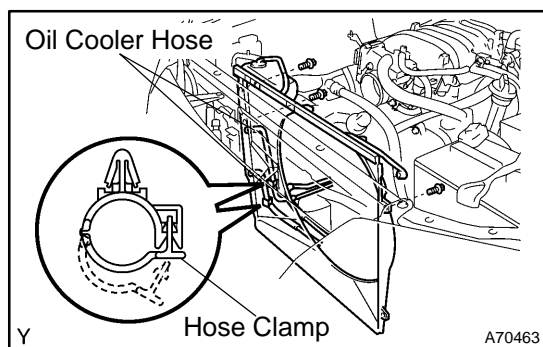


## REPLACEMENT

1. **DRAIN ENGINE COOLANT**(See page 16-5 )
2. **SEPARATE BATTERY NEGATIVE TERMINAL**
3. **REMOVE THROTTLE BODY COVER SUB-ASSY**
  - (a) Remove the 2 cap nuts and throttle body cover sub-assy.
4. **REMOVE AIR CLEANER HOSE ASSY**
5. **REMOVE RADIATOR SUPPORT SEAL UPPER**
  - (a) Remove the 11 clips and radiator support seal upper.
6. **REMOVE FAN AND GENERATOR V BELT** (See page 14-5 )



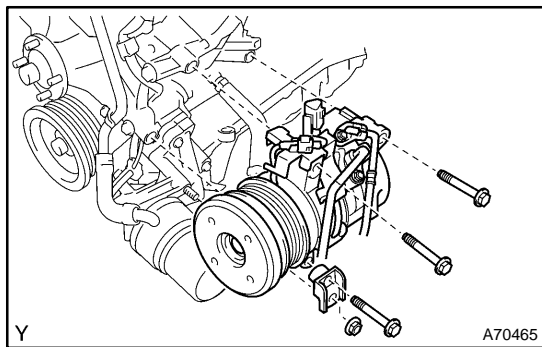
7. **REMOVE FAN W/ FLUID COUPLING**
  - (a) Unfasten each clip the 2 hose clamps, and then separate the 2 oil cooler hoses from fan shroud.
  - (b) Remove the 3 bolts and separate the fan shroud from radiator.
  - (c) Remove the 4 nuts and separate the fan w/ fluid coupling from engine.
  - (d) Remove the fan shroud and fan w/ fluid coupling from the vehicle at the same time.

8. **SEPARATE VANE PUMP ASSY**
  - (a) Disconnect the vacuum hose.
  - (b) Remove the nut, 2 bolts and vane pump assy.

HINT:

Hang up the hoses instead of detaching.

9. **REMOVE GENERATOR ASSY** (See page 19-17 )



10. **SEPARATE COMPRESSOR**
  - (a) Remove the nut, 3 bolts compressor stay and compressor.

HINT:

Hang up the hoses instead of detaching.

11. **REMOVE IDLER PULLEY SUB-ASSY NO.2**
  - (a) Remove the bolt and idler pulley sub-assy.
12. **REMOVE OIL COOLER PIPE**
  - (a) Disconnect the 3 hoses.
  - (b) Remove the bolt, nut and oil cooler pipe.
13. **REMOVE TIMING BELT COVER SUB-ASSY NO.3 LH**
  - (a) Remove the grommet and separate the cam position sensor connector and cam position sensor wire from timing belt cover sub-assy No. 3 LH.
  - (b) Disconnect the 3 wire harness clamps.
  - (c) Remove the 4 bolts and timing belt cover sub-assy No. 3 LH.

**14. REMOVE TIMING CHAIN OR BELT COVER NO.2**

- (a) Remove the nut, 3 bolts and timing belt cover No. 2.

**15. REMOVE TIMING BELT COVER SUB-ASSY NO.2**

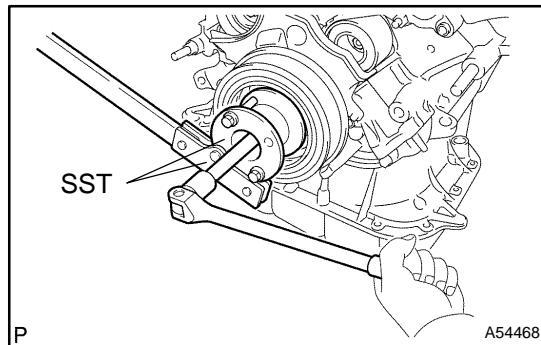
- (a) Remove the 2 bolts and timing belt cover sub-assy No. 2.

