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Model Year: 2006	Model: Hiace	Doc ID: RM00000126H000X
Title: 5L-E ENGINE MECHANICAL: TIMING BELT: INSTALLATION (2006-2010 Hiace)		

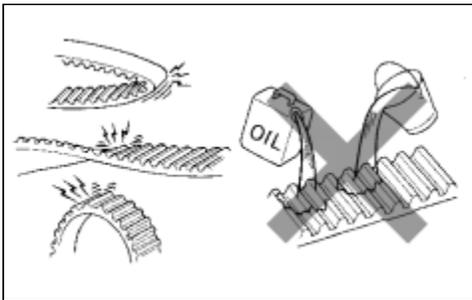
INSTALLATION

1. INSPECT TIMING BELT

NOTICE:

- Do not bend, twist or turn the timing belt inside out.
- Do not allow the timing belt to come into contact with oil, water or steam.
- Do not utilize timing belt tension when installing or removing the mount bolt of the camshaft timing pulley.

If there are any defects as shown in the illustrations, check the following points:



(a) If there is premature parting:

- Check for proper installation.
- Check the timing cover gasket for damage and proper installation.

(b) If the belt teeth are cracked or damaged, check if either camshaft is locked.

(c) If there is noticeable wear or cracks on the belt face, check if there are nicks on the side of the idler pulley lock and water pump.

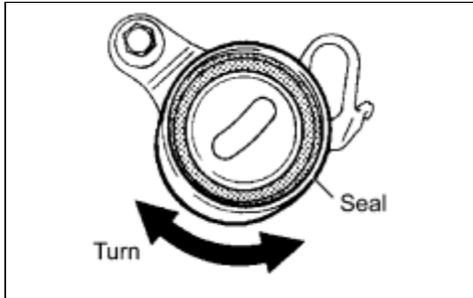
(d) If there is wear or damage to only one side of the belt, check the belt guide and the alignment of each pulley.

(e) If there is noticeable wear on the belt teeth:

- Check the timing cover for damage.
- Check that the gasket has been installed correctly.
- Check for foreign matter on the pulley teeth.

If necessary, replace the timing belt.

2. INSPECT TIMING BELT IDLER SUB-ASSY NO.1



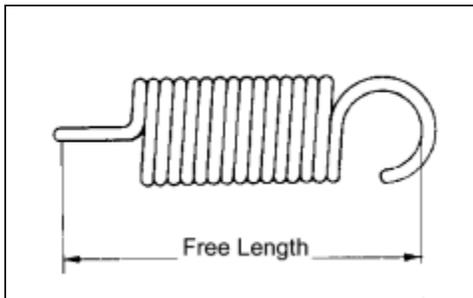
(a) Visually check the seal portion of the timing belt idler No.1 for oil leakage.

If leakage is found, replace the timing belt idler No.1.

(b) Check that the timing belt idler No.1 turns smoothly.

If necessary, replace the timing belt idler No.1.

3. INSPECT IDLER TENSION SPRING



(a) Measure the free length of the tension spring.

Free length:

44.4 to 45.4 mm (1.748 to 1.787 in.)

If the free length is not as specified, replace the tension spring.

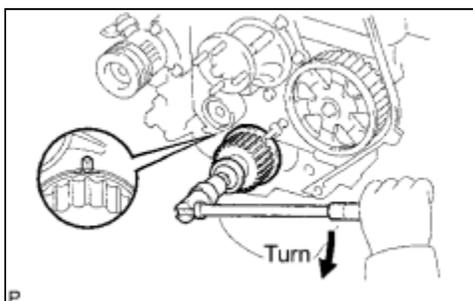
(b) Measure the tension of the tension spring at the specified installed length.

Installed tension:

53 to 59 N (5.42 to 5.98 kgf, 11.9 to 13.2 lbf) at 52.1 mm (2.051 in.)

4. INSPECT WATER PUMP ASSY

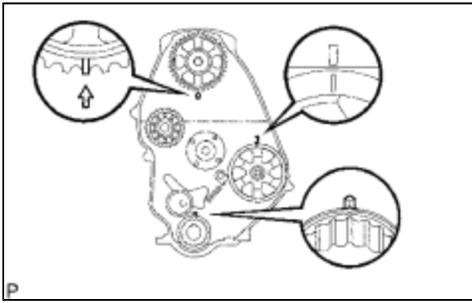
5. SET NO.1 CYLINDER TO TDC/ COMPRESSION



(a) Using the crankshaft pulley bolt, align its groove with the timing pointer by turning the crankshaft clockwise.

NOTICE:

Do not turn the crankshaft pulley counterclockwise.



