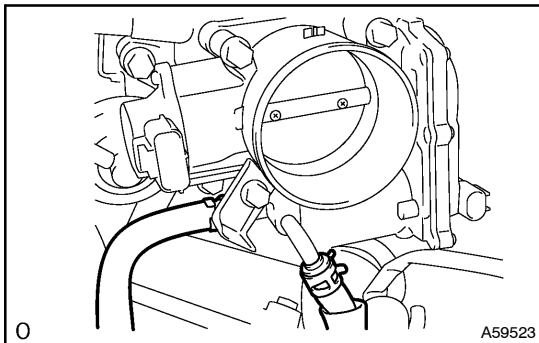


# VALVE CLEARANCE

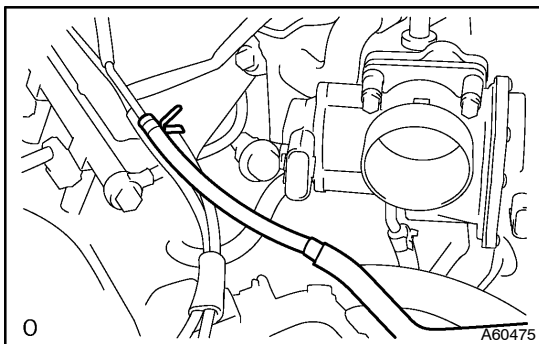
## ADJUSTMENT

1401Z-02

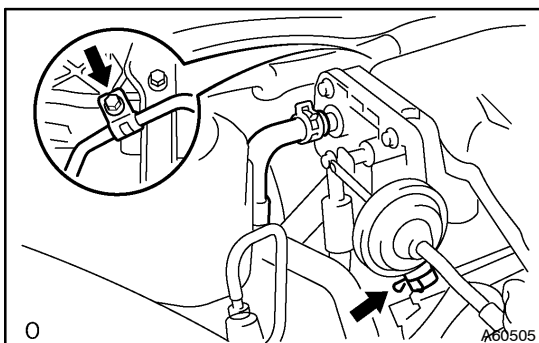
1. DRAIN COOLANT (See page 16-7)
2. REMOVE FRONT FENDER APRON SEAL RH
3. REMOVE V-BANK COVER SUB-ASSY  
(See page 14-20)
4. REMOVE RADIATOR HOSE INLET
5. REMOVE FRONT SUSPENSION UPPER BRACE CENTER  
(W/ FRONT SUSPENSION BRACE UPPER CENTER)
6. REMOVE AIR CLEANER ASSEMBLY WITH HOSE (See page 10-6)
  7. REMOVE INTAKE AIR SURGE TANK
    - (a) Disconnect the throttle position sensor connector.
    - (b) Disconnect the throttle control motor sensor connector.



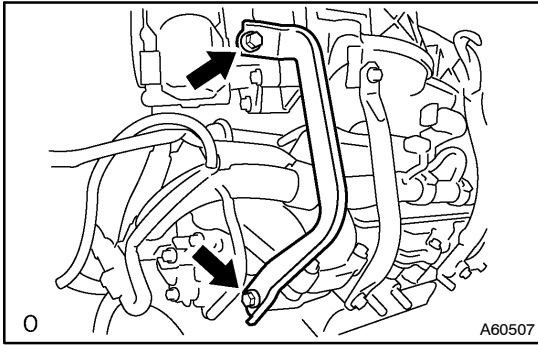
- (c) Disconnect the 2 water by-pass hoses.



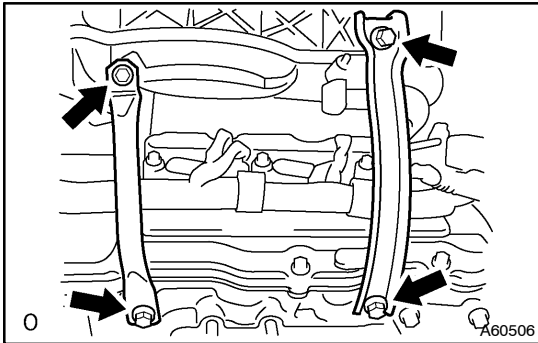
- (d) Disconnect the purge hose.