**16. REMOVE V-RIBBED BELT TENSIONER ASSY**

- (a) Remove the bolt 2 nuts and v-ribbed belt tensioner.

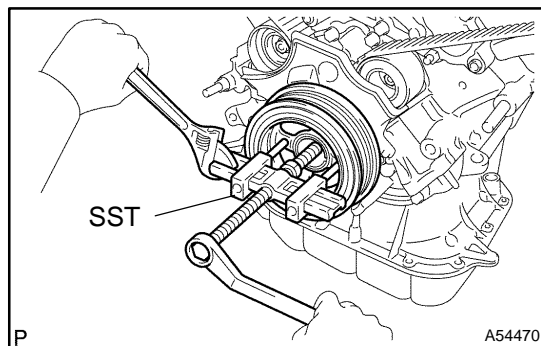
**17. REMOVE FAN BRACKET SUB-ASSY**

- (a) Remove the 2 nuts, 2 bolts and fan bracket sub-assy with fan pulley.

**18. REMOVE CRANKSHAFT DAMPER SUB-ASSY**

- (a) Using SST, remove the pulley bolt.

SST 09213-7001 1 (09213-70020), 09330-00021

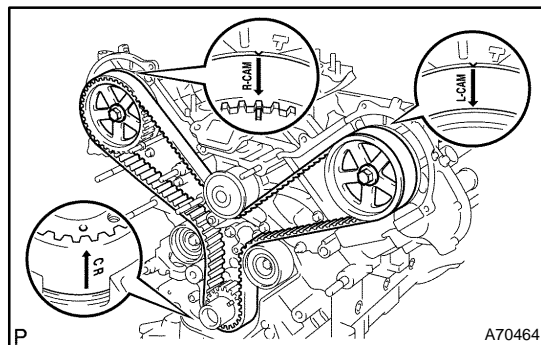


- (b) Using SST, remove the crankshaft pulley.

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

**19. REMOVE TIMING BELT NO.1 COVER**

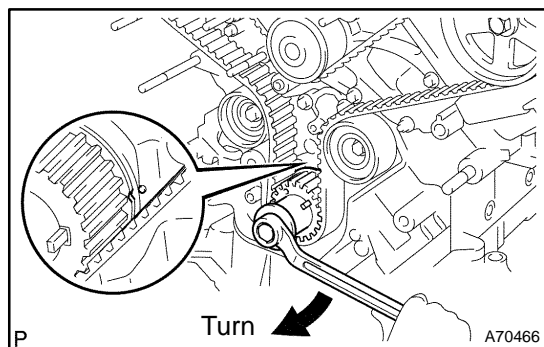
- (a) Remove the 4 bolts and timing belt cover.

**20. REMOVE CRANKSHAFT POSITION SENSOR PLATE NO.1****21. REMOVE TIMING BELT**

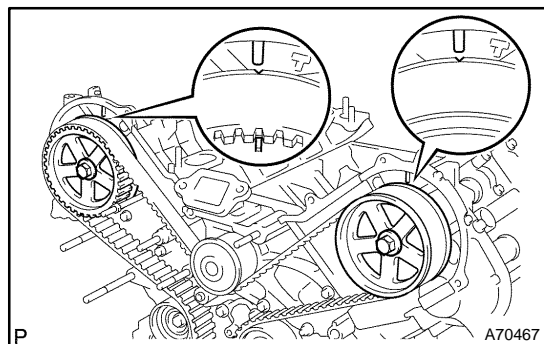
- (a) If re-using the timing belt, check the installation marks on the timing belt.

- (1) Check that there are 3 installation marks on the timing belt by turning the crankshaft as shown in the illustration.

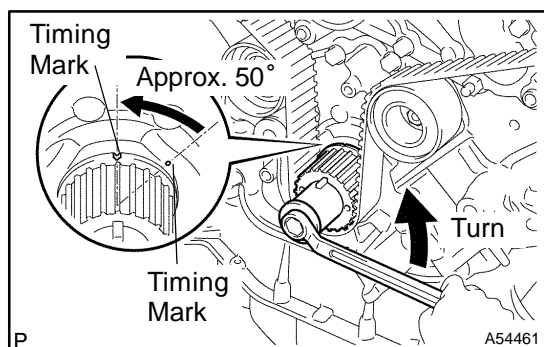
If the installation marks have disappeared, place a new installation mark on the timing belt before removing each part.



