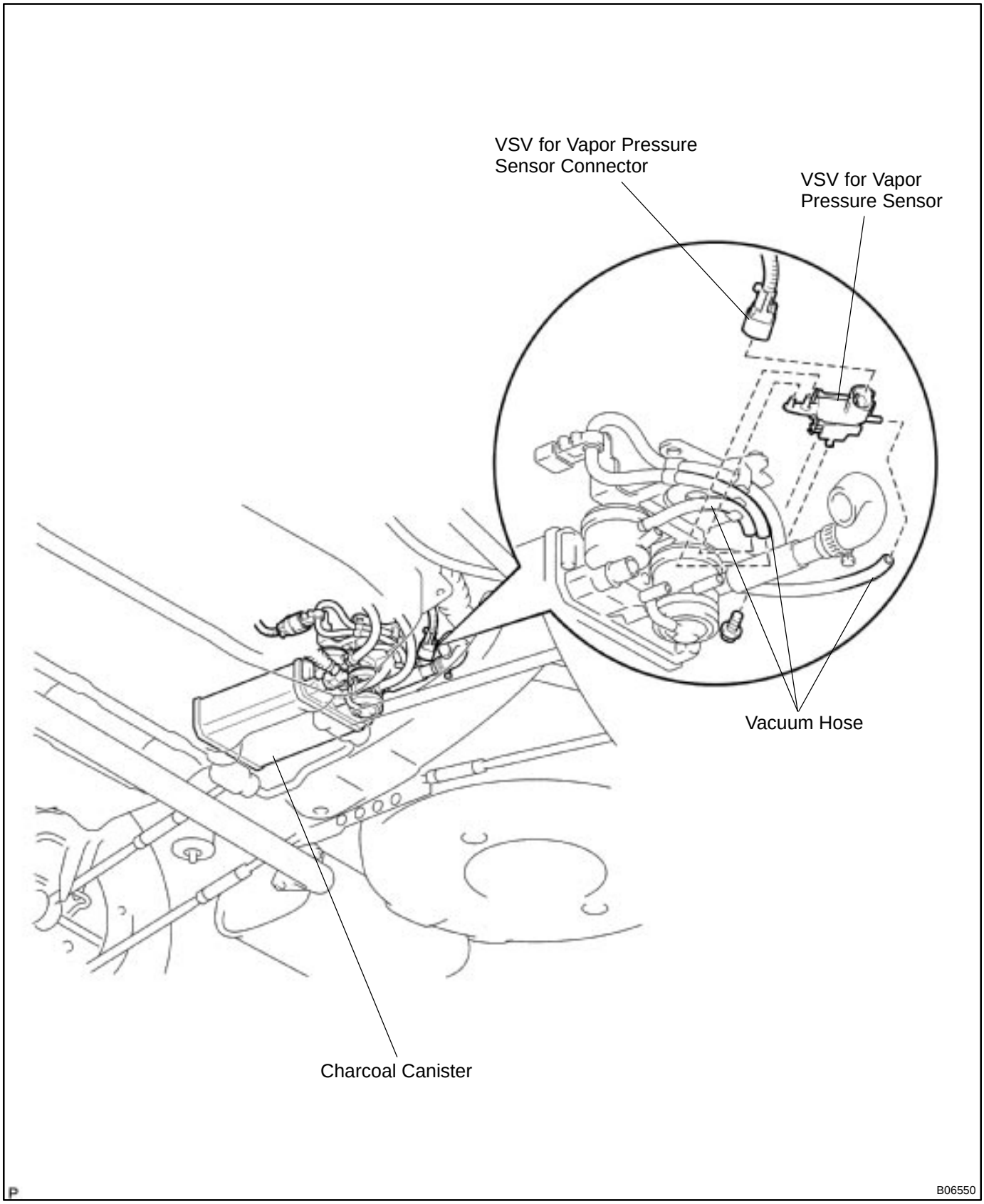
8. REINSTALL HIGH–TENSION CORD COVER

9. REINSTALL V–BANK COVER

VSV FOR VAPOR PRESSURE SENSOR

COMPONENTS

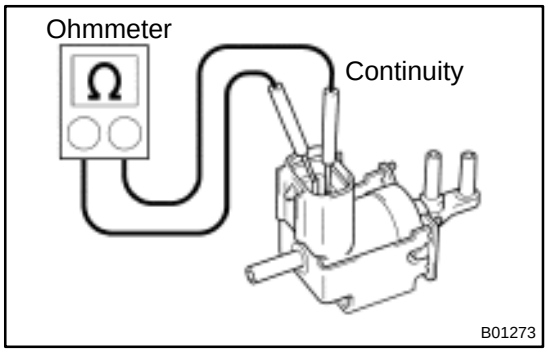
SF08G–03



SF08H–03

INSPECTION

1. REMOVE VSV

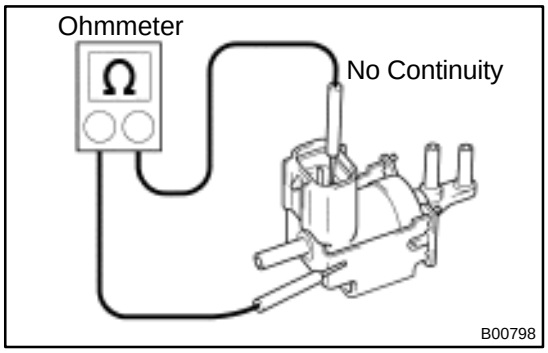


2. INSPECT VSV FOR OPEN CIRCUIT

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

Resistance: 33 – 39 Ω at 20˚C (68˚F)

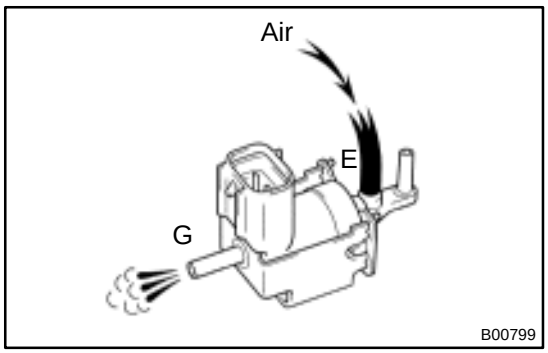
If there is no continuity, replace the VSV.



