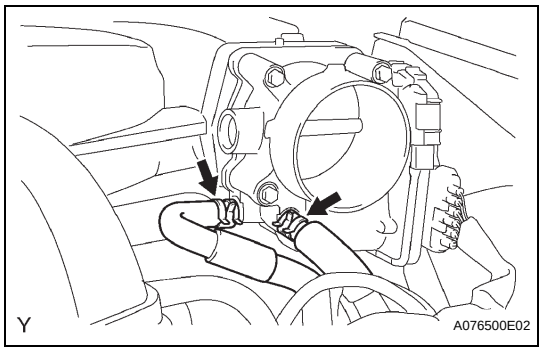
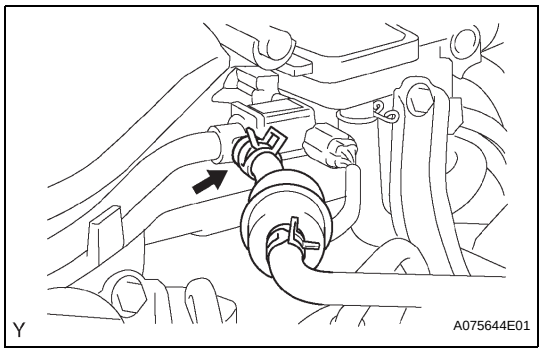
REMOVAL

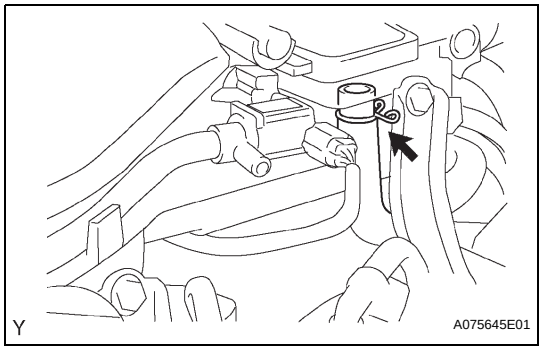
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **DRAIN ENGINE COOLANT (See page CO-3)**
3. **REMOVE V-BANK COVER (See page ES-414)**
4. **REMOVE AIR CLEANER ASSEMBLY (See page ES-415)**
5. **REMOVE INTAKE AIR SURGE TANK**
   (a) Disconnect the 2 water by-pass hoses.



   (b) Disconnect the fuel vapor feed hose.



   (c) Disconnect the ventilation hose.



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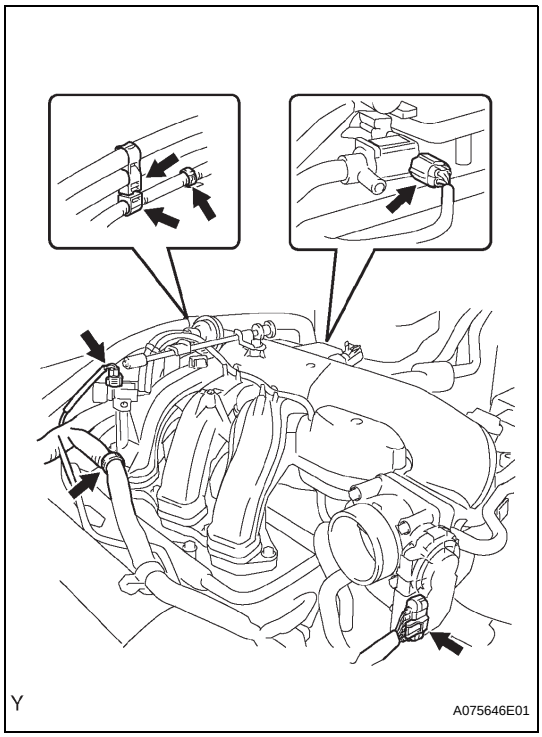
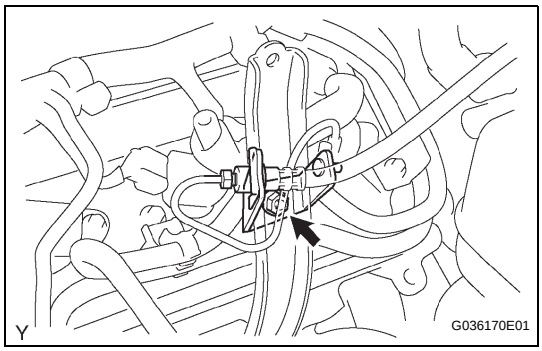
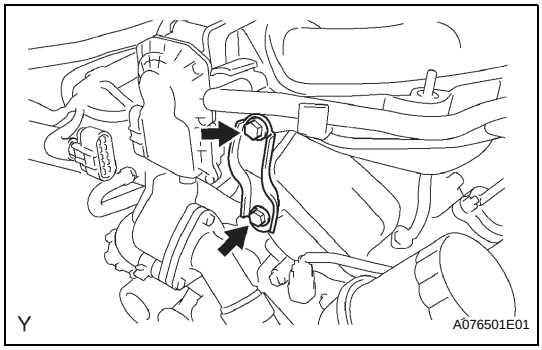


