CAMSHAFT (LH BANK) (1MZ−FE/3MZ−FE)

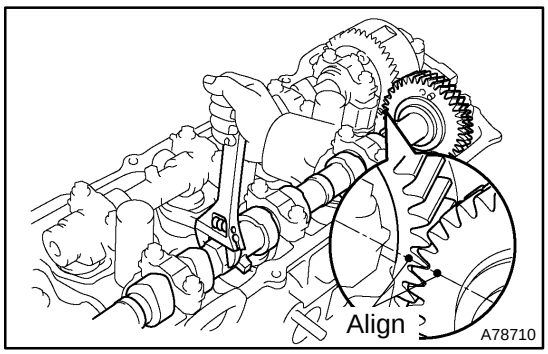
141IK−02

REPLACEMENT

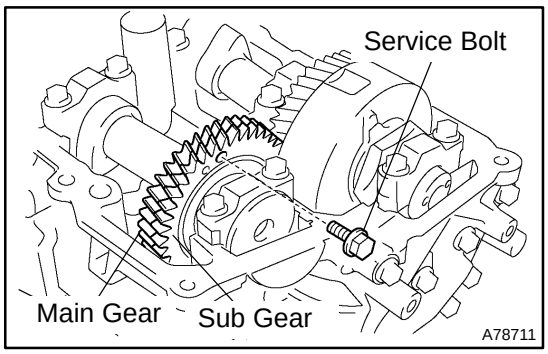
1. DRAIN ENGINE COOLANT (See page 16−27)
2. REMOVE V−BANK COVER SUB−ASSY (See page 14−164)
3. REMOVE RADIATOR HOSE INLET
4. REMOVE SPARK PLUG
5. REMOVE CYLINDER HEAD COVER SUB−ASSY LH (See page 14−142)
6. REMOVE FRONT WHEEL RH
7. REMOVE FRONT FENDER APRON SEAL RH
8. REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 14−140)
9. REMOVE VANE PUMP V BELT (See page 14−140)
10. REMOVE ENGINE MOVING CONTROL ROD (See page 14−164)
11. REMOVE ENGINE MOUNTING STAY NO.2 RH (See page 14−164)
12. REMOVE GENERATOR BRACKET NO.2
13. REMOVE CRANKSHAFT PULLEY (See page 14−186)
14. REMOVE TIMING BELT NO.1 COVER (See page 14−186)
15. REMOVE TIMING BELT NO.2 COVER (See page 14−186)
16. REMOVE ENGINE MOUNTING BRACKET RH
17. REMOVE TIMING BELT GUIDE NO.2 (See page 14−186)
18. REMOVE TIMING BELT (See page 14−186)
19. REMOVE TIMING BELT IDLER SUB−ASSY NO.2
20. REMOVE CAMSHAFT TIMING PULLEY (See page 14−186)
21. REMOVE TIMING BELT NO.3 COVER (See page 14−186)
22. REMOVE NO.3 CAMSHAFT SUB−ASSY

NOTICE:

Since 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, damage to the cylinder head or to the camshaft may result. To avoid this, the following steps must be carried out.



(a) Align the camshaft drive and driven gear’s timing marks (1 dot mark each) by turning the camshaft with a wrench.

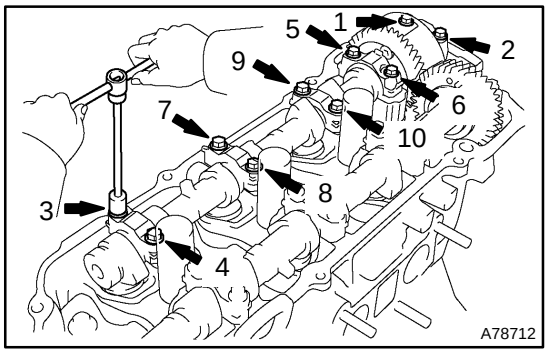


(b) Secure the exhaust camshaft sub gear to the main gear with a service bolt.
Recommended service bolt:

Thread diameter	6 mm
Thread pitch	1 mm
Bolt length	16 to 20 mm

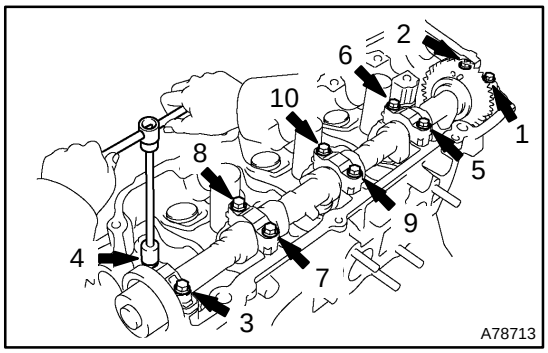
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

HINT:
When removing the camshaft, make certain that the torsional spring force of the sub gear has been eliminated by installation of the service bolt.



(c) Uniformly loosen and remove the 10 bearing cap bolts in the sequence shown in the illustration. Remove the 5 bearing caps and the No. 3 camshaft.

