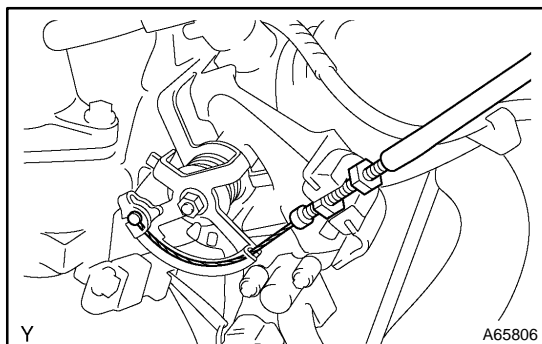


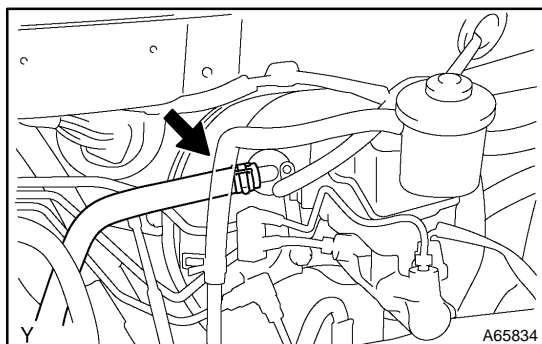
## REPLACEMENT

1. DISCHARGE FUEL SYSTEM PRESSURE (See page 11-1 )
2. DRAIN COOLANT (See page 16-18 )
3. REMOVE FRONT WHEEL RH
4. REMOVE ENGINE UNDER COVER RH
5. REMOVE CYLINDER HEAD COVER NO.2
  - (a) Remove the 3 bolts and nut, then remove the cylinder head cover No. 2.
6. DISCONNECT BATTERY NEGATIVE TERMINAL



7. SEPARATE ACCELERATOR CONTROL CABLE ASSY

8. REMOVE AIR CLEANER CAP SUB-ASSY



9. DISCONNECT UNION TO CONNECTOR TUBE HOSE
  - (a) Disconnect the union to connector tube hose from the brake booster.

10. REMOVE EFI FUEL PIPE CLAMP (See page 11-1 )
11. DISCONNECT FUEL TUBE SUB-ASSY (See page 11-1 )
12. DISCONNECT RADIATOR HOSE INLET
13. DISCONNECT HEATER INLET WATER HOSE
14. DISCONNECT HEATER OUTLET WATER HOSE
15. DISCONNECT WATER BY-PASS HOSE NO.2
16. DISCONNECT WATER BY-PASS HOSE NO.3
17. REMOVE WIRE HARNESS PROTECTOR (See page 14-161 )
18. SEPARATE SUCTION HOSE SUB-ASSY (See page 14-161 )
19. REMOVE AIR SWITCHING VALVE ASSY (See page 12-34 )
20. REMOVE FAN AND GENERATOR V BELT (See page 14-161 )
21. REMOVE GENERATOR BRACKET NO.1 (See page 19-20 )
22. REMOVE GENERATOR ASSY (See page 19-20 )

## 23. SEPARATE COMPRESSOR AND MAGNETIC CLUTCH (W/ AIR CONDITIONING) (See page 55-40 )

HINT:

Hang up the hoses instead of detaching.

24. REMOVE EXHAUST PIPE ASSY FRONT (See page 15-1 1)

25. REMOVE ENGINE MOUNTING INSULATOR SUB-ASSY RH (See page 14-236 )

26. REMOVE V-RIBBED BELT TENSIONER ASSY

HINT:

Jack the engine up and down to remove the bolt.

