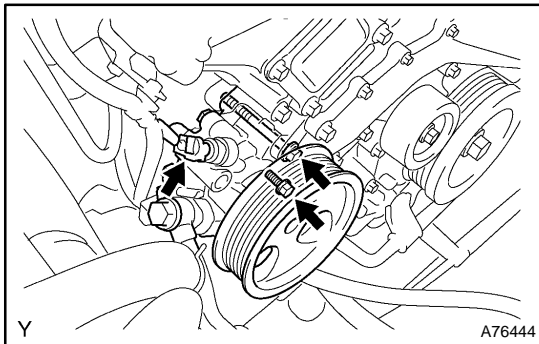


## REPLACEMENT

### HINT:

Refer to CAMSHAFT (RH BANK) or CAMSHAFT (LH BANK) for the replacement procedure of the No. 2 chain.

1. REMOVE POWER STEERING LINK ASSY (See Pub No. RM1001U on page 51-20)
2. REMOVE DIFFERENTIAL CARRIER ASSY FRONT (4WD DRIVE TYPE) (See page 29-3 )
3. DRAIN ENGINE COOLANT (See page 16-5 )
4. DRAIN ENGINE OIL (See page 17-4 )
5. REMOVE BATTERY
6. REMOVE V-BANK COVER (See page 10-7 )
7. REMOVE RADIATOR SUPPORT SEAL UPPER
  - (a) Remove the 11 clips and radiator support seal upper.
8. LOOSEN FAN W/ FLUID COUPLING (See page 16-6 )
9. REMOVE FAN AND GENERATOR V BELT (See page 14-5 )
10. REMOVE FAN W/ FLUID COUPLING (See page 16-6 )
11. DISCONNECT VENTILATION HOSE NO.2 (See page 10-7 )
12. REMOVE AIR CLEANER ASSY (See page 10-7 )
13. REMOVE OIL LEVEL GAUGE GUIDE
  - (a) Remove the oil level gauge.
  - (b) Remove the bolt and pull out the oil level gauge guide.
  - (c) Remove the O-ring from the oil level gauge guide.
14. REMOVE WATER INLET (See page 16-6 )



### 15. SEPARATE VANE PUMP ASSY

- (a) Disconnect the P/S oil pressure switch connector.
- (b) Remove the 2 bolts, and separate the vane pump.

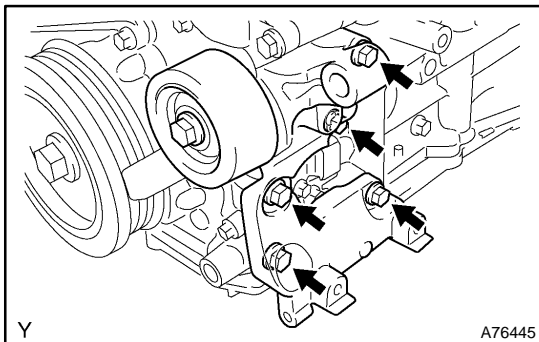
#### NOTICE:

Do not hit the pulley to other parts when separating the vane pump.

#### HINT:

The vane pump is suspended securely.

16. REMOVE GENERATOR ASSY (See page 19-26 )
17. SEPARATE COOLER COMPRESSOR ASSY (See page 18-7 )



### 18. REMOVE V-RIBBED BELT TENSIONER ASSY

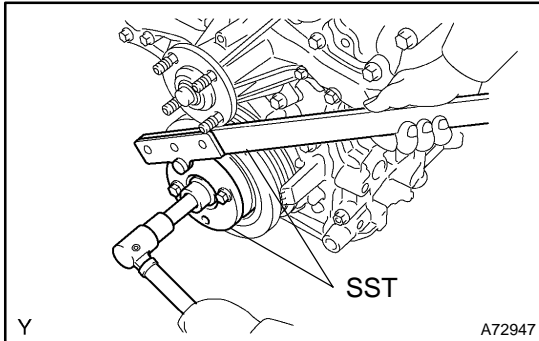
- (a) Remove the 5 bolts and V-ribbed belt tensioner.

**19. REMOVE IDLER PULLEY SUB-ASSY NO.2**

- (a) Remove the 2 bolts and 2 idler pulleys.

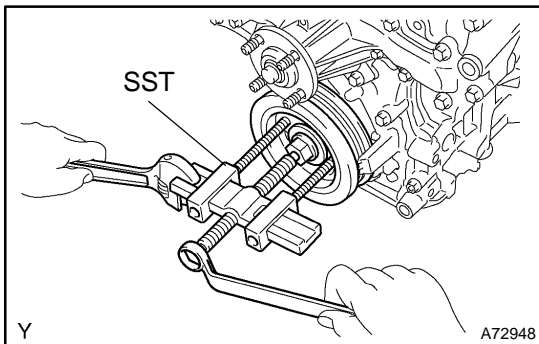
**20. REMOVE IDLER PULLEY SUB-ASSY NO.1**

- (a) Remove the bolt and idler pulley.

