

REPLACEMENT

1. REMOVE HOOD SUB-ASSY

- (a) Remove the 4 bolts, then remove the hood.

2. REMOVE COWL TOP VENTILATOR LOUVER CENTER NO.1

(See Pub. No. RM864E, page 66-9)

3. REMOVE FRONT WIPER ARM HEAD CAP

4. REMOVE FR WIPER ARM LH (See Pub. No. RM864E, page 66-9)

5. REMOVE FR WIPER ARM RH (See Pub. No. RM864E, page 66-9)

6. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSY (See Pub. No. RM864E, page 66-9)

7. REMOVE WIPER LINK ASSY (See Pub. No. RM864E, page 66-9)

8. REMOVE COWL TOP PANEL SUB-ASSY OUTER (See page 10-16)

9. REMOVE FRONT WHEEL RH

10. REMOVE ENGINE UNDER COVER RH

11. DRAIN ENGINE OIL

- (a) Install a new gasket and drain plug after draining engine oil.

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

12. REMOVE EXHAUST PIPE ASSY FRONT (See page 15-2)

13. REMOVE FAN AND GENERATOR V-BELT (See page 14-5)

14. REMOVE GENERATOR ASSY (See page 19-15)

15. SEPARATE VANE PUMP ASSY (See page 14-22)

16. SEPARATE BRAKE MASTER CYLINDER RESERVOIR SUB-ASSY (See page 14-22)

17. SEPARATE VANE PUMP OIL RESERVOIR ASSY (See page 14-22)

18. REMOVE ENGINE COVER SUB-ASSY NO.1

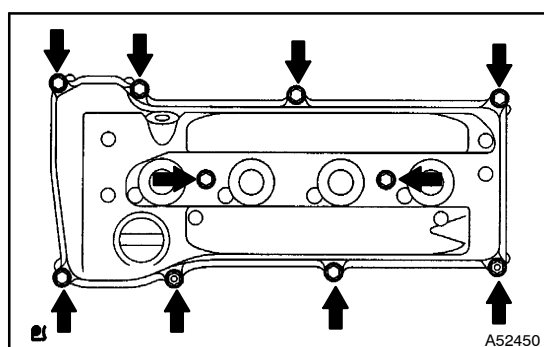
- (a) Remove the 2 nuts, then remove the engine cover No. 1.

19. REMOVE IGNITION COIL ASSY

- (a) Remove the 4 bolts, then remove the 4 ignition coils.

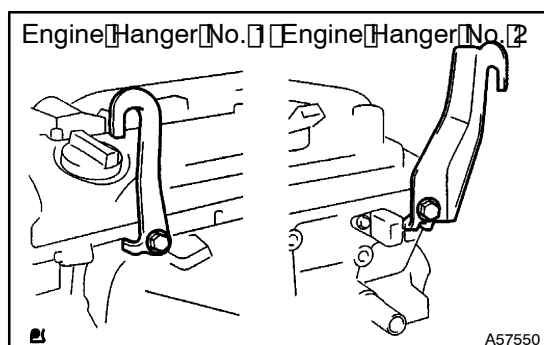
20. SEPARATE VENTILATION HOSE

21. SEPARATE VENTILATION HOSE NO.2



22. REMOVE CYLINDER HEAD COVER SUB-ASSY

- (a) Remove the bolt, then separate the wire harness.
(b) Remove the 8 bolts and 2 nuts, then remove the cylinder head cover.



23. INSTALL ENGINE HANGER NO.1

- (a) Install the engine hanger No. 1 (12281-28010, 28020, 28030) with the bolt (91512-61020).

Torque: 38 N·m (387 kgf·cm, 28 ft·lbf)

24. INSTALL ENGINE HANGER NO.2

- (a) Install the engine hanger No. 2 (12282-28010, 28020, 28030) with the bolt (91512-61020).

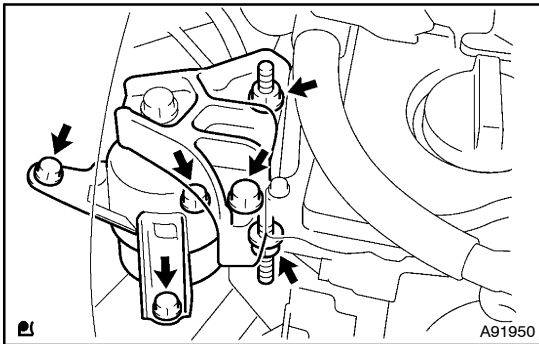
Torque: 38 N·m (387 kgf·cm, 28 ft·lbf)

25. REMOVE TRANSVERSE ENGINE ENGINE MOUNTING INSULATOR

- (a) Using a chain block or sling device, hang the engine.

NOTICE:

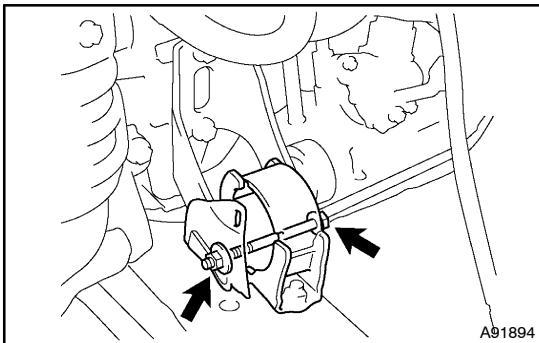
- **Confirm that the engine is stable by swinging it lightly with hand.**
- **Do not swing the engine strongly while it is being held.**



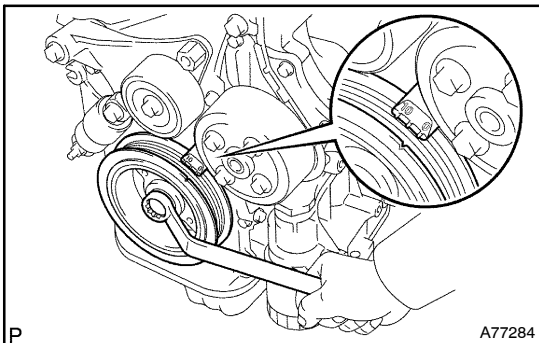
- (b) Remove the 4 bolts and 2 nuts, then remove the engine mounting insulator RH.