3. INSPECT VSV FOR GROUND

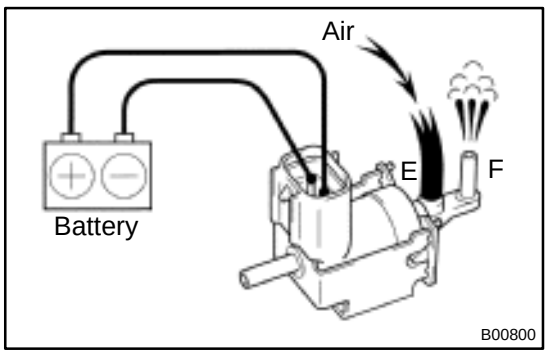
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



4. INSPECT VSV OPERATION

(a) Check that air flows from ports E to G.



(b) Apply battery positive voltage across the terminals.

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

If operation is not as specified, replace the VSV.

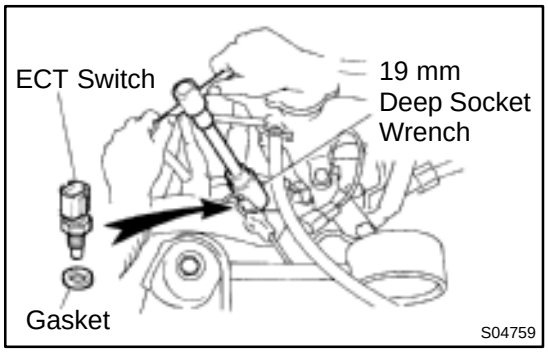
5. REINSTALL VSV

ENGINE COOLANT TEMPERATURE (ECT) SENSOR

SF08I–03

INSPECTION

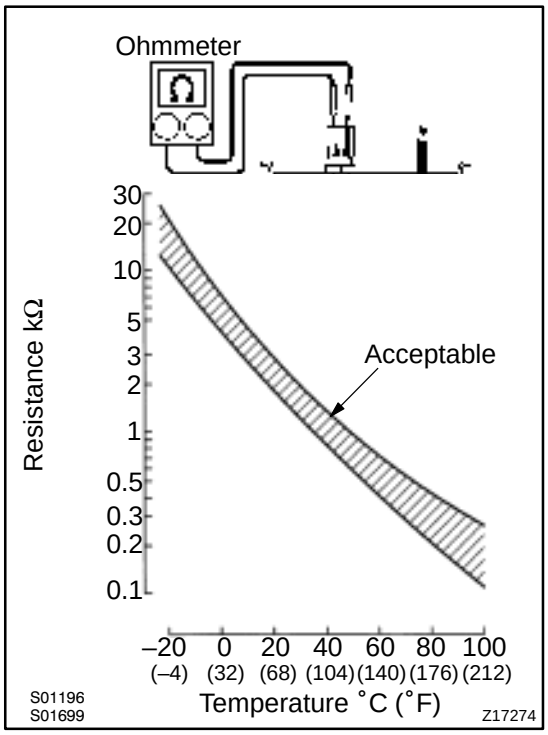
1. DRAIN ENGINE COOLANT



2. REMOVE ECT SENSOR

(a) Disconnect the ECT sensor connector.

(b) Using a 19 mm deep socket wrench, remove the ECT sensor and gasket.



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 a 19 mm deep socket, install the ECT sensor.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

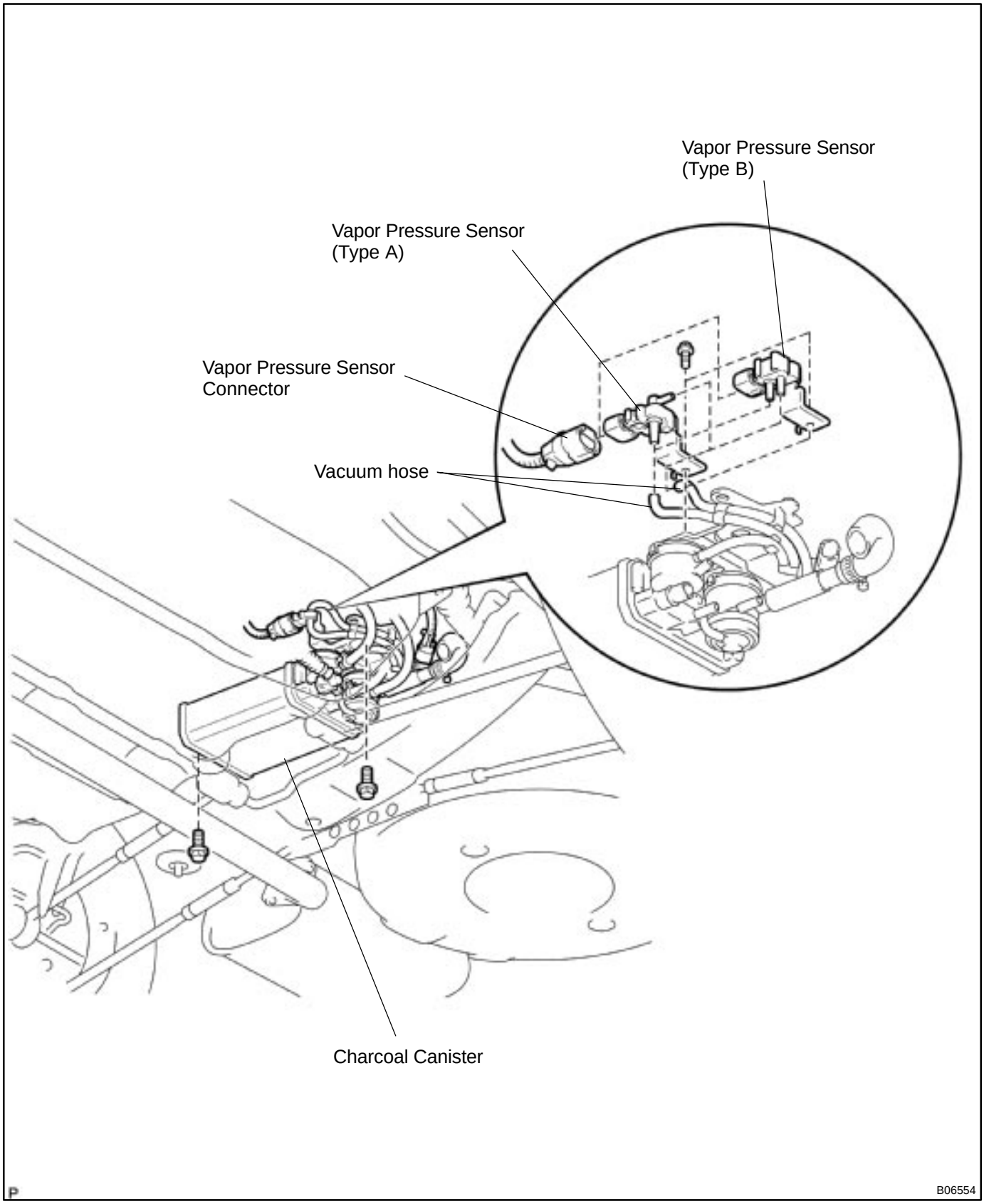
(c) Connect the ECT sensor connector.