**21. REMOVE CRANKSHAFT PULLEY**

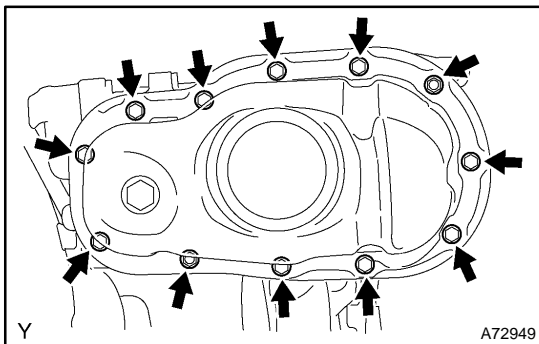
- (a) Using SST, hold the crankshaft pulley and loosen the pulley set bolt.

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

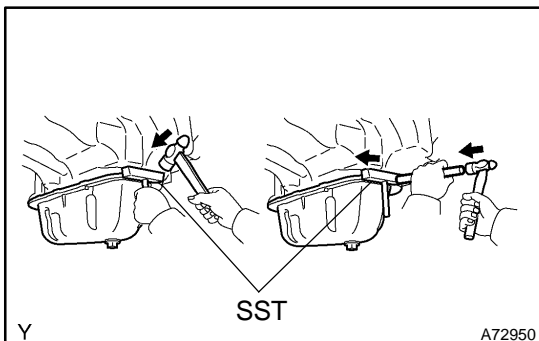


- (b) Using the pulley set bolt and SST, remove the crankshaft pulley.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05030)

**22. REMOVE OIL PAN SUB-ASSY NO.2**

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

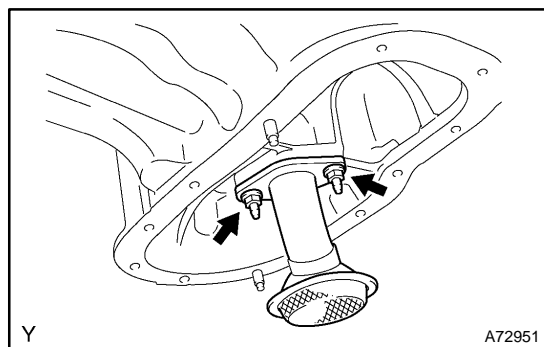


- (b) Insert the blade of SST between the oil pan and oil pan No. 2, cut off applied sealer from and remove the oil pan No. 2.

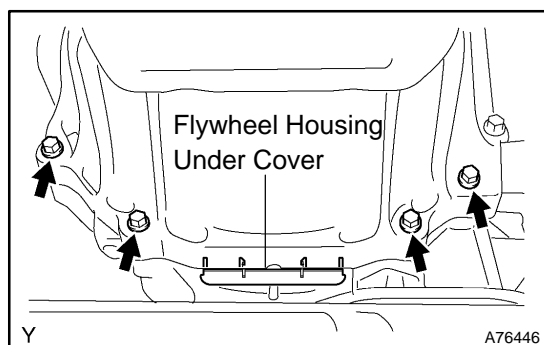
SST 09032-00100

**NOTICE:**

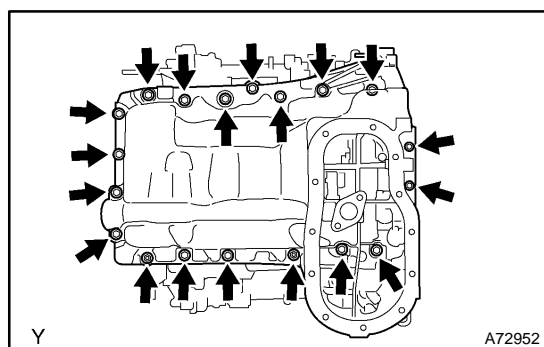
- Be careful not to damage the contact surface of the oil pan and oil pan No. 2.
- Be careful not to damage the oil pan No. 2 flange.

