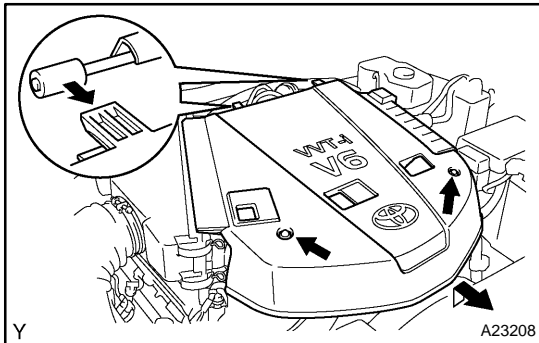


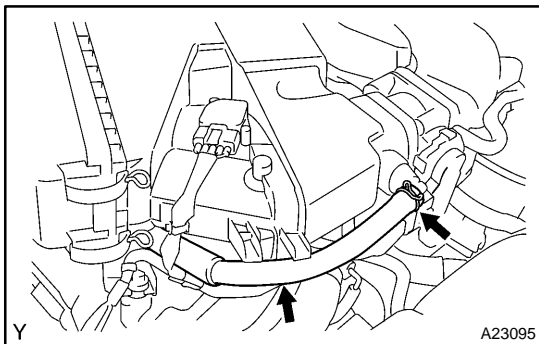
REMOVAL

1. PREVENT GASOLINE FROM SPILLING OUT
2. DRAIN ENGINE COOLANT (See page [CO-2](#))
3. DRAIN ENGINE OIL (See page [LU-3](#))



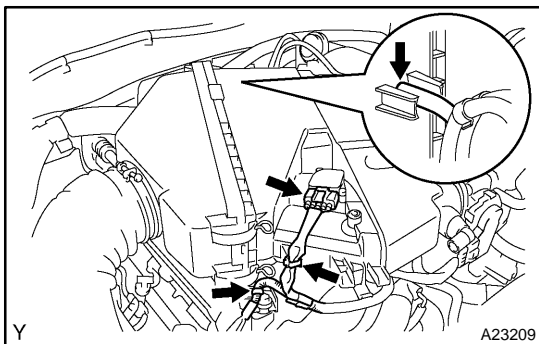
4. REMOVE V-BANK COVER

Remove the 2 nuts and V-bank cover.

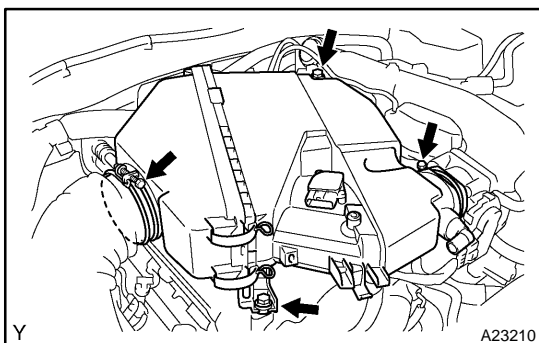


5. REMOVE AIR CLEANER

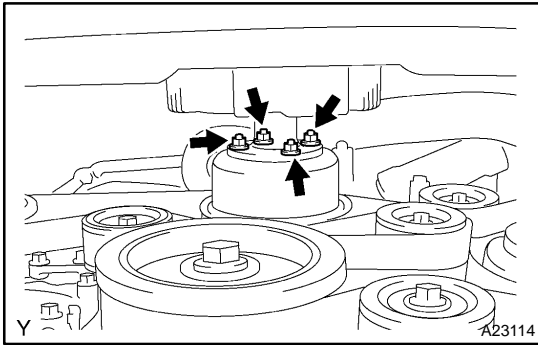
- (a) Disconnect the ventilation hose No.2.



- (b) Disconnect the vacuum hose.
- (c) Disconnect the mass air flow meter connector.
- (d) Remove the 2 wire harness clamps.

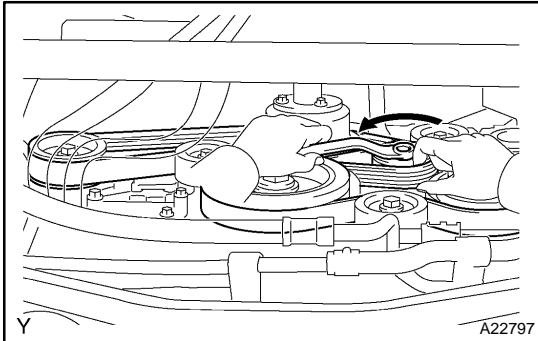


- (e) Loosen the 2 hose clamps.
- (f) Remove the 2 bolts and air cleaner
6. DISCONNECT FUEL PIPE (See page [SF-1](#))
7. REMOVE FAN SHROUD
8. REMOVE RADIATOR (See page [CO-17](#))



9. LOOSEN FAN W/FLUID COUPLING

Loosen the 4 nuts of the fan w/ fluid coupling.



