

ENGINE TUNE-UP

INSPECTION OF ENGINE COOLANT

(See steps 1 and 2 on page [CO-5](#))

INSPECTION OF ENGINE OIL

(See steps 1 and 2 on page [LU-5](#))

INSPECTION OF BATTERY

(See steps 1 and 2 on page [CH-2](#))

Standard specific gravity:

1.25 – 7.27 when fully charged at 20°C (68°F)

INSPECTION OF AIR FILTER

(See step 3 on page [MA-4](#))

INSPECTION OF HIGH-TENSION CORDS

(See page [IG-6](#))

INSPECTION OF SPARK PLUGS

(See page [IG-6](#))

Correct electrode gap of new plug:

1.1 mm (0.043 in.)

Maximum electrode gap: 1.3 mm (0.051 in.)

NOTICE: Never attempt to adjust gap on used plug.

Recommended spark plugs:

ND PQ16R

NGK BCPR5EP11

INSPECTION OF DRIVE BELTS

(See step 2 on page [MA-4](#))

Drive belt tension:

Alternator New belt 175 ± 5 lb

Used belt 115 ± 20 lb

PS pump New belt 160 ± 20 lb

Used belt 100 ± 20 lb

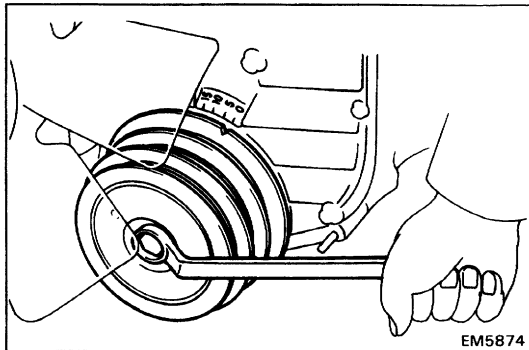
A/C New belt 160 ± 20 lb

Used belt 105 ± 10 lb

INSPECTION AND ADJUSTMENT OF VALVE CLEARANCE

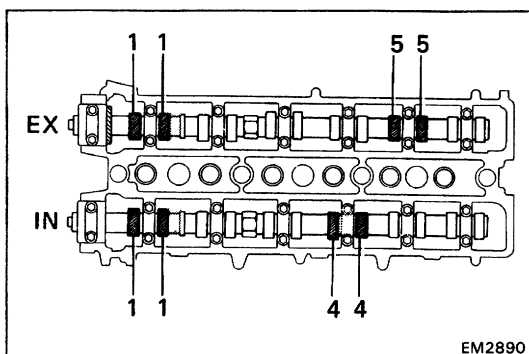
HINT: Inspect and adjust the valve clearance while the engine is cold.

1. REMOVE NO. 1 AIR CLEANER HOSE WITH AIR CONNECTOR PIPE
2. REMOVE PCV PIPE AND HOSES
3. REMOVE ACCELERATOR LINK
4. REMOVE AIR INTAKE CONNECTOR, VACUUM TRANSMITTING PIPE AND BRACKETS
5. DISCONNECT HIGH-TENSION CORDS
6. REMOVE CYLINDER HEAD COVERS
(See step 23 on page [EM-31](#))



7. SET NO. 1 CYLINDER TO TDC/COMPRESSION

- (a) Turn the crankshaft pulley and align its groove with the "0" mark on the No. 1 timing belt cover.
- (b) Check that the valve lifters on the No. 1 cylinder are loose and valve lifters on the No.6 cylinder are tight. If not, turn the crankshaft pulley one complete revolution.



8. INSPECT VALVE CLEARANCE

- (a) Check the clearance of No. 1 (IN) and No.4 (IN) and No. 1 (EX) and No. 5 (EX) valves.
 - Using a thickness gauge, measure the clearance between the valve lifter and camshaft.
 - Record the valve measurements which are out of specification. They will be used later to determine the required replacement adjusting shim.

Valve clearance (Cold):

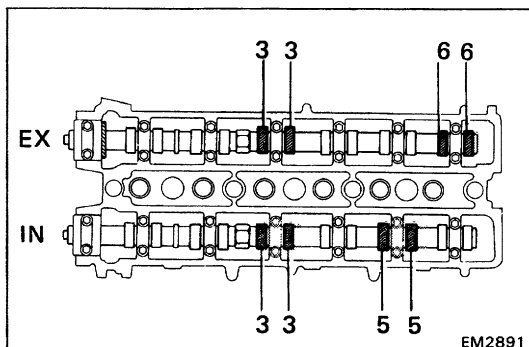
Intake 0.15 – 0.25 mm (0.006 – 0.010 in.)