**23. REMOVE OIL STRAINER SUB-ASSY**

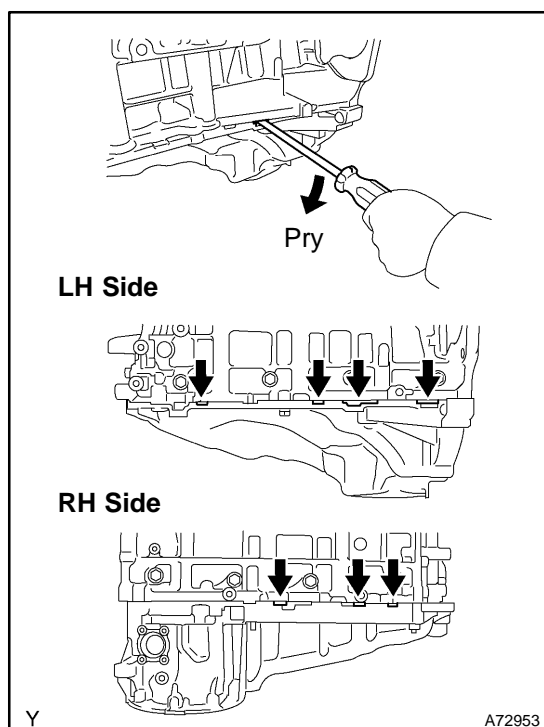
- (a) Remove the 2 nuts, oil strainer and gasket.

**24. REMOVE OIL PAN SUB-ASSY**

- (a) Remove the 4 housing bolts.  
(b) Remove the flywheel housing under cover.



- (c) Remove 17 bolts and 2 nuts.



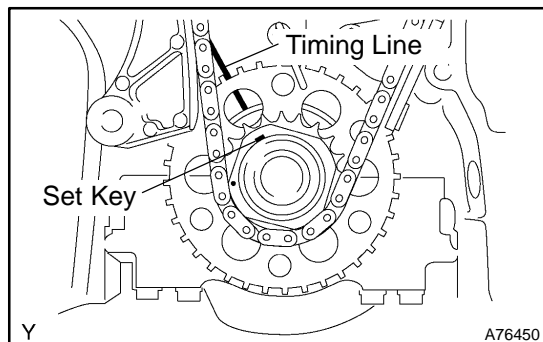
- (d) Using a screwdriver, remove the oil pan by prying between the oil pan and cylinder block in the sequence shown.

**NOTICE:**

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

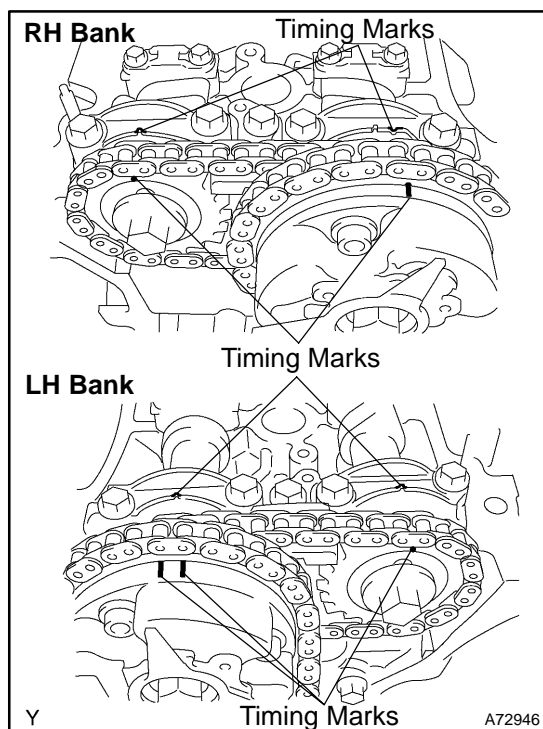
- (e) Remove the O-ring from the oil pump.

25. REMOVE INTAKE AIR SURGE TANK (See page 14-132 )
26. REMOVE IGNITION COIL ASSY
27. REMOVE CYLINDER HEAD COVER SUB-ASSY (See page 14-132 )
28. REMOVE CYLINDER HEAD COVER SUB-ASSY LH (See page 14-132 )
29. REMOVE CAMSHAFT TIMING OIL CONTROL VALVE ASSY
  - (a) Disconnect the 2 oil control valve connectors.
  - (b) Remove the 2 bolts and 2 camshaft timing oil control valves.
30. REMOVE VVT SENSOR (See page 18-5 )
31. REMOVE TIMING CHAIN OR BELT COVER SUB-ASSY (See page 17-12 )
32. REMOVE TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL (See page 17-12 )



### 33. SET NO. 1 CYLINDER TO TDC/COMPRESSION

- (a) Using the crankshaft pulley set bolt, turn the crankshaft to align the crankshaft set key with the timing line of the cylinder block.



