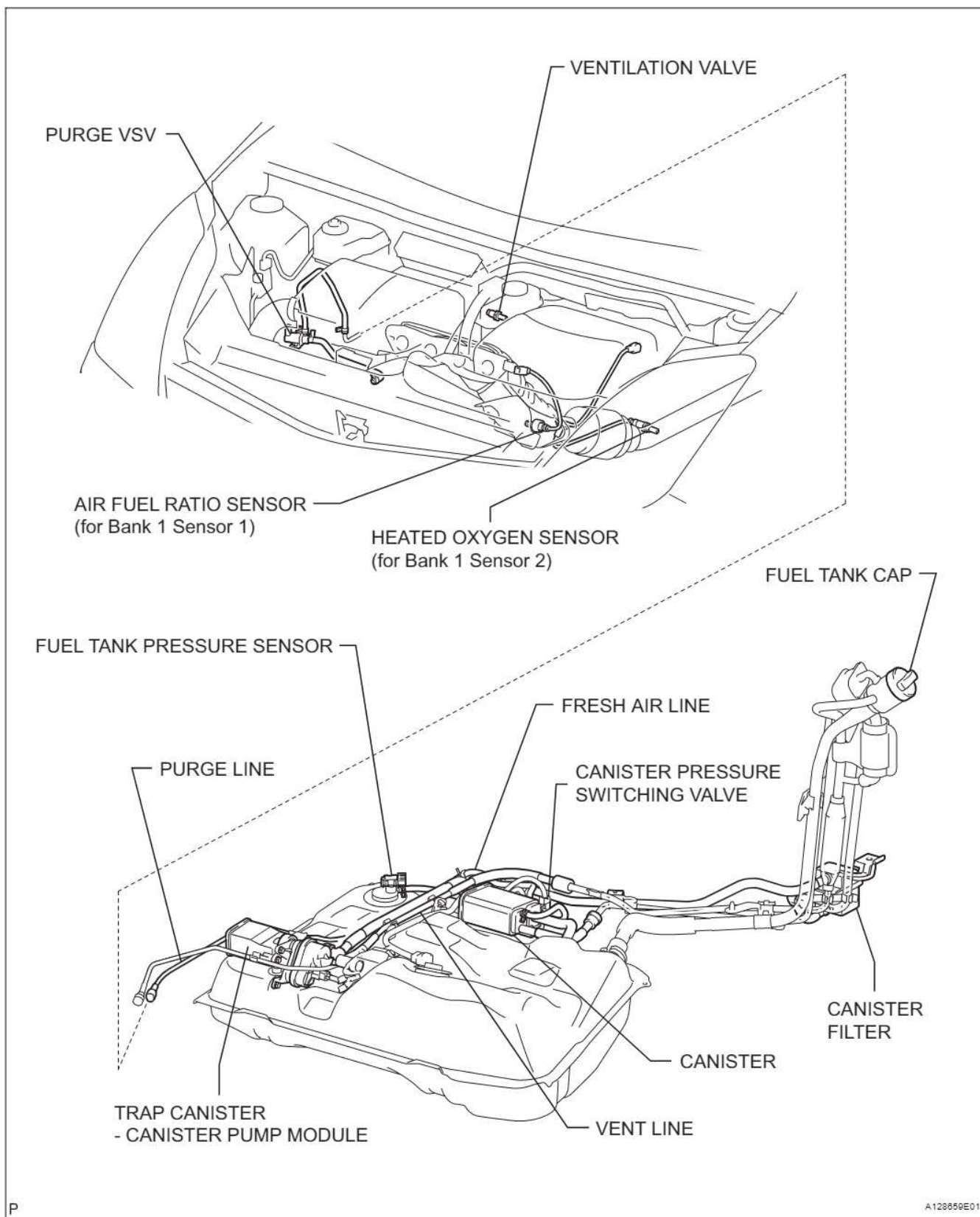


EMISSION CONTROL SYSTEM

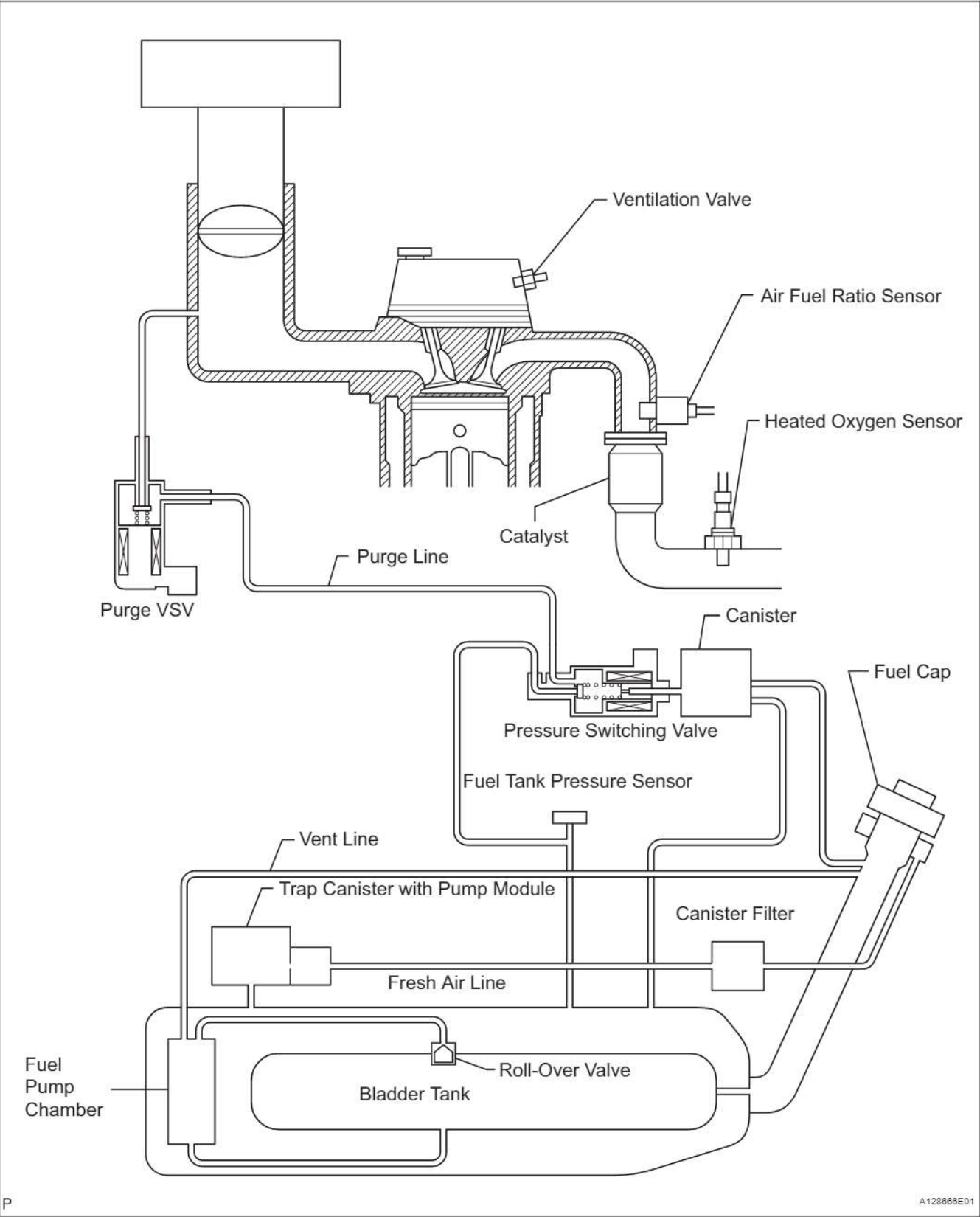
PARTS LOCATION



EC

SYSTEM DIAGRAM

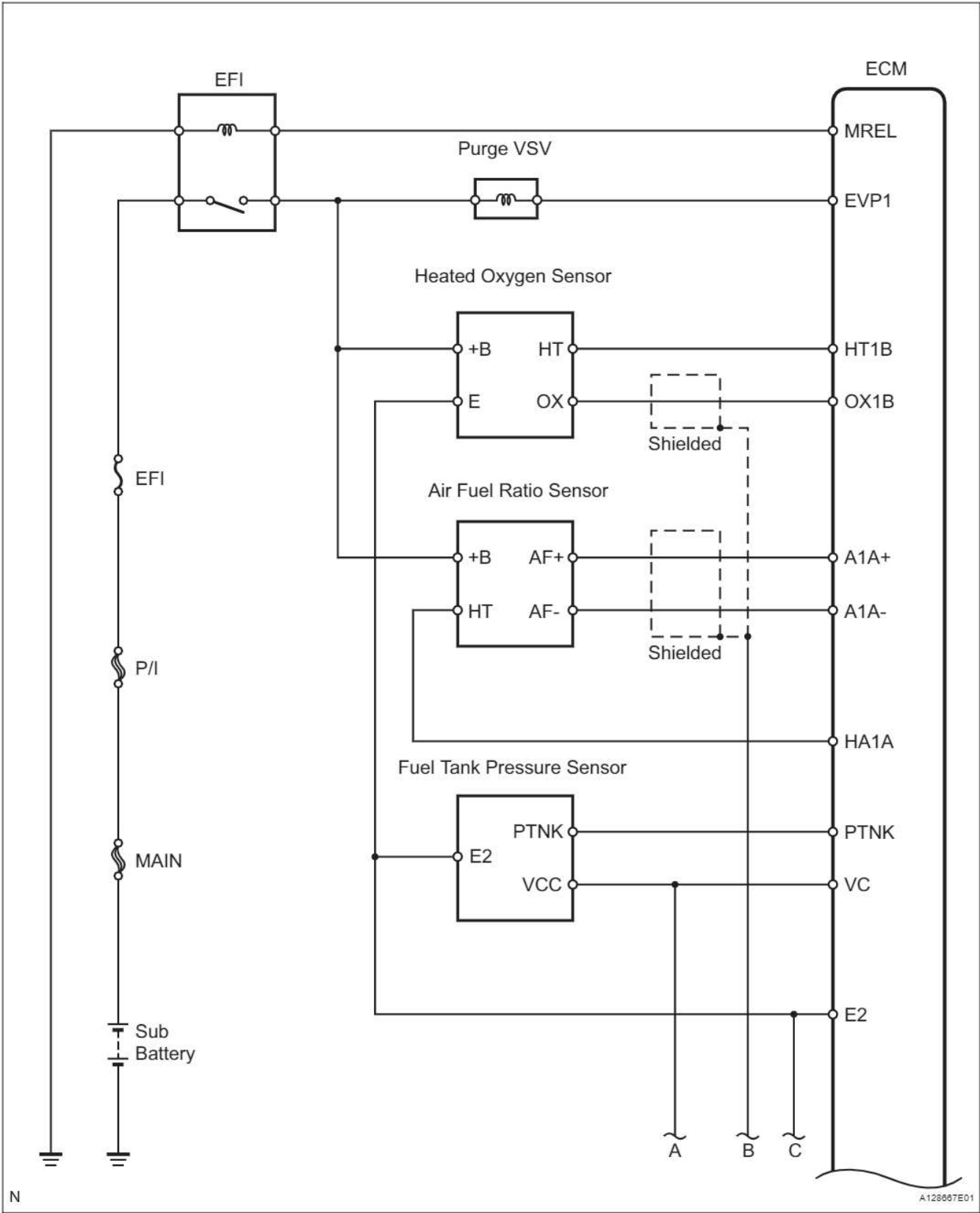
The emission control system is controlled by the ECM based on signals from various sensors.



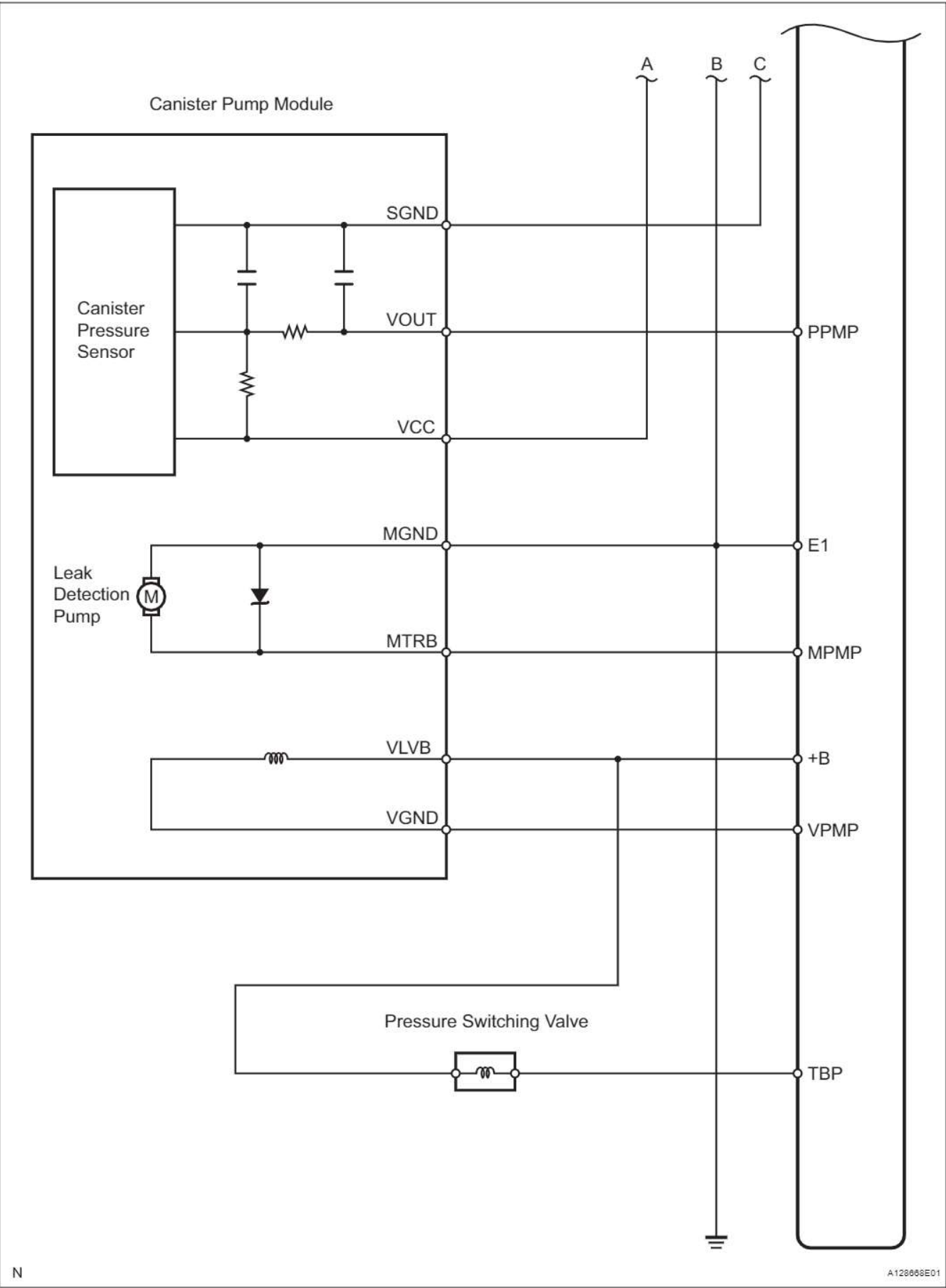
1NZ-FXE EMISSION CONTROL – EMISSION CONTROL SYSTEM

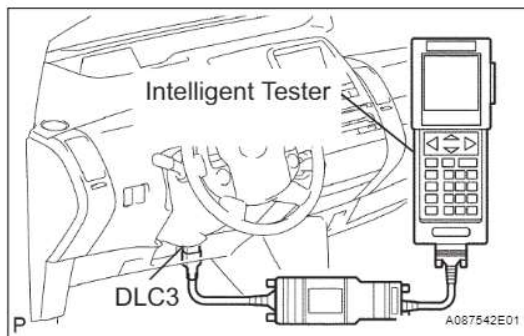
EC-3

EC



EC-4 1NZ-FXE EMISSION CONTROL – EMISSION CONTROL SYSTEM





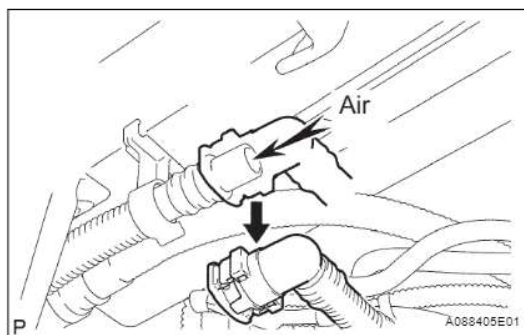
ON-VEHICLE INSPECTION

1. INSPECT FUEL CUT OFF RPM

- (a) Check the operation.
 - (1) Start the engine, then warm up it.
 - (2) Connect the intelligent tester to the DLC3.
 - (3) Turn the intelligent tester ON.
 - (4) Select the item: DIAGNOSIS / ENHANCED OBD II / DATA LIST / USER DATA / INJECTOR.
 - (5) Drive the vehicle. When releasing the accelerator pedal after the vehicle speed is 45 to 60 km/h (28 to 37 mph), read "INJECTOR" on the intelligent tester.

Standard:

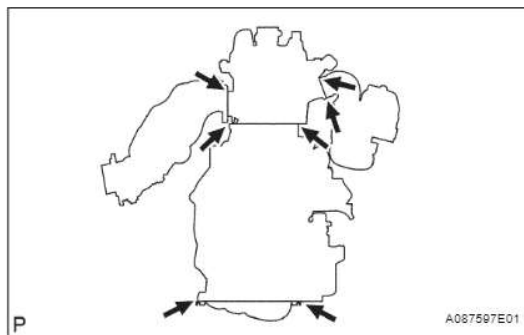
0 ms



2. CHECK AIR INLET LINE

- (a) Check the ventilation.
 - (1) Disconnect the ventilation hose (see page [FU-23](#)).
 - (2) Check that there is ventilation from the canister filter to the fuel tank inlet pipe when air is applied to the vent hose of the canister filter. If there is no ventilation, replace the canister filter.
 - (3) Connect the ventilation hose (see page [FU-32](#)).

EC



3. VISUALLY CHECK HOSES, CONNECTIONS AND GASKETS

- (a) Check the appearance.
 - (1) Visually check that there are no cracks, leaks or damage on the indicated portions in the illustration.

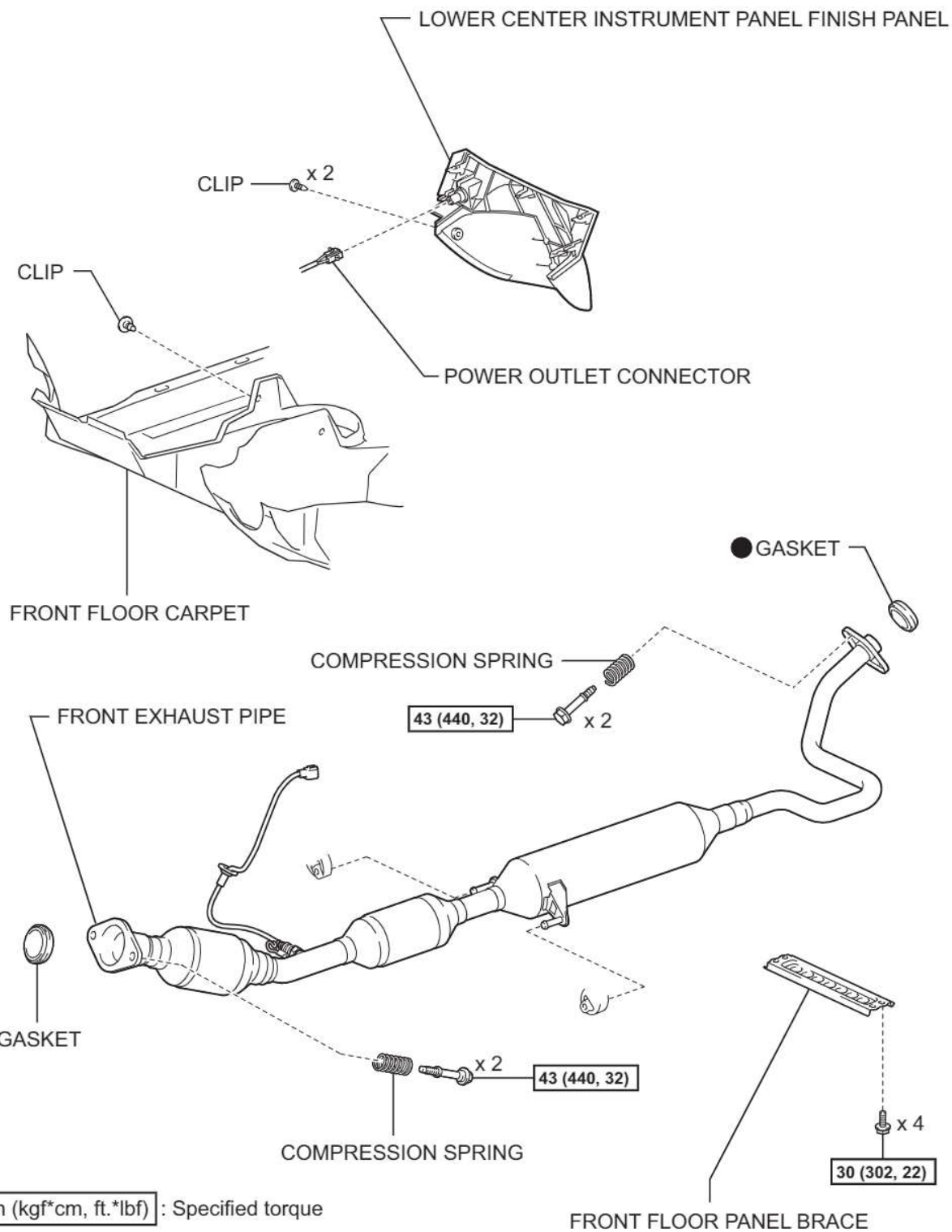
HINT:

 - Removing the oil level gauge, oil filler cap or ventilation hoses may cause the engine malfunction or engine stall.
 - If the parts between the mass air flow meter and cylinder head are disconnected, loose or cracked, secondary air may be sucked. If could cause the engine malfunction or engine stall.

