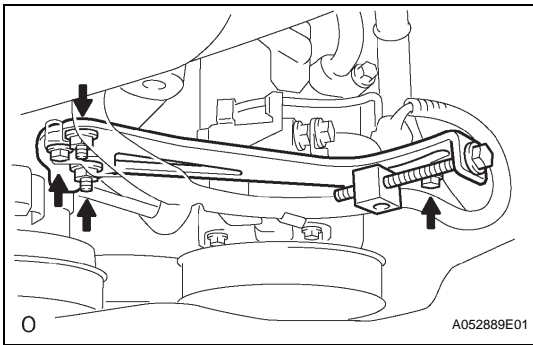


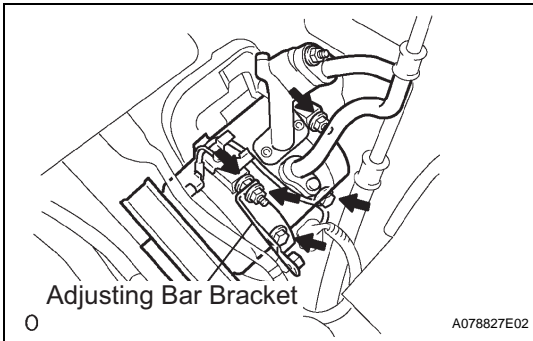
REMOVAL

1. **REMOVE ENGINE UNDER COVER ASSEMBLY**
 - (a) W/ engine under cover assembly
2. **REMOVE ENGINE UNDER COVER NO.1**
3. **REMOVE ENGINE UNDER COVER NO.2**
 - (a) W/ engine under cover No. 2
4. **DRAIN ENGINE OIL (See page LU-5)**
5. **REMOVE FRONT WHEEL RH**
6. **REMOVE FR WIPER ARM RH (See page WW-37)**
7. **REMOVE FR WIPER ARM LH (See page WW-37)**
8. **REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-37)**
9. **REMOVE WINDSHIELD WIPER LINK ASSEMBLY (See page WW-37)**
10. **REMOVE COWL TOP PANEL SUB-ASSEMBLY OUTER (See page FU-10)**
11. **REMOVE FRONT FENDER APRON SEAL RH (See page ES-368)**
12. **REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1**
 - (a) Remove the V (cooler compressor to crankshaft pulley) belt No. 1 (See page EM-6).
13. **REMOVE GENERATOR ASSEMBLY**
 - (a) Remove the generator assembly (See page CH-7).
14. **REMOVE VANE PUMP V BELT**
 - (a) Remove the vane pump V belt (See page EM-6).
15. **REMOVE ENGINE MOVING CONTROL ROD**
 - (a) Remove the engine moving control rod (See page EM-22).
16. **REMOVE ENGINE MOUNTING STAY NO.2 RH**
 - (a) Remove the engine mounting stay No. 2 RH (See page EM-22).
17. **REMOVE GENERATOR BRACKET NO.2**
 - (a) Remove the generator bracket No. 2 (See page EM-22).
18. **REMOVE CRANKSHAFT PULLEY**
 - (a) Remove the crankshaft pulley (See page EM-22).
SST 09213-54015 (91651-60855), 09330-00021, 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05031)
19. **REMOVE TIMING BELT NO.1 COVER**
20. **REMOVE TIMING BELT NO.2 COVER**
 - (a) Remove the timing belt No. 2 cover (See page EM-22).

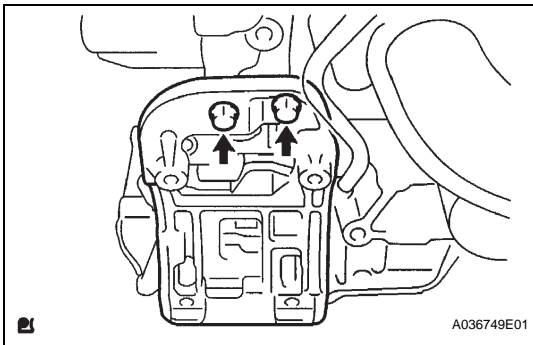
- 21. REMOVE ENGINE MOUNTING BRACKET RH**
 - (a) Remove the engine mounting bracket RH (See page [EM-22](#)).
- 22. REMOVE TIMING BELT GUIDE NO.2**
 - (a) Remove the timing belt guide No. 2 (See page [EM-22](#)).
- 23. REMOVE TIMING BELT**
 - (a) Remove the timing belt (See page [EM-22](#)).
- 24. REMOVE TIMING BELT IDLER SUB-ASSEMBLY NO.2**
- 25. REMOVE CAMSHAFT TIMING PULLEY**
 - (a) Remove the camshaft timing pulley (See page [EM-39](#)).
SST 09960-10010 (09962-01000, 09963-01000), 09249-63010
- 26. REMOVE TIMING BELT NO.3 COVER**
 - (a) Remove the timing belt No. 3 cover (See page [EM-39](#)).
- 27. REMOVE TIMING BELT IDLER SUB-ASSEMBLY NO.1 (See page [CO-14](#))**
- 28. REMOVE CRANKSHAFT TIMING PULLEY**
 - (a) Remove the crankshaft timing pulley (See page [EM-96](#)).
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05011)
- 29. REMOVE EXHAUST PIPE SUB-ASSEMBLY FRONT NO.3 (See page [EX-5](#))**
- 30. REMOVE EXHAUST PIPE ASSEMBLY FRONT (See page [EX-5](#))**
- 31. REMOVE EXHAUST PIPE SUPPORT BRACKET NO.1**
- 32. REMOVE MANIFOLD CONVERTER INSULATOR NO.3**
- 33. REMOVE EXHAUST MANIFOLD HEAT INSULATOR NO.2**
- 34. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY NO.2**
 - (a) Remove the exhaust manifold converter sub-assembly No. 2 (See page [EM-65](#)).
- 35. REMOVE OIL LEVEL GAGE GUIDE**
 - (a) Remove the oil level gage guide (See page [EM-65](#)).