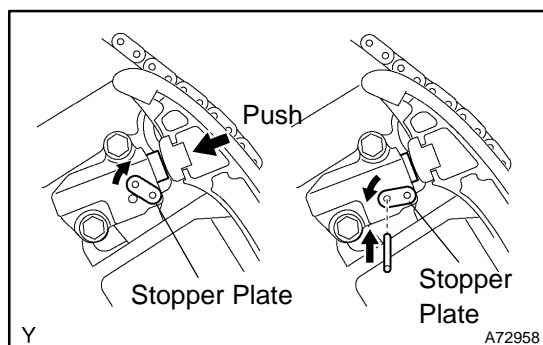
- (b) Check that the timing marks of the camshaft timing gears are aligned with the timing marks of the bearing cap as shown in the illustration.

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

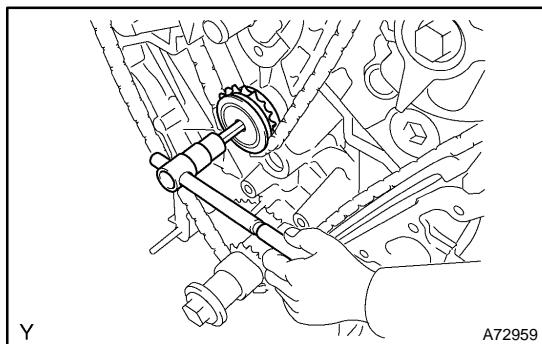
### 34. REMOVE CHAIN TENSIONER ASSY NO.1

#### NOTICE:

- Never rotate the crankshaft with the chain tensioner removed.
- When rotating the camshaft with the timing chain removed, rotate the crankshaft counterclockwise 40° from the TDC first.



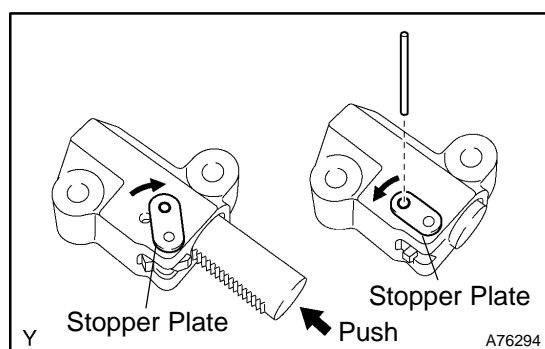
- (a) While turning the stopper plate of the tensioner upward, push in the plunger of the chain tensioner as shown in the illustration.
- (b) While turning the stopper plate of the tensioner downward, insert a bar of  $\phi 3.5$  mm (0.138 in.) into the holes in the stopper plate and tensioner to fix the stopper plate.
- (c) Remove the 2 bolts and chain tensioner.

**35. REMOVE CHAIN TENSIONER SLIPPER****36. REMOVE IDLE GEAR NO.1**

- (a) Using a 10 mm hexagon wrench, remove the idle gear shaft No. 2, idle gear No. 1 and idle gear shaft No. 1.

**37. REMOVE CHAIN VIBRATION DAMPER NO.2**

- (a) Remove the 2 chain vibration damper No. 2.

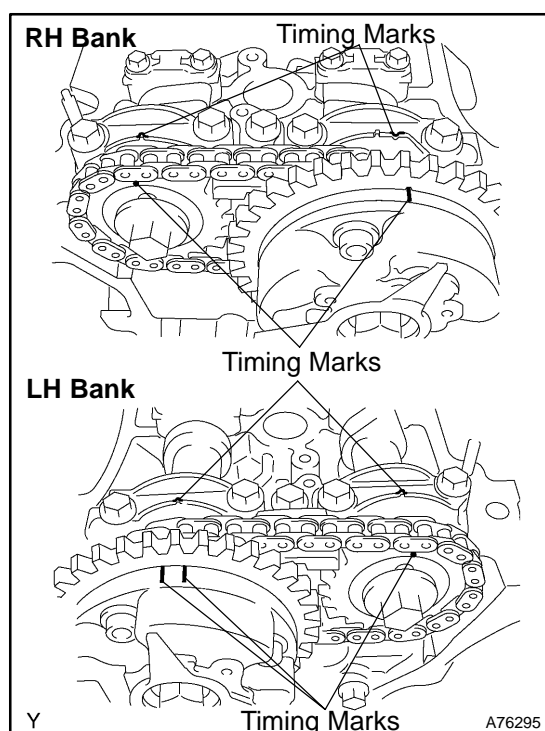
**38. REMOVE CHAIN SUB-ASSY****39. INSTALL CHAIN TENSIONER SLIPPER****40. INSTALL CHAIN TENSIONER ASSY NO.1**

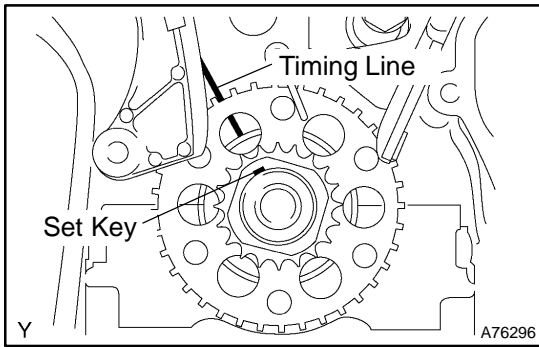
- (a) While turning the stopper plate of the tensioner clockwise, push in the plunger of the tensioner as shown in the illustration.
- (b) While turning the stopper plate of the tensioner counter-clockwise, insert a bar of  $\phi$  3.5 mm (0.138 in.) into the holes in the stopper plate and tensioner to fix the stopper plate.
- (c) Install the chain tensioner with the 2 bolts.