5. REFILL WITH ENGINE COOLANT

VAPOR PRESSURE SENSOR

SF0Z9–01

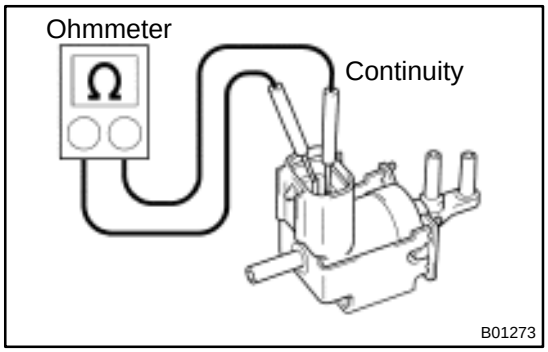
COMPONENTS



SF08H–03

INSPECTION

1. REMOVE VSV

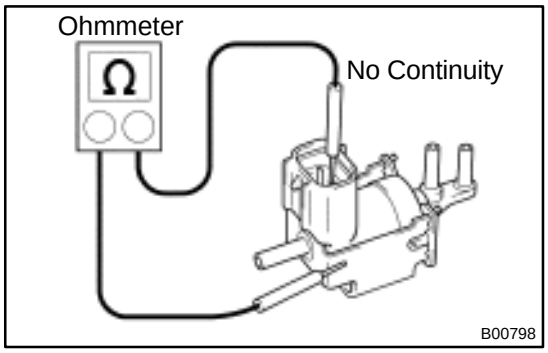


2. INSPECT VSV FOR OPEN CIRCUIT

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

Resistance: 33 – 39 Ω at 20˚C (68˚F)

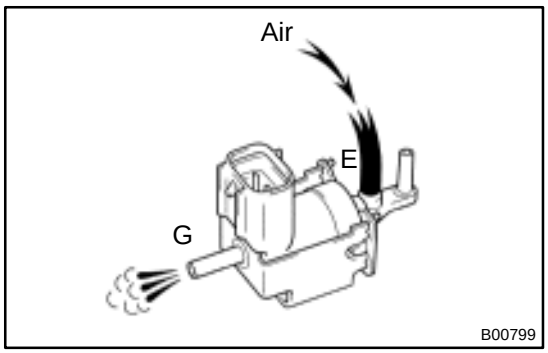
If there is no continuity, replace the VSV.



3. INSPECT VSV FOR GROUND

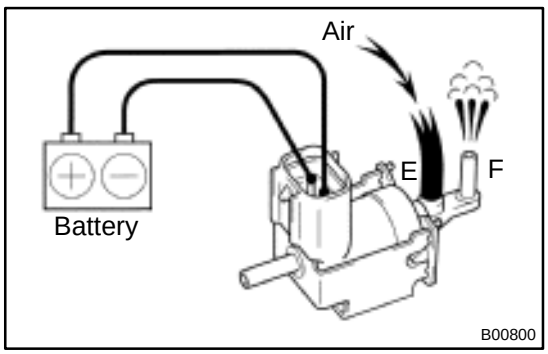
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



4. INSPECT VSV OPERATION

(a) Check that air flows from ports E to G.



(b) Apply battery positive voltage across the terminals.

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

If operation is not as specified, replace the VSV.

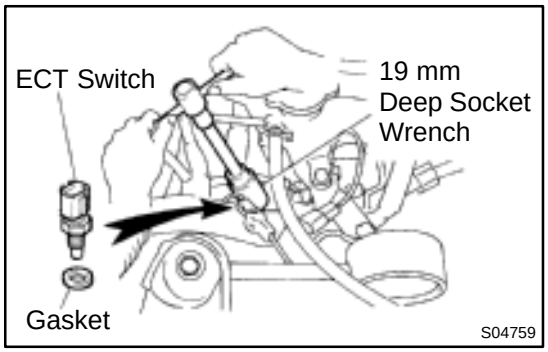
5. REINSTALL VSV

ENGINE COOLANT TEMPERATURE (ECT) SENSOR

SF08I–03

INSPECTION

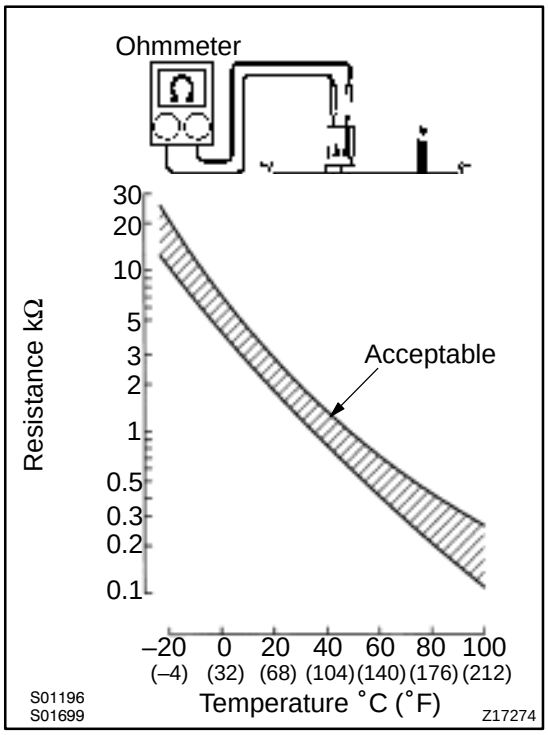
1. DRAIN ENGINE COOLANT



2. REMOVE ECT SENSOR

(a) Disconnect the ECT sensor connector.

