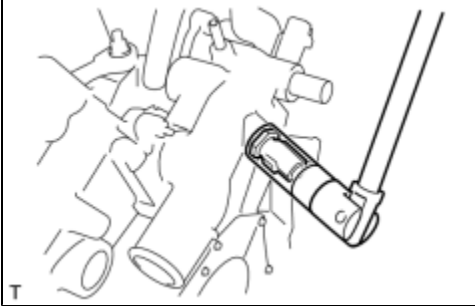


Last Modified: 7-13-2007		1.6 A
Service Category: Engine/Hybrid System		Section: Engine Mechanical
Model Year: 2008	Model: ES350	Doc ID: RM0000021ZR00JX
Title: 2GR-FE ENGINE MECHANICAL: ENGINE ASSEMBLY: INSTALLATION (2008 ES350)		

INSTALLATION

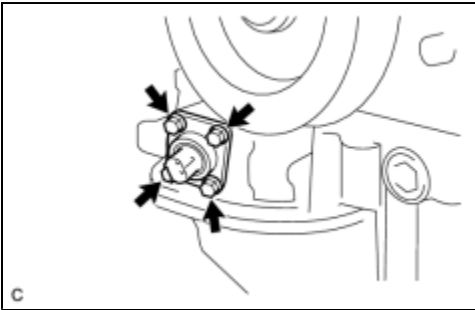
1. INSTALL ENGINE COOLANT TEMPERATURE SENSOR



- (a) Using a 19 mm deep socket wrench, install the engine coolant temperature sensor and a new gasket.

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

2. INSTALL ENGINE OIL LEVEL SENSOR

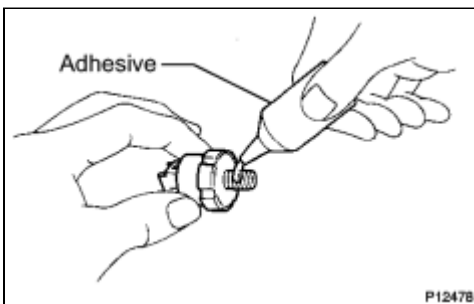


- (a) Install the engine oil level sensor and a new gasket with the 4 bolts.

Torque: 8.2 N·m (84 kgf·cm, 73 in·lbf)

3. INSTALL KNOCK CONTROL SENSOR INFO

4. INSTALL ENGINE OIL PRESSURE SWITCH ASSEMBLY

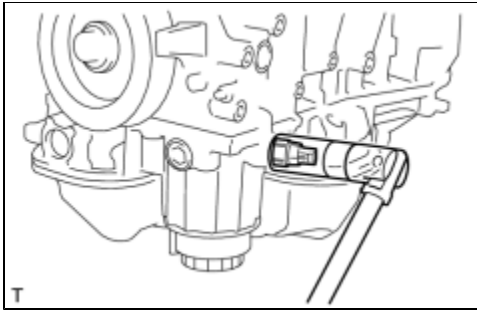


- (a) Clean the threads of the oil pressure switch. Apply adhesive to 2 or 3 threads of the oil pressure switch.

Adhesive:

Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

- (b) Using a 24 mm deep socket wrench, install the oil pressure switch.

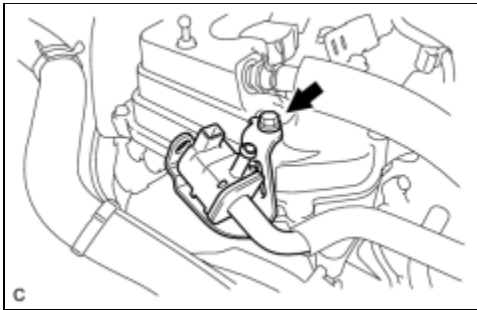


Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

NOTICE:

Do not start the engine within 1 hour after installation to prevent oil leaks.

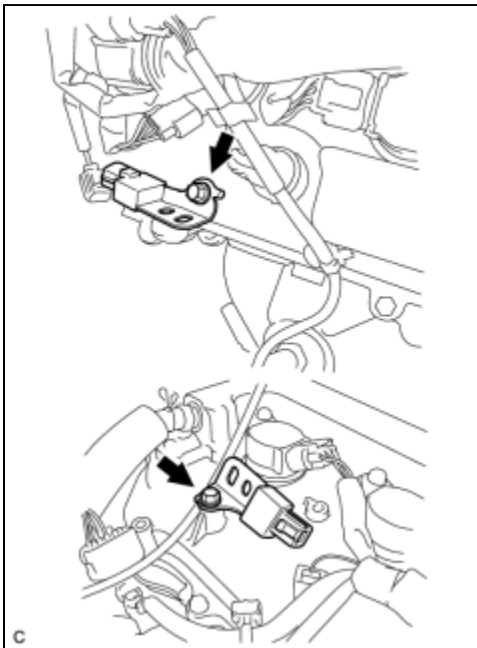
5. INSTALL NO. 1 VACUUM SWITCHING VALVE ASSEMBLY



(a) Install the No. 1 vacuum switching valve with the bolt.

Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

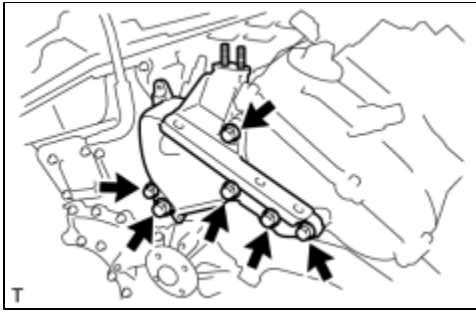
6. INSTALL RADIO SETTING CONDENSER



(a) Install the 2 radio setting condensers with the 2 bolts.

Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

7. INSTALL NO. 1 ENGINE MOUNTING BRACKET FRONT LH



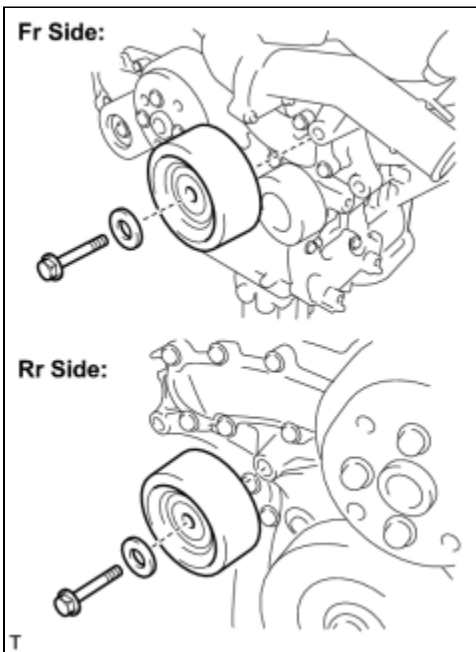
(a) Install the No. 1 engine mounting bracket front LH with the 6 bolts.

Torque: 54 N·m (551 kgf·cm, 40 ft·lbf)

8. INSTALL WATER PUMP PULLEY

INFO

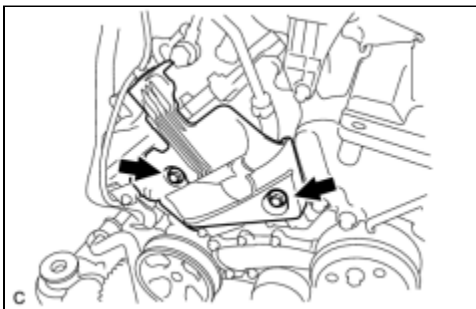
9. INSTALL NO. 2 IDLER PULLEY SUB-ASSEMBLY



(a) Install the 2 No. 2 idler pulley sub-assemblies and 2 plates with the 2 bolts.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

10. INSTALL NO. 2 TIMING GEAR COVER



(a) Install the No. 2 timing gear cover with the 2 bolts.

Torque: 6.0 N·m (61 kgf·cm, 53 in·lbf)

11. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY

(a) Temporarily install the V-ribbed belt tensioner with the 5 bolts.

HINT:

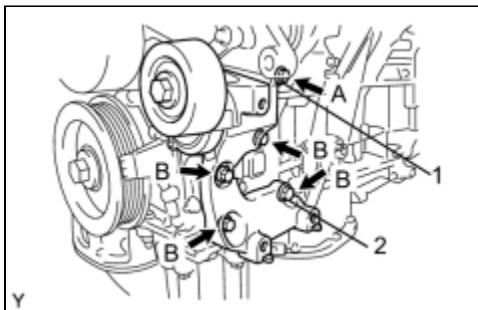
Each bolt length is as follows:

HINT:

A: 70 mm (2.76 in.)

HINT:

B: 33 mm (1.30 in.)



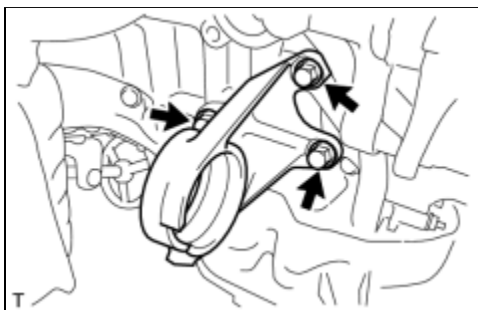
(b) Install the V-ribbed belt tensioner by tightening bolt 1 and bolt 2 in the order shown in the illustration.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

(c) Tighten the other bolts.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

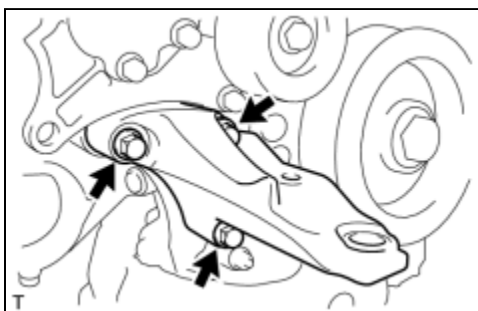
12. INSTALL DRIVE SHAFT BEARING BRACKET



(a) Install the drive shaft bearing bracket with the 3 bolts.

Torque: 64 N·m (653 kgf·cm, 47 ft·lbf)

13. INSTALL ENGINE MOUNTING BRACKET RH

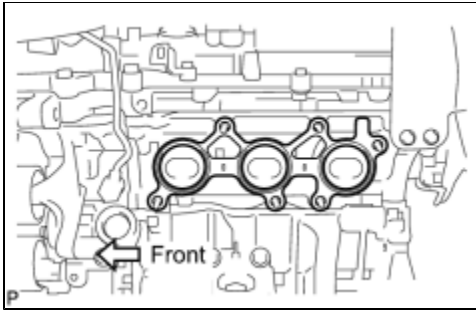


(a) Install the engine mounting bracket RH with the 3 bolts.

Torque: 54 N·m (551 kgf·cm, 40 ft·lbf)

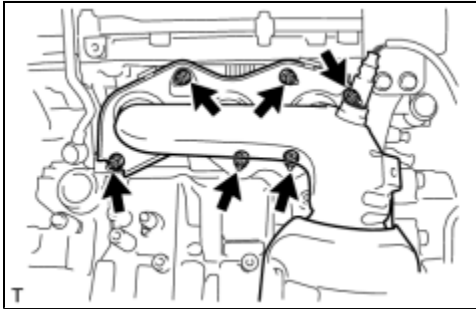
14. INSTALL EXHAUST MANIFOLD SUB-ASSEMBLY LH

(a) Install a new gasket as shown in the illustration.