EC-6

1NZ-FXE EMISSION CONTROL – CANISTER

CANISTER COMPONENTS



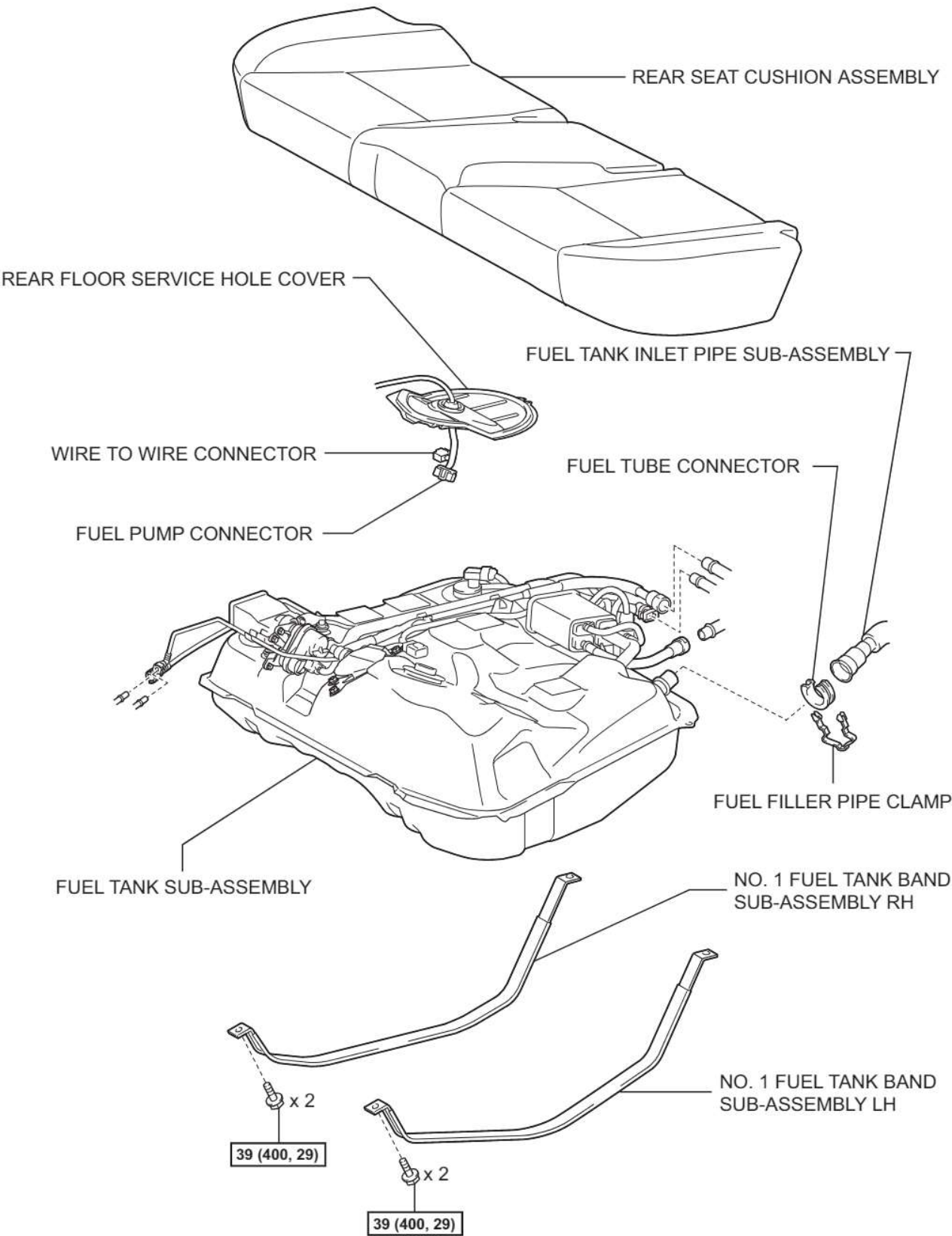
P

A131462E01

1NZ-FXE EMISSION CONTROL – CANISTER

EC-7

EC



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

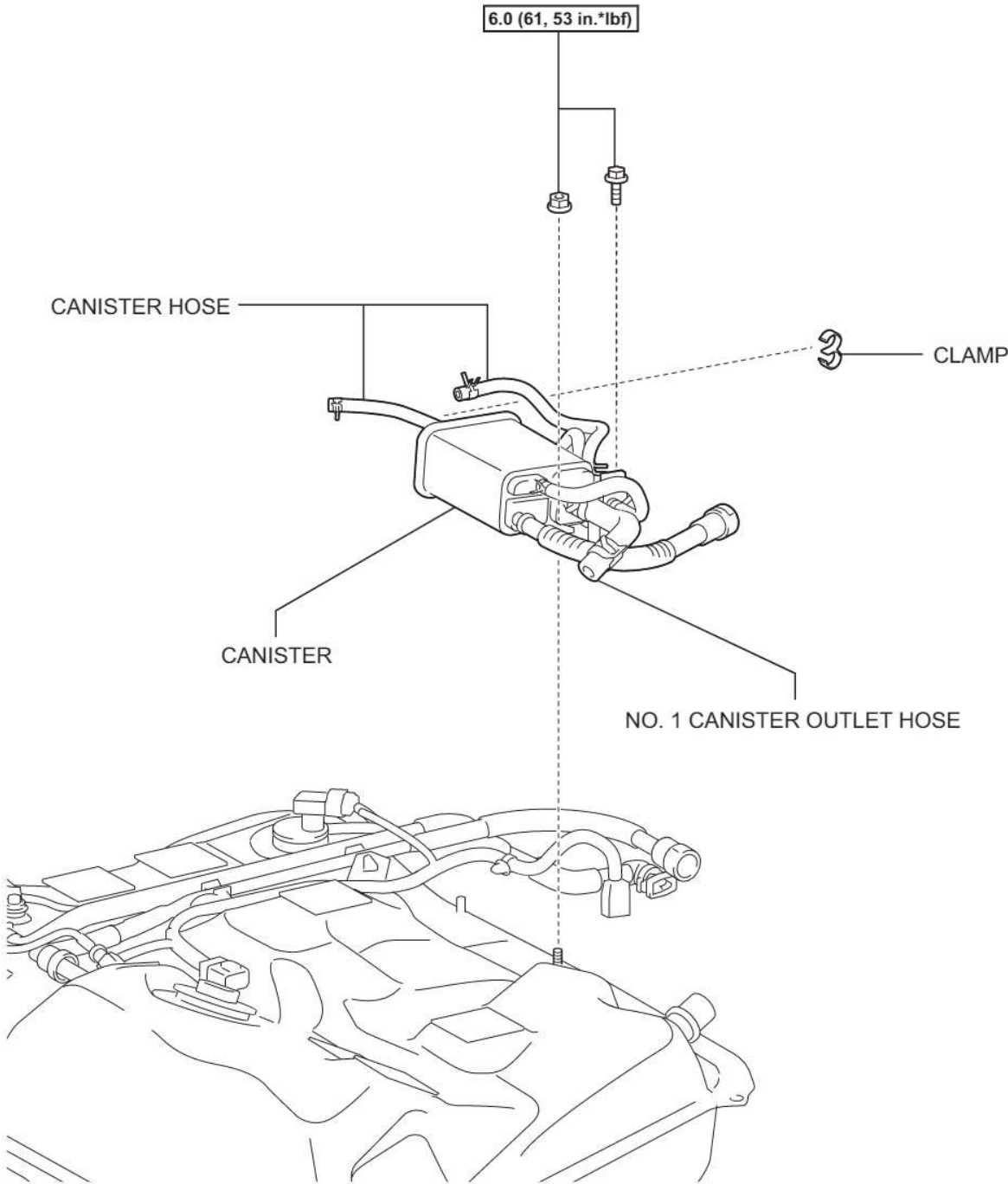
P

A131463E01

EC-8

1NZ-FXE EMISSION CONTROL – CANISTER

EC



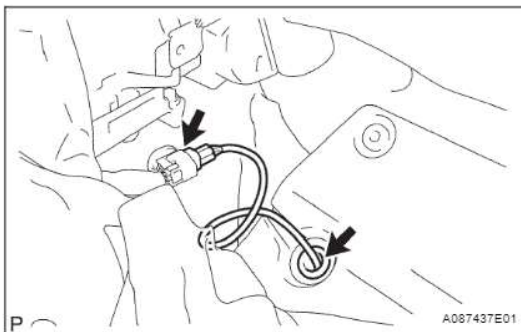
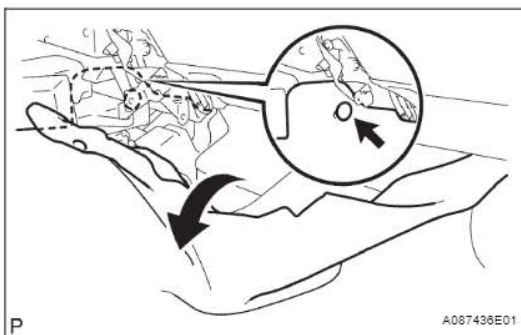
N*m (kgf*cm, ft.*lbf) : Specified torque

P

A128860E01

REMOVAL

1. DISCHARGE FUEL SYSTEM PRESSURE (See page [FU-12](#))
2. REMOVE REAR NO. 2 FLOOR BOARD (See page [CH-4](#))
3. REMOVE REAR DECK FLOOR BOX (See page [CH-4](#))
4. REMOVE REAR NO. 3 FLOOR BOARD (See page [CH-4](#))
5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. REMOVE LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page [IP-18](#))
7. REMOVE REAR SEAT CUSHION ASSEMBLY (See page [SE-15](#))
8. REMOVE REAR FLOOR SERVICE HOLE COVER (See page [FU-23](#))
9. REMOVE FRONT FLOOR PANEL BRACE (See page [EX-2](#))
10. REMOVE FRONT EXHAUST PIPE
 - (a) Using a clip remover, remove the clip.
 - (b) Fold back the front floor carpet.

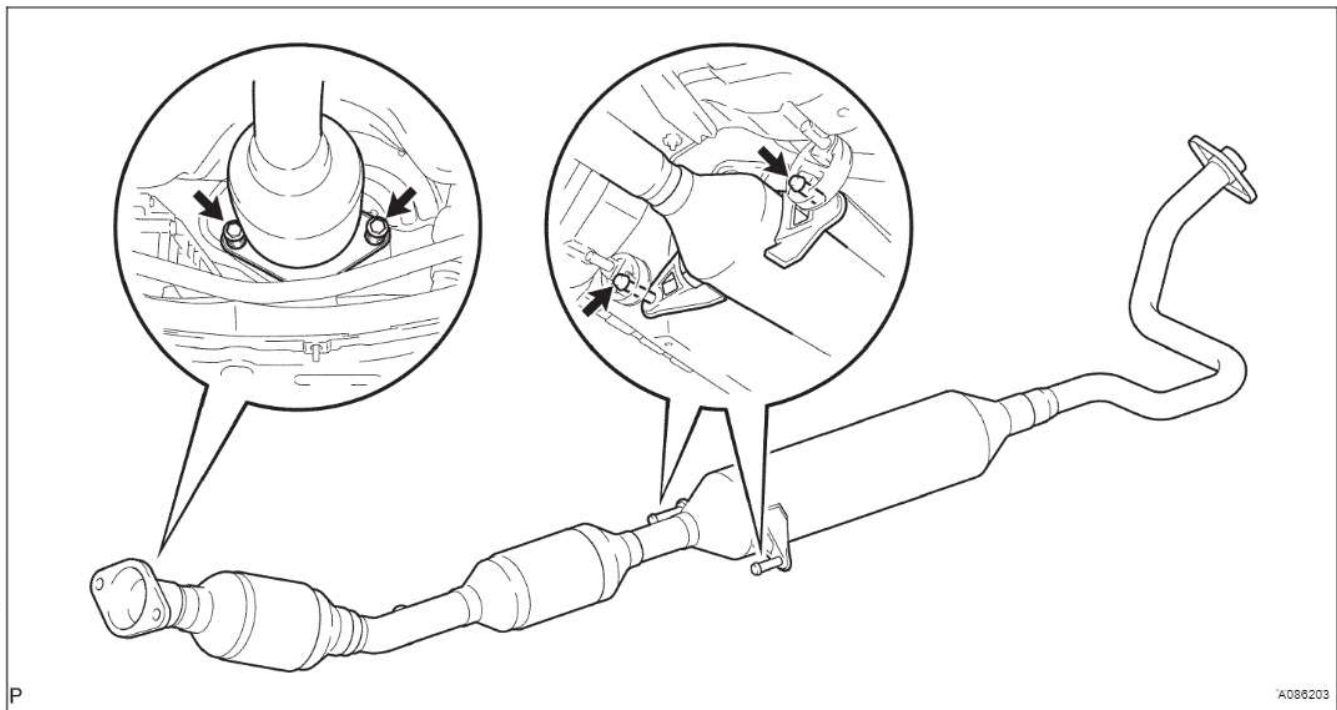


- (c) Disconnect the heated oxygen sensor connector.
- (d) Remove the grommet of the heated oxygen sensor from the vehicle.
- (e) Remove the 2 bolts and 2 compression springs.
- (f) Remove the gasket from the front exhaust pipe.
- (g) Disconnect the tail pipe from the front exhaust pipe.
- (h) Remove the 2 bolts and 2 compression springs.
- (i) Remove the front exhaust pipe from the 2 exhaust pipe supports.

EC-10

1NZ-FXE EMISSION CONTROL – CANISTER

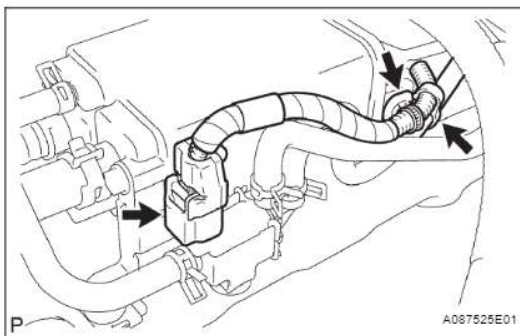
(j) Remove the gasket from the exhaust manifold.



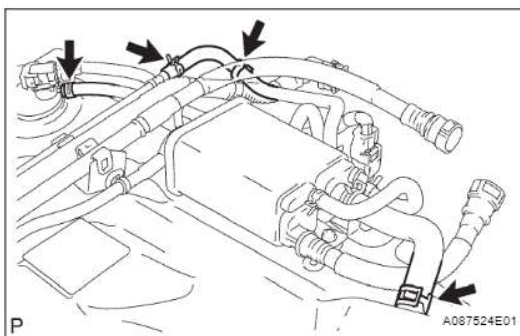
11. REMOVE FUEL TANK SUB-ASSEMBLY (See page [FU-23](#))

12. REMOVE CANISTER

- (a) Disconnect the pressure switching valve connector.
- (b) Remove the clamp.
- (c) Remove the wire harness clamp.

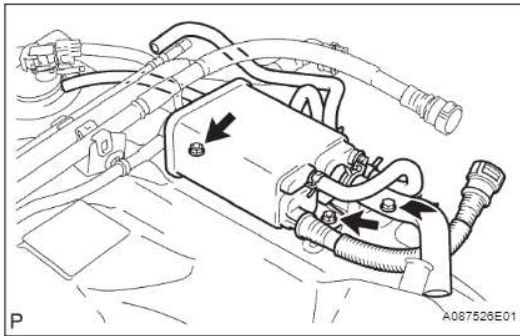


- (d) Remove the clamp.
- (e) Disconnect the 2 canister hoses from the fuel tank retainer and fuel tank to canister tube.
- (f) Disconnect the No. 1 canister outlet hose from the fuel tank.



1NZ-FXE EMISSION CONTROL – CANISTER

EC-11

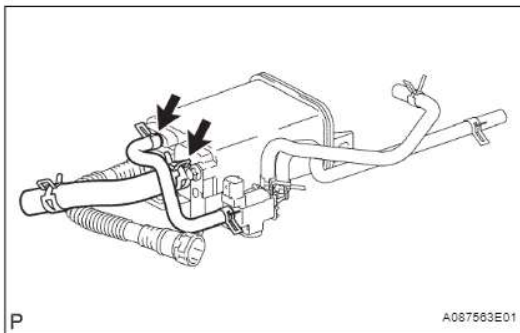
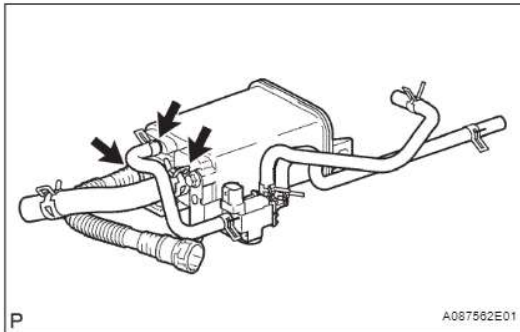


- (g) Remove the bolt and 2 nuts, then remove the canister.

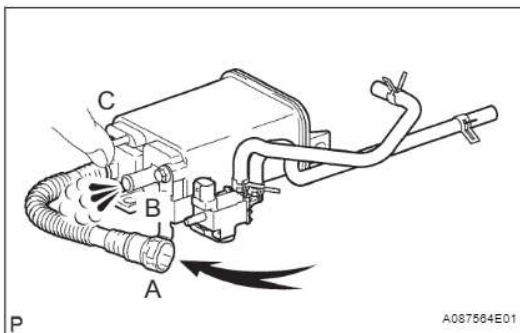
INSPECTION

1. INSPECT CANISTER

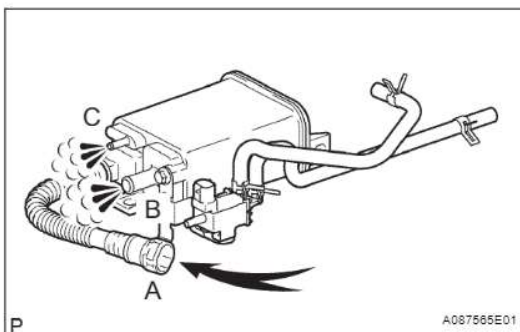
- (a) Check the appearance.
 (1) Check that there are no cracks or damage on the indicated portions of the canister.
 If there are any defects, replace the canister.



- (b) Check the ventilation.
 (1) Disconnect the charcoal canister hose from the canister.
 (2) Remove the No. 1 canister outlet hose from the canister.



- (3) Check that there is ventilation from port B when air of 4.9 kPa (50 gf/cm², 0.71 psi) is applied to port A with the port C plugged with your finger. If there is no ventilation, replace the canister.



- (4) Check that there is ventilation from ports B and C when air (4.9 kPa (50 gf/cm², 0.71 psi)) is applied to canister vent hose. If there is no ventilation, replace the canister.

