

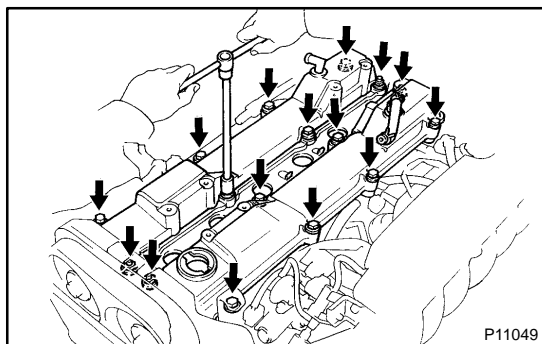
# VALVE CLEARANCE INSPECTION

EM1G4-01

## HINT:

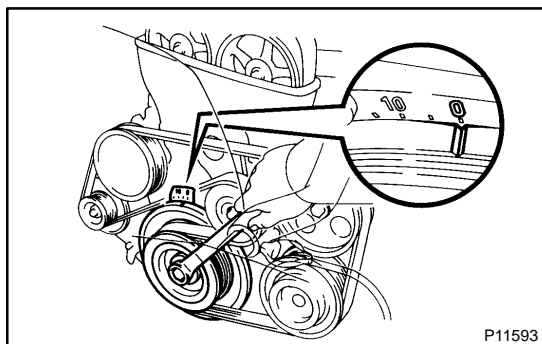
Inspect and adjust the valve clearance when the engine is cold.

1. **REMOVE THROTTLE BODY AND INTAKE AIR CONNECTOR ASSEMBLY** (See page [SF-21](#))
2. **DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS** (See page [IG-1](#))



3. **REMOVE NO.3, NO.1 AND NO.2 CYLINDER HEAD COVERS**

- (a) Remove the 4 bolts, 4 nuts and No.3 cylinder head cover.
- (b) Remove the 4 bolts, No.1 cylinder head cover and gasket.
- (c) Remove the 4 bolts, No.2 cylinder head cover and gasket.

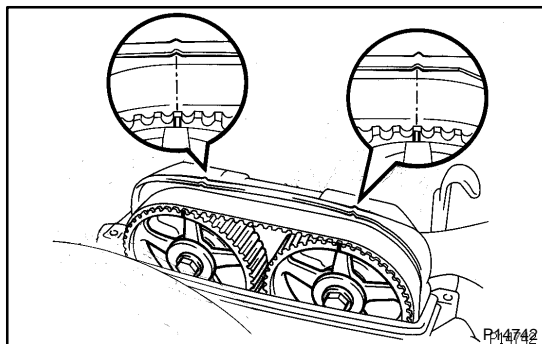


4. **SET NO.1 CYLINDER TO TDC/COMPRESSION**

- (a) Turn the crankshaft pulley and align its groove with the timing mark "0" of the No.1 timing belt cover.

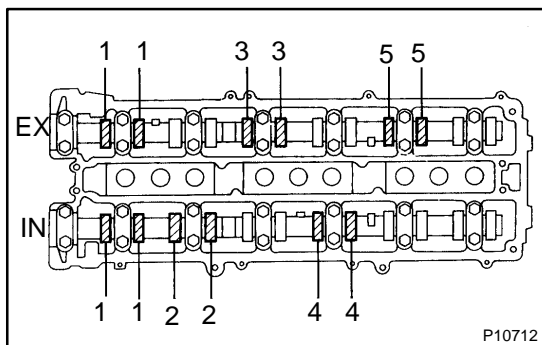
## NOTICE:

Always turn the crankshaft clockwise.