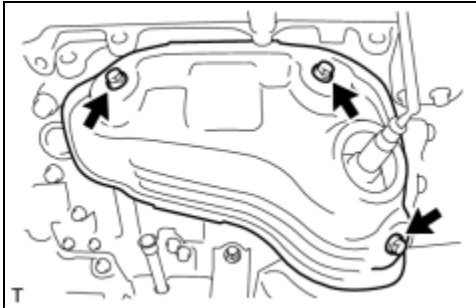


(b) Install the exhaust manifold sub-assembly LH with the 6 nuts.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)



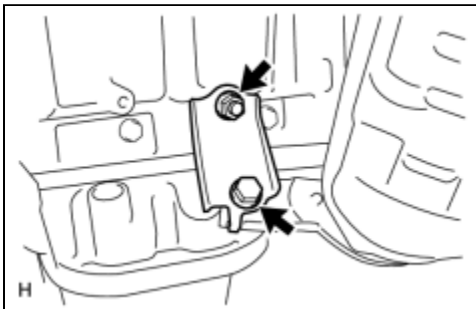
15. INSTALL NO. 2 EXHAUST MANIFOLD HEAT INSULATOR



(a) Install the No. 2 exhaust manifold heat insulator with the 3 bolts.

Torque: 8.5 N·m (87 kgf·cm, 75 in·lbf)

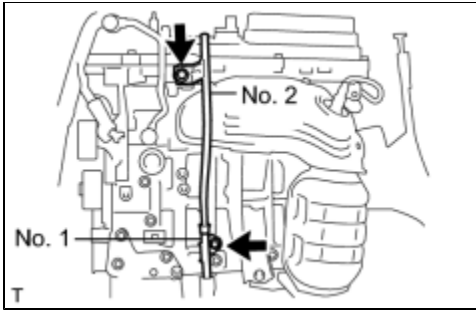
16. INSTALL NO. 2 MANIFOLD STAY



(a) Install the No. 2 manifold stay with the bolt and nut.

Torque: 34 N·m (347 kgf·cm, 25 ft·lbf)

17. INSTALL OIL LEVEL GAUGE GUIDE SUB-ASSEMBLY



(a) Install 2 new O-rings to the oil level gauge guide.

(b) Apply a light coat of engine oil to the O-rings.

(c) Push in the oil level gauge guide end into the guide hole.

(d) Install the No. 1 oil level gauge guide with the bolt.

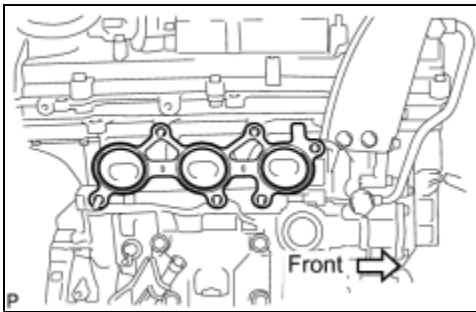
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

(e) Install the No. 2 oil level gauge guide with the bolt.

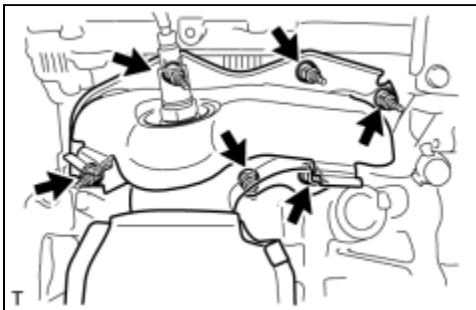
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

(f) Install the oil level gauge.

18. INSTALL EXHAUST MANIFOLD SUB-ASSEMBLY RH



(a) Install a new gasket as shown in the illustration.



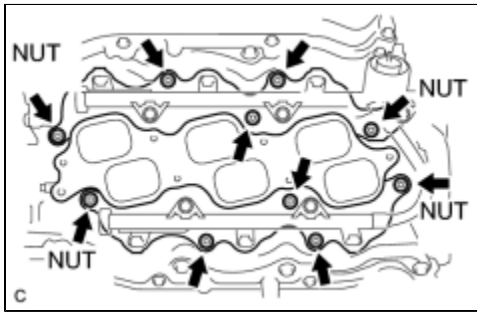
(b) Install the exhaust manifold sub-assembly RH with the 6 nuts.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

19. INSTALL INTAKE MANIFOLD

(a) Set a new gasket on each cylinder head.

NOTICE:



- Align the port holes of the gasket and cylinder head.
- Make sure that the gasket is installed in the correct direction.

(b) Set the intake manifold on the cylinder heads.

(c) Install and tighten the 6 bolts and 4 nuts uniformly in several steps.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

20. INSTALL NO. 2 ENGINE MOUNTING STAY RH

(a) Install the No. 2 engine mounting stay RH with the bolt.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

21. INSTALL IGNITION COIL ASSEMBLY

(a) Install the 6 ignition coil assemblies with the 6 bolts.

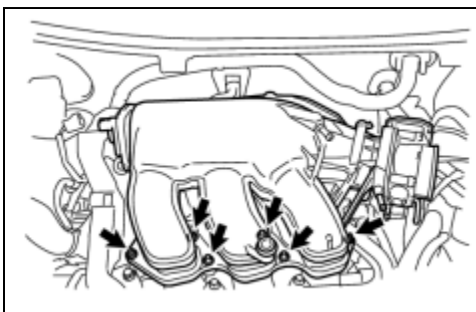
Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

22. INSTALL INTAKE AIR SURGE TANK ASSEMBLY

NOTICE:

TIGHTENING PARTS
Surge Tank and Intake Manifold
No. 1 Surge Tank Stay and Cylinder Head Cover
No. 1 Surge Tank Stay and Surge Tank
Throttle Body Bracket and Cylinder Head Cover
Throttle Body Bracket and Surge Tank

(a) Install a new gasket to the intake air surge tank.