NOTICE:

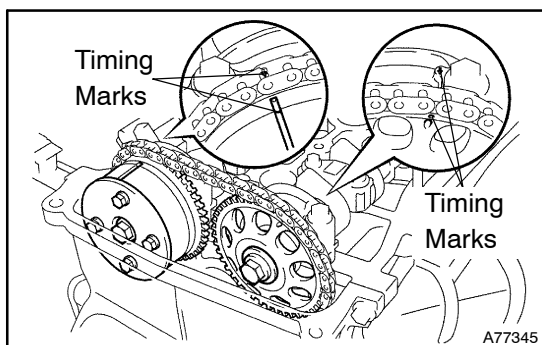
- **Remove the engine mounting bracket RH with engine mounting insulator RH not to damage the return tube and brake tube.**
- **Do not disconnect the engine mounting bracket RH and engine mounting insulator RH.**

**26. SEPARATE TRANSVERSE ENGINE ENGINE MOUNTING INSULATOR**

- (a) Remove the installed bolt, then separate the engine mounting insulator FR.

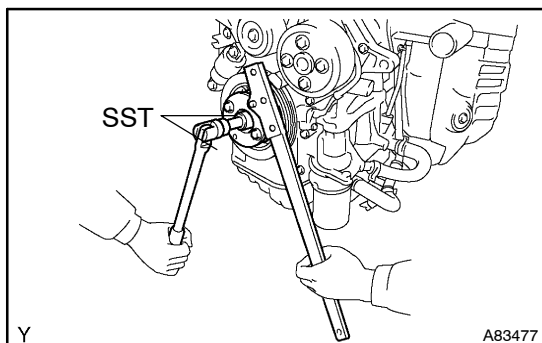
**27. SET NO. 1 CYLINDER TO TDC/COMPRESSION**

- (a) Turn the crankshaft pulley, then align its groove with timing mark 0 of the timing chain cover.



- (b) Check that each timing mark of the camshaft timing gears is aligned with the timing marks of the No. 1 and No. 2 bearing caps as shown in the illustration.

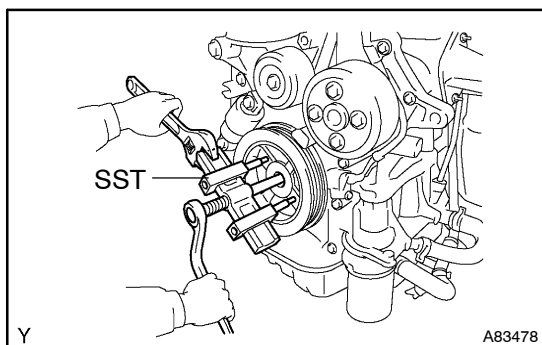
If not, turn the crankshaft 1 revolution (360°), then align the marks as above.



28. REMOVE CRANKSHAFT PULLEY

- (a) Using SST, hold the crankshaft pulley, then loosen a crankshaft pulley bolt.

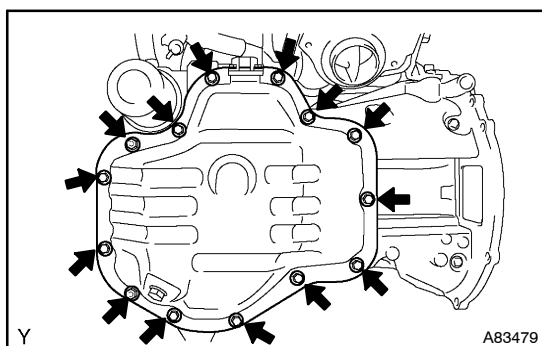
SST 09213-54015 (91651-60855), 09330-00021



- (b) Using a crankshaft pulley bolt and SST, then remove the crankshaft pulley.

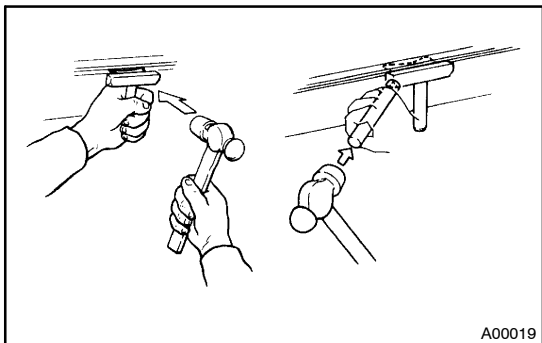
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

29. REMOVE CRANKSHAFT POSITION SENSOR (See page 18-6)



30. REMOVE OIL PAN SUB-ASSY

- (a) Remove the 12 bolts and 2 nuts.

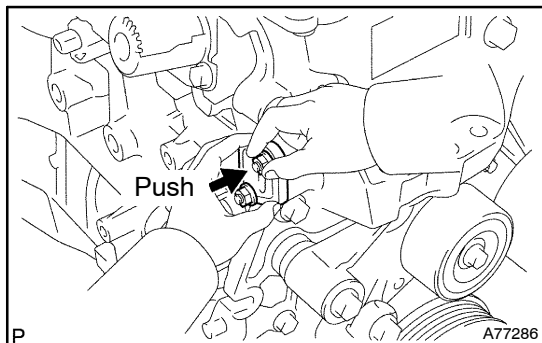


- (b) Insert the blade of SST among the crank case, timing chain cover and oil pan, then cut off applied sealer and remove the oil pan.

SST 09032-00100

NOTICE:

Be careful not to damage the contact surface of the timing chain cover, crank case and oil pan.

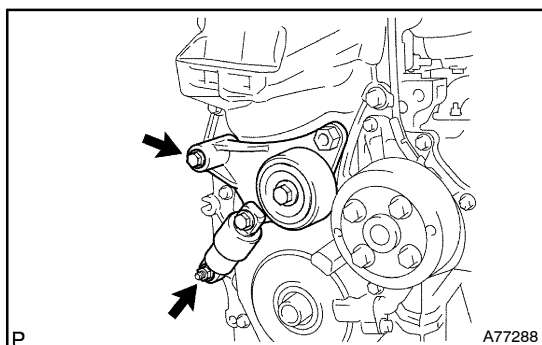


31. REMOVE CHAIN TENSIONER ASSY NO.1

- (a) Remove the 2 nuts, the chain tensioner No. 1 and gasket.