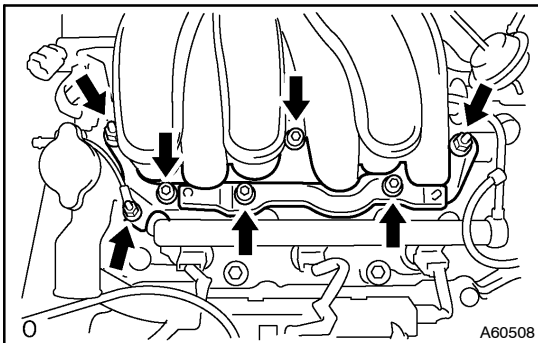
- (e) Disconnect the hoses and remove the nut.



- (f) Remove the 2 bolts and surge tank stay No. 2.



- (g) Remove the 2 bolts and No.1 engine hanger.  
 (h) Remove the 2 bolts and surge tank stay No. 1.  
 (i) Disconnect the engine wire from emission control valve set.  
 (j) Remove the 2 nuts and emission control valve set.

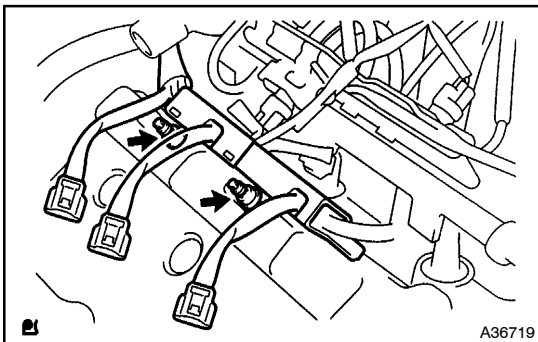


- (k) Using an 8 mm socket hexagon wrench, remove the 4 bolts, 2 nuts, emission control valve bracket and intake air surge tank.

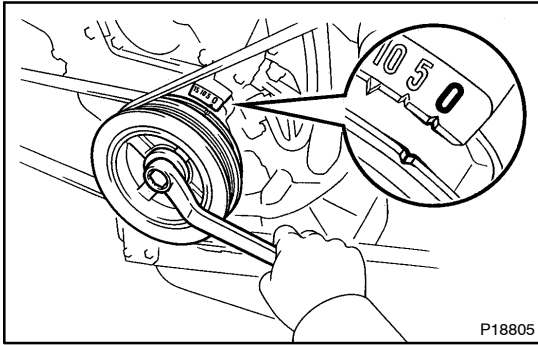
## 8. REMOVE IGNITION COIL ASSY

## 9. REMOVE CYLINDER HEAD COVER SUB-ASSY

## 10. REMOVE CYLINDER HEAD COVER SUB-ASSY LH



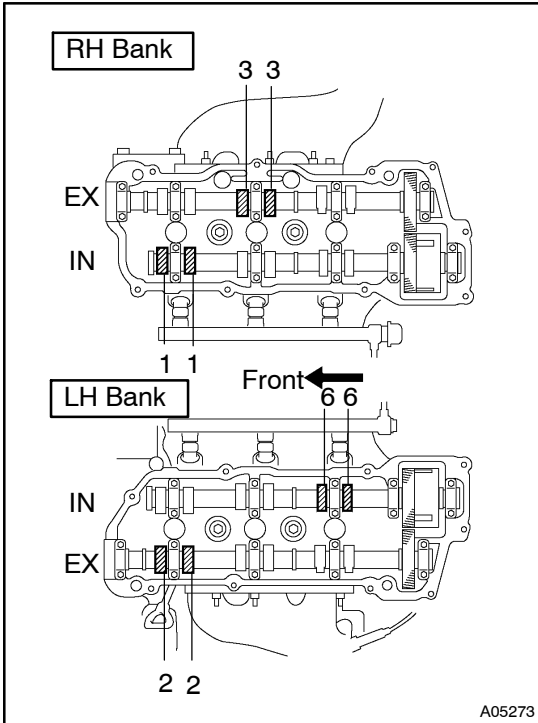
- (a) Using an E6 torx socket wrench, remove the 2 bolts, and disconnect the engine wire protector.  
 (b) Remove the 9 bolts and cylinder head cover.



