VALVE CLEARANCE ADJUSTMENT
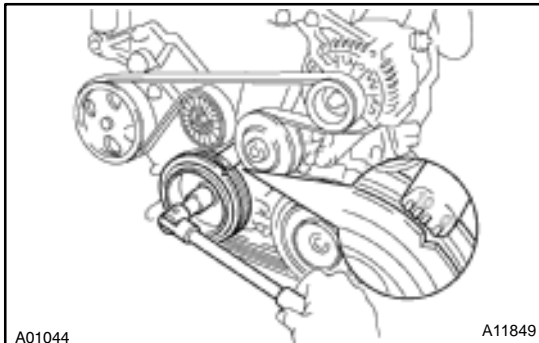
EM19B–01

HINT:

Inspect and adjust the valve clearance when the engine is cold.
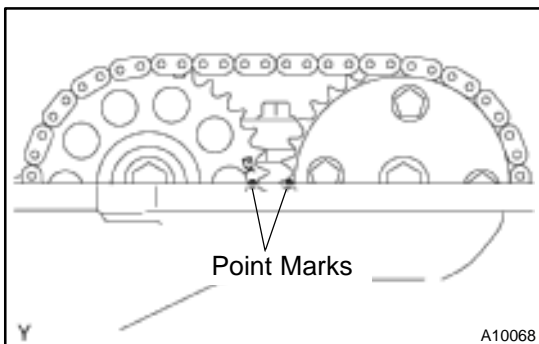
1. **REMOVE CYLINDER HEAD COVER (See page EM–13)**

2. **SET NO. 1 CYLINDER TO TDC/COMPRESSION**
(a) Turn the crankshaft pulley, and align its groove with the timing mark 0 of the timing chain cover.

Point Marks

(b) Check that the point marks of the camshaft timing sprocket and VVT timing sprocket are in straight line on the timing chain cover surface as shown in the illustration.

If not, turn the crankshaft 1 revolution (360˚) and align the marks as above.
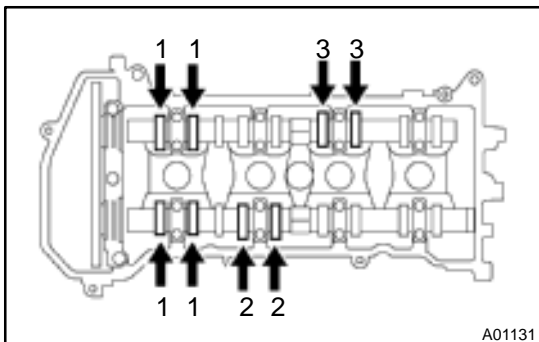
3. **INSPECT VALVE CLEARANCE**
(a) Check only the valves indicated.
  (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
  (2) Record the out–of–specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.
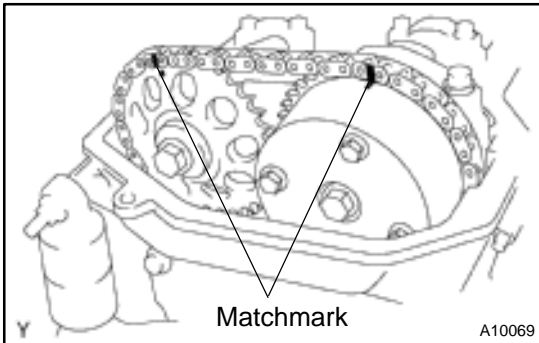
Valve clearance (Cold):

Intake	0.15 – 0.25 mm (0.006 – 0.010 in.)
Exhaust	0.25 – 0.35 mm (0.010 – 0.014 in.)

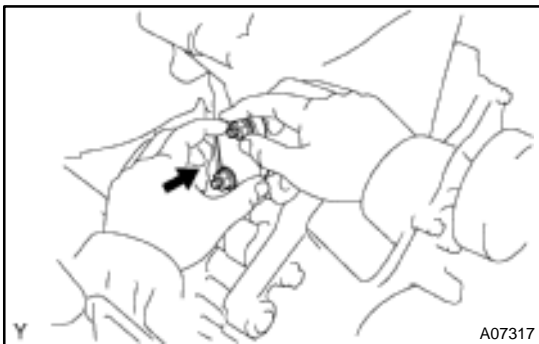(b) Turn the crankshaft 1 revolution (360˚) and align the mark as above (See step 2).
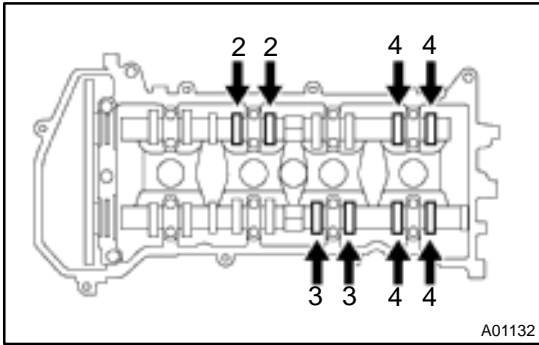
(c) Check only the valves indicated as shown.
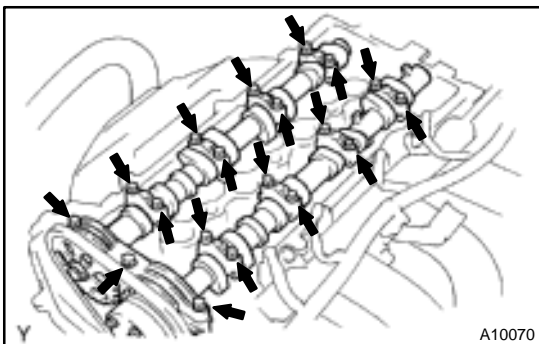Measure the valve clearance (See step (a)).