10. REMOVE DRIVE BELT

Release the belt tension by turning the belt tensioner counter-clockwise. Remove the V-ribbed belt from the belt tensioner.

11. REMOVE FAN W/FLUID COUPLING

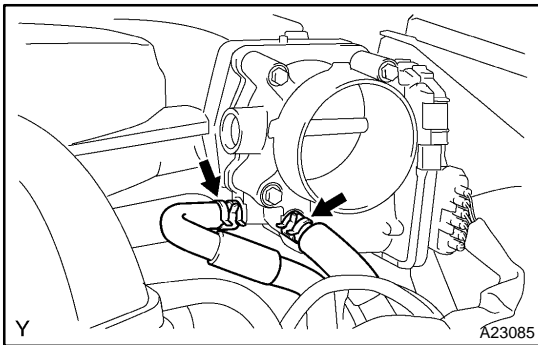
12. SEPARATE VANE PUMP (See page [SR-47](#))

13. REMOVE GENERATOR (See page [CH-7](#))

14. SEPARATE COOLER COMPRESSOR

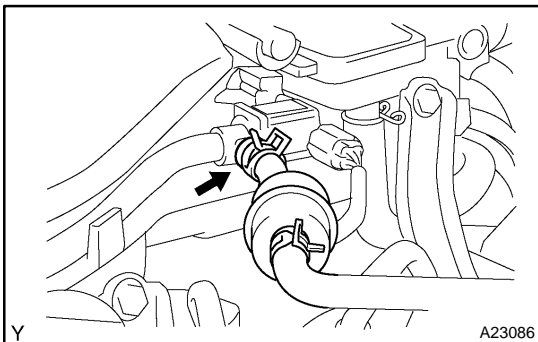
(See page [AC-54](#))

15. DISCONNECT HEATER WATER OUTLET AND INLET HOSE

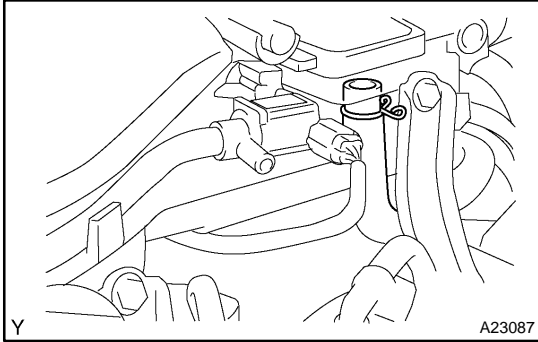


16. REMOVE INTAKE AIR SURGE TANK

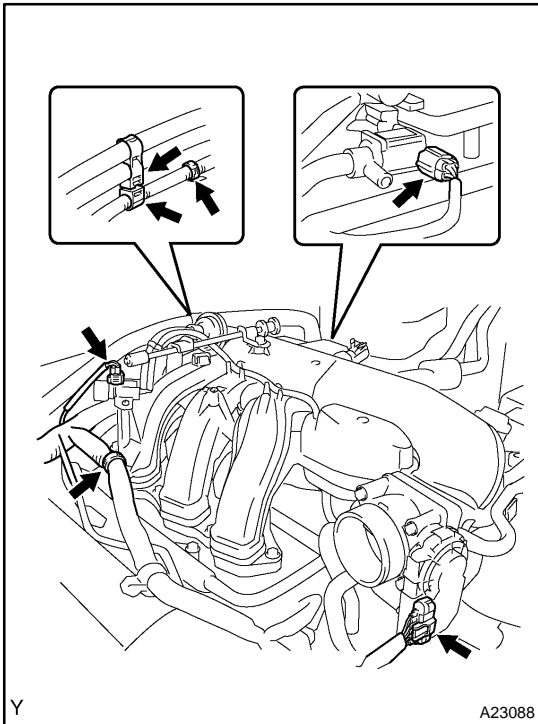
(a) Disconnect the 2 water by-pass hoses.