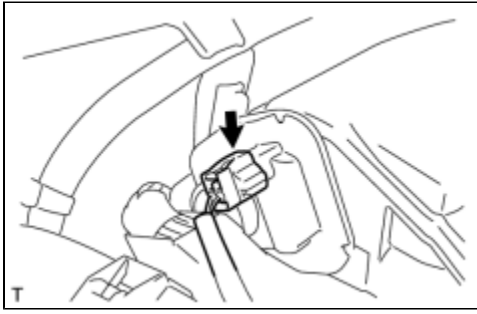
(b) Using a 5 mm hexagon socket wrench, install the 4 bolts and 2 nuts.

Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)

Torque: 16 N·m (163 kgf·cm, 12 ft·lbf)

(c) Install the throttle body bracket and No. 1 surge tank stay with the 4 bolts.

Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)



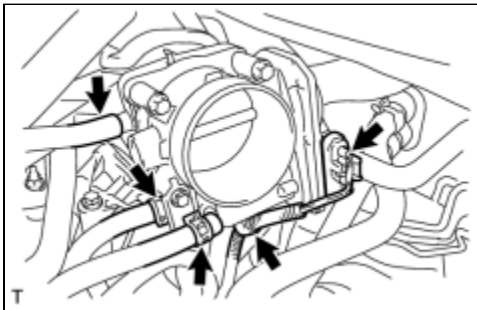
(d) Connect the connector.



(e) Install the vacuum hose clamp with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

(f) Connect the No. 1 ventilation hose.



(g) Install the clamp and connect the throttle with motor body assembly connector.

(h) Connect the vapor feed hose.

(i) Connect the 2 water by-pass hoses to the throttle with motor body assembly.

23. REMOVE ENGINE STAND

24. INSTALL DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

[INFO](#)

25. INSTALL AUTOMATIC TRANSAXLE ASSEMBLY

HINT:

[INFO](#)

26. INSTALL STARTER ASSEMBLY

[INFO](#)

27. INSTALL ENGINE WIRE

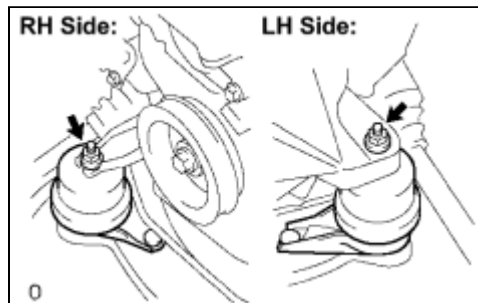
28. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

INFO

29. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH

INFO

30. INSTALL FRONT FRAME ASSEMBLY



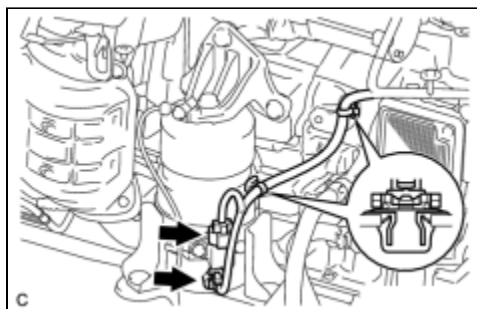
- (a) Install the engine mounting insulators RH and LH with the 2 nuts.
Torque: 95 N·m (969 kgf·cm, 70 ft·lbf)



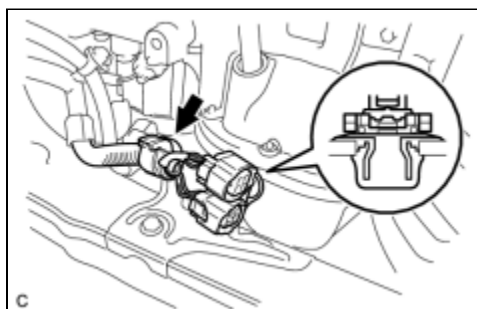
- (b) Install the engine mounting insulator FR with the bolt.
Torque: 87 N·m (887 kgf·cm, 64 ft·lbf)

- (c) Connect the cable with the bolt.

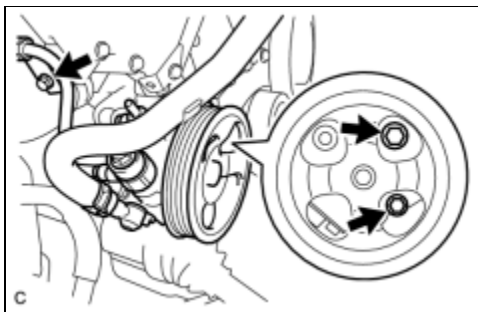
Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)



- (d) Connect the 2 connectors and 2 clamps.



- (e) Connect the 2 clamps.

31. INSTALL VANE PUMP ASSEMBLY

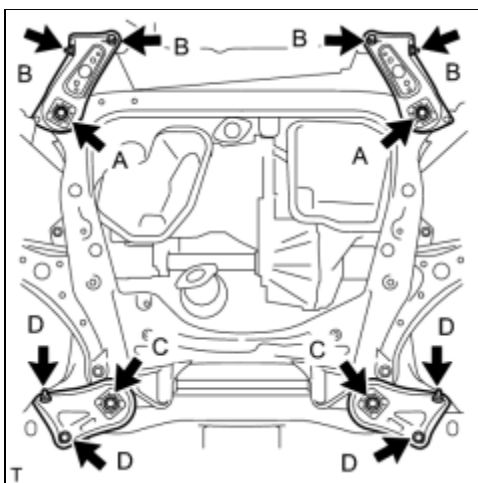
(a) Install the vane pump with the 2 bolts.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

(b) Install the pressure feed tube clamp bolt.

Torque: 9.8 N·m (100 kgf·cm, 87 in·lbf)

(c) Connect the power steering oil pressure switch connector.

32. INSTALL ENGINE ASSEMBLY WITH TRANSAXLE

(a) Set the engine assembly with transaxle on the engine lifter.