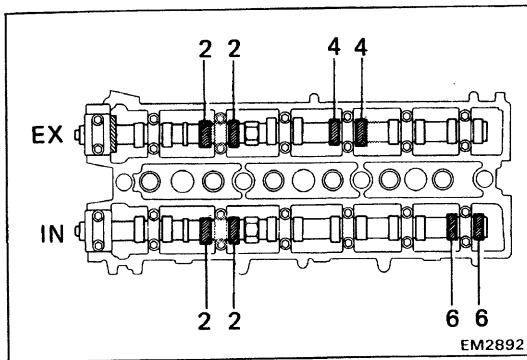
Exhaust 0.20 – 0.30 mm (0.008 – 0.012 in.)

- (b) Turn the crankshaft pulley 21/3 revolution (2400) and check the clearance of No.3 (IN) and No.5 (IN) and No. 3 (EX) and No. 6 (EX) valves.

HINT: Check that the valve lifters on the No.3 cylinder are loose.

- Measure the valve clearance.
(See procedure in step (a))





- (c) Turn the crankshaft pulley 213 revolution (2400) and check the clearance of No.2 (IN) and No.6 (IN) and No. 2 (EX) and No.4 (EX) valves.

HINT: Check that the valve lifters on the No.2 cylinder are loose.

- Measure the valve clearance.
[See procedure in step (a)]

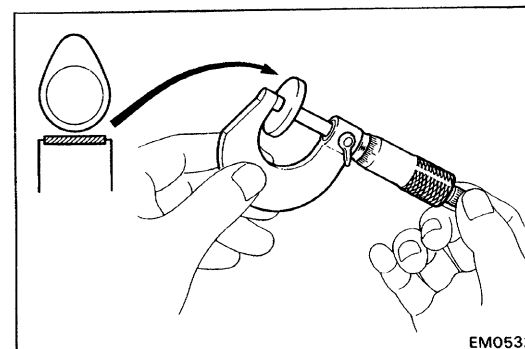
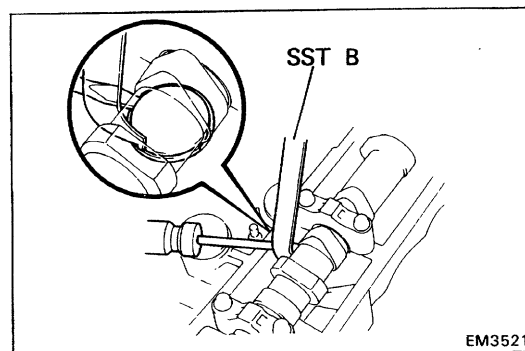
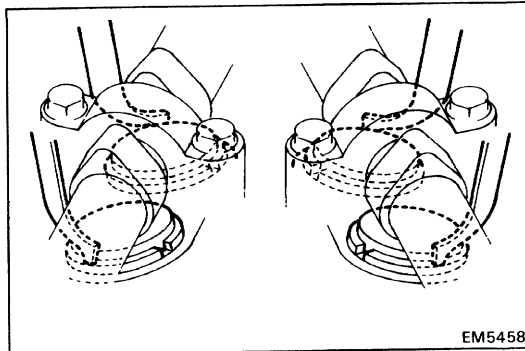
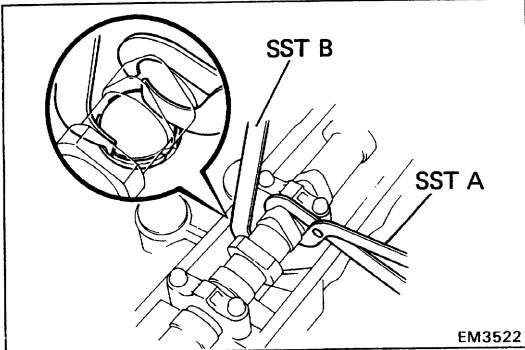
9. ADJUST VALVE CLEARANCE

- (a) Remove the adjusting shim.

- Turn the crankshaft to position the cam lobe of the camshaft on the adjusting valve upward.
- Position the valve lifter notch so that the shim can be removed with a small screwdriver.
- Using SST (A), press down the valve lifter and place SST (B) between the camshaft and valve lifter. Remove SST (A).

