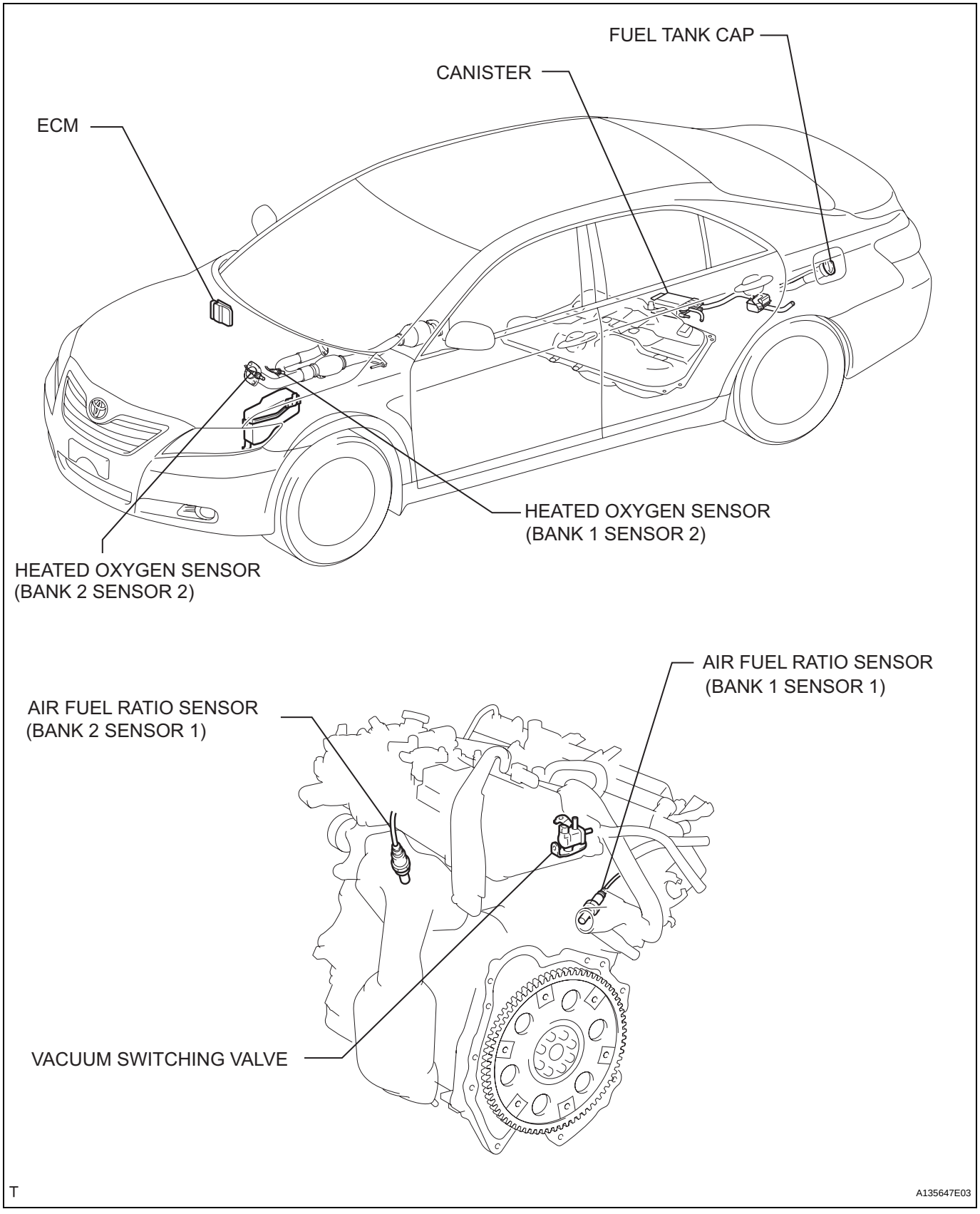
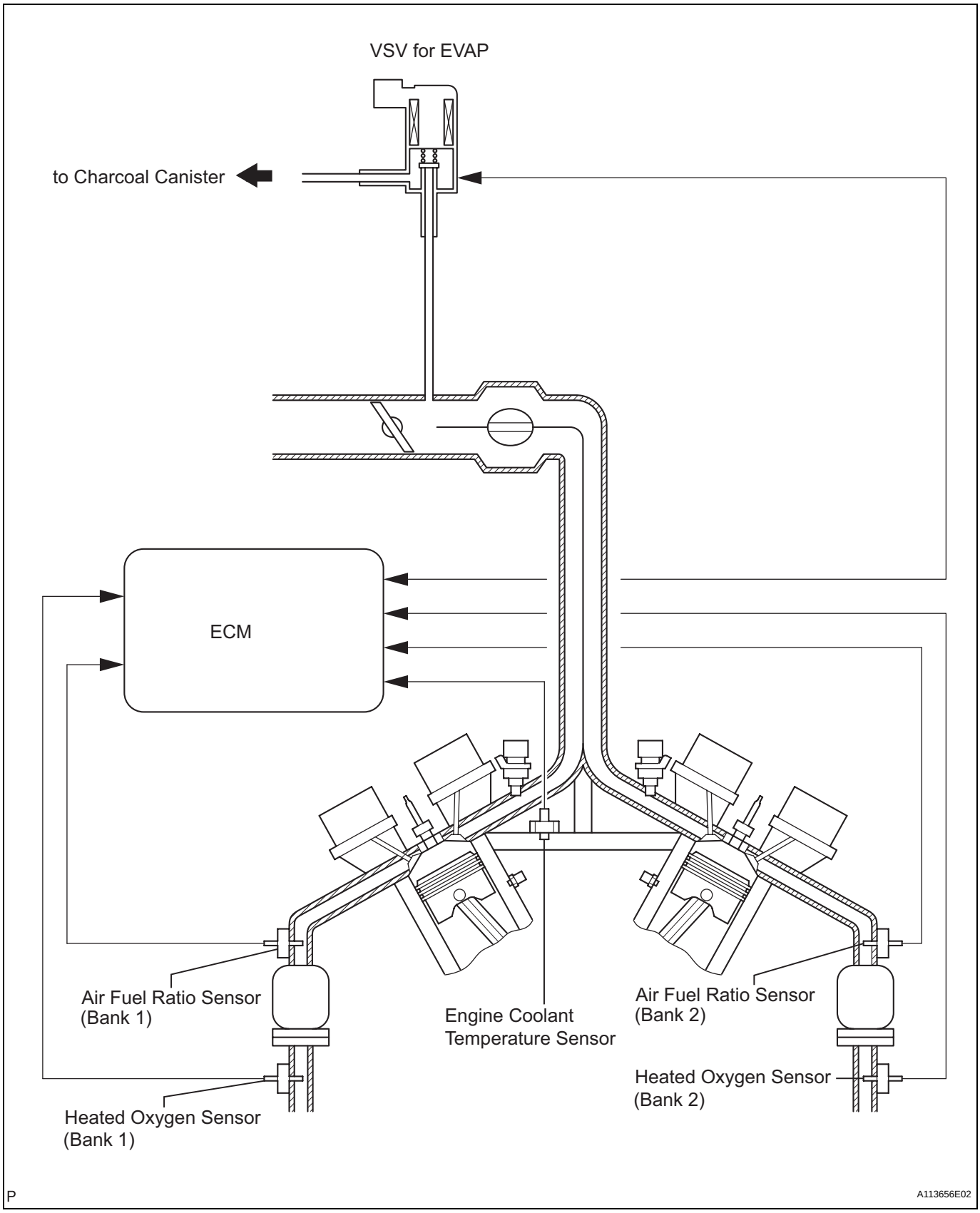
# EMISSION CONTROL SYSTEM

## PARTS LOCATION




EC

# SYSTEM DIAGRAM

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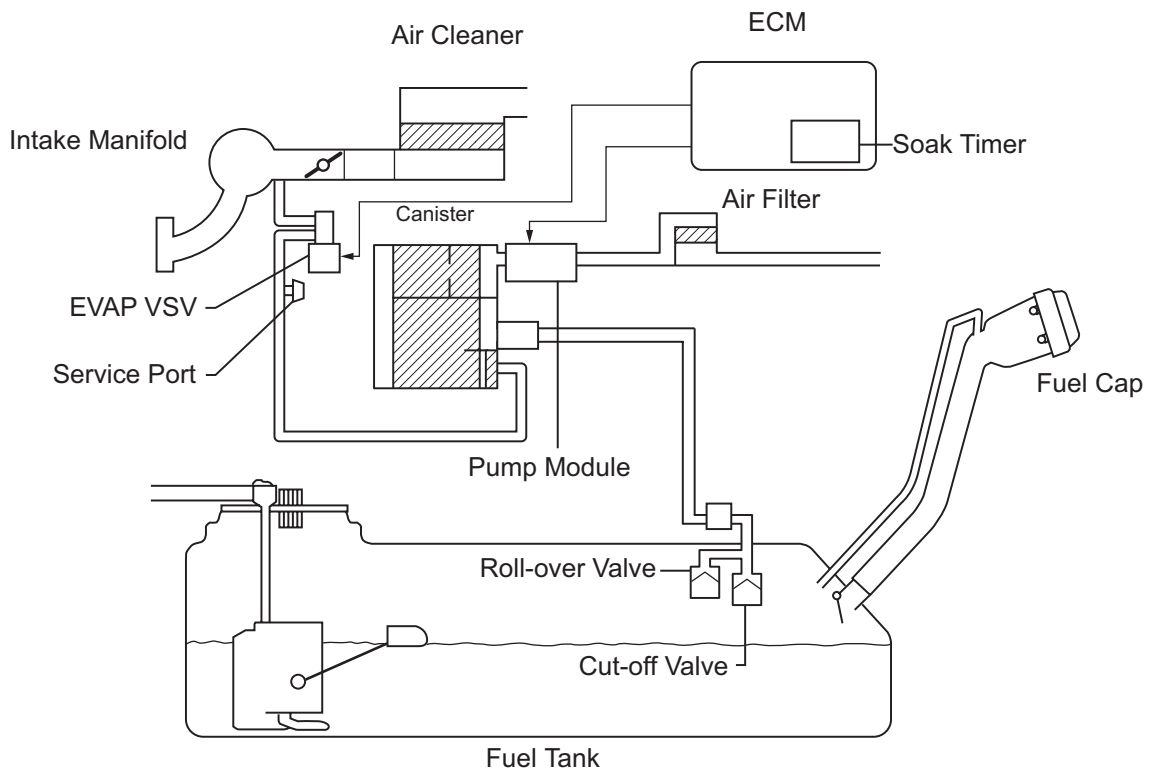
**EVAP System Circuit :**