(b) Install the engine assembly to the vehicle.

(c) Install the frame side rail plates RH and LH with the 4 bolts and 2 nuts.

Torque: 85 N·m (867 kgf·cm, 63 ft·lbf)

Torque: 32 N·m (329 kgf·cm, 24 ft·lbf)

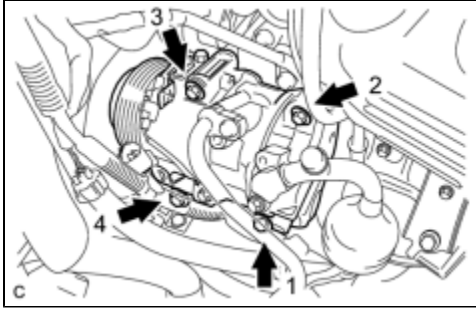
(d) Install the front suspension member brace rear RH and LH with the 4 bolts and 2 nuts.

Torque: 85 N·m (867 kgf·cm, 63 ft·lbf)

Torque: 32 N·m (329 kgf·cm, 24 ft·lbf)

33. INSTALL COOLER COMPRESSOR ASSEMBLY

(a) Temporarily install the cooler compressor with the 4 bolts.



(b) Install the compressor with the 4 bolts by tightening the bolts in the order shown in the illustration.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

(c) Install the 2 connector clamps.

34. INSTALL GENERATOR ASSEMBLY INFO

35. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY INFO

36. INSTALL DRIVE PLATE AND TORQUE CONVERTER CLUTCH SETTING BOLT INFO

37. INSTALL NO. 1 EXHAUST PIPE SUPPORT BRACKET

(a) Install the No. 1 exhaust pipe support bracket with the 2 nuts.

Torque: 33 N·m (337 kgf·cm, 245 ft·lbf)

38. INSTALL FRONT AXLE ASSEMBLY LH INFO

39. INSTALL FRONT AXLE ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

40. INSTALL FRONT SUSPENSION LOWER NO. 1 ARM LH INFO

41. INSTALL FRONT SUSPENSION LOWER NO. 1 ARM RH

HINT:

Use the same procedure described for the LH side.

42. INSTALL TIE ROD ASSEMBLY LH INFO

43. INSTALL TIE ROD ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

44. INSTALL FRONT SPEED SENSOR LH INFO

45. INSTALL FRONT SPEED SENSOR RH

HINT:

Use the same procedure described for the LH side.

46. INSTALL FRONT STABILIZER LINK ASSEMBLY LH INFO

47. INSTALL FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

48. INSTALL FRONT AXLE HUB NUT LH INFO

49. INSTALL FRONT AXLE HUB NUT RH

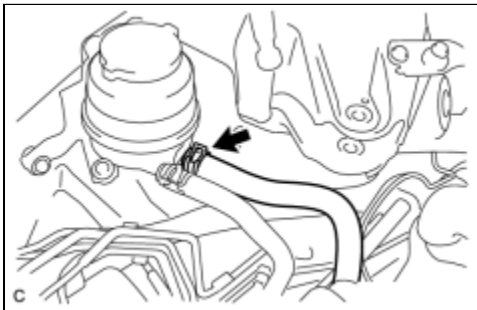
HINT:

Use the same procedure described for the LH side.

50. INSTALL EXHAUST PIPE ASSEMBLY FRONT INFO

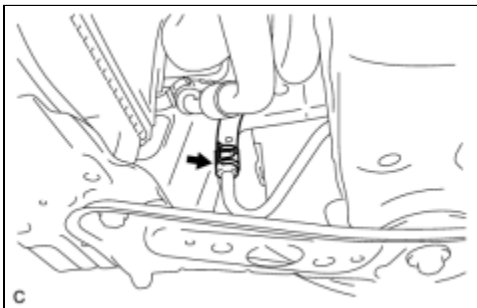
51. INSTALL EXHAUST PIPE NO. 1 SUPPORT BRACKET INFO

52. CONNECT OIL RESERVOIR TO PUMP HOSE



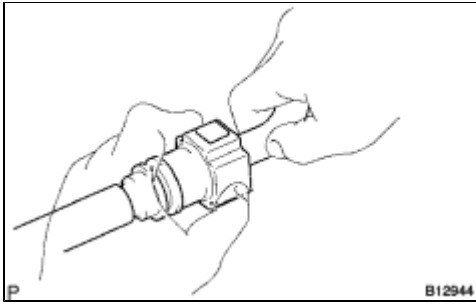
(a) Connect the oil reservoir to pump hose.

53. CONNECT RETURN TUBE SUB-ASSEMBLY



(a) Connect the return tube sub-assembly.

54. CONNECT FUEL TUBE SUB-ASSEMBLY



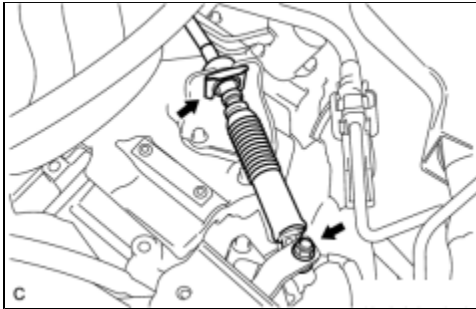
- (a) Push in the fuel tube connector to the fuel pipe until the connector makes a "click" sound.

NOTICE:

- Check for damage or contamination on the connected part of the pipe.
- Check if the pipe and the connector are securely connected by trying to pull them apart.

- (b) Install the No. 1 fuel pipe clamp.

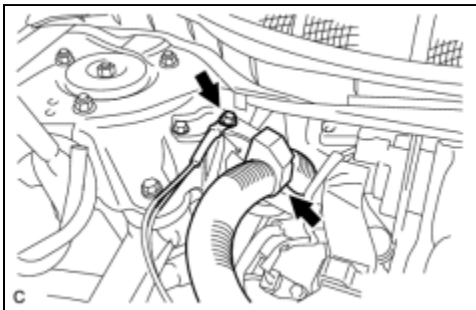
55. CONNECT TRANSMISSION CONTROL CABLE ASSEMBLY



- (a) Connect the cable to the transaxle with the clip and nut.