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HINT: For easy removal of the shim, when positioning SST (B), set it on the lifter so there is space enough to be able to remove the shim.



- Remove the adjusting shim with a small screw driver and magnetic finger.

- (b) Determine the replacement adjusting shim size by using the following Formula or Charts:

- Using a micrometer, measure the thickness of the shim which was removed.
- Calculate the thickness of the new shim so that the valve clearance comes within specified value

T Thickness of used shim

A Measured valve clearance

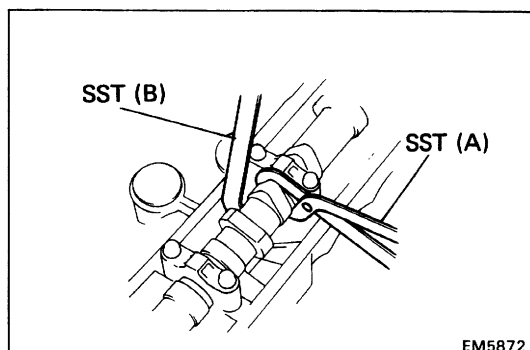
N Thickness of new shim

Intake $N = T + (A - 0.20 \text{ mm (0.0079 in.)})$

Exhaust $N = T + (A - 0.25 \text{ mm (0.0098 in.)})$

- Select a new shim with a thickness as close as possible to the calculated value.

HINT: Shims are available in –seventeen sizes, in increments of 0.05 mm (0.0020 in.), from 2.50 mm (0.0984 in.) to 3.30 mm (0.1299 in.).



(c) Install the new adjusting shim.

- Place the new adjusting shim on the valve lifter.
- Using SST (A), press down the valve lifter and remove SST (B).

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(d) Recheck the valve clearance.

10. INSTALL CYLINDER HEAD COVERS

(See step 4 on pages [EM-47](#), 48)

11. CONNECT HIGH-TENSION CORDS

12. INSTALL AIR INTAKE CONNECTOR, VACUUM TRANSMITTING PIPE AND BRACKET

13. INSTALL ACCELERATOR LINK

14. INSTALL PCV PIPE AND HOSES

15. INSTALL NO. 1 AIR CLEANER HOSE WITH AIR CONNECTOR PIPE

Adjusting Shim Selection Chart

INTAKE

[illegible]

Intake valve clearance (Cold):

0.15 – 0.25 mm (0.006 – 0.010 in.)

EXAMPLE: The 2.800 mm (0.1 102 in.) shim is installed and measured clearance is 0.450 mm (0.0177 in.). Replace the 2.800 mm (0.1 102 in.) shim with No. 24 shim.

[illegible]

EXAMPLE: The 2.800 mm (0.1 102 in.) shim is installed and measured clearance is 0.450 mm (0.0177 in.). Replace the 2.800 mm (0.1 102 in.) shim with No.22 shim.

INSPECTION AND ADJUSTMENT OF IGNITION TIMING

(See steps 6 to 9 on pages [IG-11](#), 12)

Ignition timing:

10° BTDC @ idle

(w/ Terminals TE1 and E1 connected)

IDLE AND/OR 2,500 RPM HC/CO CONCENTRATION CHECK METHOD

HINT: This check method is used only to determine whether or not the idle and/or 2,500 rpm HC/CO complies with regulations.

1. INITIAL CONDITIONS

- (a) Air cleaner installed
- (b) Engine at normal operating temperature
- (c) All pipes and hoses of air induction system connected
- (d) All accessories switched OFF
- (e) All vacuum lines properly connected

HINT: All vacuum hoses for EGR system etc. should be properly connected.

- (f) EFI system wiring connectors fully plugged
- (g) Ignition timing set correctly
- (h) Transmission in neutral range
- (i) Tachometer and HC/CO meter calibrated and at hand

2. START ENGINE

3. RACE ENGINE AT 2,500 RPM FOR APPROX. 2 MINUTES

4. INSERT TESTING PROBE OF HC/CO METER INTO TAIL PIPE AT 40 cm (1.3 ft)

5. CHECK HC/CO CONCENTRATION AT IDLE AND/OR 2,500 RPM

Complete the measuring within three minutes.

HINT: When performing the 2 mode 12,500 rpm and idle) test, follow the measurement order prescribed by the regulations.

If the HC/CO concentration at 2,500 rpm does not comply with regulations, try the following procedure.

Race the engine again at 2,500 rpm for approx. 1 minute, and quickly repeat steps 4 and 5 above. This may correct the problem.