**11. INSPECT VALVE CLEARANCE**

- (a) Turn the crankshaft pulley, and align its groove with the timing mark "0" of the No. 1 timing belt cover.
- (b) Check that the valve lifters on the No. 1 (IN and EX) are loose.

If not, turn the crankshaft 1 revolution (360°) and align the mark as above.



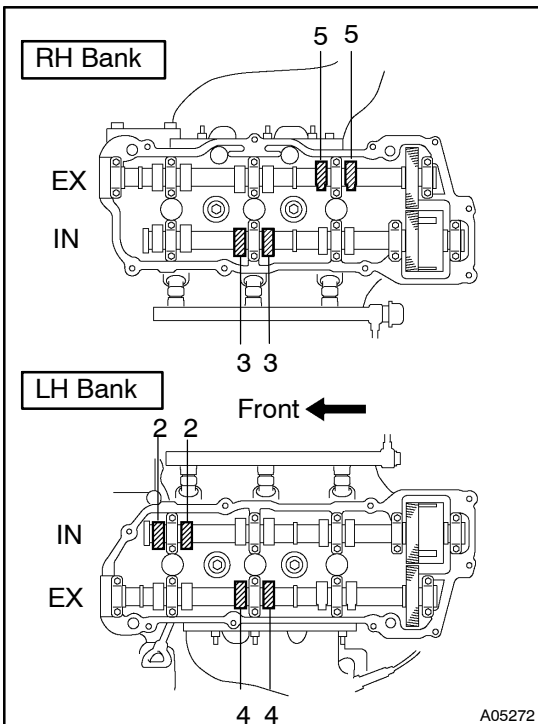
- (c) Check only those valves indicated in the illustration.
  - (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.

**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.)**

- (2) Record out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.



- (d) Turn the crankshaft 2/3 of a revolution (240°), and check only the valves indicated in the illustration.

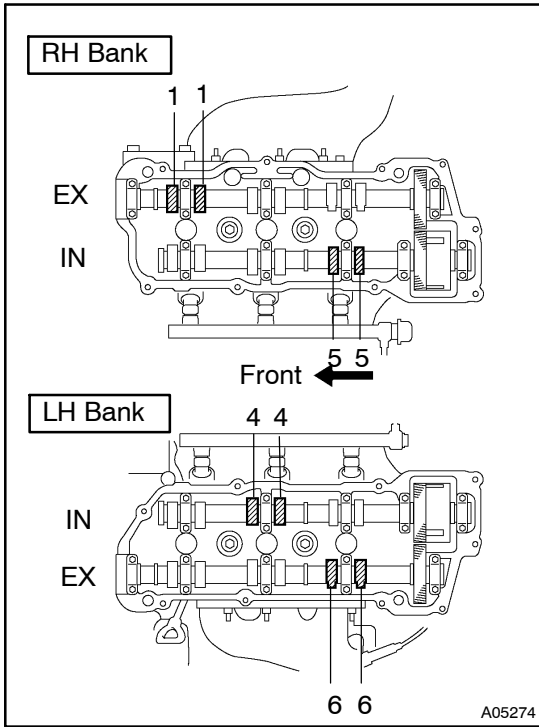
- (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.

**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.)**

- (2) Record out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.



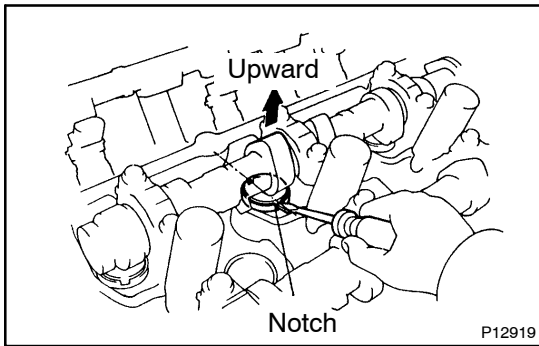
- (e) Turn the crankshaft 2/3 of a revolution (240°), and check only the valves indicated in the illustration.
- (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.