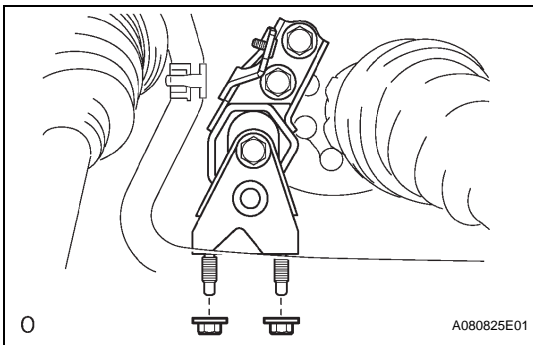
- 36. REMOVE GENERATOR BELT ADJUSTING BAR**
 (a) Remove the 2 bolts and 2 nuts, then remove the adjusting bar.



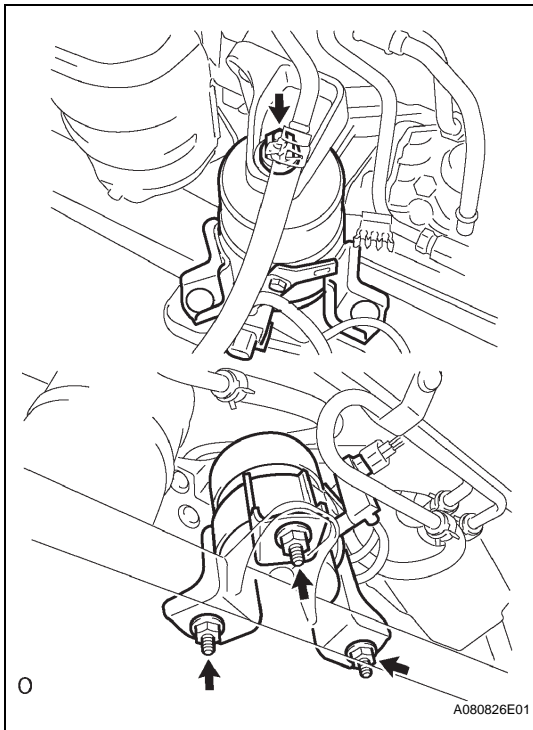
- 37. SEPARATE COMPRESSOR AND MAGNETIC CLUTCH**
 (a) Remove the bolt and nut, then remove the adjusting bar bracket.
 (b) Remove the 3 bolts and the compressor.
 HINT:
 Secure the hoses off to the side instead of detaching.



- 38. REMOVE COMPRESSOR MOUNTING BRACKET NO.1**
 (a) Remove the 2 bolts and the compressor mounting bracket No. 1.



- 39. SEPARATE ENGINE MOUNTING INSULATOR RR**
 (a) Remove the 2 nuts and separate the engine mounting insulator RR.

**40. SEPARATE ENGINE MOUNTING INSULATOR FR**

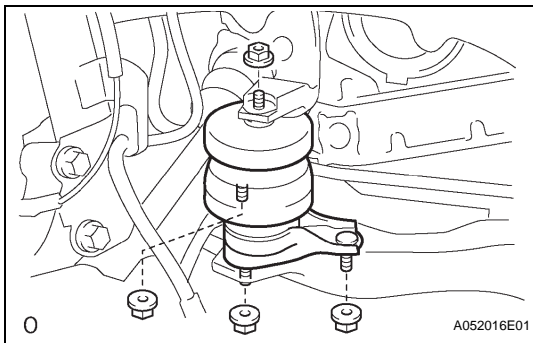
- (a) Remove the 4 nuts and separate the engine mounting insulator FR.

NOTICE:

Do not remove the engine mounting insulator FR.

41. REMOVE ENGINE MOUNTING INSULATOR RH

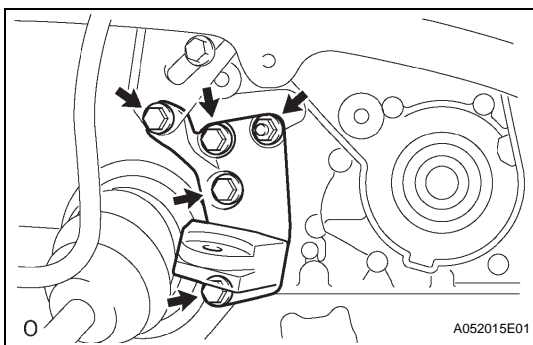
- (a) Remove the bolt and disconnect the power steering return hose clamp from the frame.



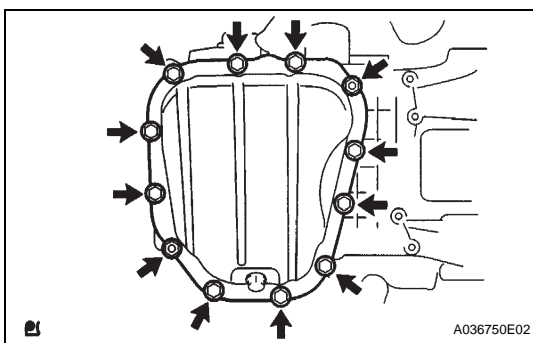
- (b) Remove the 4 nuts.
 (c) Place a wooden block on a jack underneath the engine.
 (d) Jack-up the engine and remove the engine mounting insulator RH.