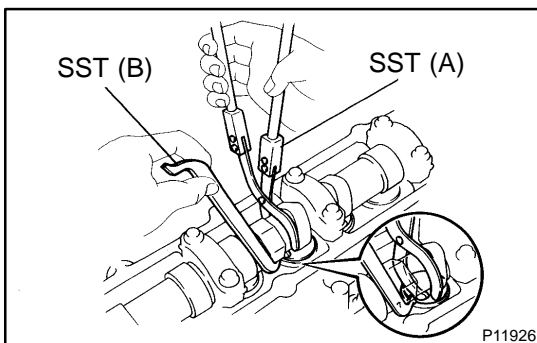
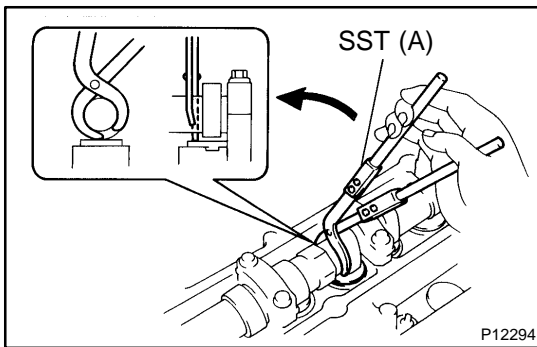
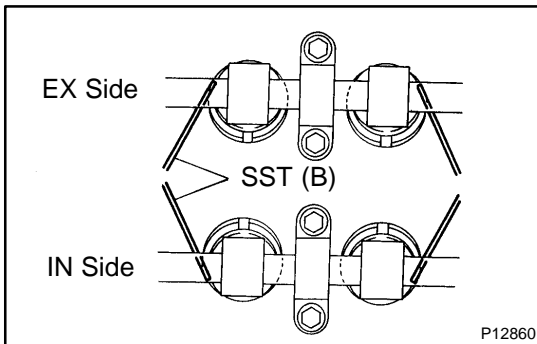
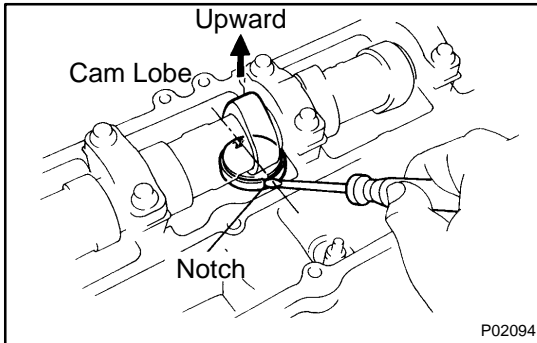
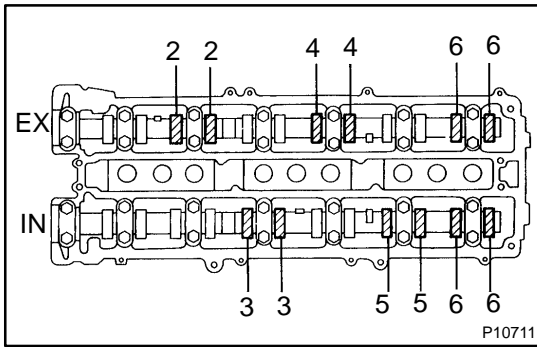
- (b) Check that the timing marks of the camshaft timing pulleys are aligned with the timing marks of the No.4 timing belt cover.

If not, turn the crankshaft 1 revolution (360°).



5. **INSPECT VALVE CLEARANCE**

- (a) Check only those valves indicated in the illustration.
  - Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
  - Record the valve clearance measurements of those that 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****0.25 – 0.35 mm (0.010 – 0.014 in.)**

- (b) Turn the crankshaft pulley 1 revolution (360°), and align the groove with the timing mark "0" of the No.1 timing belt cover.
- (c) Check only the valves indicated as shown. Measure the valve clearance (See procedure in step (a)).

**6. ADJUST VALVE CLEARANCE**

- (a) Remove the adjusting shim.
  - Turn the camshaft so that the cam lobe for the valve to be adjusted faces up.
  - Turn the valve lifter with a screwdriver so that the notches are perpendicular to the camshaft.

- Insert SST (B) gently from the inside as shown in the illustration.

- Using SST (A), hold the camshaft as shown in the illustration.

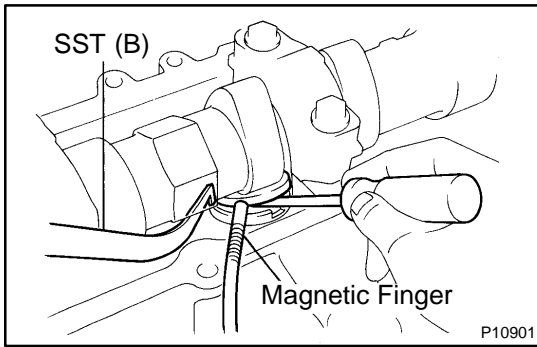
SST 09248-55040 (09248-05410)

- Using SST (A), press down the valve lifter and place SST (B) between the camshaft and valve lifter. Remove SST (A).

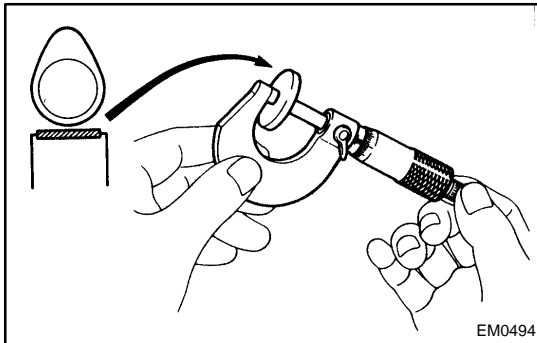
SST 09248-55040 (09248-05410, 09248-05420)

**HINT:**

- Apply SST (B) at slight angle on the side marked with "7", at the position shown in the illustration.