- (b) Set the No. 1 cylinder to approx. 50° BTDC/compression.
- (1) Using the crankshaft damper bolt, turn the crankshaft to align the timing marks of the crankshaft timing pulley and oil pump body.



- (2) Check that the timing marks of the camshaft timing pulleys and timing belt plates aligned. If not, turn the crankshaft 1 revolution (360°).

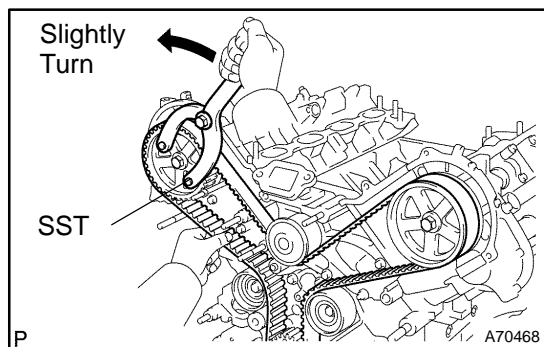


- (3) Using the crankshaft damper bolt, turn the crankshaft counterclockwise by approx. 50°.

#### NOTICE:

If the timing belt is disengaged, having the crankshaft pulley at the wrong angle can cause the piston head and valve head to come into contact with each other when you remove the camshaft timing pulley and camshaft, causing damage. So always set the crankshaft pulley at the correct angle.

- (c) Alternately loosen the 2 bolts, and remove them, the belt tensioner and dust boot.



- (d) Using SST, loosen the tension between the camshaft timing pulley (RH bank) and crankshaft timing pulley by slightly turning the camshaft timing pulley (RH bank) counterclockwise.

SST 09960-10010 (09962-01000, 09963-01000)

- (e) Disconnect the timing belt from the timing belt idler No. 1, and remove the timing belt.

## 22. INSTALL TIMING BELT

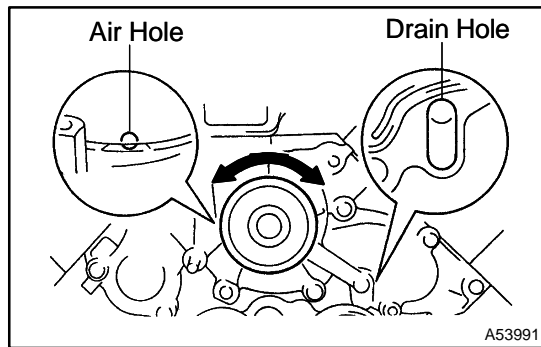
- (a) Check the timing belt idler No. 1 and No. 2.

- (1) Visually check the seal portion of the idler pulley for oil leakage.

If leakage is found, replace the idler.

- (2) Check that the idler turns smoothly.

If necessary, replace the idler.



- (b) Check the water pump.
- (1) Visually check the air hole and water hole for coolant leakage.

If leakage is found, replace the water pump and timing belt.

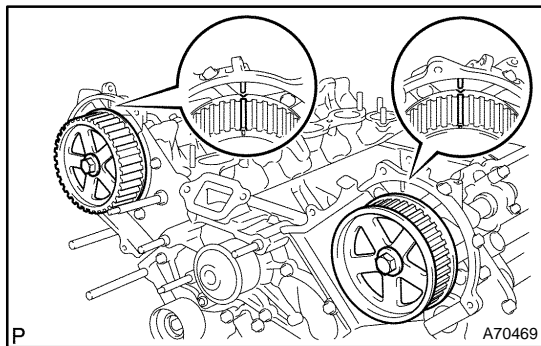
- (2) Turn the pulley, and check that the water pump bearing moves smoothly and quietly.

If necessary, replace the water pump.

- (c) Remove any oil or water on the crankshaft pulley, oil pump pulley, water pump pulley, idler No.1 and idler No.2, and keep them clean.