4. ADJUST VALVE CLEARANCE
(a) Set the No. 1 cylinder to the TDC/compression (See step 2).
(b) Place matchmarks on the timing chain and camshaft timing sprockets.

(c) Remove the 2 nuts and chain tensioner.

(d) Remove the 2 camshaft and timing sprocket assemblies.
    (1) Remove the 19 bolts and 9 camshaft bearing caps (See page EM–20).
    (2) Remove the 2 camshaft and timing sprocket assemblies.
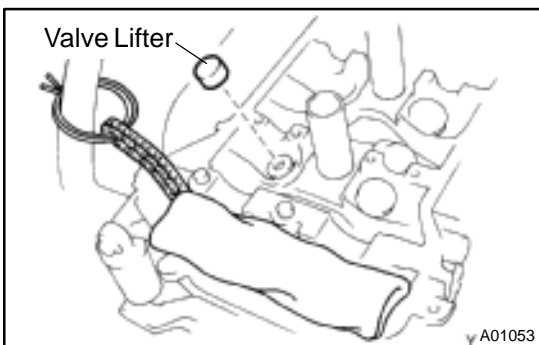
(e) Tie the timing chain as shown in the illustration.
NOTICE:
- **Be careful not to drop anything inside the timing chain cover.**
- **Do not allow the chain to come into contact with water or dust.**
(f) Remove the valve lifter.
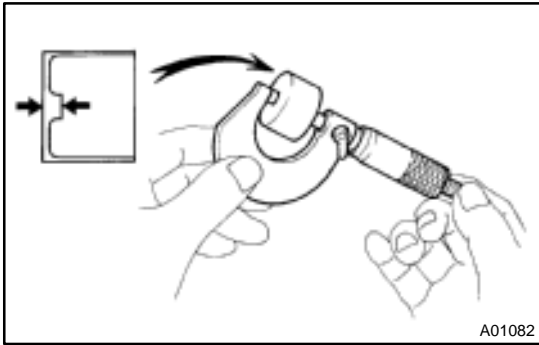
(g) Determine the replacement valve lifter size according to these Formula or Charts:
- Using a micrometer, measure the thickness of the removed lifter.
- Calculate the thickness of a new lifter so the valve clearance comes within the specified value.
  T..........Thickness of used lifter
  A.........Measured valve clearance
  N.........Thickness of new lifter

Intake: N = T + (A − 0.20 mm (0.008 in.))
**Exhaust: N = T + (A − 0.30 mm (0.012 in.))**
- Select a new lifter with a thickness as close as possible to the calculated values.

HINT:
Lifters are available in 35 sizes in increments of 0.020 mm (0.0008 in.), from 5.060 mm (0.1992 in.) to 5.740 mm (0.2260 in.).

(h) Reinstall the valve lifter (See page EM–44).
(i) Align the crankshaft pulley groove with the timing mark 0 of the timing chain cover.
(j) Hold the timing chain, and place the intake camshaft and timing sprocket assembly.
(k) Align the matchmarks on the timing chain and camshaft timing sprocket.
(l) Reinstall the 2 camshaft and timing sprocket assemblies (See page EM–46).
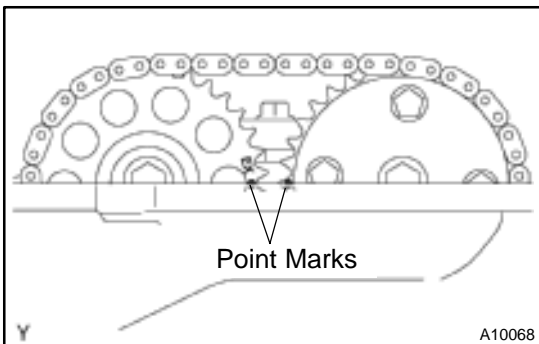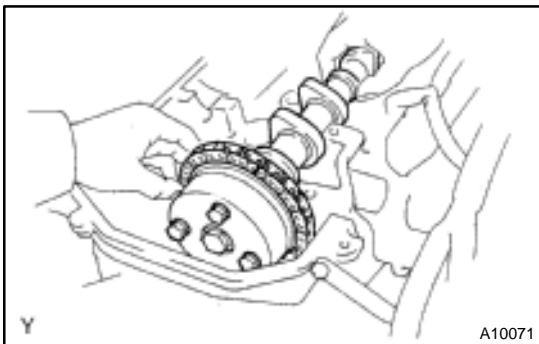
(m) Check that the point marks of the camshaft timing sprocket and VVT timing sprocket are in straight line on the timing chain cover surface, as shown in the illustration.