NOTICE:

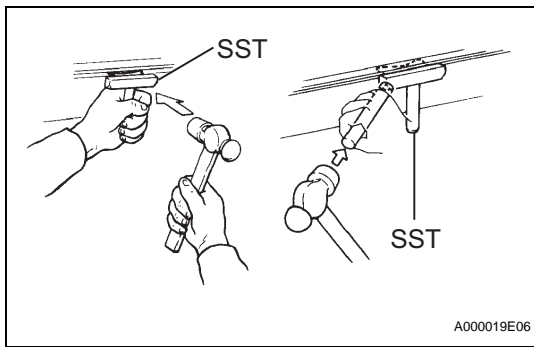
Be careful not to damage the oil pan.

**42. REMOVE ENGINE MOUNTING BRACKET RH**

- (a) Remove the 4 bolts and nut, then remove the bracket.

**43. REMOVE OIL PAN SUB-ASSEMBLY NO.2**

- (a) Remove the 10 bolts and 2 nuts.



- (b) Insert the blade of SST between oil pan No.1 and oil pan No.2, cut off the sealer and remove the oil pan No.2.

SST 09032-00100

NOTICE:

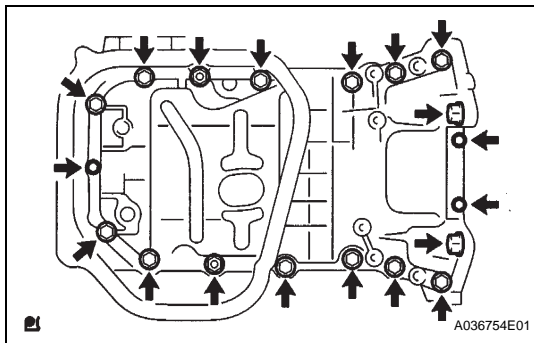
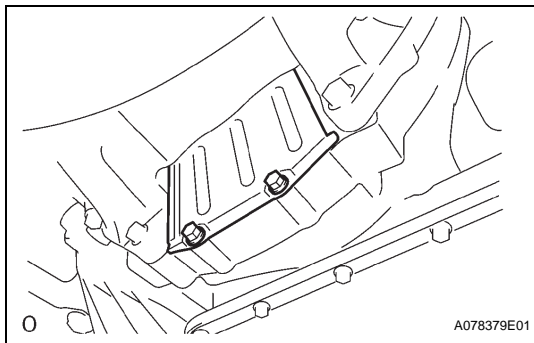
- Be careful not to damage the contact surface of oil pan No.1 where oil pan No.2 is mounted.
- Do not damage the flange portion of oil pan No.2 when removing.

44. REMOVE OIL STRAINER SUB-ASSEMBLY

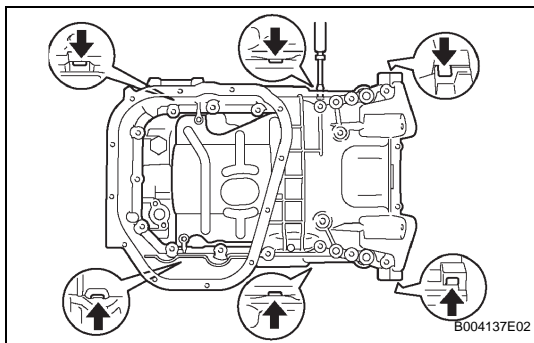
- (a) Remove the bolt and 2 nuts, and remove the oil strainer and the gasket.

45. REMOVE OIL PAN SUB-ASSEMBLY

- (a) Remove the 2 bolts and the flywheel housing under cover.



- (b) Loosen and remove the 17 bolts and 2 nuts uniformly.



- (c) Using a screwdriver, remove the oil pan by prying between the cylinder block and the oil pan.

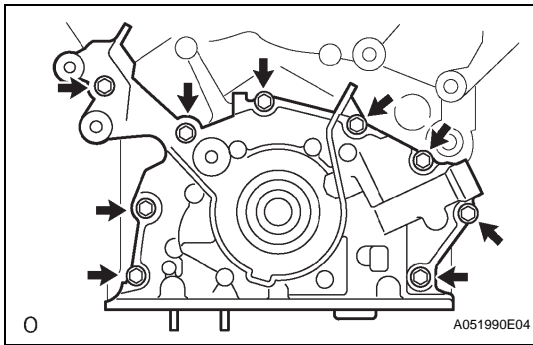
NOTICE:

Be careful not to damage the contact surfaces of the oil pan and cylinder block.

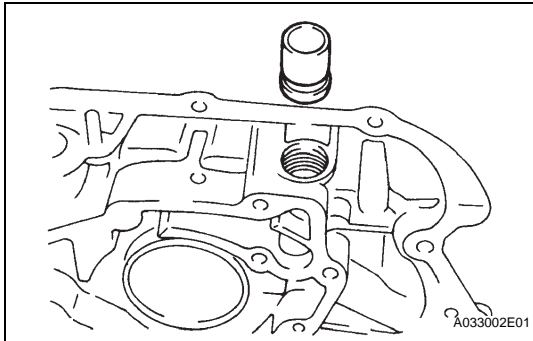
46. REMOVE CRANKSHAFT POSITION SENSOR

- (a) Disconnect the crankshaft position sensor connector.
- (b) Remove the bolt and the crankshaft position sensor.