(b) Using a 19 mm deep socket wrench, remove the ECT sensor and gasket.



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 a 19 mm deep socket, install the ECT sensor.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

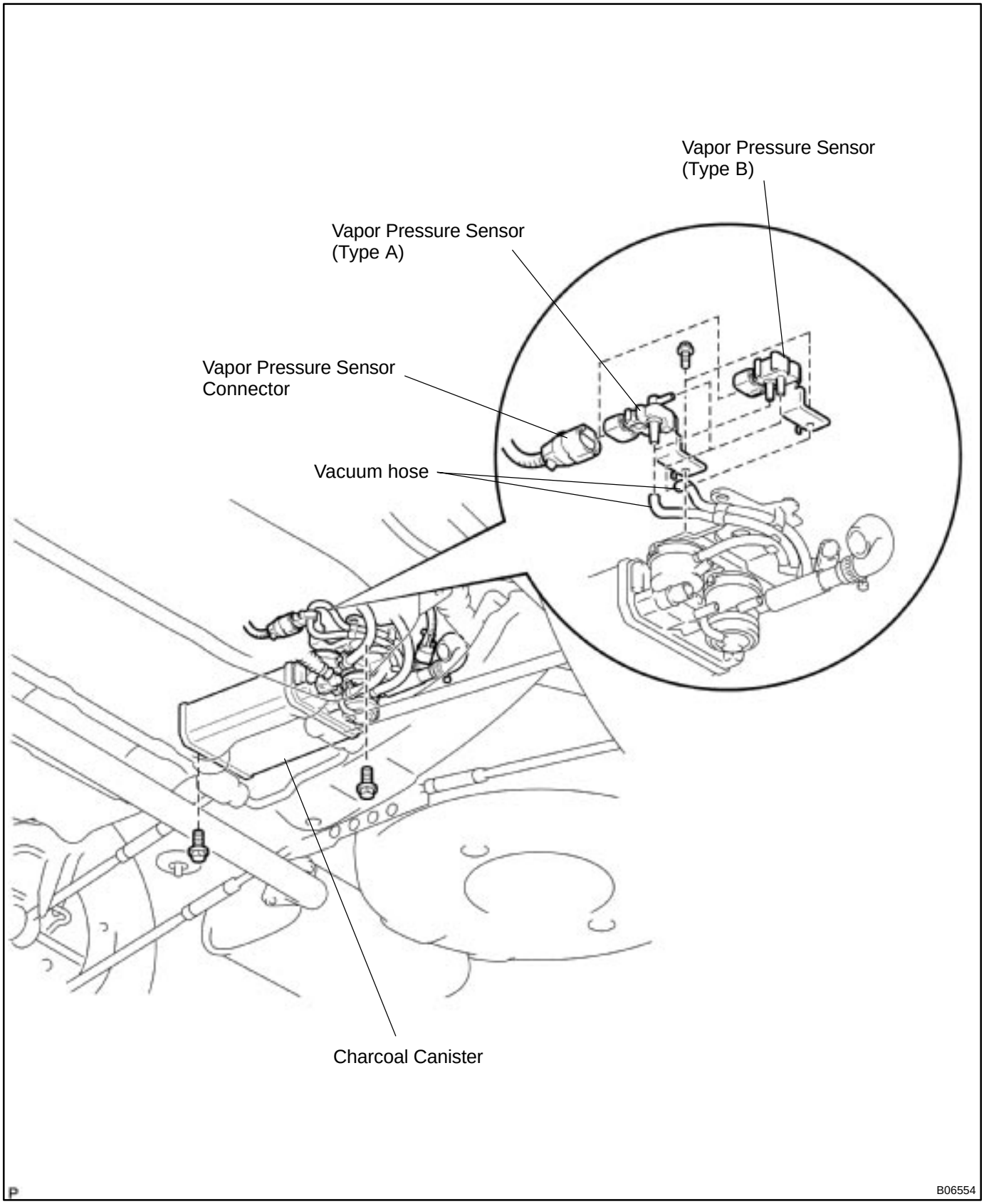
(c) Connect the ECT sensor connector.

5. REFILL WITH ENGINE COOLANT

VAPOR PRESSURE SENSOR

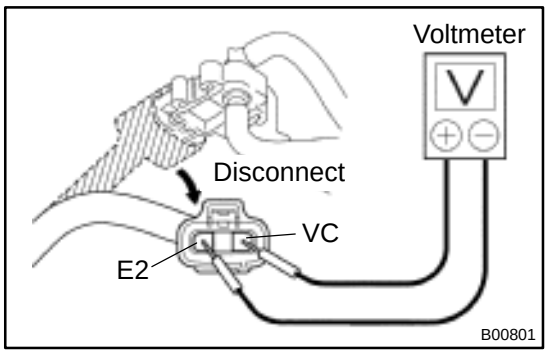
SF0Z9–01

COMPONENTS



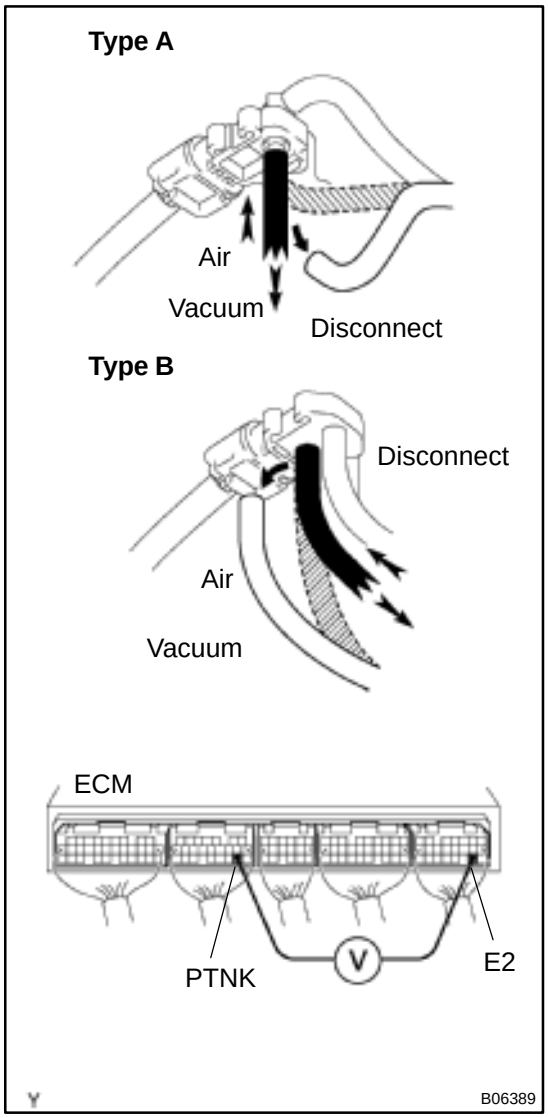
SF08J–04

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.