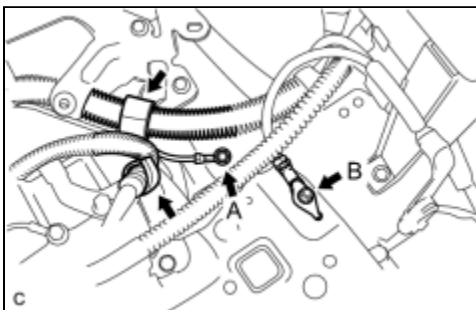
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

56. CONNECT ENGINE WIRE



- (a) Install the clamp to the bracket with the bolt.

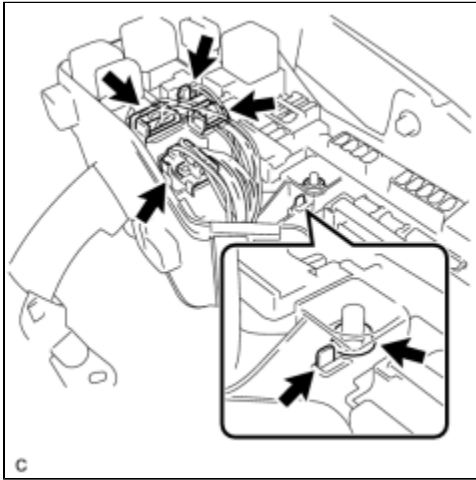
Torque: 8.4 N·m (85 kgf·cm, 74 in·lbf)



- (b) Install the 2 clamps to the body with the 2 bolts.

Torque: 12 N·m (123 kgf·cm, 9 ft·lbf)

Torque: 8.4 N·m (85 kgf·cm, 74 in·lbf)



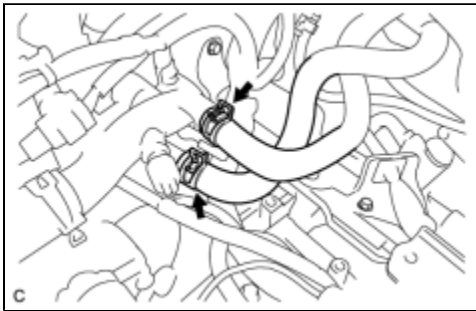
(c) Connect the engine wire connectors to the engine room junction block. Then, install the engine wire with the nut.

Torque: 8.4 N·m (85 kgf·cm, 74 in·lbf)

57. INSTALL RELAY BLOCK COVER UPPER

58. INSTALL ECM [INFO](#)

59. CONNECT HEATER INLET WATER HOSE

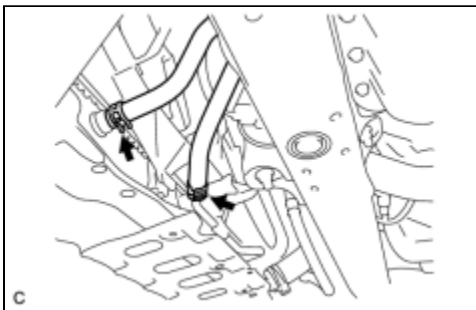


(a) Connect the heater inlet water hose.

60. CONNECT HEATER OUTLET WATER HOSE

(a) Connect the heater outlet water hose.

61. CONNECT NO. 1 OIL COOLER INLET HOSE

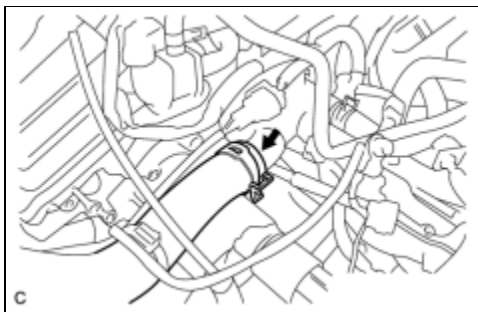


(a) Install the oil cooler inlet hose with the clamp.

62. CONNECT NO. 1 OIL COOLER OUTLET HOSE

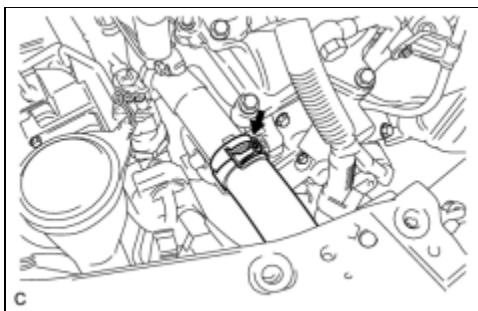
(a) Install the oil cooler outlet hose with the clamp.

63. INSTALL RADIATOR HOSE INLET



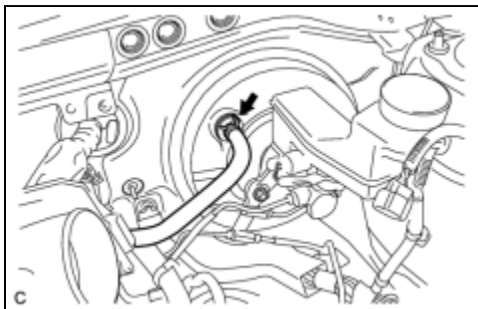
(a) Install the radiator hose inlet with the clamp.