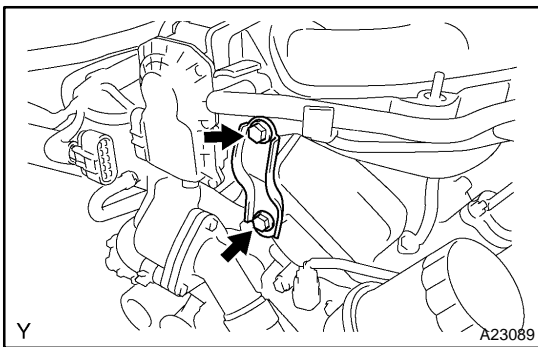
(b) Disconnect the fuel vapor feed hose.



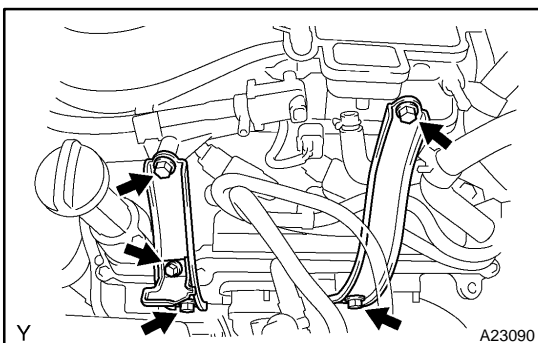
- (c) Disconnect the ventilation hose.



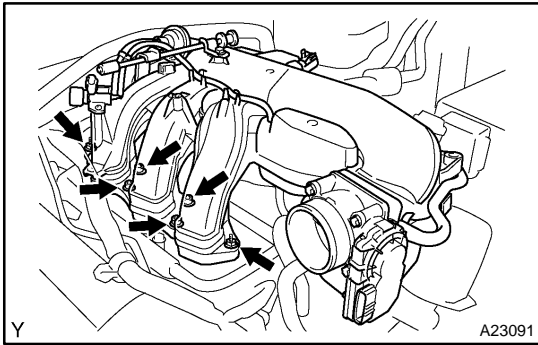
- (d) Disconnect the 2 VSV connectors.
(e) Disconnect the throttle body w/ motor connector.
(f) Separate the 3 wire harness clamps and hose clamp.



- (g) Remove the 2 bolts and throttle body bracket.

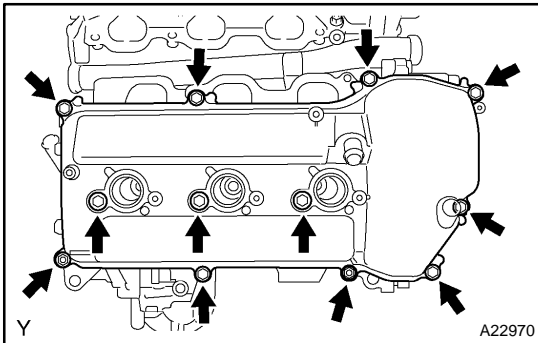


- (h) Remove the bolt and oil baffle plate.
(i) Remove the 4 bolts and 2 surge tank stays.



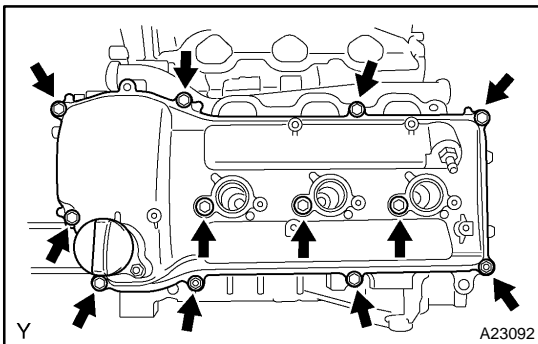
- (j) Remove the 2 nuts.
- (k) Using a socket hexagon wrench 8, remove the 4 bolts, intake air surge tank and gasket.

17. REMOVE IGNITER (See page IG-6)



18. REMOVE CYLINDER HEAD COVER

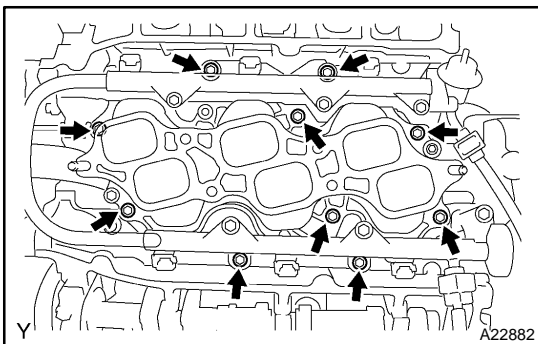
- (a) Remove the 10 bolts, 3 seal washers, 2 nuts, cylinder head cover RH and gasket.
- (b) Remove the 2 nuts, oil filter cap housing and gasket.