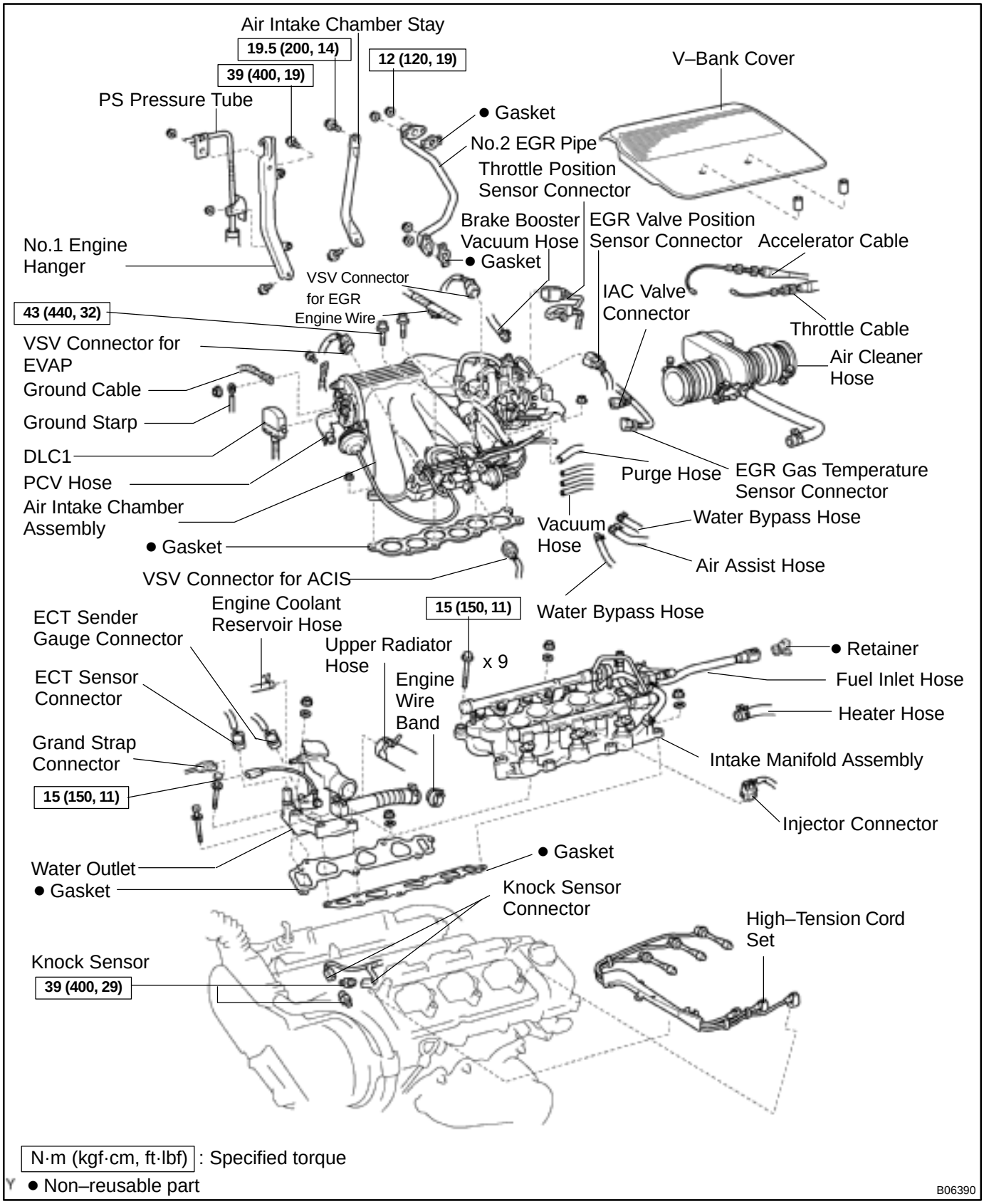
2. INSPECT POWER OUTPUT OF VAPOR PRESSURE SENSOR

(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 the following 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

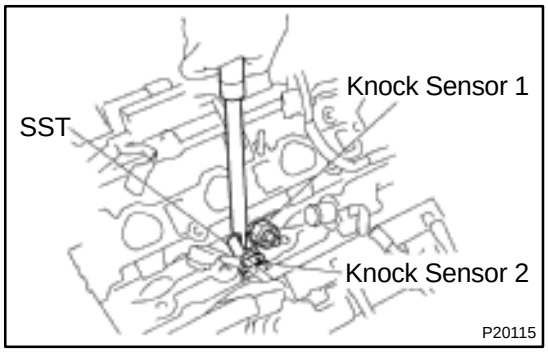
SF08K–03



SF08L–03

INSPECTION

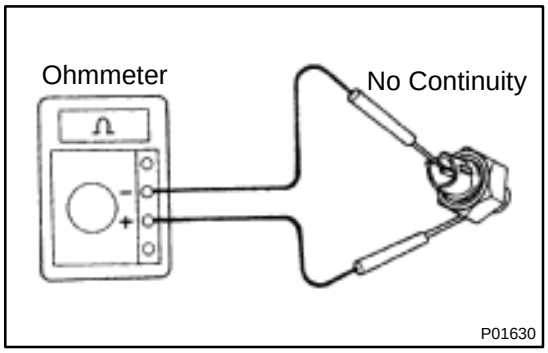
1. **REMOVE AIR CLEANER HOSE**
2. **REMOVE RH ENGINE MOUNTING STAY**
3. **REMOVE INTAKE MANIFOLD ASSEMBLY AND WATER OUTLET (Seepage EM–32)**



4. **REMOVE KNOCK SENSORS**

(a) Disconnect the knock sensor connector.

