

INSTALLATION

1. INSTALL CYLINDER HEAD GASKET

- (a) Place a new cylinder head gasket on the cylinder block with the R mark upward.

NOTICE:

- Remove any oil from the contact surface.
- Be careful to install of the installing orientation.
- Place the cylinder head on the gasket carefully in order not to damage the gasket at the bottom part of the head.

2. INSTALL CYLINDER HEAD GASKET NO.2

- (a) Place a new cylinder head gasket on the cylinder block with the L mark upward.

NOTICE:

- Remove any oil from the contact surface.
- Be careful to install of the installing orientation
- Place the cylinder head on the gasket carefully in order not to damage the gasket at the bottom part of the head.

3. INSTALL CYLINDER HEAD SUB-ASSEMBLY

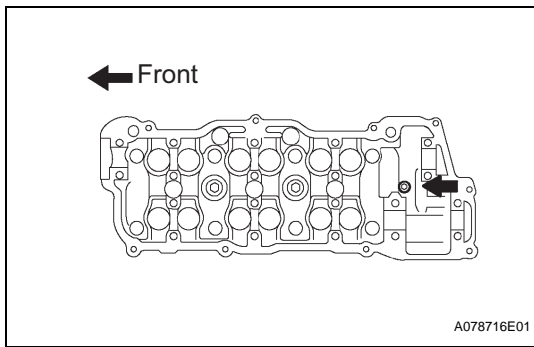
NOTICE:

The cylinder head bolts are tightened in 2 successive steps.

- (a) Apply a light coat of engine oil to the threads of the cylinder head bolts.
- (b) Install the plate washers to the cylinder head bolts.
- (c) Using several steps, install and tighten the 8 cylinder head bolts uniformly in the sequence shown in the illustration (procedure "A").

Torque: 54 N*m (550 kgf*cm, 40 ft.*lbf)

- (d) Mark the front side of each cylinder head bolt head with paint as shown in the illustration.
- (e) Retighten the cylinder head bolts by 90° in the same sequence as procedure "A".
- (f) Check that each painted mark is now at 90° angle to the front.



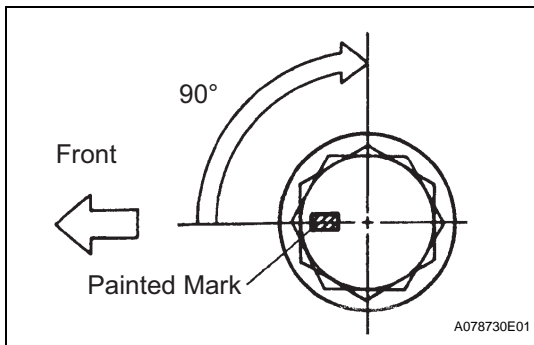
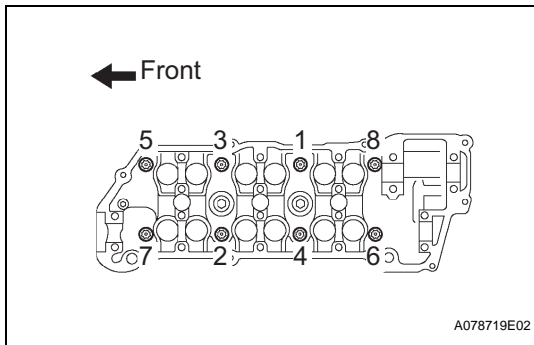
- (g) Using a socket hexagon wrench 8, install the hexagon bolt.
Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)
- (h) Connect the engine wire harness clamp with the nut.
Torque: 8.4 N*m (85 kgf*cm, 74 in.*lbf)

4. INSTALL CYLINDER HEAD LH

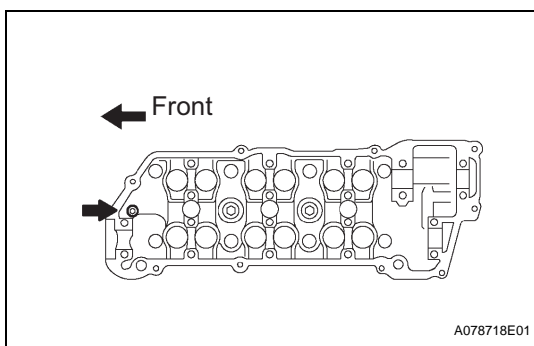
NOTICE:

The cylinder head bolts are tightened in 2 successive steps.