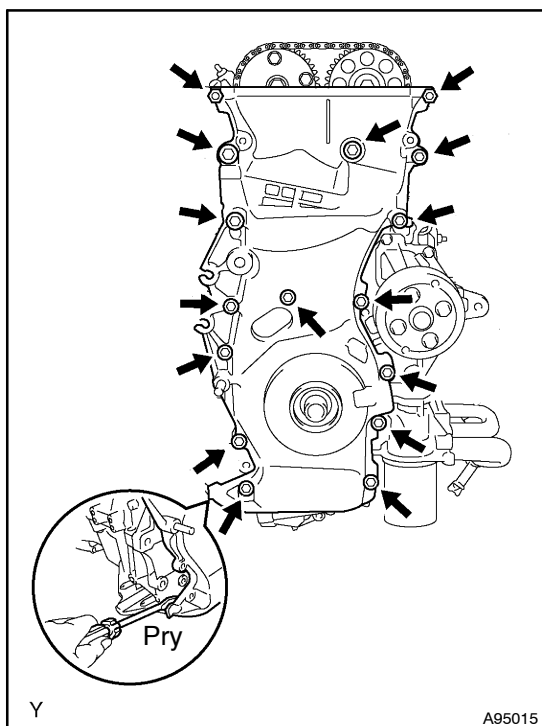
NOTICE:

Do not turn the crankshaft.



32. REMOVE V-RIBBED BELT TENSIONER ASSY

- (a) Remove the bolt and nut, then remove the V-ribbed belt tensioner.



33. REMOVE TIMING CHAIN OR BELT COVER SUB-ASSY

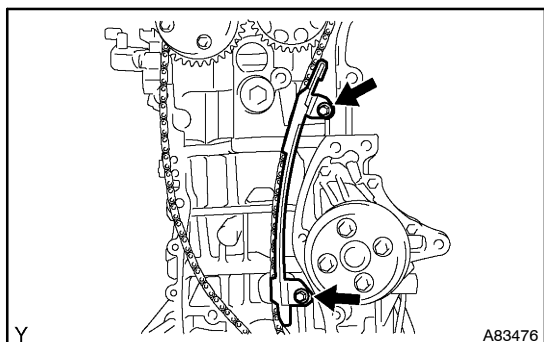
- (a) Remove the 14 bolts and 2 nuts.
 (b) Using a screwdriver, pry between the timing chain cover and cylinder head or cylinder block.
 (c) Remove the timing chain cover.

NOTICE:

Be careful not to damage the contact surface of the timing chain cover, cylinder head and cylinder block.

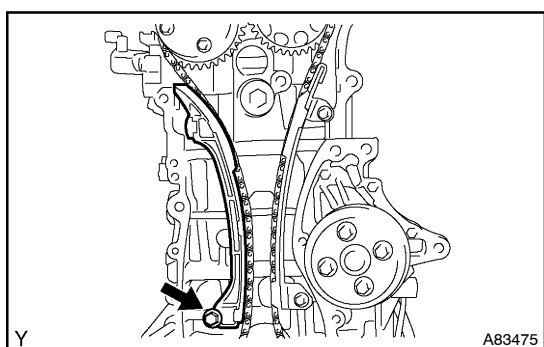
34. REMOVE TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL (See page 14-71)

35. REMOVE CRANKSHAFT POSITION SENSOR PLATE NO.1



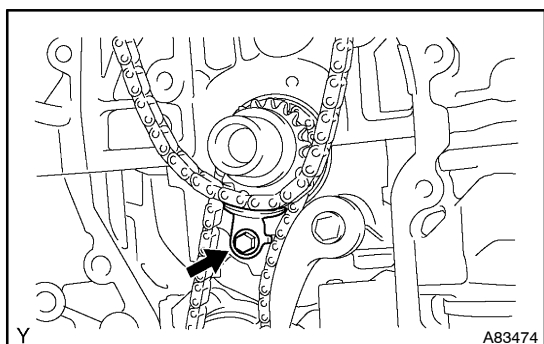
36. REMOVE CHAIN VIBRATION DAMPER NO.1

- (a) Remove the 2 bolts and chain vibration damper.



37. REMOVE CHAIN TENSIONER SLIPPER

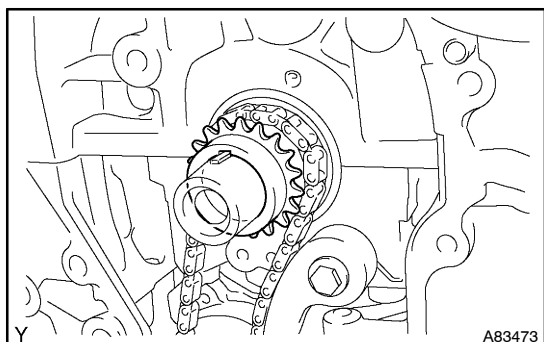
- (a) Remove the bolt and chain tensioner slipper.



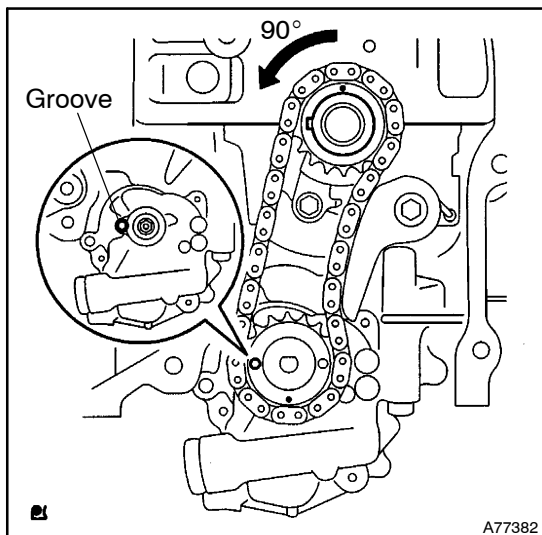
38. REMOVE TIMING CHAIN GUIDE

- (a) Remove the bolt and timing chain guide.

