

FUEL SYSTEM (2AZ-FE)

1109K-01

PRECAUTION

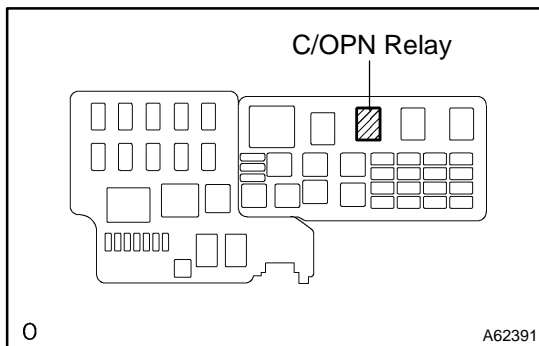
1. PRECAUTION

- (a) Before working on fuel system, disconnect negative (-) terminal cable from battery.
- (b) Do not smoke or work near an open flame when working on fuel system.
- (c) Keep gasoline away from rubber or leather parts.

2. WORK FOR PREVENT GASOLINE FROM SPILLING OUT

CAUTION:

- Perform disconnecting operation of the fuel system parts after working for prevent gasoline from spilling out.
- As there is remained pressure in the fuel line after working for prevent gasoline from spilling out, prevent it from splashing inside the vehicle compartment by covering them with a shop rag.



- (a) Remove the circuit opening relay in the engine room relay block.
- (b) Start the engine. After the engine has stopped on its own, turn the ignition switch OFF.

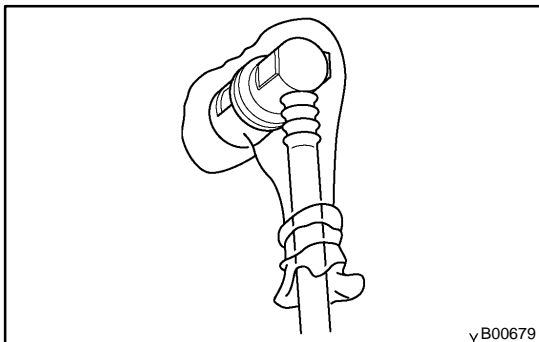
HINT:

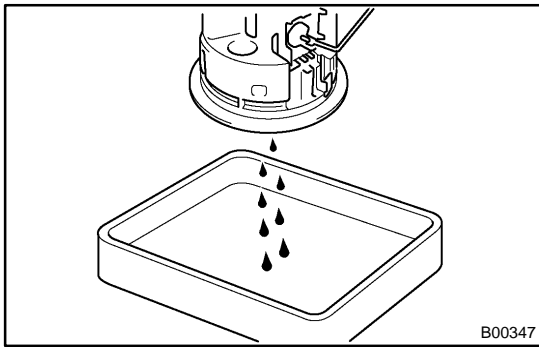
There is a case that DTC P0171 (system too lean) is output.

- (c) Check that the engine does not start.
- (d) Remove the fuel tank cap, and let the air out of the fuel tank.
- (e) Disconnect negative (-) terminal cable from battery.
- (f) Reinstall the circuit opening relay.

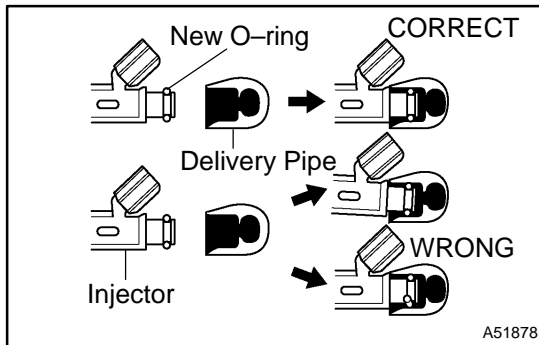
3. FUEL SYSTEM

- (a) When disconnecting the high fuel pressure line, a large amount of gasoline will spill out, so observe these procedures.
 - (1) Work for prevent gasoline from spilling out.
 - (2) Disconnect the fuel pump tube.
(See page 11-15)
 - (3) Drain the fuel remained inside the fuel pump tube.
- (4) Prevent the disconnected fuel pump tube from damaging and mixing foreign objects by covering them with a vinyl bag.