**Valve clearance (Cold):**

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

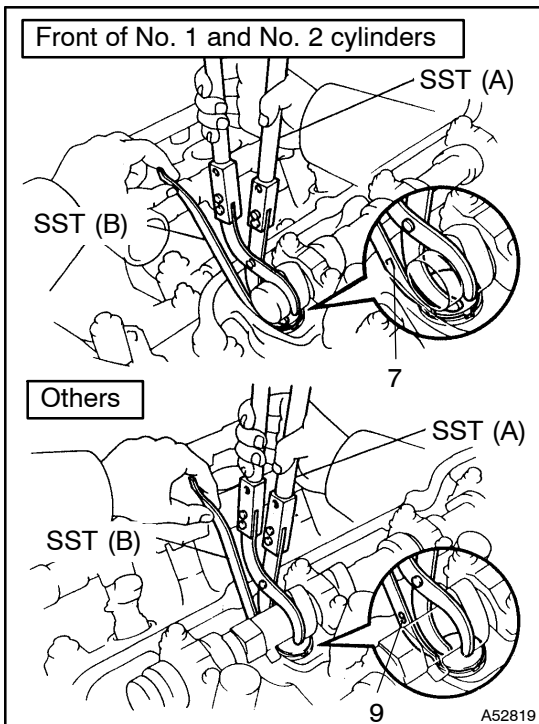
**Exhaust 0.25 – 0.35 mm (0.010 – 0.014 in.)**

- (2) Record out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.



**12. ADJUST VALVE CLEARANCE**

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

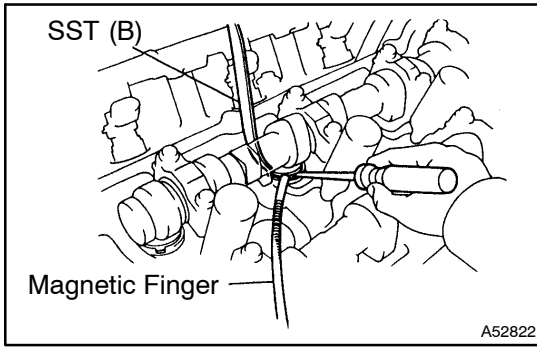


- (c) Using SST (A), press down the valve lifter and place SST (B) between the camshaft and valve lifter. Remove SST (A).
- SST 09248-55040 (09248-05410, 09248-05420)

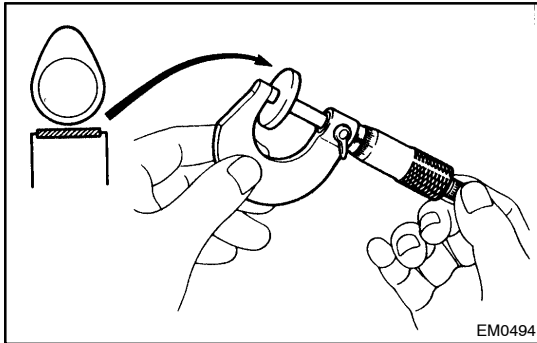
**HINT:**

- Apply SST (B) at a slight angle on the side marked with "9" or "7", at the position shown in the illustration.
- When SST (B) is inserted too deeply, it will get pinched by the shim. To prevent it from being stuck, insert it gently from the intake side, at a slight angle.

SST (A)	09248-05410
SST (B)	09248-05420



(d) Using a small screwdriver and magnetic finger, remove the adjusting shim.



(e) Using a micrometer, measure the thickness of the removed shim.

(f) Calculate the thickness of a new shim so the valve clearance comes within the specified value.

A	Thickness of new shim
B	Thickness of used shim
C	Measured valve clearance

**Specified value (Cold):**

**Intake  $A = B + (C - 0.20 \text{ mm (0.008 in.)})$**

**Exhaust  $A = B + (C - 0.30 \text{ mm (0.012 in.)})$**

(g) Select a new shim with a thickness which is as close to the calculated values as possible.

**EXAMPLE (Intake):**

Measured valve clearance = 0.45 mm (0.0177 in.)

$0.45 \text{ mm (0.0177 in.)} - 0.20 \text{ mm (0.0079 in.)} = 0.25 \text{ mm (0.0098 in.)}$

(Measured - Specification = Excess clearance)

Used shim measurement = 2.80 mm (0.1102 in.)

