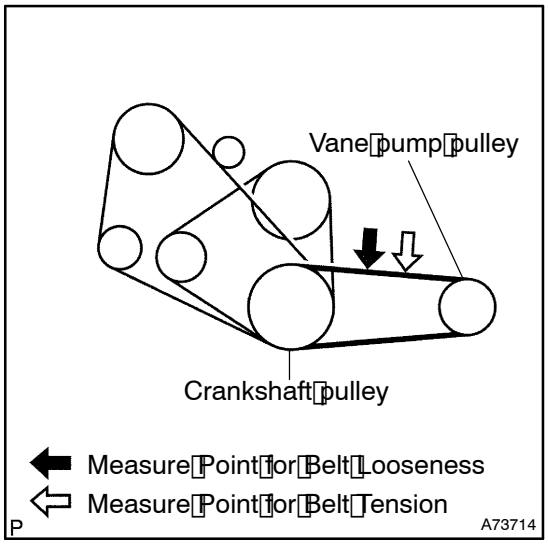
ENGINE (5L–E)

14115–01

INSPECTION

1. INSPECT COOLANT (See page 16–18)
2. INSPECT ENGINE OIL (See page 17–17)
3. INSPECT BATTERY SPECIFIC GRAVITY (See page 19–13)
4. INSPECT AIR CLEANER FILTER ELEMENT SUB–ASSY



5. INSPECT VANE PUMP V BELT

(a) Check the V belt deflection.

(1) Belt deflection

Pressing force: 98 N (10 kgf, 22 lbf)

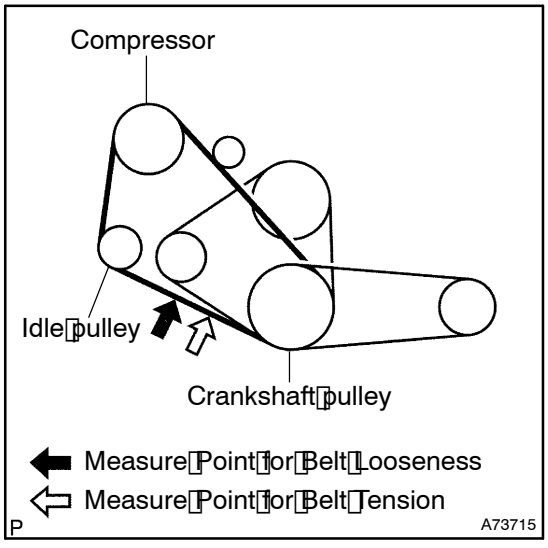
New belt mm (in.)	Used belt mm (in.)
8.0 – 10 (0.31 – 0.39)	10 – 15 (0.39 – 0.59)

(2) Tension

New belt N (kgf)	Used belt N (kgf)
441 – 539 (45 – 55)	196 – 343 (20 – 35)

NOTICE:

- **Check the drive belt deflection at the specified point.**
- **When installing a new belt, set its tension value as specified.**
- **When checking a belt used for over 5 minutes, confirm the deflection value is within the specified one.**
- **When reinstalling a belt used for over 5 minutes, perform the check based on the used deflection value.**
- **V belt tension and deflection value should be checked after two revolution of engine cranking.**
- **When using a belt tension gauge, confirm the accuracy first by using a master gauge.**



6. INSPECT V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (W/ AIR CONDITIONING)

(a) Check the V belt deflection.

(1) Belt deflection

Pressing force: 98 N (10 kgf, 22 lbf)

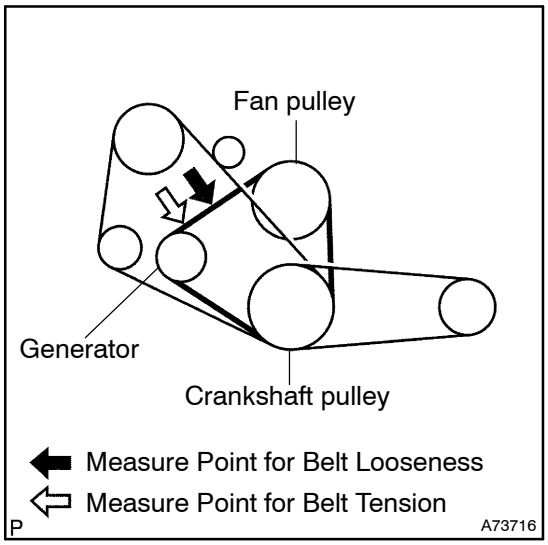
New belt mm (in.)	Used belt mm (in.)
11 – 15 (0.43 – 0.59)	15 – 20 (0.59 – 0.79)