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

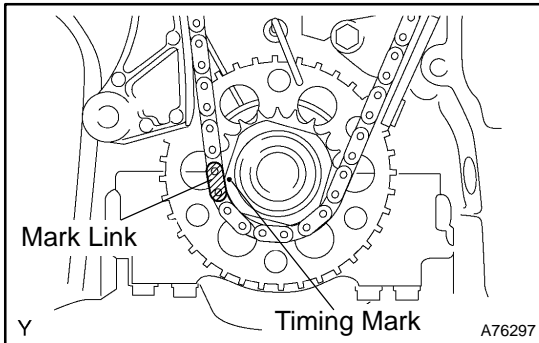
**41. INSTALL CHAIN SUB-ASSY**

- (a) Set the No. 1 cylinder to TDC/ compression.
- (1) Align the timing marks of the camshaft timing gears and bearing caps.

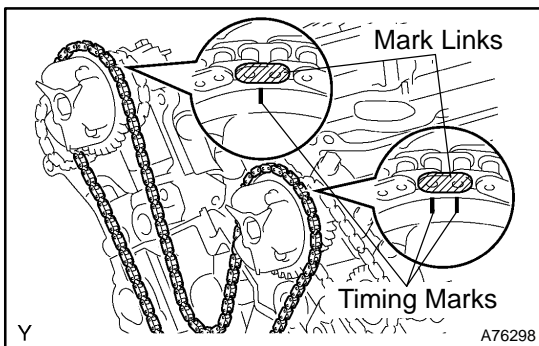




- (2) Using the crankshaft pulley set bolt, turn the crankshaft to align the crankshaft set key with the timing line of the cylinder block.



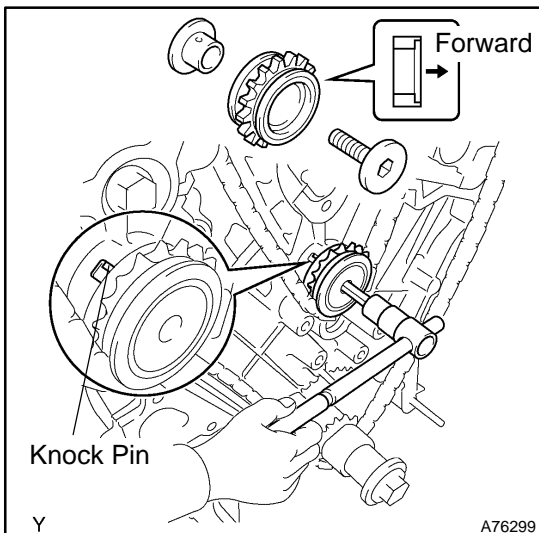
- (b) Align the mark link (yellow) with the timing mark of the crankshaft timing gear.



- (c) Align the mark links (orange) with the timing marks of the camshaft timing gears, and install the chain.

## 42. INSTALL CHAIN VIBRATION DAMPER NO.2

- (a) Instal the 2 chain vibration damper No. 2.



## 43. INSTALL IDLE GEAR NO.1

- (a) Apply a light coat of engine oil to rotating surface of the idle gear shaft No. 1.  
 (b) Temporarily install the idle gear shaft No. 1 and idle gear No. 1 with the idle gear shaft No. 2 while aligning the knock pin of the idle gear shaft No. 1 with the knock pin groove of the cylinder block.

### NOTICE:

**Be careful of the idle gear direction.**

- (c) Using a 10 mm hexagon wrench, tighten the idle gear shaft No. 2.

**Torque: 60 N·m (612 kgf·cm, 44 ft·lbf)**

- (d) Remove the bar from the chain tensioner.