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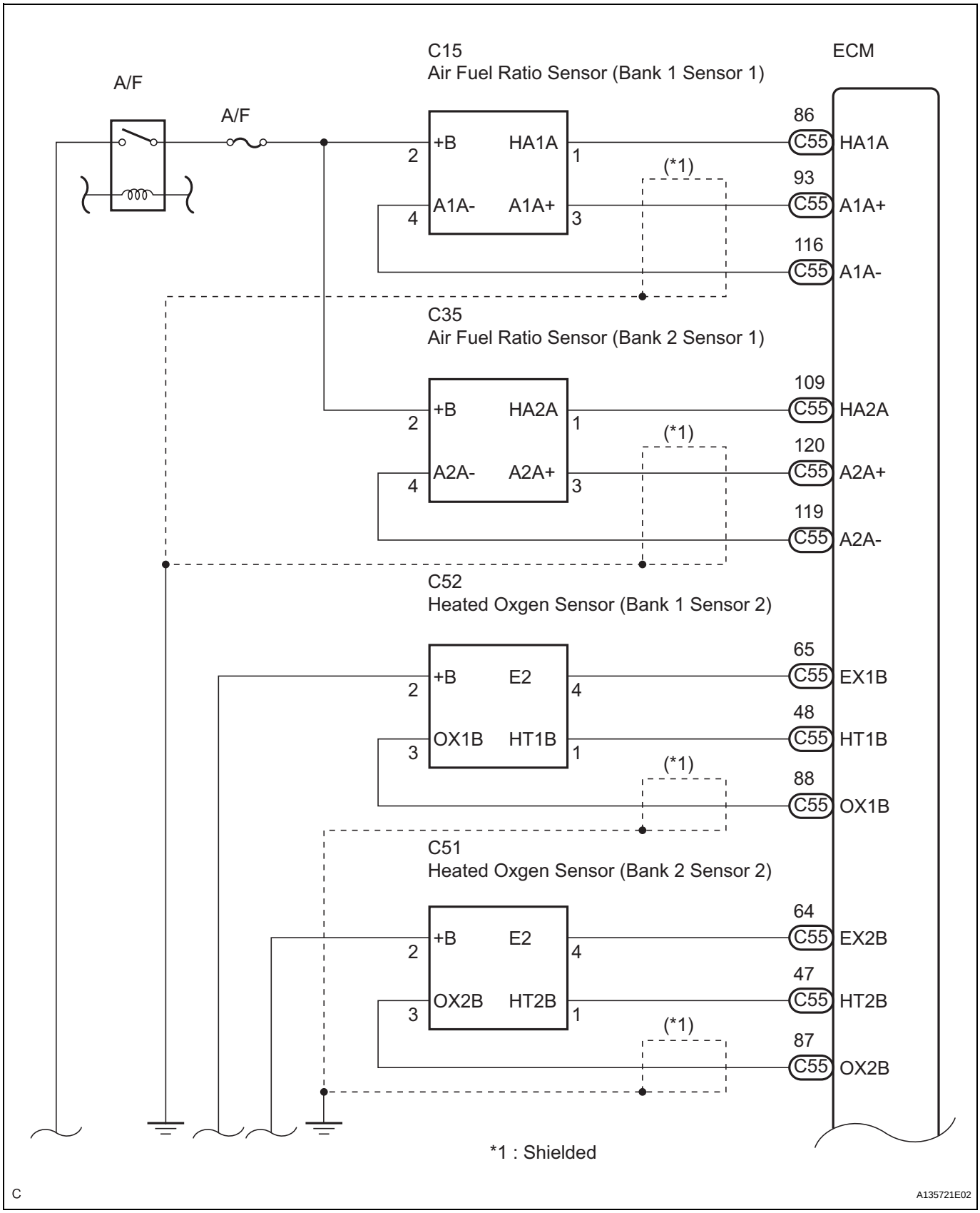
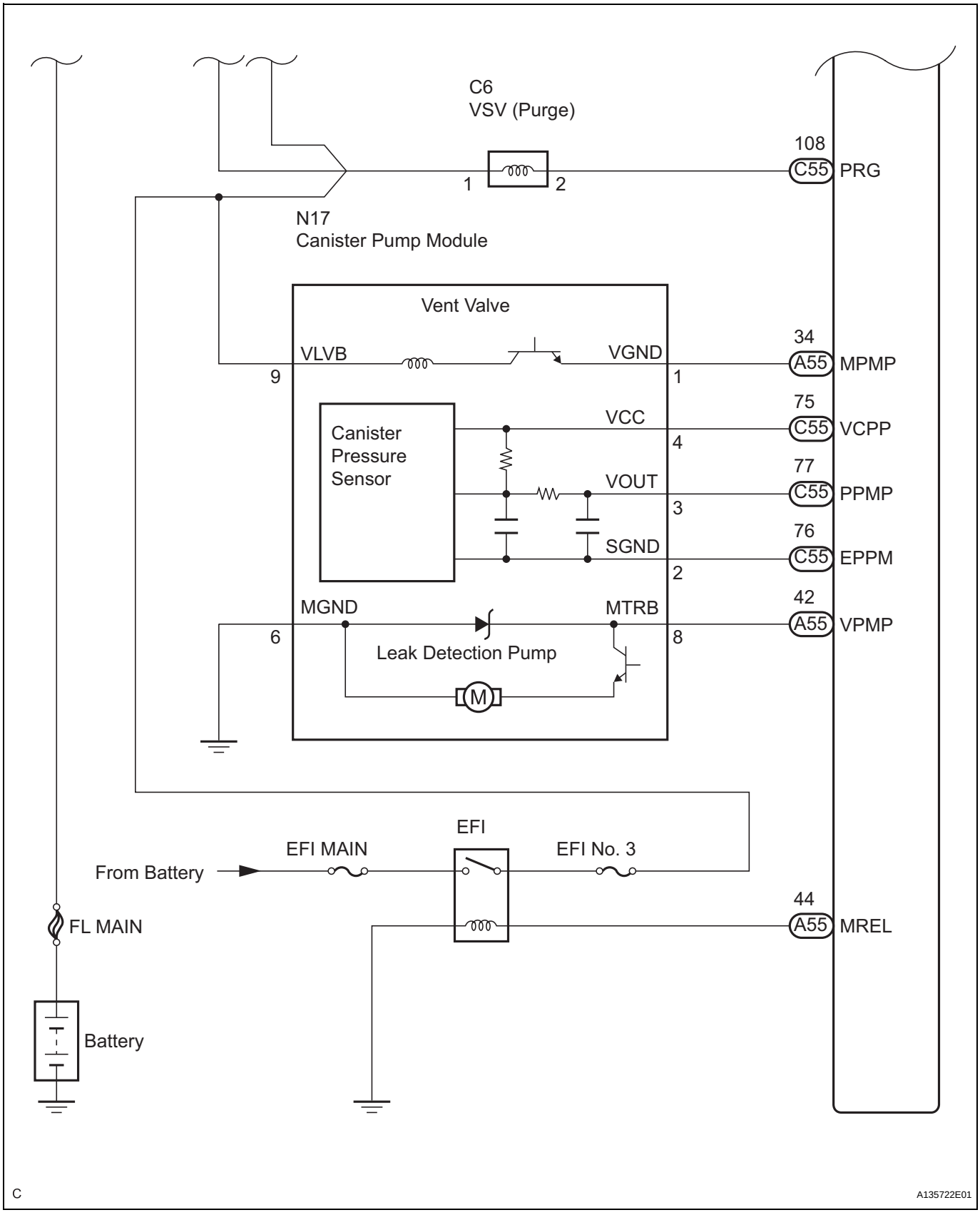

C15
Air Fuel Ratio Sensor (Bank 1 Sensor 1)
ECM
A/F
A/F
+B
HA1A
A1A-
A1A+
2
1
4
3
(*1)
86
C55
HA1A
93
C55
A1A+
116
C55
A1A-
C35
Air Fuel Ratio Sensor (Bank 2 Sensor 1)
+B
HA2A
A2A-
A2A+
2
1
4
3
(*1)
109
C55
HA2A
120
C55
A2A+
119
C55
A2A-
C52
Heated Oxgen Sensor (Bank 1 Sensor 2)
+B
E2
OX1B
HT1B
2
4
3
1
(*1)
65
C55
EX1B
48
C55
HT1B
88
C55
OX1B
C51
Heated Oxgen Sensor (Bank 2 Sensor 2)
+B
E2
OX2B
HT2B
2
4
3
1
(*1)
64
C55
EX2B
47
C55
HT2B
87
C55
OX2B
*1 : Shielded
C
A135721E02

