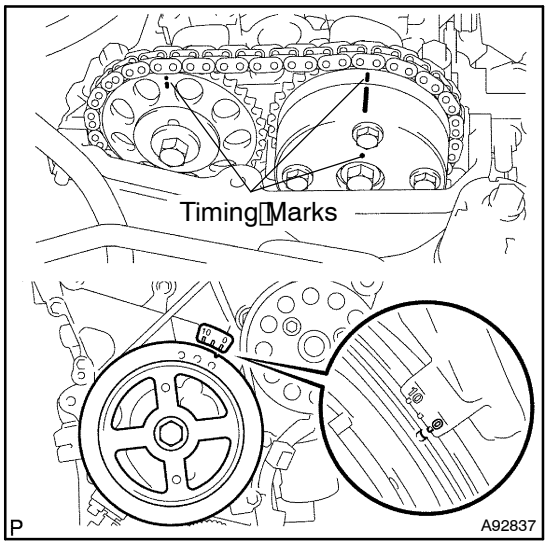
141OB–01

REPLACEMENT

1. REMOVE REAR FLOOR BOARD NO.2 (See page 21–120)
2. REMOVE DECK FLOOR BOX REAR (See page 21–120)
3. REMOVE REAR FLOOR BOARD NO.3 (See page 21–120)
4. DISCONNECT BATTERY NEGATIVE TERMINAL (See page 21–120)
5. REMOVE ENGINE UNDER COVER RH
6. REMOVE WINDSHIELD WIPER LINK ASSY (See page 66–16)
7. REMOVE COWL TOP PANEL SUB–ASSY OUTER FRONT (See page 71–16)
8. REMOVE RADIATOR SUPPORT OPENING COVER (See page 76–11)
9. REMOVE AIR CLEANER ASSY (See page 17–8)
10. SUSPEND BRAKE MASTER CYLINDER RESERVOIR SUB–ASSY (See page 17–8)
11. REMOVE RESERVOIR BRACKET (See page 17–8)
12. REMOVE CYLINDER HEAD COVER SUB–ASSY (See page 17–8)



13. REMOVE NO.2 CAMSHAFT

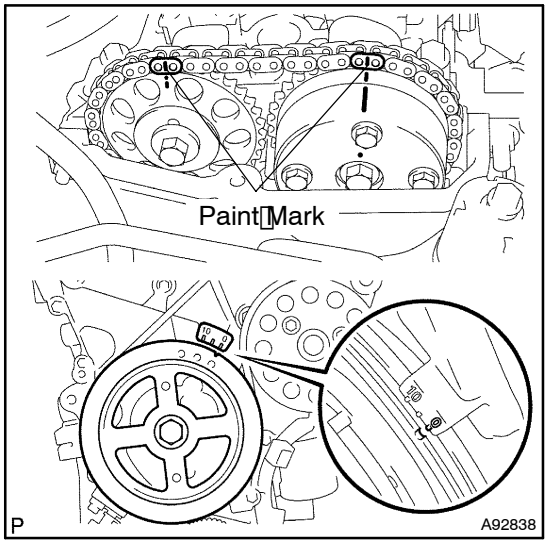
(a) Set the No. 1 cylinder to the TDC/compression.

(1) Turn the crankshaft damper clockwise, then align its timing mark notch with the timing mark ”0”.

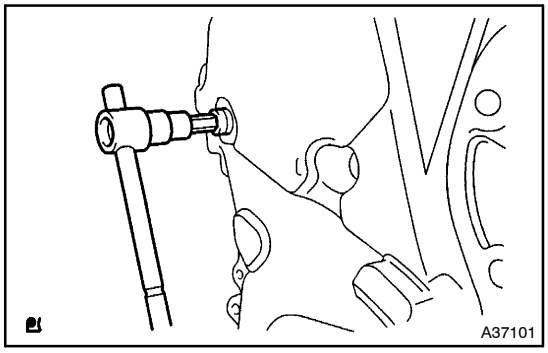
(2) Check that the timing marks of the camshaft timing gear are located as illustrated.