27. REMOVE IGNITION COIL ASSY (See page 14-236 )

28. REMOVE CYLINDER HEAD COVER SUB-ASSY (See page 14-236 )

29. REMOVE MANIFOLD STAY (See page 14-224 )

30. REMOVE EXHAUST MANIFOLD HEAT INSULATOR NO.1

31. REMOVE EXHAUST MANIFOLD (See page 14-224 )

32. REMOVE WATER PUMP PULLEY (See page 16-19 )

SST 09960-10010 (09962-01000, 09963-00600)

33. REMOVE WATER PUMP ASSY (See page 16-19 )

34. REMOVE TRANSVERSE ENGINE MOUNTING BRACKET (See page 14-224 )

35. REMOVE CRANKSHAFT POSITION SENSOR

36. SET NO. 1 CYLINDER TO TDC/COMPRESSION (See page 14-224 )

37. REMOVE CRANKSHAFT PULLEY (See page 14-224 )

SST 09213-7001 1 (09213-70020), 09330-00021, 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021, 09957-04010)

38. REMOVE CHAIN TENSIONER ASSY NO.1 (See page 14-224 )

39. REMOVE TIMING CHAIN OR BELT COVER SUB-ASSY (See page 14-224 )

40. REMOVE TIMING CHAIN OR BELT COVER OIL SEAL (See page 14-259 )

41. REMOVE CRANKSHAFT POSITION SENSOR PLATE NO.1

42. REMOVE CHAIN TENSIONER SLIPPER

(a) Remove the bolt and chain tensioner slipper.

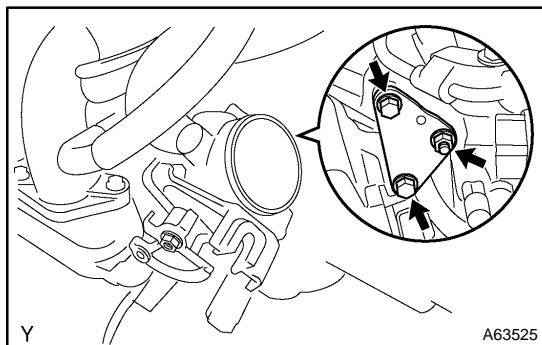
43. REMOVE CHAIN VIBRATION DAMPER NO.1

(a) Remove the 2 bolts and chain vibration damper No. 1.

44. REMOVE CHAIN SUB-ASSY (See page 14-224 )

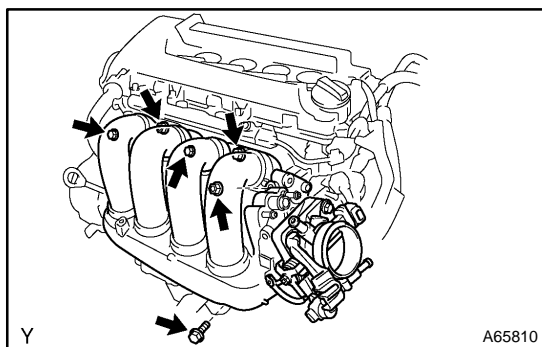
45. REMOVE OIL LEVEL GAGE GUIDE

46. REMOVE OIL LEVEL GAGE SUB-ASSY

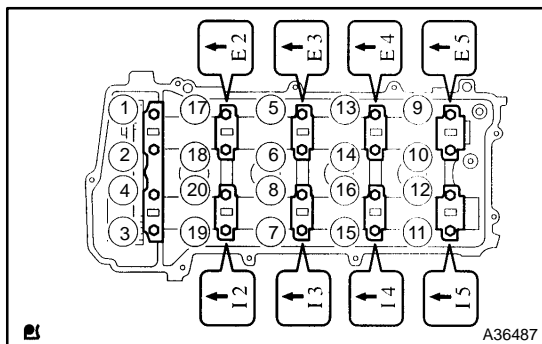


47. REMOVE SURGE TANK STAY NO.1

(a) Remove the 2 bolts and nut, then remove the surge tank stay.

**48. REMOVE INTAKE MANIFOLD**

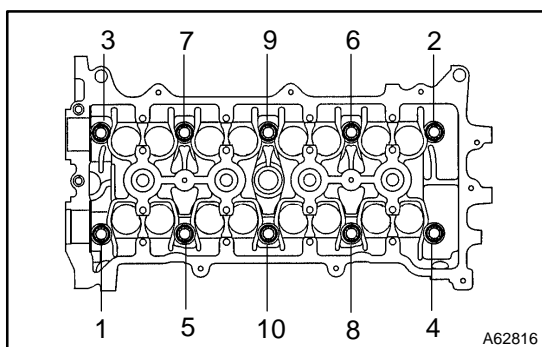
- (a) Remove the 4 bolts and 2 nuts, then remove the intake manifold and gasket.

