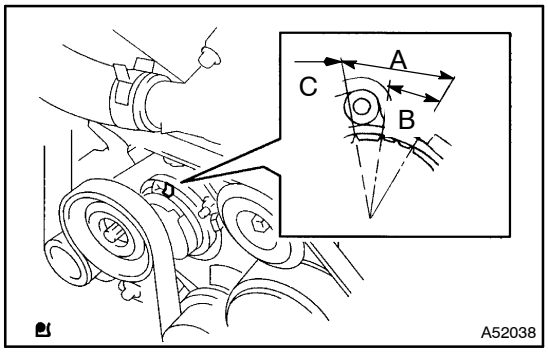
ENGINE

141MO–01

INSPECTION

1. INSPECT ENGINE COOLANT (See page 16–8)
2. INSPECT ENGINE OIL (See page 17–3)
3. INSPECT BATTERY (See page 19–23)
4. INSPECT AIR CLEANER FILTER ELEMENT SUB–ASSY
5. INSPECT SPARK PLUG (See page 18–6)



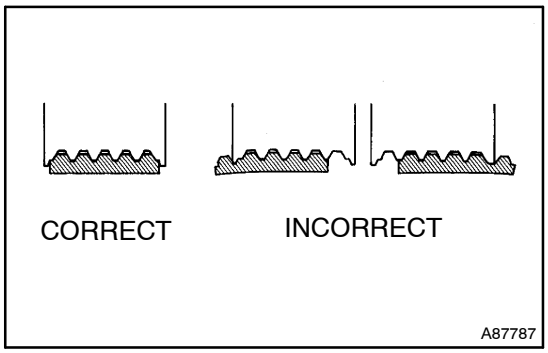
6. INSPECT FAN AND GENERATOR V BELT

HINT:

Use of the automatic tensioner has made tension and flexibility measurements unnecessary.

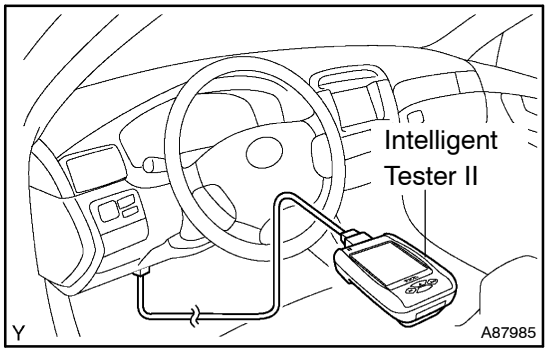
(a) Check that the indicator mark on the automatic tensioner is within range A as shown in the illustration.

(b) When the mark is out of the standard range, replace the V belt with a new one.



HINT:

- After installing the V belt, check that it fits properly in the ribbed grooves. Check with your hand to comfirm that the belt has not slipped out of the groove on the bottom of the crank pulley.
- A ”new belt” is a belt which has been used for less than 5 minutes on a running engine.
- A ”used belt” is a belt which has been used on a running engine for 5 minutes or more.
- After installing a new belt, run the engine for approximately 5 minutes and then recheck the tension.



7. INSPECT IGNITION TIMING

(a) Warm up the engine.

(b) Check the ignition timing.

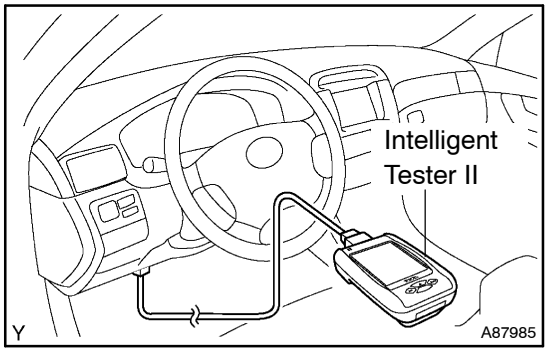
(1) Connect the intelligent tester II to the DLC3.

(2) Enter DATA LIST mode on the intelligent tester II.

Ignition timing 8 to 12° BTDC @ idle

HINT:

Please refer to the intelligent tester II operator’s manual for help on selecting the DATA LIST.



8. INSPECT ENGINE IDLE SPEED

(a) Warm up the engine.

(b) Check the idle speed.

(1) Connect the Intelligent tester II to the DLC3.