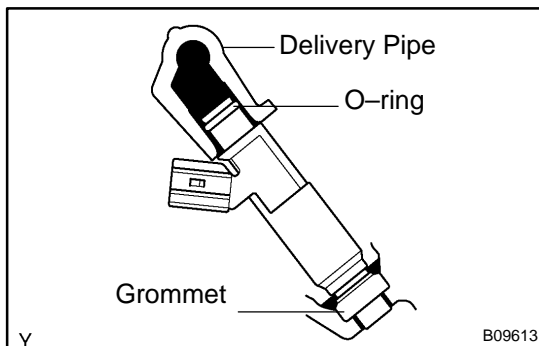




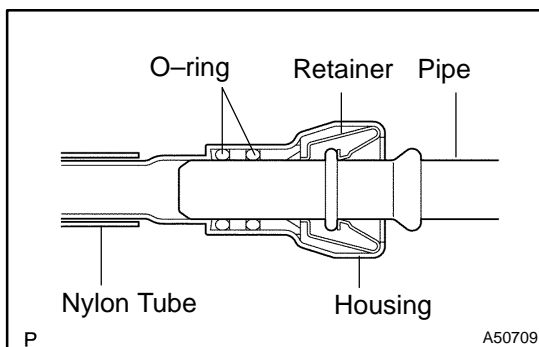
- (5) Put a container under the connection.



- (b) Observe these precautions when removing and installing the injector.
- (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.



- (c) Install the injector to the delivery pipe and cylinder head, as shown in the illustration. Before installing the injector, be sure to apply spindle oil or gasoline on the place where the delivery pipe touches O-ring of the injector.

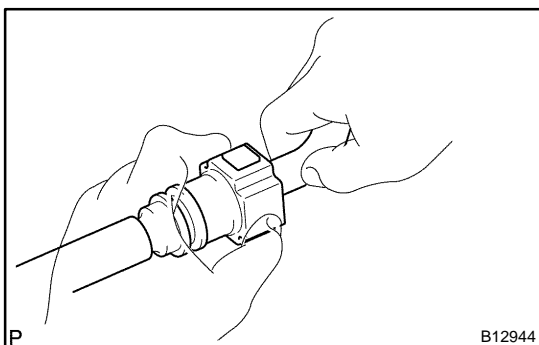
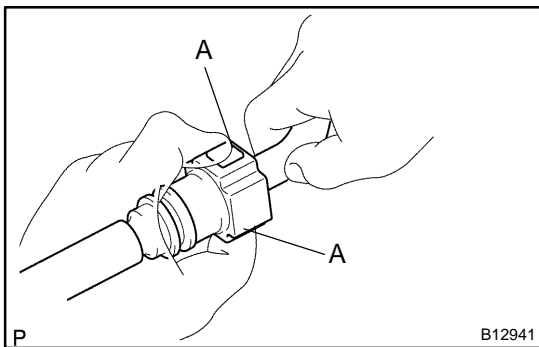
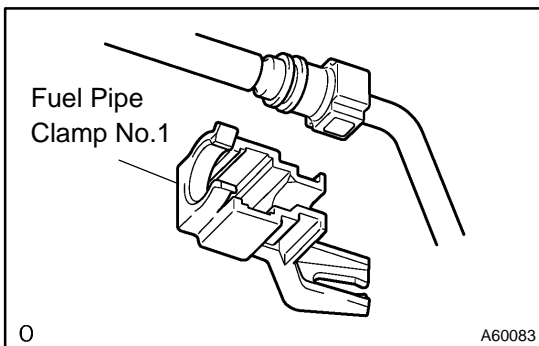
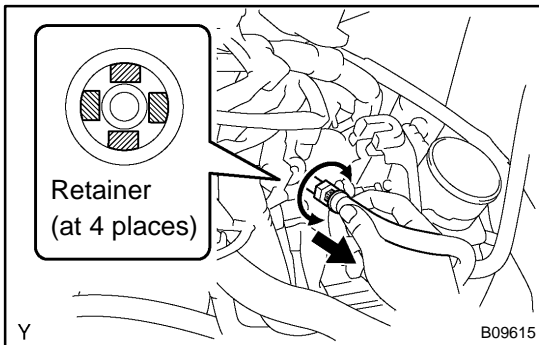
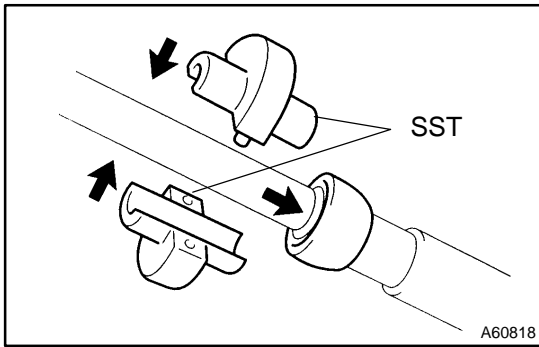