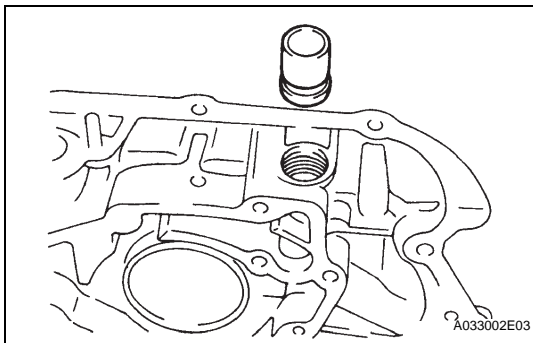
LU

**47. REMOVE OIL PUMP ASSEMBLY**

- (a) Remove the 9 bolts.
- (b) Using a screwdriver, remove the oil pump by prying between the oil pump and the main bearing cap.
- (c) Remove the O-ring.

**DISASSEMBLY****1. REMOVE OIL PUMP RELIEF VALVE**

- (a) Remove the plug, spring and relief valve.

**INSPECTION****1. INSPECT OIL PUMP RELIEF VALVE**

- (a) Apply a light coat of engine oil.
- (b) Check that it falls smoothly into the valve hole by its own weight.

2. INSPECT OIL PUMP ASSEMBLY

- (a) Remove the oil pump cover.
 - (1) Remove the 10 screws and the oil pump cover.
- (b) Remove the oil pump rotor set.

NOTICE:

Do not change the combination and mounting direction of the two rotors.

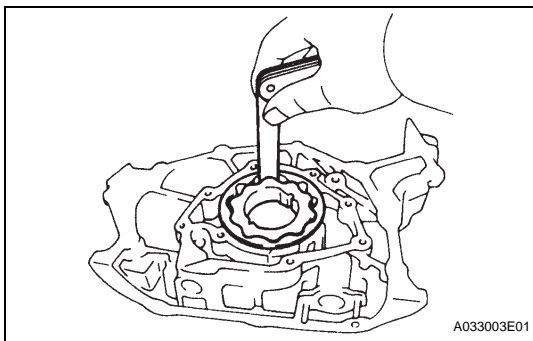
- (c) Inspect the oil pump rotor set.
 - (1) Apply a light coat of engine oil to the oil pump rotor set and place them into the oil pump body. Check that the rotors revolve smoothly.
- (d) Inspect rotor tip clearance.
 - (1) Using a feeler gauge, measure the clearance between the drive and the driven rotor tips.

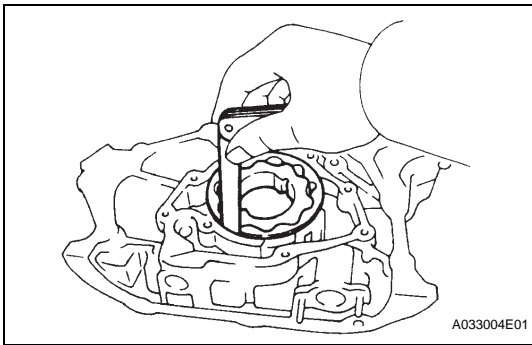
Standard tip clearance:

0.11 to 0.24 mm (0.0043 to 0.0094 in.)

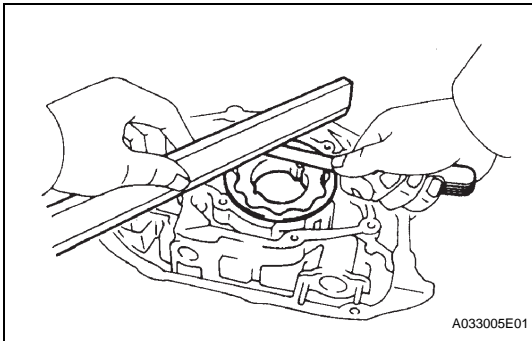
Maximum tip clearance:

0.35 mm (0.0138 in.)

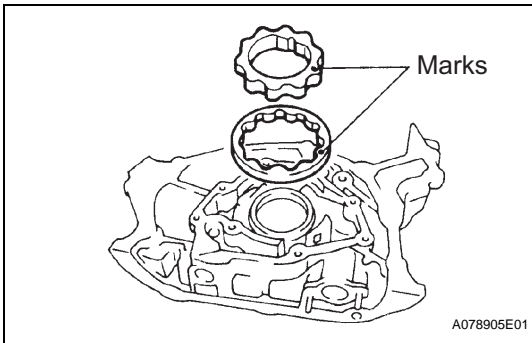




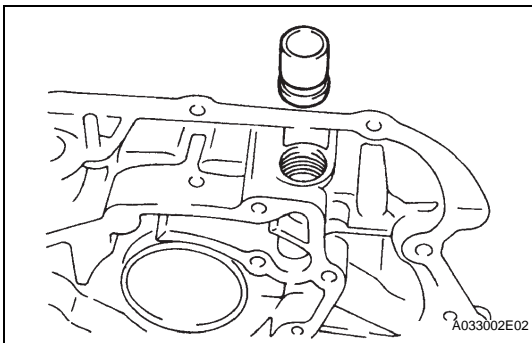
- (e) Inspect rotor body clearance.
- (1) Using a feeler gauge, measure the clearance between the driven rotor and body.
Standard body clearance:
0.125 to 0.162 mm (0.0050 to 0.0064 in.)
Maximum body clearance:
0.30 mm (0.0118 in.)



