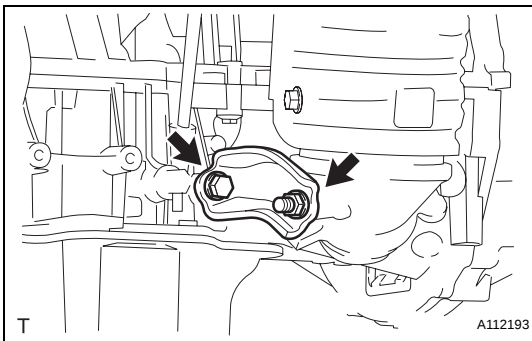
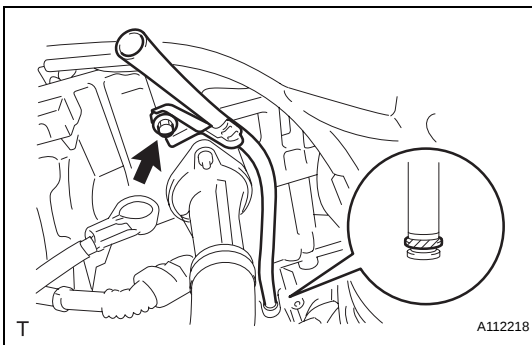
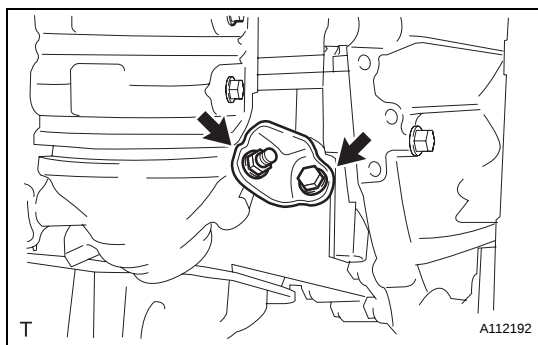


REMOVAL

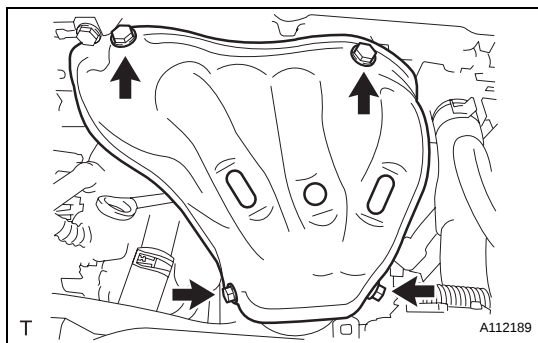
1. DISCHARGE FUEL SYSTEM PRESSURE (See page [FU-9](#))
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
3. REMOVE RADIATOR SUPPORT OPENING COVER
4. REMOVE FRONT WHEEL RH
5. REMOVE NO. 1 ENGINE UNDER COVER
6. REMOVE FRONT FENDER APRON RH
7. REMOVE NO. 1 ENGINE COVER (See page [EM-22](#))
8. DRAIN ENGINE COOLANT (See page [CO-6](#))
9. DRAIN ENGINE OIL (See page [LU-4](#))
10. REMOVE AIR CLEANER CAP (See page [ES-411](#))
11. REMOVE THROTTLE BODY (See page [ES-412](#))
12. REMOVE FUEL DELIVERY PIPE SUB-ASSEMBLY (See page [FU-10](#))
13. REMOVE INTAKE MANIFOLD (See page [ES-419](#))
14. REMOVE INTAKE MANIFOLD INSULATOR (See page [ES-420](#))
15. REMOVE FRONT EXHAUST PIPE (See page [EX-3](#))
16. REMOVE OIL DIPSTICK
17. REMOVE OIL DIPSTICK GUIDE
 - (a) Remove the bolt and guide.
 - (b) Remove the O-ring from the guide.