EC

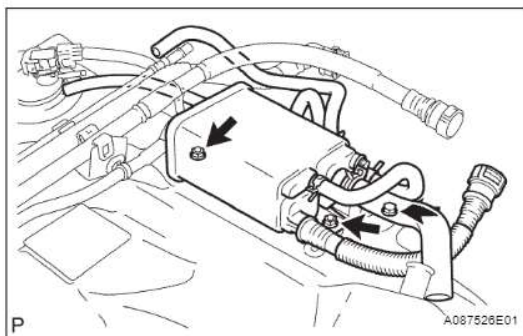
EC-12

1NZ-FXE EMISSION CONTROL – CANISTER

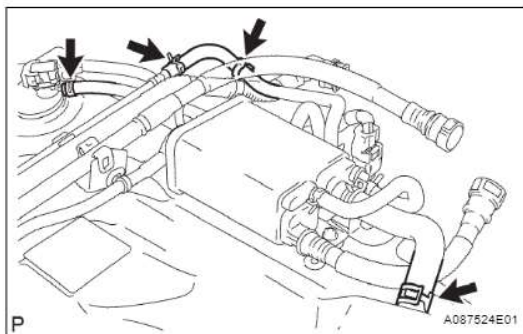
INSTALLATION

1. INSTALL CANISTER

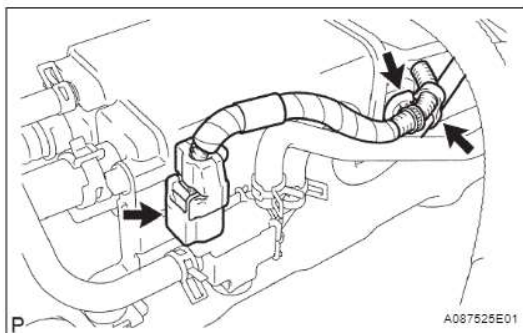
- (a) Install the canister with the bolt and 2 nuts.
Torque: 6.0 N*m (61 kgf*cm, 53 in.*lbf)



- (b) Connect the No. 1 canister outlet hose to the fuel tank.
 (c) Connect the 2 canister hoses to the fuel tank retainer and fuel tank to canister tube.
 (d) Install the clamp.



- (e) Install the wire clamp harness.
 (f) Install the clamp.
 (g) Connect the pressure switching valve connector.

2. INSTALL FUEL TANK SUB-ASSEMBLY (See page [FU-35](#))

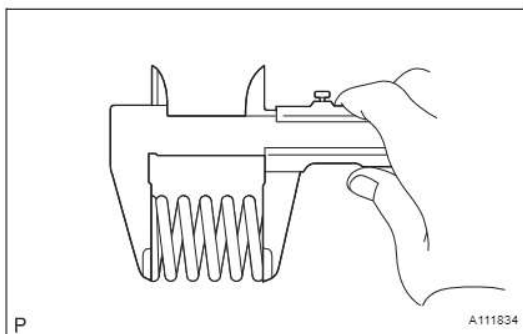
3. INSTALL FRONT EXHAUST PIPE

- (a) Using a vernier caliper, measure the free length of the compression spring.

Minimum length:

40.5 mm (1.594 in.)

If the length is less than the minimum, replace the compression spring.

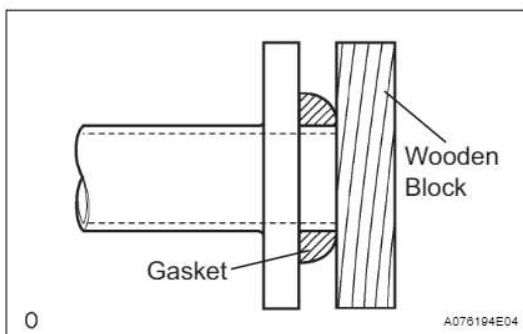


- (b) Using a plastic-faced hammer and wooden block, tap in a new gasket until its surface is flush with the exhaust manifold.

NOTICE:

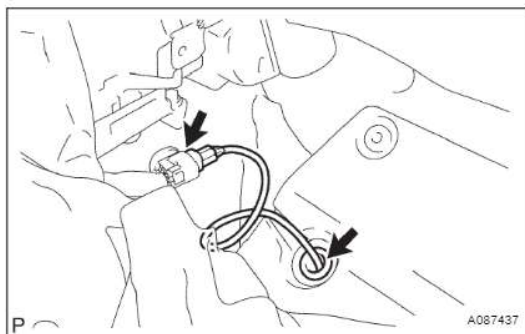
- Tap in the gasket in the correct direction.
- Do not reuse the removed gasket.
- Do not push in the gasket while installing the exhaust pipe.

- (c) Connect the 2 exhaust pipe supports, and install the exhaust pipe.



1NZ-FXE EMISSION CONTROL – CANISTER

EC-13



- (d) Install the 2 compression springs and 2 bolts.
Torque: 43 N*m (438 kgf*cm, 32 ft.*lbf)
 - (e) Install the grommet of the heated oxygen sensor to the vehicle.
 - (f) Connect the heated oxygen sensor connector.
 - (g) Install the front floor carpet with the clip.
4. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL** (See page [CH-7](#))
 5. **CHECK FOR FUEL LEAKS** (See page [FU-8](#))
 6. **CHECK FOR EXHAUST GAS LEAKS** (See page [EX-4](#))
 7. **INSTALL FRONT FLOOR PANEL BRACE** (See page [EX-4](#))
 8. **INSTALL REAR FLOOR SERVICE HOLE COVER** (See page [FU-38](#))
 9. **INSTALL REAR SEAT CUSHION ASSEMBLY** (See page [SE-23](#))
 10. **INSTALL LOWER CENTER INSTRUMENT PANEL FINISH PANEL** (See page [IP-21](#))
 11. **INSTALL REAR NO. 3 FLOOR BOARD** (See page [CH-8](#))
 12. **INSTALL REAR DECK FLOOR BOX** (See page [CH-8](#))
 13. **INSTALL REAR NO. 2 FLOOR BOARD** (See page [CH-8](#))
 14. **PERFORM INITIALIZATION**
 - (a) Perform initialization (see page [IN-32](#)).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

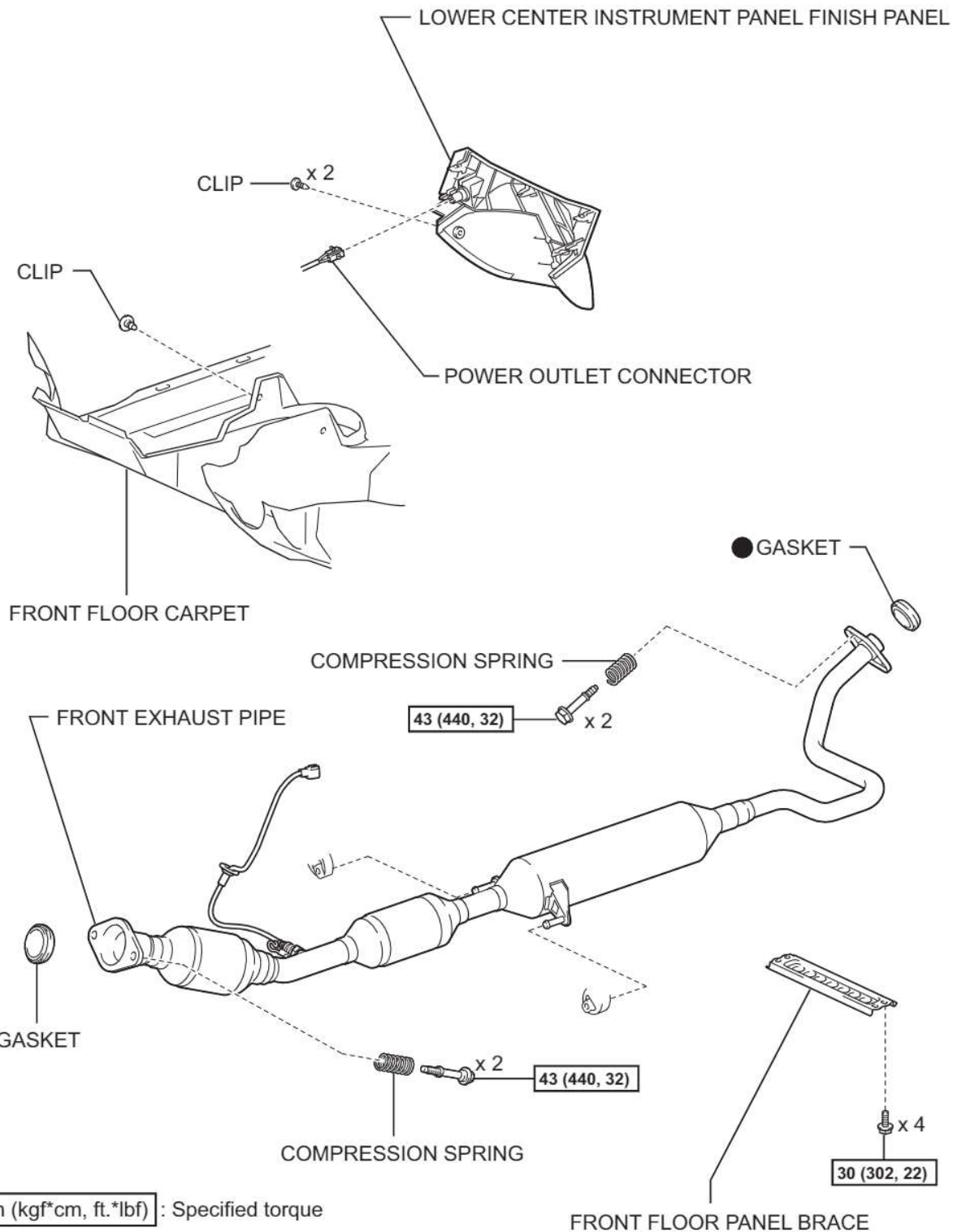
EC

EC-14

1NZ-FXE EMISSION CONTROL – TRAP CANISTER

TRAP CANISTER

COMPONENTS



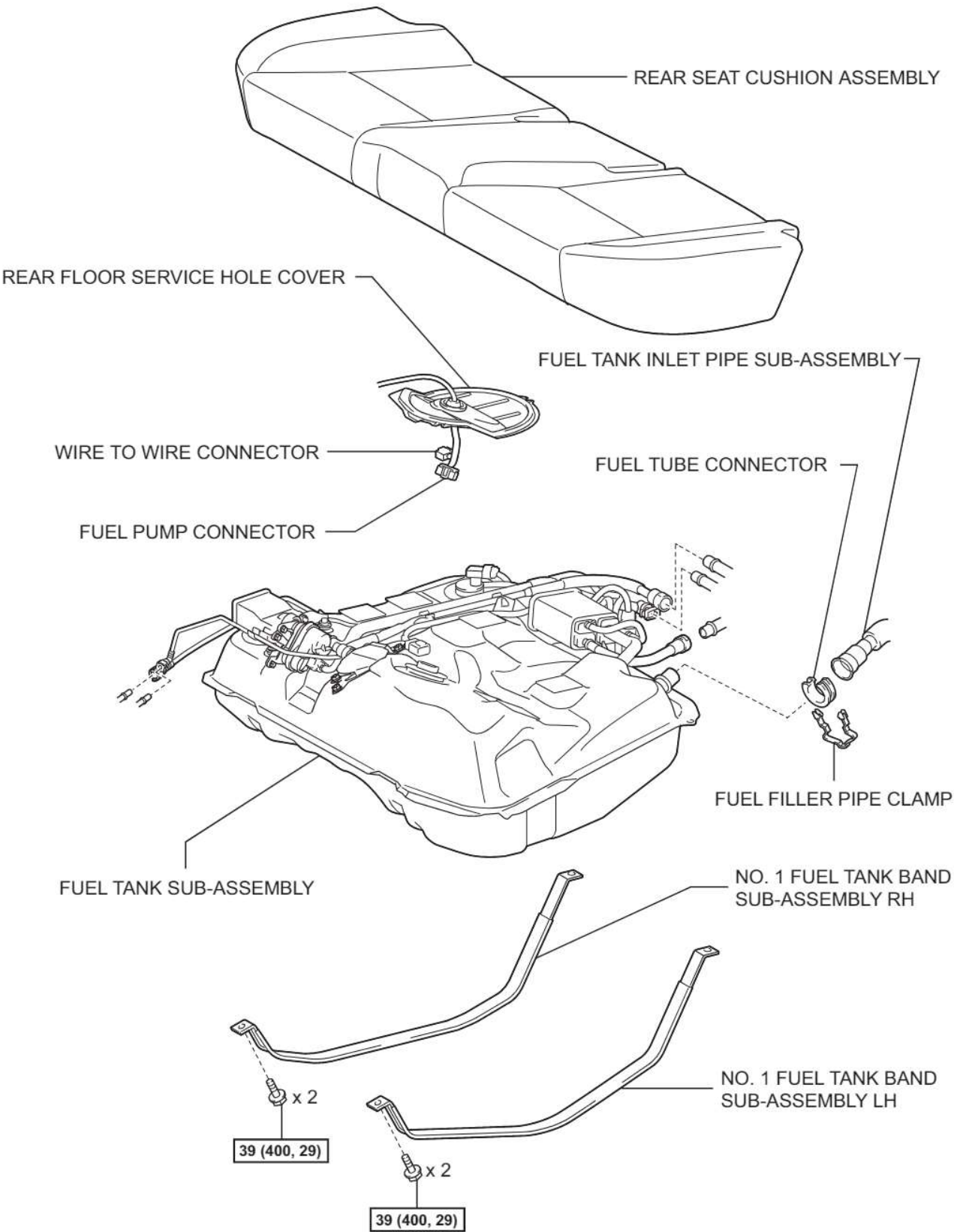
P

A131462E02

1NZ-FXE EMISSION CONTROL – TRAP CANISTER

EC-15

EC



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

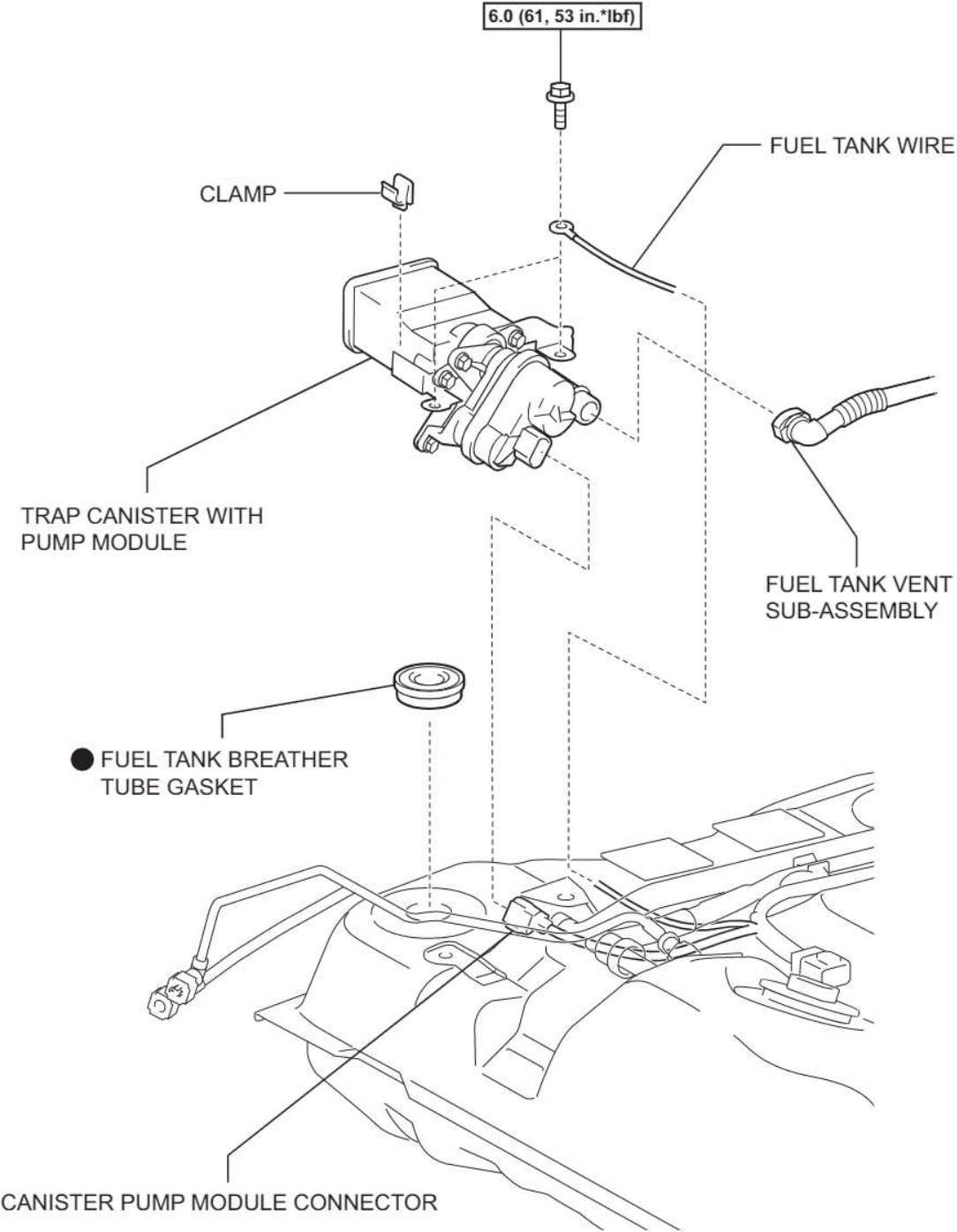
P

A131463E02

EC-16

1NZ-FXE EMISSION CONTROL – TRAP CANISTER

EC



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

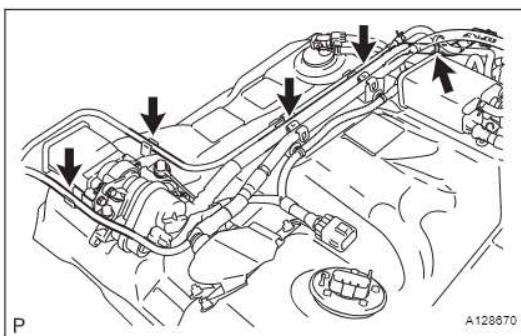
● Non-reusable part

P

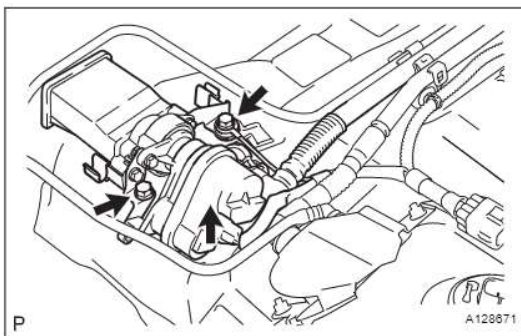
A128862E01

REMOVAL

1. DISCHARGE FUEL SYSTEM PRESSURE (See page [FU-12](#))
2. REMOVE REAR NO. 2 FLOOR BOARD (See page [CH-4](#))
3. REMOVE REAR DECK FLOOR BOX (See page [CH-4](#))
4. REMOVE REAR NO. 3 FLOOR BOARD (See page [CH-4](#))
5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. REMOVE LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page [IP-18](#))
7. REMOVE REAR SEAT CUSHION ASSEMBLY (See page [SE-15](#))
8. REMOVE REAR FLOOR SERVICE HOLE COVER (See page [FU-23](#))
9. REMOVE FRONT FLOOR PANEL BRACE (See page [EX-2](#))
10. REMOVE FRONT EXHAUST PIPE (See page [EC-9](#))
11. REMOVE FUEL TANK SUB-ASSEMBLY (See page [FU-23](#))



12. REMOVE TRAP CANISTER WITH PUMP MODULE
 - (a) Remove the clamp from the fuel tank vent hose and canister hose.
 - (b) Remove the tube of the fuel tank main tube from the clamp.
 - (c) Remove the tube of the fuel tank to canister tube from the clamp.
 - (d) Remove the tube of the fuel tank vent hose from the 2 fuel tube with No. 1 grommet clamps.

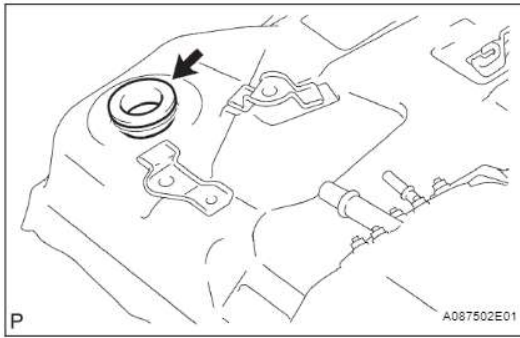


- (e) Disconnect the canister pump module connector.
- (f) Remove the 2 bolts, then remove the trap canister with pump module and ground terminal of the fuel tank wire.