- (a) Apply a light coat of engine oil on the threads of the cylinder head bolts.
- (b) Install the plate washer to the cylinder head bolt.
- (c) Using several steps, install and tighten the 8 cylinder head bolts uniformly in the sequence shown in the illustration (Procedure "B").
Torque: 54 N*m (550 kgf*cm, 40 ft.*lbf)



- (d) Mark the front side of each cylinder head bolt head with paint as shown in the illustration.
- (e) Retighten the cylinder head bolts by 90° in the same sequence as procedure "B".
- (f) Check that each painted mark is now at 90° angle to the front.



- (g) Using a socket hexagon wrench 8, install the hexagon bolt.
Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)
- (h) Install the bolt holding the water inlet to the cylinder head. (TMMWV MADE)
Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)
- (i) Install the wire harness clamp bracket with the bolt.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
- (j) Connect the ground cable with the bolts.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

5. INSTALL NO.2 CAMSHAFT

- (a) Install the No.2 camshaft (See page [EM-44](#)).

6. INSTALL CAMSHAFT

- (a) Install the camshaft (See page [EM-44](#)).

7. INSTALL NO.4 CAMSHAFT SUB-ASSEMBLY

- (a) Install the No.4 camshaft sub-assembly (See page [EM-44](#)).

8. INSTALL NO.3 CAMSHAFT SUB-ASSEMBLY

- (a) Install the No.3 camshaft sub-assembly (See page [EM-44](#)).

9. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

- (a) Install the cylinder head cover sub-assembly (See page [EM-8](#)).

10. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY LH

- (a) Install the cylinder head cover sub-assembly (See page [EM-8](#)).

11. INSTALL IGNITION COIL ASSEMBLY

- (a) Install the ignition coil assembly (See page [EM-8](#)).

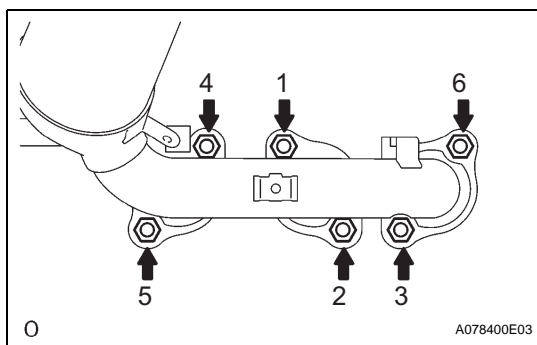
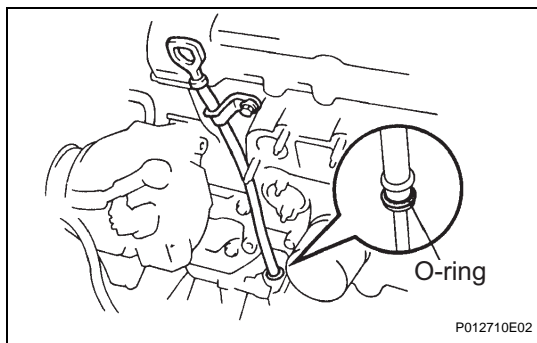
12. INSTALL WATER INLET PIPE

- (a) Install the water inlet pipe (TMC made) (See page [CO-19](#)).

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13. INSTALL OIL LEVEL GAGE GUIDE

- (a) Install a new O-ring to the oil level gage guide.
 (b) Apply soapy water to the O-ring.
 (c) Push in the oil level gage guide end into the guide hole of the cylinder block.
 (d) Install the oil level gage guide with the bolt.
Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)
 (e) Install the oil level gage.

**14. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY**

- (a) Install a new gasket and the exhaust manifold RH with the 6 nuts. Using several steps, tighten the nuts uniformly in the sequence shown in the illustration.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
 (b) Retighten nuts 1 and 2 shown in the illustration.