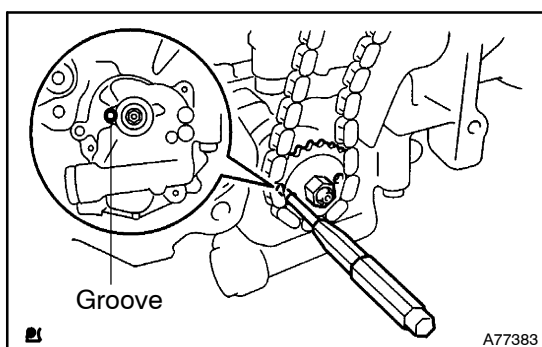
39. REMOVE CHAIN SUB-ASSY



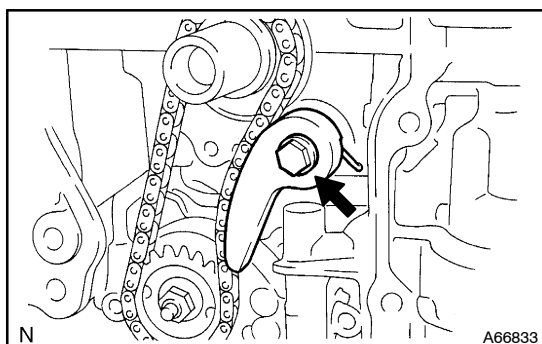
40. REMOVE CRANKSHAFT TIMING GEAR OR SPROCKET

**41. REMOVE NO.2 CHAIN SUB-ASSY**

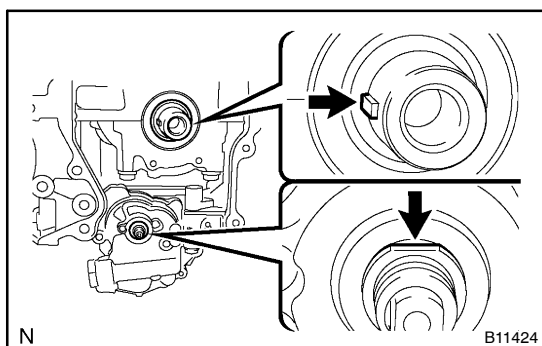
- (a) Turn the crankshaft counterclockwise by 90°, then align an adjusting hole of the oil pump drive shaft gear with the groove of the oil pump.



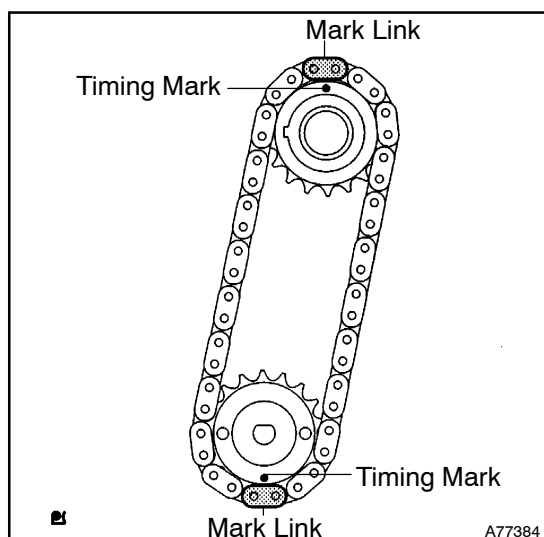
- (b) Put a 4 mm diameter bar in the adjusting hole of the oil pump drive shaft gear to lock in position, then remove the nut.



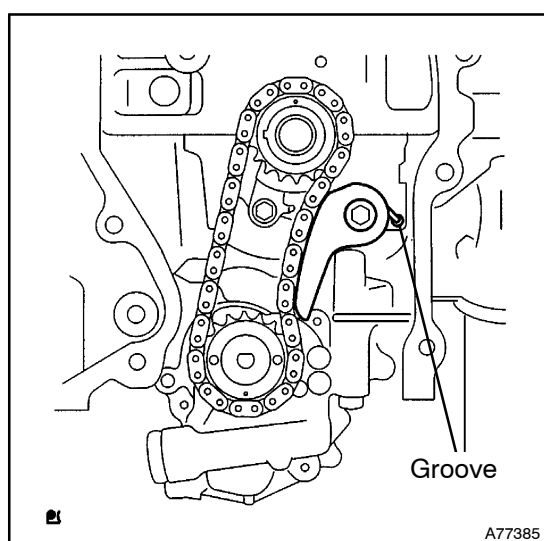
- (c) Remove the bolt, then remove the chain tensioner and spring.
(d) Remove the oil pump drive shaft gear and chain No. 2.

**42. INSTALL NO.2 CHAIN SUB-ASSY**

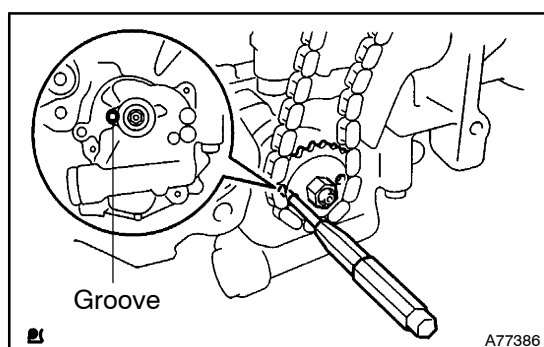
- (a) Set the crankshaft key to the left side position.
(b) Position the flat portion of the drive shaft upward.



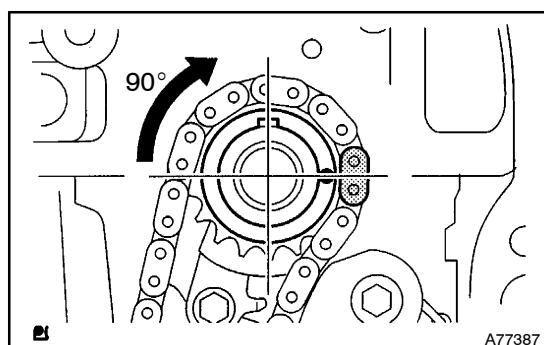
- (c) Align the mark links (yellow colored links) with the timing marks of each gear as shown in the illustration.
- (d) Install the gears to the crankshaft and oil pump shaft wrapped with the chain.
- (e) Temporarily tighten the oil pump drive shaft gear with the nut.



