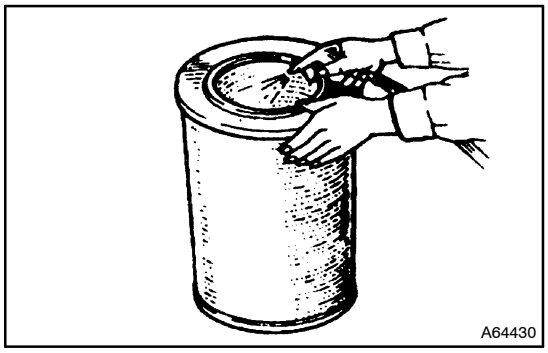
ENGINE (14B)

1416Q–01

ADJUSTMENT

1. INSPECT COOLANT (See page 16–3)
2. INSPECT ENGINE OIL (See page 17–1)
3. INSPECT BATTERY SPECIFIC GRAVITY


A64430

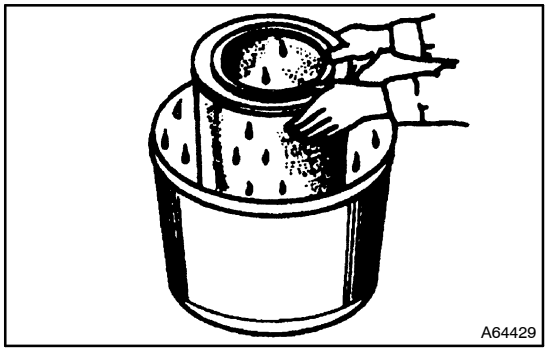
4. INSPECT AIR CLEANER FILTER ELEMENT SUB–ASSY

(a) Paper filter type:
Visually check that the filter is not excessively dirty or oily.

(b) Using an air gun, remove dry dirt or dust, Air pressure: less than 690 kPa (7.0 kgf/cm^2, 100 psi).

HINT:

- Always blow air from the inside of the element to the outside. Never strike or bang the filter to remove dirt or dust.
- If the air pressure is too high and the element deformed, the engine will be in trouble.


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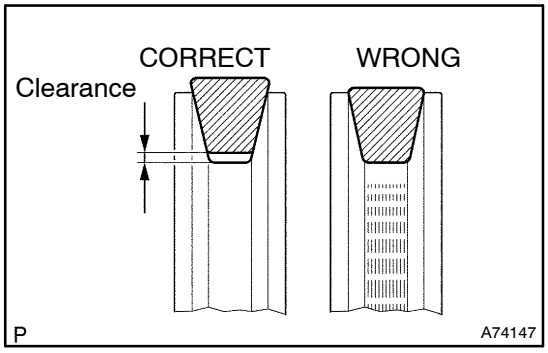
(c) Washable type:
Wash the element by soaking it in a non–sudsy detergent solution for approx. 30 minutes.

(d) Rinse the element with clean water and dry it completely with compressed air.

HINT:

- Check that the inside of the element is not soiled with dust, etc.
- When using an oven to dry the element, the temperature should be set below 80°C (176°F).
- Never install the element before it is completely dried.
- Make sure that the dried element is not broken and that the packing is not broken nor deformed.

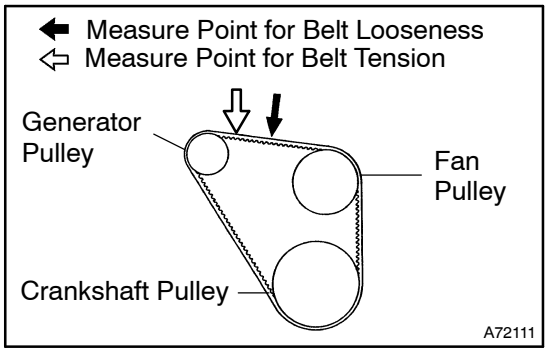
NOTICE:
Never use other solvents, suchaskerosene and gasoline to clean the elements. Use of these could cause the engine to overrun and damage the engine.