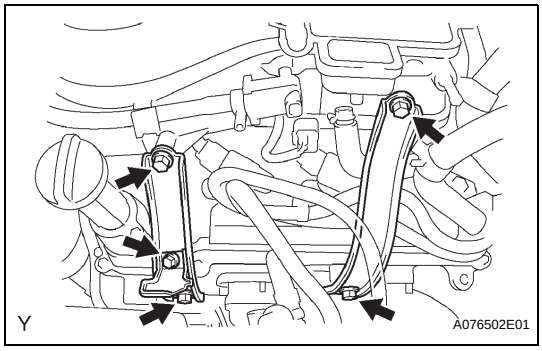
(d) Disconnect the 2 VSV connectors.
(e) Disconnect the throttle body with motor connector.
(f) Separate the 3 wire harness clamps and hose clamp.



(g) Remove the nut, then separate the clutch flexible hose bracket from the surge tank stay (with Manual Transmission).



(h) Remove the 2 bolts and throttle body bracket.



(i) Remove the bolt and oil baffle plate.
(j) Remove the 4 bolts and 2 surge tank stays.

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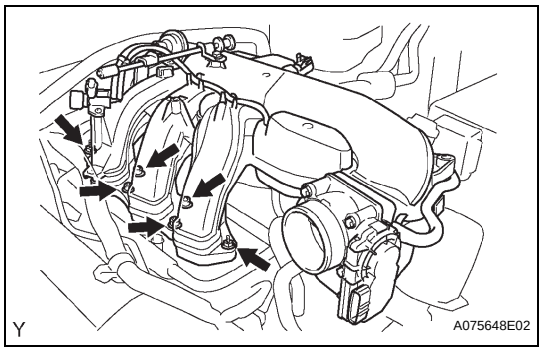
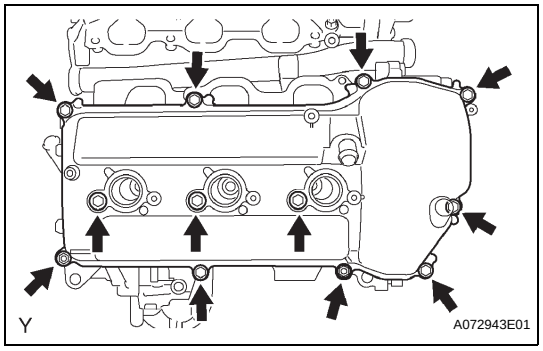


(k) Remove the 2 nuts.
(l) Using a socket hexagon wrench 8, remove the 4 bolts, intake air surge tank and gasket.