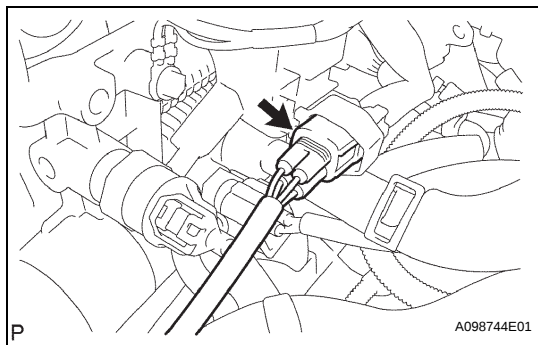
18. REMOVE MANIFOLD STAY
 - (a) Remove the bolt, nut and stay.

**19. REMOVE NO. 2 MANIFOLD STAY**

- (a) Remove the bolt, nut and stay.

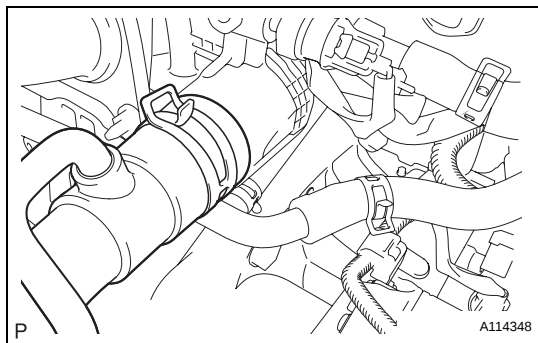
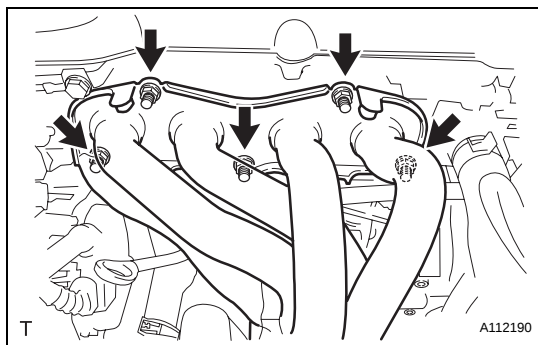
**20. REMOVE NO. 1 EXHAUST MANIFOLD HEAT INSULATOR**

- (a) Remove the 4 bolts and heat insulator.

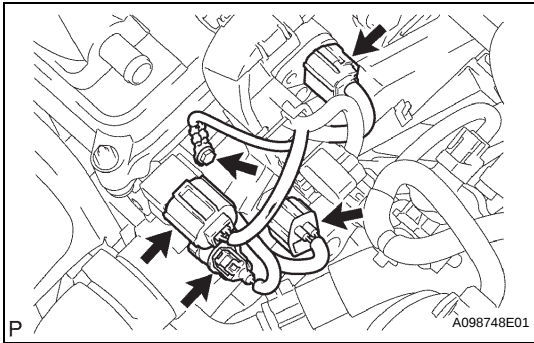
**21. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY**

- (a) Disconnect the air-fuel ratio sensor connector.

- (b) Remove the 5 nuts, manifold converter and gasket.

**22. DISCONNECT NO. 1 RADIATOR HOSE**

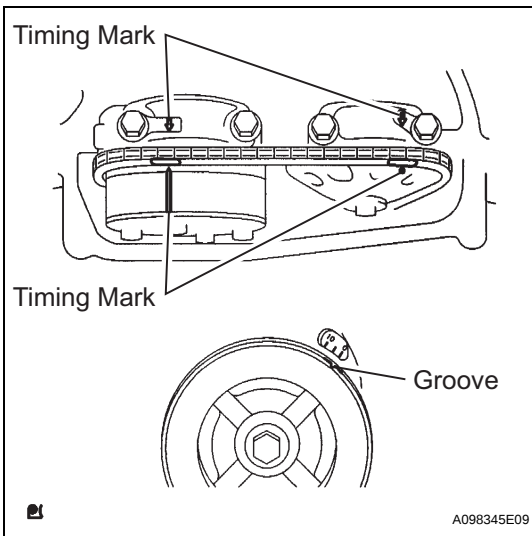
- (a) Disconnect the No. 1 radiator hose.