$0.25 \text{ mm (0.0098 in.)} + 2.80 \text{ mm (0.1102 in.)} = 3.05 \text{ mm (0.1201 in.)}$

(Excess clearance + Used shim = Ideal new shim)

Closest new shim = 3.05 mm (0.1201 in.)

Select No. 12 shim

**HINT:**

- Shims are available in 17 sizes in increments of 0.05 mm (0.0020 in.), from 2.50 mm (0.0984 in.) to 3.30 mm (0.1299 in.).
- Refer to New Shim Thickness table on the next 2 pages.

Adjusting Shim Selection Chart (Intake)

Measured Clearance mm (in.)	Installed Shim Thickness mm (in.)	Shim No.	Shim Thickness mm (in.)	Shim No.	Shim Thickness mm (in.)
0.000 - 0.020 (0.0000 - 0.0008)	1	1	1	1	1
0.021 - 0.040 (0.0008 - 0.0016)	1	1	1	1	1
0.041 - 0.060 (0.0016 - 0.0024)	1	1	1	1	1
0.061 - 0.080 (0.0024 - 0.0031)	1	1	1	1	1
0.081 - 0.100 (0.0032 - 0.0039)	1	1	1	1	1
0.101 - 0.120 (0.0040 - 0.0047)	1	1	1	1	1
0.121 - 0.140 (0.0048 - 0.0055)	1	1	1	1	1
0.141 - 0.160 (0.0056 - 0.0063)	1	1	1	1	1
0.161 - 0.180 (0.0064 - 0.0071)	1	1	1	1	1
0.181 - 0.200 (0.0072 - 0.0079)	1	1	1	1	1
0.201 - 0.220 (0.0080 - 0.0087)	1	1	1	1	1
0.221 - 0.240 (0.0088 - 0.0095)	1	1	1	1	1
0.241 - 0.260 (0.0096 - 0.0103)	1	1	1	1	1
0.261 - 0.280 (0.0104 - 0.0111)	1	1	1	1	1
0.281 - 0.300 (0.0112 - 0.0119)	1	1	1	1	1
0.301 - 0.320 (0.0119 - 0.0126)	1	1	1	1	1
0.321 - 0.340 (0.0126 - 0.0134)	1	1	1	1	1
0.341 - 0.360 (0.0134 - 0.0142)	1	1	1	1	1
0.361 - 0.380 (0.0142 - 0.0150)	1	1	1	1	1
0.381 - 0.400 (0.0150 - 0.0157)	1	1	1	1	1
0.401 - 0.420 (0.0158 - 0.0165)	1	1	1	1	1
0.421 - 0.440 (0.0166 - 0.0173)	1	1	1	1	1
0.441 - 0.460 (0.0174 - 0.0181)	1	1	1	1	1
0.461 - 0.480 (0.0181 - 0.0188)	1	1	1	1	1
0.481 - 0.500 (0.0189 - 0.0197)	1	1	1	1	1
0.501 - 0.520 (0.0197 - 0.0205)	1	1	1	1	1
0.521 - 0.540 (0.0205 - 0.0213)	1	1	1	1	1
0.541 - 0.560 (0.0213 - 0.0220)	1	1	1	1	1
0.561 - 0.580 (0.0221 - 0.0228)	1	1	1	1	1
0.581 - 0.600 (0.0229 - 0.0236)	1	1	1	1	1
0.601 - 0.620 (0.0237 - 0.0244)	1	1	1	1	1
0.621 - 0.640 (0.0244 - 0.0252)	1	1	1	1	1
0.641 - 0.660 (0.0252 - 0.0260)	1	1	1	1	1
0.661 - 0.680 (0.0260 - 0.0268)	1	1	1	1	1
0.681 - 0.700 (0.0268 - 0.0276)	1	1	1	1	1
0.701 - 0.720 (0.0276 - 0.0283)	1	1	1	1	1
0.721 - 0.740 (0.0284 - 0.0291)	1	1	1	1	1
0.741 - 0.760 (0.0292 - 0.0299)	1	1	1	1	1
0.761 - 0.780 (0.0300 - 0.0307)	1	1	1	1	1
0.781 - 0.800 (0.0307 - 0.0315)	1	1	1	1	1
0.801 - 0.820 (0.0315 - 0.0323)	1	1	1	1	1
0.821 - 0.840 (0.0323 - 0.0331)	1	1	1	1	1
0.841 - 0.860 (0.0331 - 0.0339)	1	1	1	1	1
0.861 - 0.880 (0.0339 - 0.0346)	1	1	1	1	1
0.881 - 0.900 (0.0347 - 0.0354)	1	1	1	1	1
0.901 - 0.920 (0.0355 - 0.0362)	1	1	1	1	1
0.921 - 0.940 (0.0363 - 0.0370)	1	1	1	1	1
0.941 - 0.960 (0.0370 - 0.0378)	1	1	1	1	1
0.961 - 0.980 (0.0378 - 0.0386)	1	1	1	1	1
0.981 - 1.000 (0.0386 - 0.0394)	1	1	1	1	1
1.001 - 1.020 (0.0394 - 0.0402)	1	1	1	1	1
1.021 - 1.040 (0.0402 - 0.0409)	1	1	1	1	1
1.041 - 1.060 (0.0410 - 0.0418)	1	1	1	1	1