HINT:

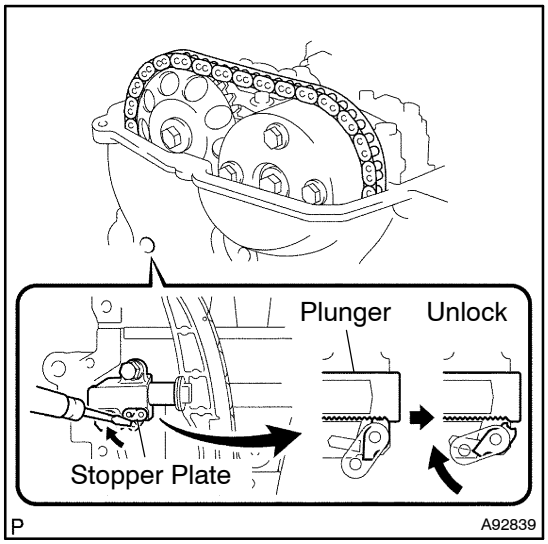
If not, turn the crankshaft to align the marks.



(3) Put the paint marks on the timing chain plates which align with timing marks of the camshaft timing gear.

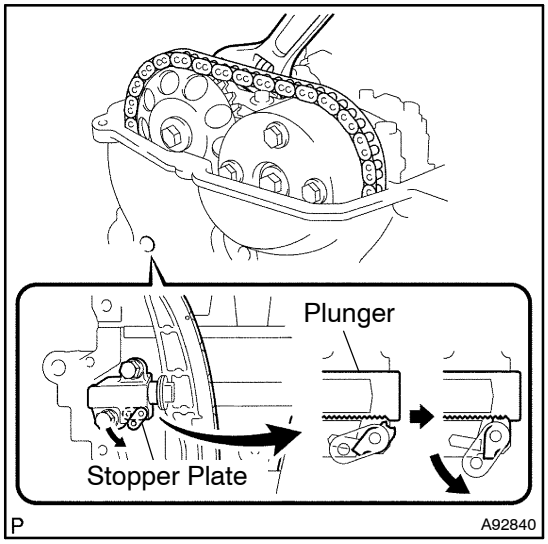


(b) Using 8 mm socket hexagon wrench, remove the service hole screw plug.
SST 09023–38400



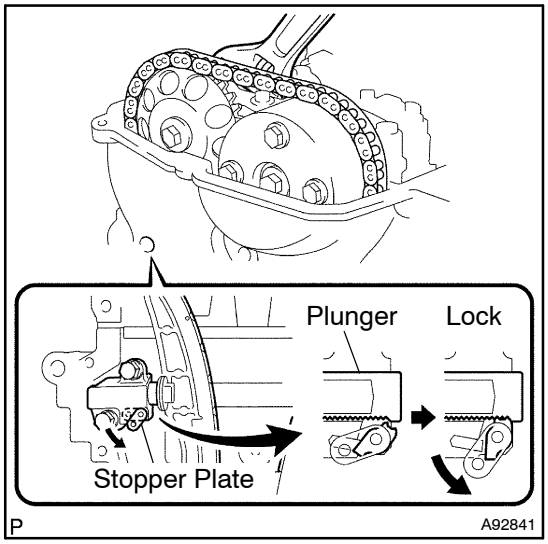
(c) Insert a screwdriver into the service hole of the chain tensioner to hold the stopper plate of the chain tensioner upward.

HINT:
Lifting up the stopper plate of the chain tensioner unlocks the plunger.



(d) Keeping the stopper plate of the chain tensioner lifted, slightly rotate the hexagonal lobe of the camshaft No. 2 to the right t with an adjustable wrench so the plunger of the chain tensioner is pushed.

HINT:
When the camshaft No. 2 is slightly rotated to the right, the plunger is pushed.



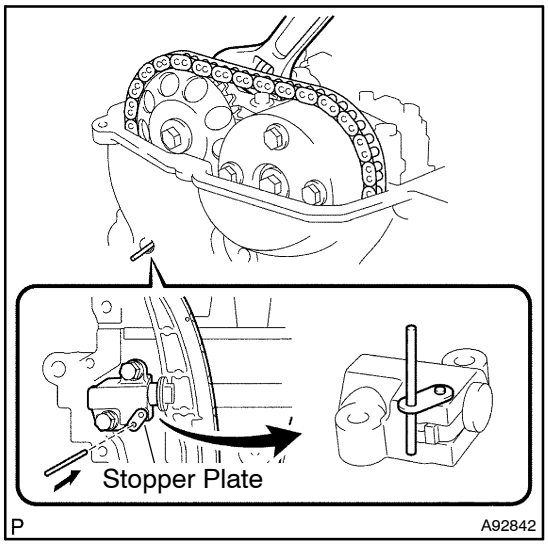
(e) Keeping the adjustable wrench installed, remove the screwdriver with the plunger pushed.