EC


C6
VSV (Purge)
1
2
108
C55
PRG
N17
Canister Pump Module
Vent Valve
VLVB
9
VGND
1
34
A55
MPMP
Canister
Pressure
Sensor
VCC
4
75
C55
VCPP
VOUT
3
77
C55
PPMP
SGND
2
76
C55
EPPM
MGND
6
MTRB
8
42
A55
VPMP
Leak Detection Pump
M
EFI
EFI MAIN
EFI No. 3
From Battery
FL MAIN
44
A55
MREL
Battery
C
A135722E01

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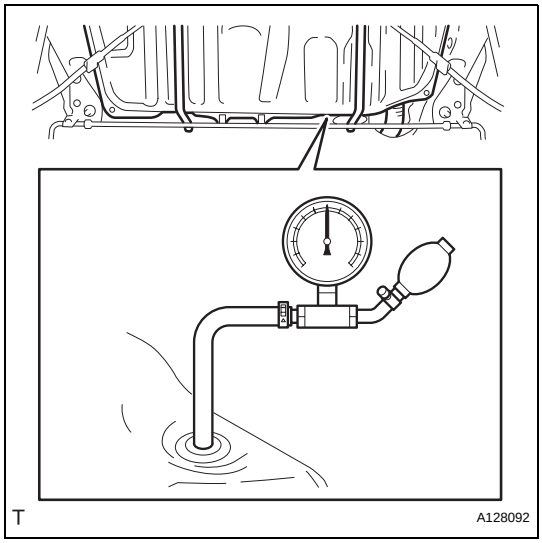
# ON-VEHICLE INSPECTION

**1. INSPECT FUEL CUT-OFF RPM**

(a) Increase the engine speed to at least 3,500 rpm.
(b) Use a sound scope to check for injector operating sounds.
(c) Check that when the throttle lever is released, injector operating sounds stop momentarily (at 2,500 rpm) and then resume (at 1,400 rpm).

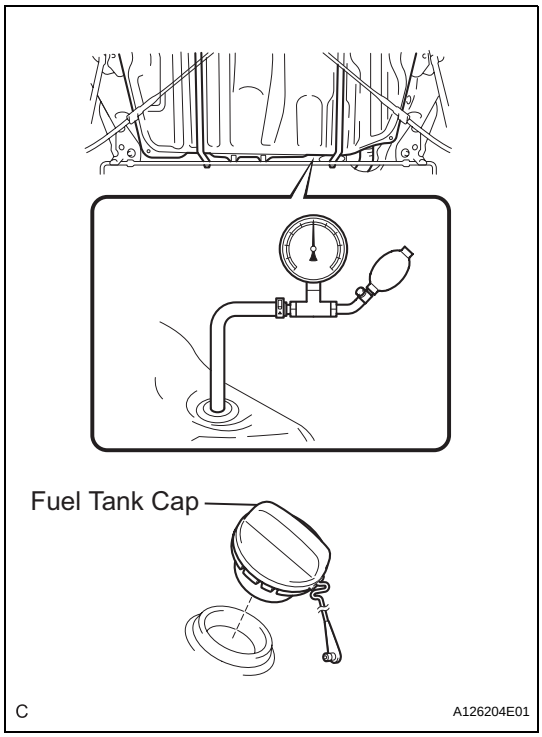
**Standard**

| Item | Specified Condition |
|---|---|
| Fuel cut off rpm | 2,500 rpm |
| Fuel return rpm | 1,400 rpm |




**2. CHECK AIR TIGHTNESS IN FUEL TANK AND FILLER PIPE**

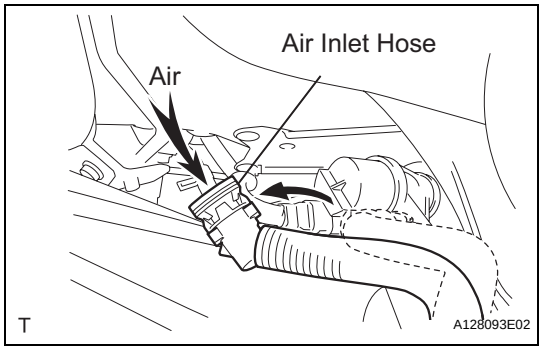
(a) Disconnect the vent line hose from the fuel tank.
(b) Connect the pressure gauge to the fuel tank.
(c) Apply pressure to the fuel tank to create an internal pressure of 4 kPa (41 gf/cm$^2$, 0.58 psi).
(d) Check that the internal pressure of the fuel tank is maintained for 1 minute.
(e) Check the connected portions of each hose and pipe.
(f) Check the installed parts on the fuel tank.
If any malfunctions, damage or other problems are found, replace the fuel tank and filler pipe.
(g) Reconnect the vent line hose to the fuel tank.




**3. INSPECT FUEL CUT OFF VALVE AND FUEL CHECK VALVE**

(a) Disconnect the vent line hose from the fuel tank.
(b) Connect the pressure gauge to the fuel tank.
(c) Fill the fuel tank with fuel.
(d) Apply pressure of 4 kPa (41 gf/cm$^2$, 0.58 psi) to the vent port of the fuel tank.
HINT:
Check the amount of fuel in the fuel tank. When the fuel tank is full, the float valve of the fill check valve is closed and no air can pass through.
(e) Remove the fuel tank cap, and check that the pressure drops.
If the pressure does not drop, replace the fuel tank assembly.
(f) Reconnect the vent line hose to the fuel tank.

EC

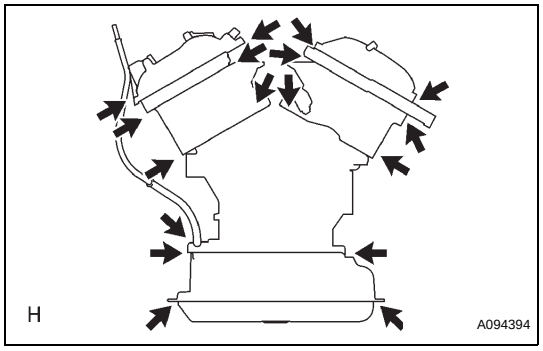



**4. CHECK AIR INLET LINE**

(a) Disconnect the air inlet line hose from the charcoal canister.

(b) Check that air can flow freely into the air inlet line.
If air cannot flow freely into the air inlet line, repair or replace it.

(c) Reconnect the air inlet line hose to the charcoal canister.



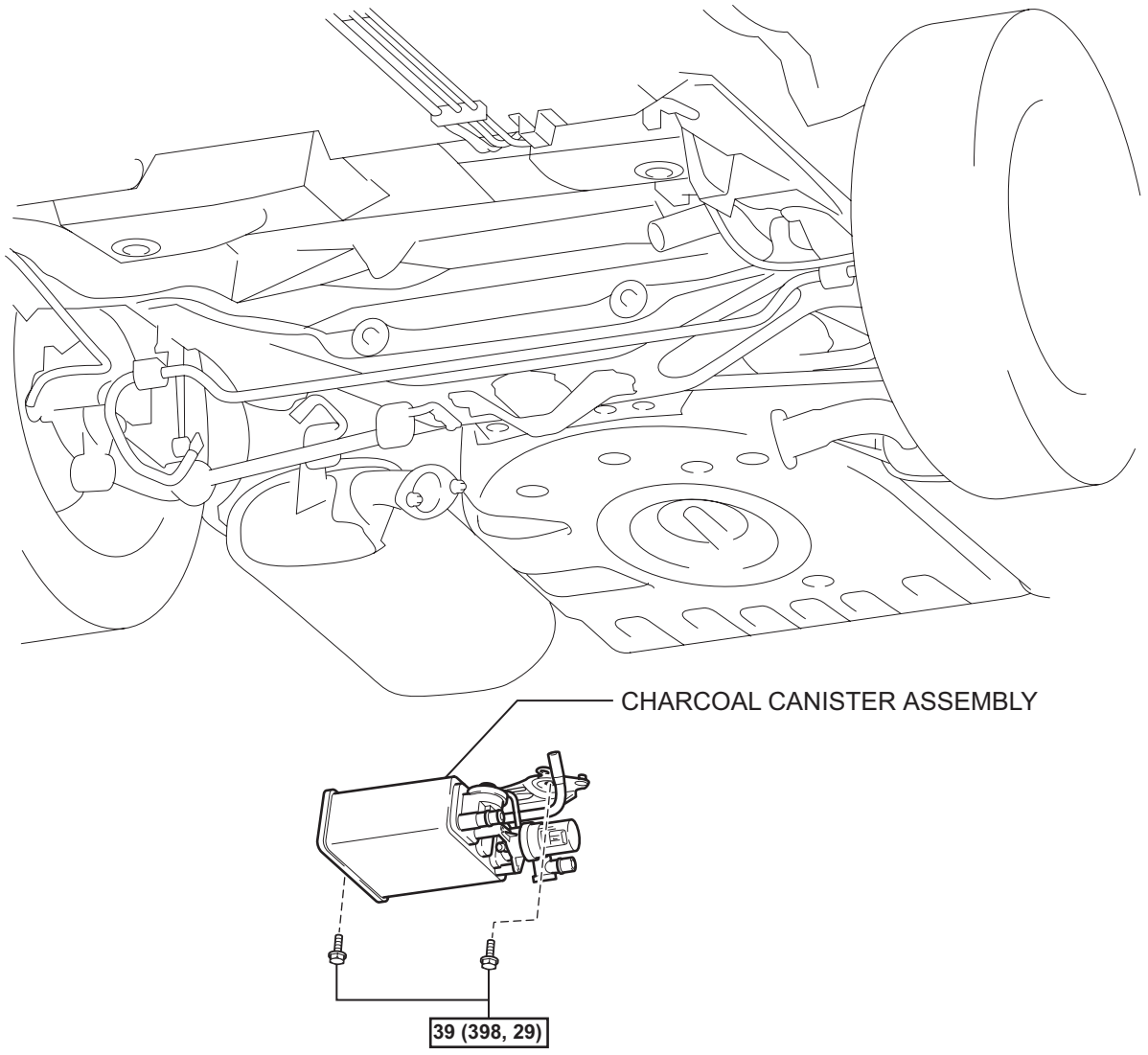

**5. VISUALLY INSPECT HOSES, CONNECTIONS AND GASKETS**

(a) Check for cracks, leaks or damage.
HINT:
Removal or problems with the engine oil dipstick, oil filler cap, PCV hose and other components may cause the engine to run improperly. 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 improperly.
If necessary, replace any damaged parts.