(2) Tension

New belt N (kgf)	Used belt N (kgf)
372 – 608 (38 – 62)	196 – 392 (20 – 40)

NOTICE:

- **Check the drive belt deflection at the specified point.**
- **When installing a new belt, set its tension value as specified.**
- **When checking a belt used for over 5 minutes, confirm the deflection value is within the specified one.**
- **When reinstalling a belt used for over 5 minutes, perform the check based on the used deflection value.**
- **V belt tension and deflection value should be checked after two revolution of engine cranking.**
- **When using a belt tension gauge, confirm the accuracy first by using a master gauge.**



7. INSPECT FAN AND GENERATOR V BELT

(a) Check the V belt deflection. (Per 1 belt)

(1) Belt deflection

Pressing force: 98 N (10 kgf, 22 ·lbf)

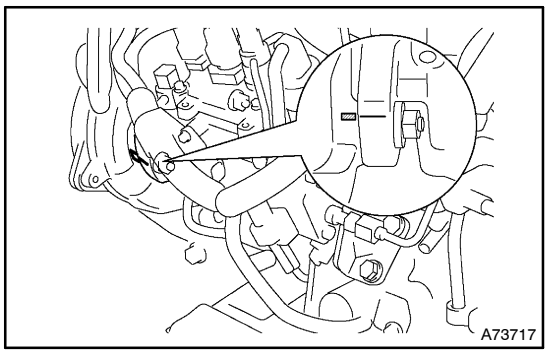
New belt mm (in.)	Used belt mm (in.)
7.0 – 10 (0.28 – 0.39)	10 – 14 (0.39 – 0.55)

(2) Tension. (Per 1 belt)

New belt N (kgf)	Used belt N (kgf)
441 – 539 (45 – 55)	196 – 343 (20 – 35)

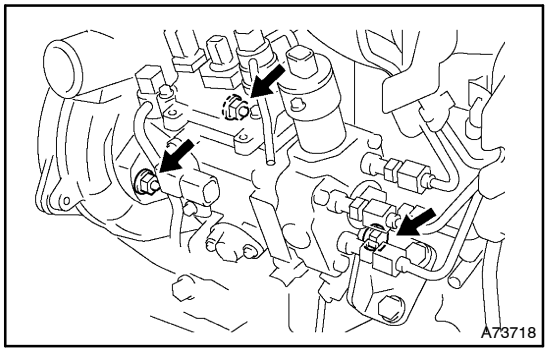
NOTICE:

- **Check the drive belt deflection at the specified point.**
- **When installing a new belt, set its tension value as specified.**
- **When checking a belt used for over 5 minutes, confirm the deflection value is within the specified one.**
- **When reinstalling a belt used for over 5 minutes, perform the check based on the used deflection value.**
- **V belt tension and deflection value should be checked after two revolution of engine cranking.**
- **When using a belt tension gauge, confirm the accuracy first by using a master gauge.**



8. INSPECT INJECTION TIMING

(a) Using mirror, check that the punting line of the injection pump flange and the punting line of the timing gear case aligned.



9. ADJUST INJECTION TIMING

(a) Loosen these nuts and bolts.
(1) Bolt holding injection pump to injection pump stay.
(2) 2 nuts holding injection pump to timing gear case.

(b) Align the punting line by slightly tilting the injection pump.

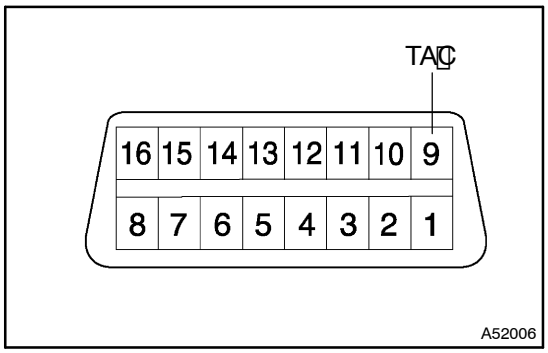
(c) Tighten these nuts and bolts.
(1) 2 nuts holding injection pump to timing gear case.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
(2) Bolt holding injection pump to injection pump stay.
Torque: 26 N·m (270 kgf·cm, 19 ft·lbf)

10. INSPECT ENGINE IDLE SPEED

(a) Warm up engine.