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

19. REMOVE INTAKE MANIFOLD

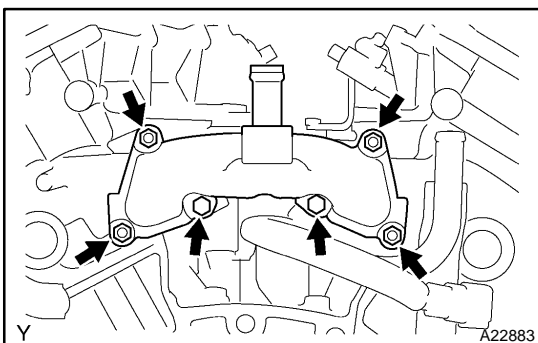
- (a) Disconnect the 6 fuel injector connectors.



- (b) Remove the 10 bolts, intake manifold and 2 gaskets.

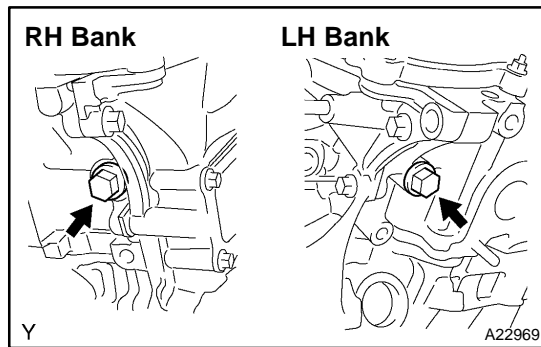
20. REMOVE WATER BY-PASS JOINT

- (a) Disconnect the engine coolant temperature sensor connector.
- (b) Disconnect the heater hose.



- (c) Remove the 2 bolts, 4 nuts, water by-pass joint RR and 2 gaskets.
- (d) Remove the O-ring from the water outlet pipe.

21. REMOVE CAMSHAFT TIMING OIL CONTROL VALVE

**22. REMOVE OIL CONTROL VALVE FILTER**

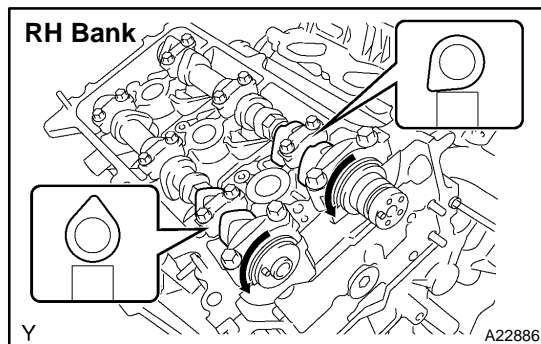
Remove the plug, filter and gasket from each cylinder head.

23. REMOVE VVT SENSOR**24. REMOVE RH AND LH FRONT EXHAUST PIPE****25. REMOVE RH AND LH EXHAUST MANIFOLD**

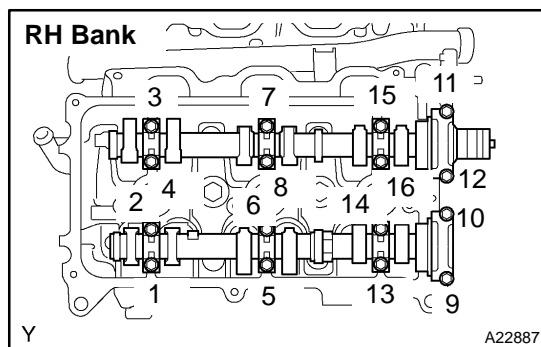
- (a) Remove the 6 bolts and 2 exhaust manifold stays.
- (b) Remove the 12 nuts, RH and LH exhaust manifold and 2 gaskets.

26. REMOVE OIL PAN (See page EM-32)**27. REMOVE TIMING CHAIN COVER (See page EM-32)****28. REMOVE TIMING CHAIN (See page EM-32)****29. REMOVE CAMSHAFT****NOTICE:**

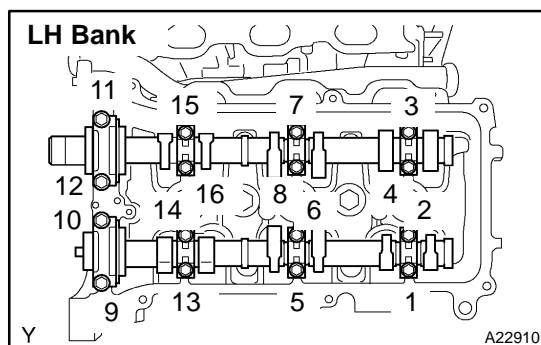
As the thrust clearance of the camshaft is small, the camshaft must be kept level while it is being removed. If the camshaft is not kept level, the portion of the cylinder head which receives the shaft thrust may crack or be damaged, causing the camshaft to seize or break. To avoid this, the following steps should be carried out.