**44. INSTALL TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL (See page 17-12 )**

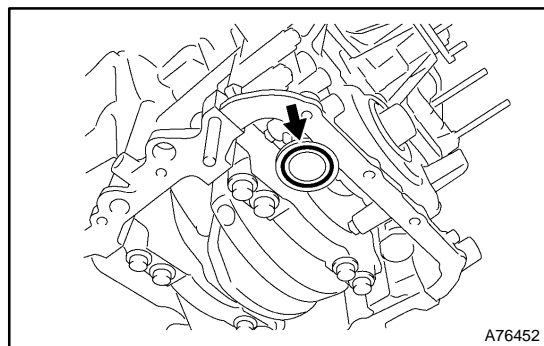
SST 09226-10010

**45. INSTALL TIMING CHAIN OR BELT COVER SUB-ASSY (See page 17-12 )****46. INSTALL VVT SENSOR (See page 18-5 )****47. INSTALL CAMSHAFT TIMING OIL CONTROL VALVE ASSY**

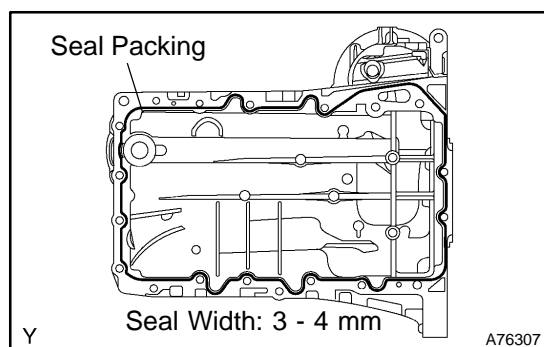
- (a) Insert the camshaft timing oil control valves to each cylinder head, and tighten the 2 bolts.

**Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)****48. INSTALL CYLINDER HEAD COVER SUB-ASSY LH (See page 14-132 )****49. INSTALL CYLINDER HEAD COVER SUB-ASSY (See page 14-132 )****50. INSTALL IGNITION COIL ASSY****Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)****51. INSTALL INTAKE AIR SURGE TANK (See page 14-132 )****52. INSTALL OIL PAN SUB-ASSY**

- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the cylinder block, rear oil seal retainer and oil pan.



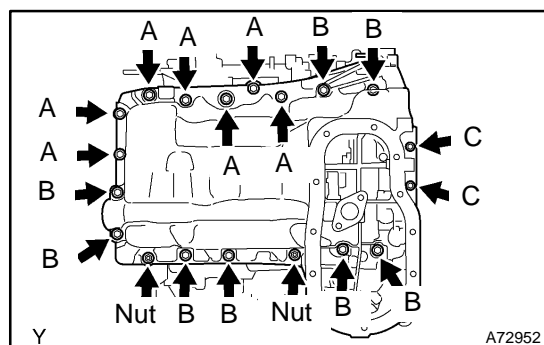
- (b) Install a new O-ring to the oil pump.



- (c) Apply a continuous bead of the seal packing (diameter 3 - 4 mm (0.12 - 0.16 in.)) to the oil pan as shown in the illustration.

**Seal packing: Part No. 08826-00080 or equivalent****NOTICE:**

**Install the oil pan within 3 minutes after applying seal packing. After installing it, oil pan bolts and nuts must be tightened within 15 minutes. Otherwise the seal packing must be removed and reapplied.**



- (d) Install the oil pan with the 17 bolts and 2 nuts. Tighten the bolts and nuts uniformly in several steps.

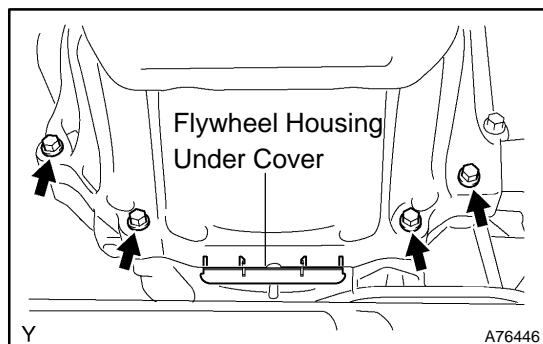
**Torque:****9.0 N·m (92 kgf·cm, 80 in·lbf) for 10 mm (0.39 in.) head****19 N·m (194 kgf·cm, 14 ft·lbf) for 12 mm (0.47 in.) head****HINT:**

Each bolt length as follows:

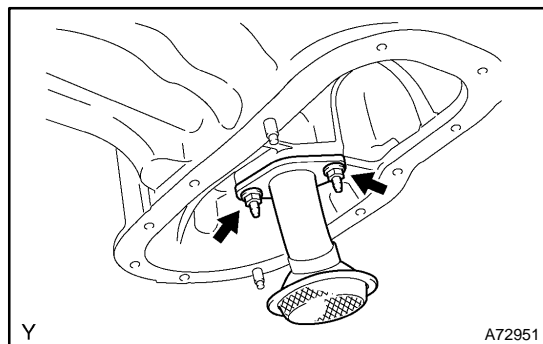
A 25 mm (0.98 in.)