- (d) Observe these precautions when disconnecting the fuel delivery pipe.

HINT:

The structure of the metallic connector is shown as left.

- (1) Remove the fuel pipe clamp No.2.



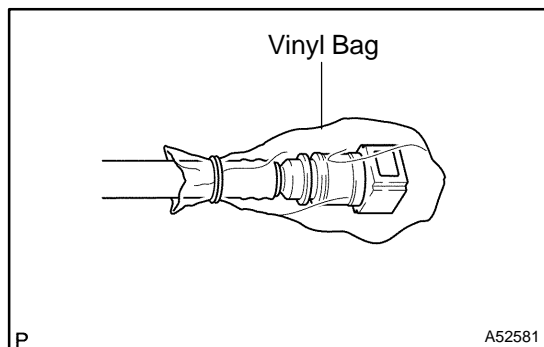
- (2) Find the metallic connector of the fuel tube assembly, pull it out towards the rear and hold it as it is.
- (3) Assemble SST to the connection as shown.
SST 09268-21010

- (4) Turn SST, align the retainers inside the connector with SST chamfered parts and insert SST into the connector.
- (5) Slide SST and the connector together towards the fuel tube assembly.

- (e) Observe these following precautions when disconnecting the fuel tube connector (quick type).
 - (1) Remove the fuel pipe clamp No.1.
 - (2) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.

- (3) Disconnect the connector from the hose while pinching part A with fingers as shown in the illustration.

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

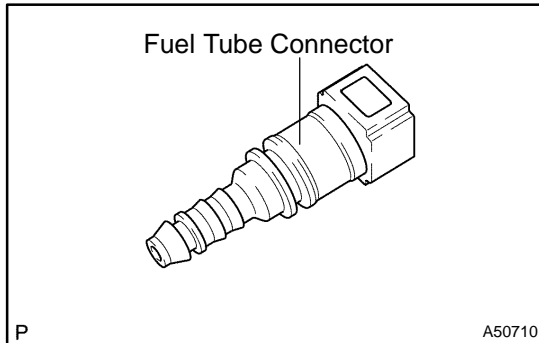


- (6) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

4. CHECK FUEL LEAK

- (a) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.
(See page [11-5](#))

ON-VEHICLE INSPECTION



1. CHECK FUEL PRESSURE

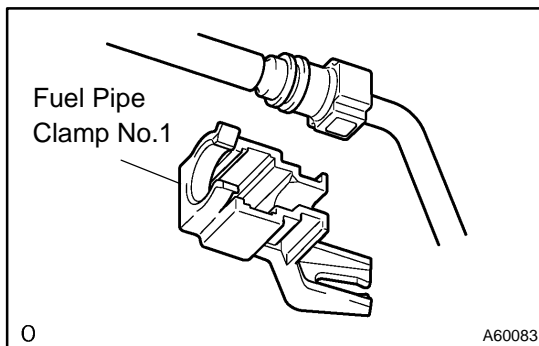
(a) Prepare for inspection.