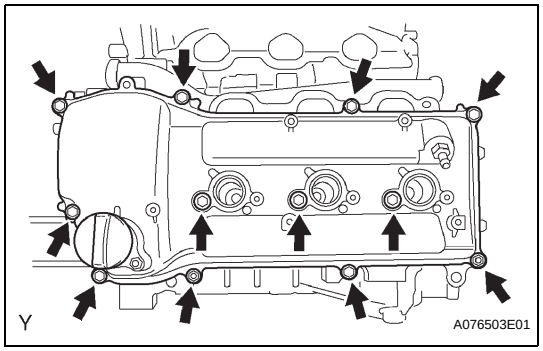
6. REMOVE IGNITION COIL ASSEMBLY

(a) Disconnect the 3 connectors.
(b) Remove the 3 bolts, then remove the 3 ignition coils.



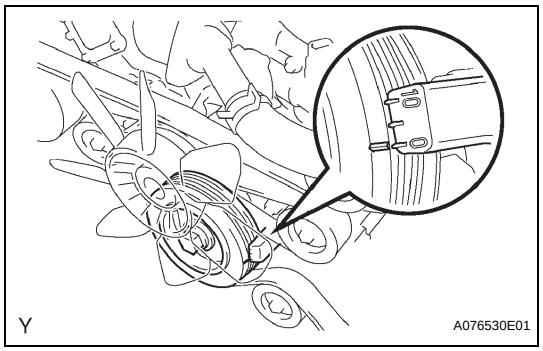
7. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

(a) Remove the 10 bolts, 3 seal washers, 2 nuts, cylinder head cover and gasket.



8. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY LH

(a) Remove the 10 bolts, 3 seal washers, 2 nuts, cylinder head cover and gasket.



9. SET NO.1 CYLINDER TO TDC/COMPRESSION

(a) Turn the crankshaft pulley until its groove and the timing mark "0" of the timing chain cover are aligned.

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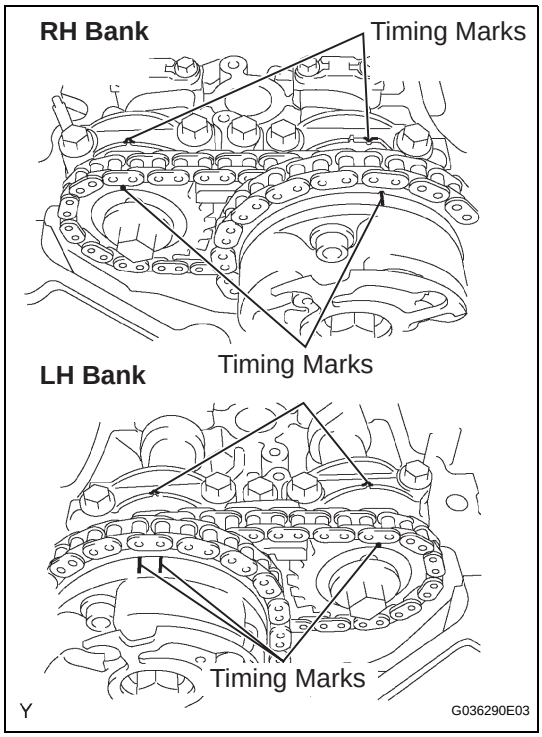
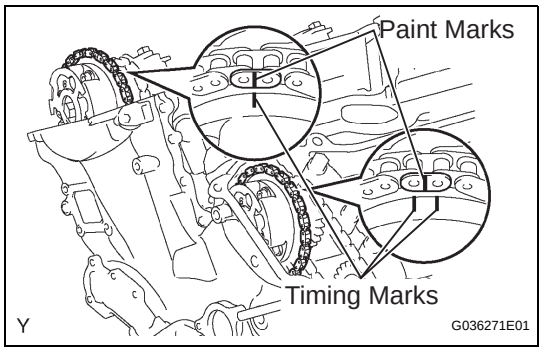


(b) Check that the timing marks of the camshaft timing gears are aligned with the timing marks of the bearing cap as shown in the illustration.
If not, turn the crankshaft 1 complete revolution (360°) and align the timing marks above.