B 40 mm (1.57 in.)

C 14 mm (0.55 in.)



- (e) Install the 4 housing bolts.  
**Torque: 37 N·m (377 kgf·cm, 27 ft·lbf)**
- (f) Install the flywheel housing under cover.

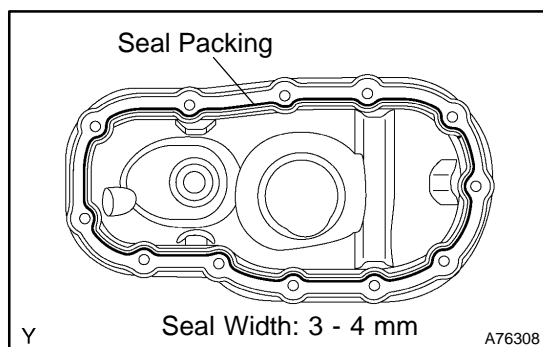


### 53. INSTALL OIL STRAINER SUB-ASSY

- (a) Install a new gasket and the oil strainer with the 2 nuts.  
**Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)**

### 54. INSTALL OIL PAN SUB-ASSY NO.2

- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the oil pan and oil pan No. 2.

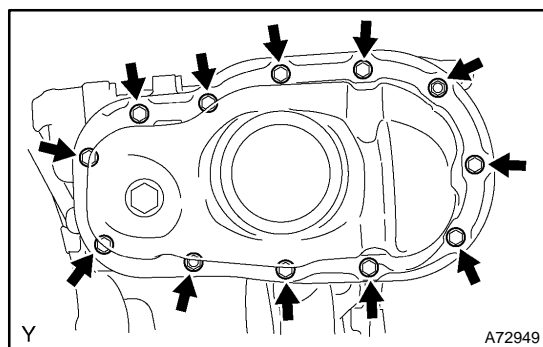


- (b) Apply a continuous bead of the seal packing (diameter 3 - 4 mm (0.12 - 0.16 in.)) as shown in the illustration.

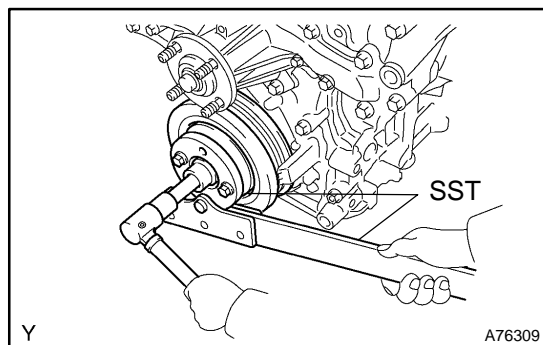
**Seal packing: Part No. 08826-00080 or equivalent**

#### NOTICE:

**Install the oil pan No. 2 within 3 minutes after applying seal packing. After installing it, oil pan No. 2 bolts and nuts must be tightened within 15 minutes. Otherwise the seal packing must be removed and reapplied.**



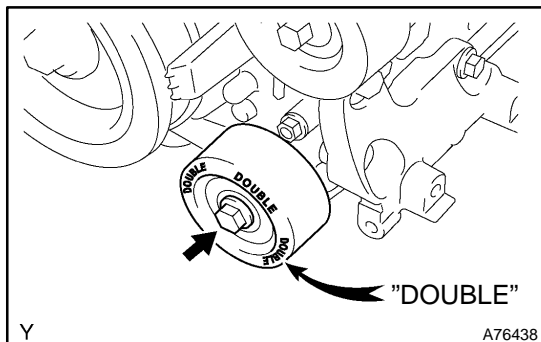
- (c) Install the oil pan No. 2 with the 10 bolts and 2 nuts. Tighten the bolts and nuts uniformly in several steps.  
**Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)**



### 55. INSTALL CRANKSHAFT PULLEY

- (a) Using SST, install the pulley set bolt.  
SST 09213-54015 (91651-60855), 09330-00021  
**Torque: 250 N·m (2,549 kgf·cm, 184 ft·lbf)**



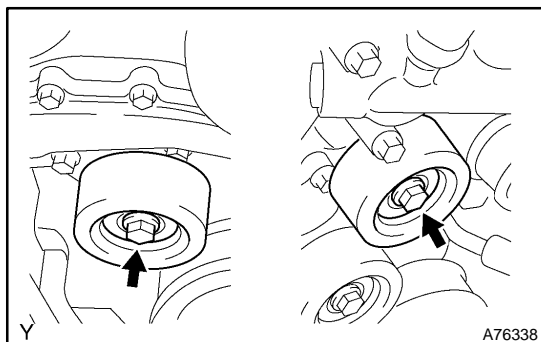
**56. INSTALL IDLER PULLEY SUB-ASSY NO.1**

- (a) Install the idler pulley with the bolt.