5. INSPECT V BELT

(a) Visually check the V belt for cracks, oiliness or wear. Check that the belt does not touch the bottom of the pulley groove.

If necessary, replace the V belt.



(b) Check the drive belt deflection by pressing on the belt at the points indicated illustration with 98 N (10 kgf, 22 lbf) of pressure.

Deflection:

New Belt mm (in.)	Used Belt mm (in.)
8.0 – 11 (0.31 – 0.43)	11 – 16 (0.43 – 0.63)

(c) Reference:

Using a belt tension gauge, measure the belt tension.

Tension:

New Belt N (kgf)	Used Belt N (kgf)
421 – 657 (43 – 67)	245 – 441 (25 – 45)

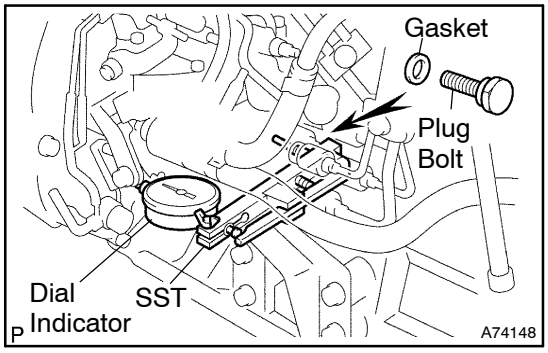
HINT:

Belt tension gauge:

DENSO BTG–20 (95506–00020)

NOTICE:

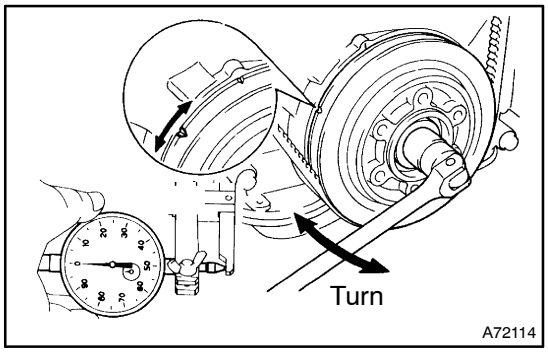
- **Check that the drive belt deflection at the specified point.**
- **When installing a new belt, set its tension value as specified.**
- **When checking a belt that has been used for over 5 minutes, confirm that the deflection value is within the specified one.**
- **When reinstalling a belt that has been used for over 5 minutes, check the belt, based on the used deflection value.**
- **The tension and deflection value of the V beltshould be checked after 2 revolution of engine cranking.**
- **When using a belt tension gauge, confirm the accuracy first using a master gauge.**



6. INSPECT INJECTION TIMING

(a) Remove the plug bolt and gasket from the distributive head plug of the injection pump.

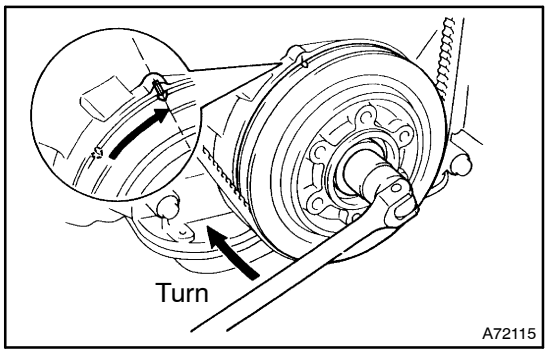
(b) Install SST (plunger stroke measurement tool) and a dial indicator to the plug bolt hole ofthe distributive head plug.
SST 09275–54011



(c) Slowly rotate the crankshaft pulley counterclockwise and set the dial indicator at 0 mm (0 in.) when the dial indicator reaches the minimum value.

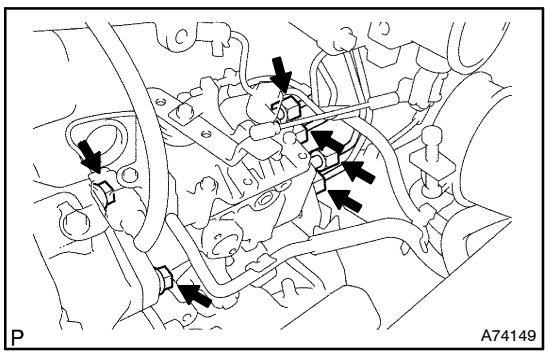
(d) Turn the crankshaft left and right and check that the dial indicator shows the minimum value.