NOTICE:

Do not move the adjustable wrench.

HINT:

Removing the screwdriver lifts down the stopper plate and locks the plunger.

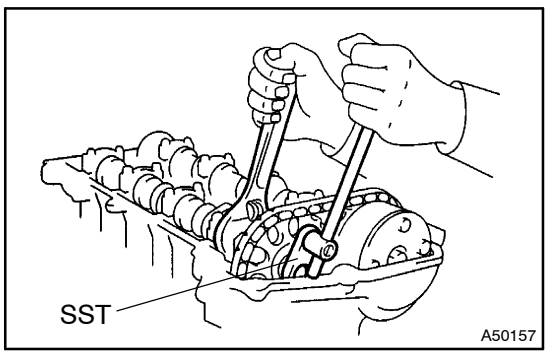


(f) Insert a 3.0 mm (0.118 in.) diameter bar into the hole of the stopper plate with the stopper plate of the chain tensioner lifted down and locked.

HINT:

If a 3.0 mm (0.118 in.) diameter bar cannot be inserted into the hole of the stopper plate, rotate the camshaft No. 2 slightly to the left and right. Then a 3.0 mm (0.118 in.) diameter bar can be inserted easily.

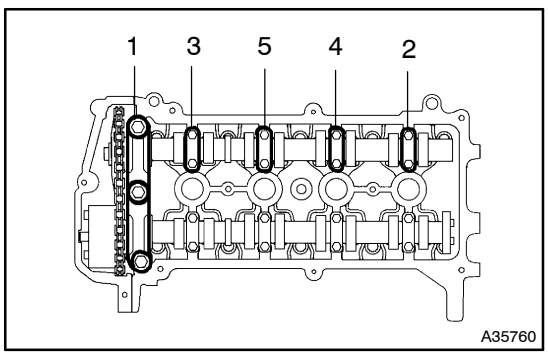
(g) Secure the 3.0 mm (0.118 in.) diameter bar with tape.



(h) Hold the hexagonal lobe of the camshaft No. 2 with the adjustable wrench.

(i) Using SST, loosen the bolt.

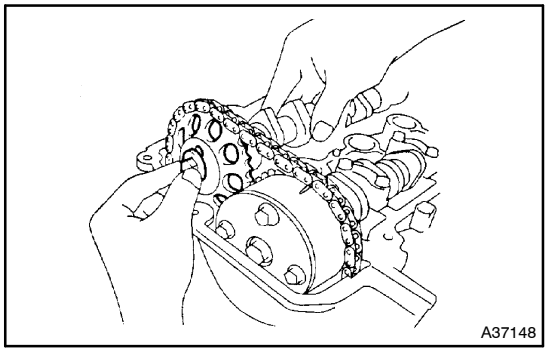
SST 09023–38400



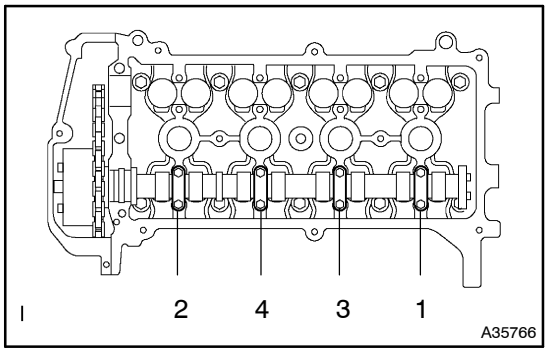
(j) Remove the camshaft bearing caps No. 1 and No. 2 in the sequence shown in the illustration.

NOTICE:

Uniformly loosen the bolts keeping the camshaft No. 2 level.



(k) Remove the bolt when the camshaft No. 2 is lifted slightly, then remove the camshaft No. 2 and camshaft timing gear.