**49. REMOVE CAMSHAFT**

- (a) Uniformly loosen and remove the 20 bearing cap bolts, in several passes in the sequence shown, then remove the 9 bearing caps of the intake and exhaust camshafts.

**50. REMOVE CYLINDER HEAD SUB-ASSY**

- (a) Disconnect the water by-pass pipe from the cylinder head.

**51. REMOVE CYLINDER HEAD GASKET**

- (b) Using a bi-hexagon wrench 10, uniformly loosen the 10 cylinder head bolts, in several passes in the sequence shown.

- (c) Remove the 10 cylinder head bolts and plate washers.

**NOTICE:**

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

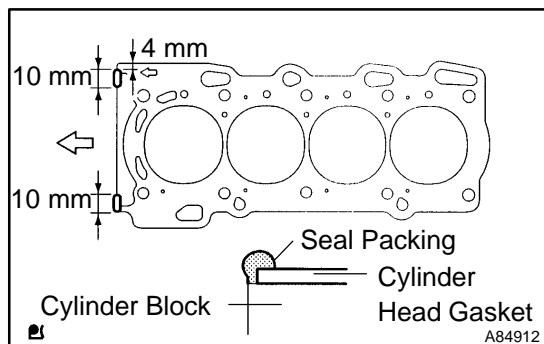
- (d) Remove the cylinder head from the cylinder block.

**52. INSTALL CYLINDER HEAD GASKET**

- (a) Place a new cylinder head gasket on the cylinder block surface with the Lot No. stamp upward.

**NOTICE:**

- **Make sure that the cylinder head gasket is mounted in the correct direction when installing.**
- **Place the cylinder head gently in order to avoid damaging the gasket.**



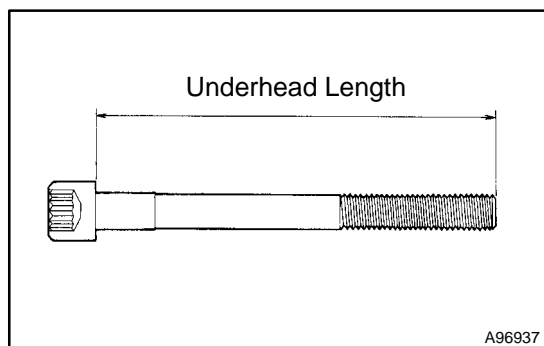
- (b) Apply seal packing to the cylinder head gasket as shown in the illustration.

**Seal packing: Part No. 08826-00080 or equivalent**

**HINT:**

Avoid applying an excessive amount of seal packing to the surface.

- The parts must be assembled within 3 minutes of applying. Otherwise, the seal packing must be removed and reapplied.
- Immediately remove the nozzle from the tube, then reinstall the cap.



**53. INSPECT CYLINDER HEAD SET BOLT**

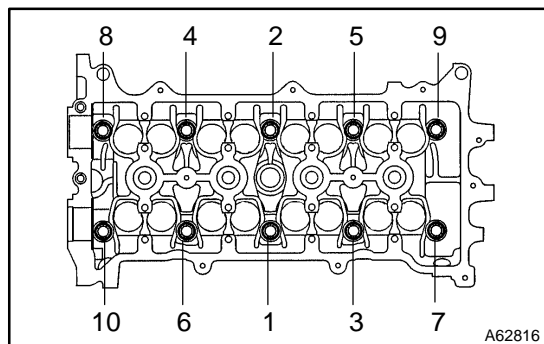
- (a) Using vernier calipers, measure the length of the head bolts from the seat to the end.

**Standard bolt length:**

**146.8 to 148.2 mm (5.780 to 5.835 in.)**

**Maximum bolt length: 148.5 mm (5.846 in.)**

If the bolt length is greater than maximum, replace the cylinder head set bolt.



**54. INSTALL CYLINDER HEAD SUB-ASSY**

- (a) Place the cylinder head on the cylinder block.

**HINT:**

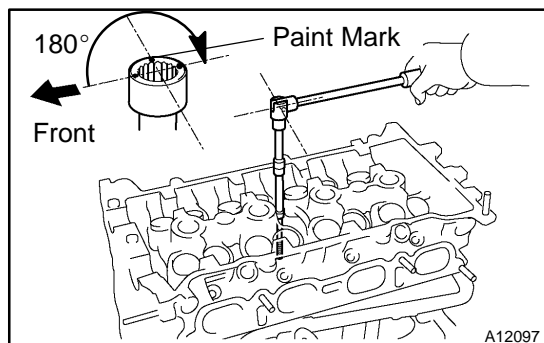
The cylinder head bolts are tightened in 2 progressive steps.