- (1) Purchase the new fuel tube and take out the fuel tube connector from its pipe.

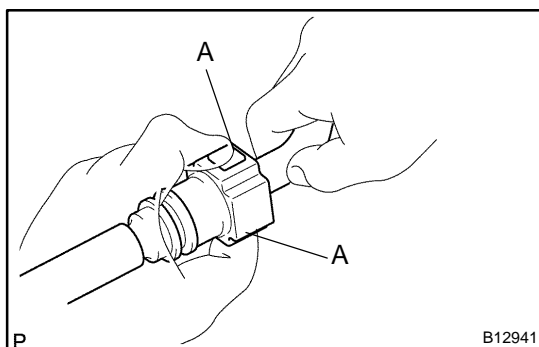
HINT:

Part No. 23901-28130

(b) Work for prevent gasoline from spilling out.
(See page 11-1)



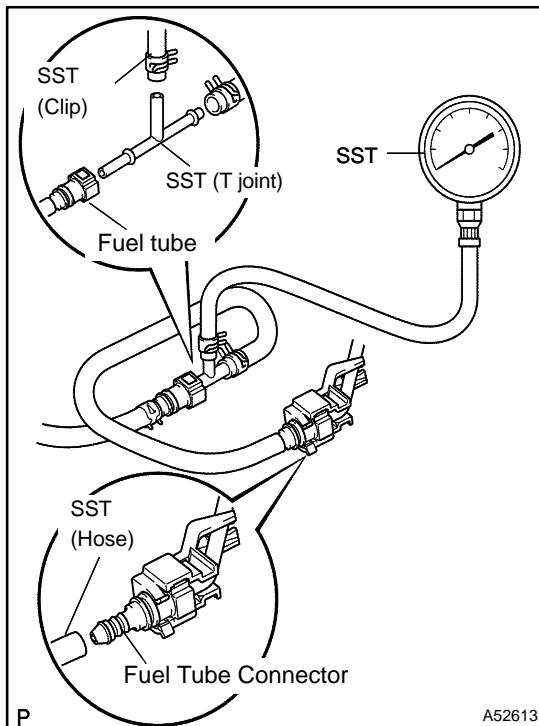
(c) Remove the fuel pipe clamp No.1 from the fuel tube connector.



(d) Disconnect the fuel tube connector from the fuel pipe while pinching part A with fingers as shown in the illustration.

CAUTION:

- Perform disconnecting 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 engine compartment.



- (e) Install SST (pressure gauge) as shown in the illustration by using SST and fuel tube connector.
SST 09268-41047 (90467-13001, 95336-08070),
09268-45012 (09268-41250)
- (f) Wipe off any splattered gasoline.
- (g) Reconnect the negative (-) terminal cable to the battery.
- (h) Connect the hand-held tester to the DLC3.
- (i) Measure the fuel pressure regulator.

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

If pressure is high, replace the fuel pressure regulator.

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

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

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

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

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

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

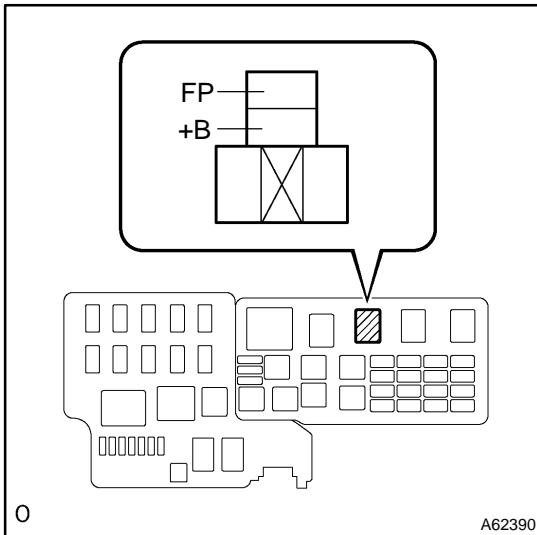
- (o) After checking fuel pressure, disconnect the negative (-) terminal cable from the battery and carefully remove the SST and fuel tube connector to prevent gasoline from splashing.
- (p) Reconnect the fuel tube (fuel tube connector).