15. INSTALL MANIFOLD STAY

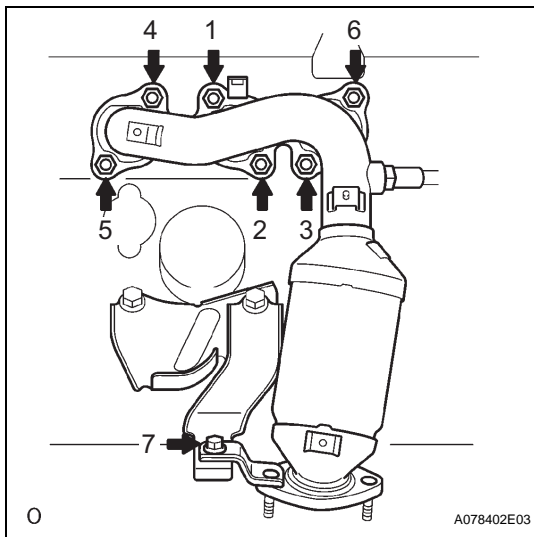
- Torque: 34 N*m (347 kgf*cm, 25 ft.*lbf)**

16. INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.1

- Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)**

17. INSTALL EXHAUST PIPE SUB-ASSEMBLY FRONT NO.3

- [EX-6](#)



18. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY NO.2

- (a) Install a new gasket and the exhaust manifold converter No. 2 with the 6 nuts and bolt. Using several steps, tighten the nuts uniformly in the sequence in the illustration.

Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

- (b) Retighten nuts 1 and 2 shown in the illustration.

19. INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.2

Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)

20. INSTALL MANIFOLD CONVERTER INSULATOR NO.3

Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)

21. INSTALL EXHAUST PIPE ASSEMBLY FRONT

- (a) Install the exhaust pipe assembly front (See page [EX-6](#)).

22. INSTALL PROPELLER SHAFT (for 4WD)

- (a) Install the propeller shaft (See page [PR-9](#)).

23. INSTALL VANE PUMP ASSEMBLY

- (a) Install the vane pump assembly (See page [EM-120](#)).

24. INSTALL TIMING BELT NO.3 COVER

- (a) Install the timing belt No.3 cover (See page [EM-44](#)).

25. INSTALL CAMSHAFT TIMING PULLEY

SST 09960-10010 (09962-01000, 09963-01000), 09249-63010

- (a) Install the camshaft timing pulley (See page [EM-44](#)).

26. INSTALL TIMING BELT IDLER SUB-ASSEMBLY NO.2

- (a) Install the timing belt idler sub-assembly No.2 (See page [EM-44](#)).

27. INSPECT TIMING BELT

- (a) Inspect the timing belt (See page [EM-72](#)).

28. INSTALL TIMING BELT

- (a) Install the timing belt (See page [EM-26](#)).

29. INSTALL CHAIN TENSIONER ASSEMBLY NO.1

- (a) Install the chain tensioner assembly No.1 (See page [EM-26](#)).

30. INSTALL TIMING BELT GUIDE NO.2

- (a) Install the timing belt guide No.2 (See page [EM-26](#)).

31. INSTALL ENGINE MOUNTING BRACKET RH

- (a) Install the engine mounting bracket RH (See page [EM-26](#)).