**NOTICE:**

**Only wipe the pulleys; do not use any cleansing agent.**



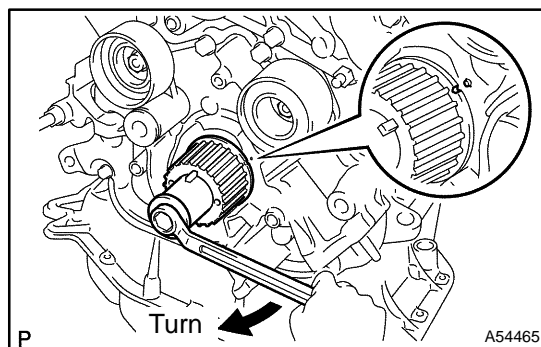
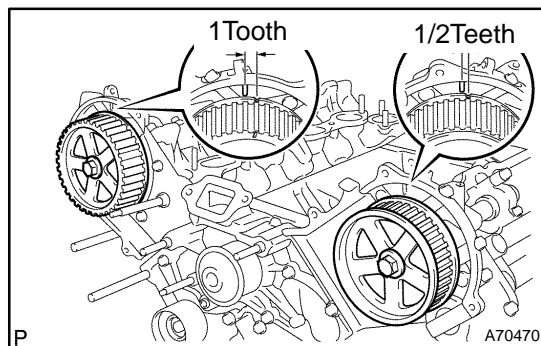
- (d) Set the No. 1 cylinder to TDC/compression.
- (1) Turn the hexagon wrench head portion of the camshaft to align the timing marks of the camshaft timing pulleys and timing belt plates aligned.

**HINT:**

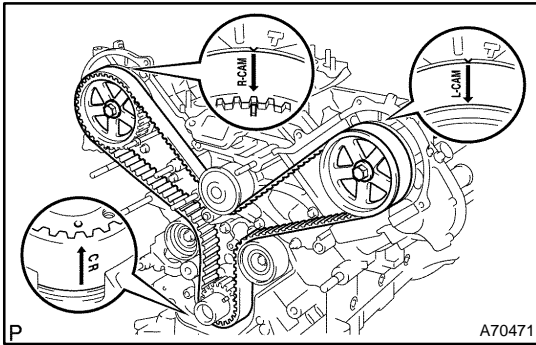
Setting positions of the camshaft timing pulleys by turning them slightly clockwise makes it easy to install the timing belt:

Camshaft timing pulley of LH bank: 1/2 teeth

Camshaft timing pulley of RH bank: 1 tooth



- (2) Using the crankshaft damper bolt, turn the crankshaft to align the timing marks of the crankshaft timing pulley and oil pump body.

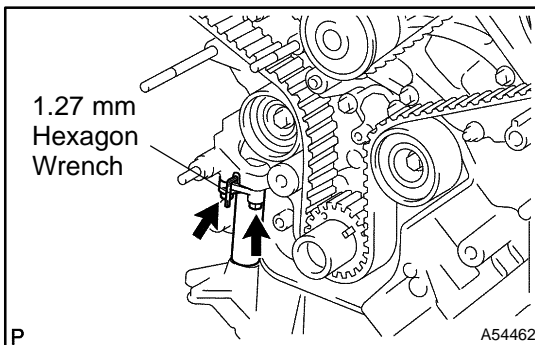
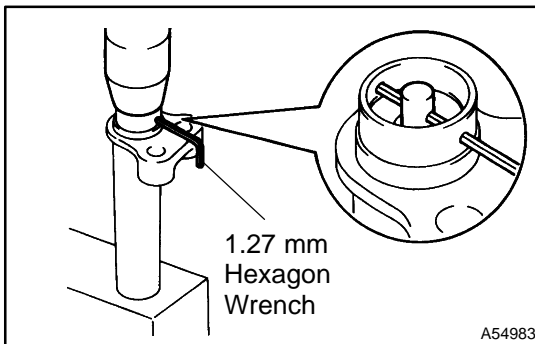


- (e) Install the timing belt.
- (1) Remove any oil or water on the each pulley, and keep them clean.