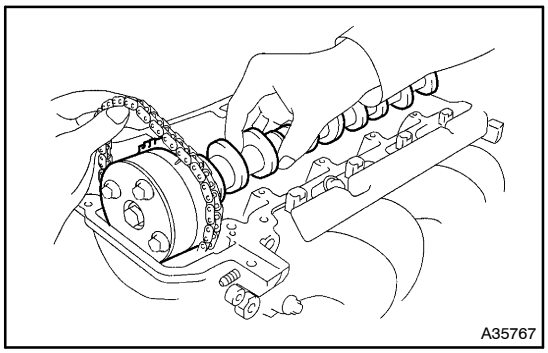


14. REMOVE CAMSHAFT

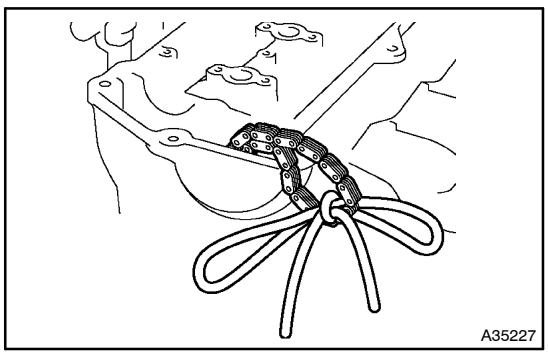
(a) Remove the camshaft bearing caps No. 2 in the sequence shown in the illustration.

NOTICE:

Uniformly loosen the bolts keeping the camshaft level.



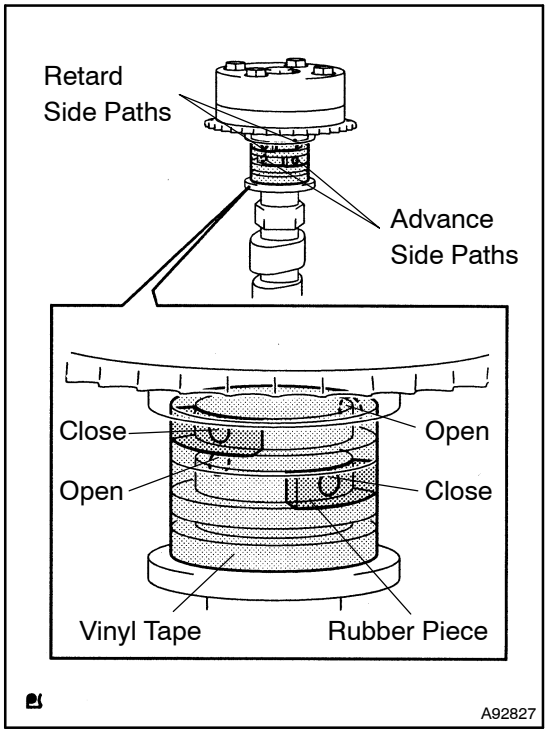
(b) Hold the timing chain by hand, then remove the camshaft.



(c) Tie the timing chain with a string or wire.

NOTICE:

Prevent foreign objects from getting into the engine compartment with a shop rag.



15. REMOVE CAMSHAFT TIMING GEAR ASSY

(a) Clamp the camshaft in a vise, then check that the camshaft timing gear assembly does not rotate.

NOTICE:

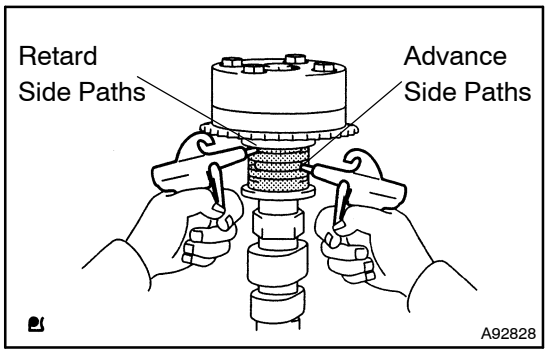
Do not damage the camshaft by clamping it in a vise too tightly.

(b) Cover the 4 oil paths of the cam journal with vinyl tape as shown in the illustration.

HINT:

One of the 2 grooves located on the cam journal is for retarding cam timing (upper) and the other is for advancing cam timing (lower). Each groove has 2 oil paths. Plug one of the 2 oil paths for each groove with rubber pieces before wrapping the cam journal with the tape.