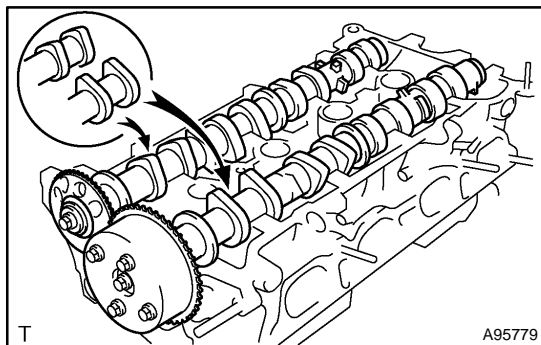
- (b) Apply a light coat of engine oil to the threads and under the heads of the cylinder head bolts.
- (c) Using a 10 mm bi-hexagon wrench, install and uniformly tighten the 10 cylinder head bolts with the plate washers, in several passes in the sequence shown.

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

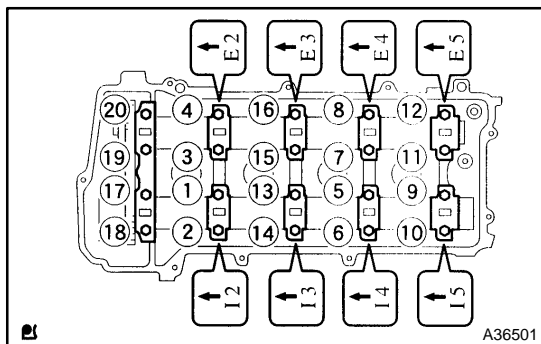
- (d) Mark the front of each cylinder head bolt with paint.
- (e) Retighten the cylinder head bolts 180° in the sequence shown.
- (f) Check that the paint marks on each bolts are at a 180° angle from the original position.
- (g) Install the water by-pass pipe.

**Torque: 21 N·m (214 kgf·cm, 16 ft·lbf)**



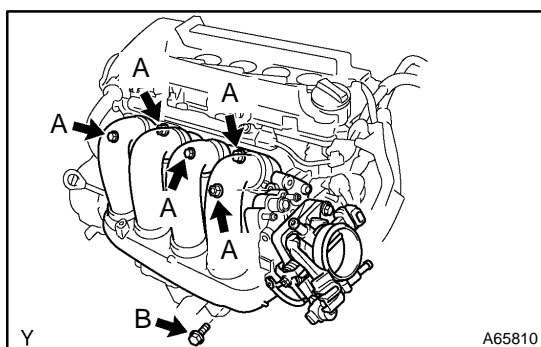
**55. INSTALL CAMSHAFT**

- (a) Apply a light coat of engine oil to the camshaft journals.
- (b) Place the 2 camshafts on the cylinder head with the No. 1 cam lobes facing as shown in the illustration.



- (c) Examine the front marks and numbers and check that the sequence order is as shown in the illustration. Then tighten the bolts.

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

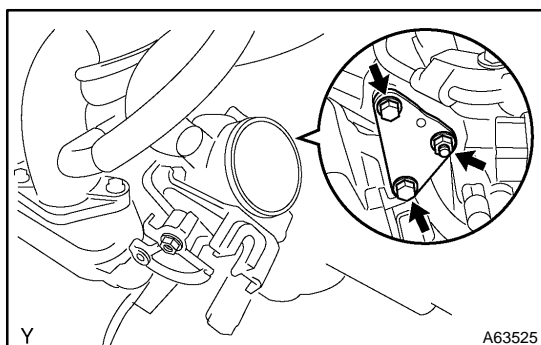
**56. INSTALL INTAKE MANIFOLD**

- (a) Install a new gasket and the intake manifold with the 4 bolts and 2 nuts.

**Torque:**

**34 N·m (347 kgf·cm, 25 ft·lbf) for bolt A and nut A**

**46 N·m (469 kgf·cm, 34 ft·lbf) for bolt B**

**57. INSTALL SURGE TANK STAY NO.1**

- (a) Install the surge tank stay with the 2 bolts and nut.

