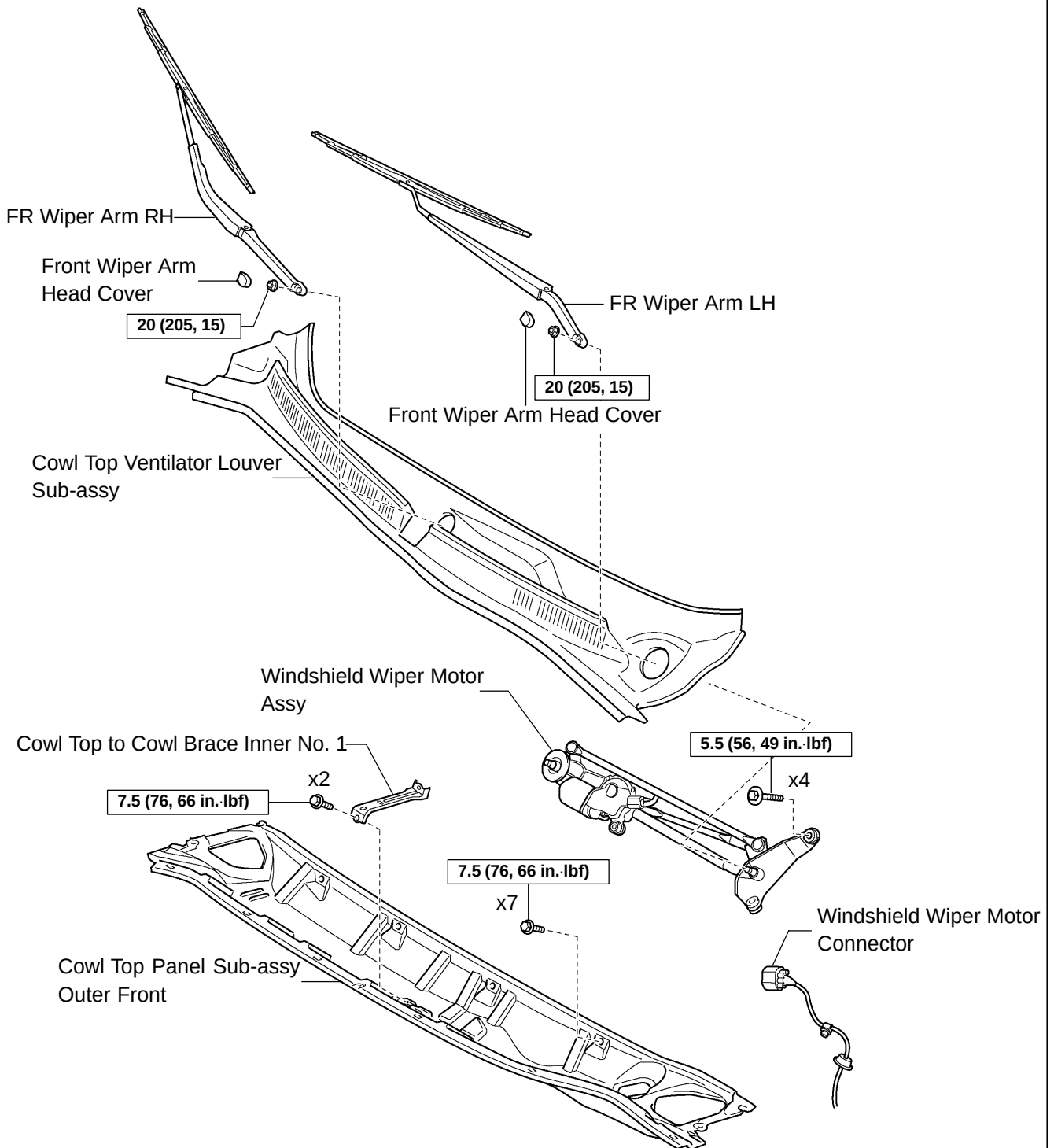


KNOCK SENSOR COMPONENTS

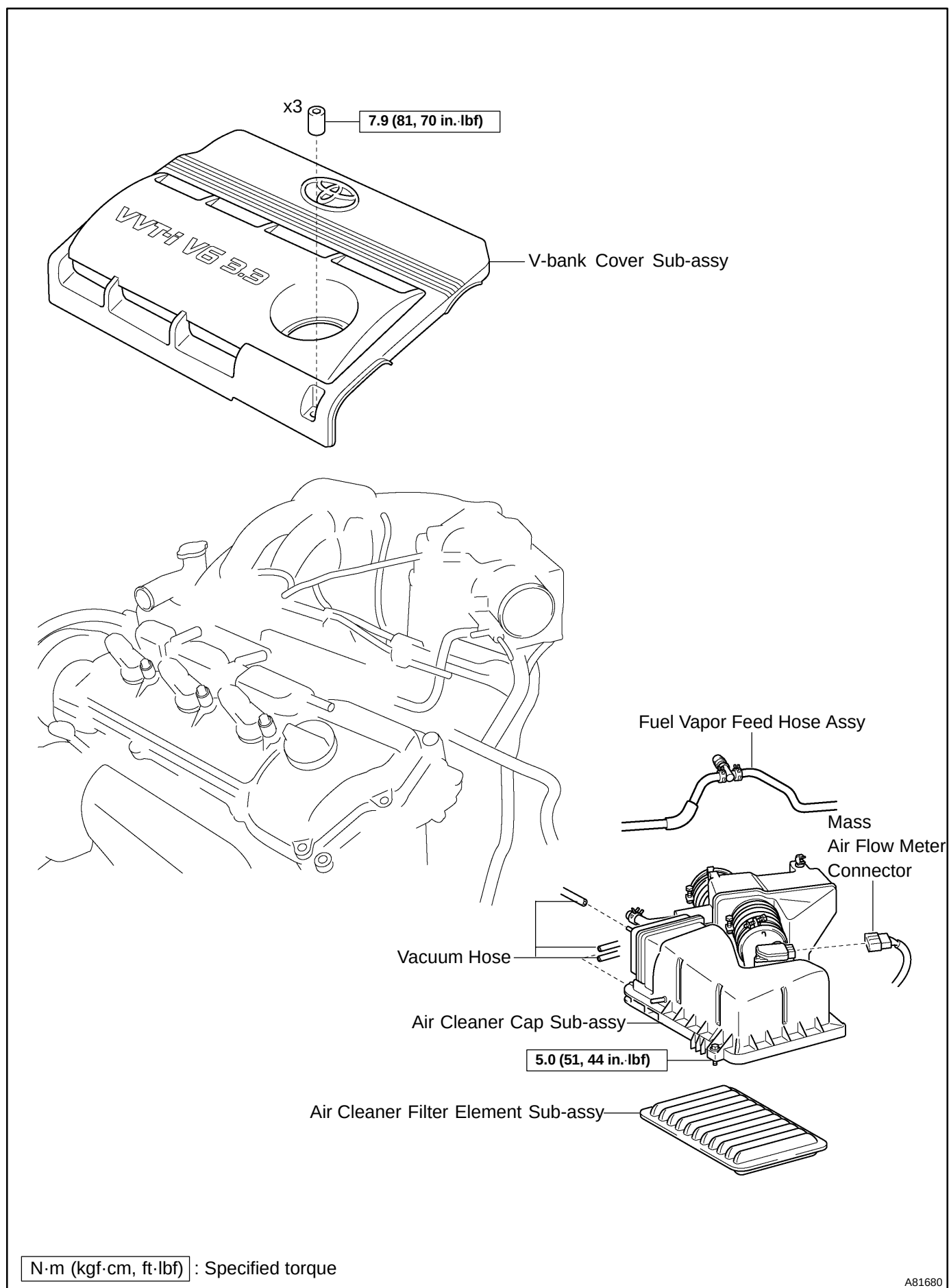
100F3-01

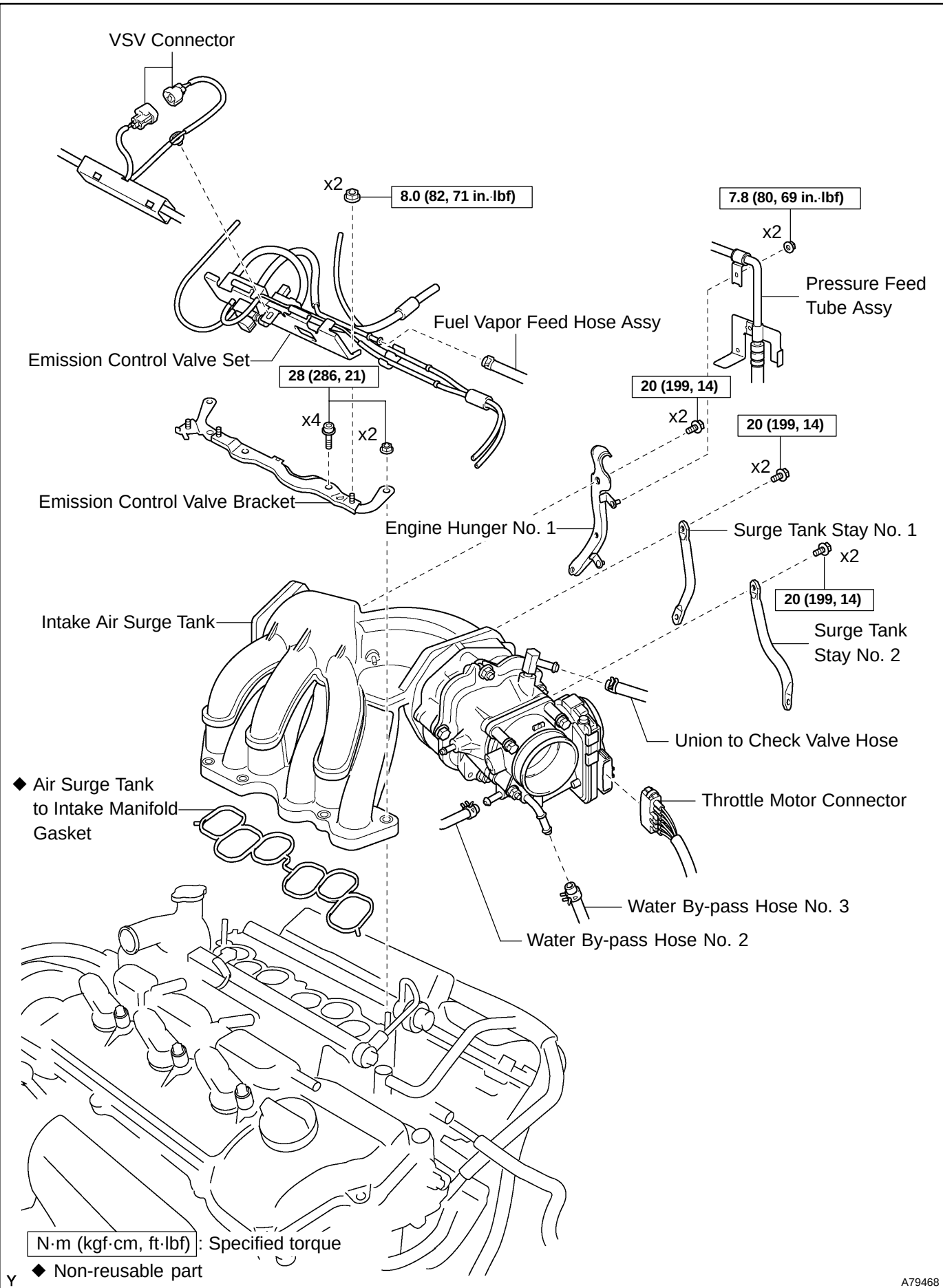


