

VALVE CLEARANCE INSPECTION

HINT:

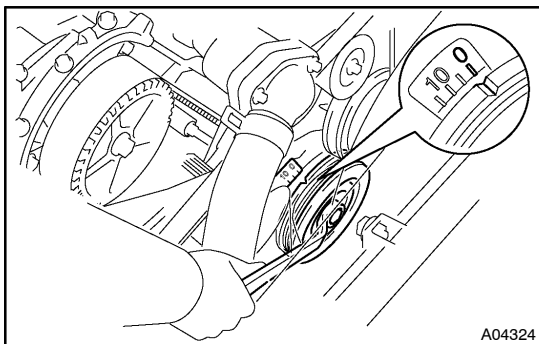
Inspect and adjust the valve clearance when the engine is cold.

1. **DRAIN ENGINE COOLANT**
2. **REMOVE BATTERY CLAMP COVER**
3. **REMOVE V-BANK COVER**
4. **REMOVE AIR CLEANER AND INTAKE AIR CONNECTOR ASSEMBLY**
5. **REMOVE NO.3 TIMING BELT COVERS**
(See page [EM-15](#))
6. **REMOVE IGNITION COILS** (See page [IG-6](#))
7. **REMOVE RH CYLINDER HEAD COVER**

Remove the 9 bolts, the 9 seal washers and the cylinder head cover.

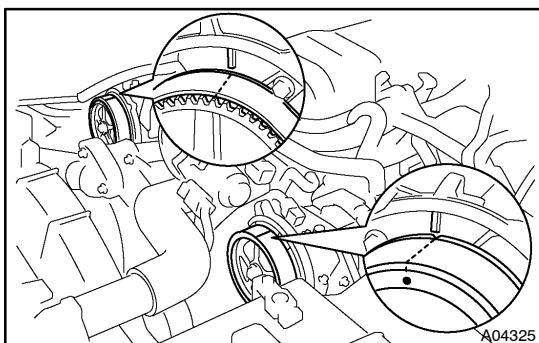
8. REMOVE LH CYLINDER HEAD COVER

- (a) Remove the oil dipstick for the transmission.
- (b) Disconnect the PCV hose.
- (c) Disconnect the engine wire clamp from the wire bracket on the cylinder head cover.
- (d) Remove the 9 bolts, the 9 seal washers and the cylinder head cover.

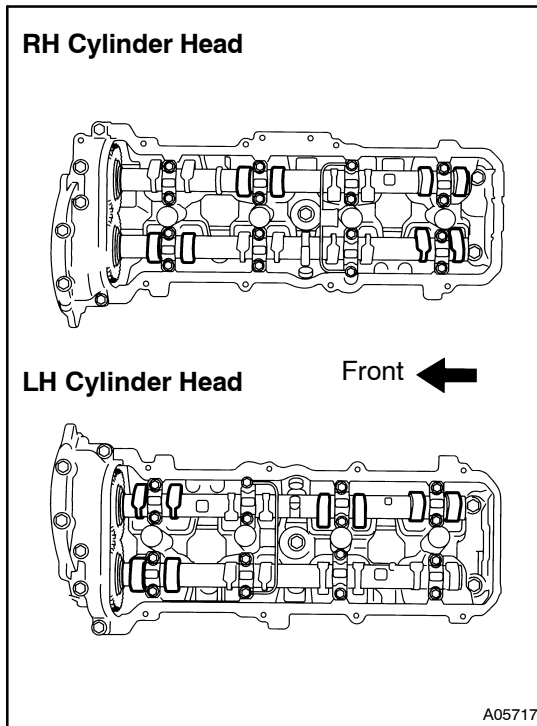


9. SET NO.1 CYLINDER TO TDC/COMPRESSION

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



- (b) Check that the timing marks of the camshaft timing pulleys and that of the timing belt rear plates are aligned. If not, turn the crankshaft 1 revolution (360°) and align the mark as above.