- (f) Inspect rotor side clearance.
- (1) Using a feeler gauge and precision straight edge, measure the clearance between the rotors and precision straight edge.
Standard side clearance:
0.03 to 0.09 mm (0.0012 to 0.0035 in.)
Maximum side clearance:
0.15 mm (0.0059 in.)



- (g) Install the oil pump rotor set.
- (1) Apply a light coat of engine oil to the oil pump gear set and place it into pump body with the marks facing the pump body cover side.
- (h) Install the oil pump cover.
- (1) Install the 10 screws and the oil pump cover.
Torque: 10 N*m (105 kgf*cm, 8 ft.*lbf)



REASSEMBLY

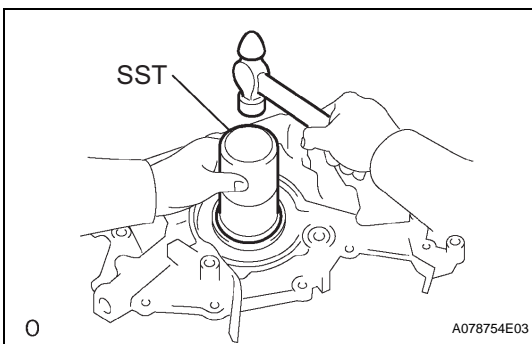
1. INSTALL OIL PUMP ROTOR SET

- (a) Apply a light coat of engine oil to the relief valve, and insert the relief valve and spring into the pump body hole.
- (b) Install the oil pump relief valve plug.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

INSTALLATION

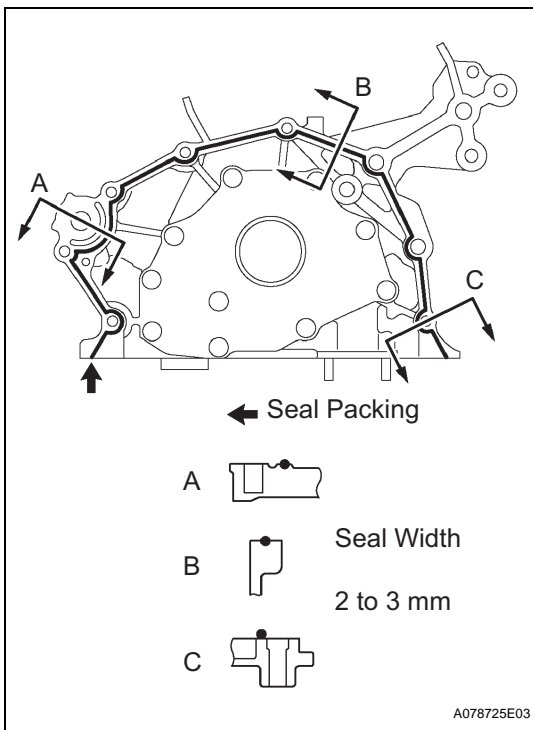
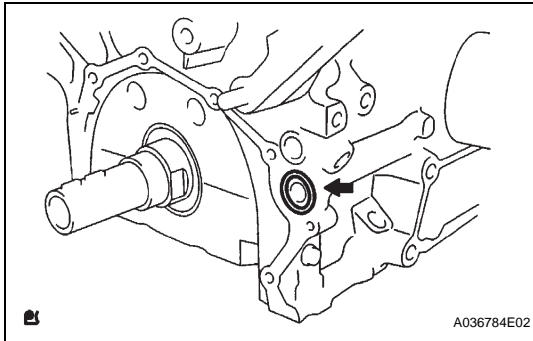
1. INSTALL OIL PUMP SEAL

- (a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump body edge.
SST 09223-00010
NOTICE:
 - Be careful not to tap the oil seal at an angle.
 - Keep the lip free of foreign objects.
- (b) Apply MP grease to the oil seal lip.



2. INSTALL OIL PUMP ASSEMBLY

- (a) Remove any old seal packing material from the contact surface.
- (b) Apply a light coat of engine oil to a new O-ring and place it on the cylinder block.



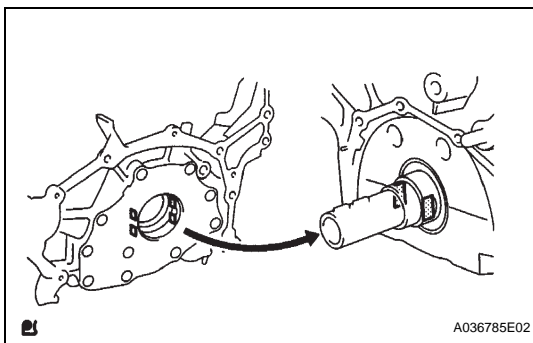
- (c) Apply a continuous bead of seal packing (Diameter 2 to 3 mm (0.08 to 0.12 in.)) as shown in the illustration.

Seal packing:

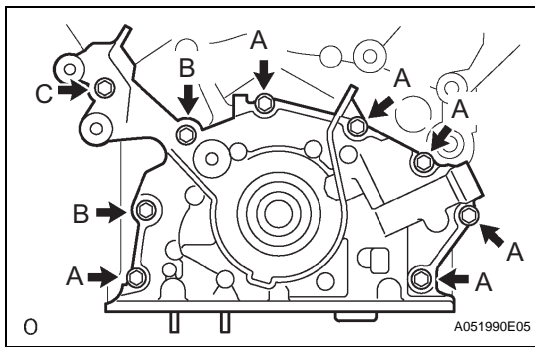
Part No. 08826-00080 or equivalent

NOTICE:

- Remove any oil from contact surface.
- Apply seal packing to the inner side of the bolt holes.
- Install the oil pump within 3 minutes after applying seal packing.
- Do not expose the seal to engine oil within 2 hours after installing.