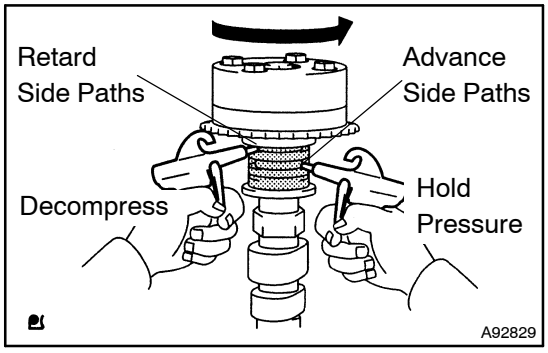
(c) Punctuate the tape which covers the advance side path and retard side path on the opposite side.



(d) Apply approximately 150 kPa (1.5 kgf/cm^2) of air pressure into the 2 punctuated paths (the advance side path and retard side path).

NOTICE:

When applying air pressure, cover the paths with a shop rag to prevent oil splash.



(e) Confirm that the camshaft timing gear assembly revolves in the advance direction when reducing the air pressure of the retard side path.

HINT:

The lock pin is released and the camshaft timing gear revolves in the advance direction.

(f) When the camshaft timing gear assembly reaches the most advanced position, release the air pressure of the retard side path, then release the air pressure of the advance side path.

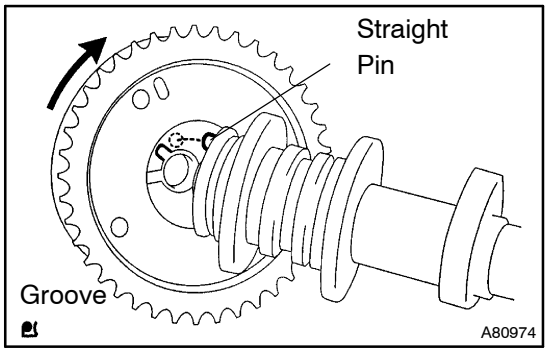
NOTICE:

If the air pressure of the advance side path is released first, the camshaft timing gear assembly occasionally shifts in the retard direction abruptly, which may damage the lock pin. Be sure to release the air pressure of the retard side path first.

(g) Remove the bolt and camshaft timing gear assembly.

NOTICE:

- **Do not remove the 4 other bolts.**
- **If reusing the camshaft timing gear assembly, unlock the lock pin inside the camshaft timing gear first.**



16. INSTALL CAMSHAFT TIMING GEAR ASSY

(a) Put the camshaft timing gear assembly and camshaft together with the straight pin off the groove as illustrated.

(b) Turn the camshaft timing gear assembly in the direction shown (to the left) while pushing it lightly into the camshaft. Push further at the position where the pin fits into the groove.

NOTICE:

Do not turn the camshaft timing gear to the retard direction (to the right).

(c) Check that there is no clearance between the camshaft timing gear assembly and fringe.

(d) Tighten the bolt with the camshaft timing gear fixed.

Torque: 64 N·m (653 kgf·cm, 47 ft·lbf)

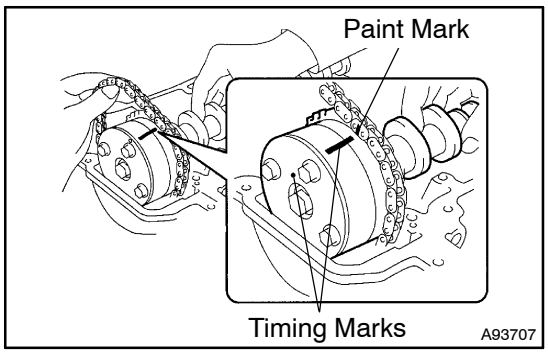
NOTICE:

- **Do not damage the camshaft by clamping it in a vise too tightly.**
- **Do not lock the camshaft timing gear assembly when tightening the bolt.**
- **If the camshaft timing gear is locked at the most retarded position, unlock the lock pin inside the timing gear, then tighten the bolts.**

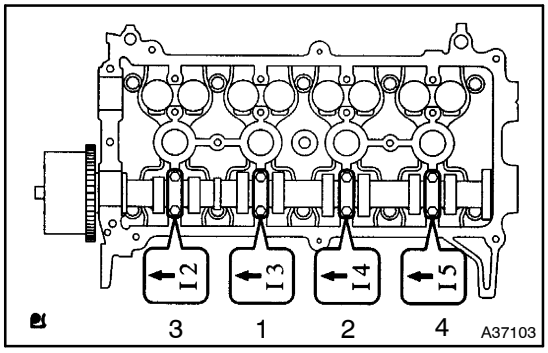
(e) Check that the camshaft timing gear moves to the retard direction (to the right) and it is locked at the most retarded position.