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

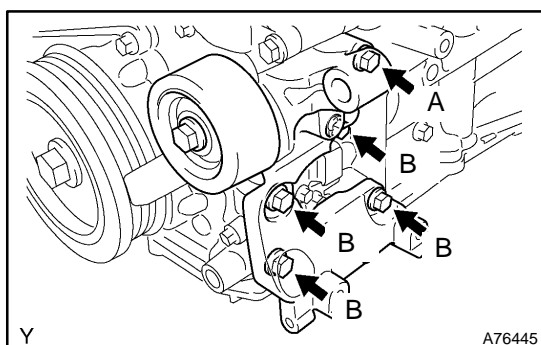
**HINT:**

"DOUBLE" is marked on the idler pulley No. 1 to distinguish it from the idler pulley No. 2.

**57. INSTALL IDLER PULLEY SUB-ASSY NO.2**

- (a) Install the 2 idler pulleys with the 2 bolts.

**Torque: 39 N·m (398 kgf·cm, 29 ft·lbf)**

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

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

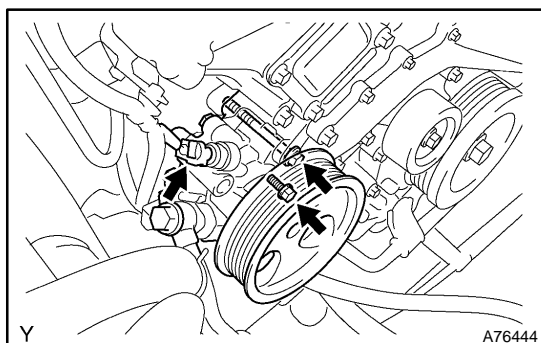
**Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)**

**HINT:**

Each bolt length as follows:

A 70 mm (2.76 in.)

B 33 mm (1.30 in.)

**59. INSTALL COOLER COMPRESSOR ASSY (See page 18-7 )****60. INSTALL GENERATOR ASSY (See page 19-26 )****61. INSTALL VANE PUMP ASSY**

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

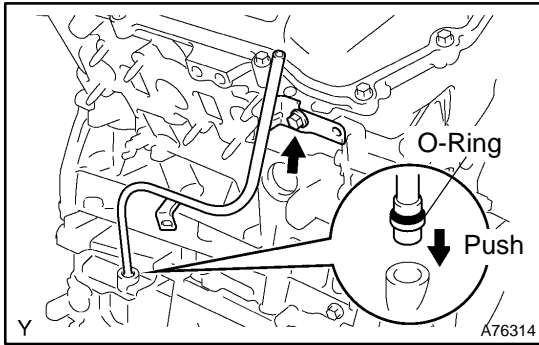
**Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)**

**NOTICE:**

**Do not hit the pulley to other parts when installing the vane pump.**

- (b) Connect the P/S oil pressure switch connector.

**62. INSTALL WATER INLET (See page 16-6 )**

**63. INSTALL OIL LEVEL GAUGE GUIDE**

- (a) Install a new O-ring to the oil level gauge guide.
  - (b) Apply a light coat of engine oil to the O-ring.
  - (c) Push in the oil level gauge guide end into the guide hole of the oil pan.
  - (d) Install the oil level gauge guide with the bolt.
- Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)**
- (e) Install the oil level gauge.

**64. INSTALL AIR CLEANER ASSY (See page 10-7 )****65. CONNECT VENTILATION HOSE NO.2****66. INSTALL FAN W/ FLUID COUPLING (See page 16-6 )****67. INSTALL FAN AND GENERATOR V BELT (See page 14-5 )****68. FULLY TIGHTEN FAN W/ FLUID COUPLING (See page 16-6 )****69. INSTALL RADIATOR SUPPORT SEAL UPPER****70. INSTALL BATTERY****71. INSTALL DIFFERENTIAL CARRIER ASSY FRONT (4WD DRIVE TYPE) (See page 29-3 )****72. INSTALL POWER STEERING LINK ASSY (See Pub No. RM1001U on page 51-20)****73. ADD ENGINE OIL (See page 17-4 )****74. ADD ENGINE COOLANT (See page 16-5 )****75. CHECK FOR ENGINE OIL LEAKS****76. CHECK FOR ENGINE COOLANT LEAKS (See page 16-1 )****77. INSTALL V-BANK COVER**

- (a) Install the V-bank cover with the 2 nuts.

**Torque: 7.5 N·m (76 kgf·cm, 66 in·lbf)**

**78. INSPECT IGNITION TIMING (See page 14-1 )**

SST 09843-18040