1420R–01

REPLACEMENT

1. REMOVE ENGINE UNDER COVER SUB–ASSY NO.1

(a) Remove the 4 bolts and engine under cover No.1.

2. DRAIN COOLANT (SEE PUB. NO. RM990E, PAGE 16–50)

3. REMOVE RADIATOR SUPPORT SEAL UPPER

(a) Remove the 11 clips and radiator support seal upper.

4. REMOVE WIRE HARNESS (W/ COLD AREA)

(a) Remove the wire harness from the fan shroud.

5. REMOVE RADIATOR RESERVE TANK ASSY

(a) Disconnect the water by–pass hose and water by–pass hose No.2.

(b) Remove the 3 bolts and radiator reserve tank.

6. REMOVE RADIATOR HOSE NO.1

7. REMOVE FAN AND GENERATOR V BELT (SEE PUB. NO. RM990E, PAGE 14–189)

HINT:

Loosen the 4 nuts for the fan with fluid coupling assy in advance.

8. REMOVE FAN SHROUD

(a) Remove the oil cooler inlet hose and outlet hose from the hose clamp. (AUTOMATIC TRANSMISSION)

(b) Remove the 4 nuts for the fan with fluid coupling assy and 2 bolts for the fan shroud.

(c) Remove the fan with fluid coupling assy together with the fan shroud.

9. REMOVE FAN PULLEY

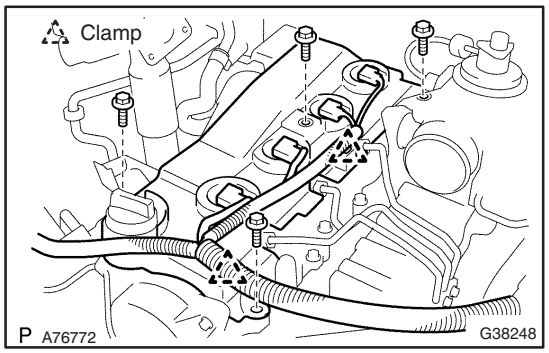
10. REMOVE INTERCOOLER PROTECTOR (SEE PAGE 13–18)

11. REMOVE INTERCOOLER ASSY (SEE PAGE 13–18)

12. REMOVE DIESEL THROTTLE BODY ASSY (SEE PAGE 10–22)

13. REMOVE TIMING BELT NO.1 COVER (SEE PUB. NO. RM990E, PAGE 14–214)

14. REMOVE TIMING BELT (SEE PUB. NO. RM990E, PAGE 14–214)



15. REMOVE CYLINDER HEAD COVER SUB–ASSY NO.2

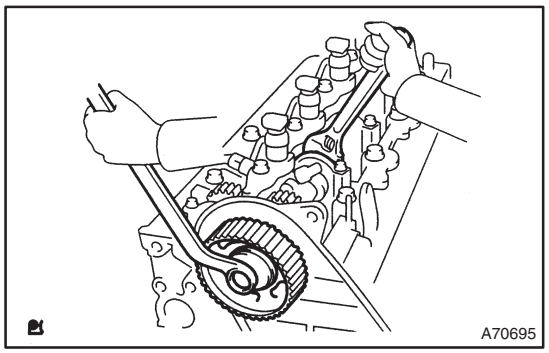
(a) Disconnect the injector connectors.

(b) Remove the 2 clamps and wire harness from the cylinder head cover sub–assy No.2.

(c) Remove the 4 bolts and cylinder head cover sub–assy No.2.

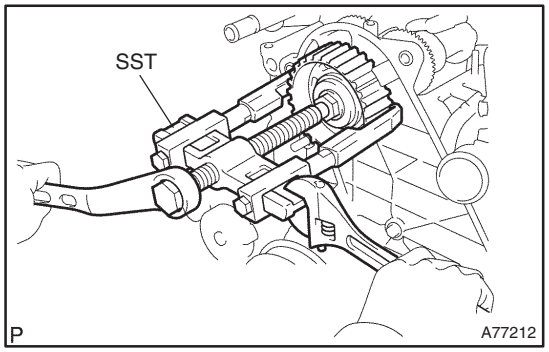
16. REMOVE INJECTION PIPE (SEE PAGE 11–52)

17. REMOVE CYLINDER HEAD COVER SUB–ASSY (SEE PAGE 11–52)

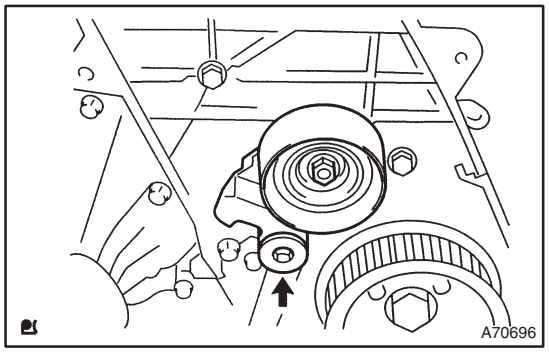


18. REMOVE CAMSHAFT TIMING PULLEY

(a) Remove the bolt for the camshaft timing pulley while holding the camshaft with a monkey wrench.