17. INSTALL CAMSHAFT

(a) Apply engine oil to the cam and cylinder head journal.

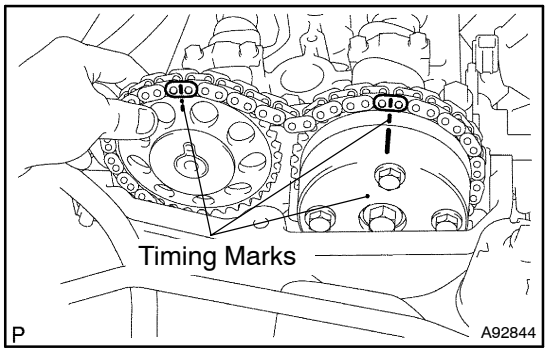


(b) Hold the chain as illustrated, then install the camshaft and camshaft timing gear assembly so that the paint mark of the chain and the timing mark of the camshaft timing gear assembly are aligned.



(c) Check the front marks and numbers on the bearing cap No. 2, then tighten the bolts uniformly in several steps in the sequence shown in the illustration.
Torque: 13 N·m (130 kgf·cm, 9.6 ft·lbf)

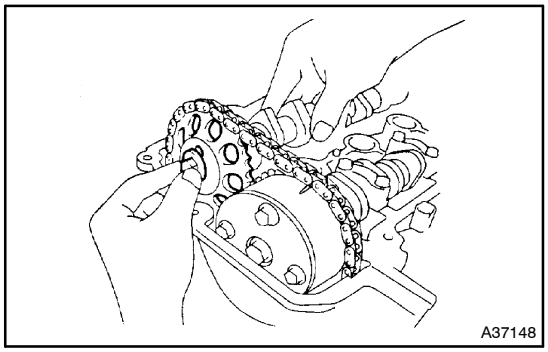
NOTICE:
Tighten the bolts uniformly keeping the camshaft level.



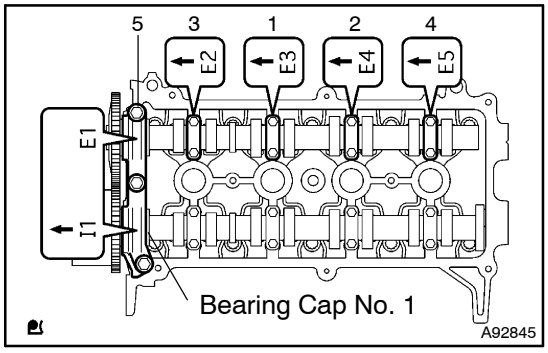
18. INSTALL NO.2 CAMSHAFT

(a) Hold the chain as illustrated, then install the camshaft No. 2 and camshaft timing gear so that the pain mark of the chain and the timing mark of the camshaft timing gear are aligned.

(b) Align the knock pin of the camshaft No. 2 with the pin groove of the camshaft timing gear.

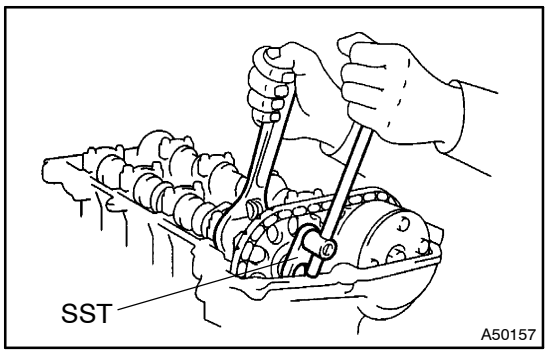


(c) Temporarily tighten the camshaft timing chain with the bolt.