- (d) Align the key of the oil pump drive gear with the keyway located on the crankshaft, and slide the oil pump into place.



- (e) Install the oil pump with the 9 bolts. Tighten the bolts uniformly in several steps.

Torque: Bolt A

8.0 N*m (82 kgf*cm, 71 in.*lbf)

Bolt B

20 N*m (199 kgf*cm, 14 ft.*lbf)

Bolt C

43 N*m (439 kgf*cm, 32 ft.*lbf)

3. INSTALL CRANKSHAFT POSITION SENSOR

Torque: 8.0 N*m (80 kgf*cm, 71 in.*lbf)

4. INSTALL OIL PAN SUB-ASSEMBLY

- (a) Remove any old seal packing from the contact surface.

- (b) Apply a continuous bead of seal packing (Diameter 3 to 4 mm (0.12 to 0.16 in.)) as shown in the illustration.

Seal packing:

Part No. 08826-00080 or equivalent

NOTICE:

- Remove any oil from the contact surface.
- Apply seal packing to the outer side of the bolt holes in the region "X".
- Apply seal packing to the inner side of the bolt holes in the region "Y".
- Install the oil pan within 3 minutes after applying seal packing.
- Do not expose the seal to engine oil within 2 hours after installing.

- (c) Install oil pan No. 1 with the 17 bolts and 2 nuts. Tighten the bolts uniformly in several steps.

Torque: 10 mm head

8.0 N*m (82 kgf*cm, 71 in.*lbf)

12 mm head

20 N*m (199 kgf*cm, 14 ft.*lbf)

14 mm head

37 N*m (379 kgf*cm, 27 ft.*lbf)

- (d) Install the flywheel housing under cover with the 2 bolts.

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

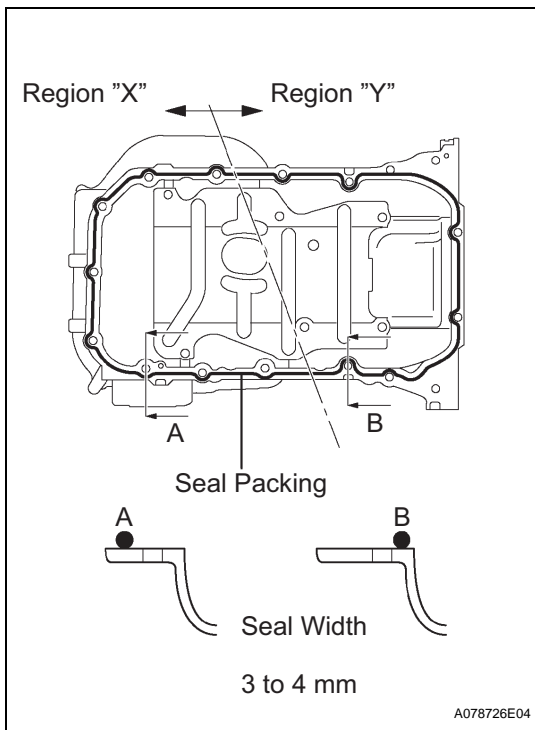
5. INSTALL OIL STRAINER SUB-ASSEMBLY

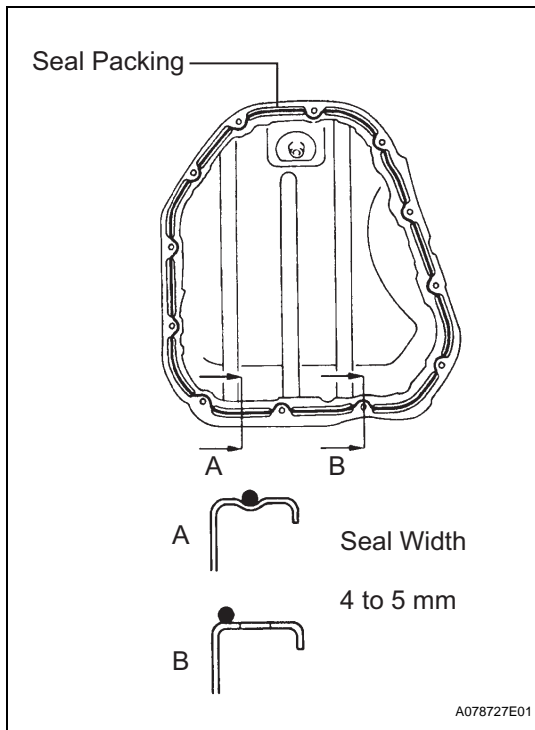
- (a) Install a new gasket and the oil strainer with the bolt and 2 nuts.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

6. INSTALL OIL PAN SUB-ASSEMBLY NO.2

- (a) Remove any old seal packing from the contact surface.





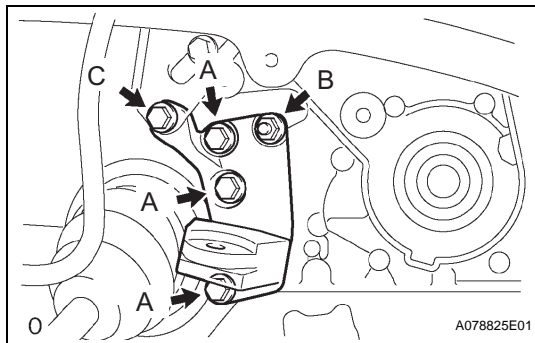
- (b) Apply a continuous bead of seal packing (Diameter 4 to 5 mm (0.16 to 0.20 in.)) as shown in the illustration.