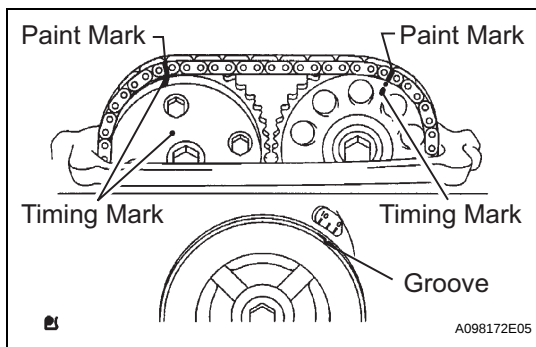
**23. DISCONNECT ENGINE WIRE**

- (a) Disconnect the radio setting condenser connector.
- (b) Disconnect the engine oil pressure switch connector.
- (c) Disconnect the engine coolant temperature sensor connector.
- (d) Disconnect the camshaft position sensor connector.
- (e) Remove the bolt and ground cable.

24. REMOVE FRONT SUSPENSION MEMBER REINFORCEMENT RH (See page EM-6)**25. REMOVE FAN AND GENERATOR V BELT (See page EM-6)****26. REMOVE GENERATOR ASSEMBLY (See page CH-9)****27. REMOVE ENGINE MOUNTING INSULATOR RH (See page EM-22)****28. REMOVE IDLER PULLEY (See page EM-23)****29. REMOVE IGNITION COIL ASSEMBLY (See page IG-9)****30. REMOVE SPARK PLUG (See page EM-8)****31. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY (See page EM-24)****32. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY (See page EM-26)****33. REMOVE CRANKSHAFT POSITION SENSOR (See page ES-402)****34. REMOVE OIL PAN SUB-ASSEMBLY (See page EM-24)****35. 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.
- (b) Check that each timing mark of the camshaft timing gear and sprocket is aligned with each timing mark located on the No. 1 and No. 2 bearing caps as shown in the illustration.
If not, turn the crankshaft by 1 revolution (360°) to align the timing marks as above.

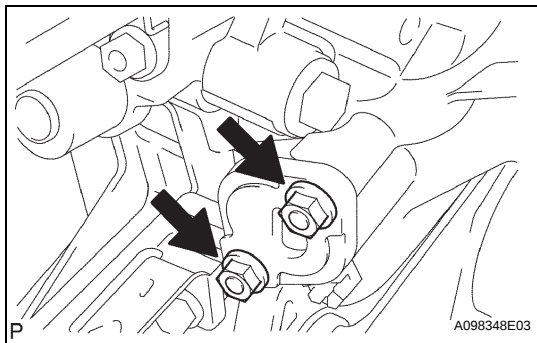




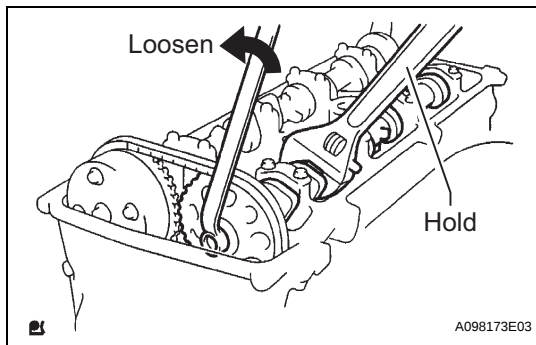
36. REMOVE NO. 2 CAMSHAFT

- (a) Place paint marks on the chain in alignment with the timing marks on the camshaft timing gear and camshaft timing sprocket.

- (b) Remove the 2 nuts, tensioner and gasket.