EC

# CANISTER

## COMPONENTS




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

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# REMOVAL

**1. REMOVE FUEL TANK ASSEMBLY**

HINT:

(See page FU-36)

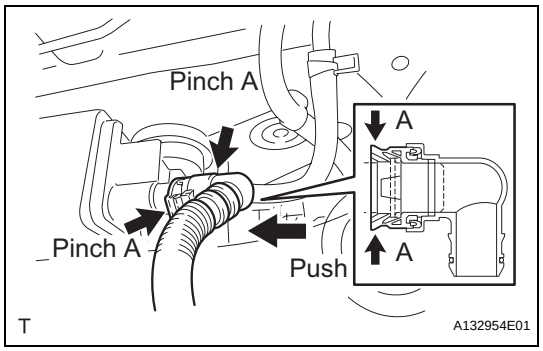
**2. REMOVE CHARCOAL CANISTER ASSEMBLY**

(a) Disconnect the fuel tank vent hose from the charcoal canister.

(1) Push the connector deep inside.

(2) Pinch portion A.

(3) Pull out the connector.




(b) Disconnect the charcoal canister filter sub-assembly from the charcoal canister.

(1) Push the connector deep inside.

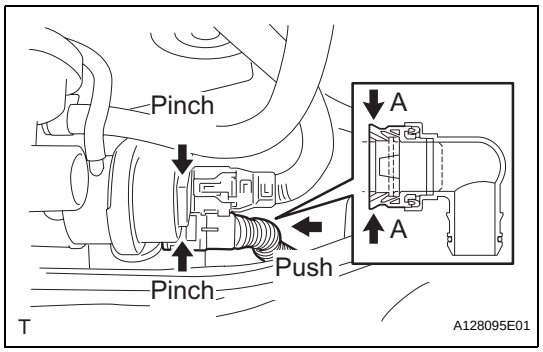
(2) Pinch portion A.

(3) Pull out the connector.

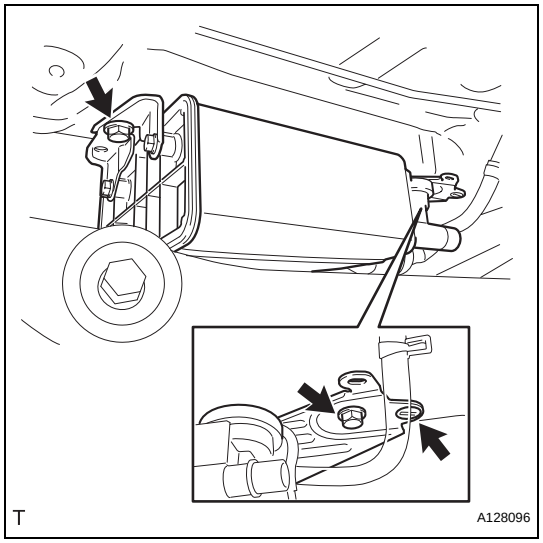
(c) Disconnect the vapor pressure sensor connector.

(d) Disconnect the wire harness clamp.

(e) Disconnect the purge line hose from the charcoal canister.




(f) Remove the 2 bolts, clip and charcoal canister.

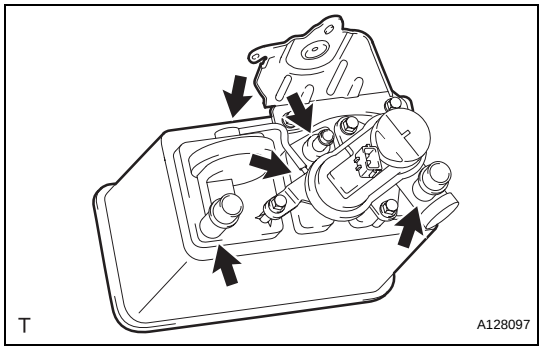



# INSPECTION

**1. INSPECT CHARCOAL CANISTER ASSEMBLY**

(a) Visually check the charcoal canister for cracks or damage.

If cracks or damage are found, replace the charcoal canister assembly.

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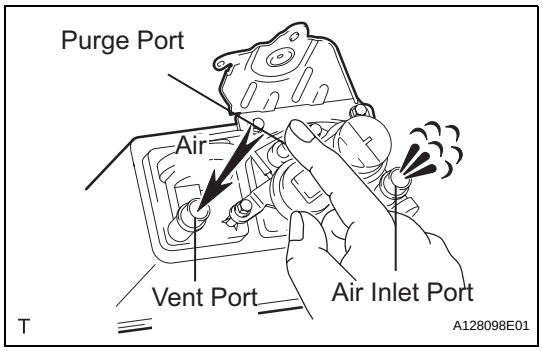
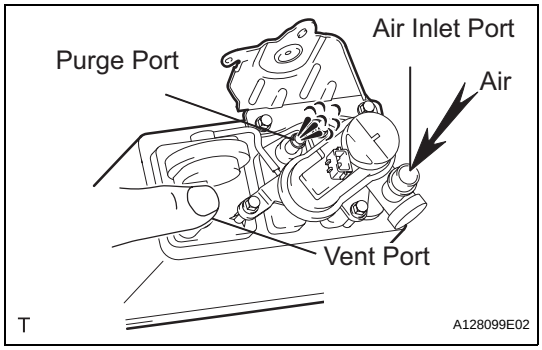



(b) Check charcoal canister operation.
(1) With the purge port closed, blow 1.67 kPa (17.0 gf/cm$^2$, 0.24 psi) of air into the vent port, and check that air flows from the air inlet port.
If the result is not as specified, replace the charcoal canister assembly.




(2) With the vent port closed, blow 1.10 kPa (11.2 gf/cm$^2$, 0.16 psi) of air to the air inlet port, and check that air flows from the purge port.
If the result is not as specified, replace the charcoal canister assembly.

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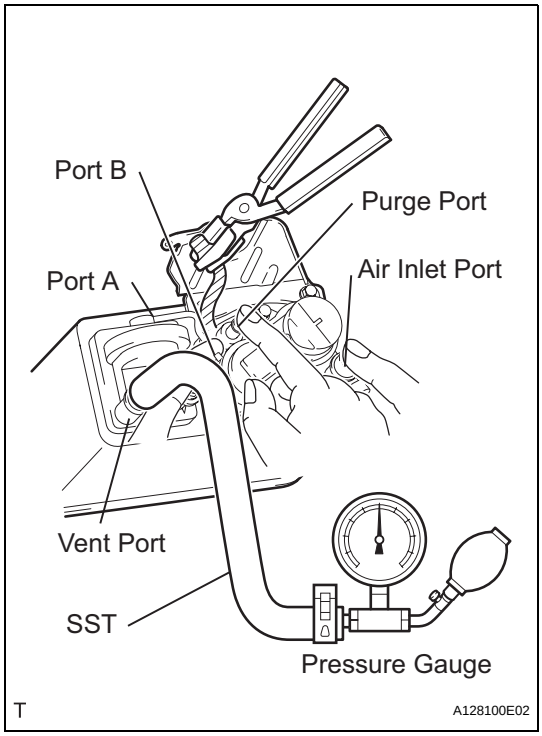
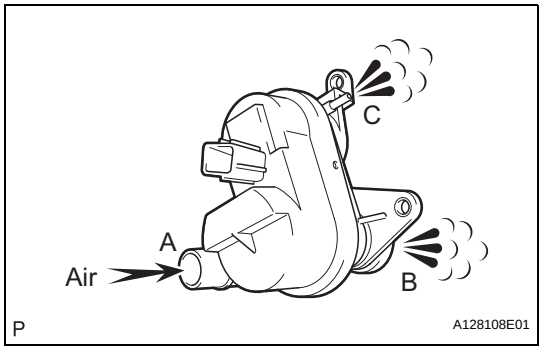
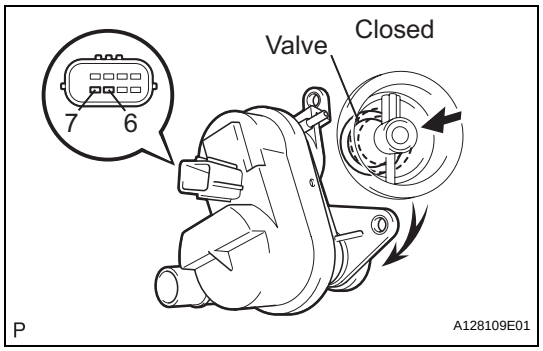


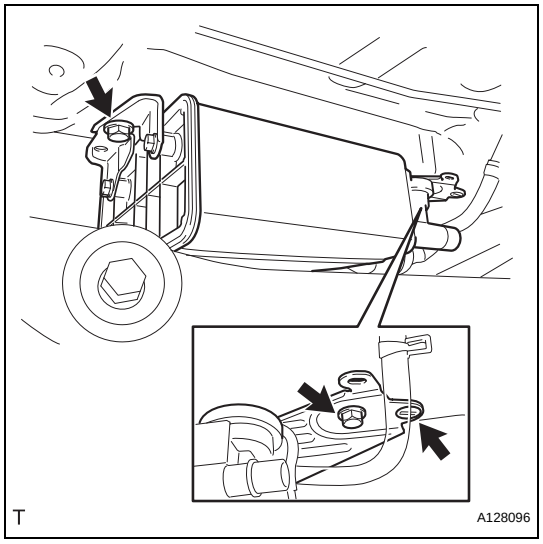

(c) Check for air leakage.
(1) Remove the air hose between ports A and B.
(2) Connect the SST (pressure gauge) to the vent port of the charcoal canister.
**SST 09992-00242**
(3) While holding port B, with the purge port and the air inlet port closed and port A open, apply 19.6 kPa (0.2 kgf/cm$^2$, 2.81 psi) of pressurized air into the vent port, then confirm that pressure is retained for 1 minute.
If the result is not as specified, replace the charcoal canister assembly.