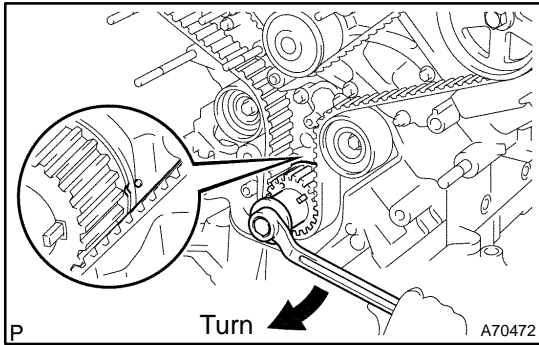
**NOTICE:**

**Only wipe the pulleys; do not use any cleansing agent.**

- (2) Face the front mark (arrow) on the timing belt forward.
  - (3) Connect the timing belt to the crankshaft timing pulley.
    - Align the installation mark on the timing belt with the timing mark of the crankshaft timing pulley.
  - (4) Connect the timing belt to the idler No. 2.
  - (5) Connect the timing belt to the camshaft timing pulley (LH.bank).
    - Align the installation mark on the timing belt with the timing mark of the camshaft timing pulley.
  - (6) Connect the timing belt to the water pump pulley.
  - (7) Connect the timing belt to the camshaft timing pulley (RH bank).
    - Align the installation mark on the timing belt with the timing mark of the camshaft timing pulley.
  - (8) Connect the timing belt to the idler No.1.
- (f) Set the belt tensioner.
- (1) Using a press, slowly press in the push rod using 981 - 9,807 N (100 - 1,000 kgf, 220 - 2,205 lbf) of pressure.
  - (2) Align the holes of the push rod and housing, pass a 1.27 mm hexagon wrench through the holes to keep the setting position of the push rod.
  - (3) Release the press.
  - (4) Install the dust boot to the belt tensioner.



- (g) Install the belt tensioner.
- (1) Temporarily install the belt tensioner with the 2 bolts.
  - (2) Alternately tighten the 2 bolts.
- Torque: 26 N·m (270 kgf-cm, 19 ft-lbf)**
- (3) Using pliers, remove the 1.27 mm hexagon wrench from the belt tensioner.

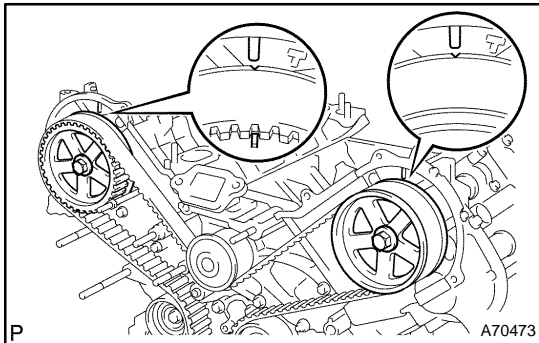


(h) Check the valve timing.

- (1) Using the crankshaft damper bolt, slowly turn the crankshaft pulley 2 revolutions from TDC to TDC.

**NOTICE:**

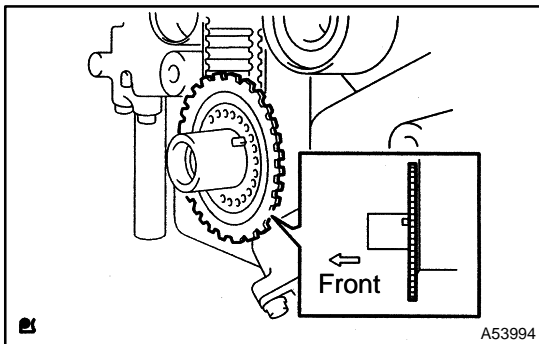
**Always turn the crankshaft pulley clockwise.**



- (2) Check that each pulley aligns with the timing marks as shown in the illustration.

If the timing marks do not align, remove the timing belt and reinstall it.

- (3) Remove the crankshaft damper bolt.



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

- (a) Install the crank angle sensor plate as shown in the illustration.

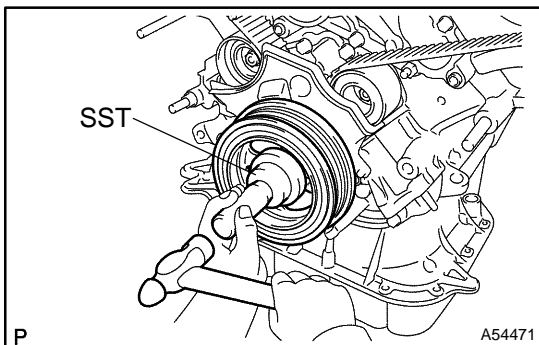
**NOTICE:**

**Take care not to install it in the wrong direction.**

**24. INSTALL TIMING BELT NO.1 COVER**

- (a) Install the timing belt cover with the 4 bolts.

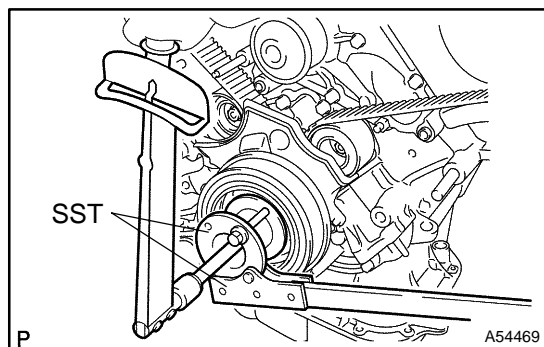
**Torque: 7.5 N·m (80 kgf·cm, 66 in·lbf)**



**25. INSTALL CRANKSHAFT DAMPER SUB-ASSY**

- (a) Using SST and a hammer, tap in the crankshaft damper.