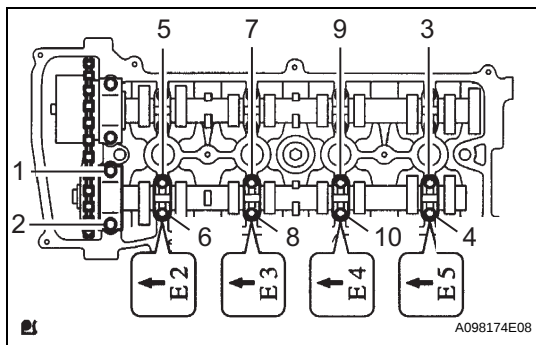


- (c) While holding the camshaft with a wrench, loosen the camshaft timing set bolt.

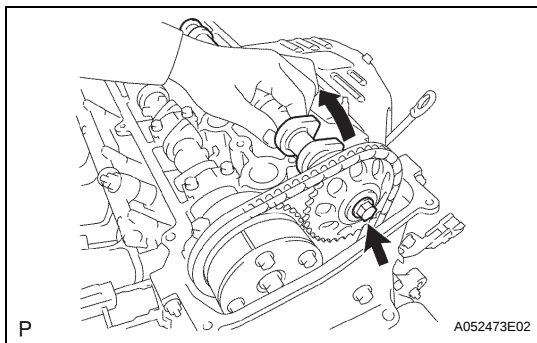


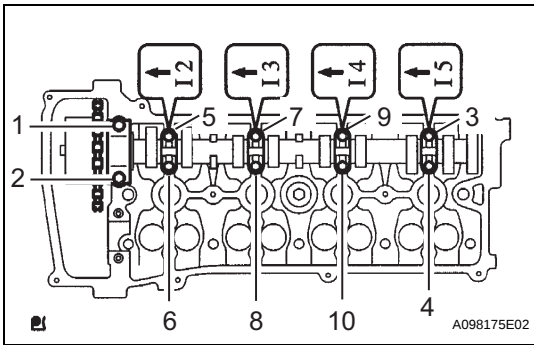
- (d) Using several steps, uniformly loosen and remove the 10 bearing cap bolts in the sequence shown in the illustration.

- (e) Remove the 5 bearing caps.

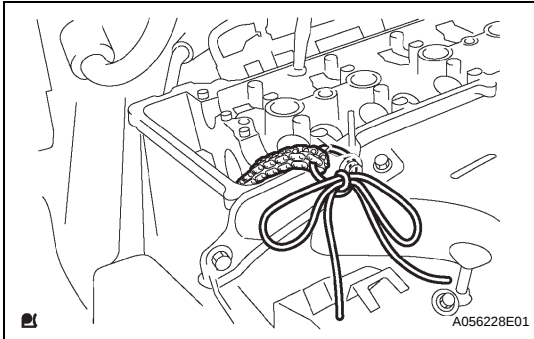


- (f) While holding the No. 2 camshaft by hand, remove the camshaft timing sprocket set bolt.
- (g) Remove the camshaft timing sprocket from the No. 2 camshaft with the timing chain wrapped on the sprocket.
- (h) Remove the camshaft timing sprocket from the timing chain.



**37. REMOVE CAMSHAFT**

- (a) Using several steps, uniformly loosen and remove the 10 bearing cap bolts in the sequence shown in the illustration.
- (b) Remove the 5 bearing caps.
- (c) Remove the camshaft and camshaft timing gear while holding the timing chain by hand.



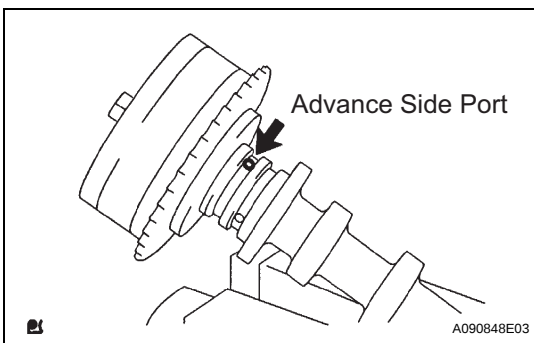
- (d) Tie the timing chain with a string as shown in the illustration.