NOTICE:
- **Do not pry out the camshaft.**
- **Be careful not to damage the portion of the cylinder head receiving the shaft thrust.**



23. REMOVE NO.4 CAMSHAFT SUB−ASSY

(a) Uniformly loosen and remove the 10 bearing cap bolts in the sequence shown in the illustration. Remove the 5 bearing caps and the No. 4 camshaft.

NOTICE:
- **Do not pry out the camshaft.**
- **Be careful not to damage the portion of the cylinder head receiving the shaft thrust.**

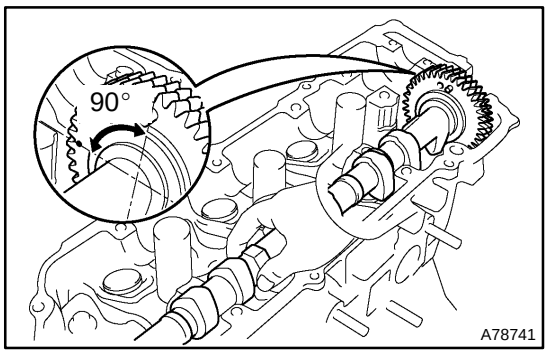
(b) Remove the oil seal from the No. 4 camshaft.

24. REMOVE CAMSHAFT TIMING GEAR ASSY (See page 14−186)
25. REMOVE CAMSHAFT SUB GEAR NO.3 (See page 14−186)
26. INSTALL CAMSHAFT SUB GEAR NO.3 (See page 14−186)
27. INSTALL CAMSHAFT TIMING GEAR ASSY (See page 14−186)

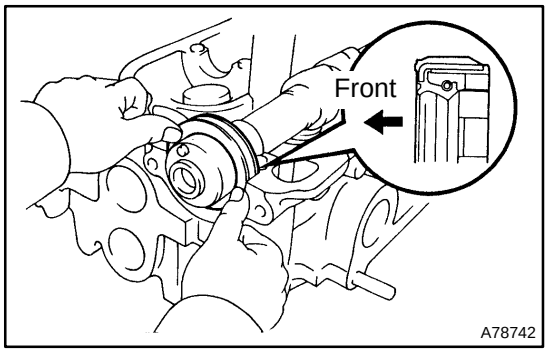
28. INSTALL NO.4 CAMSHAFT SUB−ASSY

NOTICE:

Since the thrust clearance of the camshaft is small, the camshaft must be kept level while it is being installed. If the camshaft is not kept level, damage to the cylinder head or to the camshaft may result. To avoid this, the following steps must be carried out.



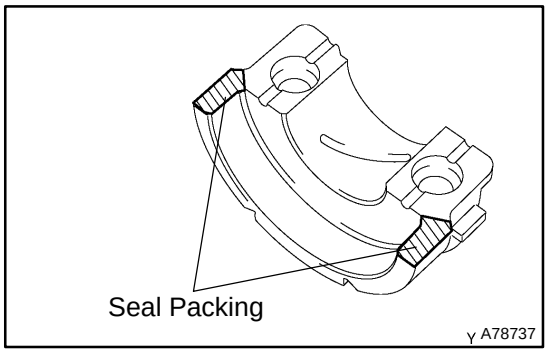
(a) Apply new engine oil to the thrust portion and journal of the camshaft.
(b) Place the No. 4 camshaft at a 90° angle of the timing mark (1 dot marks) on the cylinder head.
(c) Apply MP grease to a new oil seal lip.



(d) Install the oil seal to the camshaft.

NOTICE:

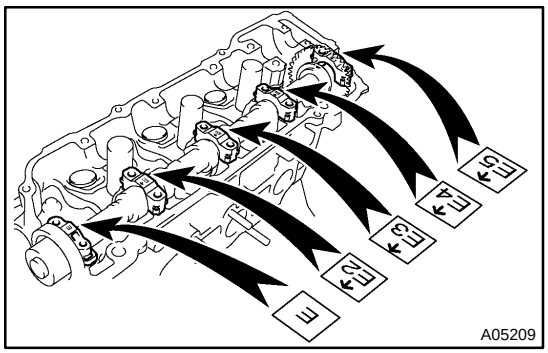
- **Do not turn over the oil seal lip.**
- **Insert the oil seal until it stops.**



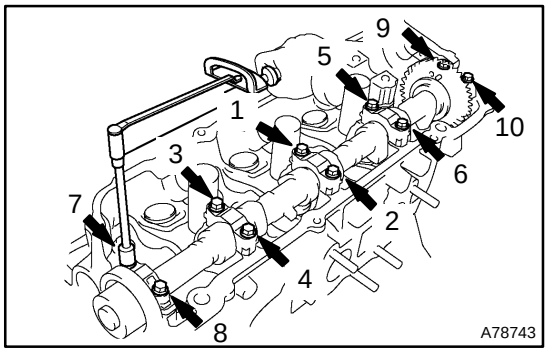
(e) Remove any old packing material from the contact surface.
(f) Apply seal packing to the No. 1 bearing cap as shown in the illustration.
Seal packing: Part No. 08826−00080 or equivalent

NOTICE:

- **Install the No. 1 bearing cap within 5 minutes after applying seal packing.**
- **Do not expose the seal to engine oil for at least 2 hours after installing.**



(g) Install the 5 bearing caps in their proper locations.
(h) Apply a light coat of engine oil on the threads of the bearing cap bolts.