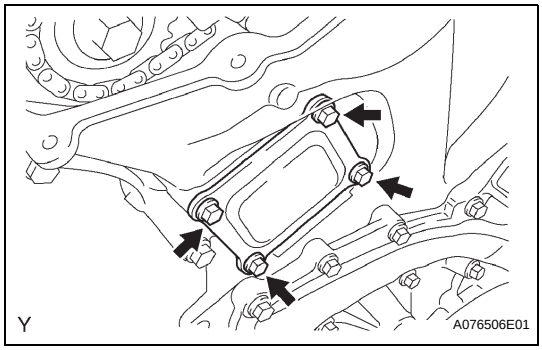


(c) Place paint marks on the No. 1 chain links corresponding to the timing marks of the camshaft timing gears.

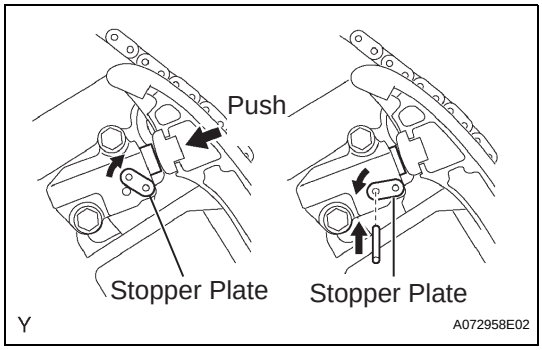
10. REMOVE NO.1 CHAIN TENSIONER ASSEMBLY

NOTICE:

- **Never rotate the crankshaft with the chain tensioner removed.**
- **When rotating the camshaft with the timing chain removed, rotate the crankshaft counterclockwise 40° from the TDC first.**



(a) Remove the 4 bolts, then remove the timing chain cover plate and gasket.



(b) While turning the stopper plate of the tensioner upward, push in the plunger of the chain tensioner as shown in the illustration.

(c) While turning the stopper plate of the tensioner downward, insert a bar of ϕ3.5 mm (0.138 in.) into the holes in the stopper plate and tensioner to fix the stopper plate.

(d) Remove the 2 bolts, then remove the chain tensioner.

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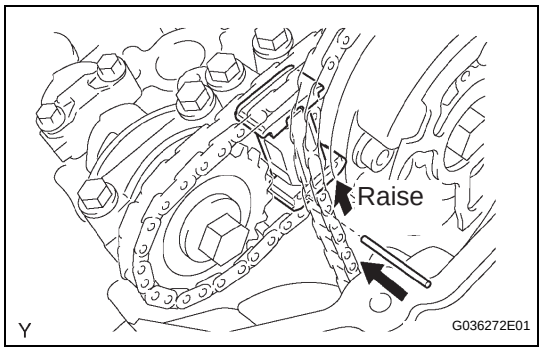
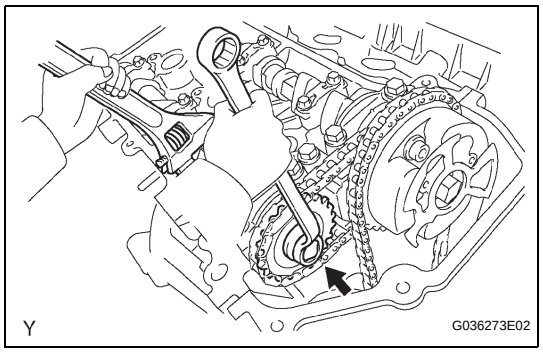
11. REMOVE NO.2 CAMSHAFT

NOTICE:

Keep the camshaft level while it is being removed. The camshaft thrust clearance is very small and failing to keep it level could crack or damage the cylinder head journal surface, which receives the thrust. This could subsequently lead the camshaft to seize or break. Perform the following steps to avoid such problems.



(a) While raising the chain tensioner No. 2, insert a pin of ϕ1.0 mm (0.039 in.) into the hole to fix it.