SST 09223-4601 1



- (b) Using SST, install the damper bolt.  
SST 09213-7001 1 (09213-70020), 09330-00021  
**Torque: 245 N·m (2,500 kgf·cm, 181 ft·lbf)**
- (c) Align the damper set key with the key groove of the crankshaft damper.

## 26. INSTALL FAN BRACKET SUB-ASSY

- (a) Install the fan bracket with the 2 bolts and 2 nuts.

**Torque:**

**16 N·m (160 kgf·cm, 12 ft·lbf) for 12 mm head**

**32 N·m (330 kgf·cm, 24 ft·lbf) for 14 mm head**

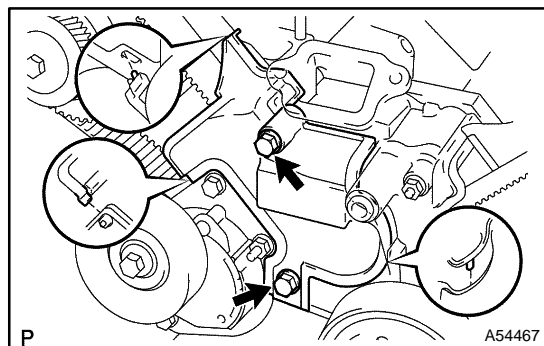
## 27. INSTALL V-RIBBED BELT TENSIONER ASSY

- (a) Install the belt tensioner with the bolt and 2 nuts.

**Torque:**

**Bolt 16 N·m (160 kgf·cm, 12 ft·lbf)**

**Nut 16 N·m (160 kgf·cm, 12 ft·lbf)**



## 28. INSTALL TIMING BELT COVER SUB-ASSY NO.2

- (a) Fit the timing belt cover, matching the claws and pin with each part.
- (b) Install the timing belt cover with the 2 bolts.  
**Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)**

## 29. INSTALL TIMING BELT COVER SUB-ASSY NO.3 LH

- (a) Install the timing belt cover sub-assy with 4 bolts.

**Torque: 7.5 N·m (80 kgf·cm, 66 in·lbf)**

- (b) Install the cam position sensor connector and grommet to the timing belt cover.

## 30. INSTALL TIMING CHAIN OR BELT COVER NO.2

- (a) Install the timing chain or belt cover with the nut and 3 bolts.

**Torque:**

**Bolt 7.5 N·m (80 kgf·cm, 66 in·lbf)**

**Nut 7.5 N·m (80 kgf·cm, 66 in·lbf)**

## 31. INSTALL OIL COOLER PIPE

- (a) Install the oil cooler pipe with bolt and nut.

**Torque:**

**Bolt 7.5 N·m (80 kgf·cm, 66 in·lbf)**

**Nut 7.5 N·m (80 kgf·cm, 66 in·lbf)**

- (b) Connect the 3 hoses.

## 32. INSTALL IDLER PULLEY SUB-ASSY NO.2

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

**Torque: 39 N·m (400 kgf·cm, 24 ft·lbf)**

**33. INSTALL COMPRESSOR**

- (a) Install the compressor with stay, nut and 3 bolts.

**Torque:**

**Bolt 47 N·m (475 kgf·cm, 34 ft·lbf)**

**Nut 25 N·m (255 kgf·cm, 18 ft·lbf)**

**34. INSTALL GENERATOR ASSY (See page 19-17 )****35. INSTALL VANE PUMP ASSY**

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

**Torque:**

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

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

**36. INSTALL FAN W/ FLUID COUPLING**

- (a) Put the fan w/ fluid coupling and fan shroud into the engine room at the same time.

- (b) Install the fan shroud with 3 bolts.

**Torque: 5.0 N·m (51 kgf·cm, 44 in·lbf)**

- (c) Install the fan w/ fluid coupling with 4 nuts.

**Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)**

**37. INSTALL FAN AND GENERATOR V BELT (See page 14-5 )****38. INSTALL RADIATOR SUPPORT SEAL UPPER****39. INSTALL AIR CLEANER HOSE ASSY****40. INSTALL THROTTLE BODY COVER SUB-ASSY**

- (a) Install the throttle body cover sub-assy with 2 nuts.

**Torque: 7.5 N·m (80 kgf·cm, 66 in·lbf)**

**41. ADD ENGINE COOLANT (See page 16-5 )****42. CHECK FOR ENGINE COOLANT LEAKS (See page 16-1 )**