N·m (kgf·cm, ft·lbf) : Specified torque

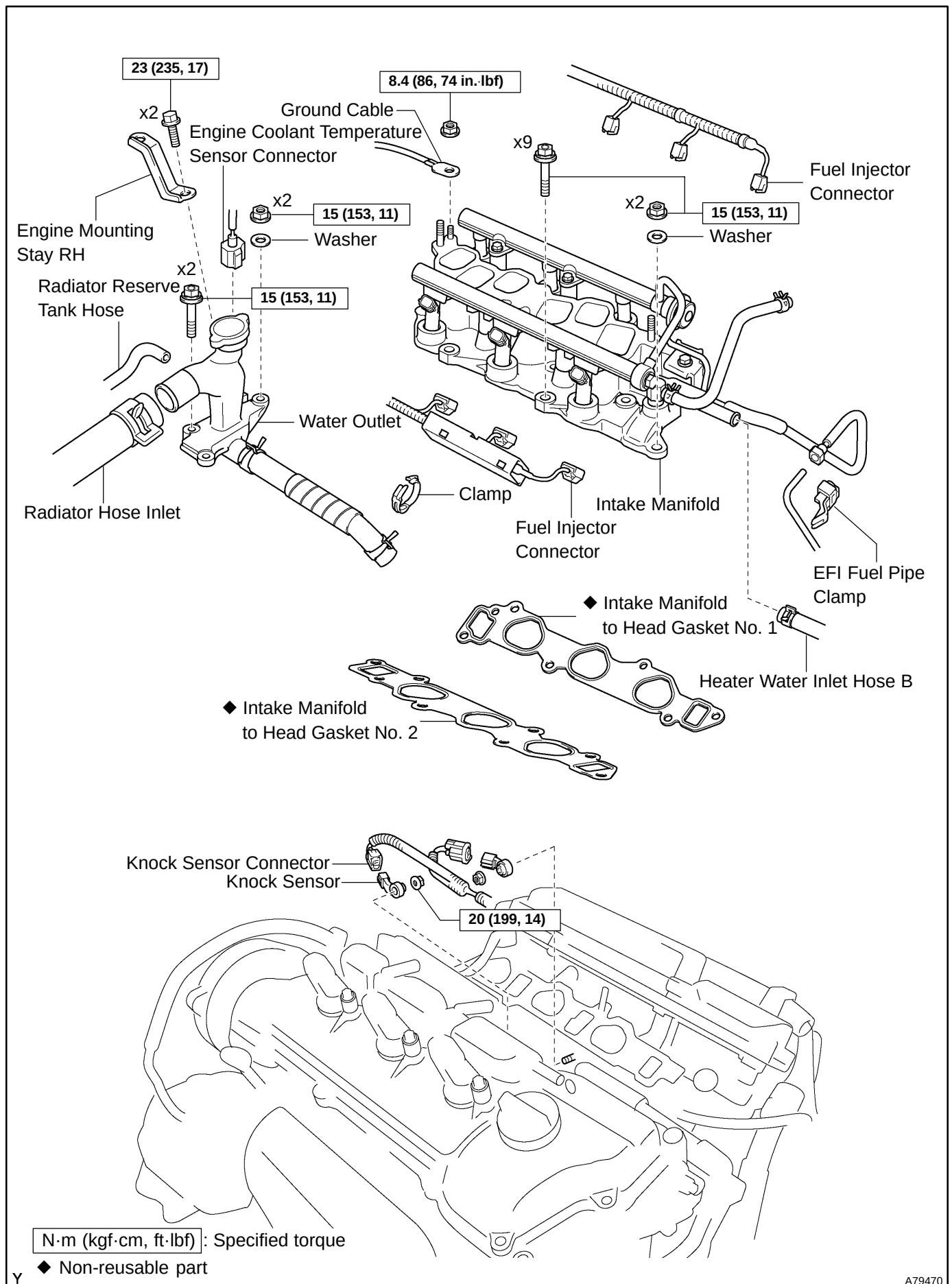
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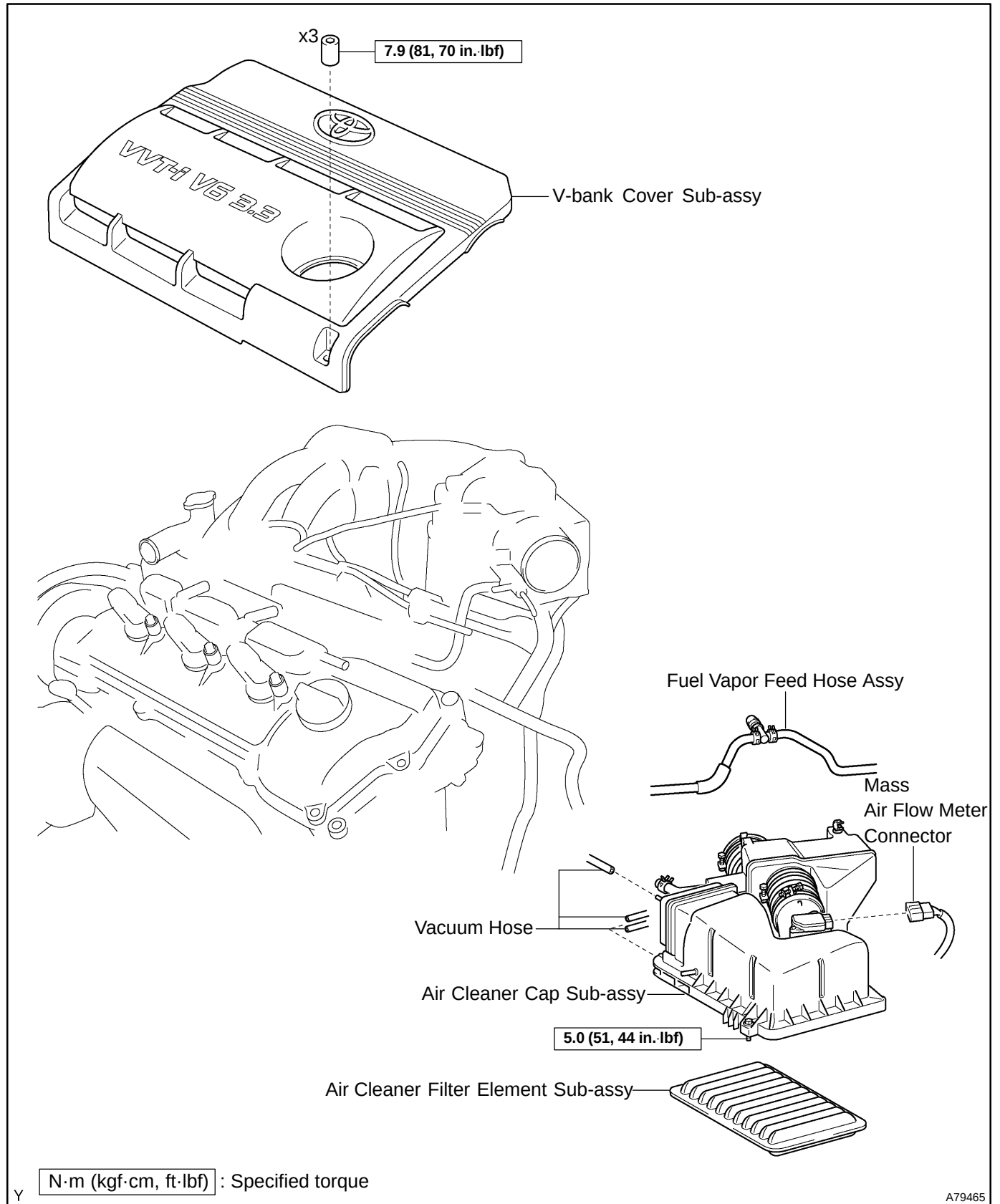