- Using a small screwdriver and a magnetic finger, remove the adjusting shim.



- (b) Determine the replacement adjusting shim size according to the following formula or Charts on the next 2 pages:
- Using a micrometer, measure the thickness of the removed shim.
  - Calculate the thickness of a new shim so the valve clearance comes within specified value.  
 T..... Thickness of used shim  
 A..... Measured valve clearance  
 N..... Thickness of new shim

**Intake**

$$N = T + (A - 0.20 \text{ mm (0.008 in.)})$$

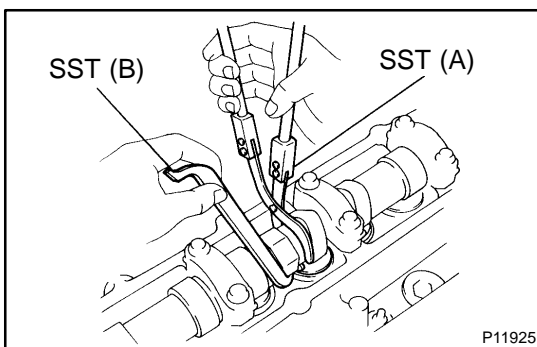
**Exhaust**

$$N = T + (A - 0.30 \text{ mm (0.012 in.)})$$

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

**HINT:**

Shims are available in 17 sizes in increments of 0.050 mm (0.0020 in.), from 2.500 mm (0.0984 in.) to 3.300 mm (0.1299 in.).



- (c) Install a new adjusting shim.
- Place a new adjusting shim on the valve lifter, with imprinted numbers facing down.
  - Press down the valve lifter with SST (A), and remove SST (B).

SST 09248-55040

- (d) Recheck the valve clearance.

1997 LEXUS SC400/SC300 (RM513U)

**Author :**

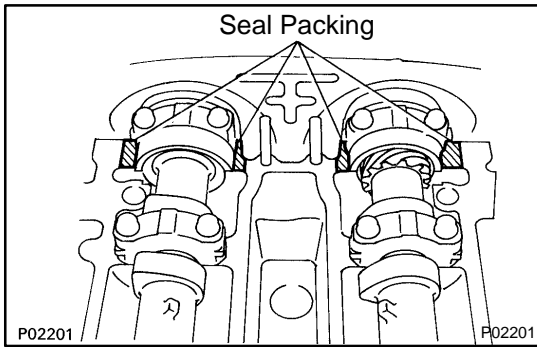
**Date :**

V00719

**Exhaust valve clearance (Cold):**  
**0.25 – 0.35 mm (0.010 – 0.014 in.)**

HINT: New shims have the thickness in millimeters imprinted on the face.

Shim No.	Thickness	Shim No.	Thickness
1	2.500 (0.0984)	10	2.950 (0.1161)
2	2.550 (0.1004)	11	3.000 (0.1181)
3	2.600 (0.1024)	12	3.050 (0.1201)
4	2.650 (0.1043)	13	3.100 (0.1220)
5	2.700 (0.1063)	14	3.150 (0.1240)
6	2.750 (0.1083)	15	3.200 (0.1260)
7	2.800 (0.1102)	16	3.250 (0.1280)
8	2.850 (0.1122)	17	3.300 (0.1299)
9	2.900 (0.1142)		

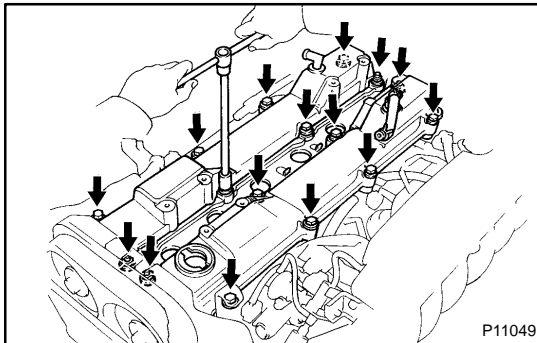


## 7. REINSTALL NO.1, NO.2 AND NO.3 CYLINDER HEAD COVERS

- (a) Remove any old packing (FIPG) material.
- (b) Apply seal packing to the cylinder head as shown in the illustration.

**Seal packing: Part No. 08826-00080 or equivalent**

- (c) Install the gaskets to the No.1 and No.2 cylinder head covers.



- (d) Install the No.1 cylinder head cover with the 4 bolts.
- (e) Install the No.2 cylinder head cover with the 4 bolts.
- (f) Install the No.3 cylinder head cover with the 4 bolts and 4 nuts.

**Torque: 8.3 N·m (85 kgf·cm, 74 in.-lbf)**

## 8. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

## 9. REINSTALL THROTTLE BODY AND INTAKE AIR CONNECTOR ASSEMBLY (See page [SF-28](#))