Seal packing:

Part No. 08826-00080 or equivalent

NOTICE:

- Remove any oil from the contact surface.
 - Apply seal packing to the inner side of the bolt holes.
 - Install the oil pan within 3 minutes after applying seal packing.
 - Do not expose the seal to engine oil within 2 hours after installing.
- (c) Install the oil pan No. 2 with the 10 bolts and 2 nuts.
Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)



7. INSTALL ENGINE MOUNTING BRACKET RH

- (a) Install the 4 bolts and nut and engine mounting bracket RH.

Torque: Bolt A

54 N*m (551 kgf*cm, 40 ft.*lbf)

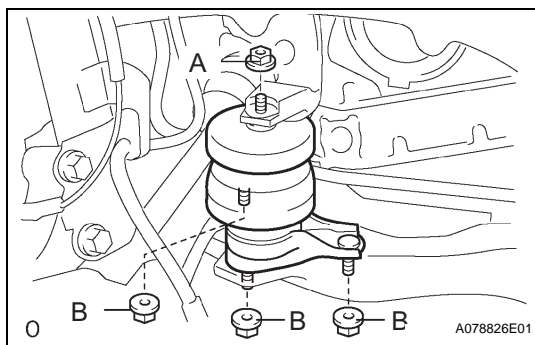
Nut B

54 N*m (551 kgf*cm, 40 ft.*lbf)

Bolt C

43 N*m (439 kgf*cm, 32 ft.*lbf)

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8. INSTALL ENGINE MOUNTING INSULATOR RH

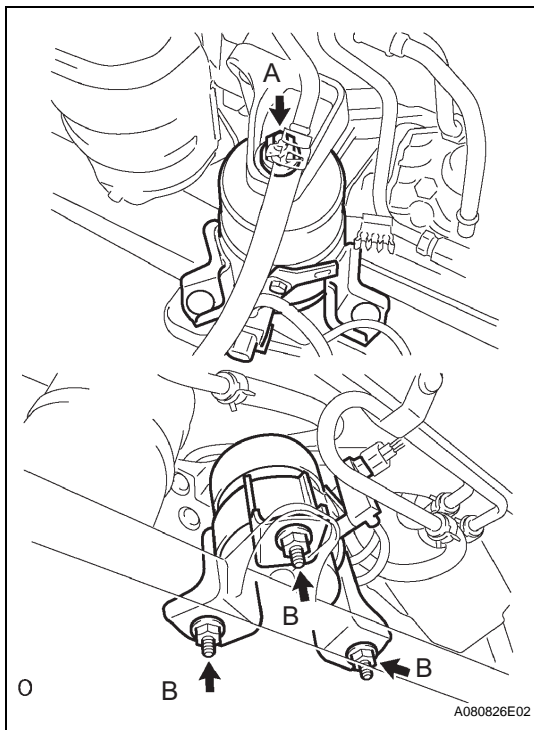
- (a) Install the 4 nuts and nut and engine mounting insulator RH.

Torque: Nut A

95 N*m (969 kgf*cm, 70 ft.*lbf)

Nut B

87 N*m (887 kgf*cm, 64 ft.*lbf)



9. INSTALL ENGINE MOUNTING INSULATOR FR

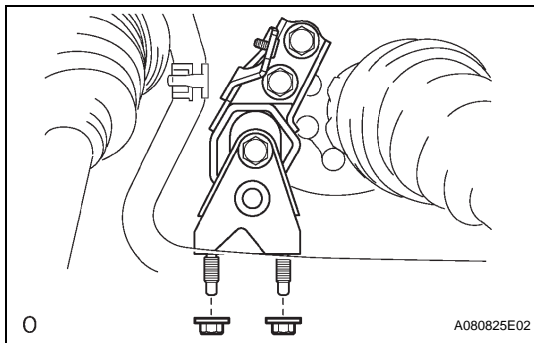
- (a) Install the 4 nuts and engine mounting insulator FR.

Torque: Nut A

87 N*m (887 kgf*cm, 64 ft.*lbf)

Nut B

52 N*m (530 kgf*cm, 38 ft.*lbf)



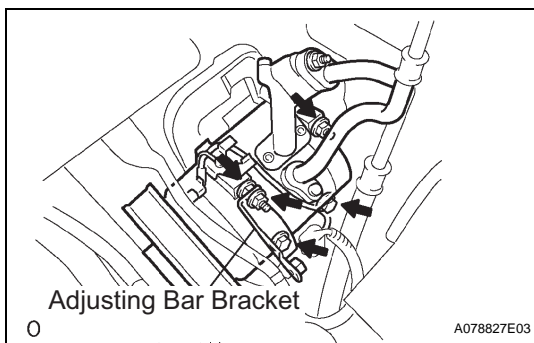
10. INSTALL ENGINE MOUNTING INSULATOR RR

- (a) Install the 2 nuts and engine insulator RR.

Torque: 52 N*m (530 kgf*cm, 38 ft.*lbf)

11. INSTALL COMPRESSOR MOUNTING BRACKET NO.1

- Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)**



12. INSTALL COMPRESSOR AND MAGNETIC CLUTCH

- (a) Install the compressor with the 3 bolts.

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

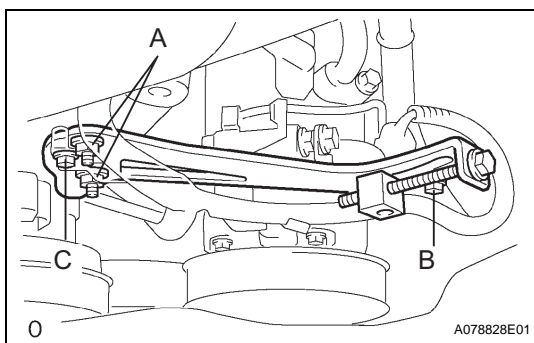
- (b) Install the adjusting bar bracket with the bolt and nut.