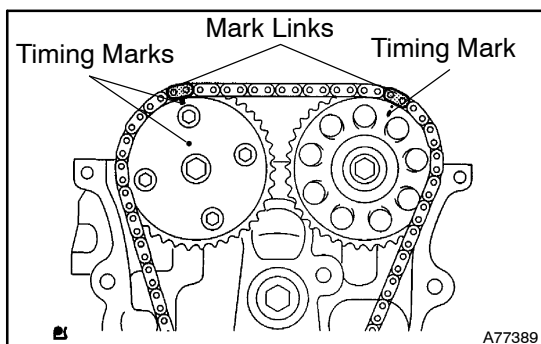
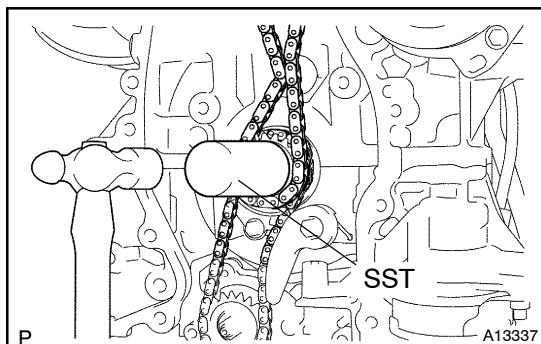
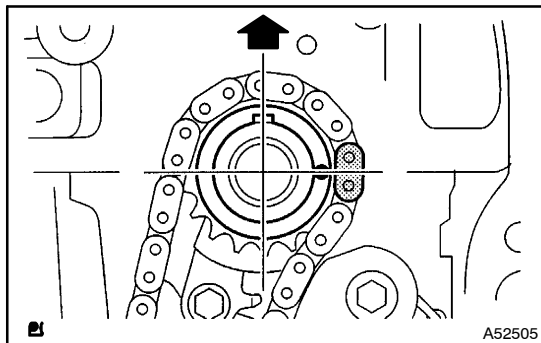
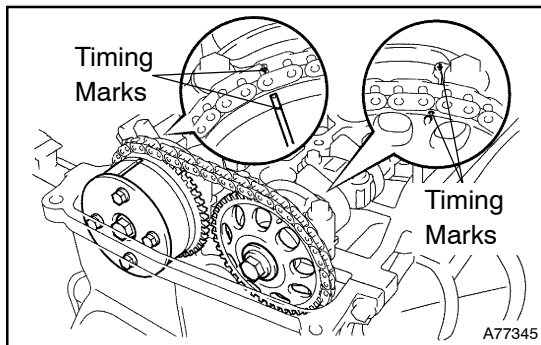
- (f) Insert the damper spring into the adjusting hole, then install the chain tensioner plate with the bolt.
Torque: 12 N·m (122 kgf·cm, 8.9 ft·lbf)



- (g) Align an adjusting hole of the sprocket with the groove of the oil pump.
- (h) Insert a 4 mm diameter bar into the adjusting hole of the sprocket to lock in position, then tighten the nut.
Torque: 30 N·m (301 kgf·cm, 22 ft·lbf)



- (i) Rotate the crankshaft clockwise by 90°, then position the crankshaft key upward.

43. INSTALL CHAIN VIBRATION DAMPER NO.1**Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)****44. INSTALL CHAIN SUB-ASSY**

(a) Set No. 1 cylinder to TDC / compression.

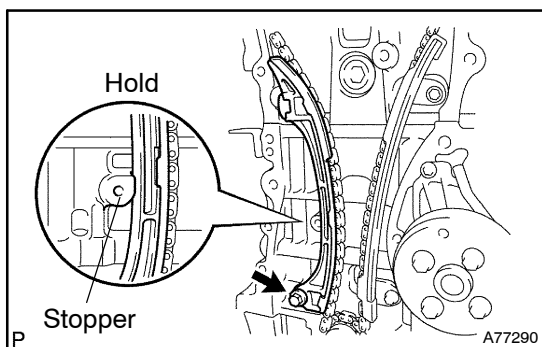
(1) Turn the camshafts with a wrench on the hexagonal lobe, then align the timing marks of the camshaft timing gear with each timing mark located on the No. 1 and No. 2 bearing caps as shown in the illustration.

(2) Using the crankshaft pulley bolt, turn the crankshaft and position the key on the crankshaft upward.

(b) Using SST, install the crankshaft timing gear holding the chain.

SST 09309-37010

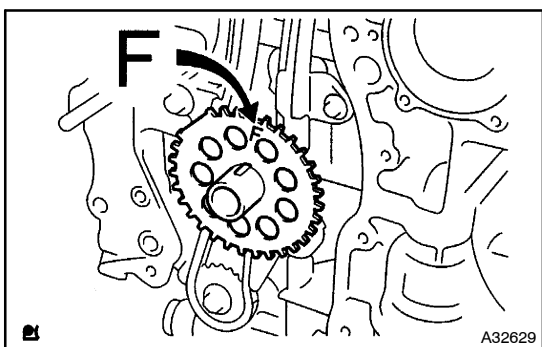
(c) Align the mark links (gold or yellow colored links) with each timing mark located on the camshaft timing gears, then install the chain.

**45. INSTALL CHAIN TENSIONER SLIPPER**

- (a) Install the chain tensioner slipper with bolt.
Torque: 19 N·m (195 kgf·cm, 14 ft·lb)
- (b) Check that the chain tensioner slipper is held on the cylinder block stopper.

46. INSTALL TIMING CHAIN GUIDE

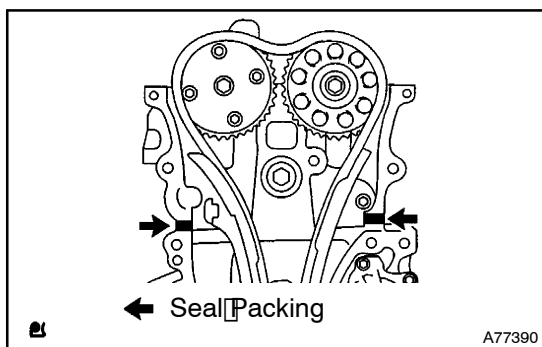
Torque: 9.0 N·m (92 kgf·cm, 80 in.·lb)

**47. INSTALL CRANKSHAFT POSITION SENSOR PLATE NO.1**

- (a) Install the plate with the "F" mark facing forward.