New Shim Thickness mm (in.)

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)		

**Intake valve clearance (Cold):**

**0.15 to 0.25 mm (0.0059 to 0.0098 in.)**

EXAMPLE: The 2.800 mm (0.1102 in.) shim is installed, and

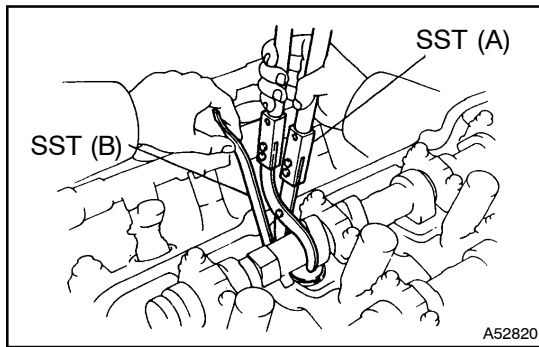
the measured clearance is 0.450 mm (0.0177 in.).

Replace the 2.800 mm (0.1102 in.) shim with a new No. 12

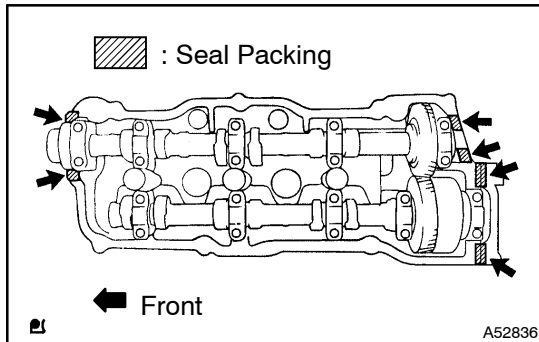
shim.

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





- (h) Place a new adjusting shim on the valve lifter, with imprinted numbers facing down.
- (i) Press down the valve lifter with SST (A), and remove SST (B).  
SST 09248-55040 (09248-05410, 09248-05420)
- (j) Recheck the valve clearance.



### 13. INSTALL CYLINDER HEAD COVER SUB-ASSY

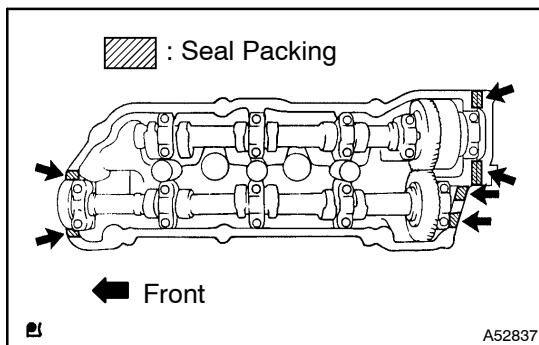
- (a) Apply seal packing to the cylinder head as shown in the illustration.