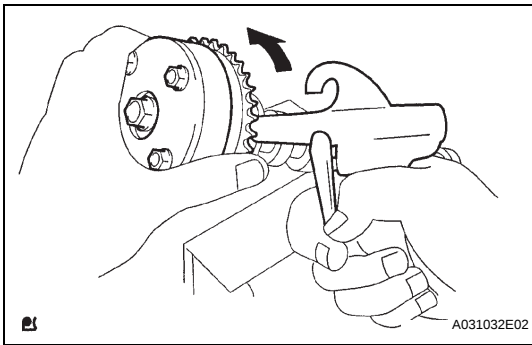
NOTICE:

Be careful not to drop anything inside the timing chain cover.

38. REMOVE CRANKSHAFT PULLEY (See page [EM-25](#))**39. REMOVE ENGINE MOUNTING BRACKET RH (See page [EM-26](#))****40. REMOVE TIMING CHAIN COVER SUB-ASSEMBLY (See page [EM-26](#))****41. REMOVE NO. 1 CRANKSHAFT POSITION SENSOR PLATE****42. REMOVE TIMING CHAIN GUIDE (See page [EM-28](#))****43. REMOVE CHAIN TENSIONER SLIPPER (See page [EM-28](#))****44. REMOVE NO. 1 CHAIN VIBRATION DAMPER (See page [EM-28](#))****45. REMOVE CHAIN SUB-ASSEMBLY****46. REMOVE CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY (See page [ES-395](#))****47. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY**

- (a) Clamp the camshaft in a vise, and make sure that the camshaft timing gear does not rotate.
- (b) Cover all the oil ports with vinyl tape except the advance side port shown in the illustration.





- (c) Apply air pressure of 100 kPa (1.0 kgf/cm², 14 psi) to the oil path, then turn the camshaft timing gear to the advance direction (counterclockwise) by hand.

CAUTION:

Cover the paths with a shop rag to avoid oil splashes.

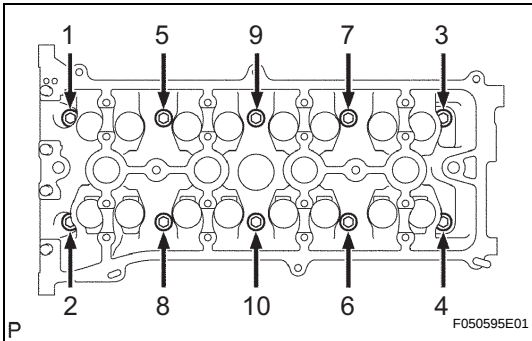
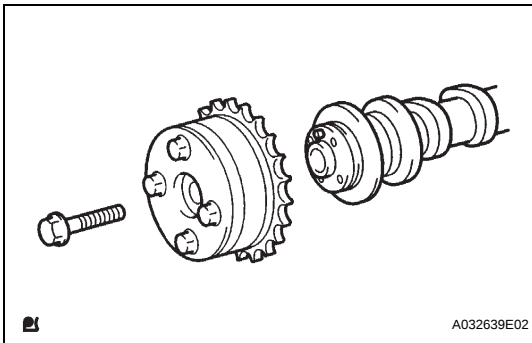
HINT:

Depending on the air pressure, the camshaft timing gear will turn to the advance angle side without applying force by hand. Also, under the condition that the pressure is difficult to apply because of air leakage from the port, there may be the case that the lock pin is difficult to release.

- (d) Remove the flange bolt of the camshaft timing gear.

NOTICE:

- Be sure not to remove the other 4 bolts.
- When reusing the camshaft timing gear, release the straight pin lock first, then install the gear.