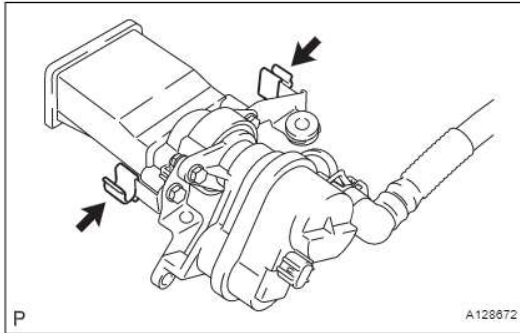
EC

EC-18

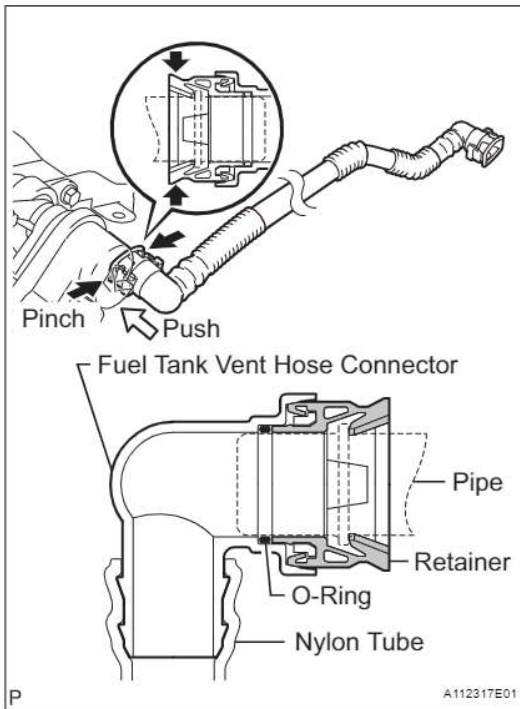
1NZ-FXE EMISSION CONTROL – TRAP CANISTER



(g) Remove the gasket from the fuel tank.



(h) Remove the 2 clamps from the trap canister with pump module.



(i) Pinch the retainer and pull out the fuel tank vent connector with the fuel tank vent hose connector pushed to the fuel tank vent hose side to disconnect the fuel tank vent hose from the trap canister with pump module.

NOTICE:

- Remove dirt or foreign objects on the fuel tank vent hose connector before this work procedure.
- Do not allow any scratches or foreign objects on the parts when disconnecting them as the fuel tank vent hose connector has the O-ring that seals the pipe.
- Perform this work by hand. Do not use any tools.
- Do not forcibly bend, twist or turn the nylon tube.
- Protect the connecting part by covering it with a plastic bag after disconnecting the fuel tank vent hose.
- If the fuel tank vent hose connector and pipe are stuck, push and pull them to release them.

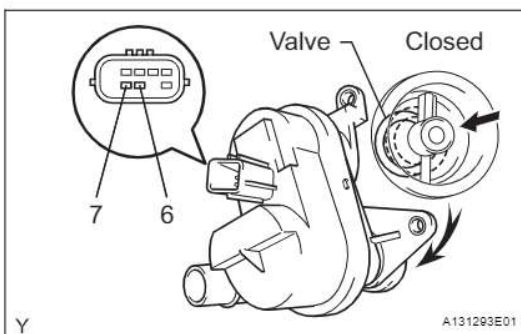
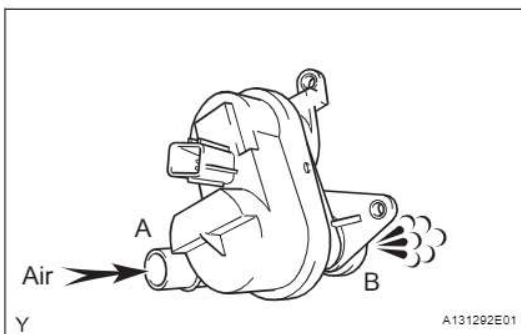
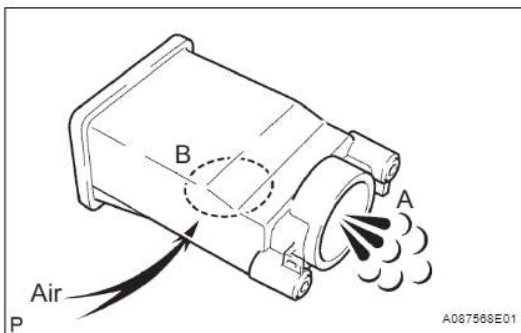
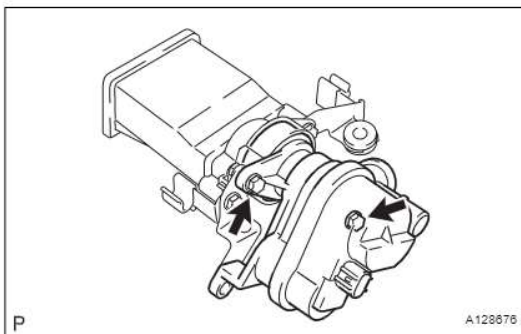
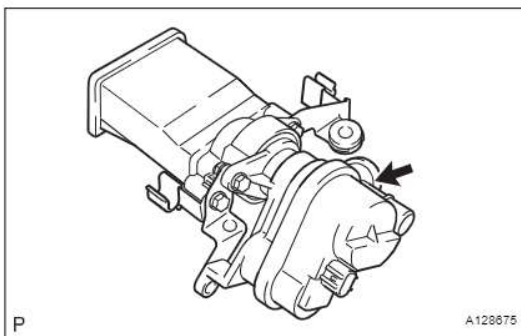
1NZ-FXE EMISSION CONTROL – TRAP CANISTER

EC-19

INSPECTION

1. INSPECT TRAP CANISTER WITH PUMP MODULE

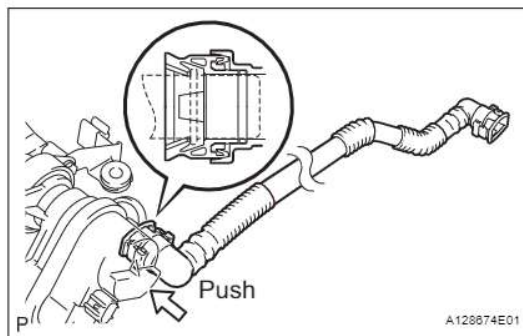
- (a) Check the appearance.
 - (1) Check that there are no cracks or damage on the indicated portion of the trap canister with pump module.
If there are any defects, replace the trap canister with pump module.
- (b) Check the ventilation.
 - (1) Remove the 2 bolts and canister pump module.
 - (2) Check that there is ventilation from port A when air is applied to port B.
If there is no ventilation, replace the trap canister with pump module.
- (c) Check the leak detection pump.
 - (1) Check that air flows from port A to port B and C.
If the result is not as specified, replace the canister.
 - (2) Connect the positive (+) lead of the battery to terminal 7 and the negative (-) lead to terminal 6. Check that the valve is closed.
If the result is not as specified, replace the trap with outlet valve canister.
 - (3) Install the canister pump module.



EC

EC-20

1NZ-FXE EMISSION CONTROL – TRAP CANISTER



INSTALLATION

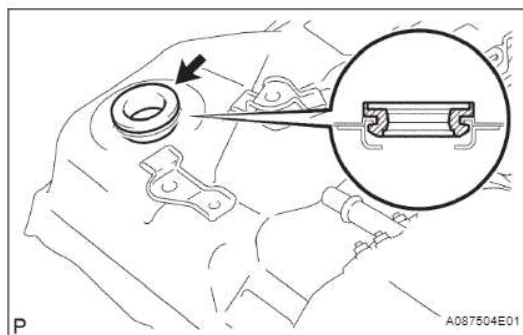
1. INSTALL TRAP CANISTER WITH PUMP MODULE

- (a) Install the fuel tank vent hose.
 - (1) Align the fuel tank vent hose connector with the pipe, then push in the fuel tank vent hose connector until the retainer makes a "click" sound to install the fuel tank vent hose to the trap canister with pump module.

NOTICE:

- Check that there are no scratches or foreign objects around the connected part of the fuel tank vent hose connector and pipe before this procedure.
- After connecting the fuel tank vent hose, check that the fuel tank vent hose is securely connected by pulling the fuel tank vent hose connector.

EC



- (b) Install a new gasket to the fuel tank.
- (c) While being careful that the gasket does not drop in the fuel tank, insert the trap canister with pump module to the fuel tank.
- (d) Install the trap canister with pump module and ground terminal of the fuel tank wire with the 2 bolts.
Torque: 6.0 N*m (61 kgf*cm, 53 in.*lbf)
- (e) Install the tube of the fuel tank vent hose to the 2 No. 1 fuel tube with grommet clamps.
- (f) Install the clamp to the fuel tank vent hose and canister hose.
- (g) Connect the canister pump module connector.
- (h) Install the fuel tank vent hose to the 2 No. 1 fuel tube with grommet clamps.
- (i) Install the tube of the fuel tank to canister tube to the clamp.
- (j) Install the tube of the fuel tank main tube to the clamp.
- (k) Install the clamp to the fuel tank vent hose and canister hose.

2. INSTALL FUEL TANK SUB-ASSEMBLY (See page [FU-35](#))
3. INSTALL FRONT EXHAUST PIPE (See page [EC-12](#))
4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page [CH-7](#))
5. CHECK FOR FUEL LEAKS (See page [FU-8](#))
6. CHECK FOR EXHAUST GAS LEAKS (See page [EX-4](#))
7. INSTALL FRONT FLOOR PANEL BRACE (See page [EX-4](#))
8. INSTALL REAR FLOOR SERVICE HOLE COVER (See page [FU-38](#))
9. INSTALL REAR SEAT CUSHION ASSEMBLY (See page [SE-23](#))

1NZ-FXE EMISSION CONTROL – TRAP CANISTER

EC-21

10. INSTALL LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page [IP-21](#))
11. INSTALL REAR NO. 3 FLOOR BOARD (See page [CH-8](#))
12. INSTALL REAR DECK FLOOR BOX (See page [CH-8](#))
13. INSTALL REAR NO. 2 FLOOR BOARD (See page [CH-8](#))
14. PERFORM INITIALIZATION
 - (a) Perform initialization (see page [IN-32](#)).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

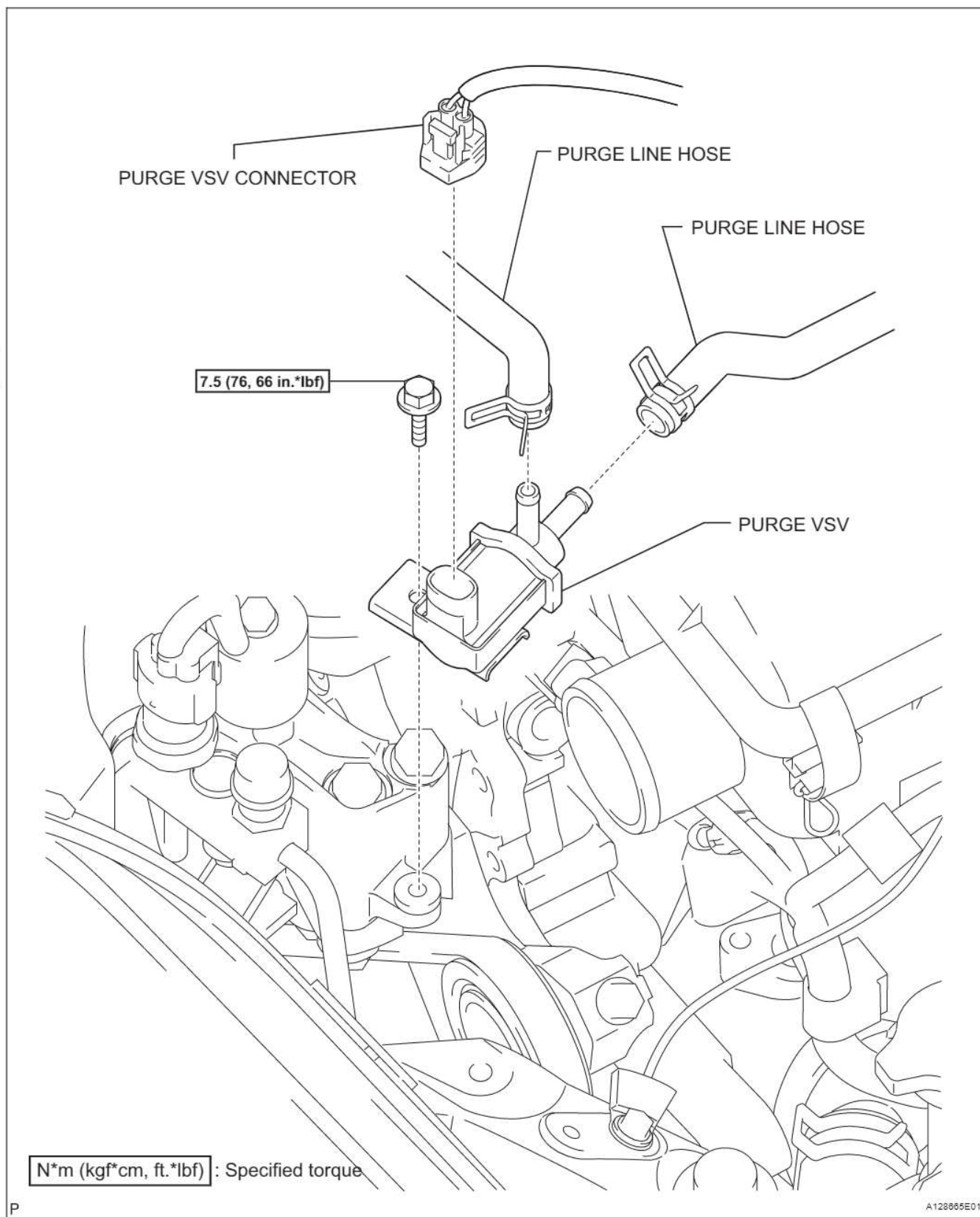
EC

EC-22

1NZ-FXE EMISSION CONTROL – VACUUM SWITCHING VALVE

VACUUM SWITCHING VALVE

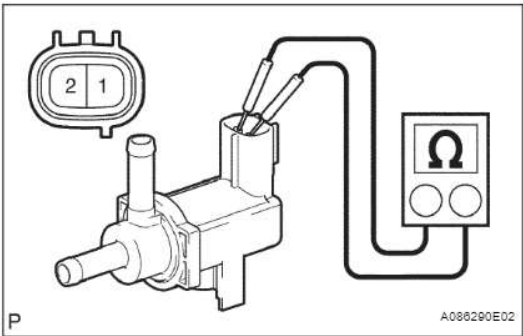
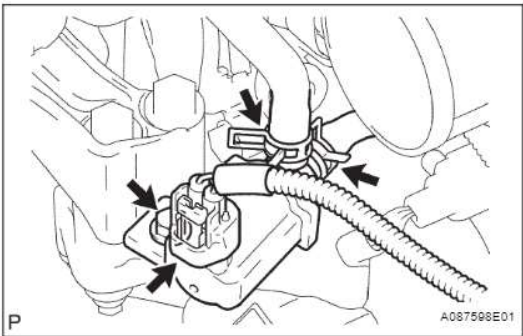
COMPONENTS



REMOVAL

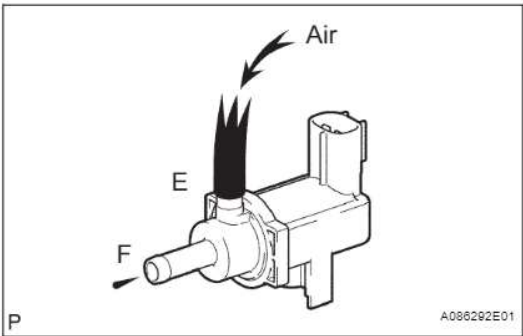
1. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
2. REMOVE REAR DECK FLOOR BOX (See page CH-4)
3. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
5. REMOVE PURGE VSV
(a) Disconnect the purge VSV connector.
(b) Disconnect the 2 purge line hoses from the purge VSV.
(c) Remove the bolt, then remove the purge VSV.

EC



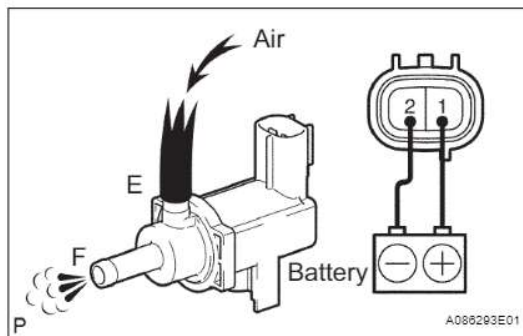
INSPECTION

1. INSPECT PURGE VSV
(a) Inspect the resistance.
(1) Measure the resistance between the terminals.
Standard resistance
- | Tester Connection | Specified Condition |
|-------------------|---------------------------|
| 1 - 2 | 26 to 30 Ω at 20°C (68°F) |
- If the resistance is not as specified, replace the purge VSV.
- (b) Check the ventilation.
(1) Check that there is no ventilation from port F when air is applied to port E.
If there is ventilation, replace the purge VSV.

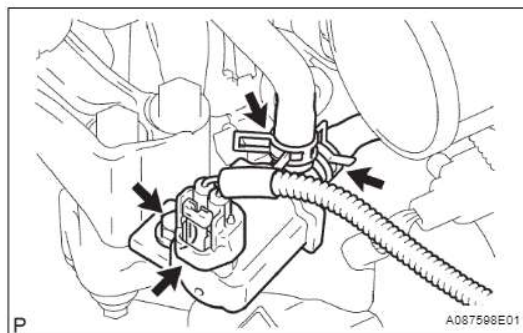


EC-24

1NZ-FXE EMISSION CONTROL – VACUUM SWITCHING VALVE



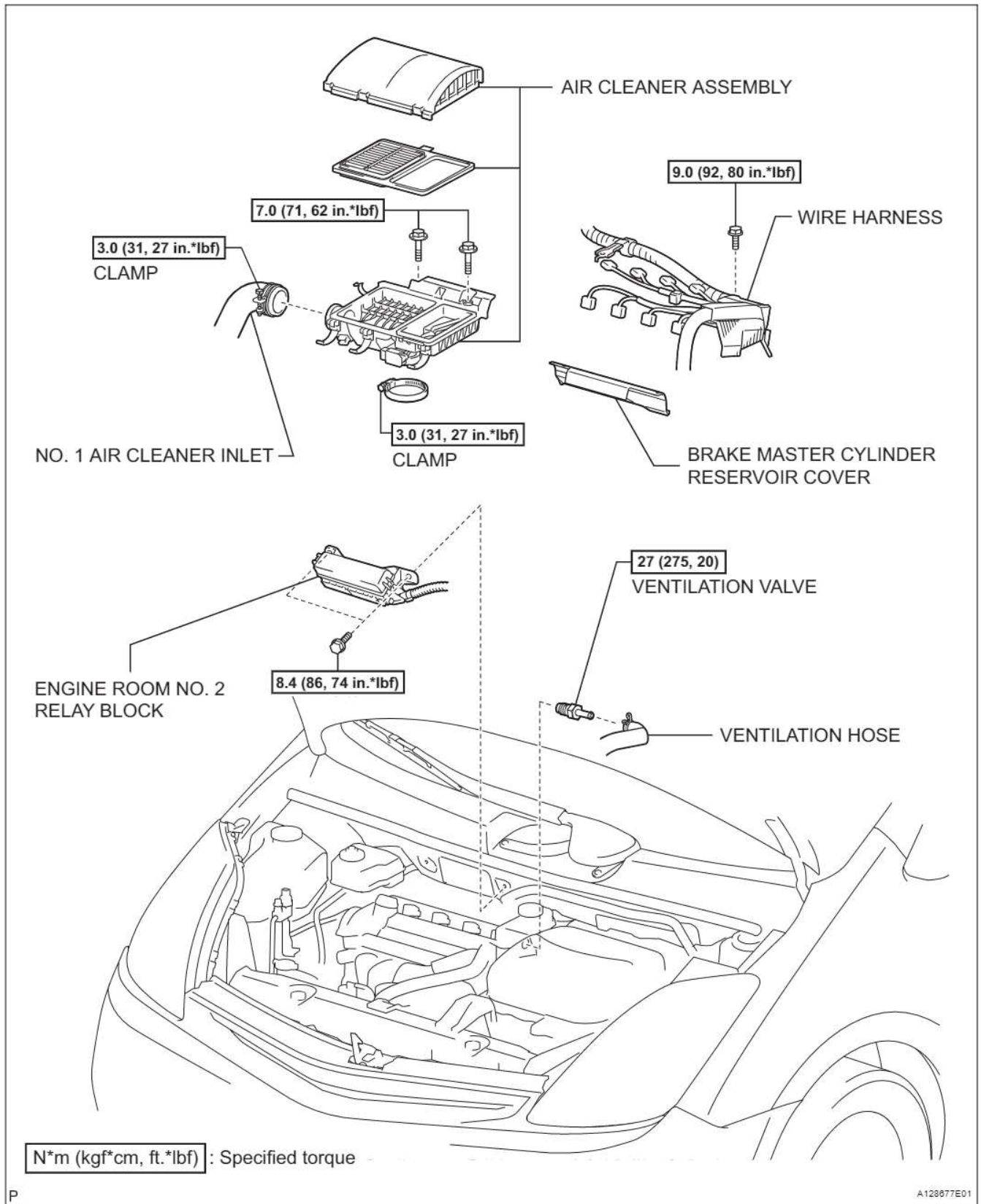
- (2) Apply battery voltage across the terminals.
- (3) Check that there is ventilation from port F when air is applied to port E.
If there is no ventilation, replace the purge VSV.