(d) Check the leak detection pump.
(1) Remove the detection pump from the charcoal canister.
(2) Check that air flows from port A to B and then C.
If the result is not as specified, replace the charcoal canister assembly.




(3) Connect the positive (+) lead to terminal 7 and the negative (-) lead to terminal 6.
(4) Check that the valve is closed.
If the result is not as specified, replace the charcoal canister assembly.
(5) Install the detection pump.




# INSTALLATION

**1. INSTALL CHARCOAL CANISTER ASSEMBLY**

(a) Install the 2 bolts, clip and charcoal canister.
**Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)**
(b) Connect the purge line hose to the charcoal canister.
(c) Connect the wire harness clamp.
(d) Connect the vapor pressure sensor connector.
(e) Connect the charcoal canister filter sub-assembly to the charcoal canister.
(f) Connect the fuel tank vent hose to the charcoal canister.

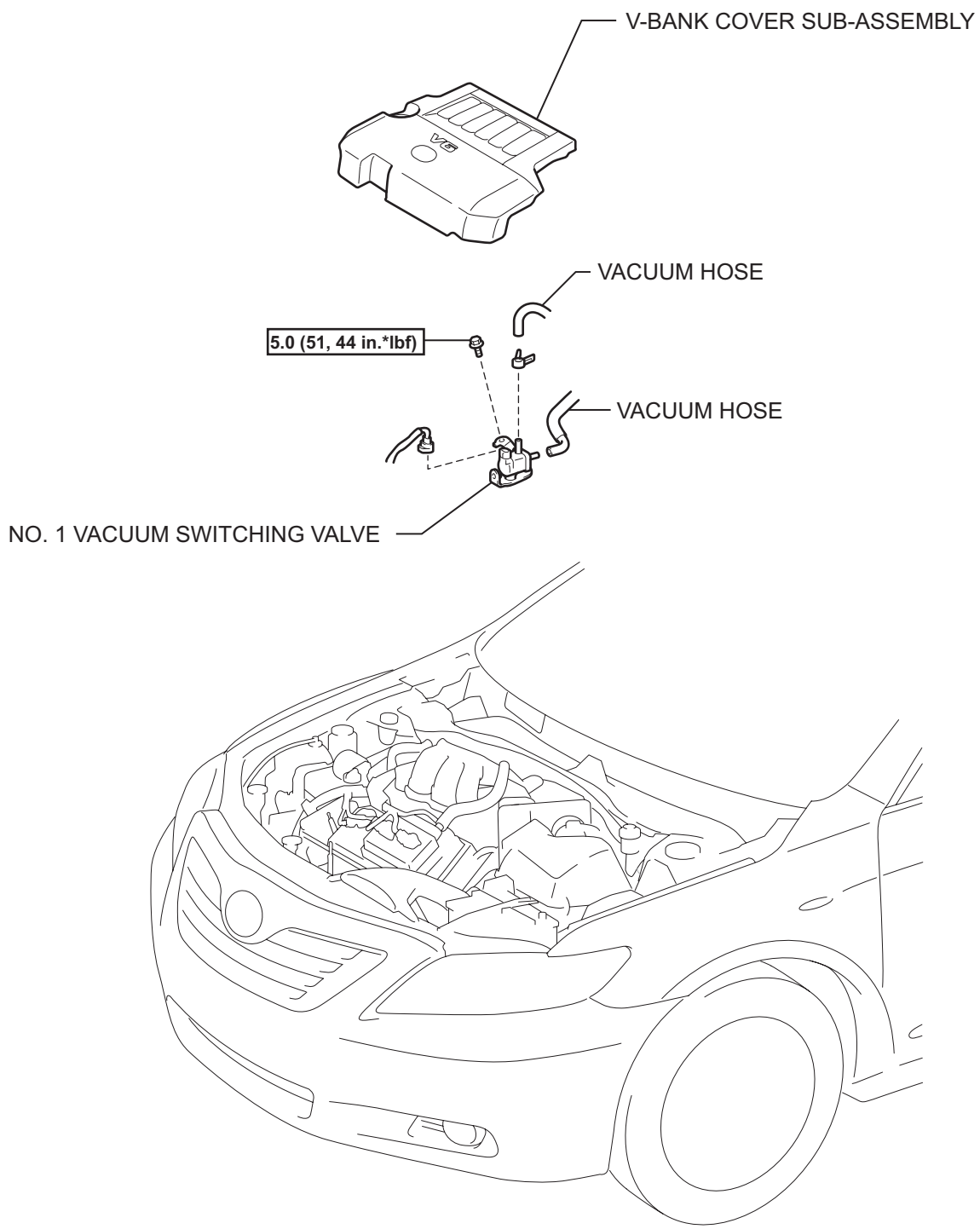
**2. INSTALL FUEL TANK ASSEMBLY**

HINT:
(See page FU-41)

EC

# VACUUM SWITCHING VALVE (for EVAP)

## COMPONENTS

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

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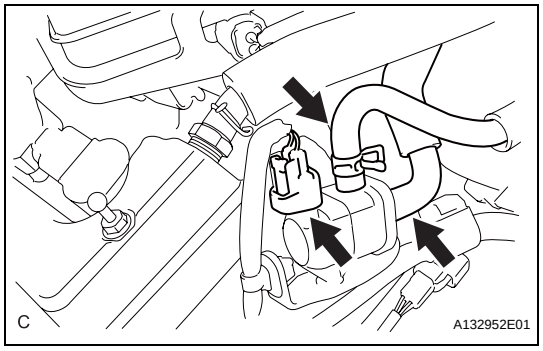
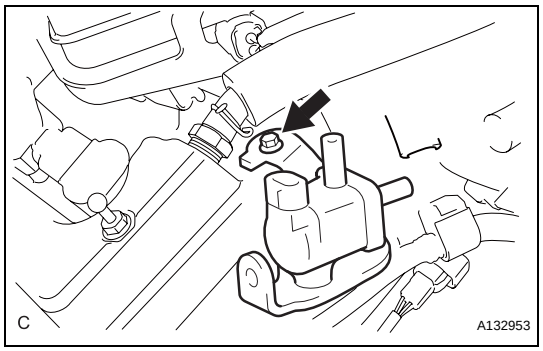
# REMOVAL

1. **REMOVE V-BANK COVER SUB-ASSEMBLY (See page EM-23)**

2. **REMOVE NO. 1 VACUUM SWITCHING VALVE**
   (a) Disconnect the 2 vacuum hoses and No. 1 vacuum switching valve connector.



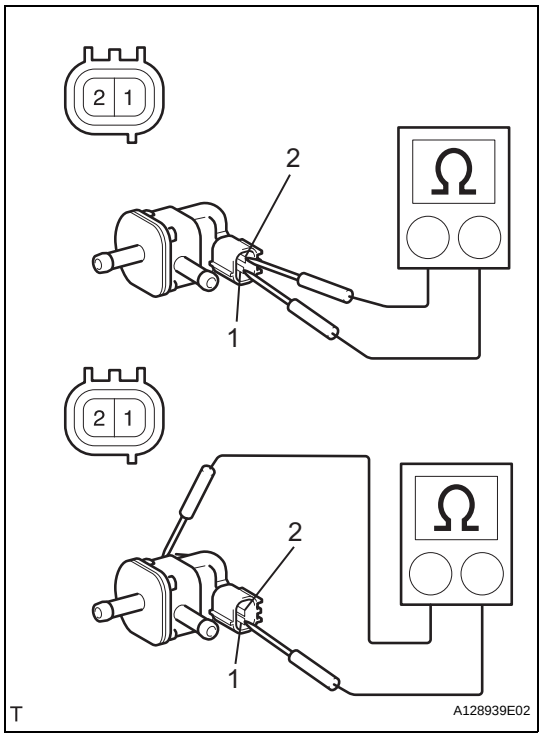

   (b) Remove the bolt and No. 1 vacuum switching valve.

# INSPECTION

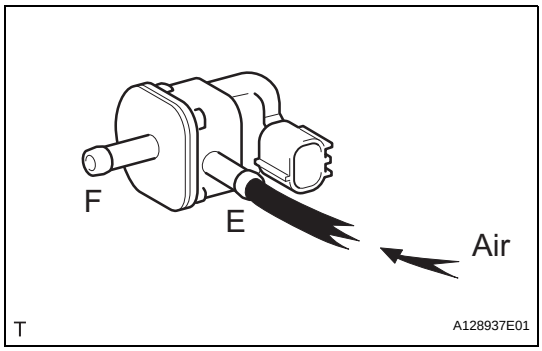
1. **INSPECT EVAP VSV**
   (a) Check the VSV for an open circuit.
      (1) Measure the resistance.
      **Standard resistance**

| Tester Connection | Specified Condition |
|---|---|
| 1 - 2 | 23 to 26Ω at 20°C (68°F) |
| 1 - Body ground<br>2 - Body ground | 10 kΩ or higher |

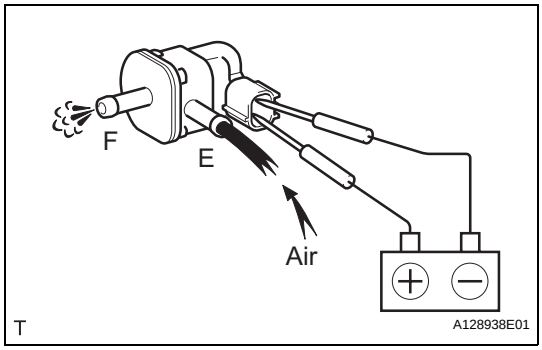
If the resistance is not as specified, replace the VSV assembly.