(b) Using SST, remove the knock sensor.
SST 09817–16011



5. **INSPECT KNOCK SENSORS**

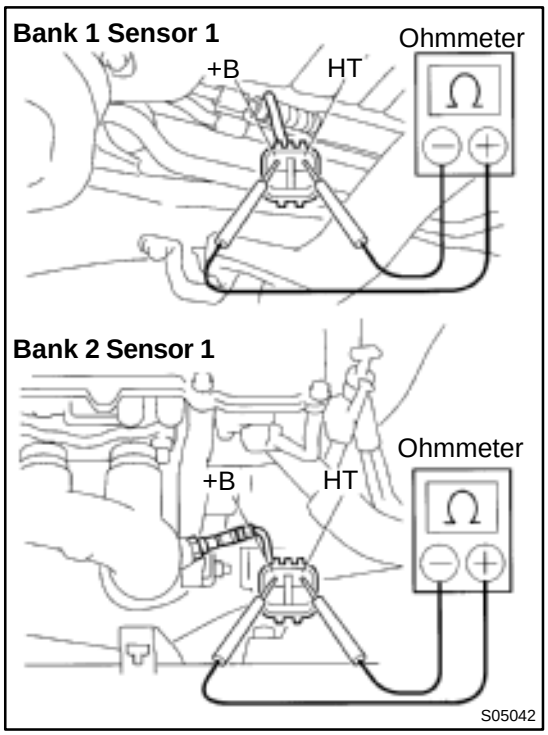
Using an ohmmeter, check that there is no continuity between the terminal and body.
If there is continuity, replace the sensor.

6. **REINSTALL KNOCK SENSORS**

(a) Using SST, install the knock sensor.
SST 09817–16011
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

(b) Connect the knock sensor connector.

7. **REINSTALL WATER OUTLET AND INTAKE MANIFOLD ASSEMBLY (See page EM–57)**
8. **REINSTALL RH ENGINE MOUNTING STAY**
9. **REINSTALL AIR CLEANER HOSE**



AIR–FUEL RATIO (A/F) SENSOR (California A/T)

SF08M–06

INSPECTION

INSPECT HEATER RESISTANCE OF A/F SENSORS (Bank 1 sensor 1, Bank 2 Sensor 1)

(a) Disconnect the A/F sensor connector.

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

Resistance:

At 20˚C (68˚F)	0.8 – 1.4 Ω
At 800˚C (1,472˚F)	1.8 – 3.2 Ω

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

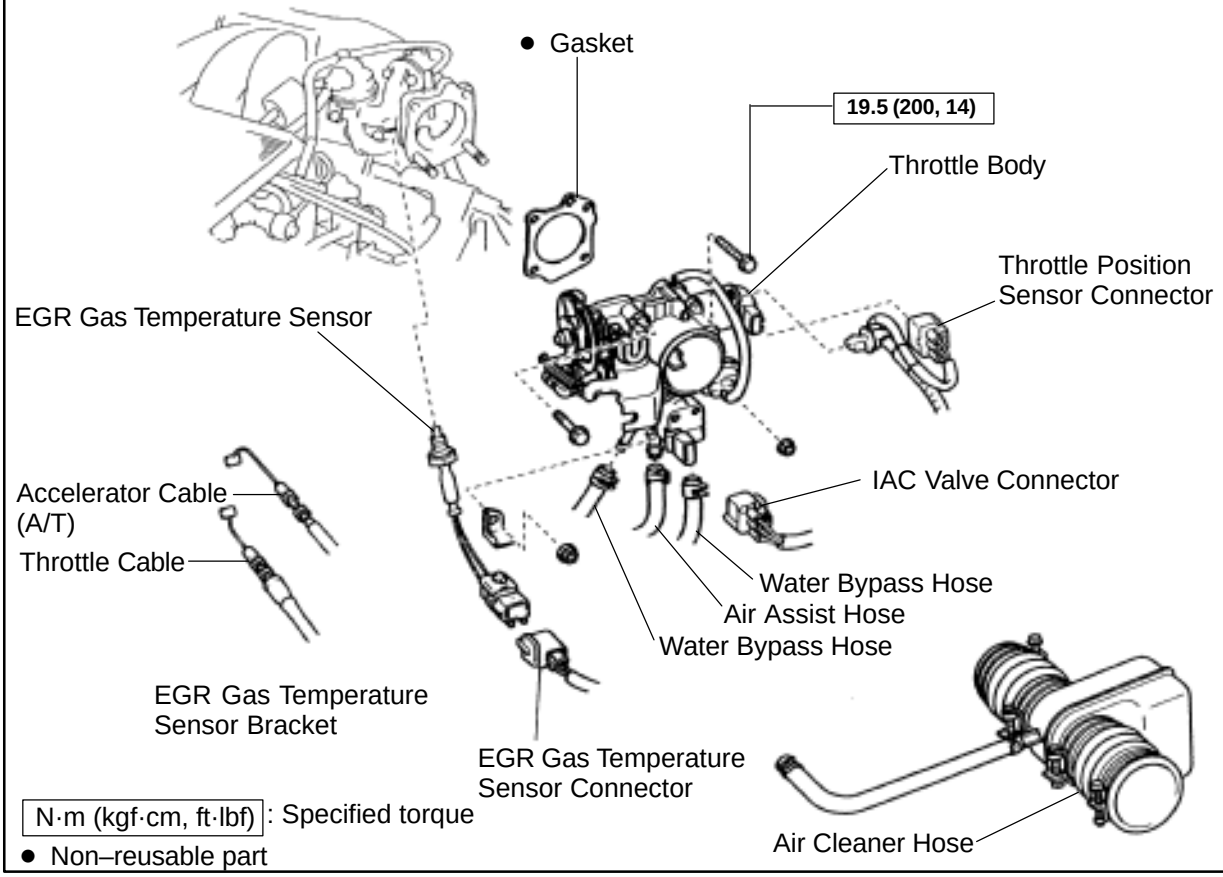
Torque: 44 N·m (440 kgf·cm, 31 ft·lbf)

(c) Reconnect the A/F sensor connector.