INSTALLATION

1. **INSTALL PURGE VSV**
 - (a) Install the purge VSV with the bolt.
Torque: 7.5 N*m (76 kgf*cm, 66 in.*lbf)
 - (b) Connect the 2 purge line hoses to the purge VSV.
 - (c) Connect the purge VSV connector.
2. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
3. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
4. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
5. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
6. **PERFORM INITIALIZATION**
 - (a) Perform initialization (see page IN-32).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

VENTILATION VALVE COMPONENTS



EC-26

1NZ-FXE EMISSION CONTROL – VENTILATION VALVE

REMOVAL

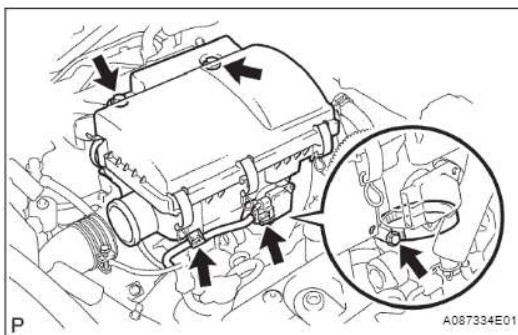
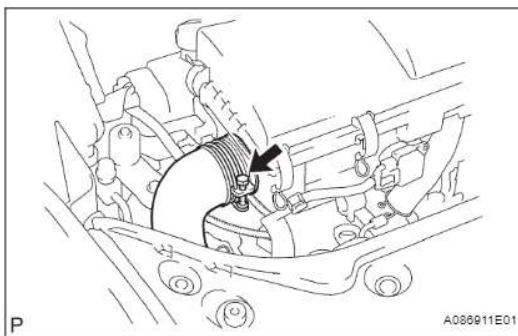
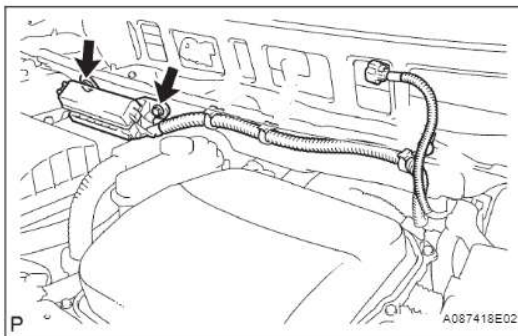
1. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
2. REMOVE REAR FLOOR DECK BOX (See page CH-4)
3. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

5. REMOVE ENGINE ROOM NO. 2 RELAY BLOCK

- (a) Remove the 2 bolts and relay block.
- (b) Remove the 4 wire harness clamps.



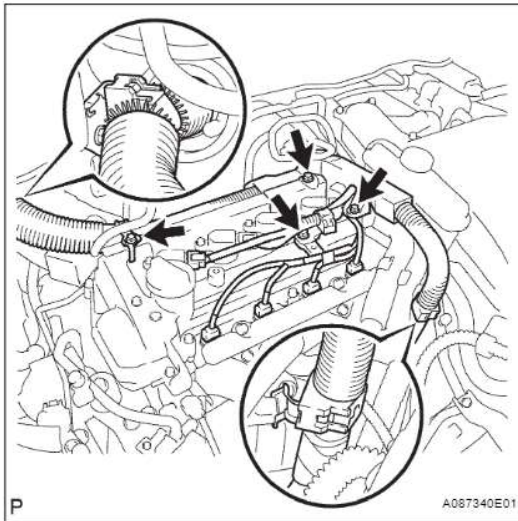
6. REMOVE AIR CLEANER ASSEMBLY

- (a) Loosen the clamp, then disconnect the No. 1 air cleaner inlet from the air cleaner case.
- (b) Disconnect the mass air flow meter connector, then remove the wire harness clamp.
- (c) Loosen the 2 clamps, then remove the 2 bolts and air cleaner assembly.

EC

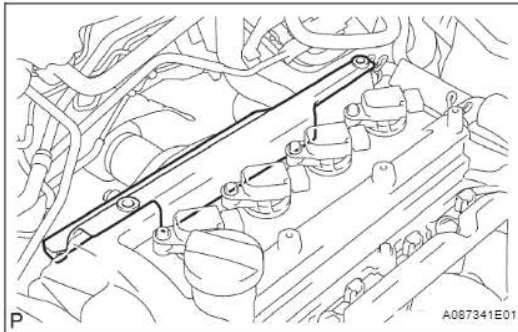
1NZ-FXE EMISSION CONTROL – VENTILATION VALVE

EC-27

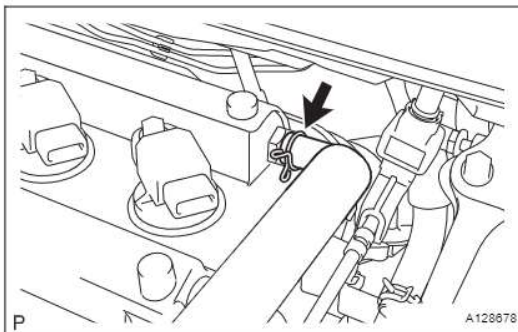


7. REMOVE WIRE HARNESS

- (a) Disconnect the fuel injector connector and ignition coil connector.
- (b) Remove the 3 bolts and wire harness clamp, then disconnect the wire harness.

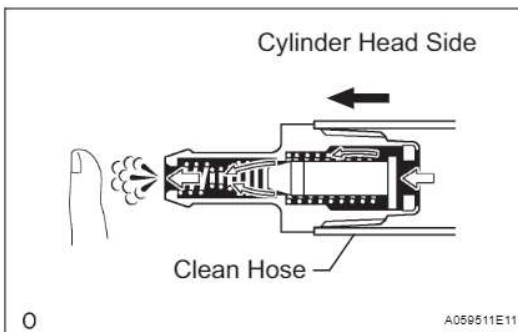


- (c) Remove the brake master cylinder reservoir cover.



8. REMOVE VENTILATION VALVE

- (a) Disconnect the ventilation hose.
- (b) Remove the ventilation valve.



INSPECTION

1. INSPECT VENTILATION VALVE

- (a) Check the ventilation.
 - (1) Install a clean hose to the ventilation valve as illustration.
 - (2) Check that there is ventilation when air is applied to the cylinder head side.

CAUTION:

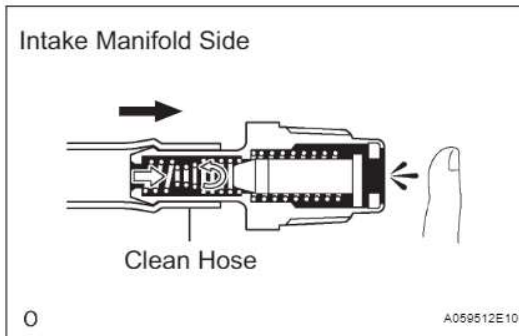
Do not suck the air inside the ventilation valve because it is harmful.

If there is no ventilation, replace the ventilation valve.

EC

EC-28

1NZ-FXE EMISSION CONTROL – VENTILATION VALVE



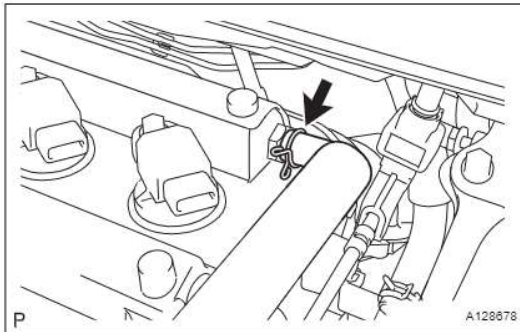
- (3) Check that there no ventilation when air is applied to the intake manifold side.
If there is ventilation, replace the ventilation valve.

INSTALLATION

1. INSTALL VENTILATION VALVE

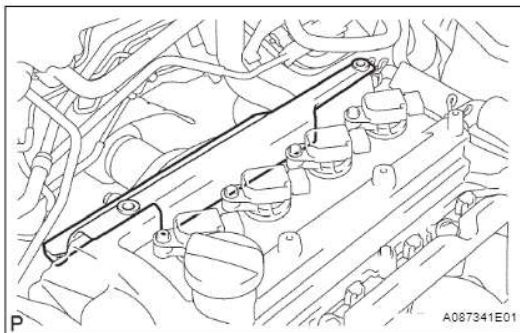
- (a) Install the ventilation valve onto the cylinder head cover.

Torque: 27 N*m (275 kgf*cm, 20 ft.*lbf)



2. INSTALL ENGINE WIRE

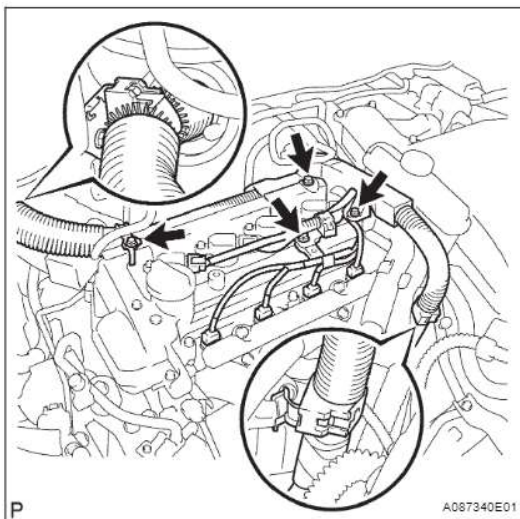
- (a) Install the brake master cylinder reservoir cover to the cylinder head cover.



- (b) Install the wire harness and brake master cylinder reservoir cover with the 3 bolts.

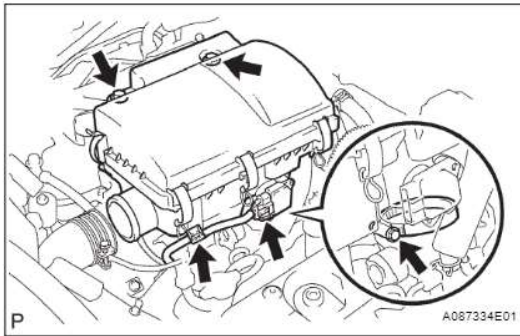
Torque: 9.0 N*m (92 kgf*cm, 80 in.*lbf)

- (c) Connect the fuel injector connector and ignition coil connector.



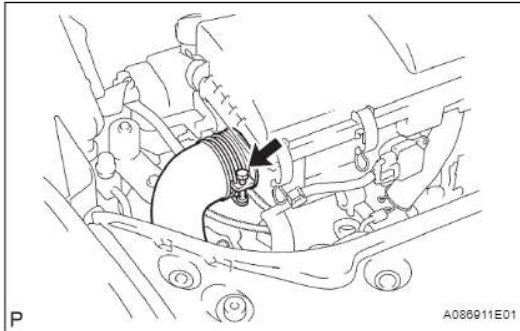
1NZ-FXE EMISSION CONTROL – VENTILATION VALVE

EC-29

**3. INSTALL AIR CLEANER ASSEMBLY**

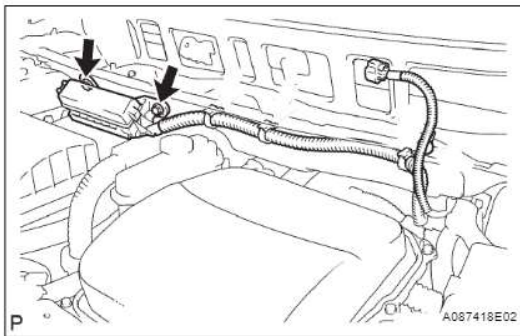
- (a) Install the air cleaner with the 2 bolts and tighten the clamp.

Torque: 7.0 N*m (71 kgf*cm, 62 in.*lbf) for bolt
3.0 N*m (31 kgf*cm, 27 in.*lbf) for clamp



- (b) Connect the No. 1 air cleaner inlet to the air cleaner case, and then tighten the clamp.

Torque: 3.0 N*m (31 kgf*cm, 27 in.*lbf)

**4. INSTALL ENGINE ROOM NO. 2 RELAY BLOCK**

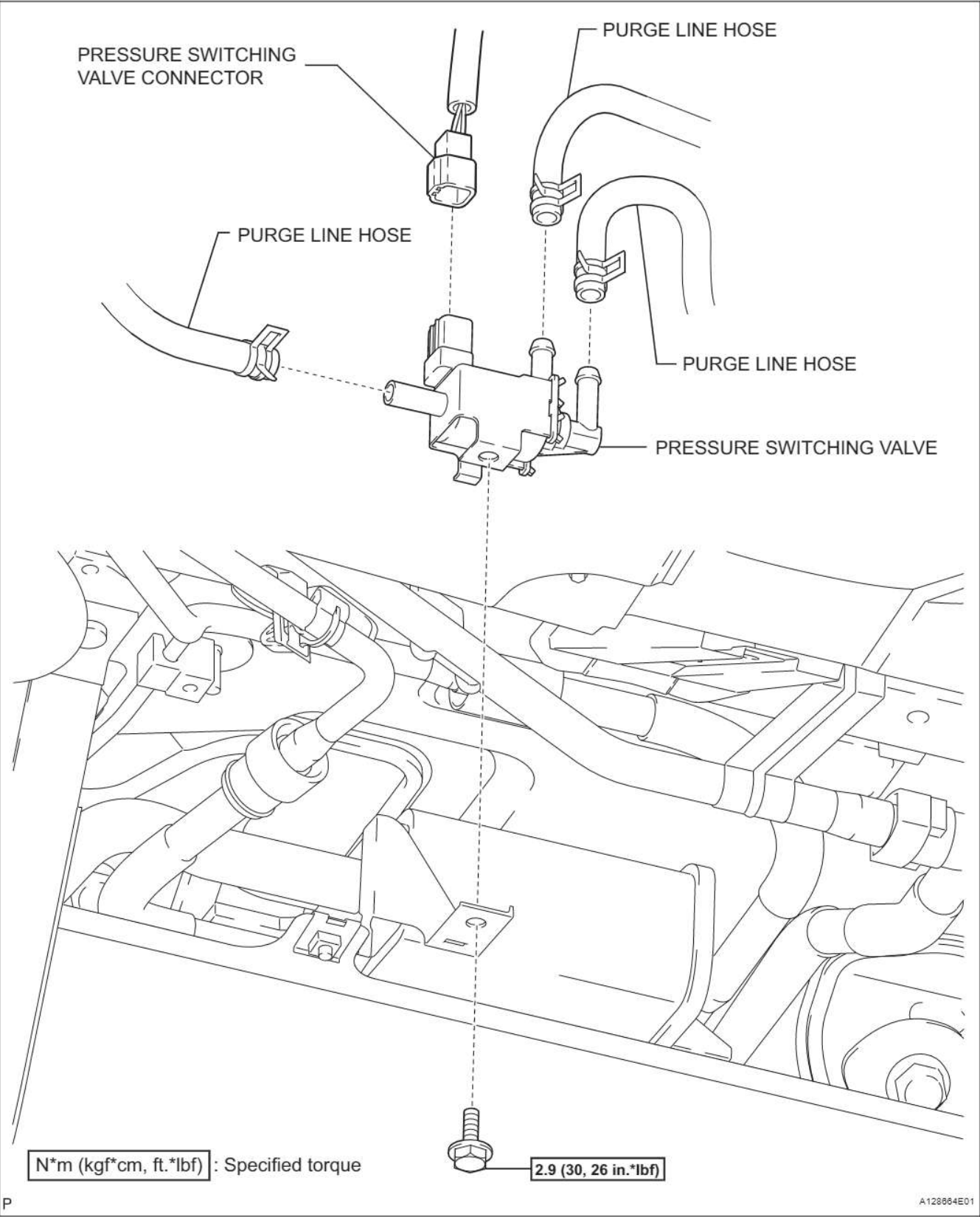
- (a) Install the relay block with the 2 bolts.

Torque: 8.4 N*m (86 kgf*cm, 74 in.*lbf)

5. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**6. INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)****7. INSTALL REAR DECK FLOOR BOX (See page CH-8)****8. INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**

EC

CANISTER PRESSURE SWITCHING VALVE
COMPONENTS



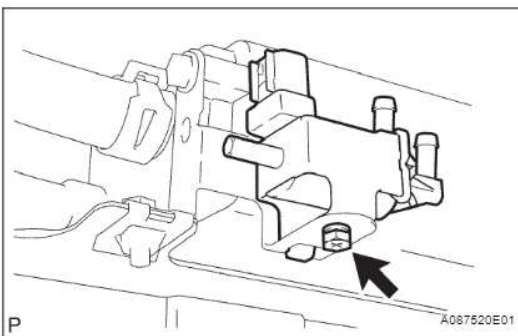
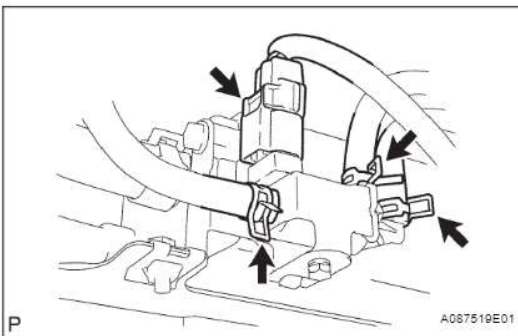
REMOVAL

1. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
2. REMOVE REAR DECK FLOOR BOX (See page CH-4)
3. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

5. REMOVE PRESSURE SWITCHING VALVE
 - (a) Disconnect the pressure switching valve connector.
 - (b) Disconnect the 3 canister hoses from the pressure switching valve.

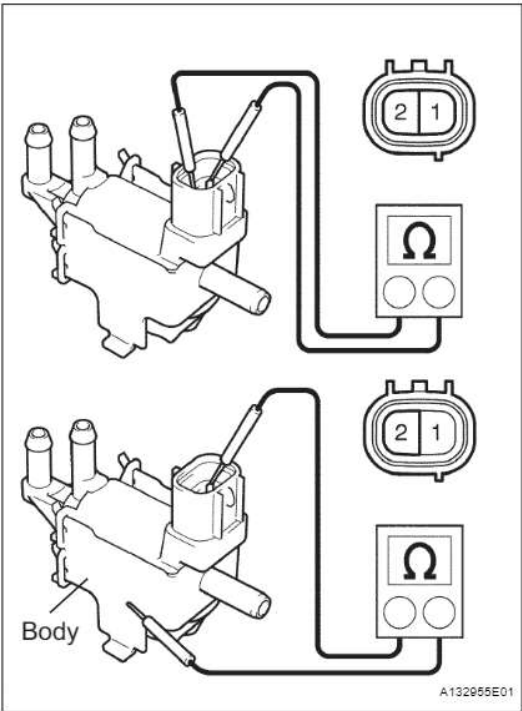


- (c) Remove the bolt, then remove the pressure switching valve.