48. INSTALL TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL (See page 14-71)

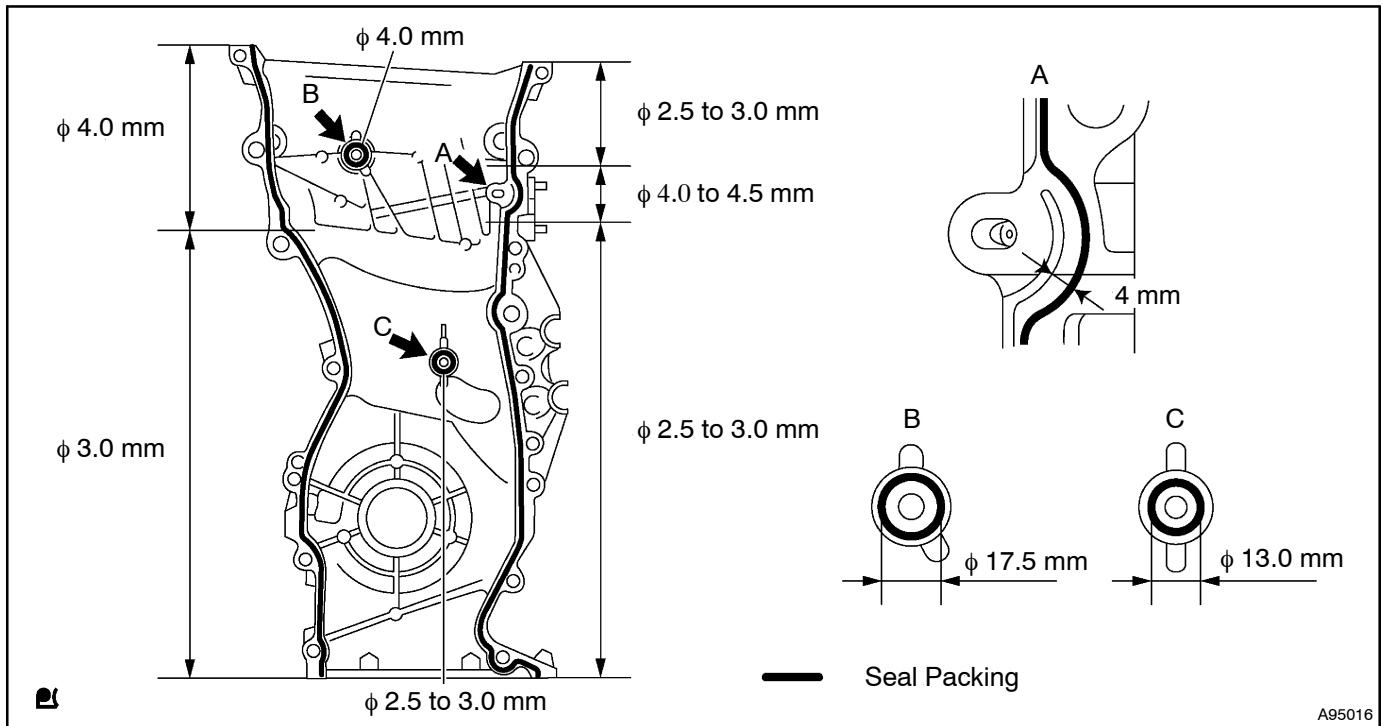
SST 09223-22010

**49. INSTALL TIMING CHAIN OR BELT COVER SUB-ASSY NOTICE:**

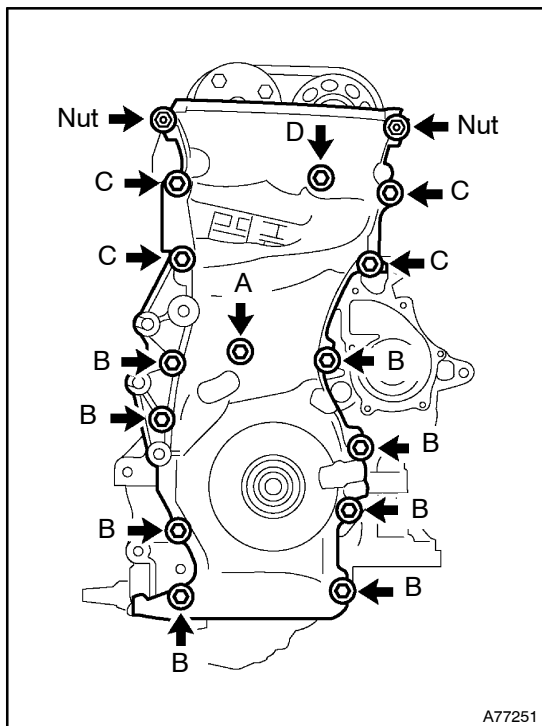
- Remove any oil from the contact surface.
 - Install the chain cover within 3 minutes after applying seal packing.
 - Do not start the engine within 2 hours of installation.
- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the timing chain cover.
 - (b) Apply a continuous bead (Diameter 2 mm (0.09 in.)) of seal packing as shown in the illustration.
Seal packing: Part No. 08826 - 00080 or equivalent.

- (c) Apply a continuous bead (Diameter 3 to 4 mm (0.118 to 0.157 in.)) of seal packing as shown in the illustration.

Seal packing: Part No. 08826 - 00080 or equivalent



A95016



A77251

- (d) Install the timing chain cover with the 14 bolts and 2 nuts.

Torque:

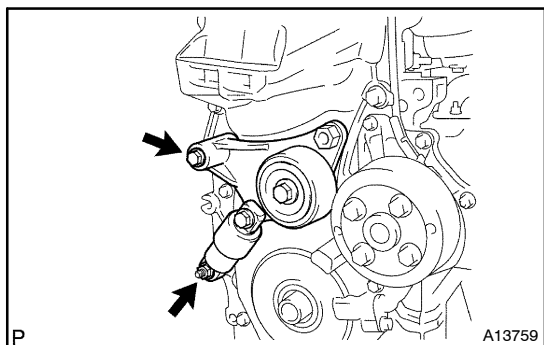
9.0 N·m (92 kgf·cm, 80 in·lbf) for bolt A