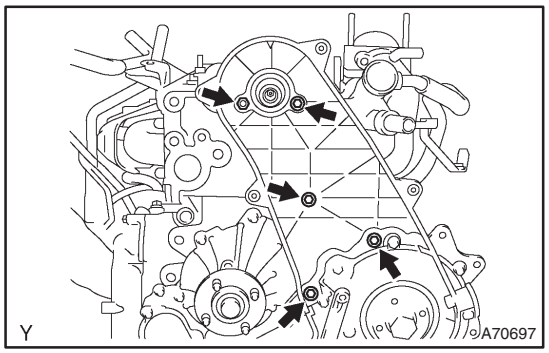


(b) Using SST, remove the camshaft timing pulley.
SST 09950–40011 (09951–04010, 09952–04010, 09953–04020, 09954–04010, 09955–04061)



19. REMOVE TIMING BELT IDLER SUB–ASSY NO.1

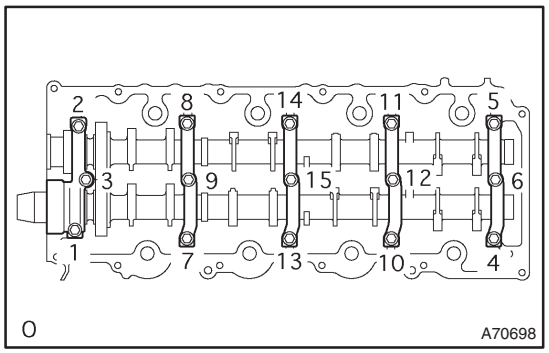
(a) Remove the timing belt idler No.1 using a 10 mm socket hexagonal wrench.



20. REMOVE TIMING BELT NO.2 COVER

(a) Remove the 4 bolts and nuts, then remove the timing belt No.2 cover.

21. REMOVE INJECTOR ASSY (SEE PAGE 11–52)

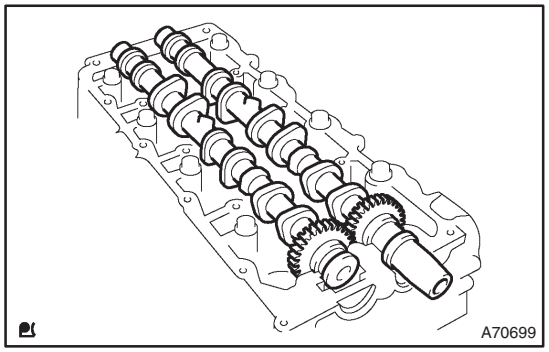


22. REMOVE CAMSHAFT

(a) Uniformly loosen and remove the 15 camshaft bearing cap bolts in the specified order described in the illustration.

(b) Remove the 5 camshaft bearing caps.

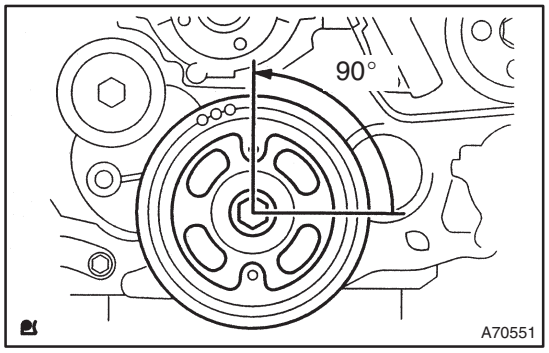
(c) Pull out the oil seal.



(d) Remove the camshaft and camshaft No.2.

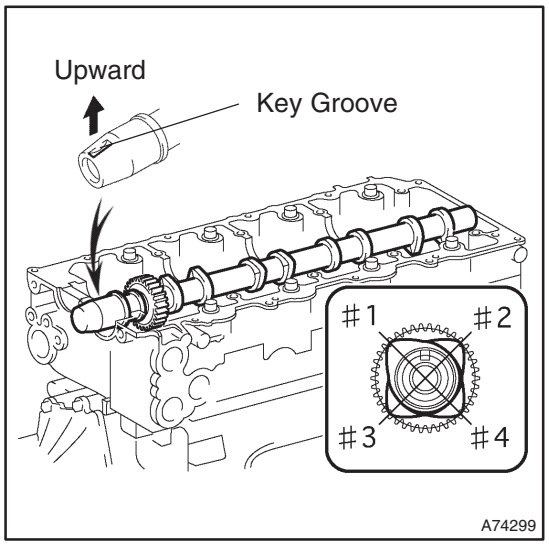
NOTICE:

- **Do not pry the camshaft.**
- **Do not damage the thrusts of the cylinder head.**



23. INSTALL CAMSHAFT

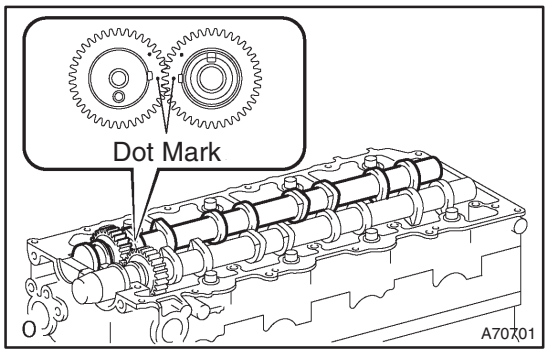
(a) Set the crankshaft to 90° position from of the compression TDC.



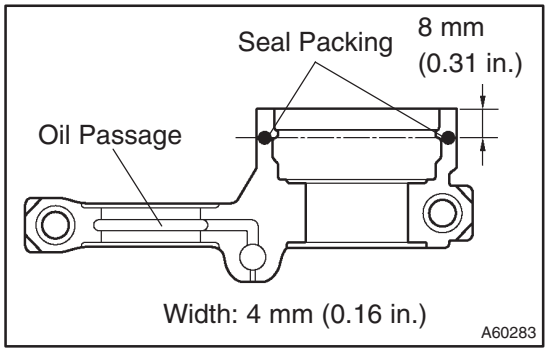
(b) Place the camshaft to the cylinder head as shown in the illustration.

NOTICE:

Apply engine oil to the cams, thrusts and gears of the camshaft as well as on the journal of the cylinder head.



(c) Align the dot marks of the camshaft and camshaft No.2 by meshing the both two gears before placing the camshaft No.2.



(d) Remove old packing (FIPG) from the camshaft bearing cap.

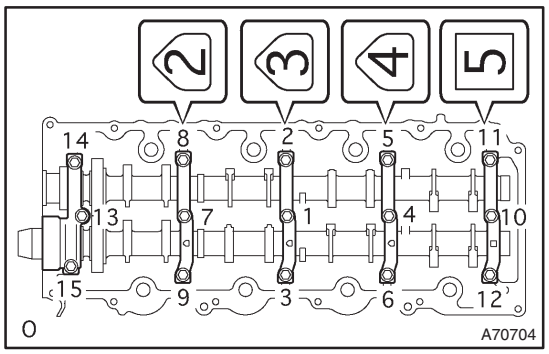
(e) Apply seal packing to the specific places shown in the illustration.

Seal packing: Part No.08826–00080 or equivalent
Thickness: 1 mm (0.04 in.)

NOTICE:

- **Be careful not to adhere FIPG to the oil passage of the bearing cap.**
- **After applying FIPG is completed, install the camshaft bearing cap and within 3 minutes and tighten its bolts within 15 minutes.**
- **Do not start the engine 2 hours after the installation.**

(f) Install the camshaft bearing cap as shown in the illustration.

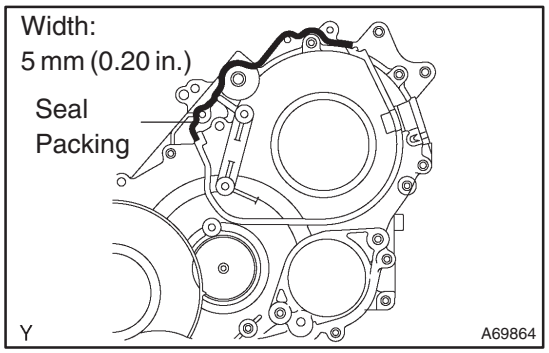


(g) Tighten the 15 bolts for the camshaft bearing cap in the specified order shown in the illustration.

Torque: 19 N·m (194 kgf·cm, 14 ft·lbf)

(h) Install the oil seal (See Pub. No. RM990E, page 14–241).
SST 09608–06041

24. INSTALL INJECTOR ASSY (SEE PAGE 11–52)
25. INSPECT FOR FUEL LEAKS (SEE PAGE 11–46)



26. INSTALL TIMING BELT NO.2 COVER

(a) Remove old seal packing (FIPG) from the timing gear case.

(b) Apply seal packing to the specific places shown in the illustration.