64. INSTALL RADIATOR HOSE OUTLET



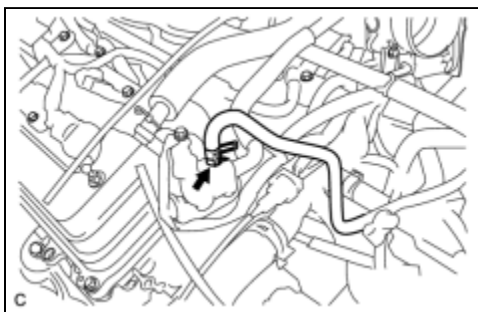
(a) Install the radiator hose outlet with the clamp.

65. CONNECT CHECK VALVE TO BRAKE BOOSTER HOSE



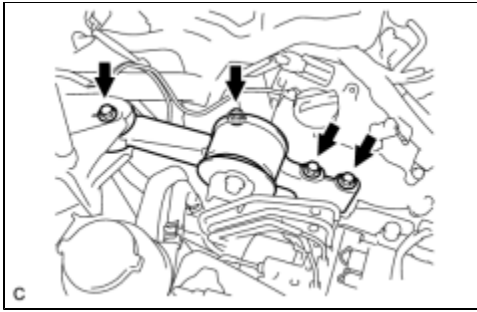
(a) Install the check valve to brake booster hose with the clamp.

66. CONNECT NO. 1 FUEL VAPOR FEED HOSE



(a) Install the No. 1 fuel vapor feed hose with the clamp.

67. INSTALL ENGINE MOVING CONTROL ROD SUB-ASSEMBLY



(a) Temporarily install the engine moving control rod with the 4 bolts.

(b) Tighten the 4 bolts.

Torque: 38 N·m (388 kgf·cm, 28 ft·lbf)

68. INSTALL NO. 2 ENGINE MOUNTING STAY RH



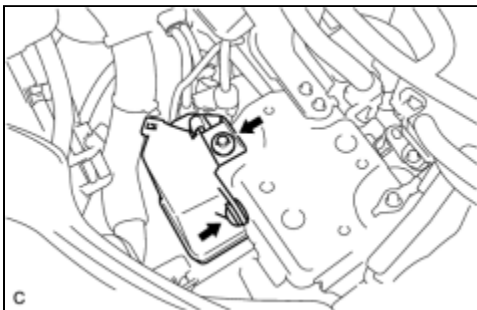
(a) Temporarily install the No. 2 engine mounting stay RH with the bolt and 2 nuts.

(b) Tighten the bolt and 2 nuts.

Torque: 38 N·m (388 kgf·cm, 28 ft·lbf)

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

69. INSTALL INTAKE AIR RESONATOR SUB-ASSEMBLY

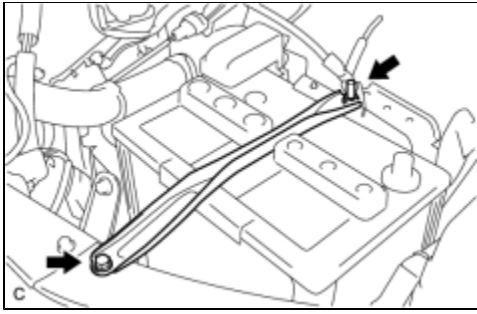


(a) Install the intake air resonator with the bolt and clip.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

70. INSTALL BATTERY

(a) Install the battery and battery tray.

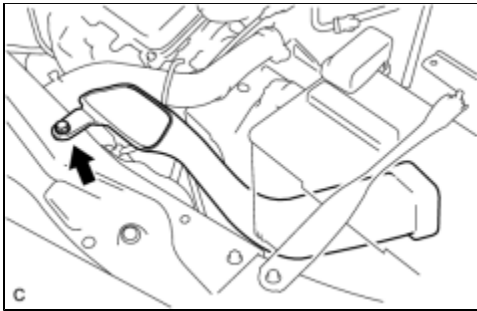


(b) Install the battery clamp with the bolt and nut.

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

Torque: 3.5 N·m (36 kgf·cm, 31 in·lbf)

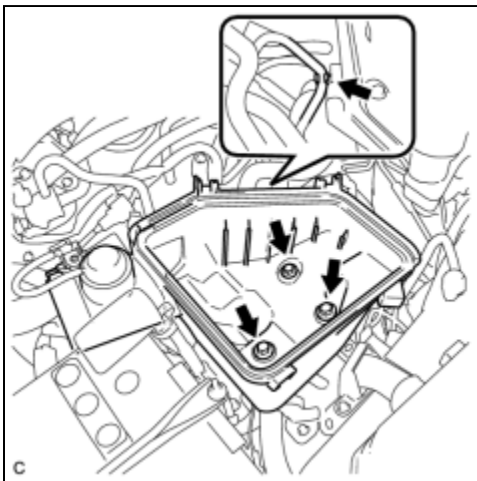
71. INSTALL NO. 1 AIR CLEANER INLET



(a) Install the No. 1 air cleaner inlet with the bolt.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

72. INSTALL AIR CLEANER CASE SUB-ASSEMBLY



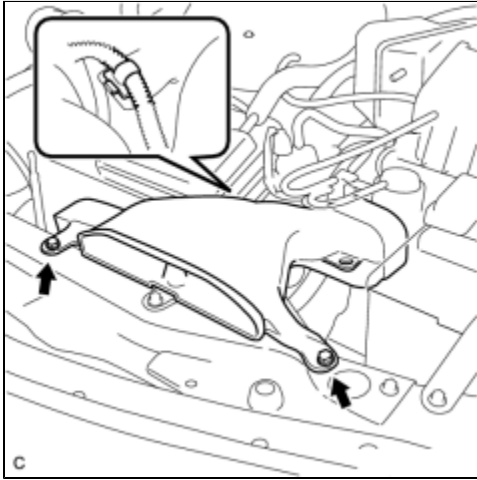
(a) Install the air cleaner case with the 3 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

(b) Connect the vacuum hose and hose clamp.