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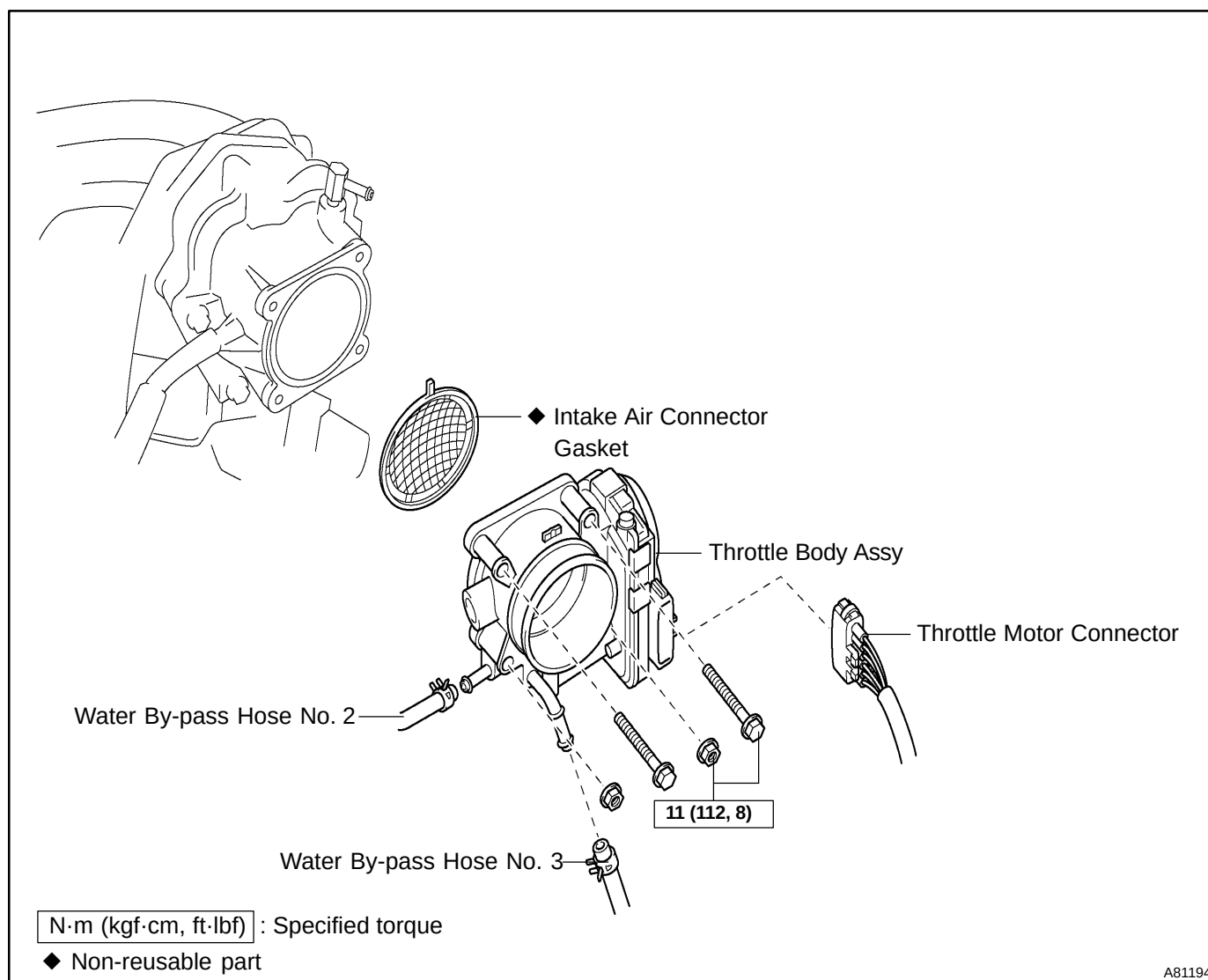
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THROTTLE BODY ASSY COMPONENTS