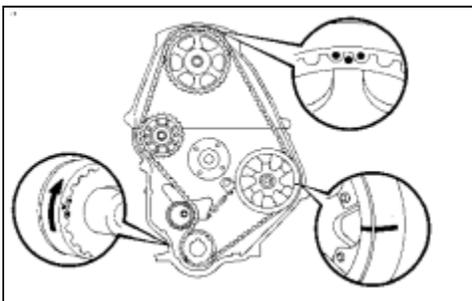
(b) Set the timing and drive pulleys at each position.

- The engine should be cold.
- When turning the crankshaft or camshaft, the valve heads will hit against the piston top. Do not turn them more than necessary.

6. INSTALL TIMING BELT

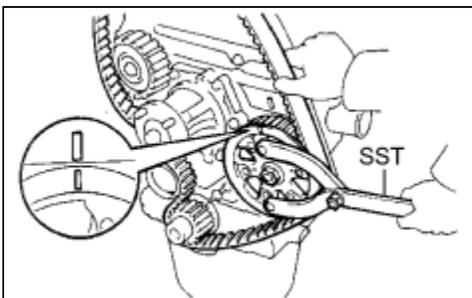
HINT:

If reusing the timing belt, align the points marked during removal, and install the timing belt with the arrow pointing in the direction of engine revolution.



(a) Remove any oil or water on each pulleys, and keep them clean.

(b) Install the timing belt on the crankshaft timing and timing belt idlers.



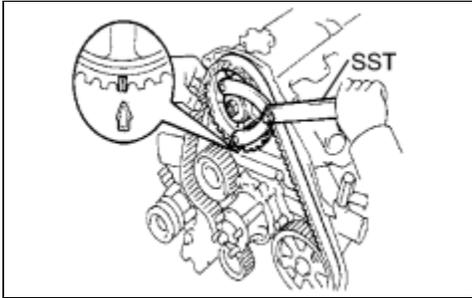
(c) Using SST, slightly turn the injection pump drive pulley clockwise. Hang the timing belt on the pulley, and align the timing marks of the drive pulley and timing belt case.

SST: 09960-10010

09962-01000

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(d) Using SST, slightly turn the camshaft timing pulley



clockwise. Hang the timing belt on the timing pulley, and align the timing marks of the timing pulley and timing belt case.

SST: 09960-10010

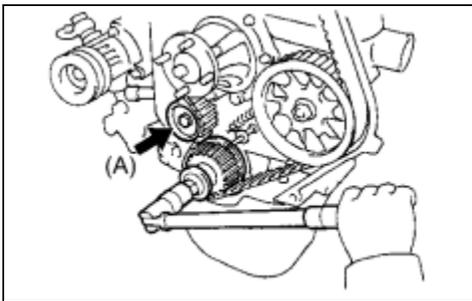
09962-01000

09963-01000

(e) Check that the timing belt has tension between the injection pump drive and camshaft timing pulleys.

(f) Install the timing belt on the timing belt idler No.2.

7. CHECK VALVE TIMING

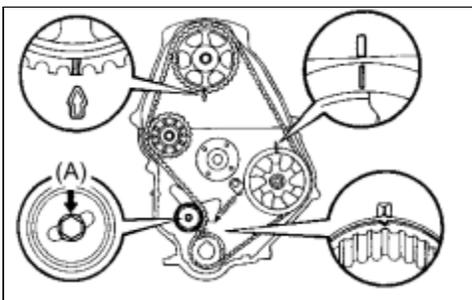


(a) Loosen the timing belt idler No.1 bolt (A), and stretch the timing belt.

(b) Slowly turn the crankshaft pulley 2 revolutions from TDC to TDC.

NOTICE:

Always turn the crankshaft clockwise.



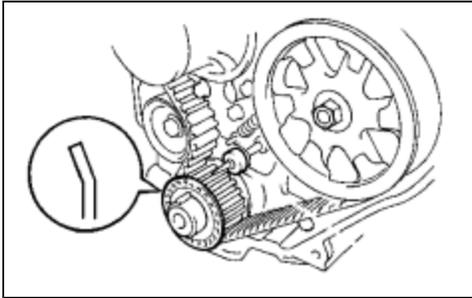
(c) Check each pulley aligns with the timing marks as shown in the illustration.

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

(d) Tighten the timing belt idler No.1 bolt (A).