CAUTION:**Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.****2. CHECK FUEL PUMP OPERATION AND FUEL LEAK**

- (a) When using hand-held tester
 - (1) Connect the hand-held tester to the DLC3.
 - (2) Turn the ignition switch ON and hand-held tester main switch ON.

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

- (3) Select the active test mode on the hand-held tester.
- (4) Please refer to the hand-held tester operator's manual for further details.



- (b) When not using hand-held tester
- (1) Remove the circuit opening relay.
 - (2) Using a service wire connect terminals FP and +B of the relay block.

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

- (3) Turn the ignition switch ON, and check that the fuel pump operates.

NOTICE:

Do not start the engine.

- (c) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.

INSPECTION

1. FUEL INJECTOR ASSY

- (a) Inspect injector resistance
 (1) Using an ohmmeter, measure the resistance between the terminals.

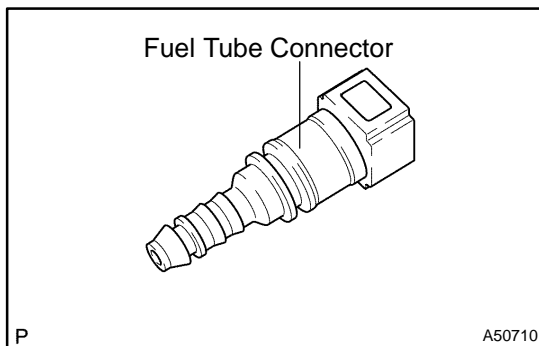
Resistance: 13.4 – 14.2 Ω at 20°C (68°F)

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

- (b) Inspect injector inspection

CAUTION:

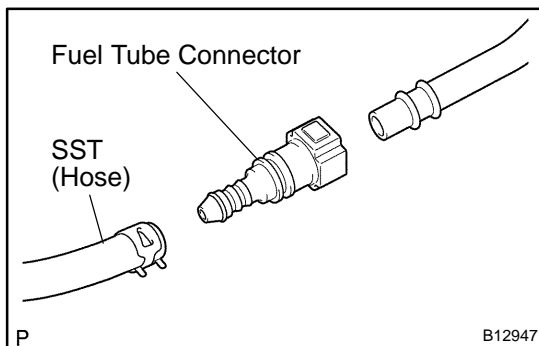
Keep injector clear of sparks during the test.



- (1) Purchase the new fuel tube and take out the fuel tube connector from its pipe.

HINT:

Part No. 23901-28130

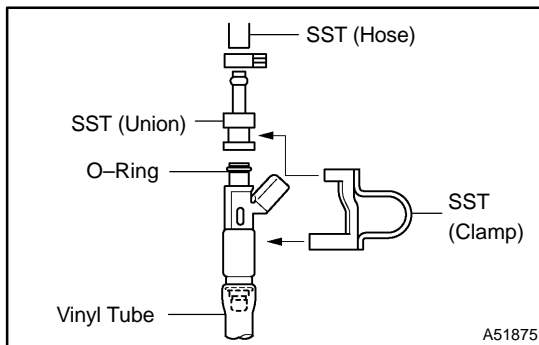


- (2) Connect SST and fuel tube connector to the fuel pipe.

SST 09268-41047 (90467-13001, 95336-08070)

CAUTION:

Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.