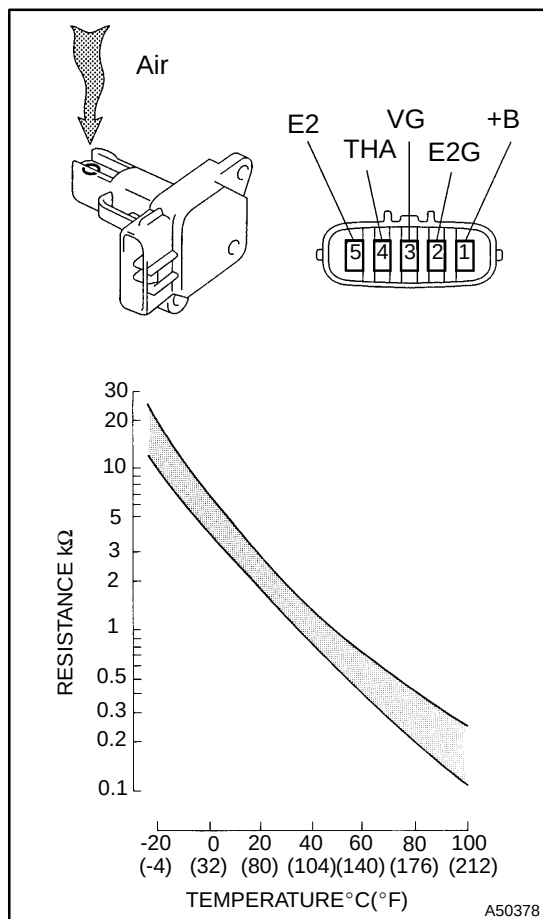
100F1-02



A79465



INSPECTION



1. INSPECT MASS AIR FLOW METER

- Output voltage inspection.
 - Apply battery voltage across terminals 1 (+B) and 2 (E2G).
 - Connect the positive (+) tester probe to terminal VG, and negative (-) tester probe to terminal E2G.
 - Blow air into the MAF meter, and check that the voltage output fluctuates.
- Resistance inspection.
 - Using an ohmmeter, measure the resistance between terminals 4 (THA) and 5 (E2).

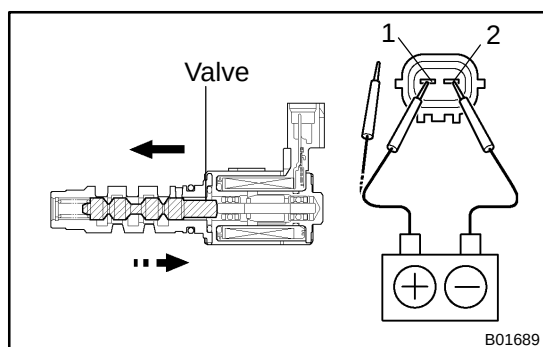
Resistance:

Terminals	Resistance	Temperature
THA - E2	13.6 to 18.4 kΩ	-20 °C (-4°F)
THA - E2	2.21 to 2.69 kΩ	20°C (68°F)
THA - E2	0.493 to 0.667 kΩ	60°C (140°F)

2. INSPECT CAMSHAFT TIMING OIL CONTROL VALVE ASSY

- Resistance inspection.
 - Using an ohmmeter, measure the resistance between the terminals.

Resistance: 6.9 to 7.9 Ω at 20°C (68°F)



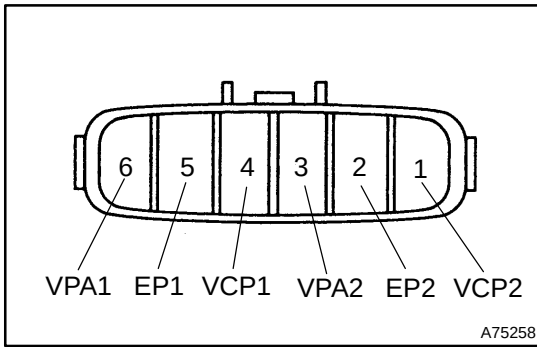
- Movement inspection.
 - Connect the positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 2, and check the movement of the valve.

NOTICE:

Confirm the valve moves freely and does not stick in any position.

HINT:

Dirt or foreign objects in the oil line cause the subtle pressure leaks in the valve. The pressure leak will cause the camshaft to advance. This condition will usually set a DTC.