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

**NOTICE:**

- Remove any oil from the contact surface.
  - Install the cylinder head cover within 3 minutes after applying seal packing.
  - Do not start the engine within 2 hours after installing.
- (b) Install the cylinder head cover with the 9 bolts. Uniformly tighten the bolts, in several passes.

**Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)**



### 14. INSTALL CYLINDER HEAD COVER SUB-ASSY LH

- (a) Apply seal packing to the cylinder head as shown in the illustration.

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

**NOTICE:**

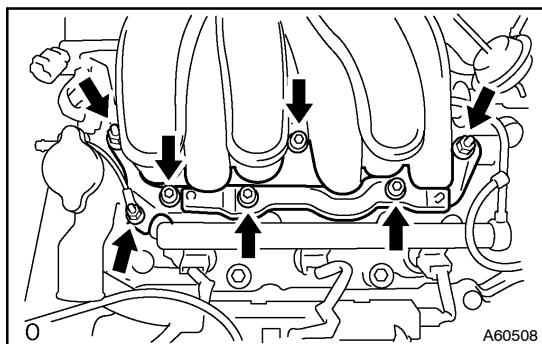
- Remove any oil from the contact surface.
  - Install the cylinder head cover within 3 minutes after applying seal packing.
  - Do not start the engine within 2 hours after installing.
- (b) Install the cylinder head cover with the 9 bolts. Uniformly tighten the bolts, in several passes.

**Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)**

### 15. INSTALL IGNITION COIL ASSY

**Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)**





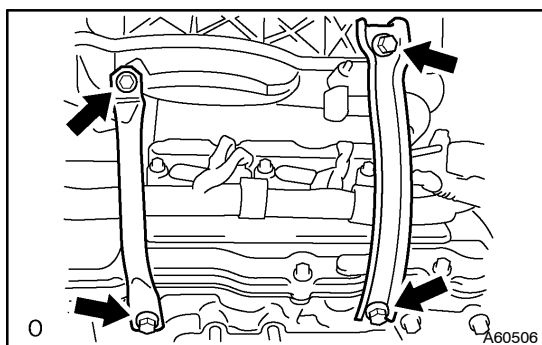
## 16. INSTALL INTAKE AIR SURGE TANK

- (a) Using an 8 mm hexagon wrench, install a new gasket, the air intake chamber assembly and the emission control bracket with the 4 bolts and 2 nuts. Uniformly tighten the bolts and nuts in several passes.

**Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)**

- (b) Install the emission control valve set with the 2 nuts.

**Torque: 8 N·m (82 kgf·cm, 71 in·lbf)**

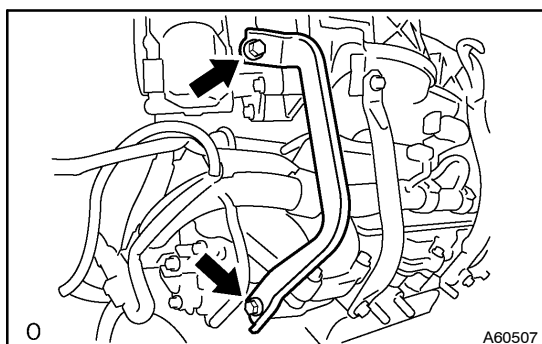


- (c) Install the No.1 engine hanger with the 2 bolts.

**Torque: 20 N·m (199 kgf·cm, 14 ft·lbf)**

- (d) Install the surge tank stay No. 1 with the 2 bolts.

**Torque: 20 N·m (199 kgf·cm, 14 ft·lbf)**



- (e) Install the surge tank stay No. 2 with the 2 bolts.

**Torque: 20 N·m (199 kgf·cm, 14 ft·lbf)**

## 17. INSTALL AIR CLEANER ASSEMBLY WITH HOSE (See page 10-6)

## 18. CONNECT VACUUM HOSE (See page 14-22)

## 19. INSTALL FRONT SUSPENSION UPPER BRACE CENTER (W/ FRONT SUSPENSION BRACE UPPER CENTER)

**Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)**

## 20. INSTALL V-BANK COVER SUB-ASSY

(See page 14-22)

## 21. ADD COOLANT (See page 16-7)

## 22. CHECK ENGINE COOLANT LEAK (See page 16-7)