Torque: Bolt

25 N*m (250 kgf*cm, 18 ft.*lbf)

Nut

26 N*m (265 kgf*cm, 19 ft.*lbf)



13. INSTALL GENERATOR BELT ADJUSTING BAR

- (a) Install the adjusting bar with the 2 bolts and 2 nuts.

Torque: Nut A

43 N*m (438 kgf*cm, 32 ft.*lbf)

Torque: Bolt B

18 N*m (184 kgf*cm, 13 ft.*lbf)

Bolt C

8.4 N*m (85 kgf*cm, 74 in.*lbf)

14. INSTALL OIL LEVEL GAGE GUIDE

- 15. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY NO.2**
 - (a) Install the exhaust manifold converter sub-assembly No. 2 (See page [EM-84](#)).
- 16. INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.2**
 - (a) Install the exhaust manifold heat insulator No. 2 (See page [EM-84](#)).
- 17. INSTALL MANIFOLD CONVERTER INSULATOR NO.3**
 - (a) Install the manifold converter insulator No. 3 (See page [EM-84](#)).
- 18. INSTALL EXHAUST PIPE SUPPORT BRACKET NO.1**
 - (a) Install the exhaust pipe support bracket No. 1 (See page [EM-120](#)).
- 19. INSTALL EXHAUST PIPE ASSEMBLY FRONT (See page [EX-6](#))**
- 20. INSTALL EXHAUST PIPE SUB-ASSEMBLY FRONT NO.3 (See page [EX-6](#))**
- 21. INSTALL CRANKSHAFT TIMING PULLEY**
 - (a) Install the crankshaft timing pulley (See page [EM-97](#)).
- 22. INSTALL TIMING BELT IDLER SUB-ASSEMBLY NO.1 (See page [CO-14](#))**
- 23. INSTALL TIMING BELT NO.3 COVER**
 - (a) Install the timing belt No. 3 cover (See page [EM-44](#)).
- 24. INSTALL CAMSHAFT TIMING PULLEY**
 - (a) Install the camshaft timing pulley (See page [EM-44](#)).
SST 09960-10010 (09962-01000, 09963-01000), 09249-63010
- 25. INSTALL TIMING BELT IDLER SUB-ASSEMBLY NO.2**
 - (a) Install the timing belt idler sub-assembly No. 2 (See page [EM-44](#)).
- 26. INSPECT TIMING BELT**
 - (a) Inspect timing belt (See page [EM-26](#)).
- 27. INSTALL TIMING BELT**
 - (a) Install the timing belt (See page [EM-26](#)).
SST 09960-10010 (09962-01000, 09963-01000)
- 28. INSTALL CHAIN TENSIONER ASSEMBLY NO.1**
 - (a) Install the chain tensioner assembly No. 1 (See page [EM-26](#)).
- 29. INSTALL TIMING BELT GUIDE NO.2**
 - (a) Install the timing belt guide No. 2 (See page [EM-26](#)).
- 30. INSTALL ENGINE MOUNTING BRACKET RH**
 - (a) Install the engine mounting bracket RH (See page [EM-26](#)).
- 31. INSTALL TIMING BELT NO.2 COVER**
 - (a) Install the timing belt No. 2 cover (See page [EM-26](#)).

- 32. INSTALL TIMING BELT NO.1 COVER**
 - (a) Install the timing belt No. 1 cover (See page [EM-26](#)).
- 33. INSTALL CRANKSHAFT PULLEY**
 - (a) Install the crankshaft pulley (See page [EM-26](#)).
SST 09213-54015 (91651-60855), 09330-00021
- 34. INSTALL GENERATOR BRACKET NO.2**
 - (a) Install the generator bracket No. 2 (See page [EM-26](#)).
- 35. INSTALL ENGINE MOUNTING STAY NO.2 RH**
 - (a) Install the engine mounting stay No. 2 RH (See page [EM-26](#)).
- 36. INSTALL ENGINE MOVING CONTROL ROD**
 - (a) Install the engine moving control rod (See page [EM-26](#)).
- 37. INSTALL VANE PUMP V BELT**
 - (a) Install the vane pump V belt (See page [EM-6](#)).
- 38. INSTALL GENERATOR ASSEMBLY**
 - (a) Install the generator assembly (See page [CH-15](#)).
- 39. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1**
 - (a) Install V (cooler compressor to crankshaft pulley) belt No. 1 (See page [EM-6](#)).
- 40. INSPECT DRIVE BELT DEFLECTION AND TENSION (REFERENCE)**
 - (a) Inspect drive belt deflection and tension (reference) (See page [EM-1](#)).
- 41. INSTALL COWL TOP PANEL SUB-ASSEMBLY OUTER (See page [FU-16](#))**
- 42. INSTALL WINDSHIELD WIPER LINK ASSEMBLY (See page [WW-39](#))**
- 43. INSTALL FR WIPER ARM LH (See page [WW-39](#))**
- 44. INSTALL FR WIPER ARM RH (See page [WW-40](#))**
- 45. INSTALL FRONT WHEEL RH**
- 46. ADD ENGINE OIL (See page [LU-5](#))**
- 47. CHECK FOR ENGINE OIL LEAKS**
- 48. CHECK FOR EXHAUST GAS LEAKS**