EC

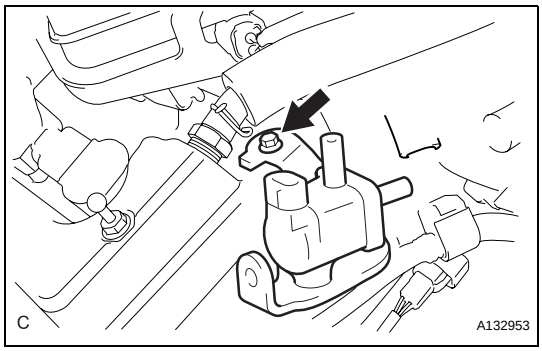



(b) Check VSV operation.
(1) Check that air does not flow from the port as shown in the illustration.

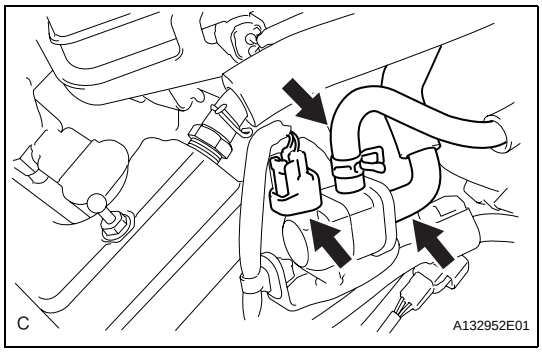



(2) Apply battery positive voltage across the terminals.
(3) Check that air flows from the ports.
If the result is not as specified, replace the VSV assembly.

# INSTALLATION




**1. INSTALL NO. 1 VACUUM SWITCHING VALVE**
(a) Install the No. 1 vacuum switching valve with the bolt.
**Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)**



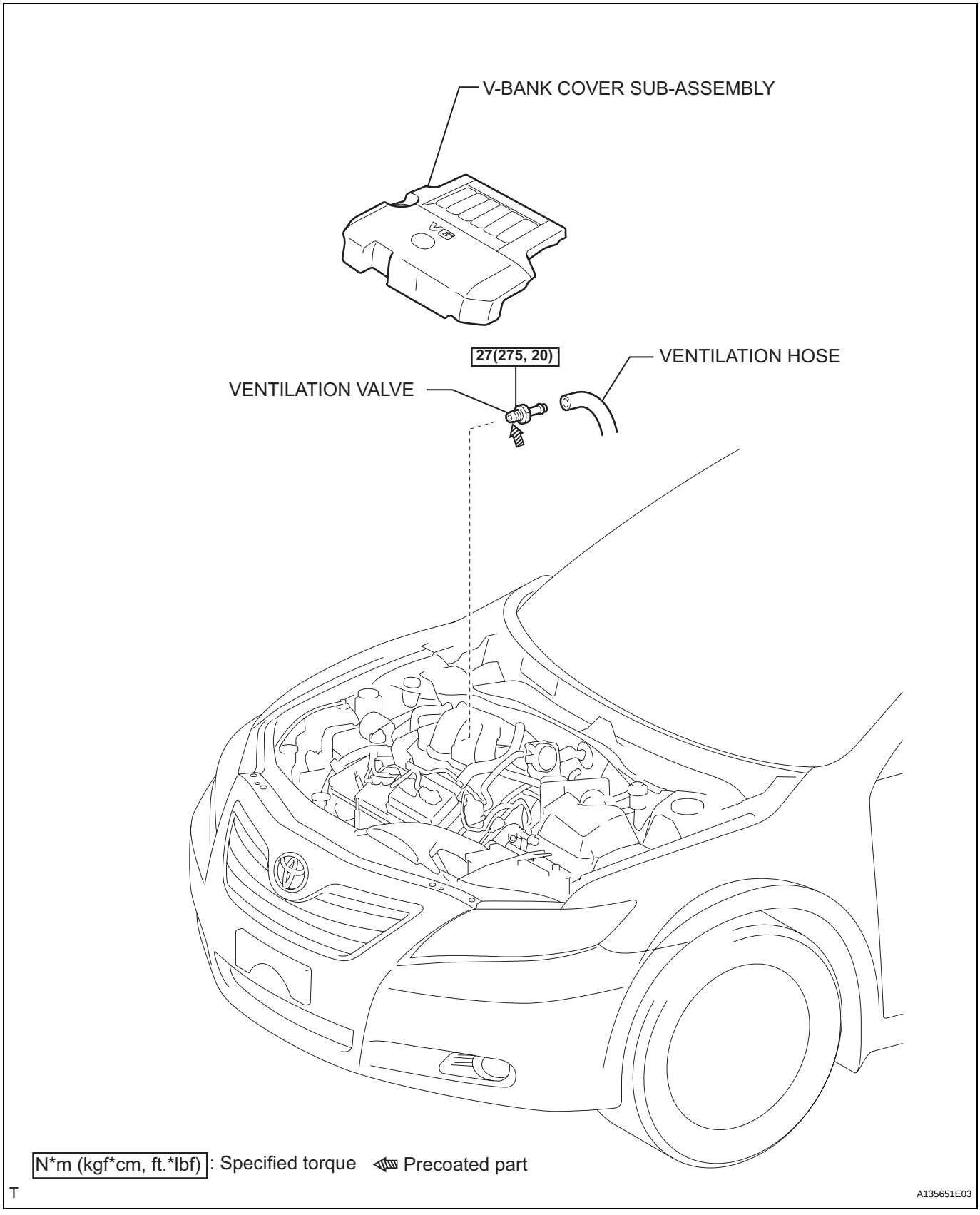

(b) Disconnect the 2 vacuum hoses and No. 1 vacuum switching valve connector.

**2. INSTALL V-BANK COVER SUB-ASSEMBLY (See page EM-52)**

EC

# VENTILATION VALVE

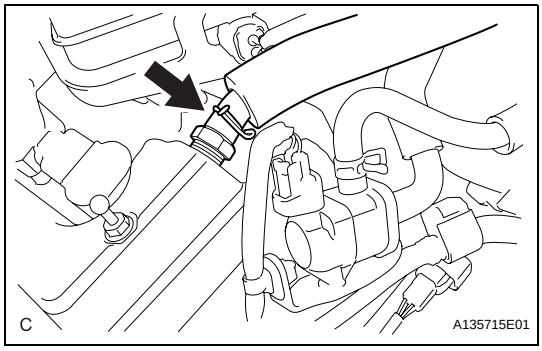
## COMPONENTS



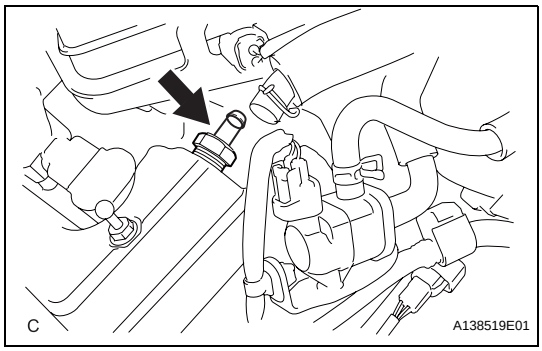
# REMOVAL

1. **REMOVE V-BANK COVER SUB-ASSEMBLY (See page EM-23)**

2. **DISCONNECT VENTILATION HOSE**
   (a) Disconnect the ventilation hose from the ventilation valve.



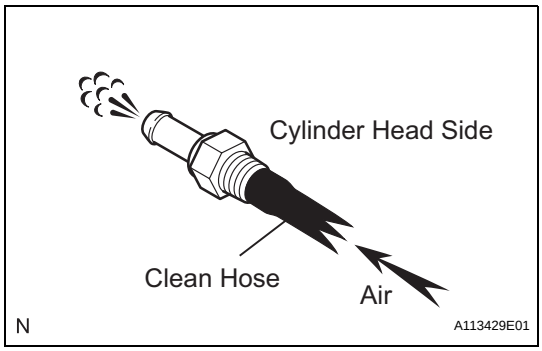

3. **REMOVE VENTILATION VALVE**
   (a) Remove the ventilation valve.