NOTICE:
Check that the minimum value is set at 0 mm (0 in.)



(e) Slowly rotate the crankshaft pulley clockwise until its groove is aligned with the groove of the timing gear cover.

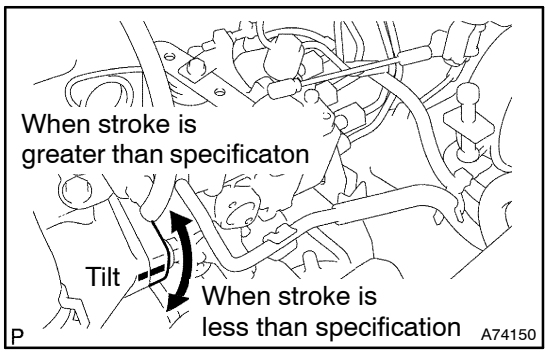
(f) Measure the plunger stroke.
Plunger stroke: 1.31 – 1.37 mm (0.0516 – 0.0539 in.)



7. ADJUST INJECTION TIMING

(a) Loosen the nuts.
(1) Loosen the 4 union nuts holding the injection pipes to the injection pump.
(2) Loosen the 2 nuts holding the injection pump to the timing gear case.

NOTICE:
Do not turn the nuts by more than 90˚.



(b) Adjust the plunger stroke by slightly tilting the injection pump body (See step (h)).

When the stroke is less than specification, tilt the pump forward the engine.

When the stroke is greater than the specification, tilt the pump opposite to the engine.

(c) Tighten the nuts and bolts:
(1) Tighten the 2 nuts holding the injection pump to the timing gear case.
Torque: 18.5 N·m (189 kgf·cm, 14 ft·lbf)

(2) Tighten the 4 bolts holding the injection pipes to the injection pump.

Torque: 25 N·m (255 kgf·cm, 18 ft·lbf)

(d) Recheck the plunger stroke.

(e) Remove the metal plate.

(f) Remove the SST and a dial indicator.

SST 09275–54011

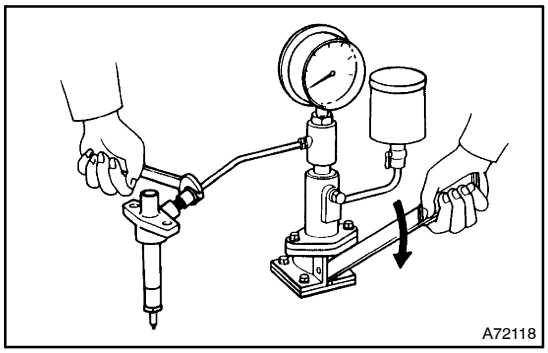
(g) Install a new gasket and the plug bolt of the distributive head plug.

Torque: 25.5 N·m (260 kgf·cm, 19 ft·lbf)

(h) Tighten the injection pump stay bolts.

Torque: 18.5 N·m (189 kgf·cm, 14 ft·lbf)

(i) Start the engine and check for fuel leaks.


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8. ADJUST INJECTION PRESSURE

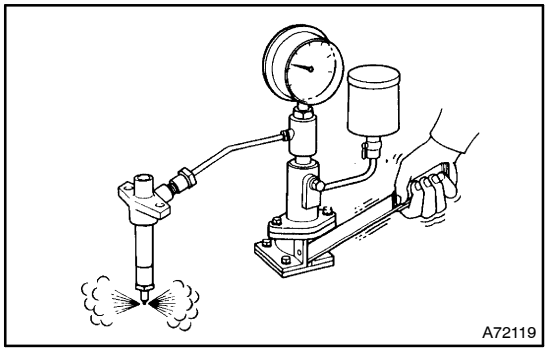
(a) Install the injection nozzle to the injection nozzle hand tester and bleed air from the union nut.