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

- (4) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp)

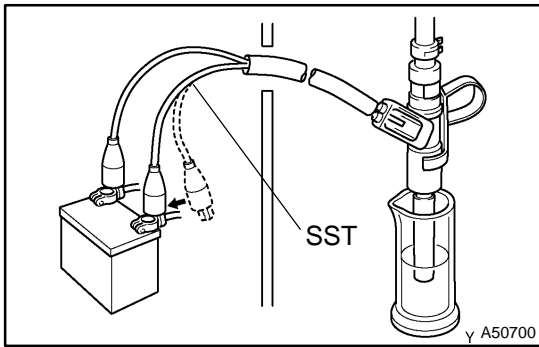
SST 09268-41047 (09268-41110, 09268-41300, 90467-13001, 95336-08070)

- (5) Put the injector into a graduated cylinder.

HINT:

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

- (6) Operate the fuel pump. (See Page 11-5)



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

SST 09842-30080

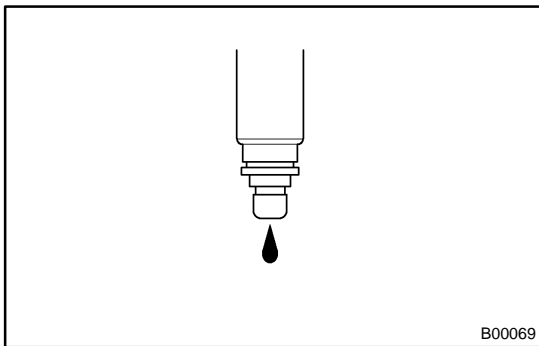
Injection volume:

Injection volume	Difference between each injector
68 - 82 cm ³ (4.1 - 4.9 cu in.) per 15 seconds	14 cm ³ (0.9 cu in.) or less

NOTICE:

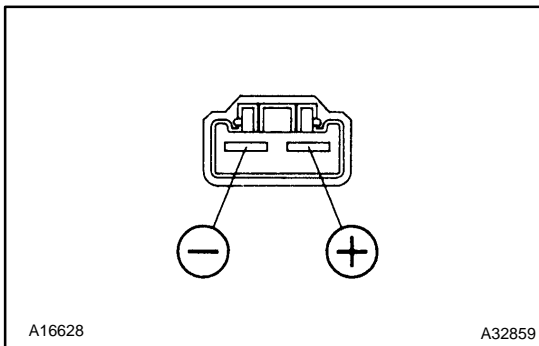
Always do the switching at the battery side.

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



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

Fuel drop: 1 drop or less per 12 minutes



2. FUEL PUMP

- (a) Inspect fuel pump resistance.
 - (1) Using an ohmmeter, measure the resistance between terminals.