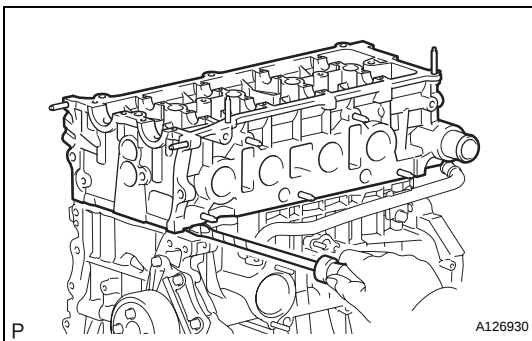


48. REMOVE CYLINDER HEAD SUB-ASSEMBLY

- (a) Using several steps, uniformly loosen and remove the 10 cylinder head bolts and 10 plate washers with a 10 mm bi-hexagon wrench in the sequence shown in the illustration.

NOTICE:

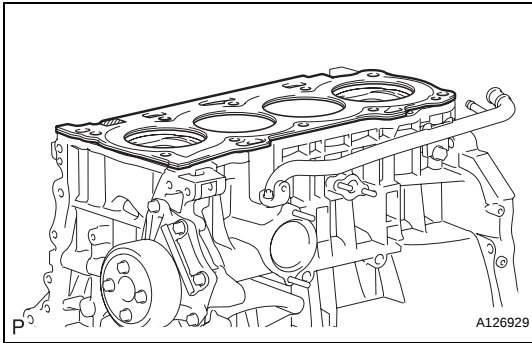
Head warpage or cracking could result from removing the bolts in the wrong order.



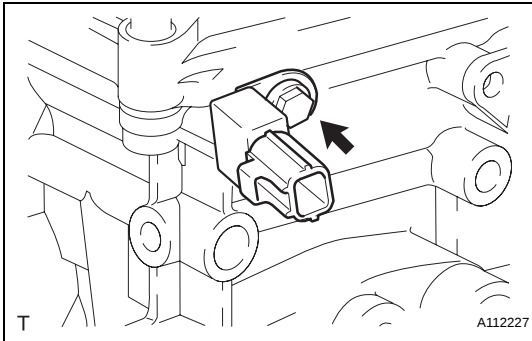
- (b) Using a screwdriver with its tip wrapped with tape, pry between the cylinder head and cylinder block, and remove the cylinder head.

NOTICE:

Be careful not to damage the contact surfaces of the cylinder head and cylinder block.



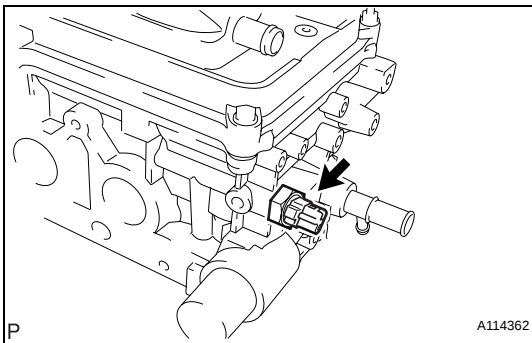
49. REMOVE CYLINDER HEAD GASKET



DISASSEMBLY

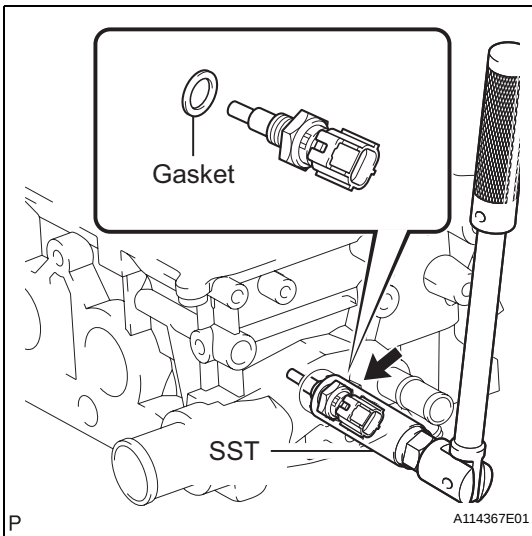
1. REMOVE RADIO SETTING CONDENSER

- (a) Remove the bolt and condenser.