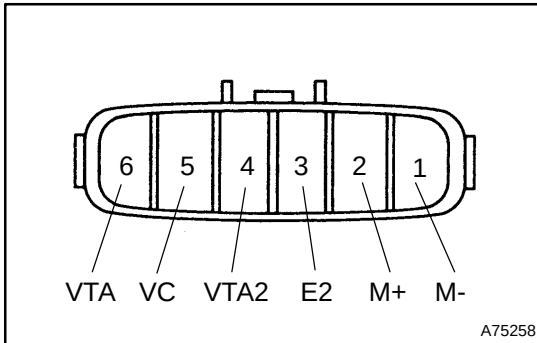
3. INSPECT ACCELERATOR PEDAL ROD ASSY

(a) Resistance inspection

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

Resistance:

Terminal	Resistance
3 (VPA2) - 5 (EP1)	5.0 kΩ or less
6 (VPA1) - 2 (EP2)	5.0 kΩ or less
4 (VCP1) - 5 (EP1)	2.25 to 4.75 kΩ
1 (VCP2) - 2 (EP2)	2.25 to 4.75 kΩ



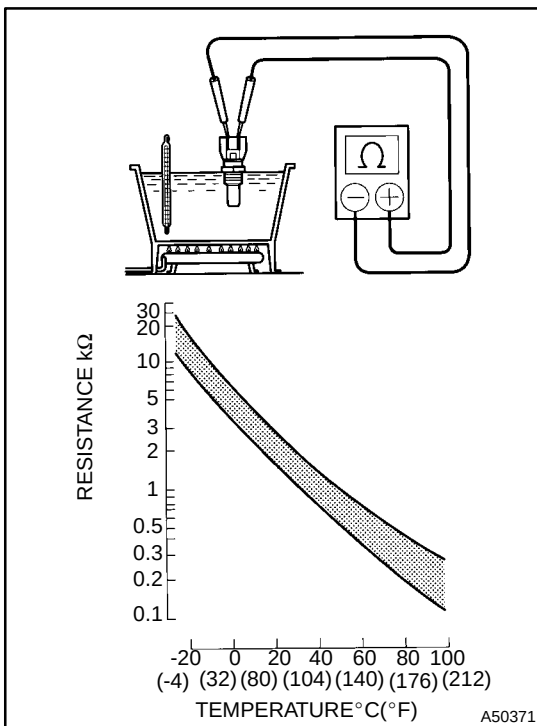
4. INSPECT THROTTLE BODY ASSY

(a) Resistance inspection

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

Resistance:

Terminals	Resistance	Temperature
2 (M+) - 1 (M-)	0.3 to 100 Ω	20°C (68°F)



5. INSPECT E.F.I. ENGINE COOLANT TEMPERATURE SENSOR

(a) Resistance inspection.

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

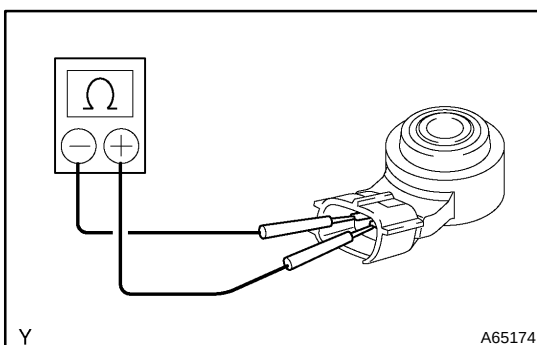
Resistance:

2.32 to 2.59 kΩ at Approx. 20°C (68°F)

0.310 to 0.326 kΩ at Approx. 80°C (126°F)

NOTICE:

While checking the engine coolant temperature sensor in water, be careful not to allow water to go into the terminals, and after checking, dry the sensor.



6. INSPECT KNOCK SENSOR

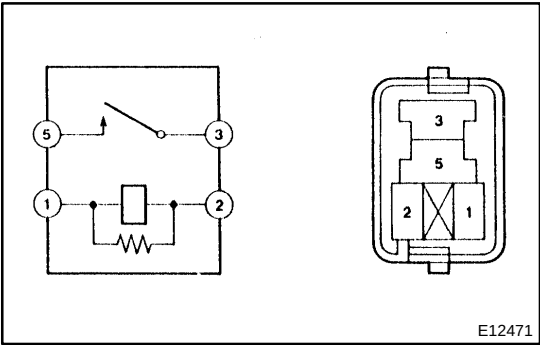
(a) Continuity inspection.

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

Resistance: 120 to 280 kΩ at 20°C (68°F)

HINT:

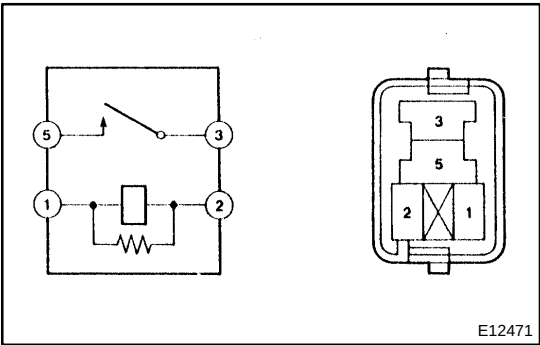
If the resistance is not specified, replace the sensor.



7. INSPECT EFI RELAY

- (a) Continuity inspection.
- (1) Using an ohmmeter, check for continuity between each terminal.

Between terminal	Specified condition
1 - 2	Continuity
3 - 5	No continuity
	Continuity (Voltage applied terminals 1 and 2)



8. INSPECT CIRCUIT OPENING RELAY

- (a) Continuity inspection.
- (1) Using an ohmmeter, check for continuity between each terminal.

Between terminal	Specified condition
1 - 2	Continuity
3 - 5	No continuity
	Continuity (Voltage applied terminals 1 and 2)

SFI SYSTEM

1006Q-04

ON-VEHICLE INSPECTION

1. INSPECTION THROTTLE BODY

- (a) Listen to the throttle control motor operating sound.
 - (1) Turn the ignition switch ON.
 - (2) When turning the accelerator pedal position sensor lever, check the running sound of the motor. Also, check that there is no friction noise.
- (b) Inspect the throttle position sensor.
 - (1) Connect the hand-held tester or OBD II scan tool to the DLC3.
 - (2) Turn the ignition switch ON.
 - (3) Check that the MIL does not illuminate.
 - (4) Check that the throttle valve opening percentage (THROTTLE POS) in the DATA LIST shows the standard value.

Standard throttle valve opening percentage: 60 % or more

2. INSPECT ACCELERATOR PEDAL POSITION SENSOR

- (a) After turning ignition switch ON, check the DATA LIST and verify that the throttle position sensor voltage is within specifications.

Standard voltage: 0.6 to 1.0 V

3. INSPECT CAMSHAFT TIMING OIL CONTROL VALVE ASSY

- (a) Connect the hand-held tester or OBD II scan tool to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Start the engine and let it warm up.
- (d) Connect the hand-held tester and select the VVT from the ACTIVE TEST menu.
- (e) Monitor the engine speed when the OCV is operated with the hand-held tester.