EC

EC-32

1NZ-FXE EMISSION CONTROL – CANISTER PRESSURE SWITCHING VALVE

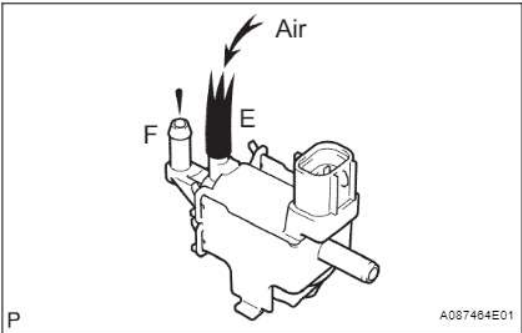


INSPECTION

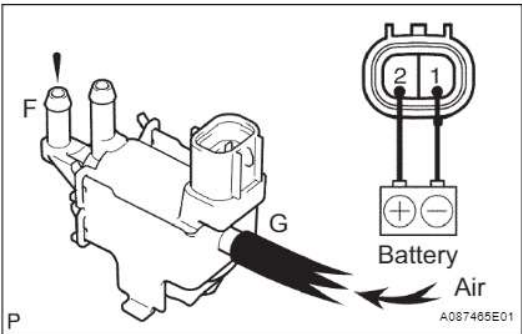
1. INSPECT PRESSURE SWITCHING VALVE
- (a) Inspect the resistance.
- (1) Measure the resistance between the terminals.
- Standard resistance**

Tester Connection	Specified Condition
1 - 2	36 to 42 Ω at 20°C (68°F)
1 - Valve body	10 k Ω or higher
2 - Valve body	10 k Ω or higher

If the result is not as specified, replace the pressure switching valve.



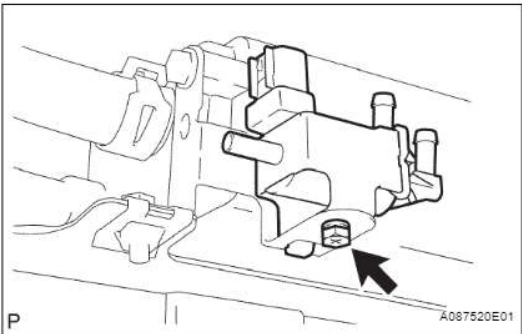
- (b) Check the ventilation.
- (1) Check that there is no ventilation from port E to port F.
- If there is ventilation, replace the pressure switching valve.

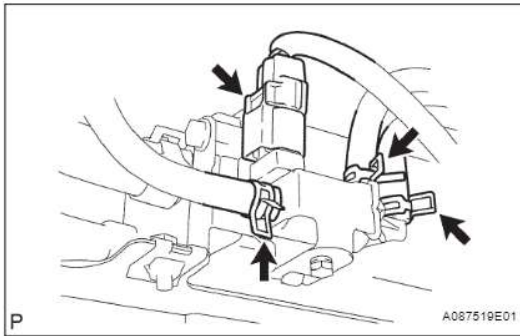


- (2) Apply battery voltage across the terminals.
- (3) Check that there is ventilation from port F when air is applied to port G.
- If there is no ventilation, replace the pressure switching valve.

INSTALLATION

1. INSTALL PRESSURE SWITCHING VALVE
- (a) Install the pressure switching valve with the bolt.
- Torque: 2.9 N*m (30 kgf*cm, 26 in.*lbf)**



1NZ-FXE EMISSION CONTROL – CANISTER PRESSURE SWITCHING VALVE**EC-33**

- (b) Connect the 3 canister hoses to the pressure switching valve.
 - (c) Connect the pressure switching valve.
 - 2. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL** (See page [CH-7](#))
 - 3. **INSTALL REAR NO. 3 FLOOR BOARD** (See page [CH-8](#))
 - 4. **INSTALL REAR DECK FLOOR BOX** (See page [CH-8](#))
 - 5. **INSTALL REAR NO. 2 FLOOR BOARD** (See page [CH-8](#))
 - 6. **PERFORM INITIALIZATION**
 - (a) Perform initialization (see page [IN-32](#)).
- NOTICE:**
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

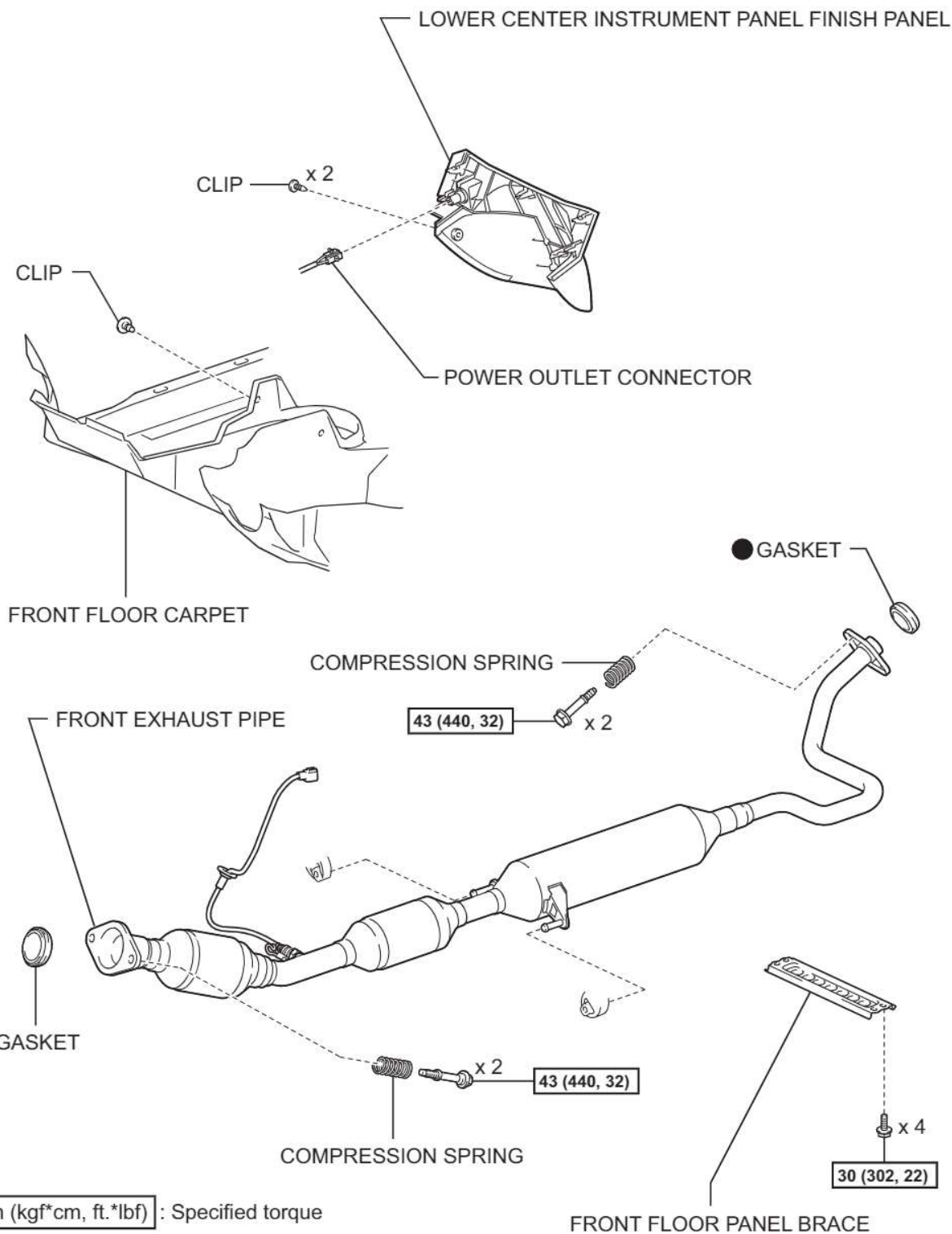
EC

EC-34

1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR

FUEL TANK PRESSURE SENSOR

COMPONENTS



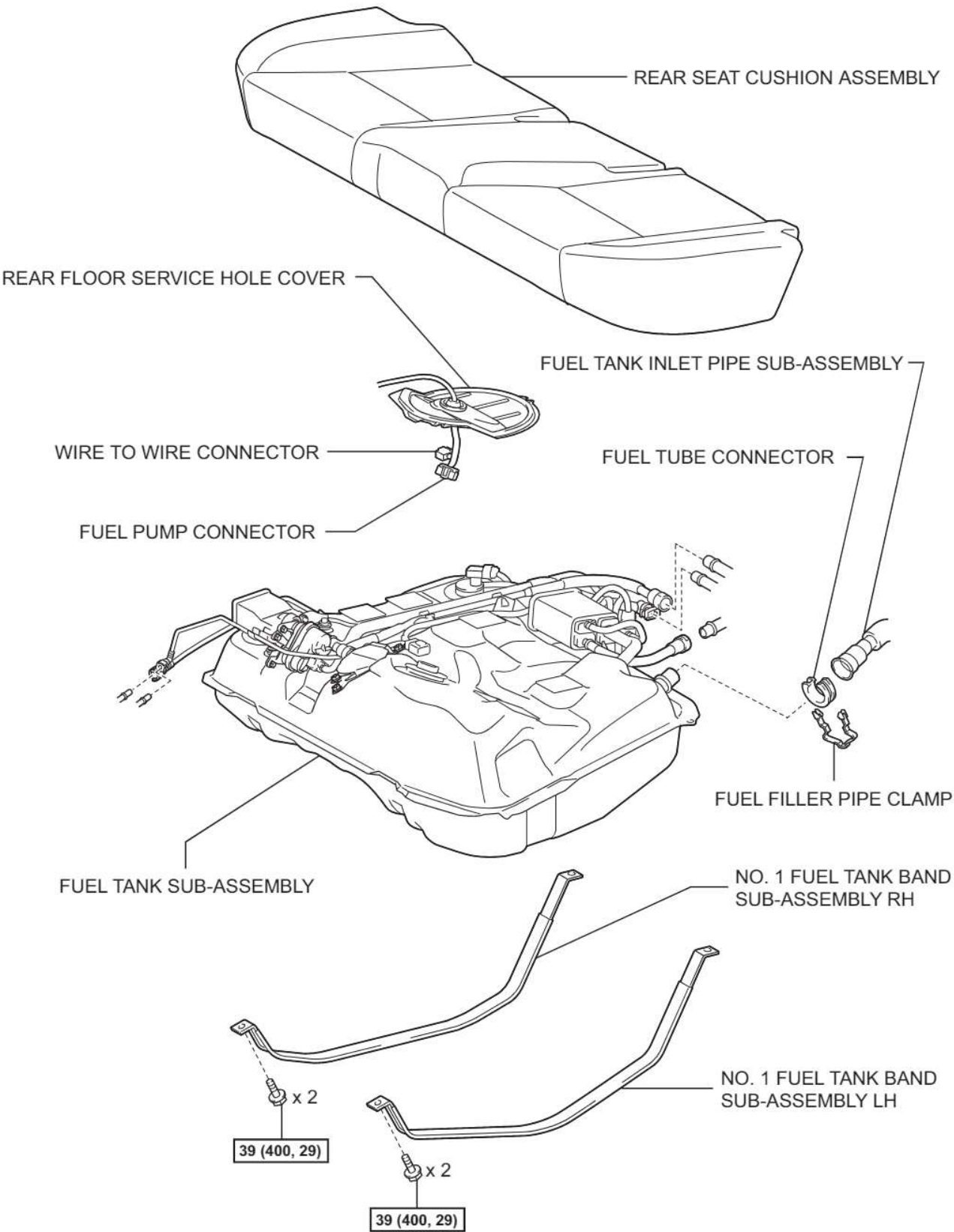
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1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR

EC-35

EC



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

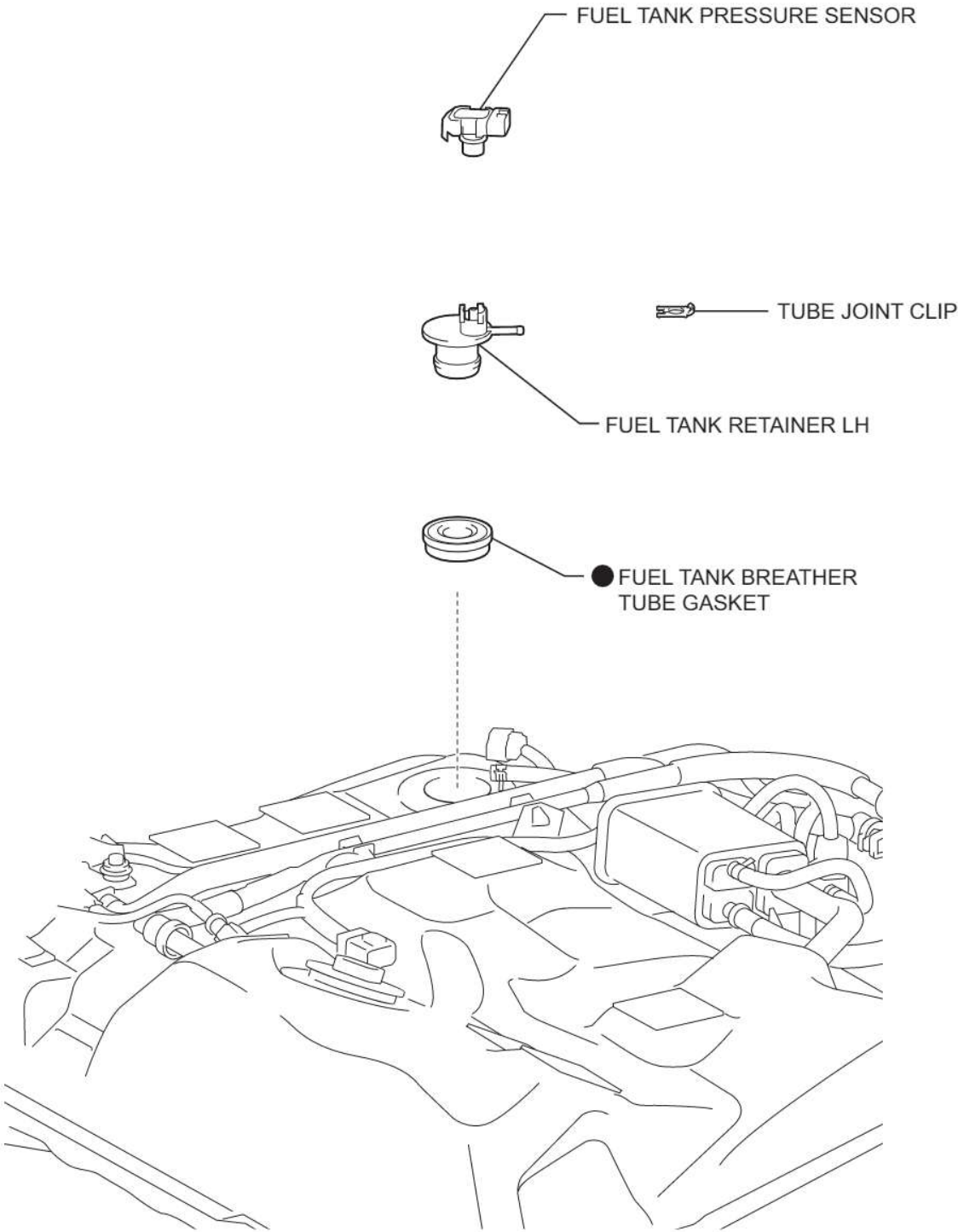
P

A131463E03

EC-36

1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR

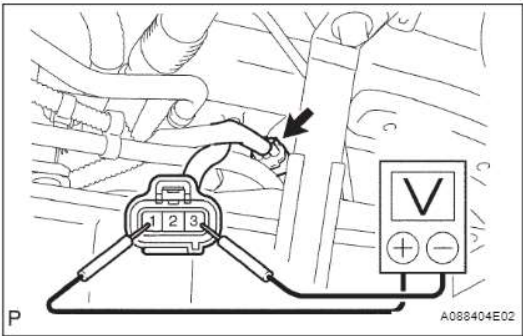
EC



● Non-reusable part

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ON-VEHICLE INSPECTION

1. CHECK FUEL TANK PRESSURE SENSOR

- (a) Inspect the voltage.
 - (1) Turn the power switch ON (IG).
 - (2) Measure the voltage between the terminals.

Standard voltage

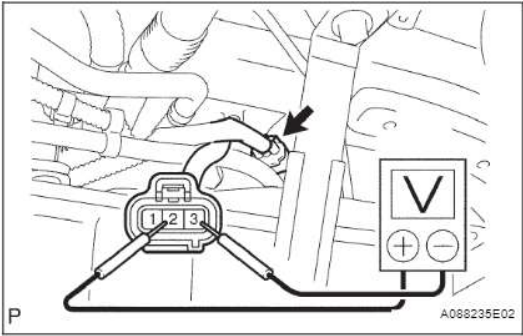
Tester Connection	Specified Condition
1 - 3	4.5 to 5.5 V

- (3) Remove the fuel tank cap.
- (4) Measure the voltage between the terminals.

Standard voltage

Tester Connection	Specified Condition
2 - 3	3.0 to 3.6 V

- (5) Reinstall the fuel tank cap.
- (6) Turn the power switch OFF.



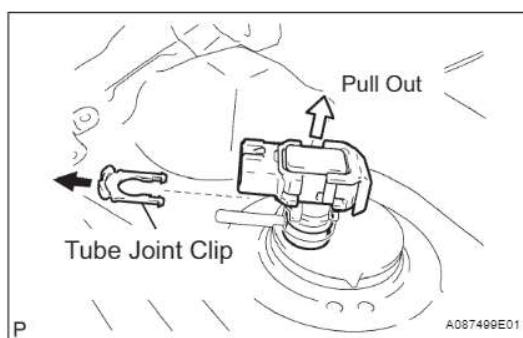
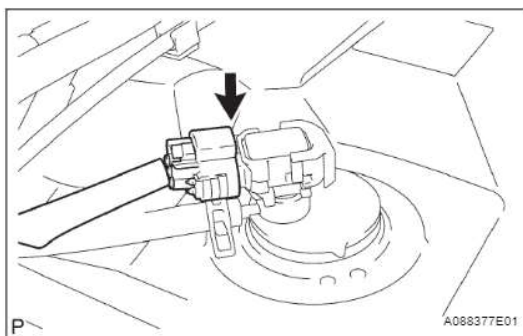
EC

EC-38

1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR

REMOVAL

1. REMOVE REAR NO. 2 FLOOR BOARD (See page [CH-4](#))
2. REMOVE REAR DECK FLOOR BOX (See page [CH-4](#))
3. REMOVE REAR NO. 3 FLOOR BOARD (See page [CH-4](#))
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
5. REMOVE LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page [IP-18](#))
6. REMOVE REAR SEAT CUSHION ASSEMBLY (See page [SE-15](#))
7. REMOVE REAR FLOOR SERVICE HOLE COVER (See page [FU-23](#))
8. REMOVE FRONT FLOOR PANEL BRACE (See page [EX-2](#))
9. REMOVE FRONT EXHAUST PIPE (See page [EC-9](#))
10. REMOVE FUEL TANK SUB-ASSEMBLY (See page [FU-23](#))
11. REMOVE FUEL TANK PRESSURE SENSOR
 - (a) Disconnect the fuel tank pressure sensor connector.

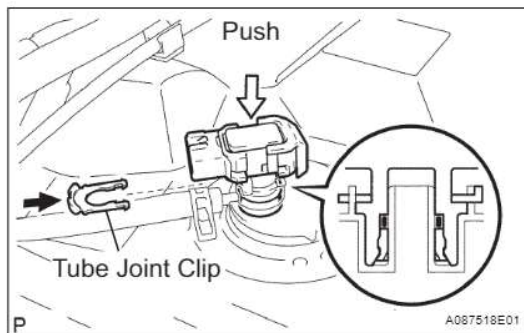
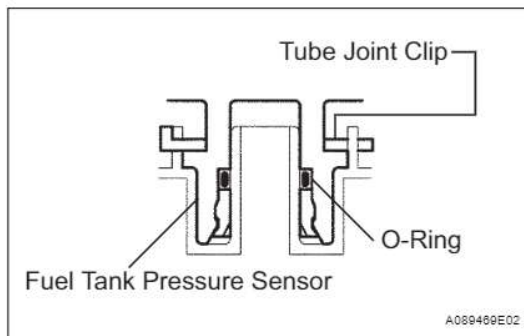


- (b) Remove the tube joint clip, then pull out the fuel tank pressure sensor from the fuel tank retainer.

EC

1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR

EC-39

**NOTICE:**

- Remove dirt or foreign objects on fuel tank pressure sensor before this work.
- Do not allow any scratches or foreign objects on the parts when disconnecting as the fuel tank pressure sensor has the O-ring that seals the plug.
- Perform this work by hand. Do not use any tools.