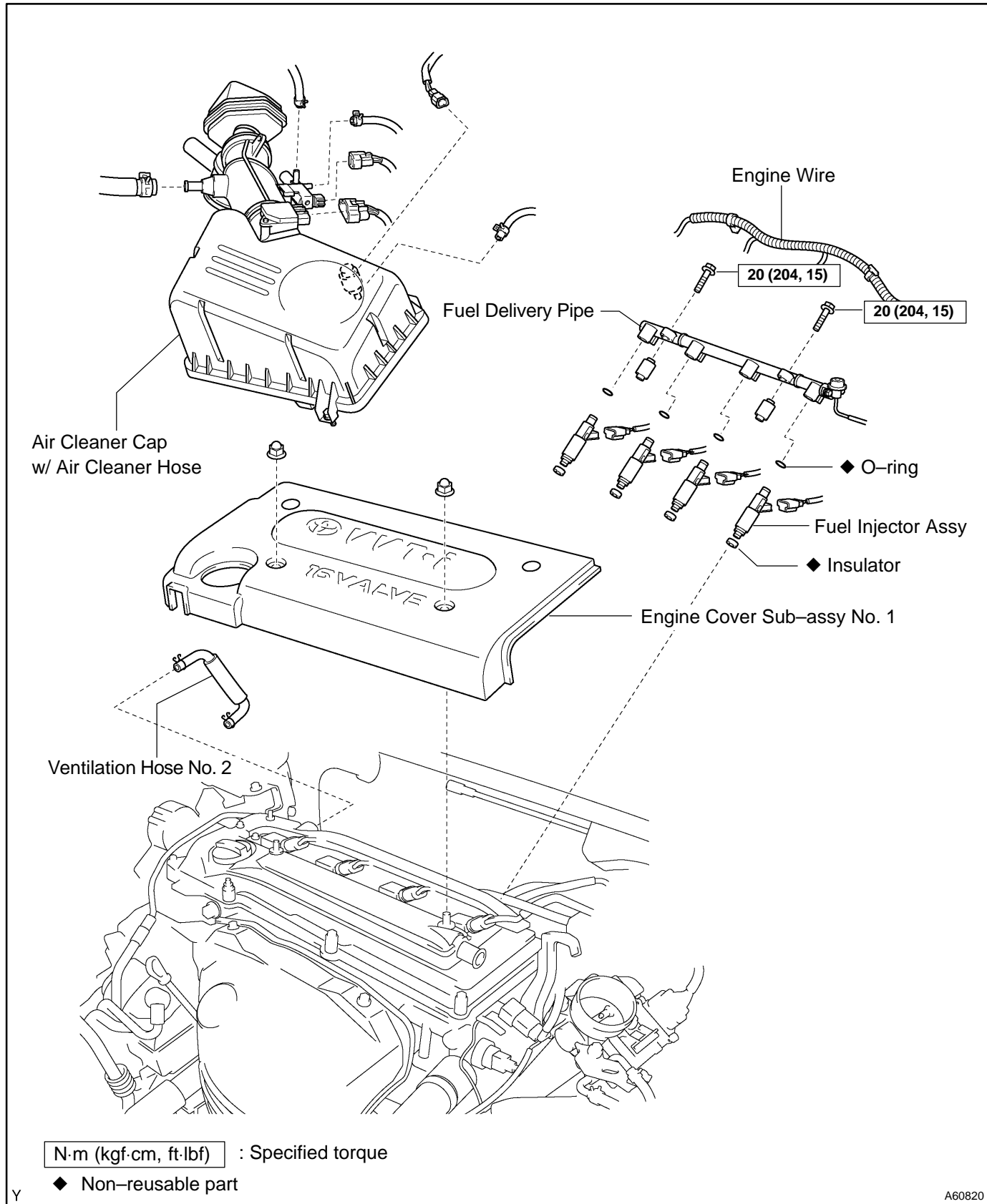
Resistance: 0.2 - 3.0 Ω at 20°C (68°F)
- (b) Inspect fuel pump operation
 - (1) Apply battery voltage to both terminals. Check that the pump operates.

NOTICE:

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

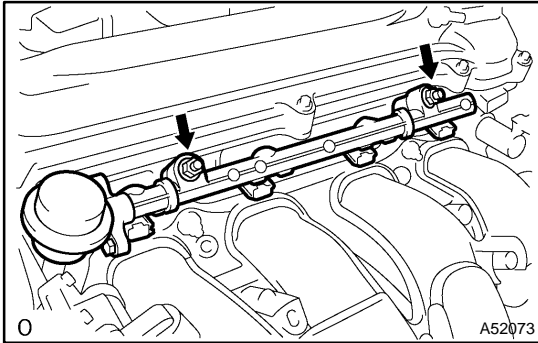
FUEL INJECTOR ASSY (2AZ-FE) COMPONENTS

1109L-01



REPLACEMENT

1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT(See page 11-1)
2. REMOVE AIR CLEANER CAP WITH AIR CLEANER HOSE
3. REMOVE ENGINE COVER SUB-ASSY NO.1
4. DISCONNECT FUEL TUBE SUB-ASSY
(See page 11-1)



5. REMOVE FUEL DELIVERY PIPE W/INJECTOR

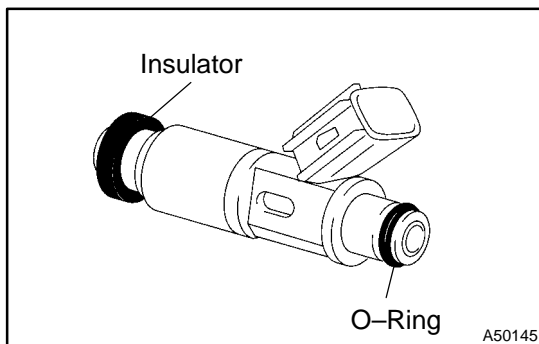
NOTICE:

Be careful not to drop the injectors when removing the delivery pipe.