- (a) Remove the camshafts of the RH bank.
 - (1) Rotate the camshafts counterclockwise using the wrench so that the cam lobes of the No. 1 cylinder face each direction as shown in the illustration.

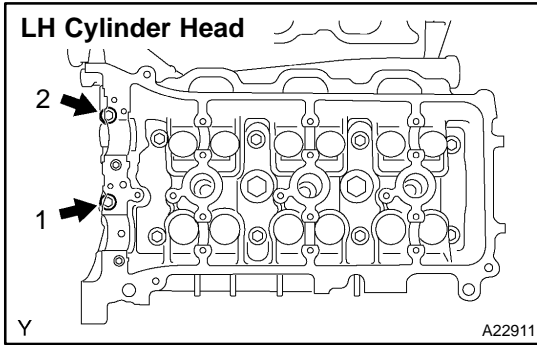


- (2) Using several steps, uniformly loosen and remove the 16 bearing cap bolts in the sequence as shown in the illustration.
- (3) Remove the 8 bearing caps and 2 camshafts.



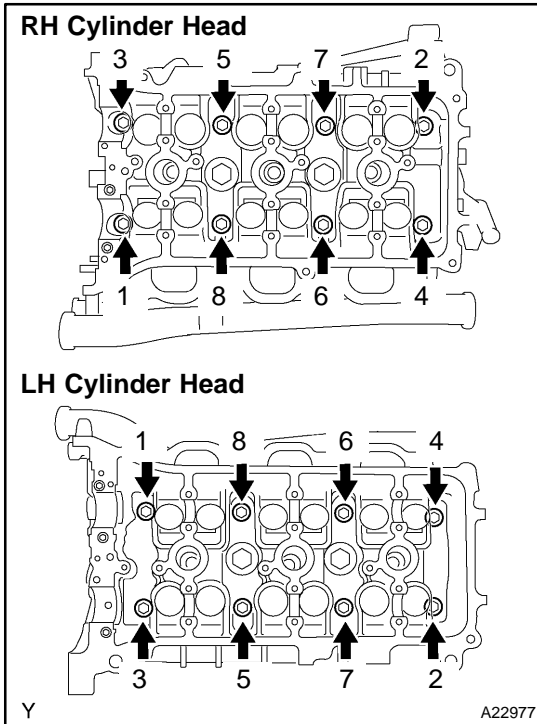
- (b) Remove the camshafts of the LH bank.
 - (1) Using several steps, uniformly loosen and remove the 16 bearing cap bolts in the sequence as shown in the illustration.
 - (2) Remove the 8 bearing caps and 2 camshafts.

30. REMOVE CAMSHAFT BEARING NO.1 AND NO.2



31. REMOVE CYLINDER HEAD

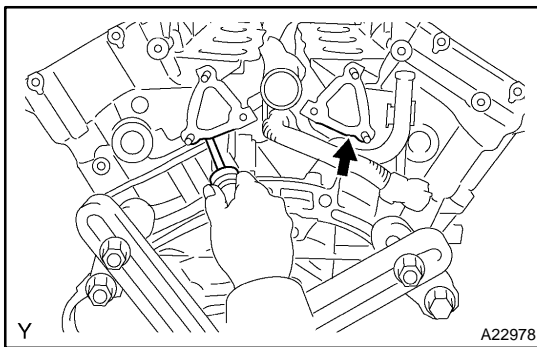
- (a) Using several steps, remove the 2 cylinder head bolts on the LH cylinder head in the sequence as shown in the illustration.



- (b) Using several steps, loosen the 8 cylinder head bolts on each cylinder head with a 10 mm bi-hexagon wrench in the sequence as shown in the illustration. Remove the 16 cylinder head bolts and plate washers.

NOTICE:

- **Be careful not to drop the plate washers into the cylinder head.**
- **Cylinder head warpage or cracking could result from removing the bolts in the incorrect order.**



- (c) Lift the cylinder head from the dowels on the cylinder block, and place the 2 cylinder heads on wooden blocks on a bench.

NOTICE:

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

HINT:

If the cylinder head is difficult to lift off, pry between the cylinder head and cylinder block with a screwdriver.

- (d) Remove the RH and LH cylinder head gaskets.

32. REMOVE CYLINDER HEAD GASKET