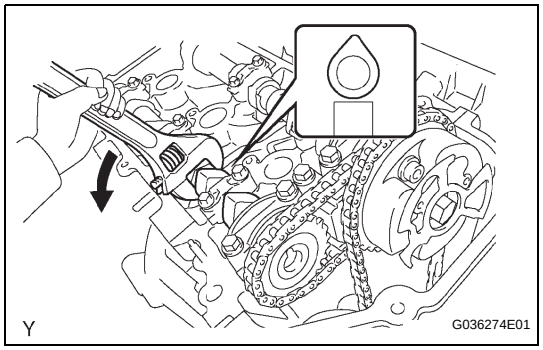


(b) Hold the hexagonal portion of the No. 2 camshaft with a wrench, and remove the camshaft timing gear set bolt.

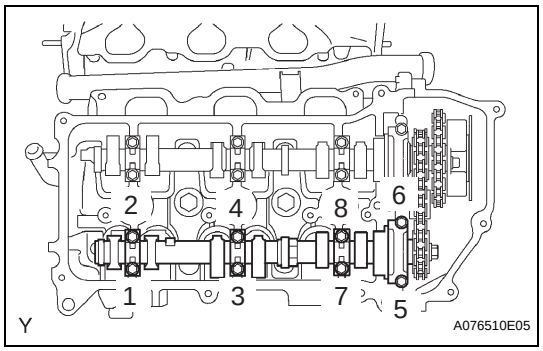
NOTICE:

Be careful not to damage the cylinder head and valve lifter with the wrench.

(c) Separate the camshaft timing gear from the No. 2 camshaft.



(d) 3Rotate the camshaft counterclockwise using the wrench so that the cam lobes of No. 1 cylinder face upward as shown in the illustration.



(e) Using several steps, uniformly loosen and remove the 8 bearing cap bolts in the sequence shown in the illustration.

(f) Remove the 4 bearing caps and No. 2 camshaft.

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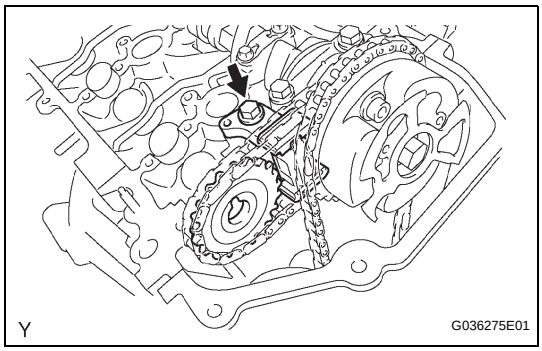


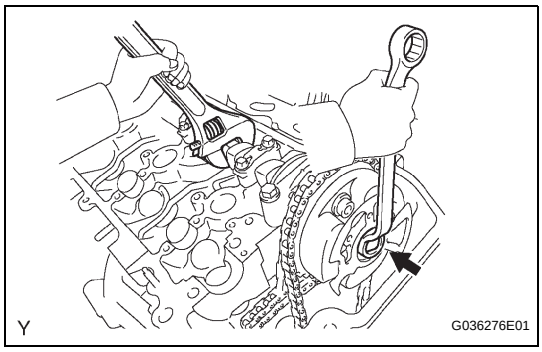
12. REMOVE NO.2 CHAIN TENSIONER ASSEMBLY

(a) Remove the chain tensioner No. 2 bolt, then remove the chain tensioner No. 2 and camshaft timing gear.

13. REMOVE CAMSHAFT

NOTICE:

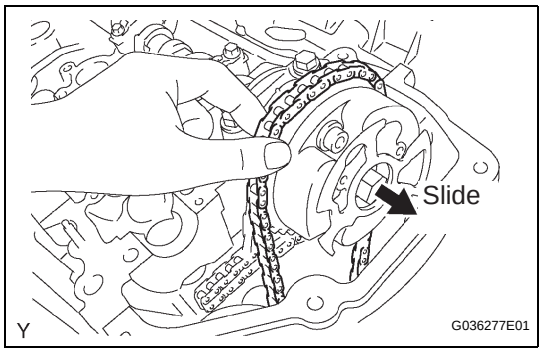
Keep the camshaft level while it is being removed. The camshaft thrust clearance is very small and failing to keep it level could crack or damage the cylinder head journal surface, which receives the thrust. This could subsequently lead the camshaft to seize or break. Perform the following steps to avoid such problems.