**10. INSPECT VALVE CLEARANCE**

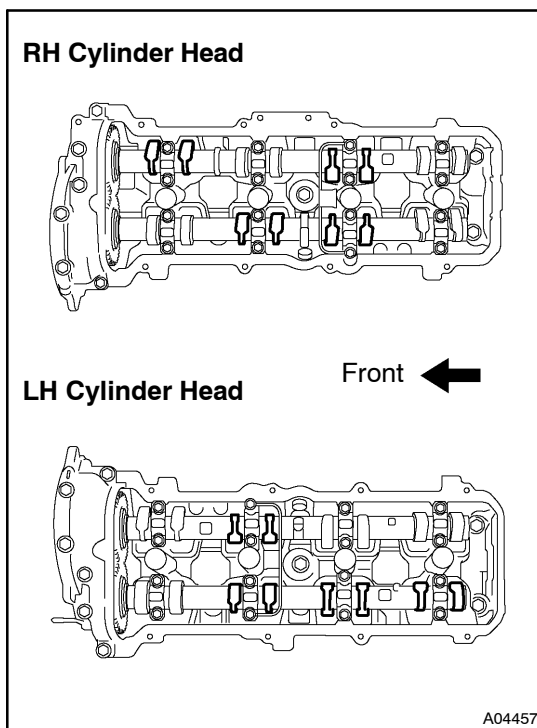
- (a) Check only the valves indicated.
- Using a feeler gauge, measure the clearance between the valve lifter and the camshaft.
 - Record the out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.

Valve clearance (Cold):**Intake**

0.15 – 0.25 mm (0.006 – 0.010 in.)

Exhaust

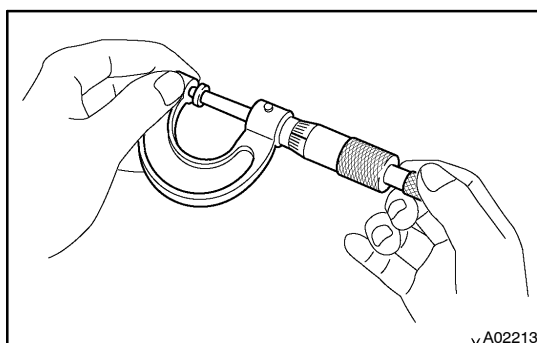
0.25 – 0.35 mm (0.010 – 0.014 in.)



- (b) Turn the crankshaft 1 revolution (360°) and align the mark as above (See procedure in step 9).
- (c) Check only the valves indicated as shown. Measure the valve clearance (See procedure in step (a)).

11. ADJUST VALVE CLEARANCE

- (a) Remove the timing belt (See page [EM-15](#)).
- (b) Remove the camshafts (See page [EM-44](#)).
- (c) Remove the valve lifter and adjusting shim.



- (d) Determine the replacement adjusting shim size according to the following Formula and Charts:
- Using a micrometer, measure the thickness of the removed shim.
 - Calculate the thickness of a new shim so that the valve clearance comes within the specified value.

T Thickness of removed 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 the closest thickness as close as possible to the calculated value.

HINT:

Shims are available in 41 increments of 0.020 mm (0.0008 in.), from 2.00 mm (0.0787 in.) to 2.80 mm (0.1102 in.).

- (e) Place a new adjusting shim on the valve.
- (f) Place the valve lifter.
- (g) Reinstall the camshafts (See page [EM-57](#)).
- (h) Reinstall the timing belt (See page [EM-22](#)).
- (i) Recheck the valve clearance.

12. REINSTALL CYLINDER HEAD COVERS**13. REINSTALL IGNITION COILS****14. REINSTALL NO.3 TIMING BELT COVERS (See page [EM-22](#))****15. REINSTALL AIR CLEANER AND INTAKE AIR CONNECTOR ASSEMBLY****16. REFILL WITH ENGINE COOLANT****17. START ENGINE AND CHECK FOR LEAKS****18. RECHECK ENGINE COOLANT LEVEL****19. REINSTALL V-BANK COVER****20. REINSTALL BATTERY CLAMP COVER**

2004 LEXUS LX470 (RM1056U)

The 2.300 mm (0.0906 in.) shim is installed, and the measured clearance is 0.440 mm (0.0173 in.). Replace the 2.300 mm (0.0906 in.) shim with a No. 44 shim.