CAUTION:

Do not place your fingers over the nozzle injection hole.

(b) Pump the tester handle a few times as fast as possible to discharge the carbons from the injection hole.

(c) Pump the tester handle slowly and observe the pressure gauge.


A72119

(d) Read the pressure gauge just as the injection pressure begins to drop.

Opening pressure:
New nozzle
19,610 – 20,590 kPa
(200 – 210 kgf/cm^2, 2,840 – 2,990 psi)
Used nozzle
17,650 – 20,590 kPa
(180 – 210 kgf/cm^2, 2,560 – 2,990 psi)

HINT:

Proper nozzle operation can be determined by swishy sound.

If the opening pressure is not as specified, disassemble the nozzle holder and change the adjusting shim on the top of the pressure spring.

Adjusted opening pressure:
17,650 – 20,590 kPa
(180 – 210 kgf/cm^2, 2,560 – 2,990 psi)

Adjusting shim thickness: mm (in.)

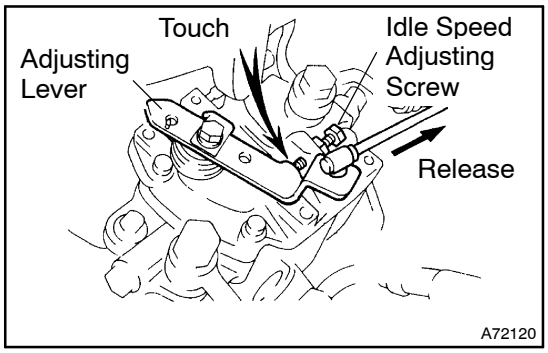
0.700 (0.0276)	1.125 (0.0443)	1.425 (0.0561)
0.750 (0.0295)	1.150 (0.0453)	1.450 (0.0571)
0.800 (0.0315)	1.175 (0.0463)	1.475 (0.0581)
0.850 (0.0335)	1.200 (0.0472)	1.500 (0.0591)
0.900 (0.0354)	1.225 (0.0482)	1.550 (0.0610)
0.950 (0.0374)	1.250 (0.0492)	1.600 (0.0630)

0.975 (0.0384)	1.275 (0.0502)	1.650 (0.0650)
1.000 (0.0394)	1.300 (0.0512)	1.700 (0.0669)
1.025 (0.0404)	1.325 (0.0522)	1.750 (0.0689)
1.050 (0.0413)	1.350 (0.0531)	1.800 (0.0709)
1.075 (0.0423)	1.375 (0.0541)	–
1.100 (0.0433)	1.400 (0.0551)	–

HINT:

- Changing the adjusting shim thickness by 0.025 mm (0.0010 in.) changes the injection pressure by about 373 kPa (3.8 kgf/cm^2, 54 psi).
- Only one adjusting shim should be used.

(e) Check that there is no dripping after the injection.

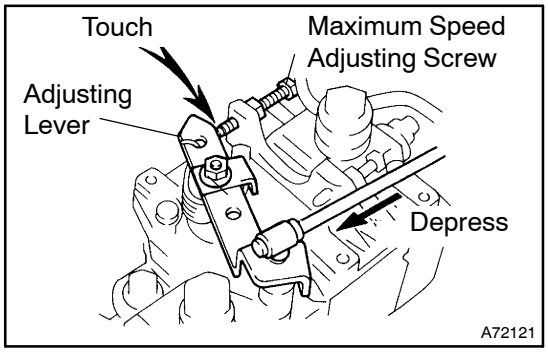


9. ADJUST IDLE SPEED

(a) Connect the tachometer.
(b) Warm up the engine.
(c) Check that the adjusting lever touches the idle speed adjusting screw when the accelerator pedal is released.

If not, adjust the accelerator linkage.