Point Marks
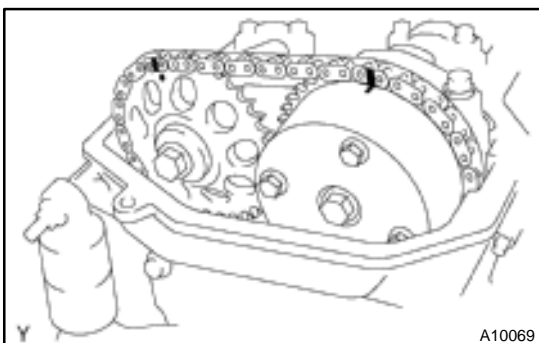
(n) Check that the matchmarks on the timing chain and 2 timing sprockets.
(o) Install the chain tensioner (See page EM–20).
(p) Recheck the valve clearance (See step 3).
(q) Check the valve timing (See page EM–20).
5. REINSTALL CYLINDER HEAD COVER (See page EM–20)

Valve Lifter Selection Chart (Intake)

(Valve lifter selection chart — matrix of Installed lifter thickness mm (in.) vs. Measured clearance mm (in.). Chart values not legibly reproducible.)

New Lifter Thickness　　mm (in.)

Lifter No.	Thickness	Lifter No.	Thickness	Lifter No.	Thickness
06	5.060 (0.1992)	30	5.300 (0.2087)	54	5.540 (0.2181)
08	5.080 (0.2000)	32	5.320 (0.2094)	56	5.560 (0.2189)
10	5.100 (0.2008)	34	5.340 (0.2102)	58	5.580 (0.2197)
12	5.120 (0.2016)	36	5.360 (0.2110)	60	5.600 (0.2205)
14	5.140 (0.2024)	38	5.380 (0.2118)	62	5.620 (0.2213)
16	5.160 (0.2031)	40	5.400 (0.2126)	64	5.640 (0.2220)
18	5.180 (0.2039)	42	5.420 (0.2134)	66	5.660 (0.2228)
20	5.200 (0.2047)	44	5.440 (0.2142)	68	5.680 (0.2236)
22	5.220 (0.2055)	46	5.460 (0.2150)	70	5.700 (0.2244)
24	5.240 (0.2063)	48	5.480 (0.2157)	72	5.720 (0.2252)
26	5.260 (0.2071)	50	5.500 (0.2165)	74	5.740 (0.2260)
28	5.280 (0.2079)	52	5.520 (0.2173)		

Intake valve clearance (Cold):
 0.15 – 0.25 mm (0.006 – 0.010 in.)
EXAMPLE:　The 5.250 mm (0.2067 in.) lifter is installed, and
the measured clearance is 0.400 mm (0.0157 in.).
Replace the 5.250 mm (0.2067 in.) lifter with a new No. 46 lifter.

EM–8

ENGINE MECHANICAL – VALVE CLEARANCE

2000 MR2 (RM760U)

Author :

Date :

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A01235

Valve Lifter Selection Chart (Exhaust)

New lifter thickness   mm (in.)

Lifter No.	Thickness	Lifter No.	Thickness	Lifter No.	Thickness
06	5.060 (0.1992)	30	5.300 (0.2087)	54	5.540 (0.2181)
08	5.080 (0.2000)	32	5.320 (0.2094)	56	5.560 (0.2189)
10	5.100 (0.2008)	34	5.340 (0.2102)	58	5.580 (0.2197)
12	5.120 (0.2016)	36	5.360 (0.2110)	60	5.600 (0.2205)
14	5.140 (0.2024)	38	5.380 (0.2118)	62	5.620 (0.2213)
16	5.160 (0.2031)	40	5.400 (0.2126)	64	5.640 (0.2220)
18	5.180 (0.2039)	42	5.420 (0.2134)	66	5.660 (0.2228)
20	5.200 (0.2047)	44	5.440 (0.2142)	68	5.680 (0.2236)
22	5.220 (0.2055)	46	5.460 (0.2150)	70	5.700 (0.2244)
24	5.240 (0.2063)	48	5.480 (0.2157)	72	5.720 (0.2252)
26	5.260 (0.2071)	50	5.500 (0.2165)	74	5.740 (0.2260)
28	5.280 (0.2079)	52	5.520 (0.2173)		

Intake valve clearance (Cold):
0.25 – 0.35 mm (0.010 – 0.014 in.)
EXAMPLE: The 5.340 mm (0.2102 in.) lifter is installed, and the measured clearance is 0.440 mm (0.0173 in.).
Replace the 5.340 mm (0.2102 in.) lifter with a new No. 48 lifter.