- (a) Remove the ventilation hose No. 2.
- (b) Disconnect 4 injector connectors from the injector.
- (c) Remove 2 clamp and wire harness from the delivery pipe.
- (d) Remove 2 bolts and delivery pipe together with 4 injector.
- (e) Remove 2 spacers from the cylinder head.

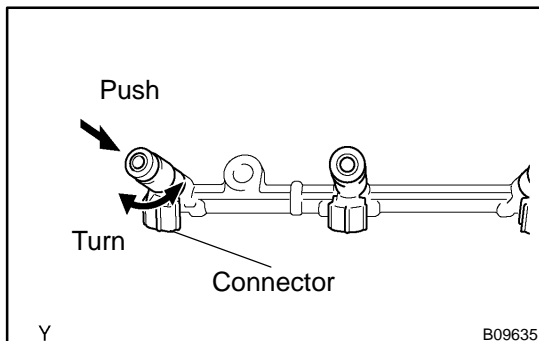
6. REMOVE FUEL INJECTOR ASSY

- (a) Pull out 4 injector from the delivery pipe.



7. INSTALL FUEL INJECTOR ASSY

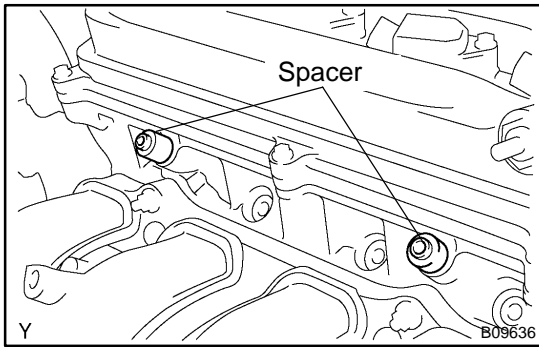
- (a) Install the new insulator to each injector.
- (b) Apply a light coat of spindle oil or gasoline to new O-ring and install them to each injector.



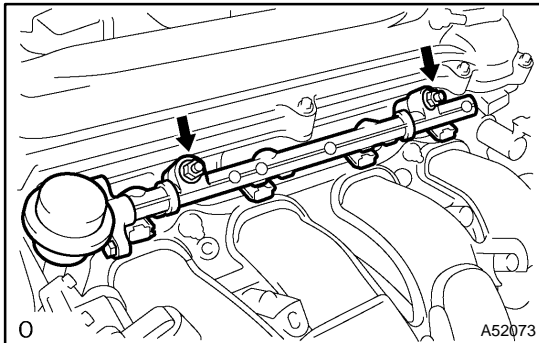
- (c) Apply a light coat of spindle oil or gasoline on the place where a delivery pipe touches on O-ring.
- (d) While turning the injector clockwise and counterclockwise, push it to the delivery pipes. install 4 injectors.

NOTICE:

- Be careful not to twist the O-ring.
 - After installing injectors, check that they turns smoothly. If an injector dose not, reinsiall it with a new O-ring.
- (e) Position the injector connector downward.

**8. INSTALL FUEL DELIVERY PIPE W/INJECTOR**

- (a) Place 2 spacers in position on the cylinder head.
- (b) Place the delivery pipe together with 4 injectors in position on the cylinder head.



- (c) Temporarily install 2 bolts holding the delivery pipe to the cylinder.
- (d) Check that the injectors rotate smoothly.

HINT:

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

- (e) Position the injector connector outward.
- (f) Tighten 2 bolts holding the delivery pipe to the cylinder head.

Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

9. INSPECT FUEL LEAK(See page11-5)

FUEL PUMP ASSY (2AZ-FE) COMPONENTS

1109M-01

