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| Last Modified: 7-13-2007 | | 1.6 A |
| Service Category: Engine/Hybrid System | Section: Engine Mechanical | |
| Model Year: 2008 | Model: ES350 | Doc ID: RM0000021ZT00JX |
| Title: 2GR-FE ENGINE MECHANICAL: ENGINE ASSEMBLY: REMOVAL (2008 ES350) | | |

REMOVAL

1. DISCHARGE FUEL SYSTEM PRESSURE

HINT:

INFO

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

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

3. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

4. REMOVE FRONT WHEELS

5. REMOVE ENGINE UNDER COVER LH

6. REMOVE ENGINE UNDER COVER RH

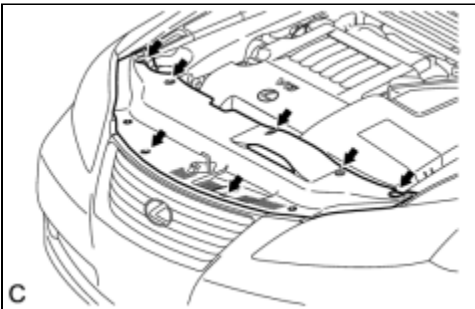
7. REMOVE FRONT FENDER APRON SEAL RH

8. DRAIN ENGINE OIL INFO

9. DRAIN ENGINE COOLANT INFO

10. DRAIN AUTOMATIC TRANSAXLE FLUID INFO

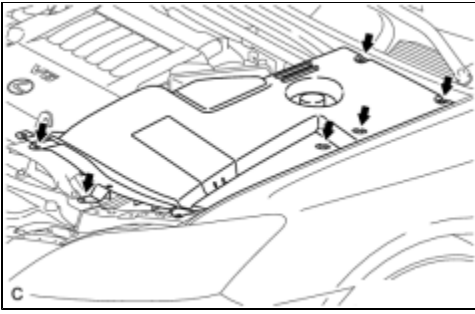
11. REMOVE COOL AIR INTAKE DUCT SEAL



(a) Remove the 7 clips and intake duct seal.

12. REMOVE ENGINE ROOM SIDE COVER LH

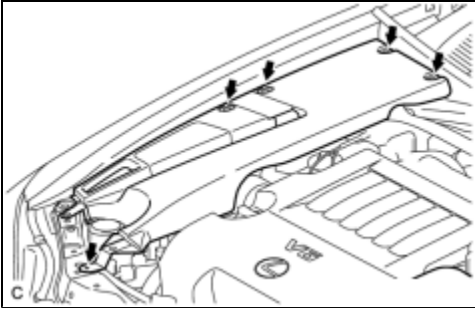
(a) Remove the hood hinge cover LH.



(b) Remove the 6 clips and engine room side cover LH.

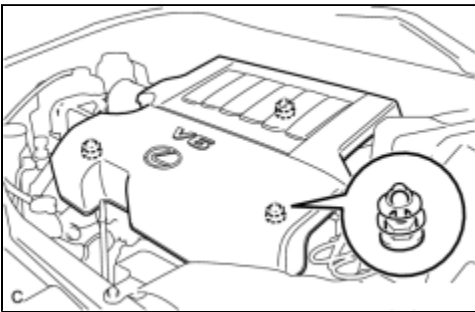
13. REMOVE ENGINE ROOM SIDE COVER RH

(a) Remove the hood hinge cover RH.



(b) Remove the 5 clips and engine room side cover RH.

14. REMOVE V-BANK COVER SUB-ASSEMBLY



(a) Hold the front of the V-bank cover and raise it to disengage the 2 clips on the front of the cover. Continue to raise the cover to disengage the clip on the rear of the cover and remove the cover.

NOTICE:

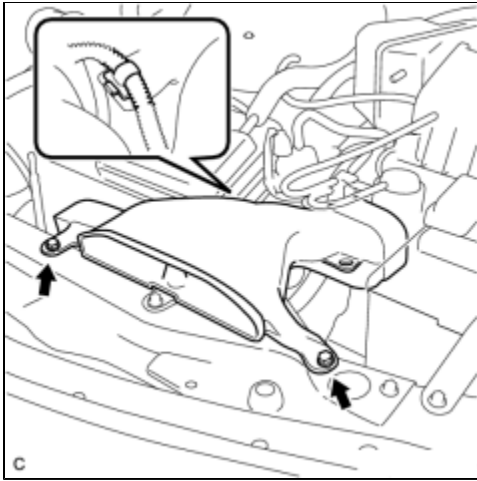
Attempting to disengage both front and rear clips at the same time may cause the cover to break.

15. REMOVE V-RIBBED BELT

INFO

16. REMOVE AIR CLEANER INLET ASSEMBLY

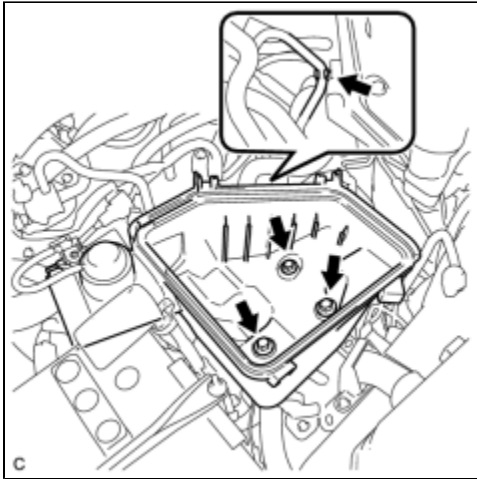
(a) Remove the 2 bolts, clamp and air cleaner inlet.



17. REMOVE AIR CLEANER CAP SUB-ASSEMBLY



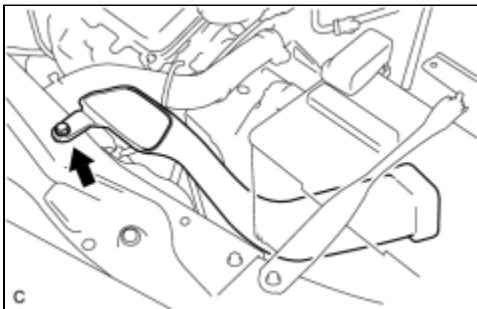
18. REMOVE AIR CLEANER CASE SUB-ASSEMBLY



(a) Disconnect the vacuum hose and hose clamp.

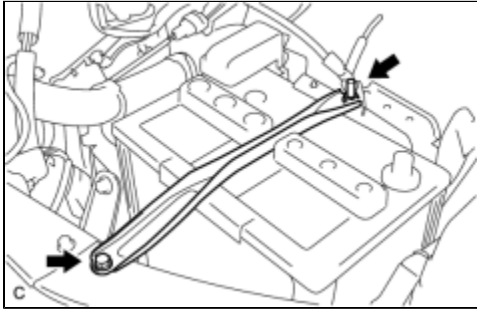
(b) Remove the 3 bolts and air cleaner case.

19. REMOVE NO. 1 AIR CLEANER INLET



(a) Remove the bolt and No. 1 air cleaner inlet.

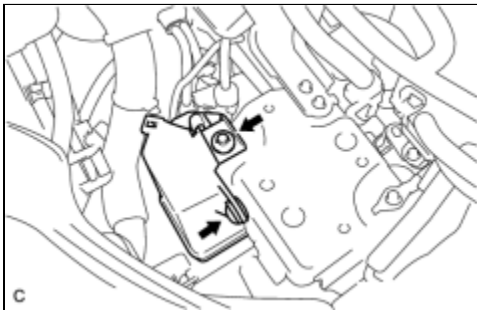
20. REMOVE BATTERY



(a) Loosen the nut, and remove the bolt and battery clamp.

(b) Remove the battery and battery tray.

21. REMOVE INTAKE AIR RESONATOR SUB-ASSEMBLY



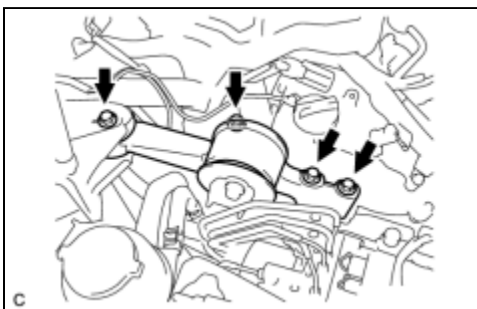
(a) Remove the clip, bolt and intake air resonator.

22. REMOVE NO. 2 ENGINE MOUNTING STAY RH



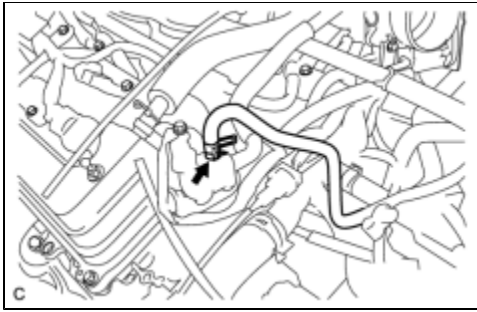
(a) Remove the bolt, 2 nuts, and No. 2 engine mounting stay RH.

23. REMOVE ENGINE MOVING CONTROL ROD SUB-ASSEMBLY



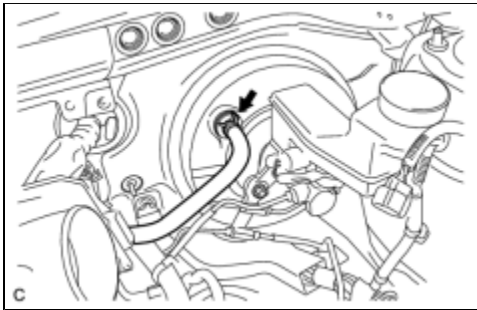
(a) Remove the 4 bolts and engine moving control rod.

24. DISCONNECT NO. 1 FUEL VAPOR FEED HOSE



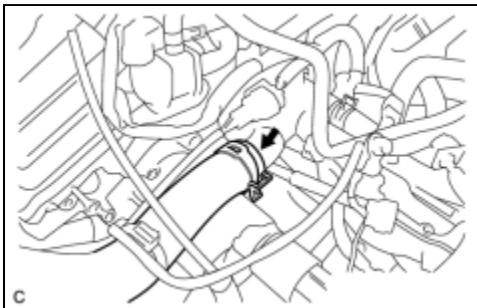
(a) Remove the clamp and disconnect the No. 1 fuel vapor feed hose.

25. DISCONNECT CHECK VALVE TO BRAKE BOOSTER HOSE



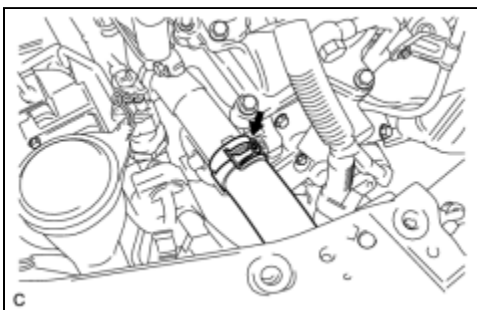
(a) Remove the clamp and disconnect the check valve to brake booster hose.

26. REMOVE RADIATOR HOSE INLET



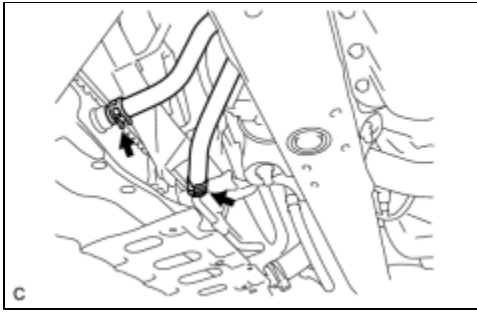
(a) Remove the clamp and disconnect the radiator hose inlet.

27. REMOVE RADIATOR HOSE OUTLET



(a) Remove the clamp and disconnect the radiator hose outlet.

28. DISCONNECT NO. 1 OIL COOLER INLET HOSE

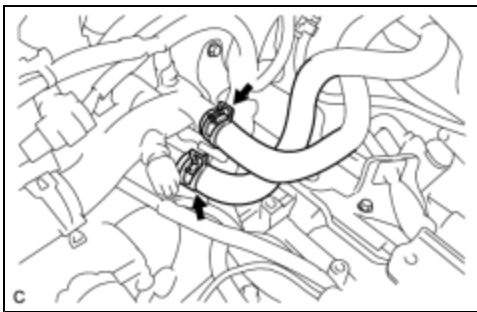


(a) Remove the clamp and disconnect the oil cooler inlet hose.

29. DISCONNECT NO. 1 OIL COOLER OUTLET HOSE

(a) Remove the clamp and disconnect the oil cooler outlet hose.

30. DISCONNECT HEATER INLET WATER HOSE



(a) Disconnect the heater inlet water hose.

31. DISCONNECT HEATER OUTLET WATER HOSE

(a) Disconnect the heater outlet water hose.

32. REMOVE ECM

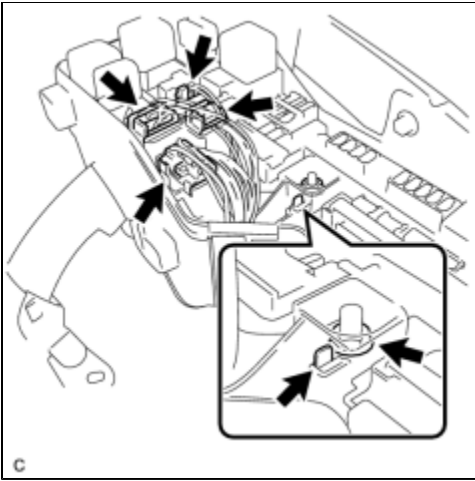
HINT:



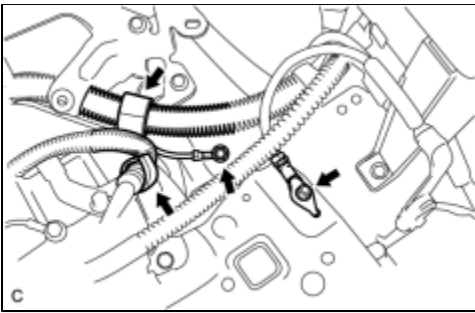
33. REMOVE RELAY BLOCK COVER UPPER

34. DISCONNECT ENGINE WIRE

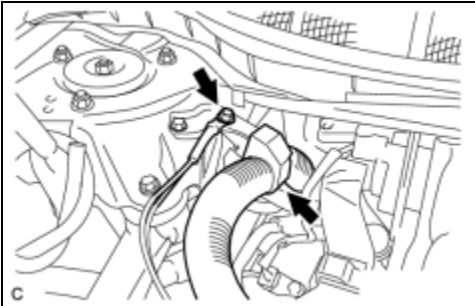
- (a) Disconnect the engine wire from the engine room junction block.
- (1) Remove the nut and separate the wire harness.
 - (2) Using a screwdriver, unlock the engine room junction block. Pull the engine room junction block upward.
 - (3) Disconnect the engine wire connectors.



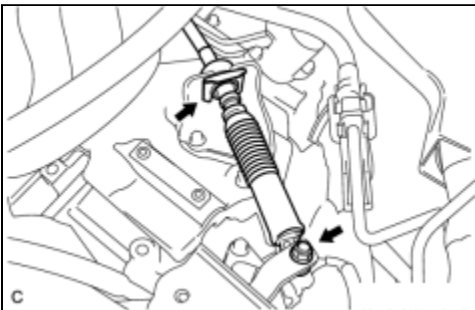
(b) Remove the 2 bolts and 2 clamps from the body.



(c) Remove the bolt and clamp from the bracket.

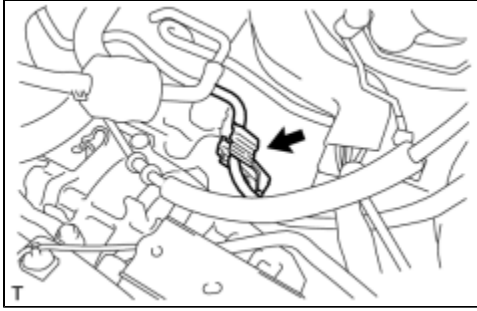


35. DISCONNECT TRANSMISSION CONTROL CABLE ASSEMBLY

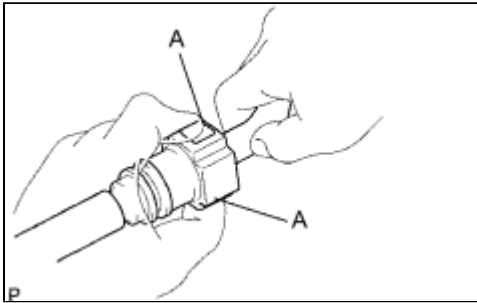


(a) Remove the clip and nut, and separate the cable from the transaxle.

36. SEPARATE FUEL TUBE SUB-ASSEMBLY



(a) Remove the No. 1 fuel pipe clamp.

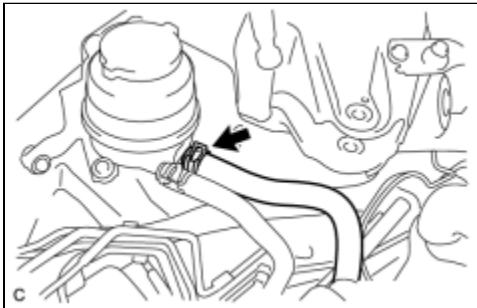


(b) Disconnect the connector from the tube while pinching part A with your fingers as shown in the illustration.

NOTICE:

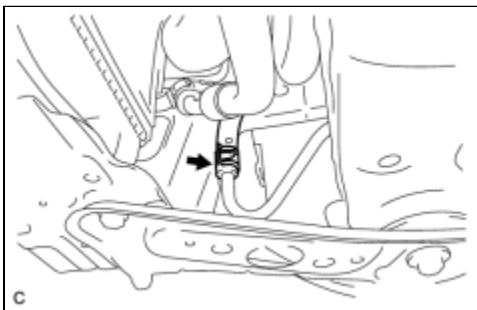
- Check for contamination in the pipe and around the connector. Clean if necessary and then disconnect the connector.
- Disconnect the connector by hand.
- Do not bend, fold or rotate the nylon tube.
- If the pipe and connector are stuck together, push and pull the connector until it becomes free.
- Put the pipe and connector ends in vinyl bags to prevent damage and contamination.

37. DISCONNECT OIL RESERVOIR TO PUMP HOSE



(a) Disconnect the oil reservoir to pump hose.

38. DISCONNECT RETURN TUBE SUB-ASSEMBLY



(a) Disconnect the return tube sub-assembly.

39. REMOVE EXHAUST PIPE NO. 1 SUPPORT BRACKET

INFO

40. REMOVE EXHAUST PIPE ASSEMBLY FRONT 

41. REMOVE FRONT AXLE HUB NUT LH 

42. REMOVE FRONT AXLE HUB NUT RH

HINT:

Use the same procedure described for the LH side.

43. DISCONNECT FRONT STABILIZER LINK ASSEMBLY LH 

44. DISCONNECT FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

45. DISCONNECT FRONT SPEED SENSOR LH 

46. DISCONNECT FRONT SPEED SENSOR RH

HINT:

Use the same procedure described for the LH side.

47. DISCONNECT TIE ROD ASSEMBLY LH 

48. DISCONNECT TIE ROD ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

49. DISCONNECT FRONT SUSPENSION LOWER NO. 1 ARM LH 

50. DISCONNECT FRONT SUSPENSION LOWER NO. 1 ARM RH

HINT:

Use the same procedure described for the LH side.

51. SEPARATE FRONT AXLE ASSEMBLY LH 

52. SEPARATE FRONT AXLE ASSEMBLY RH

HINT:

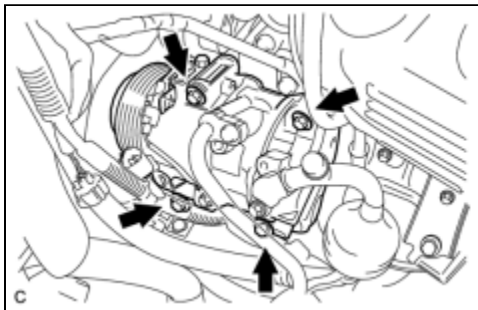
Use the same procedure described for the LH side.

53. REMOVE NO. 1 EXHAUST PIPE SUPPORT BRACKET

- (a) Remove the 2 nuts and No. 1 exhaust pipe support bracket.

54. REMOVE DRIVE PLATE AND TORQUE CONVERTER CLUTCH SETTING BOLT INFO**55. DISCONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY** INFO**56. REMOVE GENERATOR ASSEMBLY** INFO**57. SEPARATE COOLER COMPRESSOR ASSEMBLY**

(a) Remove the 2 connector clamps.



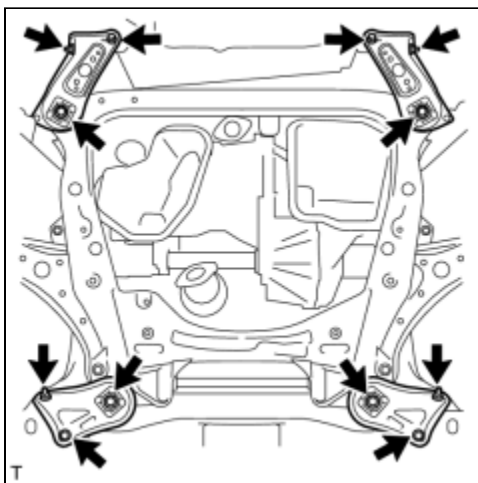
(b) Remove the 4 bolts and separate the compressor.

HINT:

Hang up the hoses instead of detaching them.

58. REMOVE ENGINE ASSEMBLY WITH TRANSAXLE

(a) Set the engine lifter.



(b) Remove the 4 bolts, 2 nuts, and frame side rail plates RH and LH.

(c) Remove the 4 bolts, 2 nuts, and front suspension member brace rear RH and LH.

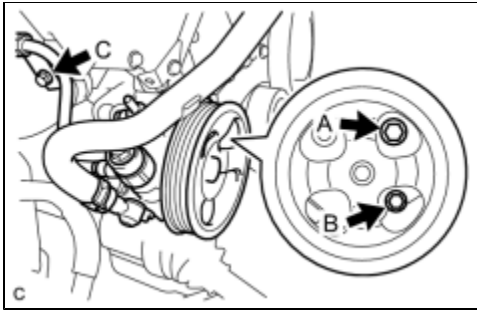
(d) Operate the engine lifter, then remove the engine assembly from the vehicle.

NOTICE:

Make sure that the engine is clear of all wiring and hoses.

59. REMOVE VANE PUMP ASSEMBLY

(a) Disconnect the power steering oil pressure switch connector.

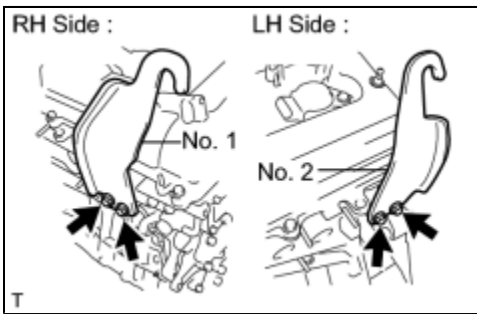


(b) Remove pressure feed tube clamp bolt C.

(c) Loosen bolt A.

(d) Remove bolt B and the vane pump.

60. INSTALL ENGINE HANGER



(a) Install the 2 engine hangers with the 4 bolts as shown in the illustration.

Part No:

No. 1 engine hanger 12281-31120

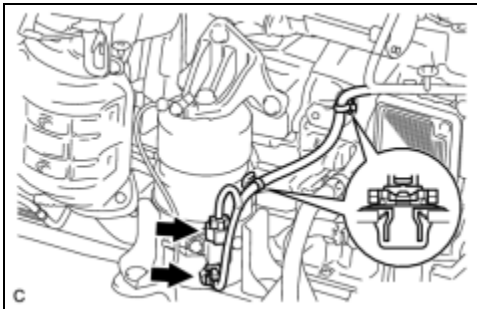
No. 2 engine hanger 12282-31100

Bolts 91671-10825

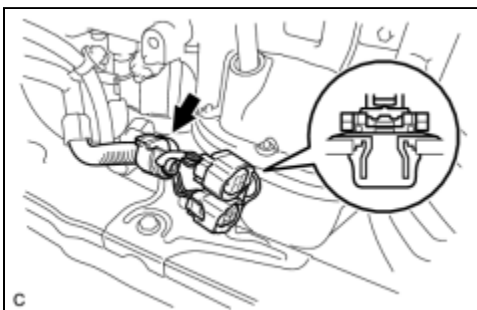
Torque: 33 N·m (337 kgf·cm, 24 ft·lbf)

(b) Attach the engine sling device and hang the engine with the chain block.

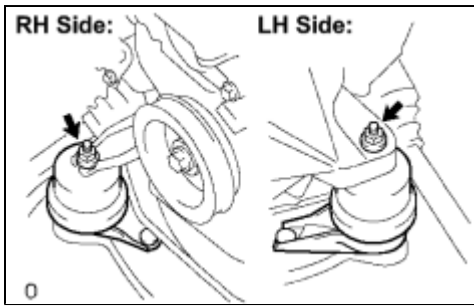
61. REMOVE FRONT FRAME ASSEMBLY



(a) Disconnect the 2 connectors and 2 clamps.



(b) Disconnect the 2 clamps.



(c) Remove the 2 nuts and disconnect the engine mounting insulators RH and LH.



(d) Remove the 2 bolts and disconnect the engine mounting insulator FR and cable.

62. REMOVE FRONT DRIVE SHAFT ASSEMBLY LH [INFO](#)

63. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH [INFO](#)

64. REMOVE ENGINE WIRE

65. REMOVE STARTER ASSEMBLY [INFO](#)

66. REMOVE AUTOMATIC TRANSAXLE ASSEMBLY

HINT:

[INFO](#) .

67. REMOVE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY [INFO](#)

68. SECURE ENGINE

(a) Secure the engine onto an engine stand with the bolts.

69. REMOVE INTAKE AIR SURGE TANK ASSEMBLY

HINT:

[INFO](#) .

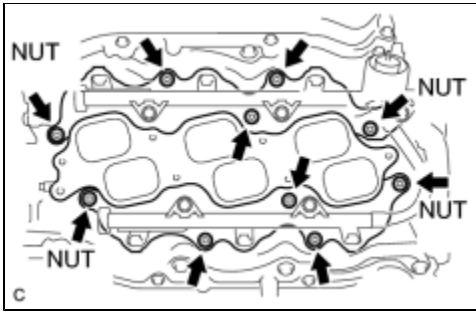
70. REMOVE IGNITION COIL ASSEMBLY

(a) Remove the 6 bolts and 6 ignition coils.

71. REMOVE NO. 2 ENGINE MOUNTING STAY RH

- (a) Remove the bolt and No. 2 engine mounting stay RH.

72. REMOVE INTAKE MANIFOLD

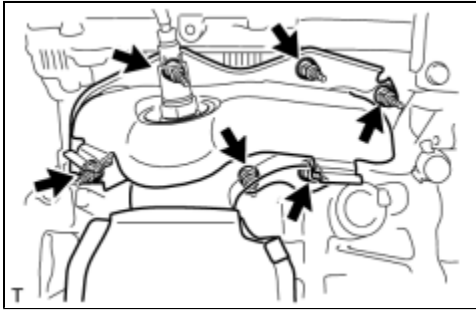


- (a) Uniformly loosen and remove the 6 bolts and 4 nuts.

- (b) Remove the intake manifold and 2 gaskets.

73. REMOVE EXHAUST MANIFOLD SUB-ASSEMBLY RH

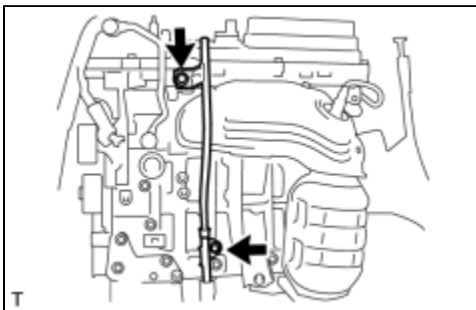
- (a) Disconnect the A/F sensor connector clamp.



- (b) Uniformly loosen and remove the 6 nuts.

- (c) Remove the manifold and gasket.

74. REMOVE OIL LEVEL GAUGE GUIDE SUB-ASSEMBLY

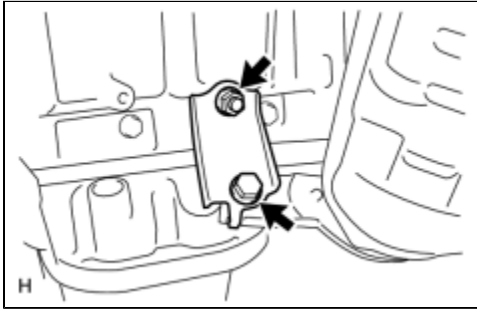


- (a) Remove the oil level gauge.

- (b) Remove the 2 bolts and No. 1 and No. 2 oil level gauge guides.

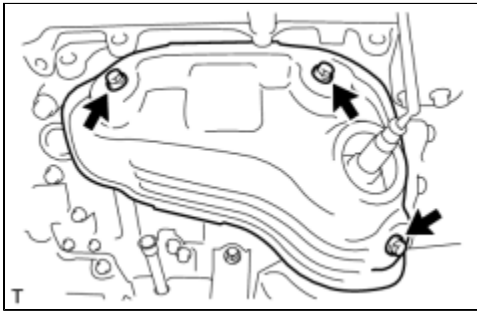
- (c) Remove the O-rings from the oil level gauge guide.

75. REMOVE NO. 2 MANIFOLD STAY



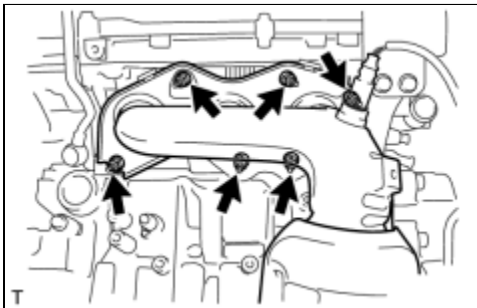
(a) Remove the bolt, nut, and No. 2 manifold stay.

76. REMOVE NO. 2 EXHAUST MANIFOLD HEAT INSULATOR



(a) Remove the 3 bolts and No. 2 exhaust manifold heat insulator.

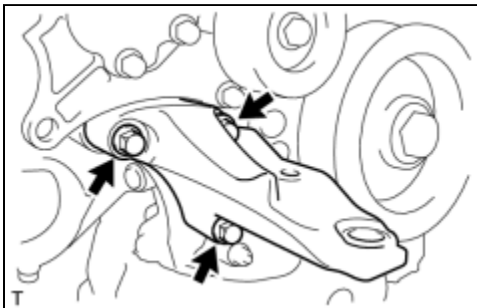
77. REMOVE EXHAUST MANIFOLD SUB-ASSEMBLY LH



(a) Uniformly loosen and remove the 6 nuts.

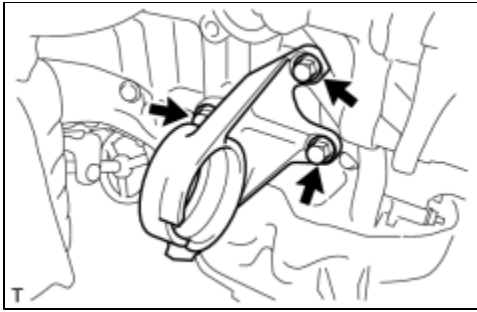
(b) Remove the manifold and gasket.

78. REMOVE ENGINE MOUNTING BRACKET RH



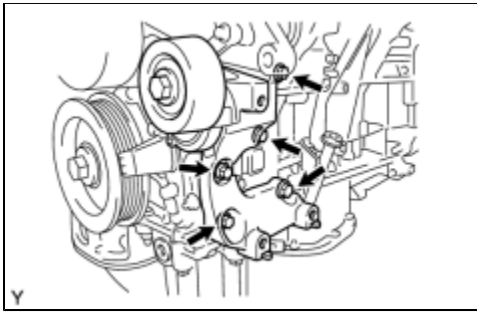
(a) Remove the 3 bolts and engine mounting bracket RH.

79. REMOVE DRIVE SHAFT BEARING BRACKET



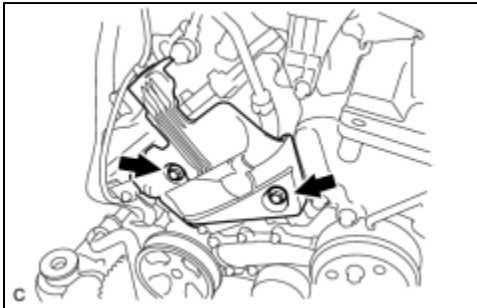
(a) Remove the 3 bolts and drive shaft bearing bracket.

80. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY



(a) Remove the 5 bolts and V-ribbed belt tensioner assembly.

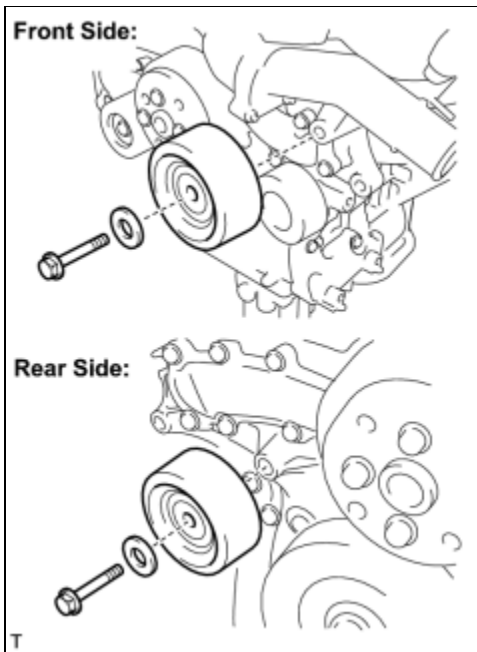
81. REMOVE NO. 2 TIMING GEAR COVER



(a) Remove the 2 bolts and No. 2 timing gear cover.

82. REMOVE NO. 2 IDLER PULLEY SUB-ASSEMBLY

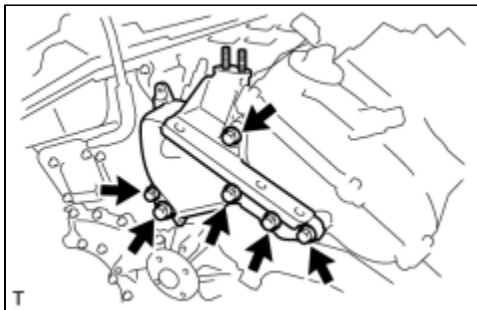
(a) Remove the 2 bolts, 2 plates and 2 No. 2 idler pulley sub-assemblies.



83. REMOVE WATER PUMP PULLEY



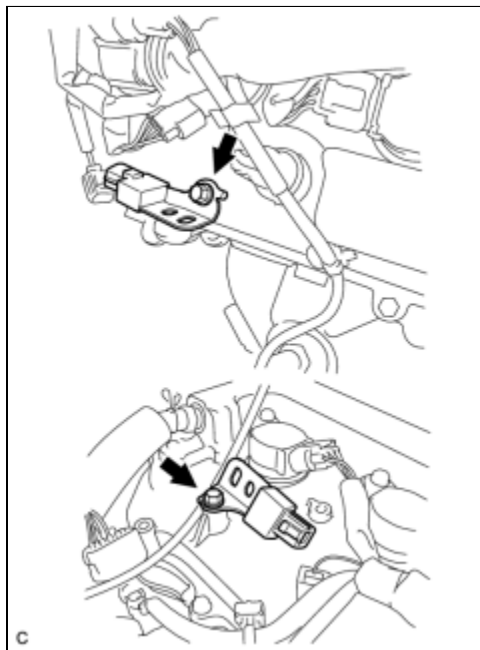
84. REMOVE NO. 1 ENGINE MOUNTING BRACKET FRONT LH



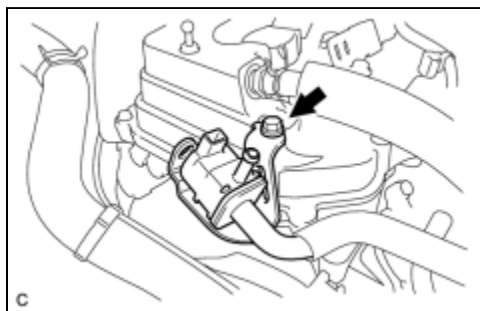
(a) Remove the 6 bolts and No. 1 engine mounting bracket front LH.

85. REMOVE RADIO SETTING CONDENSER

(a) Remove the 2 bolts and 2 radio setting condensers.

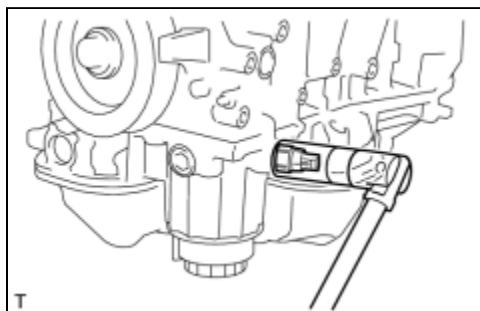


86. REMOVE NO. 1 VACUUM SWITCHING VALVE ASSEMBLY



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

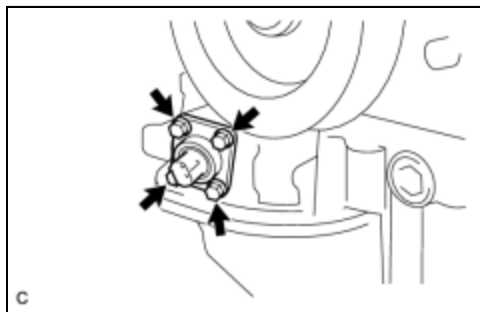
87. REMOVE ENGINE OIL PRESSURE SWITCH ASSEMBLY



(a) Using a 24 mm deep socket wrench, remove the engine oil pressure switch assembly.

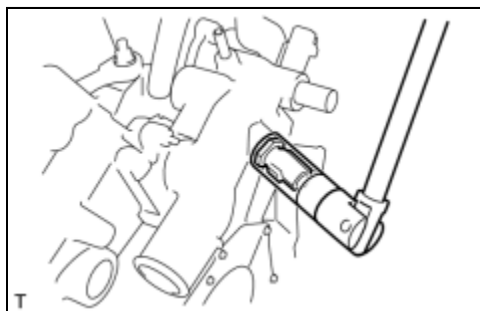
88. REMOVE KNOCK CONTROL SENSOR [INFO](#)

89. REMOVE ENGINE OIL LEVEL SENSOR



(a) Remove the 4 bolts, then remove the oil level sensor and gasket.

90. REMOVE ENGINE COOLANT TEMPERATURE SENSOR



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