(2) Enter DATA LIST mode on the Intelligent tester II.

Idle speed: 700 to 800 rpm

NOTICE:

- **When checking the idle speed, the transmission should be in the neutral position.**
- **Check the idle speed with the cooling fan off.**
- **Switch off all accessories and A/C before connecting the intelligent tester II.**

HINT:

Please refer to the intelligent tester II operator's manual for further details.

9. INSPECT COMPRESSION

(a) Remove the V–bank cover.

(b) Remove the air cleaner inlet and intake air pipe.

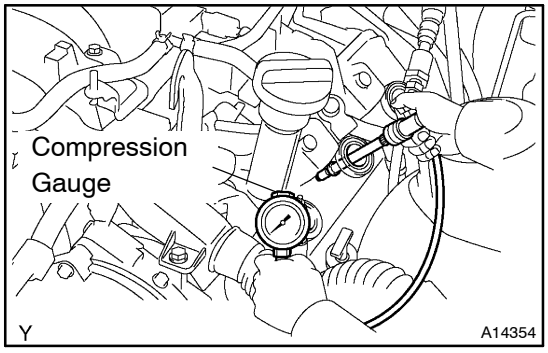
(c) Disconnect the throttle control motor connector.

(d) Remove the oil level gauge guide.

(e) Remove the 8 ignition coils.

(f) Remove the spark plugs.

(g) Disconnect the 8 injector connectors.



(h) Check the cylinder compression pressure.

SST 09992–00500

(1) Insert a compression gauge into the spark plug hole.

(2) Fully open the throttle.

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

Compression pressure:

1.2 MPa (12.5 kgf/cm^2, 174 psi)

Minimum pressure: 981 kPa (10.0 kgf/cm^2, 142 psi)

Difference between each cylinder:

98 kPa (1.0 kgf/cm^2, 14 psi)

NOTICE:

- **Always use a fully charged battery to obtain engine speed of 250 rpm or more.**
- **Check other cylinder's compression pressure in the same way.**
- **This measurement must be done as quickly as possible.**

(4) If the cylinder compression is low, pour a small amount of engine oil into the cylinder through the spark plug hole and inspect again.

HINT:

- If adding oil increases the compression, the piston rings and/or cylinder bore may be worn or damaged.

- If pressure stays low, a valve may be stuck or seated improperly, or there may be leakage in the gasket.

(i) Connect the 8 injector connectors.
(j) Install the spark plugs.
(k) Install the 8 ignition coils.
(l) Install the oil level gauge guide.
(m) Connect the throttle control motor connector.
(n) Install the air cleaner inlet and intake air pipe.
(o) Install the V–bank cover.

10. INSPECT CO/HC (LEADED GASOLINE SPEC.)

HINT:

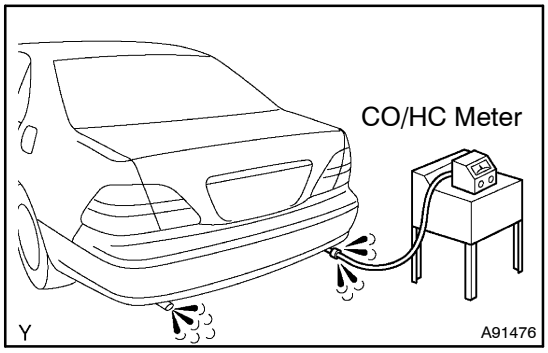
This check is used only to determine whether or not the idle CO complies with regulations.

(a) Initial condition:
  (1) Engine at normal operating temperature.
  (2) Air cleaner installed.
  (3) All pipes and hoses of air induction system connected.
  (4) All accessories switched OFF.
  (5) All vacuum lines properly connected.
  (6) SFI system wiring connectors fully seated.
  (7) Ignition timing set correctly.
  (8) Transmission in neutral position.
  (9) Tachometer and CO meter calibration at idle.