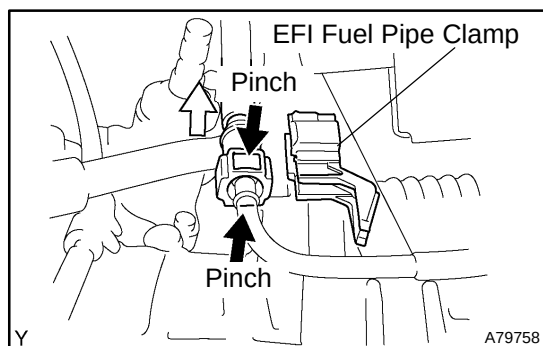
Standard:

VVT system is OFF (OCV is OFF): Normal engine speed

VVT system is ON (OCV is ON): Rough idle or engine stalled

REPLACEMENT

1. DISCHARGE FUEL SYSTEM PRESSURE (See page 11-1)
2. DRAIN ENGINE COOLANT (See page 16-8)
3. REMOVE FRONT WIPER ARM HEAD CAP (See page 66-8)
4. REMOVE FR WIPER ARM LH (See page 66-8)
5. REMOVE FR WIPER ARM RH (See page 66-8)
6. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSY (See page 66-8)
7. REMOVE WINDSHIELD WIPER MOTOR ASSY (See page 66-8)
8. REMOVE COWL TOP TO COWL BRACE INNER NO.1 (See page 11-13)
9. REMOVE COWL TOP PANEL SUB-ASSY OUTER FRONT (See page 11-13)
10. REMOVE V-BANK COVER SUB-ASSY (See page 10-7)
11. REMOVE AIR CLEANER CAP SUB-ASSY (See page 10-7)
12. REMOVE EMISSION CONTROL VALVE SET (See page 11-13)
13. REMOVE INTAKE AIR SURGE TANK (See page 11-13)

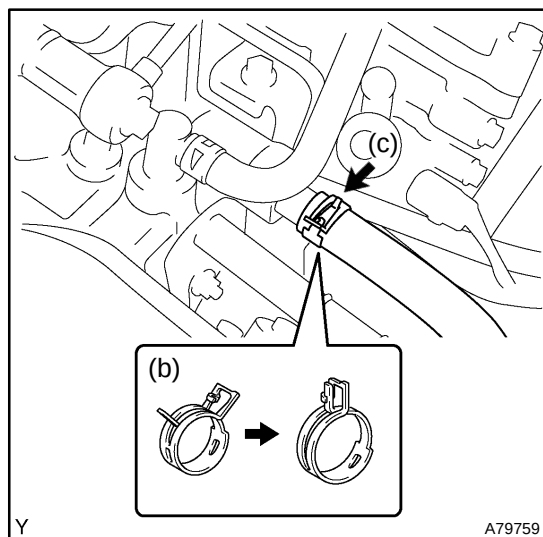
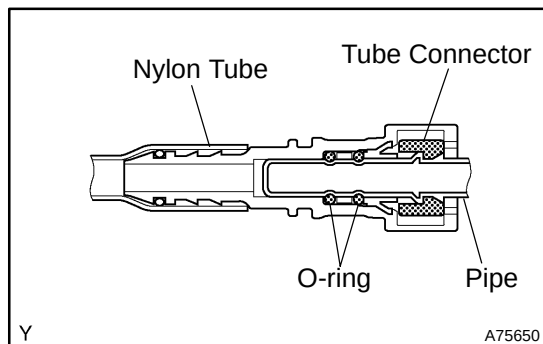


14. REMOVE INTAKE MANIFOLD

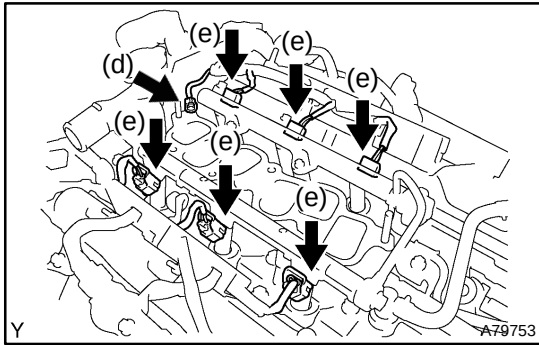
- (a) Disconnect the fuel pipe No. 1.
 - (1) Remove the EFI fuel pipe clamp.
 - (2) Pinch the tube connector and then pull out the fuel pipe No. 1.

NOTICE:

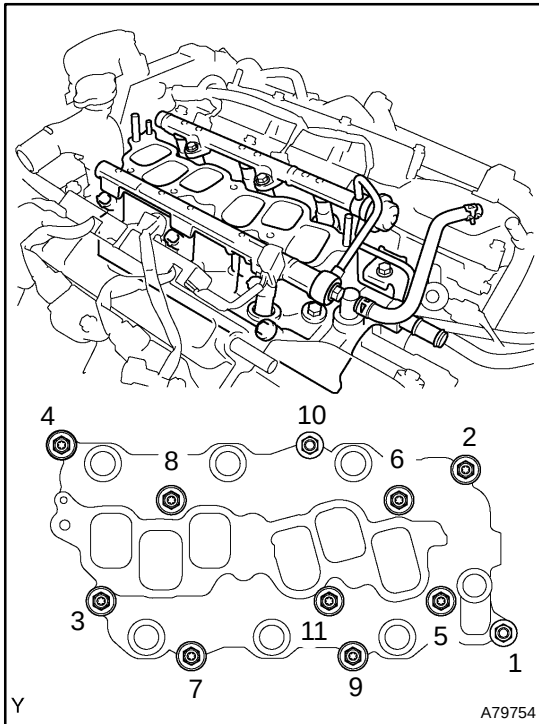
- Check if there is any dirt or mud around the connector before this operation and remove the dirt as necessary.
- Be careful of mud because the quick connector has an O-ring which seals the pipe and connector that can be contaminated.
- Do not use any tool in this operation.
- Do not bend or twist the nylon tube. Protect the connector by covering it with a vinyl or plastic bag.
- When the pipe and connector are stuck, push and pull the connector to release and pull the connector out carefully.



- (b) Lock the hose clamp as shown in the illustration.
- (c) Disconnect the heater water inlet hose B.



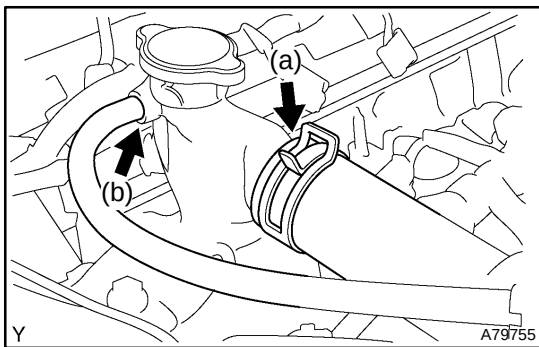
- (d) Remove the nut and the ground cable.
- (e) Disconnect the 6 fuel injector connectors.



- (f) In order to remove the intake manifold, using several steps, remove the 9 bolts and the 2 nuts in the sequence shown in the illustration.