**Torque: 24 N·m (245 kgf·cm, 18 ft·lbf)**

**58. INSTALL OIL LEVEL GAGE GUIDE**

- (a) Apply a light coat of engine oil to the new O-ring, then install it onto the oil level gage guide.
- (b) Install the oil level gage guide with the bolt.

**Torque: 24 N·m (245 kgf·cm, 18 ft·lbf)**

**59. INSTALL CHAIN VIBRATION DAMPER NO.1**

- (a) Install the chain vibration damper No. 1 with the 2 bolts.

**Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)**

**60. INSTALL CHAIN SUB-ASSY (See page 14-224 )**

SST 09223-22010

**61. INSTALL CHAIN TENSIONER SLIPPER (See page 14-224 )**

2005 COROLLA MATRIX REPAIR MANUAL  
(RM1108U)

62. **INSTALL CRANKSHAFT POSITION SENSOR PLATE NO.1 (See page 14-224 )**
63. **INSTALL TIMING CHAIN OR BELT COVER OIL SEAL (See page 14-259 )**  
SST 09223-22010
64. **INSTALL TIMING CHAIN OR BELT COVER SUB-ASSY (See page 14-224 )**
65. **INSTALL CHAIN TENSIONER ASSY NO.1 (See page 14-224 )**
66. **INSTALL CRANKSHAFT PULLEY (See page 14-224 )**  
SST 09213-7001 1 (09213-70020), 09330-00021
67. **INSTALL CRANKSHAFT POSITION SENSOR**  
Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)
68. **INSTALL TRANSVERSE ENGINE ENGINE MOUNTING BRACKET (See page 14-224 )**
69. **INSTALL WATER PUMP ASSY (See page 16-19 )**
70. **INSTALL WATER PUMP PULLEY (See page 16-19 )**  
SST 09960-10010 (09962-01000, 09963-00600)
71. **INSTALL EXHAUST MANIFOLD (See page 14-224 )**
72. **INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.1**  
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)
73. **INSTALL MANIFOLD STAY (See page 14-224 )**
74. **INSTALL CYLINDER HEAD COVER SUB-ASSY (See page 14-236 )**
75. **INSTALL IGNITION COIL ASSY**  
Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)
76. **INSTALL V-RIBBED BELT TENSIONER ASSY**  
Torque:  
29 N·m (296 kgf·cm, 21 ft·lbf) for nut  
100 N·m (1,020 kgf·cm, 74 ft·lbf) for bolt
77. **INSTALL ENGINE MOUNTING INSULATOR SUB-ASSY RH (See page 14-224 )**
78. **INSTALL EXHAUST PIPE ASSY FRONT (See page 15-1 1)**
79. **INSTALL COMPRESSOR AND MAGNETIC CLUTCH (W/ AIR CONDITIONING)**  
(See page 55-40 )
80. **INSTALL GENERATOR ASSY (See page 19-20 )**
81. **INSTALL GENERATOR BRACKET NO.1 (See page 19-20 )**
82. **INSTALL AIR SWITCHING VALVE ASSY (See page 12-34 )**
83. **INSTALL SUCTION HOSE SUB-ASSY**  
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)
84. **CONNECT BATTERY NEGATIVE TERMINAL**  
Torque: 3.5 N·m (36 kgf·cm, 31 in.·lbf)
85. **INSTALL FRONT WHEEL RH**  
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
86. **ADD COOLANT (See page 16-18 )**
87. **CHECK FOR ENGINE COOLANT LEAKAGE (See page 16-12 )**
88. **CHECK FOR ENGINE OIL LEAKAGE**
89. **CHECK FOR EXHAUST GAS LEAKAGE**
90. **INSPECT IGNITION TIMING (See page 14-157 )**  
SST 09843-18040
91. **INSPECT ENGINE IDLING SPEED (See page 14-157 )**
92. **INSPECT COMPRESSION (See page 14-157 )**  
SST 09992-00500
93. **INSPECT CO/HC (See page 14-157 )**
94. **INSTALL CYLINDER HEAD COVER NO.2**  
Torque: 7.0 N·m (71 kgf·cm, 62 in.·lbf)