NOTICE:

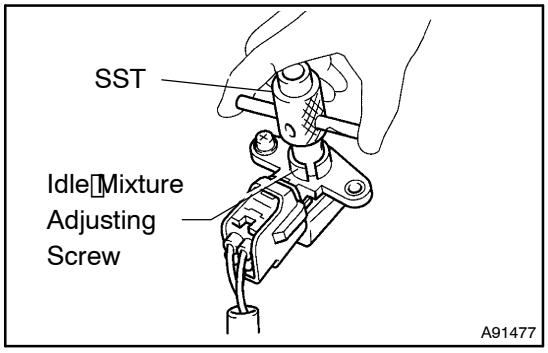
If a CO meter is not available, do not attempt to adjust the idle mixture. Always use a CO meter when adjusting the idle mixture. Use of the idle mixture screw for adjustments is typically not necessary if the vehicle is in good condition.

(b) Race the engine at 2,500 rpm for approximately 180 seconds.



(c) Insert a tester probe at least 40 cm (1.3 ft) into the tail pipe.
(d) Wait at least 1 minute before measuring to allow the concentration to stabilize. Complete the measuring within 3 minutes.

Idle CO concentration: 1.5 ± 0.5 %



If the CO concentration does not conform to regulations, adjust by turning the idle mixture adjusting screw in the variable resistor with SST.

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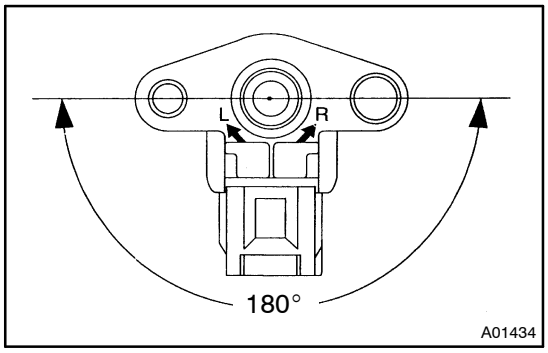
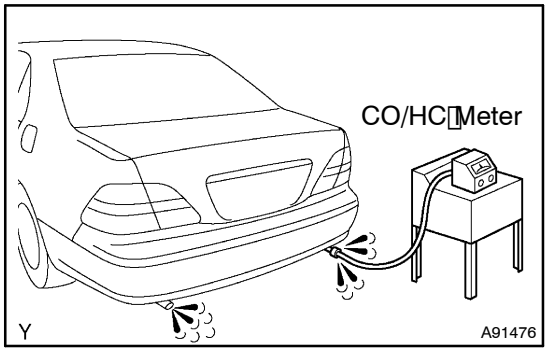


HINT:

The idle mixture adjusting screw can be tightened 180° as shown in the illustration.

- If the CO concentration is now within the specification, this adjustment is complete.
- If the CO concentration cannot be corrected by idle mixture adjustment, see the table below for other possible causes.

CO	Problems	Causes
High	Rough idle (Black smoke from exhaust)	1. Restricted air filter 2. Plugged PCV valve 3. Faulty SFI system: • Faulty pressure regulator • Clogged fuel return line • Defective ECT sensor • Faulty ECM • Faulty injectors • Faulty MAF meter • Faulty throttle position sensor



11. INSPECT CO/HC (UNLEADED GASOLINE SPEC.)

(a) Start the engine.

(b) Rev the engine at 2,500 rpm for approximately 180 seconds.

(c) Insert CO/HC meter testing probe at least 40 cm (1.3 ft) into the tailpipe during idling.

(d) Check CO/HC concentration at idle and/or 2,500 rpm.

HINT:

- Complete the measuring within 3 minutes.
- Check regulations and restrictions in your area when performing 2 mode CO/HC concentration testing (engine check at both idle speed and at 2,500 rpm).

(e) If the CO/HC concentration does not comply with regulations, troubleshoot in the order given below.

(1) Check heated oxygen sensor operation (see page 05–87 and 05–95).

(2) See the table on the next page for possible causes, and then inspect and repair.

CO	HC	Symptom	Causes
Normal	High	Rough idle	1. Faulty ignitions: • Incorrect timing • Fouled, shorted or improperly gapped plugs 2. Incorrect valve clearance 3. Leaky intake and exhaust valves 4. Leaky cylinder
Low	High	Rough idle (fluctuating HC reading)	1. Vacuum leaks: • PCV hose • Intake manifold • Throttle body 2. Lean mixture causing misfire
High	High	Rough idle (black smoke from exhaust)	1. Restricted air filter 2. Faulty SFI system: • Faulty pressure regulator • Defective ECT sensor • Faulty ECM • Faulty injector • MAF meter • Faulty throttle position sensor