21 N·m (214 kgf·cm, 15 ft·lbf) for bolt B

43 N·m (438 kgf·cm, 32 ft·lbf) for bolt C

43 N·m (438 kgf·cm, 32 ft·lbf) for bolt D

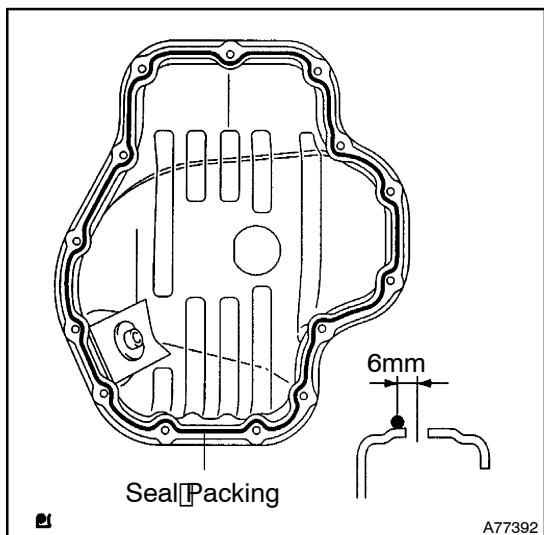
11 N·m (112 kgf·cm, 8.1 ft·lbf) for nut

**50. INSTALL V-RIBBED BELT TENSIONER ASSY**

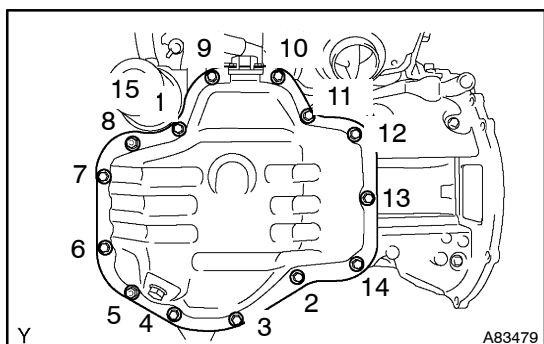
- (a) Install the V-ribbed belt tensioner with the bolt and nut.
Torque: **60 N·m (610 kgf·cm, 44 ft·lbf)**

NOTICE:

The drive tensioner should be fastened together with the timing chain cover, so be sure to install it within 5 minutes after the timing chain cover is installed.

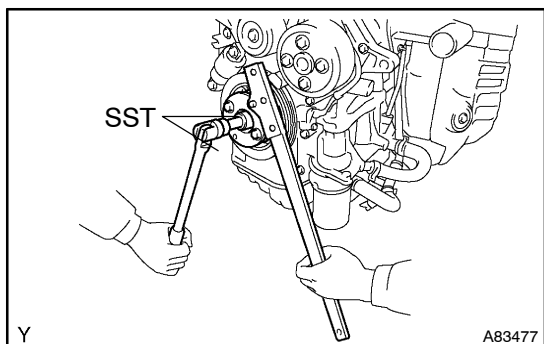
**51. INSTALL OIL PAN SUB-ASSY****NOTICE:**

- Remove any oil from the contact surface.
 - Install the oil pan within 3 minutes after applying seal packing.
 - Do not start the engine within 2 hours of installation.
- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surface of the cylinder block and oil pan.
- (b) Apply a continuous bead (Diameter 3 to 4 mm (0.118 to 0.157 in.)) of seal packing as shown in the illustration, then install the oil pan.
- Seal packing: part No. 08826 - 00080 or equivalent**

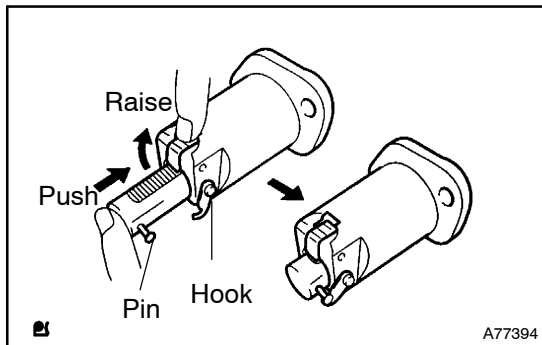


- (c) Install the oil pan with the 12 bolts and 2 nuts in the sequence shown in the illustration.

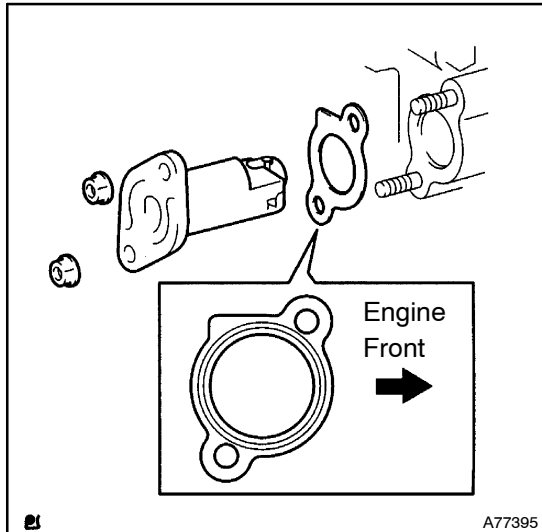
Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

52. INSTALL CRANK POSITION SENSOR (See page 18-6)**53. INSTALL CRANKSHAFT PULLEY**

- (a) Using SST, tighten the set bolt.
SST 09213-54015 (91651-60855), 09330-00021
Torque: 180 N·m (1,835 kgf·cm, 133 ft·lbf)

**54. INSTALL CHAIN TENSIONER ASSY NO.1**

- (a) Release the ratchet pawl, then fully push in the plunger and apply the hook to the pin so that the plunger is located in position.

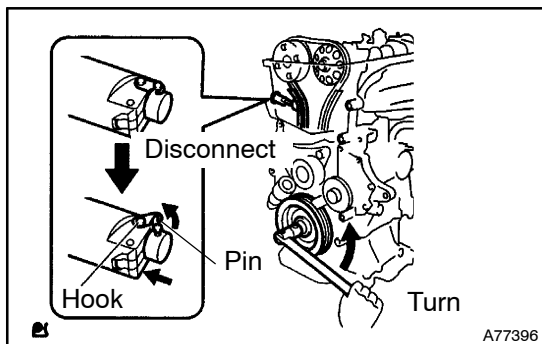


- (b) Install a new gasket chain tensioner with the 2 nuts.