INSTALLATION**1. INSTALL FUEL TANK PRESSURE SENSOR**

- (a) Push the fuel tank pressure sensor to the plug of the fuel tank retainer, then install the tube joint clip.

NOTICE:

- Check that there are no scratches or foreign objects around the connected part of the fuel tank pressure sensor and fuel tank retainer before this work.
- Check that the fuel tank pressure sensor is securely inserted to the end.
- Check that the tube joint clip is on the collar of the fuel tank pressure sensor.
- After installing the tube joint clip, check that the fuel tank pressure sensor cannot be pulled out.

- (b) Connect the fuel tank pressure sensor connector.

2. INSTALL FUEL TANK SUB-ASSEMBLY (See page [FU-35](#))
3. INSTALL FRONT EXHAUST PIPE (See page [EC-12](#))
4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page [CH-7](#))
5. CHECK FOR FUEL LEAKS (See page [FU-8](#))
6. CHECK FOR EXHAUST GAS LEAKS (See page [EX-4](#))
7. INSTALL FRONT FLOOR PANEL BRACE (See page [EX-4](#))
8. INSTALL REAR FLOOR SERVICE HOLE COVER (See page [FU-38](#))
9. INSTALL REAR SEAT CUSHION ASSEMBLY (See page [SE-23](#))
10. INSTALL LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page [IP-21](#))
11. INSTALL REAR NO. 3 FLOOR BOARD (See page [CH-8](#))
12. INSTALL REAR DECK FLOOR BOX (See page [CH-8](#))
13. INSTALL REAR NO. 2 FLOOR BOARD (See page [CH-8](#))

EC

EC-40**1NZ-FXE EMISSION CONTROL – FUEL TANK PRESSURE SENSOR**

14. PERFORM INITIALIZATION

- (a) Perform initialization (see page [IN-32](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

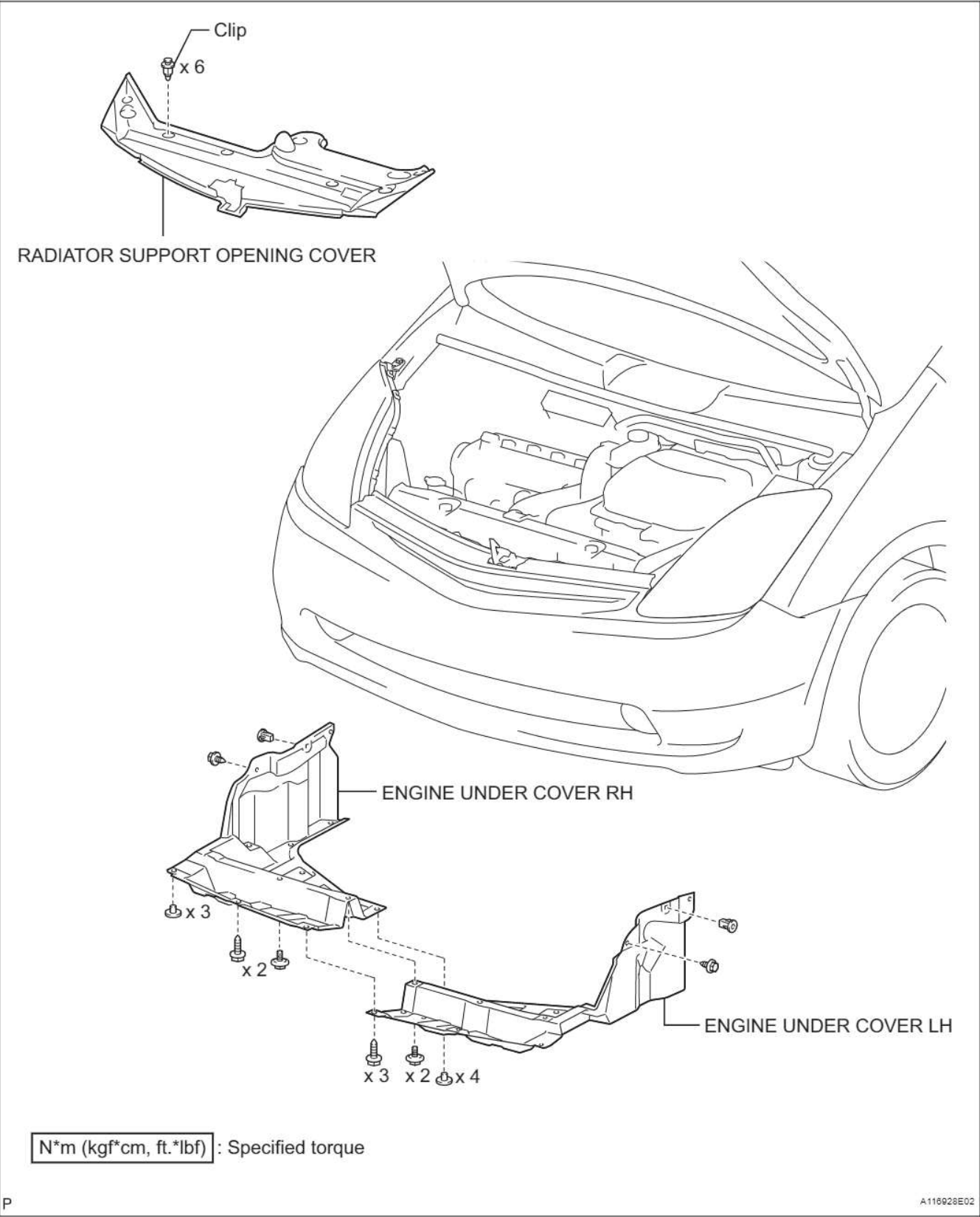
EC

EC-40

1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

AIR FUEL RATIO SENSOR
COMPONENTS

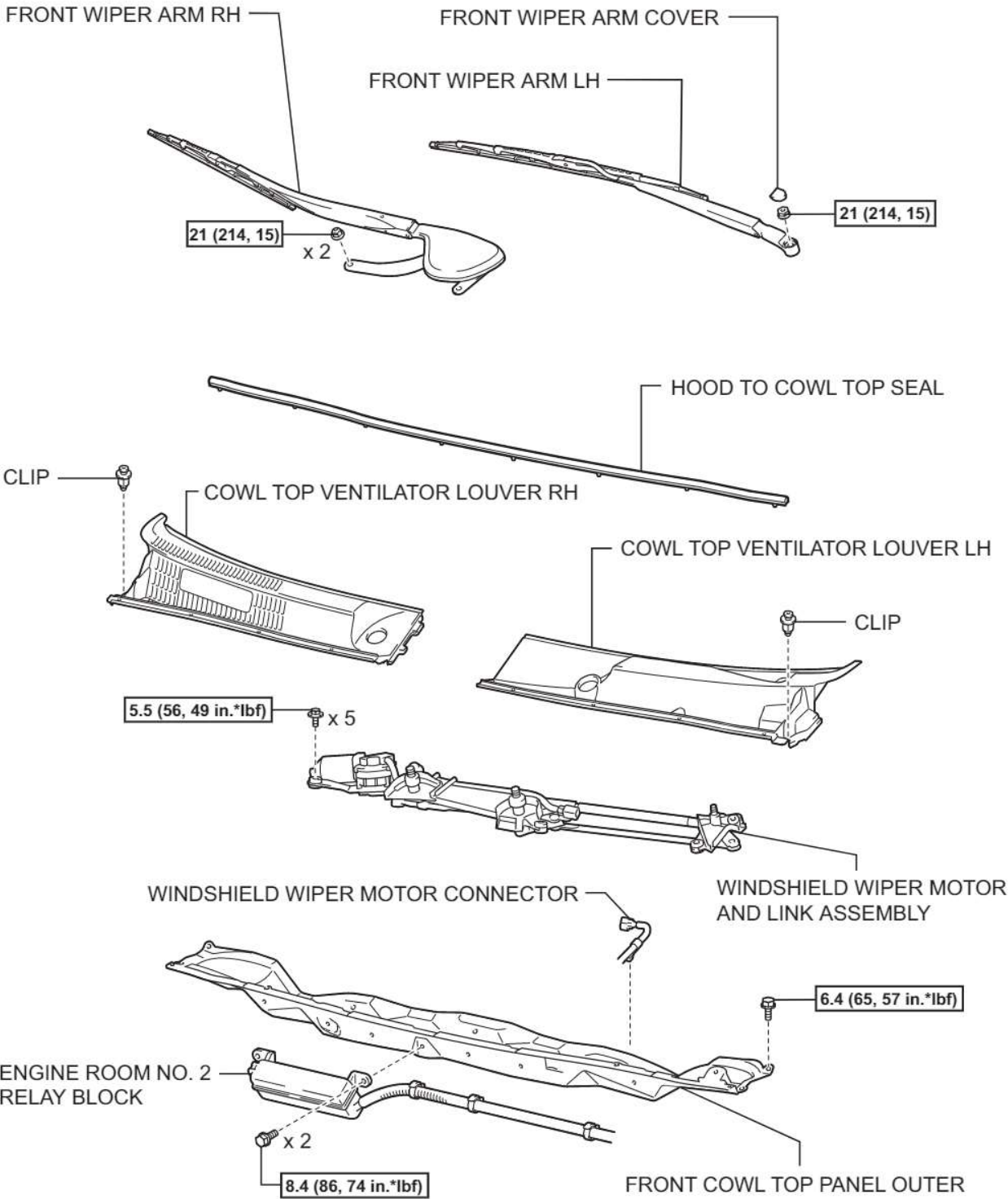
EC



1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

EC-41

EC



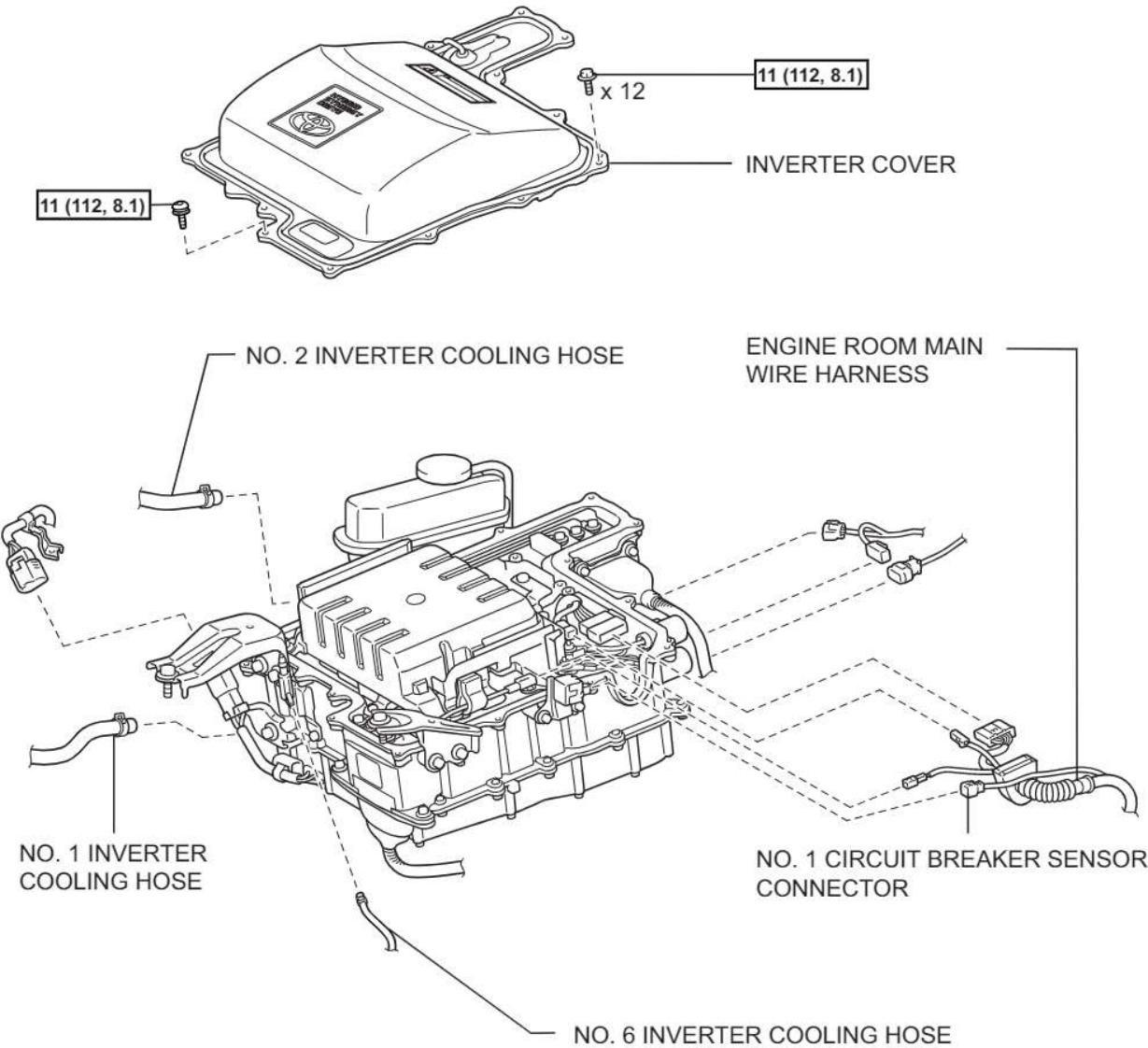
N*m (kgf*cm, ft.*lbf) : Specified torque

P

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EC-42

1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

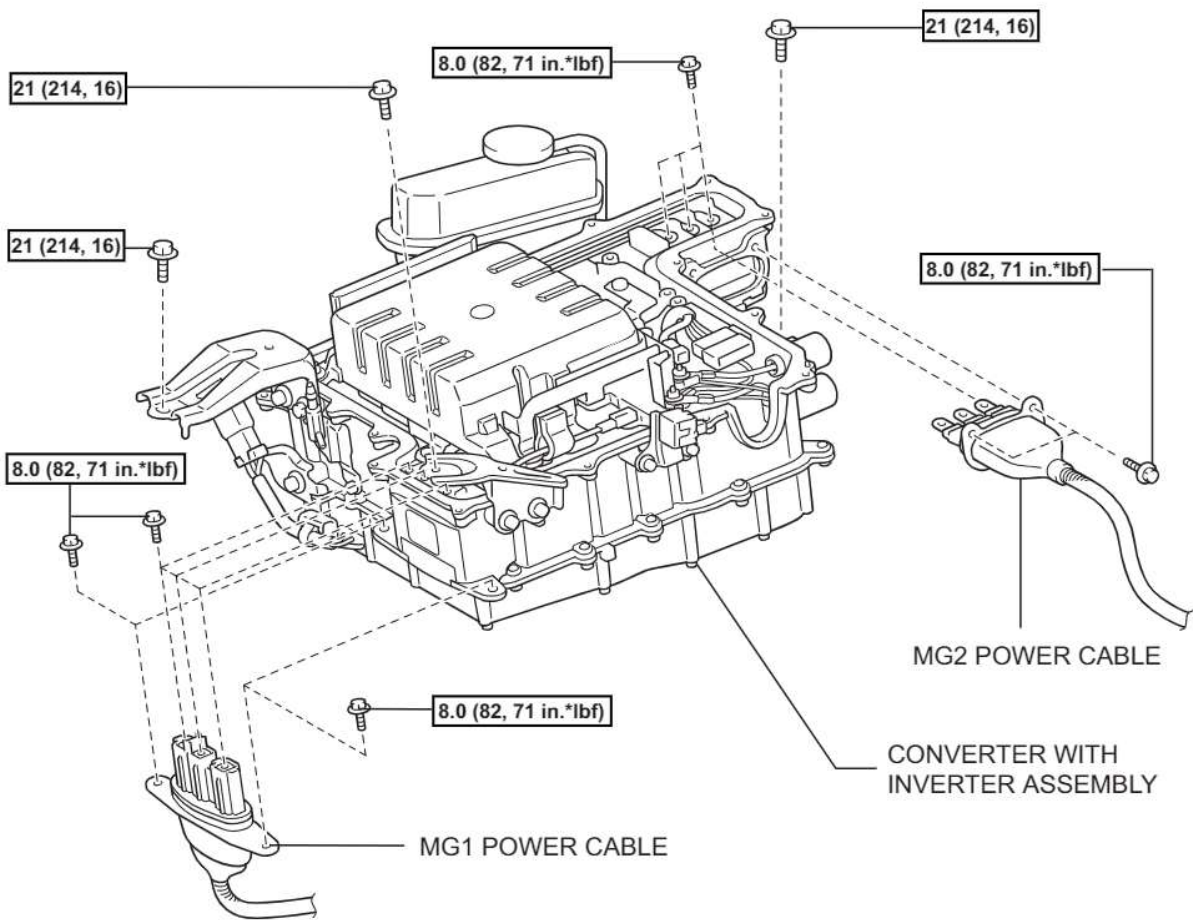


N*m (kgf*cm, ft.*lbf) : Specified torque

1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

EC-43

EC

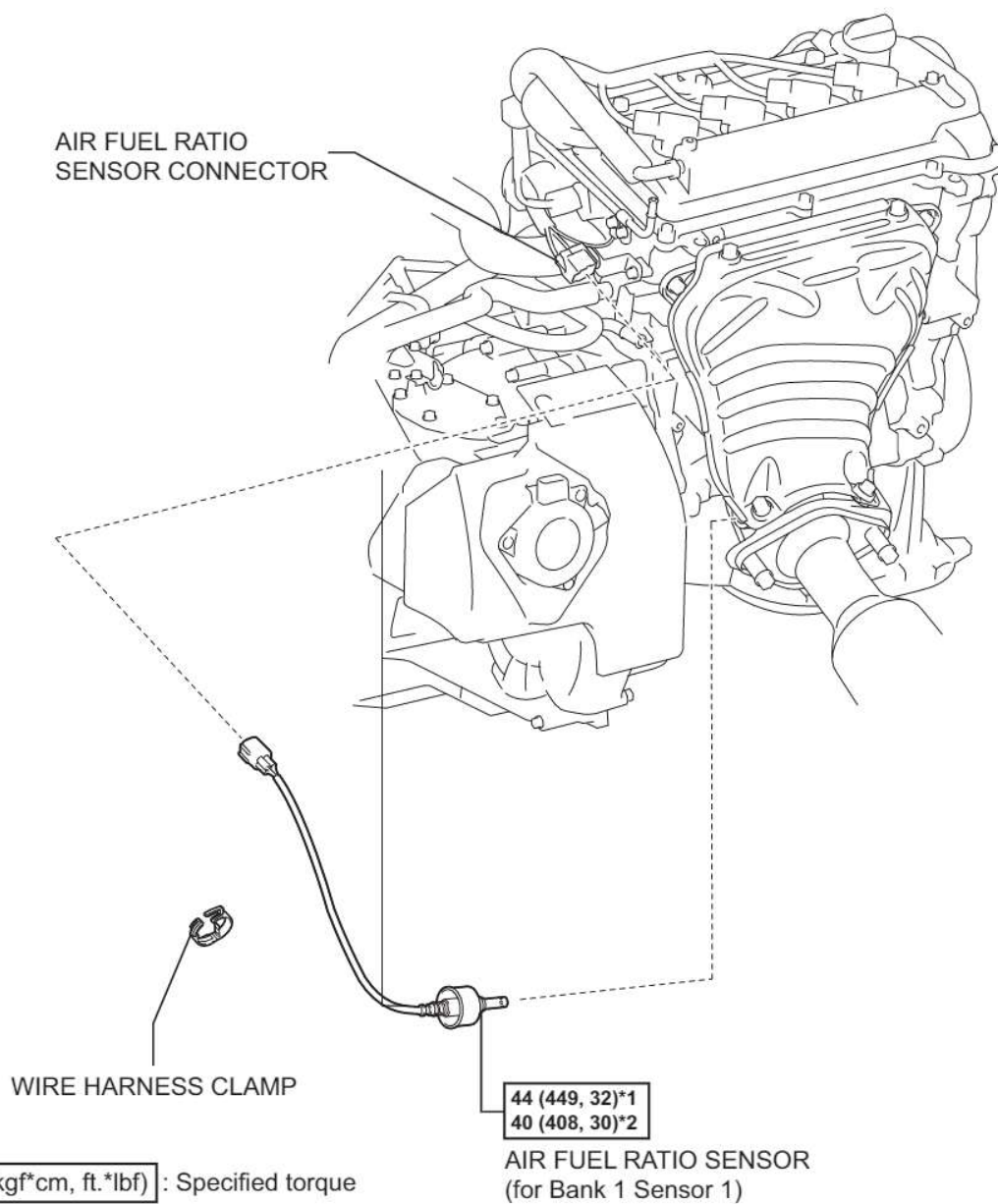


N*m (kgf*cm, ft.*lbf) : Specified torque

EC-44

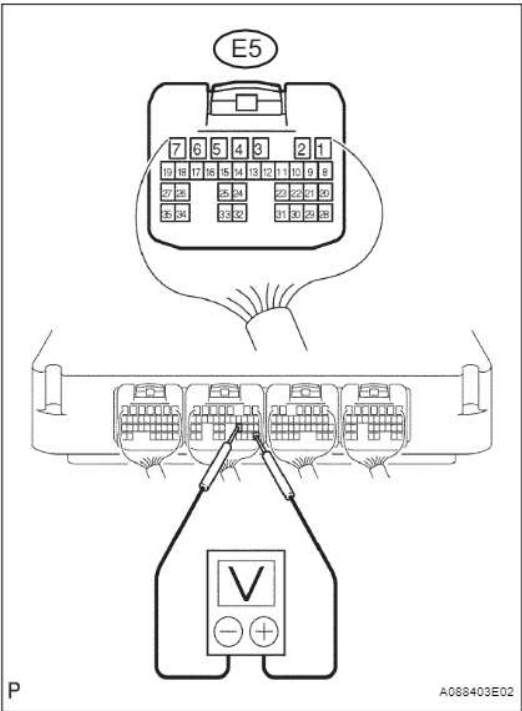
1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

EC



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ON-VEHICLE INSPECTION

1. CHECK AIR FUEL RATIO COMPENSATION SYSTEM

- (a) Inspect the voltage.
- Turn the power switch ON (IG).
 - Using a voltmeter, measure the voltage between the ECM terminals.