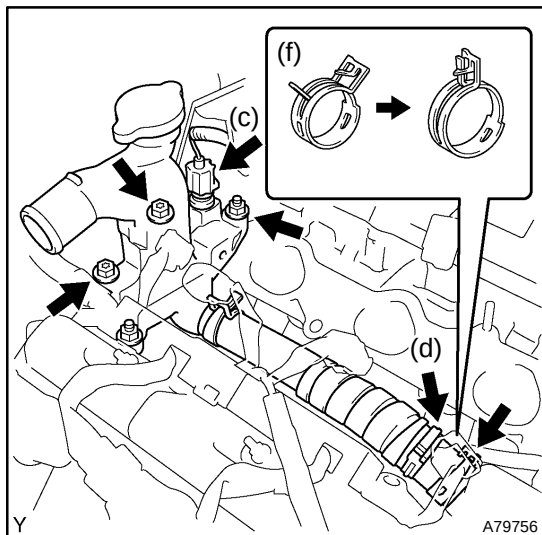
15. REMOVE ENGINE MOUNTING STAY RH

- (a) Remove the 2 bolts and the engine mounting stay.

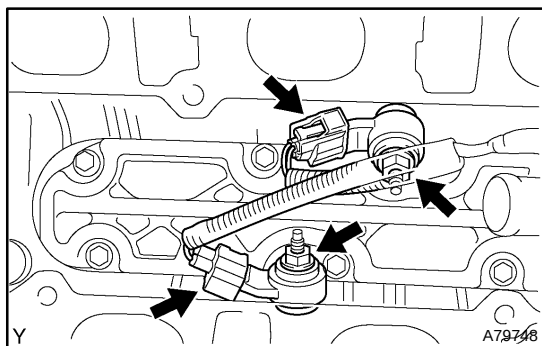


16. REMOVE WATER OUTLET

- (a) Disconnect the radiator hose inlet.
- (b) Disconnect the radiator reserve tank hose.

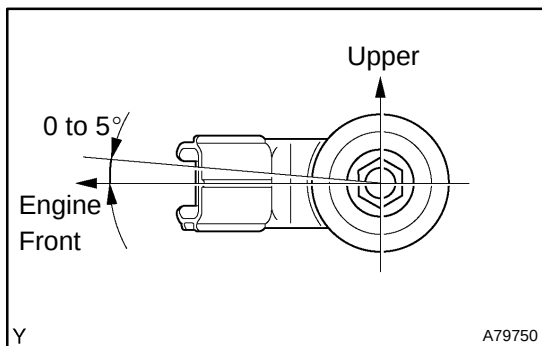


- (c) Disconnect the engine coolant temperature sensor connector.
- (d) Remove the clamp.
- (e) Remove the 2 bolts, the 2 nuts and the 2 washers.
- (f) Lock the hose clamp as shown in the illustration and remove the water outlet together with the water by-pass hose No. 1.
- (g) Remove the 2 gaskets from the 2 cylinder heads.



17. REMOVE KNOCK SENSOR

- (a) Disconnect the 2 knock sensor connectors.
- (b) Remove the 2 nuts and the 2 knock sensors.



18. INSTALL KNOCK SENSOR

- (a) Install the 2 knock sensors with the 2 nuts as shown in the illustration.

Torque: 20 N·m (199 kgf·cm, 14 ft·lbf)

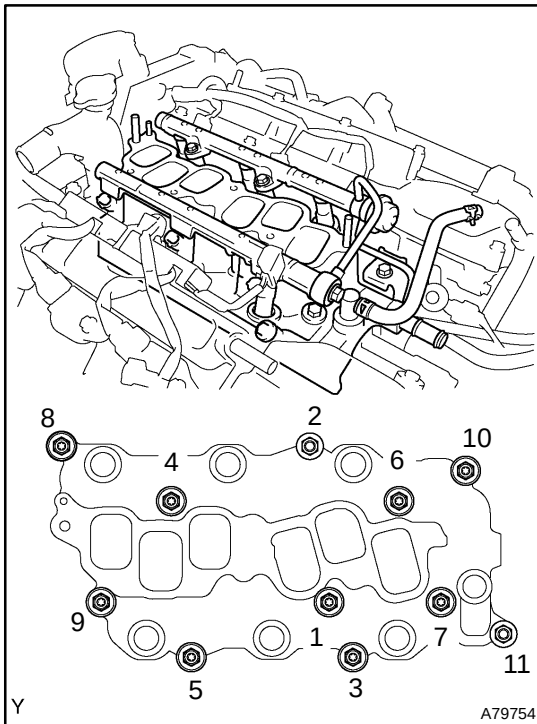
- (b) Connect the 2 knock sensor connectors.

19. INSTALL WATER OUTLET

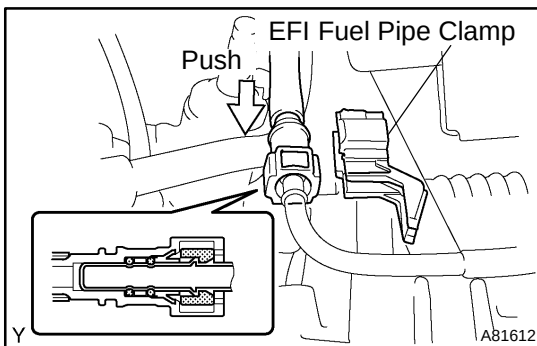
- (a) Install 2 new gaskets to the 2 cylinder heads.
- (b) Install the water outlet together with the water by-pass hose No. 1 and unlock the hose clamp.
- (c) Tighten the 2 bolts, the 2 nuts and 2 washers.
- Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)**
- (d) Install the clamp.
- (e) Connect the engine coolant temperature sensor connector.
- (f) Connect the radiator reserve tank hose.
- (g) Connect the radiator hose inlet.

20. INSTALL ENGINE MOUNTING STAY RH

Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)

**21. INSTALL INTAKE MANIFOLD**

- (a) Install the intake manifold with the 9 bolts and the 2 nuts. Using several steps, tighten the bolts and the nuts uniformly in the sequence shown in the illustration.
- (b) Retighten the 2 bolts and 2 nuts of the water outlet.
Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)
- (c) Retighten the water outlet mounting bolts and nuts.
Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)
- (d) Install the ground cable with the nut.
Torque: 8.4 N·m (86 kgf·cm, 74 in·lbf)
- (e) Connect the heater water inlet hose B.



- (f) Connect the fuel pipe No. 1.
 - (1) Push in the fuel tube connector to the pipe until fuel tube connector makes "click" sound.

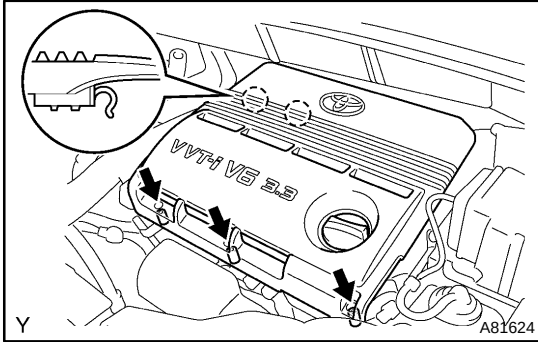
NOTICE:

- Check if there is any damage or foreign objects on the connected part.
 - After connecting, check if the connector and the pipe are securely connected by pulling on them.
- (2) Install the EFI fuel pipe clamp.