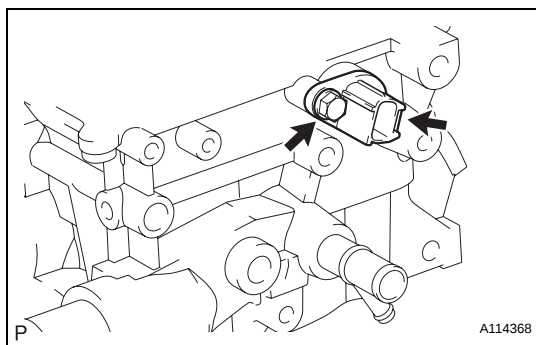
2. REMOVE OIL PRESSURE SWITCH

- (a) Using a 24 mm deep socket wrench, remove the sensor.



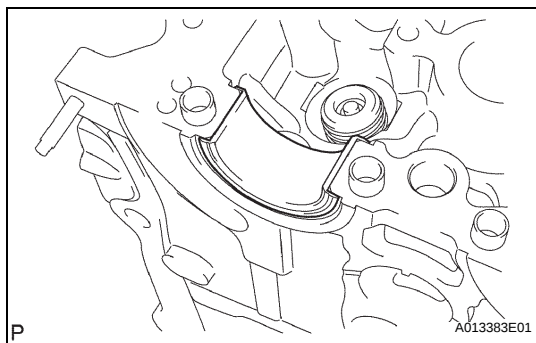
3. REMOVE ENGINE COOLANT TEMPERATURE SENSOR

- (a) Using SST, remove the sensor and gasket.
SST 09817-33190



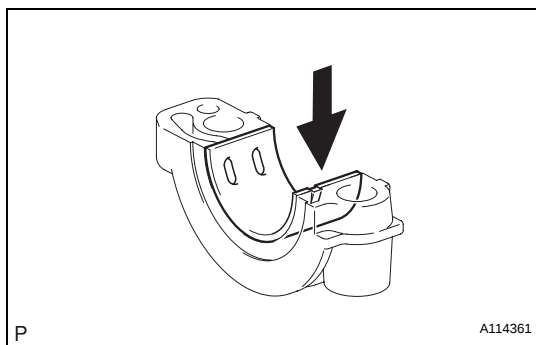
4. REMOVE CAMSHAFT POSITION SENSOR

- (a) Remove the bolt and sensor.



5. REMOVE NO. 2 CAMSHAFT BEARING

- (a) Remove the No. 2 camshaft bearing.



6. REMOVE NO. 1 CAMSHAFT BEARING

- (a) Remove the No. 1 camshaft bearing.

7. REMOVE VALVE LIFTER

HINT:

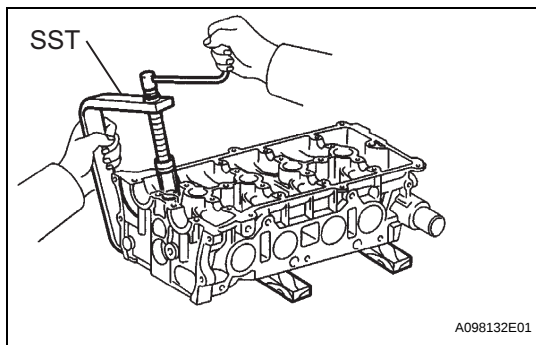
Arrange the valve lifters in the correct order.

8. REMOVE INTAKE VALVE

- (a) Place the cylinder head on wooden blocks.

- (b) Using SST, compress the spring, then remove the 2 retainer locks.