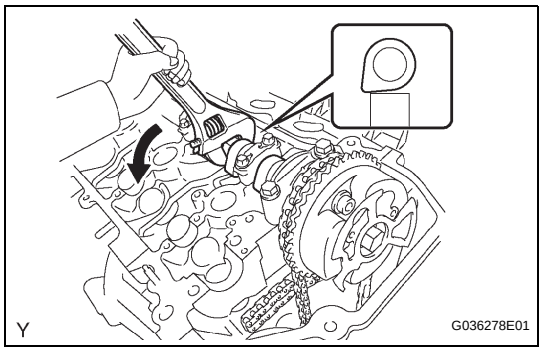
(a) Hold the hexagonal portion of the No. 1 camshaft with a wrench, and loosen the camshaft timing gear set bolt.

NOTICE:

- **Be careful not to damage the cylinder head and valve lifter with the wrench.**
- **Do not disassemble the camshaft timing gear assembly.**



(b) Slide the camshaft timing gear and separate the No. 1 chain from the camshaft timing gear.



(c) Rotate the No. 1 camshaft counterclockwise using the wrench so that the cam lobes of No. 1 cylinder face downward as shown in the illustration.

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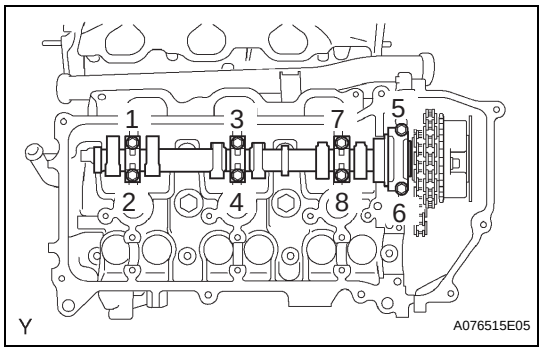
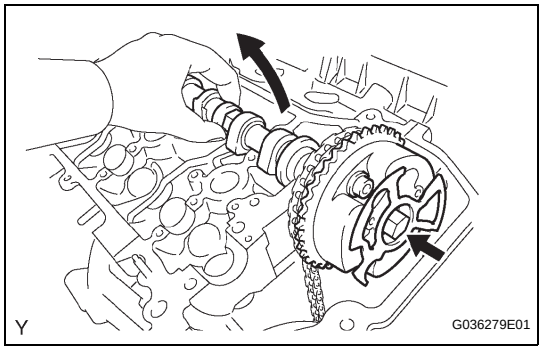
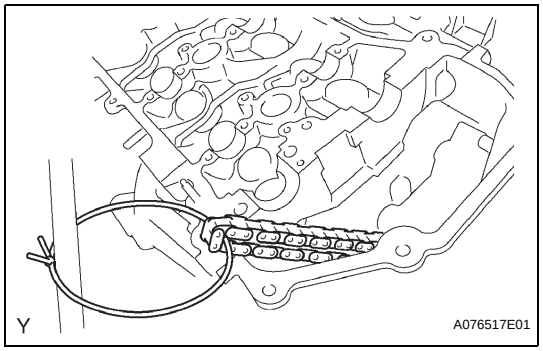


(d) Using several steps, loosen and remove the 8 bearing cap bolts in the sequence shown in the illustration.

(e) Remove the 4 bearing caps.



(f) Remove the camshaft timing gear set bolt with the No. 1 camshaft lifted up, then remove the No. 1 camshaft and camshaft timing gear with No. 2 chain.



(g) Tie the No. 1 chain with a string as shown in the illustration.
NOTICE:
Be careful not to drop anything inside the timing chain cover.

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