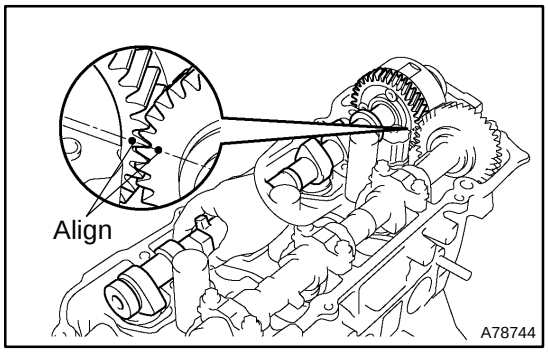


(i) Uniformly install and tighten the 10 bearing cap bolts in the sequence shown in the illustration.
Torque: 16 N·m (163 kgf·cm, 12 ft·lbf)

29. INSTALL NO.3 CAMSHAFT SUB−ASSY

NOTICE:

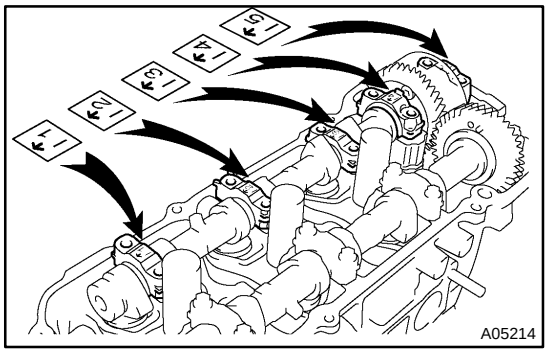
Since the thrust clearance of the camshaft is small, the camshaft must be kept level while it is being installed. If the camshaft is not kept level, damage to the cylinder head or to the camshaft may result. To avoid this, the following steps must be carried out.



(a) Apply new engine oil to the thrust portion and journal of the camshaft.

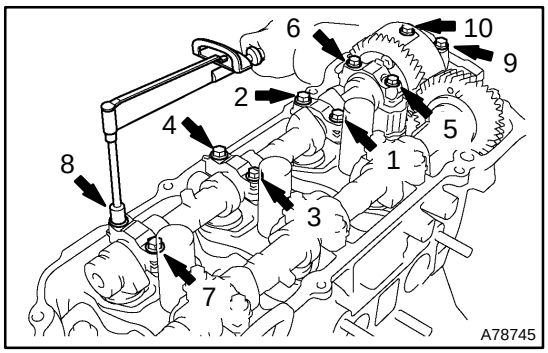
(b) Align the camshaft drive and driven gear's timing mark (1 dot mark each).

(c) Place the camshaft on the cylinder head.



(d) Install the 5 bearing caps in their proper locations.

(e) Apply a light coat of engine oil on the threads of the bearing cap bolts.



(f) Uniformly install and tighten the 10 bearing cap bolts in the sequence shown in the illustration.
Torque: 16 N·m (163 kgf·cm, 12 ft·lbf)

(g) Remove the service bolt.

30. INSTALL TIMING BELT NO.3 COVER (See page 14−186)

31. INSTALL CAMSHAFT TIMING PULLEY (See page 14−186)

32. INSTALL TIMING BELT IDLER SUB−ASSY NO.2
Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)

33. INSPECT TIMING BELT (See page 14−186)

34. INSTALL TIMING BELT (See page 14−186)

35. INSTALL TIMING BELT TENSIONER ASSY (See page 14−186)

36. INSTALL TIMING BELT GUIDE NO.2 (See page 14−186)

37. INSTALL ENGINE MOUNTING BRACKET RH
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)

38. INSTALL TIMING BELT NO.2 COVER (See page 14−186)
39. INSTALL TIMING BELT NO.1 COVER (See page 14−186)
40. INSTALL CRANKSHAFT PULLEY (See page 14−186)
41. INSTALL GENERATOR BRACKET NO.2
    Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)
42. INSTALL ENGINE MOUNTING STAY NO.2 RH (See page 14−164)
43. INSTALL ENGINE MOVING CONTROL ROD (See page 14−164)
44. INSPECT VALVE CLEARANCE (See page 14−142)
45. ADJUST VALVE CLEARANCE (See page 14−142)
46. INSTALL VANE PUMP V BELT (See page 14−140)
47. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 14−140)
48. INSPECT DRIVE BELT TENSION (See page 14−136)
49. INSTALL CYLINDER HEAD COVER SUB−ASSY LH (See page 14−142)
50. INSTALL SPARK PLUG
    Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)
51. INSTALL V−BANK COVER SUB−ASSY (See page 14−164)
52. INSTALL FRONT WHEEL RH
    Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
53. ADD ENGINE COOLANT (See page 16−27)
54. CHECK FOR ENGINE COOLANT LEAKS (See page 16−21)