EXHAUST GAS RECIRCULATION (EGR) GAS TEMPERATURE SENSOR

SF08N–03

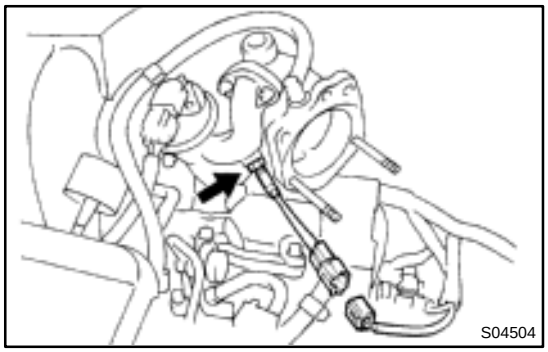
COMPONENTS



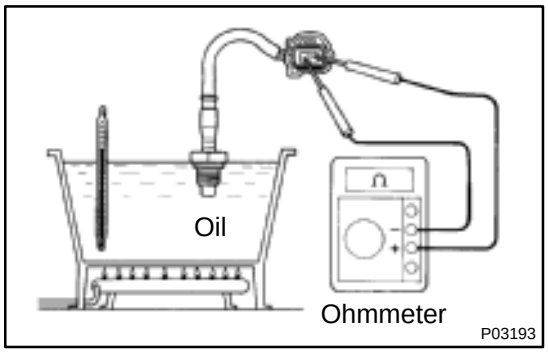
SF08O–04

INSPECTION

1. REMOVE THROTTLE BODY (See page SF–39)



2. REMOVE EGR GAS TEMPERATURE SENSOR



3. INSPECT EGR GAS TEMPERATURE SENSOR

Using an ohmmeter, measure the resistance between the terminals.

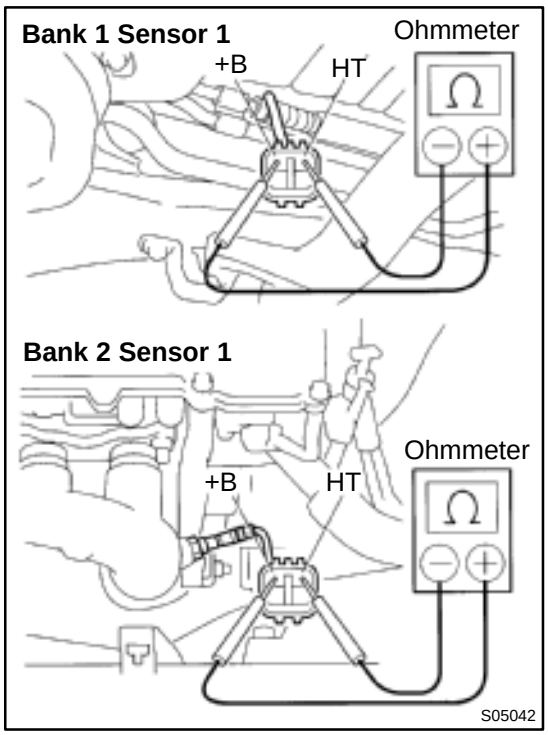
Resistance:

At 50˚C (122˚F)	64 – 97 kΩ
At 100˚C (212˚F)	11 – 16 kΩ
At 150˚C (302˚F)	2 – 4 kΩ

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

4. REINSTALL EGR GAS TEMPERATURE SENSOR

5. REINSTALL THROTTLE BODY (See page SF–41)



HEATED OXYGEN SENSOR (Bank 1,2 Sensor 1)

SF08P–04

INSPECTION

Except California A/T:

INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSORS (Bank 1 Sensor 1, Bank 2 Sensor 1)

(a) Disconnect the oxygen sensor connector.

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

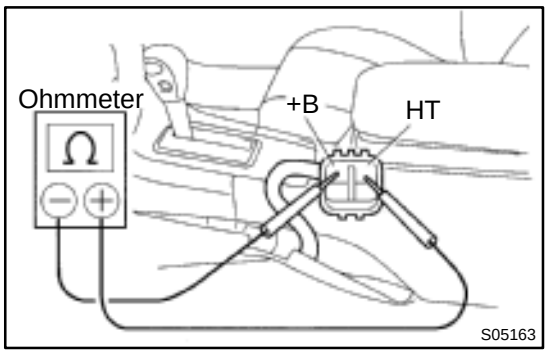
Resistance:

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

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

Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

(c) Reconnect the oxygen sensor connector.



HEATED OXYGEN SENSOR (Bank 1 Sensor 2)

SF08Q–03

INSPECTION

INSPECT HEATER RESISTANCE OF HEATED OXYGEN SENSOR (Bank 1 Sensor 2)

(a) Remove the driver's seat.
(b) Take out the floor carpet.
(c) Disconnect the oxygen sensor connector.
(d) Using an ohmmeter, measure the resistance between the terminals +B and HT.

Resistance:

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

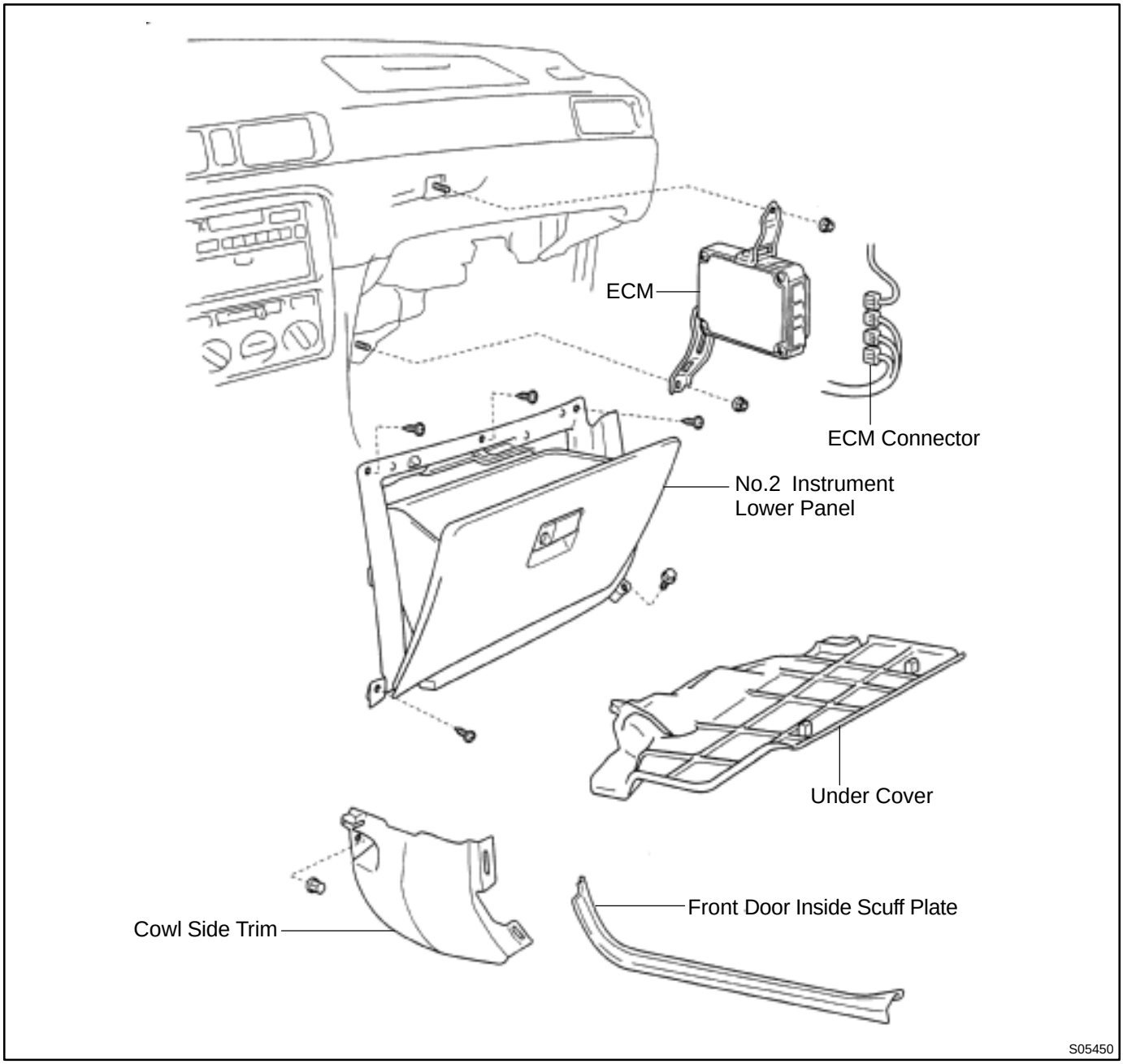
If the resistance is not as specified, replace the sensor.

(e) Reconnect the oxygen sensor connector.
Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)
(f) Reinstall the floor carpet.
(g) Reinstall the driver's seat.

ENGINE CONTROL MODULE (ECM)

COMPONENTS

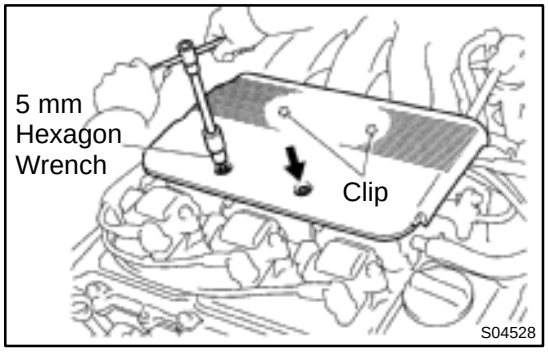
SF08R–03



SF08S–01

INSPECTION

1. REMOVE ECM
2. INSPECT ECM (See page DI–218)
3. REINSTALL ECM



FUEL CUT RPM

SF08T–03

INSPECTION

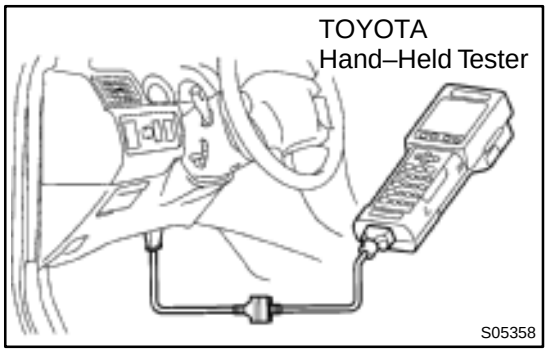
1. REMOVE V–BANK COVER

(a) Using a 5 mm hexagon wrench, remove the 2 cap nuts.

(b) Disconnect the 2 clips, and remove the V–bank cover.

2. WARM UP ENGINE

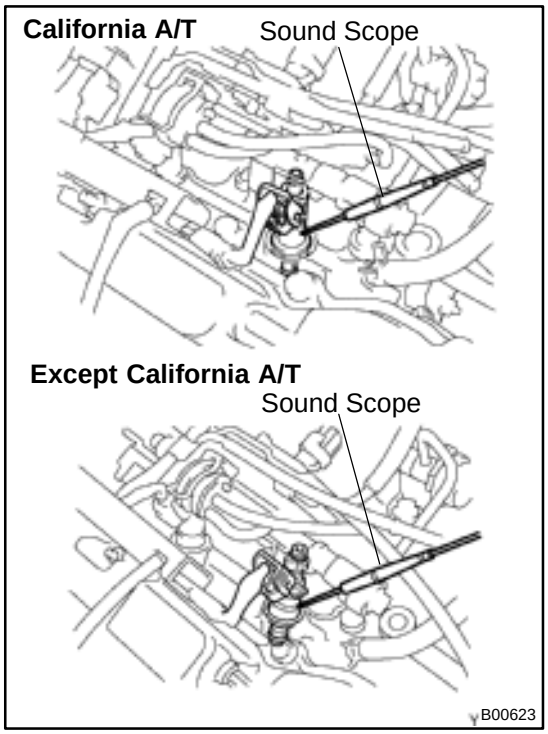
Allow the engine to warm up to normal operating temperature.



3. CONNECT TOYOTA HAND–HELD TESTER OR OBDII SCAN TOOL

(a) Connect the TOYOTA hand–held tester or OBDII scan tool to the DLC3.

(b) Please refer to the TOYOTA hand–held tester or OBDII scan tool operator's manual for further details.



4. INSPECT FUEL CUT OFF PRM

(a) Increase the engine speed to at least 3,500 rpm.

(b) Use a sound scope to 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: 1,200 rpm

5. DISCONNECT TOYOTA HAND–HELD TESTER OR OBDII SCAN TOOL

6. REINSTALL V–BANK COVER

HINT:

For fixing the V–bank cover, push on the cover until a "click" is felt.