(b) When using hand–held tester.
(1) Connect the hand–held tester to the DLC3.
Idle speed: 650 – 750 rpm

HINT:
Please refer to the hand–held tester operator's manual for further details.



(c) When not using hand–held tester.
(1) Using SST, connect tachometer test prove to terminal 9 (TAC) of DLC3.
SST 09843–18040
(2) Check the idle speed.
Idle speed: 650 – 750 rpm

NOTICE:
Switch off all accessories and air conditioning.

11. INSPECT MAXIMUM SPEED

(a) Start the engine.

(b) Depress the accelerator pedal all the way.

(c) Check the maximum speed.
Maximum speed: 4,750 – 5,050 rpm

12. INSPECT COMPRESSION

HINT:
If there is lack of power, excessive oil consumption or poor fuel economy, measure the compression pressure.

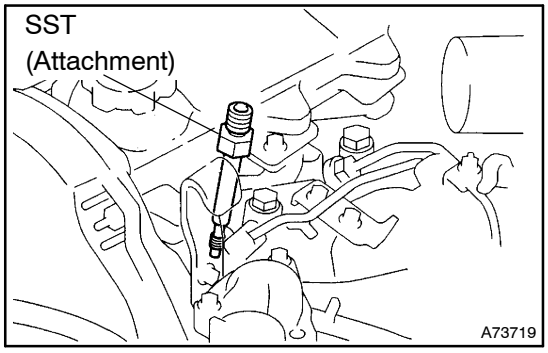
(a) Warm up and stop engine.

(b) Remove the glow plugs. (See page 19–21)

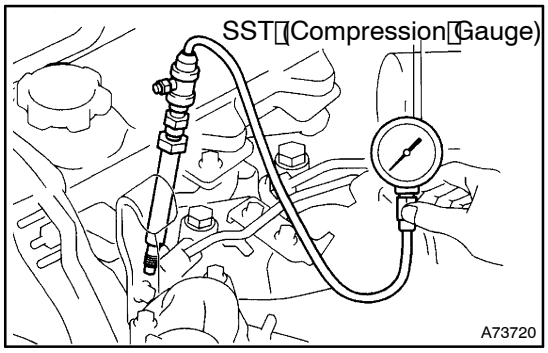
(c) Disconnect spill control valve connector.

(d) Check cylinder compression pressure.

HINT:
Turn the starter before measuring the compression and discharge the foreign objects.



(e) Install SST (attachment) to the glow plug hole.
SST 09992–00025 (09992–00121)
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



(f) Connect SST (compression gauge) to the SST (attachment).
SST 09992–00025 (09992–00211)

(g) Fully open the throttle valve, and start the engine.

(h) While cranking the engine, measure the compression pressure.

HINT:
Always use a fully charged battery to obtain engine revolution of 250 rpm or more.

(i) Repeat steps (a) through (d) for each cylinder.

NOTICE:
This measurement must be done in as short a time as possible.

Compression pressure:
3,138 kPa (32.0 kgf/cm², 455 psi) or more
Minimum pressure:
1,961 kPa (20.0 kgf/cm², 284 psi)
Difference between each cylinder:
490 kPa (5.0 kgf/cm², 71 psi) or less

(j) If the cylinder compression in one or more cylinders is low, pour a small amount of engine oil into the cylinder through the glow plug hole and repeat steps (a) through (d) for the cylinder with low compression.
(1) If adding oil helps the compression, chances are that the piston rings and/or cylinder bore are worn or damaged.
(2) If pressure stays low, a valve may be sticking or seating improperly, or there may be leakage past the gasket.

(k) Remove the SST.

(l) Reinstall the glow plugs. (See page 19–21)

(m) Reconnect spill control valve connector.

13. INSPECT DIESEL SMOKE