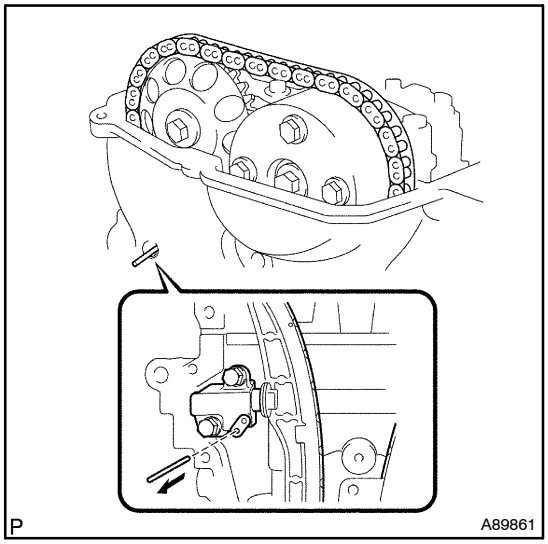
(d) Check the front marks and numbers on the bearing caps No. 1 and No. 2, then tighten the bolts uniformly in several steps in the sequence shown in the illustration.
Torque:
23 N·m (235 kgf·cm, 17 ft·lbf) for bearing cap No. 1
13 N·m (130 kgf·cm, 9.6 ft·lbf) for bearing cap No. 2

NOTICE:
Tighten the bolts uniformly keeping the camshaft level.

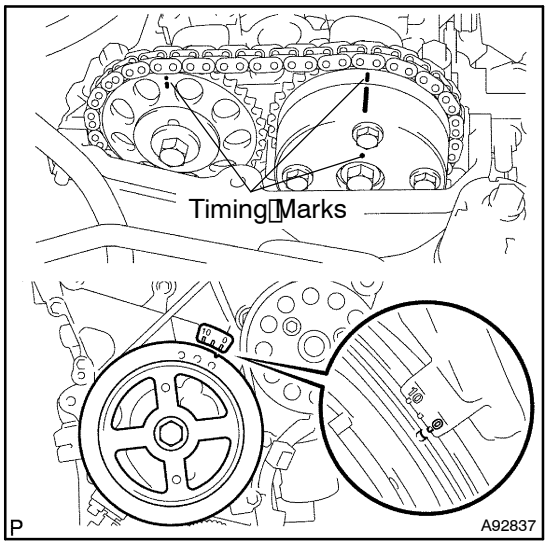


(e) Hold the hexagonal lobe of the camshaft No. 2 with the adjustable wrench.

(f) Using SST, tighten the bolt.
SST 09023–38400
Torque: 64 N·m (653 kgf·cm, 47 ft·lbf)



(g) Remove the 3.0 mm (0.118 in.) diameter bar from the chain tensioner.



(h) Turn the crankshaft damper clockwise, then align its timing mark notch with the timing mark "0".

(i) Check that the timing marks are located as illustrated.

(j) Apply adhesive to 2 or 3 threads of the service hole screw plug bolt end.

Adhesive:
Part No. 08833–00070, THREE BOND 1324, or equivalent

NOTICE:
Remove any oil from the bolts and bolt holes.

(k) Using an 8 mm socket hexagon wrench, install the service hole screw plug.

Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)

19. INSPECT VALVE CLEARANCE (See page 14–6)
20. ADJUST VALVE CLEARANCE (See page 14–6)
SST 10514, 09023–38400
21. INSTALL CYLINDER HEAD COVER SUB–ASSY (See page 17–8)
22. INSTALL RESERVOIR BRACKET
Torque: 8.5 N·m (87 kgf·cm, 75 in.·lbf)
23. INSTALL BRAKE MASTER CYLINDER RESERVOIR SUB–ASSY
Torque: 8.5 N·m (87 kgf·cm, 75 in.·lbf)
24. INSTALL AIR CLEANER ASSY
Torque:
7.0 N·m (71 kgf·cm, 62 in.·lbf) for bolt
3.0 N·m (31 kgf·cm, 27 in.·lbf) for clamp
25. INSTALL COWL TOP PANEL SUB–ASSY OUTER FRONT (See page 11–16)
26. INSTALL WINDSHIELD WIPER LINK ASSY (See page 66–16)
27. CHECK FOR ENGINE OIL LEAKS
28. INSTALL RADIATOR SUPPORT OPENING COVER
29. INSTALL ENGINE UNDER COVER RH
30. CONNECT BATTERY NEGATIVE TERMINAL
Torque: 6.0 N·m (61 kgf·cm, 53 in.·lbf)

31. INSTALL REAR FLOOR BOARD NO.3
32. INSTALL DECK FLOOR BOX REAR
33. INSTALL REAR FLOOR BOARD NO.2
34. POWER WINDOW CONTROL SYSTEM INITIALIZE (See page 01–29)