73. INSTALL AIR CLEANER CAP SUB-ASSEMBLY INFO

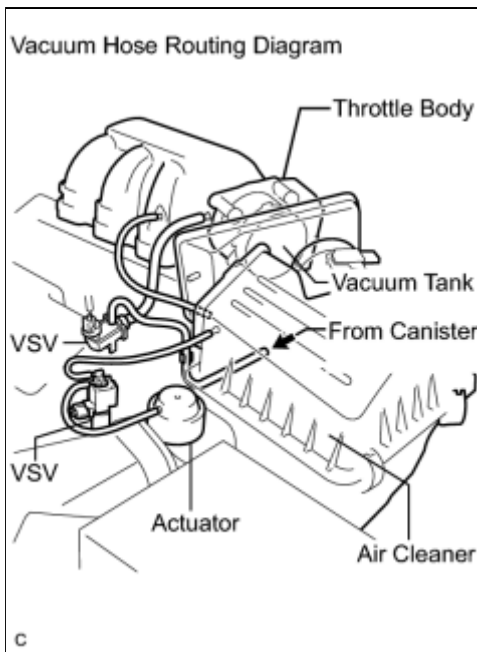
74. INSTALL AIR CLEANER INLET ASSEMBLY



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

Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)

75. CONNECT VACUUM HOSES



76. INSTALL V-RIBBED BELT INFO

77. INSTALL FRONT WHEELS

Torque: 103 N·m (1050 kgf·cm, 76 ft·lbf)

78. ADD ENGINE OIL

79. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 6.9 N·m (70 kgf·cm, 61 in·lbf)

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

80. ADD ENGINE COOLANT INFO

81. ADD AUTOMATIC TRANSAXLE FLUID

HINT:

INFO

82. ADD POWER STEERING FLUID

83. BLEED POWER STEERING FLUID INFO

84. INSPECT FOR FUEL LEAK INFO

85. INSPECT FOR OIL LEAK

86. INSPECT FOR COOLANT LEAK INFO

87. INSPECT FOR EXHAUST GAS LEAK

88. CHECK SHIFT LEVER POSITION INFO

89. CHECK AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

INFO

90. CHECK IGNITION TIMING INFO

91. CHECK ENGINE IDLE SPEED INFO

92. CHECK CO/HC INFO

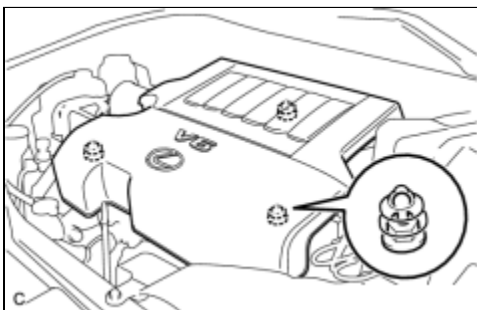
93. CHECK FUNCTION OF THROTTLE BODY INFO

94. INSTALL FRONT FENDER APRON SEAL RH

95. INSTALL ENGINE UNDER COVER LH

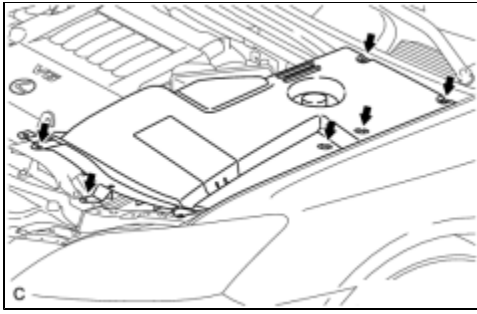
96. INSTALL ENGINE UNDER COVER RH

97. INSTALL V-BANK COVER SUB-ASSEMBLY



(a) Engage the 3 clips and install the V-bank cover.

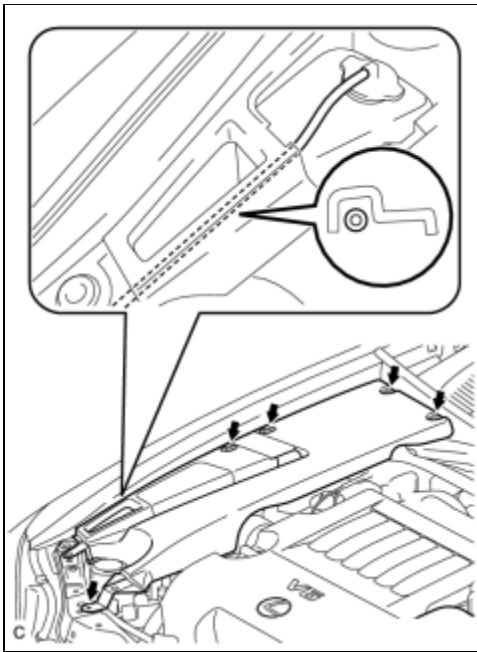
98. INSTALL ENGINE ROOM SIDE COVER LH



(a) Install the engine room side cover LH with the 6 clips.

(b) Install the hood hinge cover LH.

99. INSTALL ENGINE ROOM SIDE COVER RH



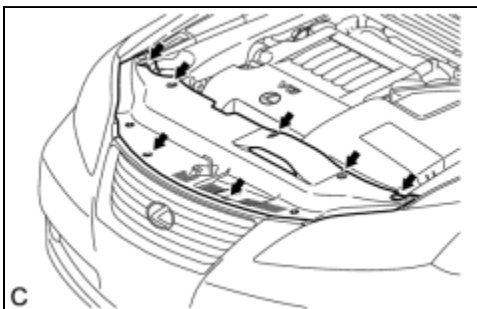
(a) Install the engine room side cover RH with the 5 clips.

NOTICE:

When installing the engine room side cover RH, make sure that the engine coolant reservoir hose is positioned as shown in the illustration.

(b) Install the hood hinge cover RH.

100. INSTALL COOL AIR INTAKE DUCT SEAL



(a) Install the intake duct seal with the 7 clips.

101. CHECK ABS SPEED SENSOR SIGNAL

HINT:

