

Last Modified: 7-25-2017	6.8:8.0.51	Doc ID: RM000002OOQ000X
Model Year Start: 2007	Model: LS460	Prod Date Range: [09/2006 -]
Title: 1UR-FSE ENGINE MECHANICAL: ENGINE: REMOVAL; 2007 MY LS460 [09/2006 -]		

REMOVAL

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

2. DISCHARGE FUEL SYSTEM PRESSURE INFO

3. REMOVE COWL TOP VENTILATOR LOUVER INFO

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.

NOTICE:

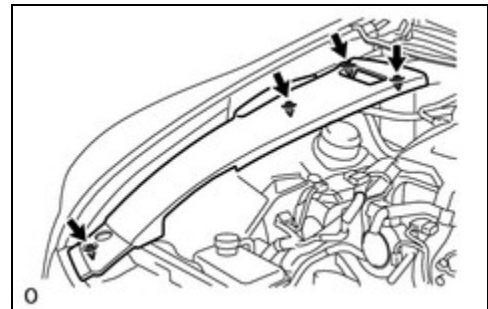
After the engine switch is turned off, the HDD navigation system requires approximately 6 minutes to record various types of memory and settings. As a result, after turning the engine switch off, wait 6 minutes or more before disconnecting the cable from the negative (-) battery terminal.

5. REMOVE V-BANK COVER SUB-ASSEMBLY INFO

6. REMOVE AIR CLEANER INLET COVER SUB-ASSEMBLY INFO

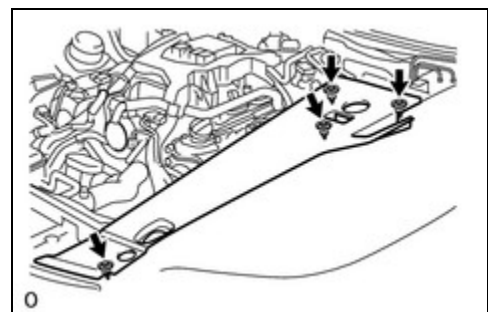
7. REMOVE ENGINE ROOM SIDE COVER RH

(a) Remove the 4 clips and engine room side cover.



8. REMOVE ENGINE ROOM SIDE COVER LH

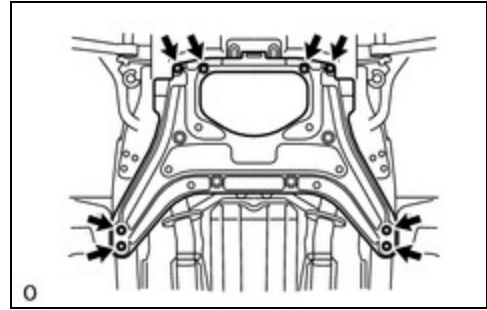
(a) Remove the 4 clips and engine room side cover.



9. REMOVE NO. 1 ENGINE UNDER COVER INFO

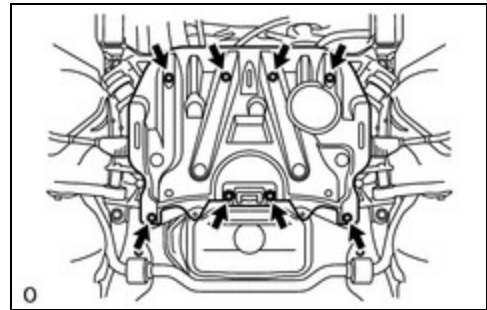
10. REMOVE NO. 2 ENGINE UNDER COVER

(a) Remove the 8 bolts and under cover.



11. REMOVE FRONT SUSPENSION MEMBER PROTECTOR LOWER

(a) Remove the 8 bolts and suspension member protector.



12. DRAIN ENGINE OIL INFO

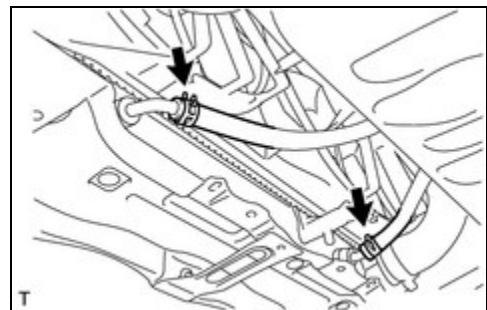
13. DRAIN ENGINE COOLANT INFO

14. DISCONNECT NO. 1 OIL COOLER INLET HOSE

(a) Using needle-nose pliers, grip the claws of the clip and slide the clip to disconnect the oil cooler hose.

HINT:

Place a container under the connection before disconnecting the oil cooler hose because oil in the hose may spill out.



15. DISCONNECT NO. 1 OIL COOLER OUTLET HOSE

(a) Using needle-nose pliers, grip the claws of the clip and slide the clip to disconnect the oil cooler hose.

HINT:

Place a container under the connection before disconnecting the oil cooler hose because oil in the hose may spill out.

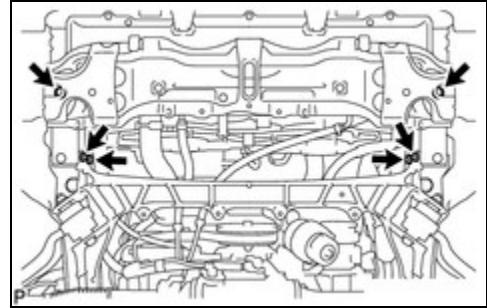
16. REMOVE FRONT WHEEL

17. REMOVE FRONT BUMPER COVER

(a) Remove the front bumper cover [INFO](#) .

18. REMOVE FRONT SUSPENSION CROSSMEMBER LOWER

(a) Remove the 6 bolts, 4 nuts and suspension crossmember lower.



19. REMOVE NO. 1 AIR CLEANER INLET [INFO](#)

20. REMOVE INTAKE AIR CONNECTOR PIPE [INFO](#)

21. REMOVE V-RIBBED BELT [INFO](#)

22. REMOVE AIR CLEANER ASSEMBLY LH [INFO](#)

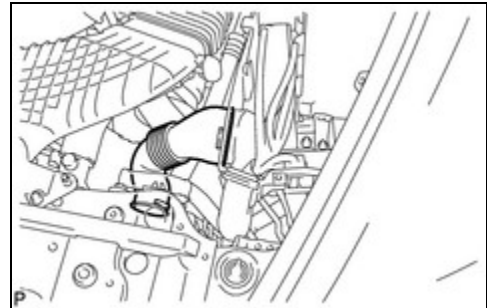
23. REMOVE AIR CLEANER ASSEMBLY RH [INFO](#)

24. DISCONNECT NO. 1 RADIATOR HOSE

25. DISCONNECT NO. 2 RADIATOR HOSE

26. REMOVE ENGINE ROOM ECU OUTLET DUCT

(a) Remove the outlet duct.

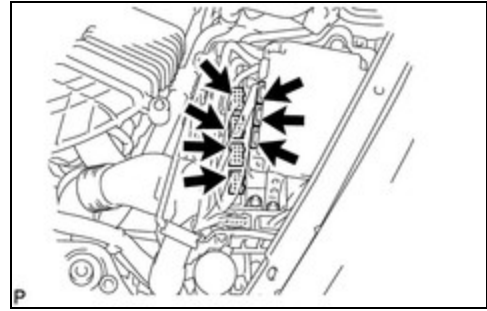


27. DISCONNECT NO. 3 FUEL HOSE [INFO](#)

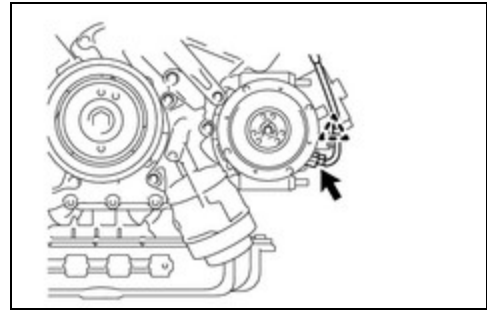
28. DISCONNECT NO. 1 FUEL PIPE SUB-ASSEMBLY [INFO](#)

29. DISCONNECT HOSES AND CONNECTORS

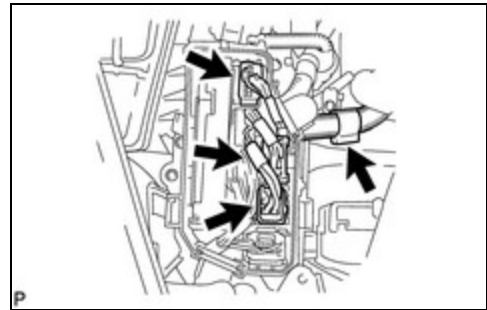
(a) Remove the ECM box cover (upper).



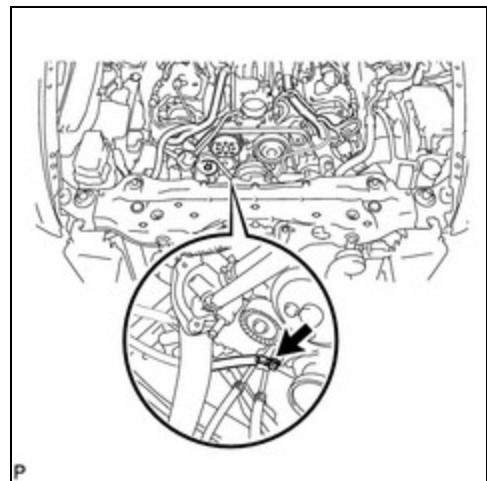
(b) Disconnect the 3 ECT connectors and 4 ECM connectors from the ECM box.



(c) Detach the clamp and disconnect the cooler compressor connector.



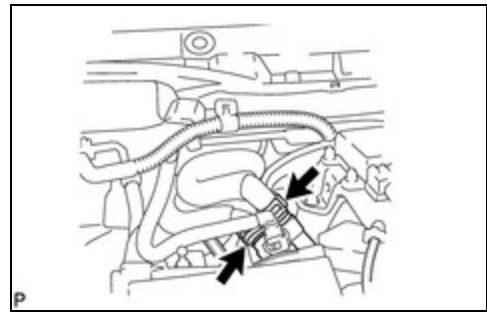
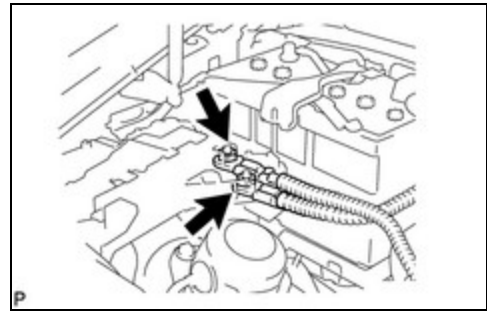
(d) Detach the clamp and disconnect the 3 connectors with front controller.



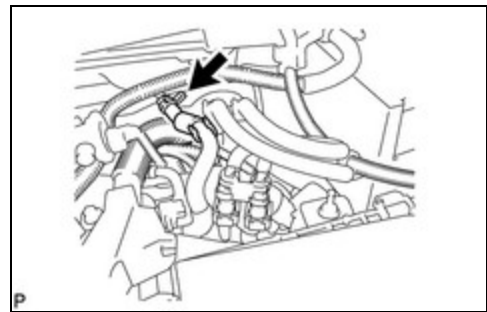
(e) Remove the bolt and disconnect the ground wire.

(f) Remove the 2 nuts and disconnect the wires with No. 1 engine room junction block.

(g) Disconnect the 2 heater hoses.



(h) Disconnect the purge line hose.



30. REMOVE FRONT EXHAUST PIPE ASSEMBLY

(a) Remove the front exhaust pipe [INFO](#) .

31. REMOVE NO. 1 EXHAUST PIPE SUPPORT BRACKET SUB-ASSEMBLY [INFO](#)

32. REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY

(a) Remove the propeller shaft [INFO](#) .

33. REMOVE FRONT STABILIZER BAR

(a) Remove the front stabilizer bar [INFO](#) .

34. REMOVE FRONT SUSPENSION MEMBER REINFORCEMENT RH [INFO](#)

35. REMOVE FRONT SUSPENSION MEMBER REINFORCEMENT LH [INFO](#)

36. REMOVE STEERING SLIDING YOKE WITH SHAFT SUB-ASSEMBLY (w/ VGRS) [INFO](#)

37. REMOVE STEERING SLIDING YOKE WITH SHAFT SUB-ASSEMBLY (w/o VGRS) [INFO](#)

38. REMOVE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY (w/ VGRS) [INFO](#)

39. REMOVE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY (w/o VGRS) INFO

40. REMOVE POWER STEERING LINK ASSEMBLY (w/ VGRS) INFO

41. REMOVE POWER STEERING LINK ASSEMBLY (w/o VGRS) INFO

42. REMOVE NO. 2 EXHAUST MANIFOLD HEAT INSULATOR INFO

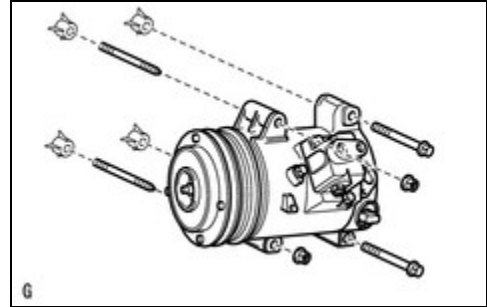
43. REMOVE EXHAUST MANIFOLD SUB-ASSEMBLY (for Bank 1) INFO

44. DISCONNECT COOLER COMPRESSOR ASSEMBLY

- (a) Remove the 2 bolts, 2 nuts and 2 stud bolts and disconnect the cooler compressor.

HINT:

It is not necessary to completely remove the compressor. With the hoses connected to the compressor, hang the compressor on the vehicle body with a rope.



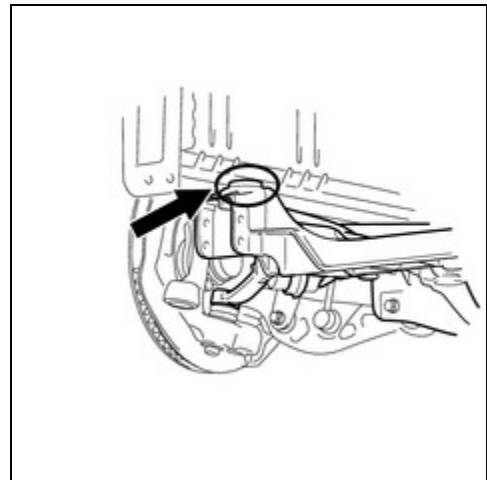
45. DISCONNECT FRONT NO. 2 LOWER SUSPENSION ARM ASSEMBLY

- (a) Disconnect the front No. 2 lower suspension arm INFO.

46. DISCONNECT FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY INFO

47. REMOVE ENGINE AND TRANSMISSION

- (a) Place a mark (with spray, etc.) over the front right vehicle side attachment area of the crossmember, which is indicated in the illustration.

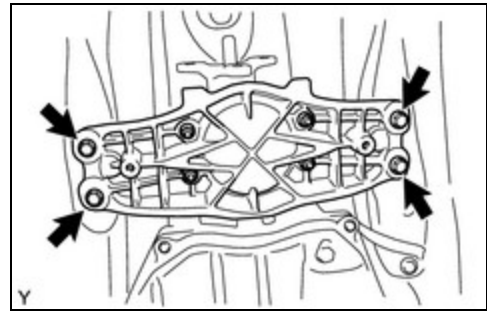


- (b) Place a mark (with spray, etc.) over the front left vehicle side attachment area of the crossmember.
- (c) Set an engine lifter underneath the engine.

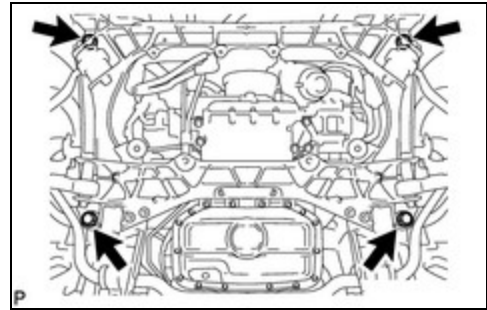
HINT:

Place the engine on wooden blocks or an equivalent so that the engine is level.

- (d) Remove the 4 engine rear mounting member's bolts.



(e) Remove the 4 bolts shown in the illustration.



(f) Operate the engine lifter, then slowly remove the engine from the vehicle.

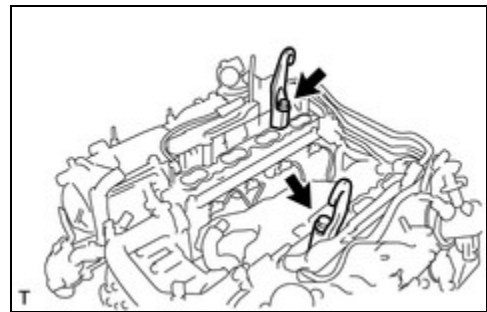
NOTICE:

- Make sure that the engine is clear of all wiring and hose.
- While lowering the engine from the vehicle, do not allow it to contact the vehicle.

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

Engine hanger part No.:

ITEM	PART NO.
No. 1 engine hanger	12281-38030 or 12281-38050
Bolt	90129-14120



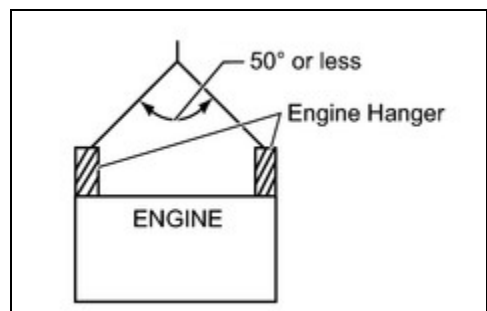
Torque:

43 N·m {438 kgf·cm, 32ft·lbf}

(h) Attach an engine sling device and hang the engine with a chain block.

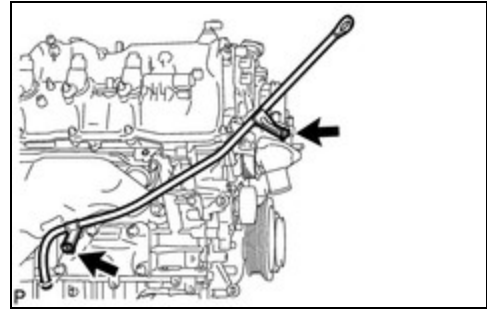
NOTICE:

When hanging the engine, make sure to hang the engine with the sling device's hanging angle at 50° or less. If not, the engine or engine hangers may be damaged.



48. REMOVE OIL LEVEL DIPSTICK GUIDE

(a) Remove the dipstick.



(b) Remove the 2 bolts and dipstick guide.

49. REMOVE NO. 1 EXHAUST MANIFOLD HEAT INSULATOR INFO

50. REMOVE EXHAUST MANIFOLD SUB-ASSEMBLY (for Bank 2) INFO

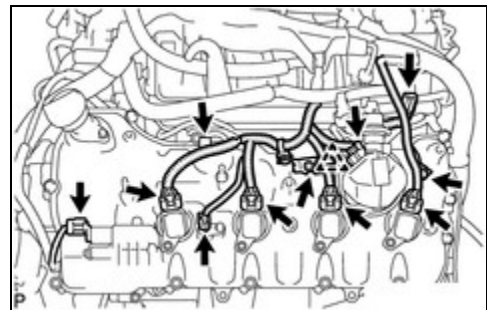
51. REMOVE OIL COOLER TUBE INFO

52. REMOVE NO. 3 EXHAUST MANIFOLD HEAT INSULATOR INFO

53. REMOVE ENGINE WIRE

(a) for Engine LH Side:

(1) Disconnect the camshaft timing control valve connector.



(2) Disconnect the 4 ignition coil connectors.

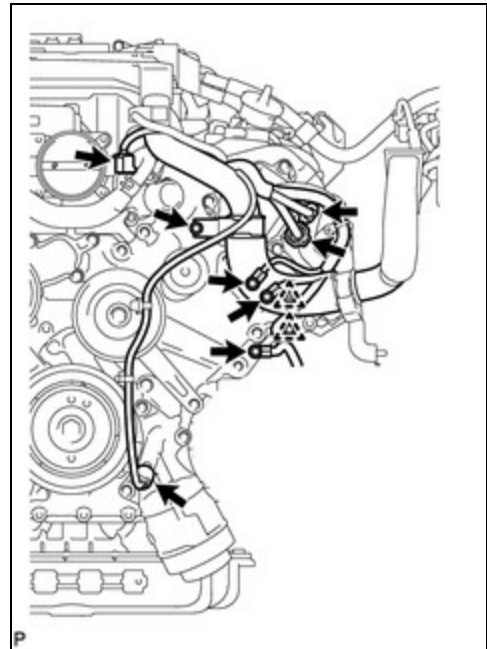
(3) Disconnect the 2 VVT sensor connectors.

(4) Disconnect the fuel pump connector (for high pressure).

(5) Disconnect the No. 8 engine wire connector.

(6) Remove the 2 bolts and disconnect the clamp and 2 clamp brackets.

(7) Disconnect the engine coolant temperature sensor connector.



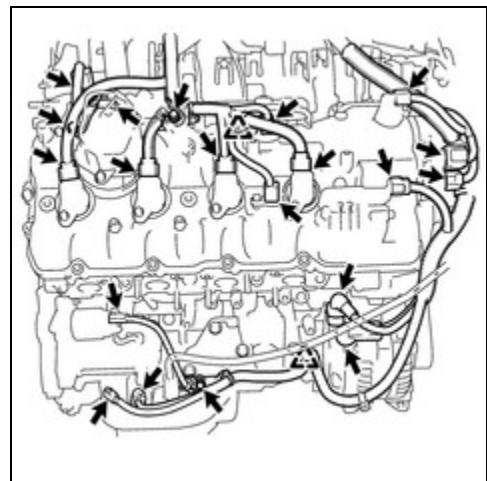
(8) Disconnect the oil pressure sensor connector.

(9) Disconnect the 2 camshaft timing control motor connectors (for Bank 1).

(10) Remove the 3 bolts and disconnect the 3 clamps and ground wire.

(11) Remove the bolt and clamp bracket.

(b) for Engine RH Side:



(1) Disconnect the camshaft timing control valve connector.

(2) Disconnect the 4 ignition coil connectors.

(3) Disconnect the 2 VVT sensor connectors.

(4) Disconnect the fuel pump connector (for high pressure).

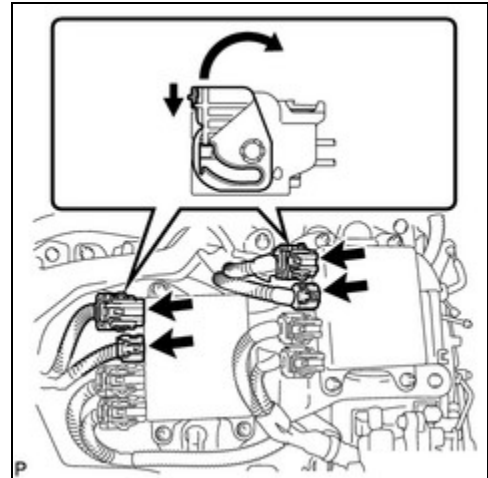
(5) Disconnect the engine wire connector.

(6) Disconnect the 2 camshaft timing control motor connectors (for Bank 2).

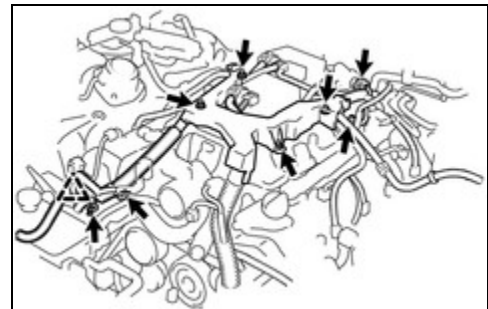
(7) Disconnect the camshaft position sensor connector.

- (8) Remove the nut and disconnect the generator wire and connector.
 - (9) Remove the nut and disconnect the starter wire and connector.
 - (10) Disconnect the crankshaft position sensor connector.
 - (11) Disconnect the engine oil level sensor connector.
 - (12) Remove the 3 bolts and disconnect the 3 clamp brackets and 2 clamps.
- (c) Disconnect the throttle body connector.

- (d) Disconnect the 4 injector driver connectors as shown in the illustration.



- (e) Disconnect the No. 1 vacuum switching valve connector.



- (f) Disconnect the intake air control valve actuator connector.
- (g) Remove the 2 bolts and disconnect the 2 clamp brackets and clamp.
- (h) Remove the 4 nuts and engine wire.

54. REMOVE STARTER ASSEMBLY INFO

55. REMOVE AUTOMATIC TRANSMISSION ASSEMBLY INFO

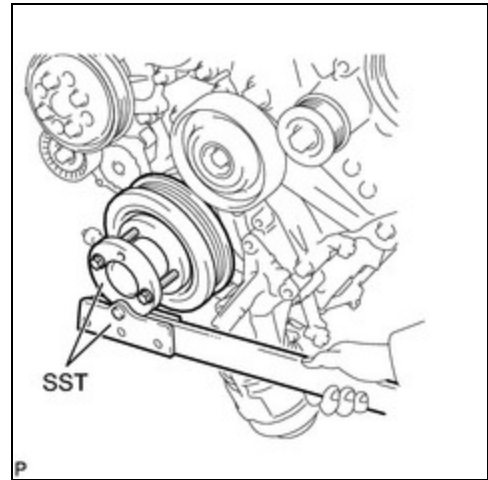
56. REMOVE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

- (a) Using SST, hold the crankshaft.

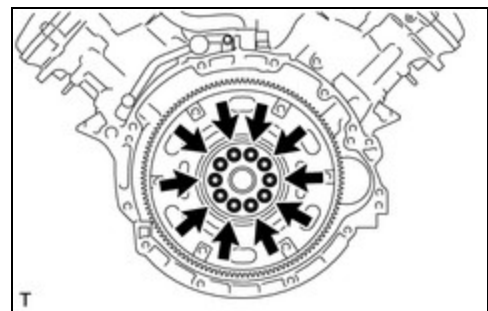
SST: 09213-54015

90119-08216

SST: 09330-00021

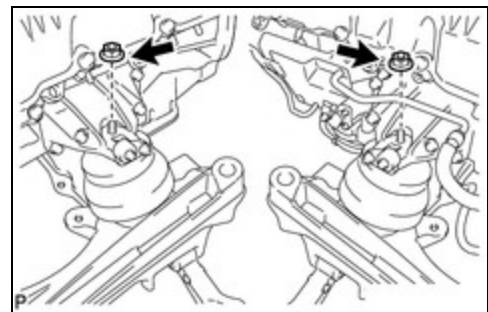


- (b) Remove the 10 bolts, spacer plate, ring gear and sensor rotor.



57. REMOVE FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY

- (a) Remove the 2 nuts, then remove the crossmember from the engine.



58. REMOVE ENGINE MOUNTING SPACER INFO

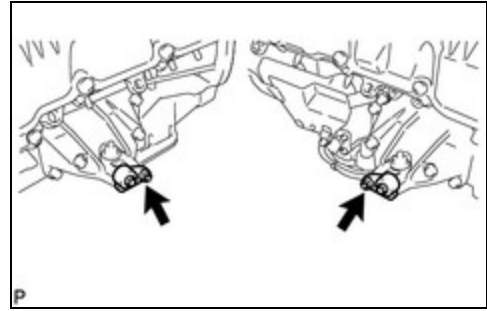
59. INSTALL ENGINE ON ENGINE STAND

- (a) Install the engine onto an engine stand with the bolts.
- (b) Remove the 2 bolts and 2 engine hangers.

60. REMOVE GENERATOR ASSEMBLY INFO

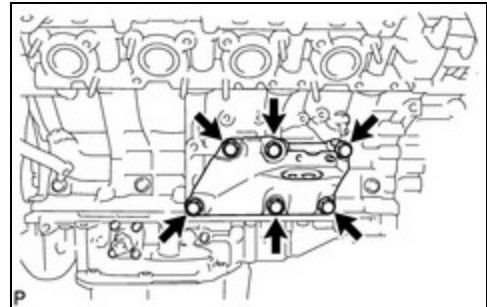
61. REMOVE ENGINE MOUNTING DAMPER

- (a) Remove the 2 nuts and 2 mounting dampers.



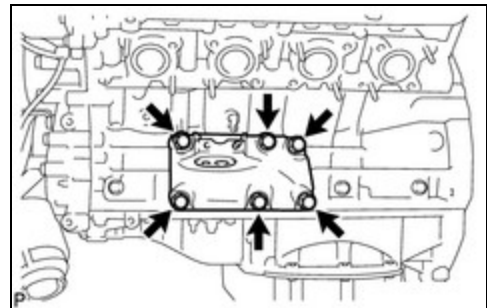
62. REMOVE FRONT NO. 1 ENGINE MOUNTING BRACKET RH

(a) Remove the 6 bolts and mounting bracket.



63. REMOVE FRONT NO. 1 ENGINE MOUNTING BRACKET LH

(a) Remove the 6 bolts and mounting bracket.



64. REMOVE INJECTOR DRIVER [INFO](#)

65. REMOVE NO. 1 ENGINE COVER

66. REMOVE WATER BY-PASS PIPE SUB-ASSEMBLY [INFO](#)

67. REMOVE VENTILATION HOSE

68. REMOVE THROTTLE BODY ASSEMBLY [INFO](#)

69. REMOVE INTAKE MANIFOLD [INFO](#)

70. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY [INFO](#)

71. REMOVE NO. 3 COVER SUB-ASSEMBLY [INFO](#)

72. REMOVE FUEL TUBE SUB-ASSEMBLY [INFO](#)

73. REMOVE FUEL DELIVERY PIPE (for Port Injection) [INFO](#)

74. REMOVE FUEL INJECTOR ASSEMBLY (for Port Injection) INFO

75. REMOVE ENGINE COVER SUB-ASSEMBLY INFO

76. REMOVE FUEL PRESSURE PULSATION DAMPER ASSEMBLY INFO

77. REMOVE NO. 2 FUEL PIPE SUB-ASSEMBLY INFO

78. REMOVE NO. 3 FUEL PIPE SUB-ASSEMBLY INFO

79. REMOVE FUEL PUMP ASSEMBLY (for High Pressure) INFO

80. REMOVE NO. 4 FUEL PIPE SUB-ASSEMBLY INFO

81. REMOVE FUEL DELIVERY PIPE (for Direct Injection) INFO

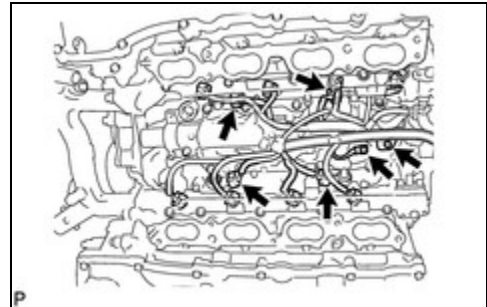
82. REMOVE NO. 2 FUEL DELIVERY PIPE (for Direct Injection) INFO

83. REMOVE FUEL INJECTOR ASSEMBLY (for Direct Injection) INFO

84. REMOVE SEPARATOR CASE INFO

85. REMOVE ENGINE WIRE

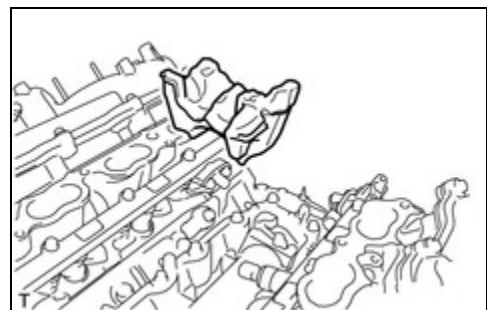
(a) Disconnect the 4 knock sensor connectors.



(b) Remove the 2 bolts and engine wire.

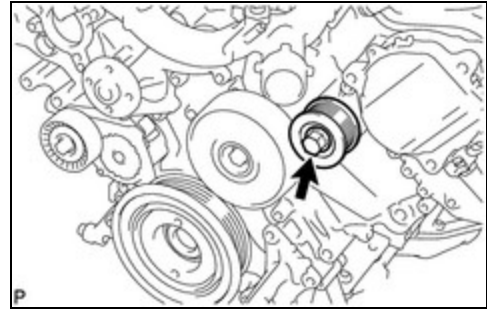
86. REMOVE NO. 4 ENGINE COVER SUB-ASSEMBLY

(a) Remove the engine cover.



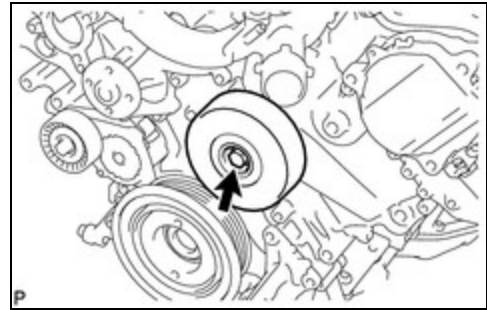
87. REMOVE NO. 2 IDLER PULLEY SUB-ASSEMBLY

(a) Remove the bolt and idler pulley.



88. REMOVE NO. 1 IDLER PULLEY SUB-ASSEMBLY

(a) Remove the bolt and idler pulley.



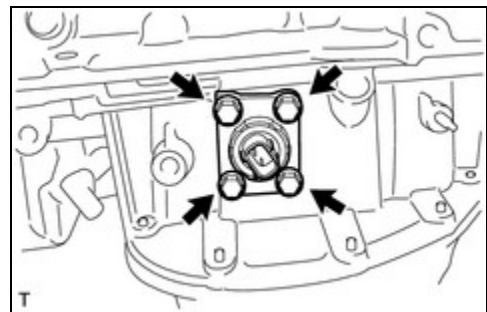
89. REMOVE WATER PUMP PULLEY INFO

90. REMOVE WATER INLET HOUSING INFO

91. REMOVE ENGINE OIL PRESSURE SWITCH ASSEMBLY INFO

92. REMOVE ENGINE OIL LEVEL SENSOR

(a) Remove the 4 bolts and oil level sensor.



93. REMOVE ENGINE COOLANT TEMPERATURE SENSOR INFO

94. REMOVE KNOCK SENSOR INFO

95. REMOVE IGNITION COIL ASSEMBLY INFO