SST 09202-70020 (09202-00010)



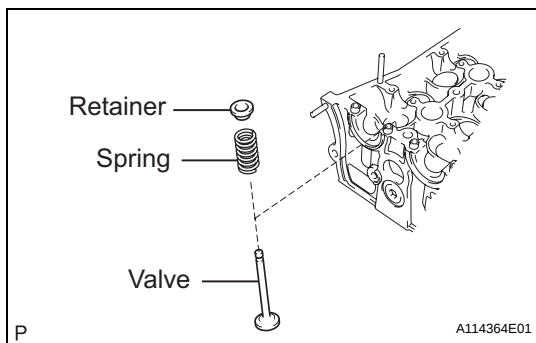
- (c) Remove the retainer, spring and valve from the cylinder head.

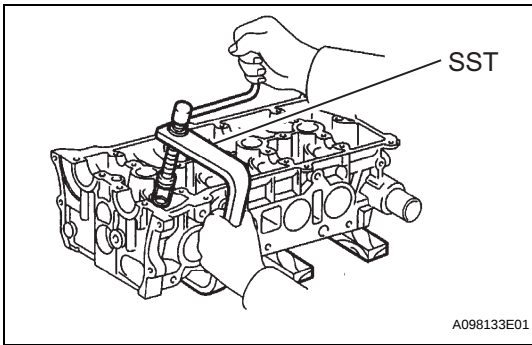
HINT:

Arrange the removed parts in the correct order.

9. REMOVE EXHAUST VALVE

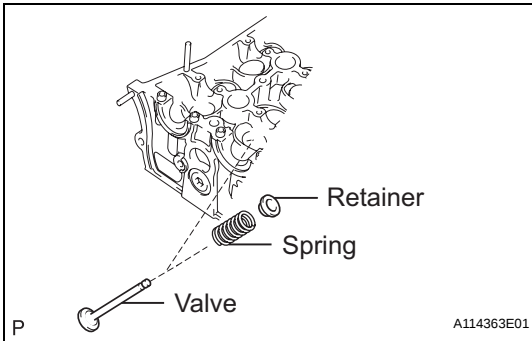
- (a) Place the cylinder head on wooden blocks.





- (b) Using SST, compress the spring, then remove the 2 retainer locks.

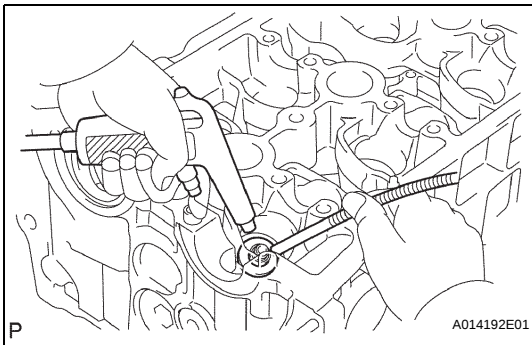
SST 09202-70020 (09202-00010)



- (c) Remove the retainer, spring and valve from the cylinder head.

HINT:

Arrange the removed parts in the correct order.

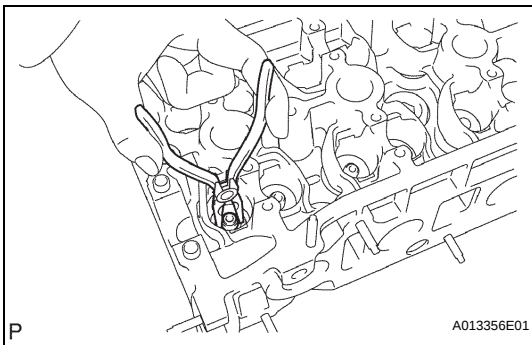


10. REMOVE VALVE SPRING SEAT

- (a) Using compressed air and a magnetic finger, remove the spring seat by blowing air.

HINT:

Arrange the valves, valve springs, spring seats and spring retainers in the correct order.



11. REMOVE VALVE STEM OIL SEAL

- (a) Using needle-nose pliers, remove the 16 oil seals.