Torque: 44 N·m (450 kgf·cm, 33ft·lbf)

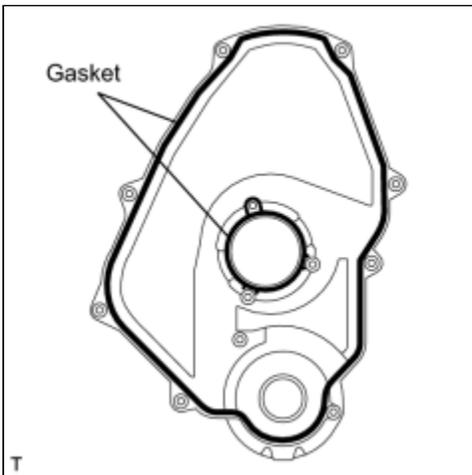
8. INSTALL TIMING BELT GUIDE



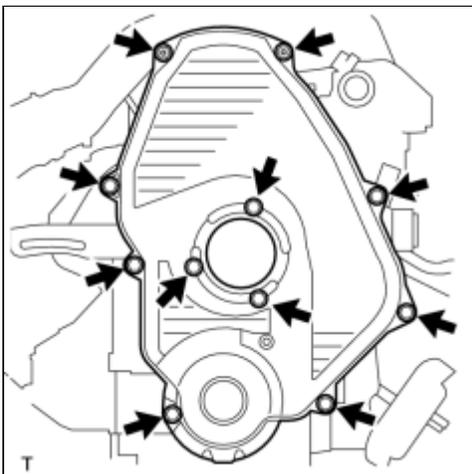
(a) Install the belt guide with the cup side facing outward.

9. INSTALL TIMING CHAIN OR BELT COVER SUB-ASSEMBLY

(a) Remove the 2 nuts and wire harness clamp bracket.



(b) Install the 2 gaskets to the timing belt cover.



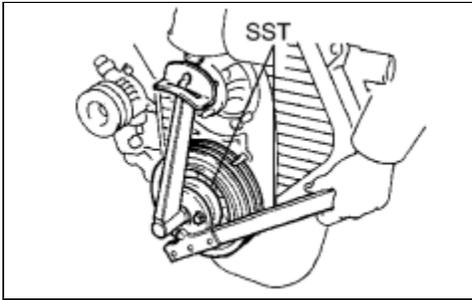
(c) Install the timing belt cover with the 11 bolts.

Torque: 11 N·m (105 kgf·cm, 8ft·lbf)

(d) Install the 2 nuts and wire harness clamp bracket.

10. INSTALL CRANKSHAFT PULLEY

(a) Align the pulley set key with the key groove of the pulley, and slide the pulley to the crankshaft.



(b) Using SST, install the pulley bolt.

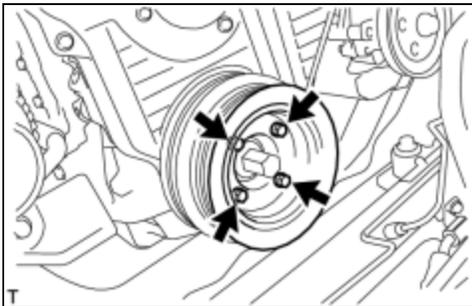
SST: 09213-54015

91651-60855

SST: 09330-00021

Torque: 235 N·m (2,400 kgf·cm, 173ft·lbf)

11. INSTALL VANE PUMP DRIVE PULLEY



(a) w/o Air conditioning:

(1) Install the vane pump drive pulley and vane pump pulley spacer with the 4 bolts.

Torque: 19 N·m (195 kgf·cm, 14ft·lbf)

(b) w/ Air conditioning:

(1) Install the 2 vane pump drive pulleys with the 4 bolts.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

12. INSTALL COMPRESSOR MOUNTING BRACKET (w/ Air Conditioning) INFO

13. INSTALL COMPRESSOR AND MAGNETIC CLUTCH (w/ Air Conditioning)



14. TEMPORARILY TIGHTEN FAN PULLEY

(a) Temporarily tighten the fan pulley with the 4 bolts.

15. INSTALL FAN & GENERATOR V BELT (w/o Air Conditioning) 

16. INSTALL FAN & GENERATOR V BELT (w/ Air Conditioning) 

17. TIGHTEN FAN PULLEY

(a) Install the 4 nuts, fan spacer and fan pulley.

Torque: 19 N·m (185 kgf·cm, 14ft·lbf)

18. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (w/ Air Conditioning) 

19. INSTALL VANE PUMP V BELT 

20. INSTALL ENGINE SERVICE HOLE SUB COVER SUB-ASSEMBLY 

21. INSTALL FRONT DOOR SCUFF PLATE RH

22. INSTALL FRONT SEAT ASSEMBLY RH (for Hi-back Seat Type)

HINT:

Use the same procedures described for the LH side. 

23. INSTALL FRONT SEAT ASSEMBLY RH (for Low-back Seat Type)

HINT:

Use the same procedures described for the LH side. 

24. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

25. ADD ENGINE COOLANT 

26. CHECK FOR ENGINE COOLANT LEAKS 

27. CHECK IDLE SPEED 

28. INSPECT MAXIMUM ENGINE SPEED 

29. PERFORM INITIALIZATION