22. INSTALL INTAKE AIR SURGE TANK (See page [11-13](#))
23. INSTALL EMISSION CONTROL VALVE SET (See page [11-13](#))
24. INSTALL AIR CLEANER CAP SUB-ASSY (See page [10-7](#))
25. ADD ENGINE COOLANT (See page [16-8](#))
26. CHECK FOR FUEL LEAKS (See page [11-4](#))
27. CHECK FOR ENGINE COOLANT LEAKS (See page [16-1](#))
28. INSTALL V-BANK COVER SUB-ASSY (See page [10-7](#))
29. INSTALL COWL TOP PANEL SUB-ASSY OUTER FRONT (See page [11-13](#))
30. INSTALL COWL TOP TO COWL BRACE INNER NO.1 (See page [11-13](#))
31. INSTALL WINDSHIELD WIPER MOTOR ASSY (See page [66-8](#))
32. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSY
33. INSTALL FR WIPER ARM RH (See page [66-8](#))
34. INSTALL FR WIPER ARM LH (See page [66-8](#))
35. INSTALL FRONT WIPER ARM HEAD CAP

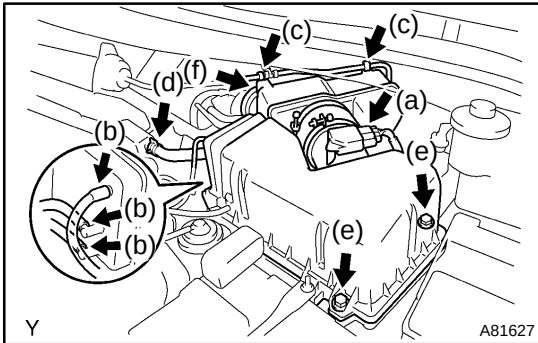
REPLACEMENT

1. DRAIN ENGINE COOLANT (See page 16-8)



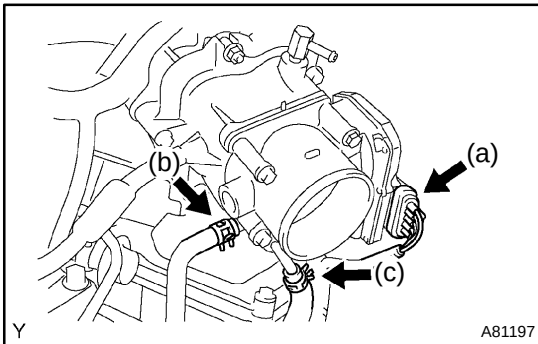
2. REMOVE V-BANK COVER SUB-ASSY

- Using a socket hexagon wrench 5, remove the 3 nuts.
- Remove the V-bank cover.



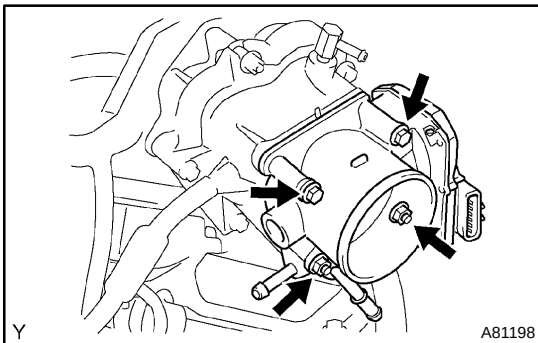
3. REMOVE AIR CLEANER CAP SUB-ASSY

- Disconnect the mass air flow meter connector.
- Disconnect the 3 vacuum hoses.
- Remove the fuel vapor feed hose from the 2 hose clamps.
- Disconnect the ventilation hose.
- Loosen the 2 air cleaner cap bolts.
- Loosen the hose clamp bolt and remove the air cleaner cap together with the air cleaner hose No. 1.
- Remove the air cleaner filter element.



4. REMOVE THROTTLE BODY ASSY

- Disconnect the throttle motor connector.
- Disconnect the water by-pass hose No. 2.
- Disconnect the water by-pass hose No. 3.



- Remove the 2 bolts, the 2 nuts and the throttle body.
- Remove the gasket from the intake air connector.

5. INSTALL THROTTLE BODY ASSY

- Install a new gasket to the intake air connector.
- Install the throttle body with the 2 bolts and the 2 nuts.

Torque: 11 N·m (112 kgf·cm, 8 ft·lbf)

- Connect the water by-pass hose No. 3.

- (d) Connect the water by-pass hose No. 2.
- (e) Connect the throttle motor connector.
- 6. INSTALL AIR CLEANER CAP SUB-ASSY**
Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)
- 7. ADD ENGINE COOLANT (See page 16-8)**
- 8. CHECK FOR ENGINE COOLANT LEAKS (See page 16-1)**
- 9. INSTALL V-BANK COVER SUB-ASSY**
 - (a) Fit the 2 retainers and install the V-bank cover.
 - (b) Using a socket hexagon wrench 5, tighten the 3 nuts.
Torque: 7.9 N·m (81 kgf·cm, 70 in·lbf)

ECM

100F5-01

REPLACEMENT

1. REMOVE GLOVE COMPARTMENT DOOR ASSY (See page [71-10](#))

2. REMOVE ECM

- (a) Disconnect the 5 ECM connectors.
- (b) Remove the 2 nuts and the ECM.
- (c) Remove the 2 screws and the ECM bracket.
- (d) Remove the 2 screws and the ECM bracket No. 2.

3. INSTALL ECM

- (a) Install the ECM bracket No. 2 with the 2 screws.

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

- (b) Install the ECM bracket with the 2 screws.

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

- (c) Install the ECM with the 2 nuts.

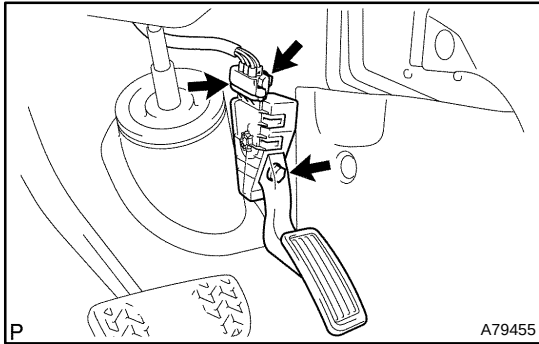
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

- (d) Connect the 5 ECM connectors.

4. INSTALL GLOVE COMPARTMENT DOOR ASSY

ACCELERATOR PEDAL ROD ASSY REPLACEMENT

100F6-01



1. REMOVE ACCELERATOR PEDAL ROD ASSY

- (a) Disconnect the accelerator position sensor connector.
- (b) Remove the 2 bolts and the accelerator pedal rod.

2. INSTALL ACCELERATOR PEDAL ROD ASSY

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)