(d) Start the engine.
(e) Check the idle speed.
Idle speed: 650 – 750 rpm
(f) Adjust the idle speed.
(1) Disconnect the accelerator linkage.
(2) Loosen the lock nut of the idle speed adjusting screw.
(3) Adjust the idle speed by turning the idle speed adjusting screw.
(4) Securely tighten the lock nut, and recheck the idle speed.
(5) Reconnect the accelerator linkage.



10. ADJUST MAXIMUM SPEED

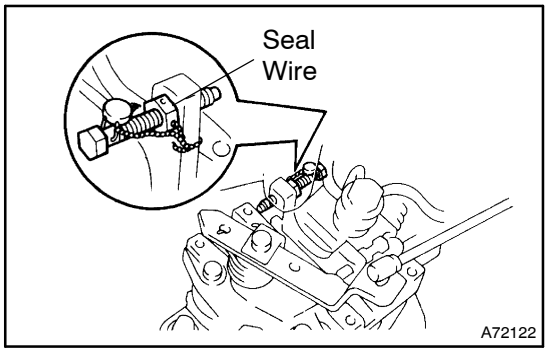
(a) Check that the adjusting lever touches the maximum speed adjusting screw when the accelerator pedal is fully-depressed.

If not, adjust the accelerator linkage.

(b) Start the engine.
(c) Fully depress the accelerator pedal all the way.
(d) Check the maximum speed.
Maximum speed: 4,050 – 4,250 rpm
(e) Adjust the maximum speed.
(1) Disconnect the accelerator linkage.
(2) Cut off the seal wire of the maximum speed adjusting screw.
(3) Loosen the lock nut of the maximum speed adjusting screw.

(4) Adjust the maximum speed by turning the maximum speed adjusting screw.

HINT:
Adjust at max speed. Then, raise the engine speed and recheck the maximum speed.

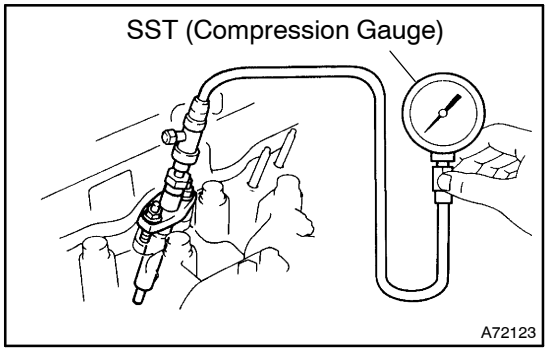


(5) Securely tighten the lock nut.
(6) Recheck the maximum speed.
(7) Reconnect the accelerator linkage.
(8) After the adjustment, adjust the accelerator linkage.
(9) Seal the maximum speed adjusting screw with a new seal wire.

11. 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 the engine.
(b) Remove the nozzle assy (See page 11–7).
(c) Disconnect the fuel cut solenoid connector.
(d) Install the gasket and SST (attachment) to the injection nozzle hole with the 2 nuts.
SST 09992–00025 (09992–00250, 09992–00211)
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)



(e) Connect SST (compression gauge) to the SST (attachment).
SST 09992–00025 (09992–00250, 09992–00211)
(f) Fully open the throttle valve, and start the engine.
(g) While cranking the engine, measure the compression pressure.

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

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

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

Compression pressure:
2,942 kPa (30.0 kgf/cm^2, 427 psi) or more
Minimum pressure: 1,961 kPa (20.0 kgf/cm^2, 284 psi)
Difference between each cylinder:
196 kPa (2.0 kgf/cm^2, 28 psi) or less

(i) If any cylinder has low pressure, pour a small amount of engine oil into the cylinder through the injection nozzle hole. Then repeat steps (a) through (d) for the cylinder with low pressure.
- If adding oil helps the pressure, the piston rings and/or cylinder bore may be worn or damaged.

- If pressure stays low, a valve may be sticking or seating improperly, or there may be leakage through the gasket.

(j) Remove the SST.
SST 09992–00025 (09992–00250, 09992–00211)

(k) Connect the fuel cut solenoid connector.

(l) Install the nozzle assy (See page 11–7).

(m) Start the engine and check for leaks.

12. INSPECT DIESEL SMOKE