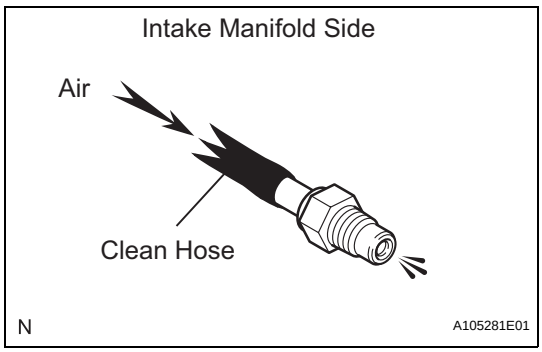


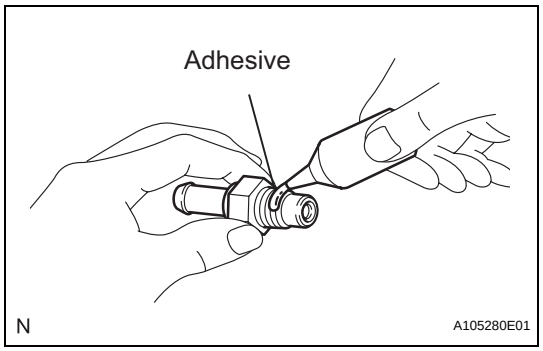

# INSPECTION

1. **INSPECT VENTILATION VALVE**
   (a) Install a clean hose to the ventilation valve.
   (b) Check the ventilation valve operation.
      (1) Blow air into the cylinder head side, and check that air passes through easily.
      **NOTICE:**
      **Do not suck air through the valve.**
      **Petroleum substances inside the valve are hazardous to your health.**

      (2) Blow air into the intake manifold side, and check that air passes through with difficulty.
      If the result is not as specified, replace the ventilation valve.
   (c) Remove the clean hose from the ventilation valve.





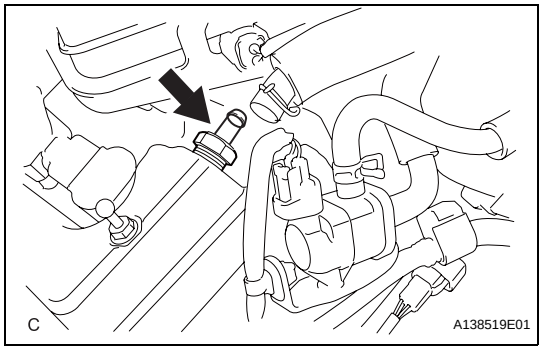

# INSTALLATION

**1. INSTALL VENTILATION VALVE**

(a) Install the ventilation valve.

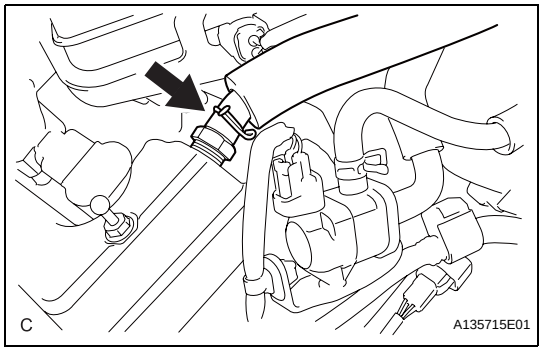
(1) Apply adhesive to 2 or 3 threads.

**Adhesive:**
**Part No. 08833-00070, THREE BOND 1324 or equivalent.**




(2) Install the ventilation valve.

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




**2. CONNECT VENTILATION HOSE**

(a) Connect the ventilation hose to the ventilation valve.

**3. INSTALL V-BANK COVER SUB-ASSEMBLY (See page EM-52)**

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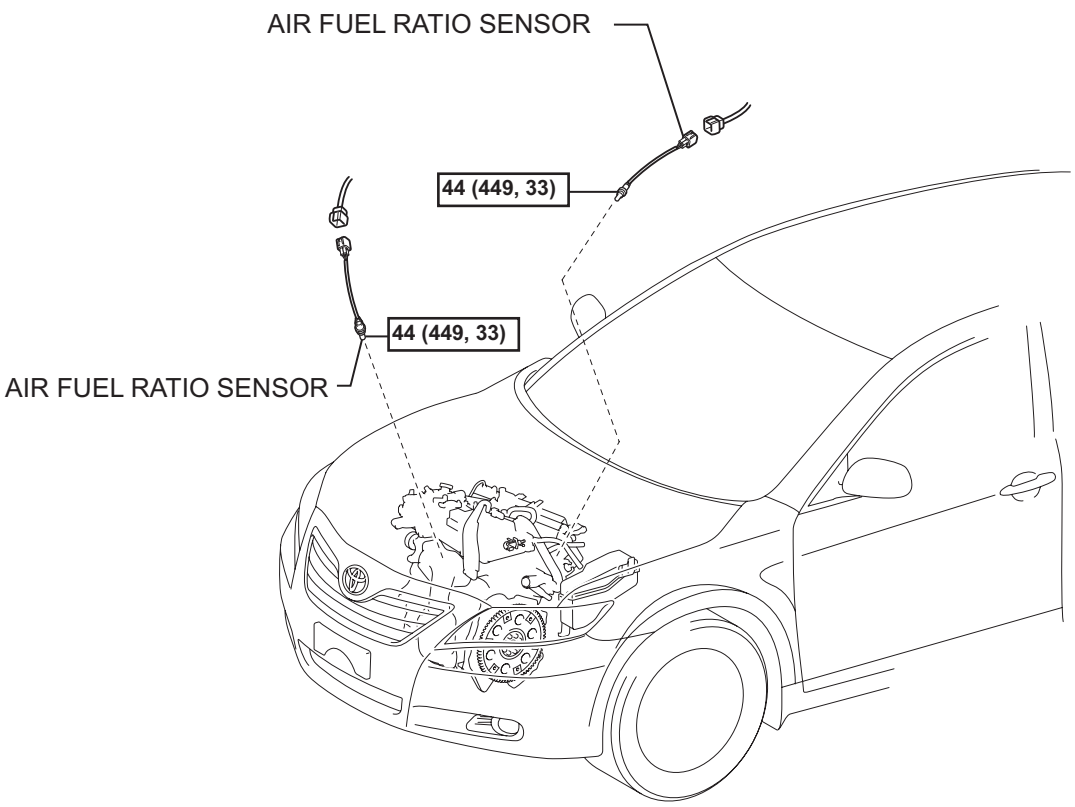
# AIR FUEL RATIO SENSOR

## COMPONENTS




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

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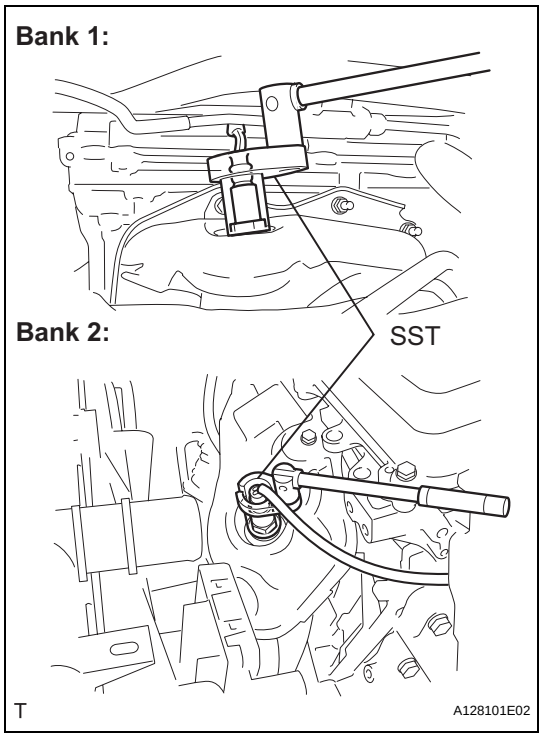
A135655E03

EC



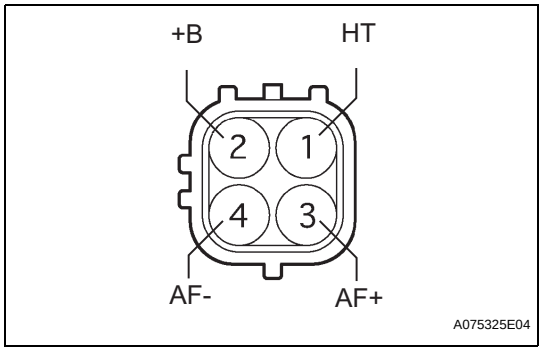

# REMOVAL

**1. REMOVE AIR FUEL RATIO SENSOR**

(a) Disconnect the 2 air fuel ratio sensor connectors.

(b) Using SST, remove the 2 air fuel ratio sensors from the front pipe assembly.

**SST 09224-00010**




# INSPECTION

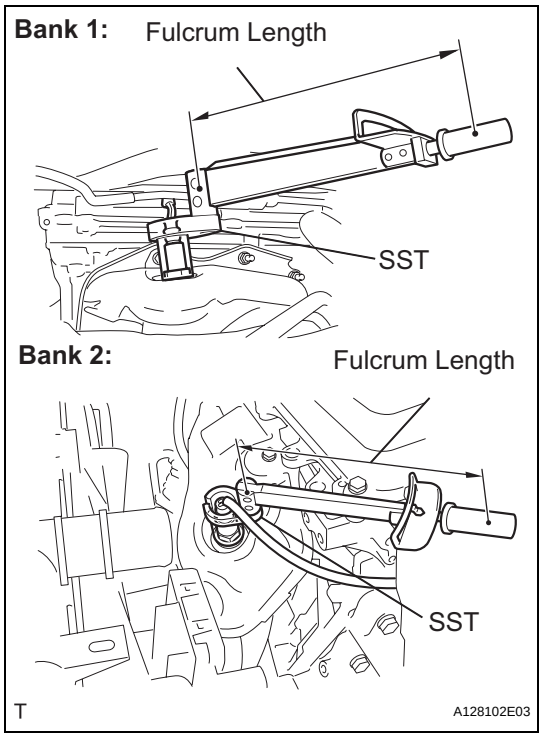
**1. INSPECT AIR FUEL RATIO SENSOR**

(a) Measure the resistance between terminals 1 (HT) and 2 (+B).

**Standard resistance**

| Condition | Specified Condition |
|---|---|
| 20 °C (68°F) | 1.8 to 3.4 Ω |

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




# INSTALLATION

**1. INSTALL AIR FUEL RATIO SENSOR**

(a) Using SST, install the 2 air fuel ratio sensors to the front pipe assembly.