Seal packing: Part No.08826–00080 or equivalent

NOTICE:

- **Install the timing belt No.2 cover within 3 minutes and tighten its bolts and nuts within 15 minutes after applying FIPG is competed.**
- **Do not start the engine 2 hours after the installation.**

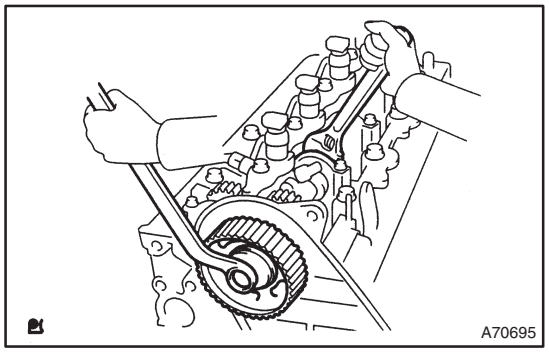
(c) Fix the timing belt cover No.2 with the 4 bolts and nuts.

Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

27. INSTALL TIMING BELT IDLER SUB–ASSY NO.1

(a) Install the timing belt idler No.1 using a 10 mm socket hexagon wrench.

Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)



28. INSTALL CAMSHAFT TIMING PULLEY

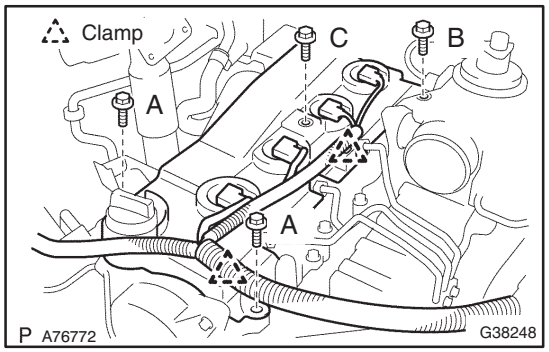
(a) Install the camshaft timing pulley.

(b) Tighten the bolt for the camshaft timing pulley while holding the camshaft with a monkey wrench.

Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf)

29. INSTALL CYLINDER HEAD COVER SUB–ASSY (SEE PAGE 11–52)

30. INSTALL INJECTION PIPE (SEE PAGE 11–52)



31. INSTALL CYLINDER HEAD COVER SUB–ASSY NO.2

(a) Install the cylinder head cover sub–assy No.2 with the 4 bolts.

Torque:
18 N·m (184 kgf·cm, 13 ft·lbf) for bolt A
8.0 N·m (82 kgf·cm, 71 in.·lbf) for bolt B

(b) Install the clamps and wire harness to the cylinder head cover sub–assy No.2.

(c) Install the injector connectors.

32. INSTALL TIMING BELT (SEE PUB. NO. RM990E, PAGE 14–214)

33. INSTALL TIMING BELT NO.1 COVER

(a) Install the timing belt cover No.1 with the 6 bolts.
Torque: 6.0 N·m (61 kgf·cm, 53 in.·lbf)

(b) Install the wire harness clamp.

(c) Install the water hose clamp with the bolt.
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)

34. INSTALL DIESEL THROTTLE BODY ASSY (SEE PAGE 10–22)

35. INSTALL INTERCOOLER ASSY (SEE PAGE 13–18)

36. INSTALL INTERCOOLER PROTECTOR

(a) Install the intercooler protector with the 5 bolts.
Torque: 7.0 N·m (71 kgf·cm, 62 in.·lbf)

37. INSTALL FAN PULLEY

38. INSTALL FAN SHROUD

(a) Temporarily place the fan shroud together with the fan with fluid coupling assy to the correct location inside the engine room first.

(b) Install the fan shroud to the radiator with the 2 bolts.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

(c) Install the fan with fluid coupling assy to the water pump with the 4 nuts.
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)

(d) Install the oil cooler inlet hose and outlet hose to the hose clamp. (AUTOMATIC TRANSMISSION)

39. INSTALL FAN AND GENERATOR V BELT (SEE PUB. NO. RM990E, PAGE 14–189)

40. INSTALL RADIATOR HOSE NO.1

41. INSTALL RADIATOR RESERVE TANK ASSY

(a) Install the radiator reserve tank with the 3 bolts.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

(b) Connect the water by–pass hose and water by–pass hose No.2.

42. INSTALL WIRE HARNESS (W/ COLD AREA)

(a) Install the wire harness to the fan shroud.

43. INSTALL RADIATOR SUPPORT SEAL UPPER

(a) Install the radiator support seal upper with the 11 clips.

44. ADD ENGINE COOLANT (SEE PUB. NO. RM990E, PAGE 16–50)

45. CHECK FOR ENGINE COOLANT LEAKS

46. INSPECT CHECK FOR FUEL LEAKS (SEE PAGE 11–46)

47. INSTALL ENGINE UNDER COVER SUB–ASSY NO.1

(a) Fix the engine under cover No.1 with the 4 bolts.
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)