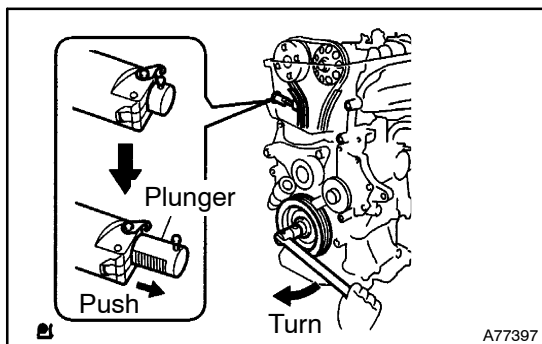
Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

NOTICE:

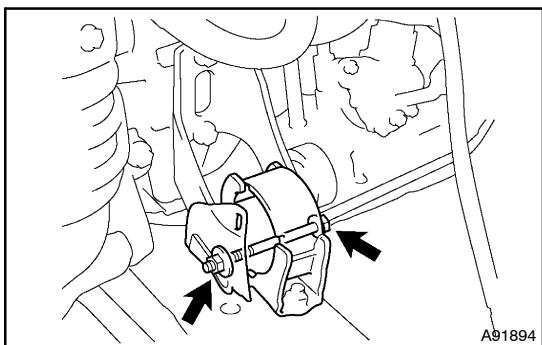
If the hook is released while inserting, apply the hook again and insert the chain tensioner.



- (c) Turn the crankshaft counterclockwise, then check that the hook is disengaged from the plunger knock pin.



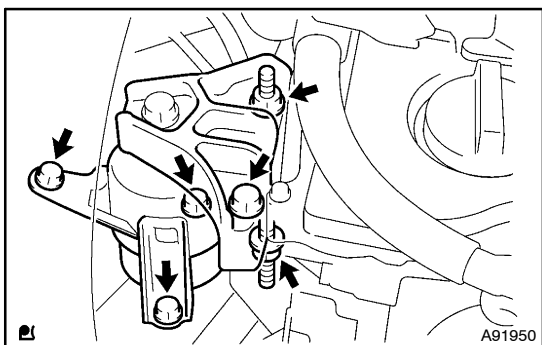
- (d) Turn the crankshaft clockwise, then check that the plunger is extended.



55. INSTALL TRANSVERSE ENGINE ENGINE MOUNTING INSULATOR

- (a) Install the engine mounting insulator FR with the bolt and nut.

Torque: 56 N·m (571 kgf·cm, 41 ft·lbf)



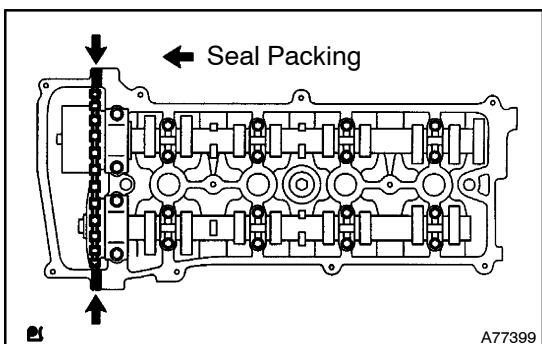
56. INSTALL TRANSVERSE ENGINE ENGINE MOUNTING INSULATOR

- (a) Install the engine mounting insulator RH with the 4 bolts and 2 nuts.

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

NOTICE:

- Install the engine mounting bracket RH with engine mounting insulator RH not to damage the return tube and brake tube.
- Do not disconnect the engine mounting bracket RH and engine mounting insulator RH.



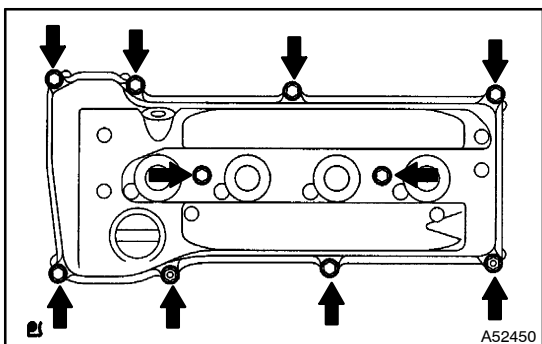
57. INSTALL CYLINDER HEAD COVER SUB-ASSY

- (a) Remove any old seal packing (FIPG) material.
(b) Apply seal packing to the 2 locations as shown in the illustration.

Seal Packing: Part No. 08826-00080 or equivalent

NOTICE:

- Remove any oil from the contact surface.
- Install the cylinder head cover within 5 minutes after applying seal packing.
- Do not expose the seal to engine oil within 2 hours of installation.



- (c) Install the cylinder head cover with the 9 bolts and 2 nuts.

Torque:

11 N·m (112 kgf·cm, 8 ft·lbf)

58. **INSTALL IGNITION COIL ASSY**
Torque: 9.0 N·m (92 kgf·cm, 80 in. lbf)
59. **INSTALL ENGINE COVER SUB-ASSY NO.1**
Torque: 9.0 N·m (92 kgf·cm, 80 in. lbf)
60. **INSTALL VANE PUMP ASSY** (See page 14-22)
61. **INSTALL BRAKE MASTER CYLINDER RESERVOIR SUB-ASSY**
62. **INSTALL GENERATOR ASSY** (See page 19-15)
63. **INSTALL FAN AND GENERATOR V-BELT** (See page 14-5)
SST 09249-63010
64. **INSTALL EXHAUST PIPE ASSY FRONT** (See page 15-2)
65. **INSTALL FRONT WHEEL RH**
Torque: 103 N·m (1,050 kgf·cm, 76 ft lbf)
66. **INSTALL WIPER LINK ASSY** (See Pub. No. RM864E, page 66-9)
67. **INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSY**
68. **INSTALL FR WIPER ARM RH** (See Pub. No. RM864E, page 66-9)
69. **INSTALL FR WIPER ARM LH** (See Pub. No. RM864E, page 66-9)
70. **INSTALL COWL TOP VENTILATOR LOUVER CENTER NO.1**
71. **INSTALL HOOD SUB-ASSY**
72. **ADJUST HOOD SUB-ASSY** (See Pub. No. RM864E, page 75-1)
73. **ADD ENGINE OIL** (See page 17-12)
74. **INSPECT OIL LEAK**
75. **CHECK FOR EXHAUST GAS LEAKS**