**SST 09224-00010**

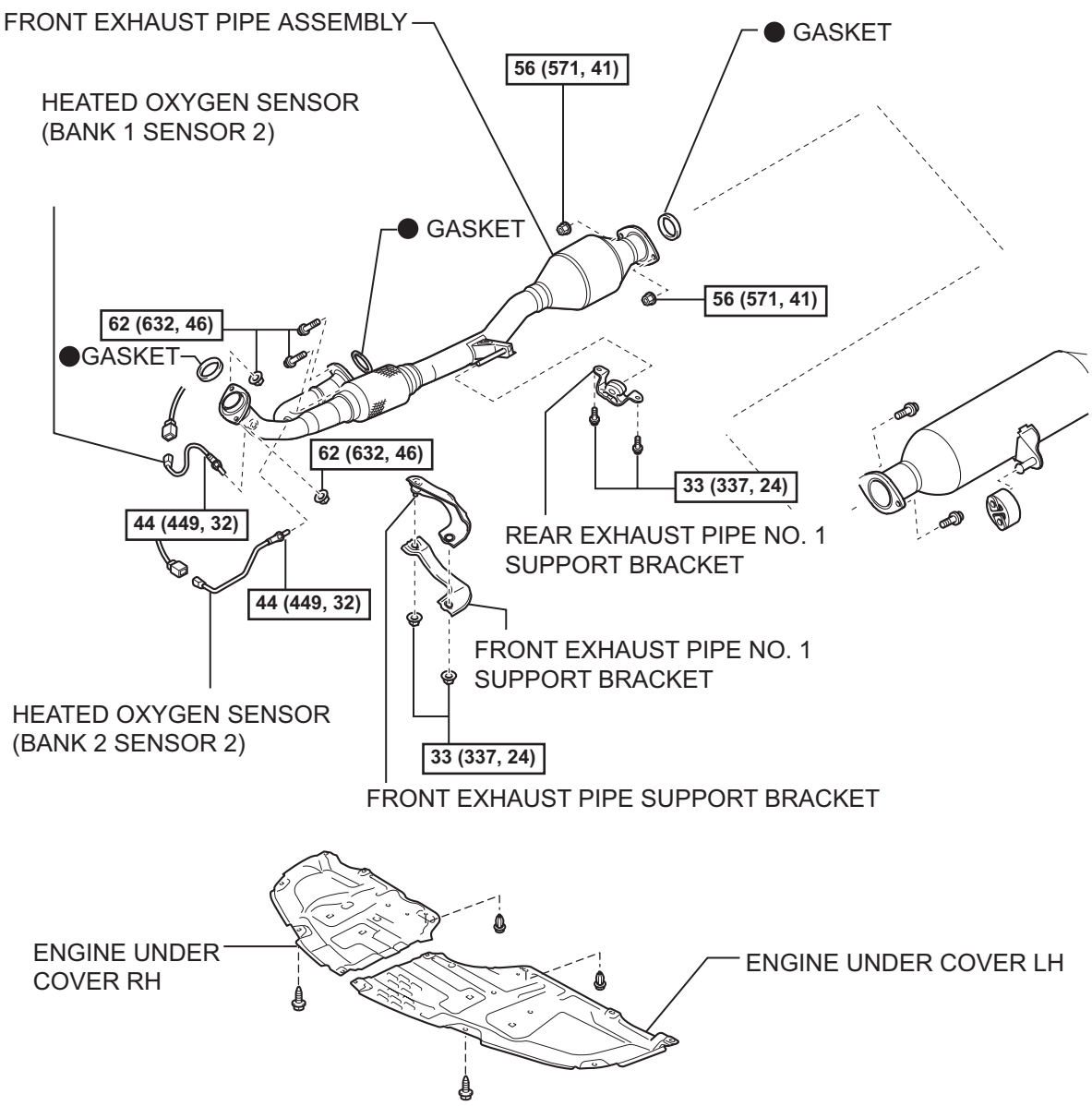
**Torque: 44 N*m (449 kgf*cm, 32 ft.*lbf)**

(b) Connect the 2 air fuel ratio sensor connectors.

EC

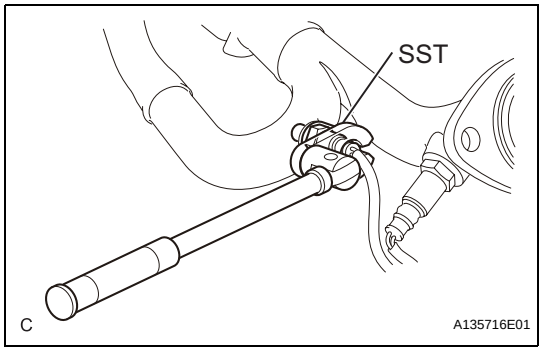
# HEATED OXYGEN SENSOR

## COMPONENTS

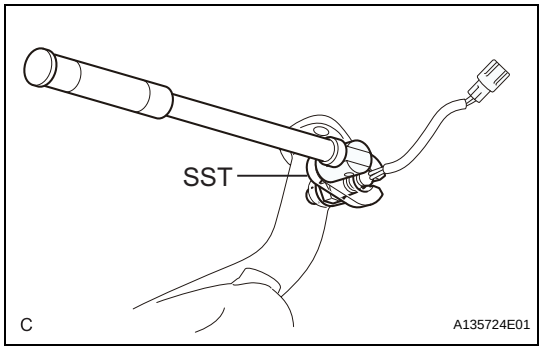


# REMOVAL

1. **REMOVE ENGINE UNDER COVER LH**
2. **REMOVE ENGINE UNDER COVER RH**
3. **REMOVE FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**
4. **REMOVE HEATED OXYGEN SENSOR (for Bank 1)**
   (a) Using SST, remove the oxygen sensor.
   **SST 09224-00010**

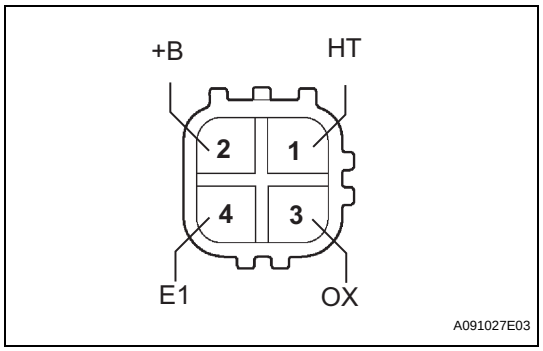



5. **REMOVE HEATED OXYGEN SENSOR (for Bank 2)**
   (a) Using SST, remove the oxygen sensor.
   **SST 09224-00010**




# INSPECTION

1. **INSPECT HEATED OXYGEN SENSOR**
   (a) Measure the resistance between terminals 1 (HT) and 2 (+B).
   **Standard resistance**

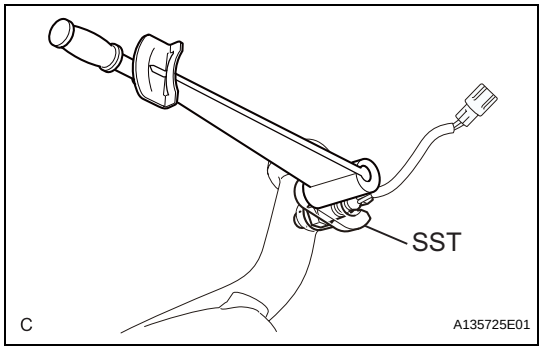



| Condition | Specified Condition |
|---|---|
| 20°C (68°F) | 11 to 16 Ω |

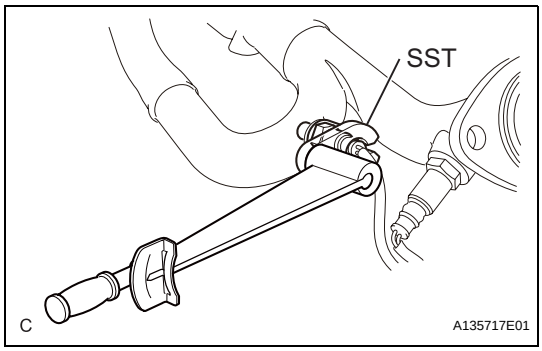
If the result is not as specified, replace the sensor.

# INSTALLATION

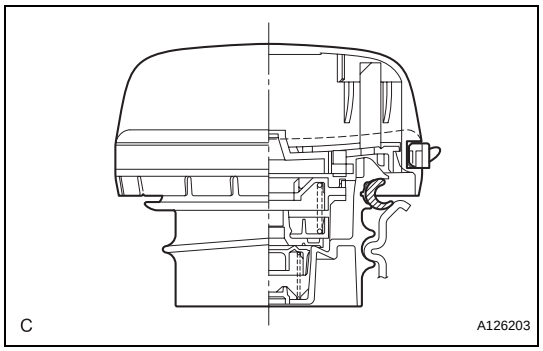
1. **INSTALL HEATED OXYGEN SENSOR (for Bank 2)**
   (a) Using SST, install the heated oxygen sensor.
   **SST 09224-00010**
   **Torque: 44 N*m (449 kgf*cm, 32 ft.*lbf)**




EC




2. **INSTALL HEATED OXYGEN SENSOR (for Bank 1)**
   (a) Using SST, install the heated oxygen sensor.
   **SST 09224-00010**
3. **INSTALL FRONT EXHAUST PIPE ASSEMBLY (See page EX-4)**
4. **INSTALL ENGINE UNDER COVER LH**
5. **INSTALL ENGINE UNDER COVER RH**




# FUEL TANK CAP

## INSPECTION

**1. REMOVE FUEL TANK CAP ASSEMBLY**

(a) Visually check if the cap and gasket are deformed or damaged.
If necessary, replace the cap.