Standard voltage

Tester Connection	Specified Condition
E5-23 (A1A+) - E5-28 (E1)	3.0 to 3.6 V
E5-22 (A1A-) - E5-28 (E1)	2.7 to 3.3 V

NOTICE:

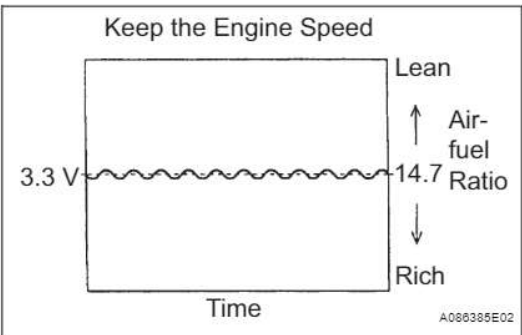
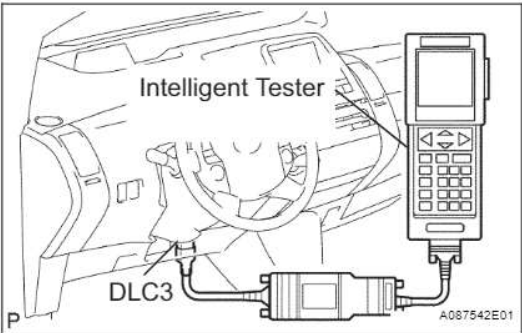
Connect the test leads from the backside of the connector with the ECM connector connected.

HINT:

The voltage between the ECM terminals is constant regardless of the output voltage of the air-fuel ratio sensor.

If the result is not as specified, check the air-fuel ratio sensor and wire harness.

EC



- (b) Check the output waveform.
- Set the vehicle to inspection mode (see page [IN-34](#)).
 - Connect the intelligent tester to the DLC3.
 - Turn the power switch ON (READY).
 - Turn the intelligent tester ON.
 - Select the item: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / AFS B1 S1.
 - Warm up the air fuel ratio sensor for approximately 2 minutes at 2,500 rpm of the engine speed.
 - Maintain the engine speed at 2,500 rpm, then check that the waveform of "AFS B1 S1" is output as illustrated.
- HINT:
- The waveform of illustration is a sample.
 - Only the intelligent tester shows the waveform of the air fuel ratio sensor.
- (8) Check that "O2S B1 S2" fluctuates between 0 and 1 V with the engine speed at 2,500 rpm.

REMOVAL

1. PRECAUTION

CAUTION:

The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (e.g. installing or removing the parts, inspection, replacing the parts), be sure to follow the procedures (see page [HV-519](#)).

2. REMOVE RADIATOR SUPPORT OPENING COVER
(See page [ED-2](#))
3. REMOVE ENGINE UNDER COVER LH
4. REMOVE ENGINE UNDER COVER RH
5. DRAIN HV COOLANT (See page [HX-58](#))
6. REMOVE REAR NO. 2 FLOOR BOARD (See page [CH-4](#))
7. REMOVE REAR DECK FLOOR BOX (See page [CH-4](#))
8. REMOVE REAR NO. 3 FLOOR BOARD (See page [CH-4](#))
9. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
10. REMOVE SERVICE PLUG GRIP (See page [HB-154](#))
11. REMOVE FRONT WIPER ARM COVER
12. REMOVE FRONT WIPER ARM LH (See page [WW-13](#))
13. REMOVE FRONT WIPER ARM RH (See page [WW-13](#))
14. REMOVE HOOD TO COWL TOP SEAL (See page [WW-13](#))
15. REMOVE COWL TOP VENTILATOR LOUVER LH (See page [WW-13](#))
16. REMOVE COWL TOP VENTILATOR LOUVER RH (See page [WW-13](#))
17. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page [WW-13](#))
18. REMOVE FRONT COWL TOP PANEL OUTER (See page [FU-12](#))
19. REMOVE INVERTER COVER (See page [HV-531](#))
20. VERIFY THAT VOLTAGE OF INVERTER WITH CONVERTER IS 0 V (See page [HV-532](#))
21. DISCONNECT NO. 2 INVERTER COOLING HOSE
(See page [HV-532](#))

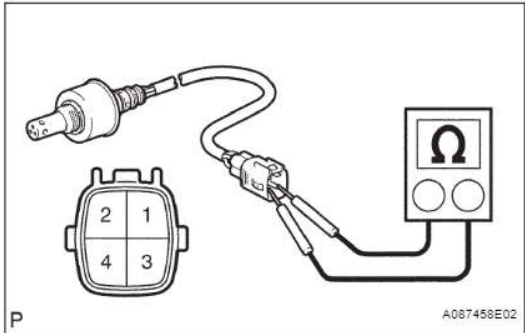
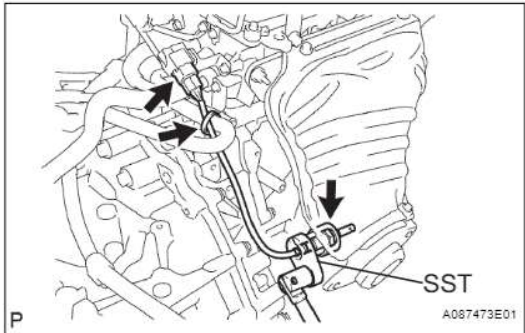
22. DISCONNECT NO. 1 INVERTER COOLING HOSE
(See page HV-532)
23. DISCONNECT NO. 6 INVERTER COOLING HOSE
(See page HV-533)
24. DISCONNECT NO. 1 CIRCUIT BREAKER SENSOR
(See page HV-533)
25. DISCONNECT FRAME WIRE (See page HV-533)
26. REMOVE CONVERTER WITH INVERTER ASSEMBLY
(See page HV-533)
27. REMOVE AIR FUEL RATIO SENSOR (for Bank 1 Sensor 1)

(a) Remove the wire harness clamp from the air fuel ratio sensor.

(b) Disconnect the air fuel ratio sensor connector.

(c) Using SST, remove the air fuel ratio sensor.

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INSPECTION

1. INSPECT AIR FUEL RATIO SENSOR

(a) Measure the resistance between the terminals.

Standard resistance

Tester Connection	Specified Condition
1 (HT) - 2 (+B)	1.8 to 3.4 Ω at 20°C (68°F)
2 (+B) - 4 (AF-)	10 kΩ or higher

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

INSTALLATION

1. INSTALL AIR FUEL RATIO SENSOR (for Bank 1 Sensor 1)

(a) Using SST, install the sensor.

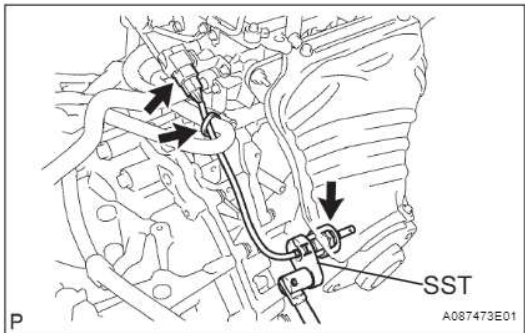
SST 09224-00010

Torque: 44 N*m (449 kgf*cm, 32 in.*lbf) for use with SST

40 N*m (408 kgf*cm, 30 ft.*lbf) for use without SST

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

- (b) Connect the sensor connector.
- (c) Install the wire harness clamp to the sensor.
2. INSTALL CONVERTER WITH INVERTER ASSEMBLY
(See page HV-536)
3. CONNECT FRAME WIRE (See page HV-537)
4. CONNECT NO. 1 CIRCUIT BREAKER SENSOR (See page HV-537)
5. CONNECT NO. 6 INVERTER COOLING HOSE



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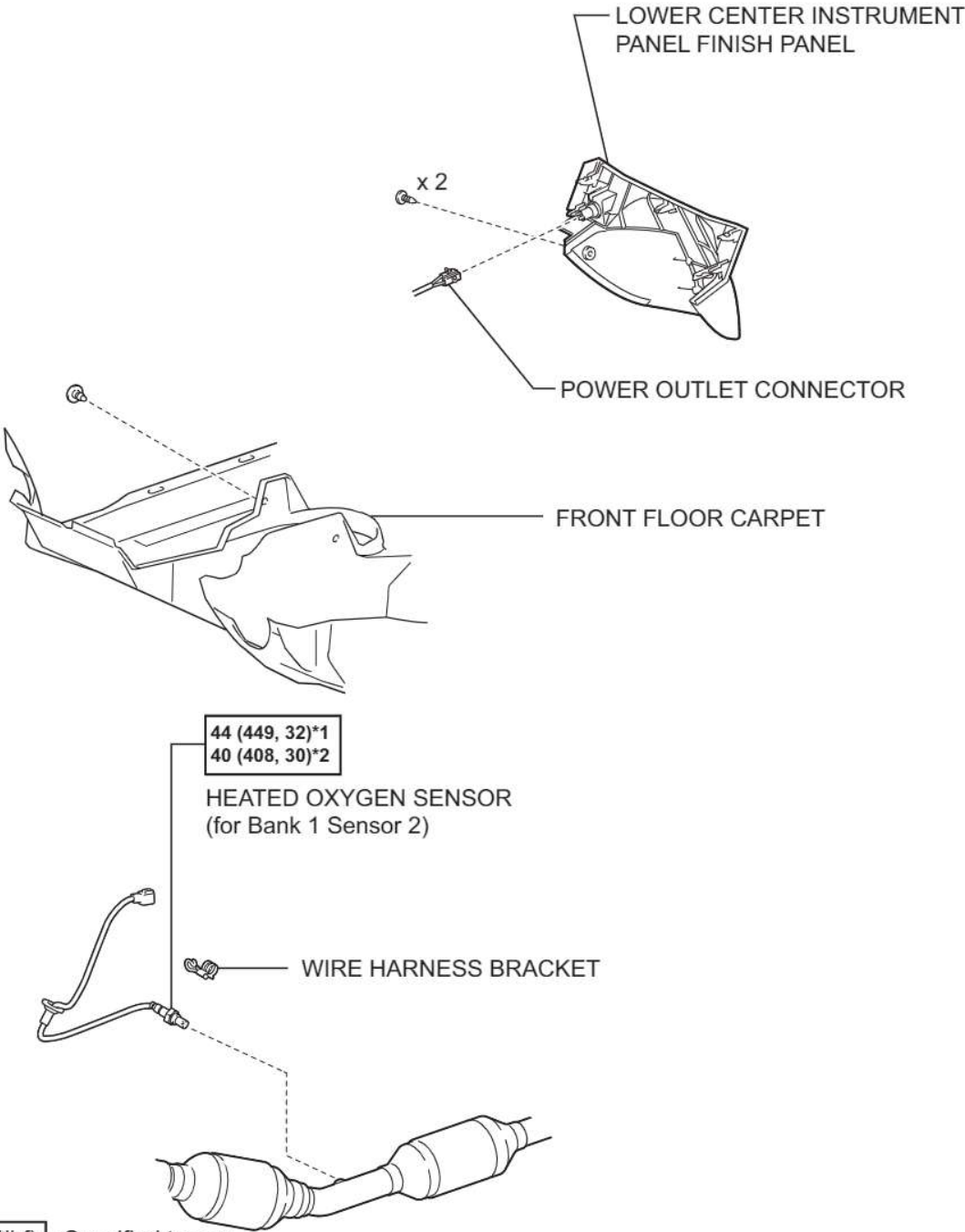
1NZ-FXE EMISSION CONTROL – AIR FUEL RATIO SENSOR

6. CONNECT NO. 1 INVERTER COOLING HOSE
7. CONNECT NO. 2 INVERTER COOLING HOSE
8. INSTALL INVERTER COVER (See page [HV-538](#))
9. INSTALL FRONT COWL TOP PANEL OUTER (See page [FU-19](#))
10. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page [WW-16](#))
11. INSTALL COWL TOP VENTILATOR LOUVER RH
12. INSTALL COWL TOP VENTILATOR LOUVER LH
13. INSTALL HOOD TO COWL TOP SEAL
14. INSTALL FRONT WIPER ARM LH (See page [WW-16](#))
15. INSTALL FRONT WIPER ARM RH (See page [WW-16](#))
16. INSTALL FRONT WIPER ARM COVER
17. INSTALL REAR NO. 3 FLOOR BOARD (See page [CH-8](#))
18. INSTALL REAR DECK FLOOR BOX (See page [CH-8](#))
19. INSTALL REAR NO. 2 FLOOR BOARD (See page [CH-8](#))
20. INSTALL SERVICE PLUG GRIP (See page [HB-154](#))
21. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page [CH-7](#))
22. ADD HV COOLANT (See page [HX-58](#))
23. CHECK FOR ENGINE COOLANT LEAKAGE (See page [HX-59](#))
24. INSTALL ENGINE UNDER COVER RH
25. INSTALL ENGINE UNDER COVER LH
26. INSTALL RADIATOR SUPPORT OPENING COVER (See page [CO-9](#))
27. PERFORM INITIALIZATION
 - (a) Perform initialization (see page [IN-32](#)).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

EC

HEATED OXYGEN SENSOR

COMPONENTS



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

*1: For use with SST

*2: For use without SST

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1NZ-FXE EMISSION CONTROL – HEATED OXYGEN SENSOR

REMOVAL

1. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
2. REMOVE REAR DECK FLOOR BOX (See page CH-4)
3. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

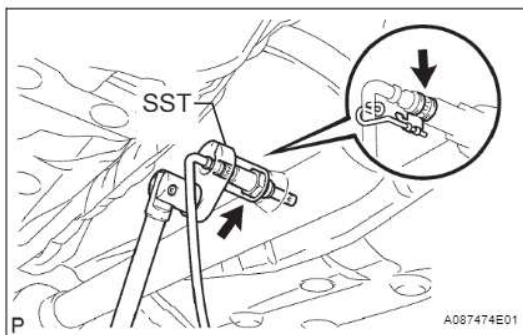
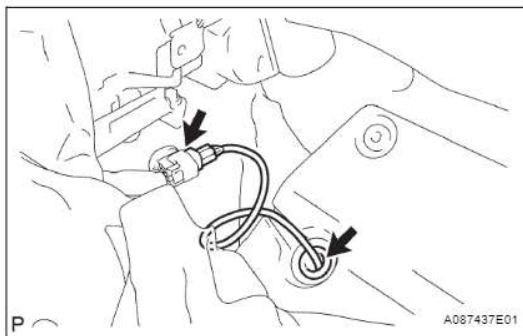
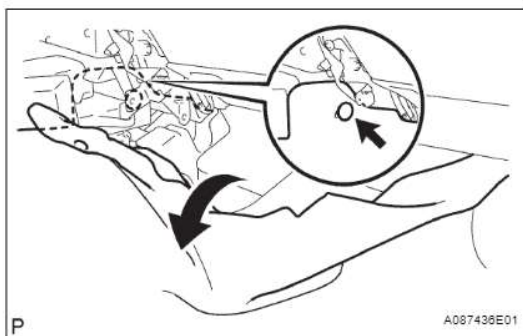
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

5. REMOVE LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page IP-18)

6. REMOVE HEATED OXYGEN SENSOR (for Bank 1 Sensor 2)

- (a) Using a clip remover, remove the clip.
- (b) Fold back the floor carpet front.

EC



- (c) Disconnect the sensor connector.
- (d) Remove the grommet of the sensor from the vehicle.

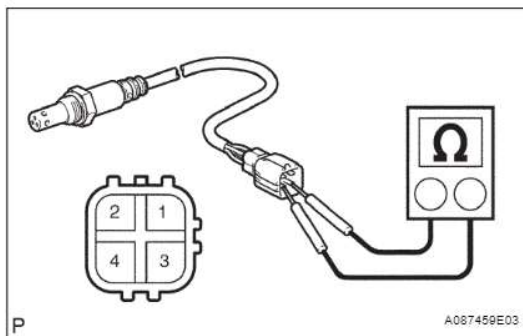
- (e) Remove the wire harness clamp bracket from the sensor.

- (f) Using SST, remove the sensor.

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1NZ-FXE EMISSION CONTROL – HEATED OXYGEN SENSOR

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INSPECTION

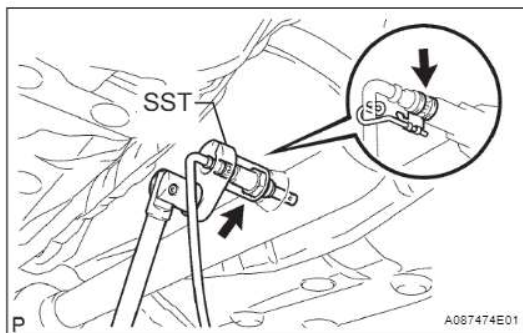
1. INSPECT HEATED OXYGEN SENSOR

- (a) Measure the resistance between the terminals.

Standard resistance

Tester Connection	Specified Condition
1 (HT) - 2 (+B)	11 to 16 Ω at 20°C (68°F)
1 (HT) - 4 (E)	10 k Ω or higher

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



INSTALLATION

1. INSTALL HEATED OXYGEN SENSOR (for Bank 1 Sensor 2)

- (a) Using SST, install the sensor.

SST 09224-00010**Torque: 44 N*m (449 kgf*cm, 32 in.*lbf) for use with SST****40 N*m (408 kgf*cm, 30 ft.*lbf) for use without SST****HINT:**

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

- (b) Install the wire harness clamp bracket to the sensor.
- (c) Install the grommet of the sensor to the vehicle.
- (d) Connect the sensor connector.
- (e) Install the floor carpet front with the clip.

2. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)

3. CHECK FOR EXHAUST GAS LEAKS (See page EX-4)

4. INSTALL LOWER CENTER INSTRUMENT PANEL FINISH PANEL (See page IP-21)

5. INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)

6. INSTALL REAR DECK FLOOR BOX (See page CH-8)

7. INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)

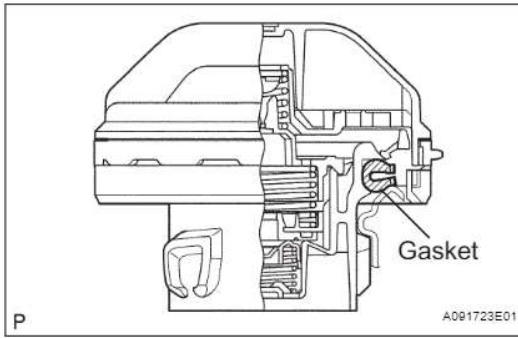
8. PERFORM INITIALIZATION

- (a) Perform initialization (see page IN-32).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

EC

EC-52**1NZ-FXE EMISSION CONTROL – FUEL TANK CAP****FUEL TANK CAP****INSPECTION****1. INSPECT FUEL TANK CAP**

- (a) Check the appearance.
 - (1) Check that there is no deformation or damage on the fuel tank cap and gasket.
If there are any defects, replace the fuel tank cap.