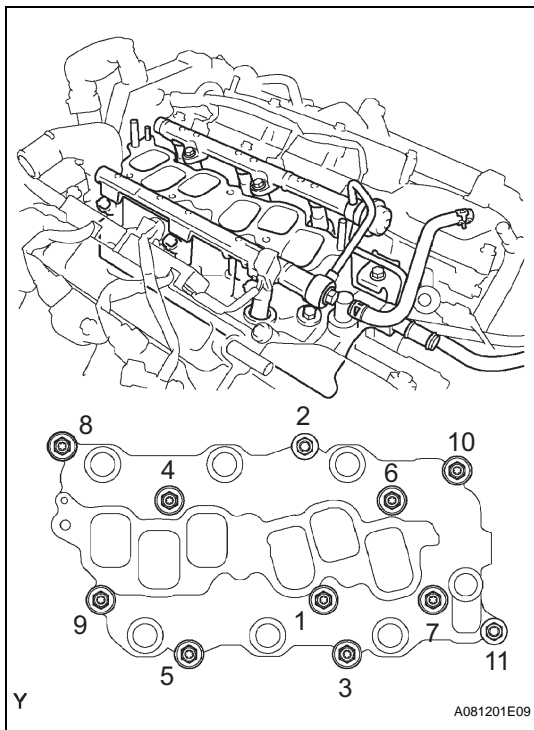
32. INSTALL TIMING BELT NO.2 COVER

- (a) Install the timing belt No.2 cover (See page [EM-26](#)).

33. INSTALL TIMING BELT NO.1 COVER

- (a) Install the timing belt No.1 cover (See page [EM-26](#)).

- 34. INSTALL CRANKSHAFT PULLEY**
SST 09213-54015 (91651-60855), 09330-00021
(a) Install the crankshaft pulley (See page [EM-26](#)).
- 35. INSTALL GENERATOR BRACKET NO.2**
(a) Install the generator bracket No.2 (See page [EM-26](#)).
- 36. INSTALL ENGINE MOUNTING STAY NO.2 RH**
(a) Install the engine mounting stay No.2 RH (See page [EM-26](#)).
- 37. INSTALL ENGINE MOVING CONTROL ROD**
(a) Install the engine moving control rod (See page [EM-26](#)).
- 38. INSTALL VANE PUMP V BELT**
(a) Install the vane pump V belt (See page [EM-6](#)).
- 39. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1**
(a) Install the V (cooler compressor to crankshaft pulley) belt No.1 (See page [EM-6](#)).
- 40. INSTALL DRIVE BELT DEFLECTION AND TENSION**
(a) Install the drive belt deflection and tension (reference) (See page [EM-1](#)).
- 41. INSTALL WATER OUTLET**
(a) Install 2 new gaskets to the 2 cylinder heads.
(b) Install the water outlet together with water by-pass hose No. 1 and unlock the hose clamp.
(c) Tighten the 2 bolts, 2 nuts and 2 washers.
Torque: 15 N*m (153 kgf*cm, 11 ft.*lbf)
(d) Install the clamp.
(e) Connect the engine coolant temperature sensor connector.
(f) Connect the radiator hose inlet.

**42. INSTALL INTAKE MANIFOLD**

- (a) Install the intake manifold with the 9 bolts, 2 nuts and 2 washers. Using several steps, tighten the bolts and nuts uniformly in the sequence shown in the illustration.

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

- (b) Retighten the water outlet mounting bolts and nuts.

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

- (c) Install the ground cable with the nut.

Torque: 8.4 N*m (86 kgf*cm, 74 in.*lbf)

- (d) Connect the heater inlet water hose.

43. CONNECT FUEL PIPE SUB-ASSEMBLY NO.1

- (a) Connect the fuel pipe sub-assembly No.1 (See page [FU-1](#)).

44. INSTALL INTAKE AIR SURGE TANK

- (a) Install the intake air surge tank (See page [EM-8](#)).

45. INSTALL EMISSION CONTROL VALVE SET

- (a) Install the emission control valve set (See page [EM-8](#)).

46. INSTALL AIR CLEANER CASE

- (a) Install the air cleaner case (See page [ST-12](#)).

47. INSTALL AIR CLEANER INLET NO.2

- (a) Install the air cleaner inlet No.2 (See page [ST-12](#)).

48. INSTALL AIR CLEANER CAP SUB-ASSEMBLY

- (a) Install the air cleaner cap sub-assembly (See page [FU-14](#)).

49. CONNECT VACUUM HOSE

- (a) Connect the vacuum hose (See page [EM-120](#)).

50. INSTALL V-BANK COVER SUB-ASSEMBLY

- (a) Install the V-bank cover sub-assembly (See page [EM-8](#)).

51. INSTALL COWL TOP PANEL SUB-ASSEMBLY OUTER

- (a) Install the cowl top panel sub-assembly outer (See page [FU-14](#)).

52. INSTALL WINDSHIELD WIPER LINK ASSEMBLY

- (a) Install the windshield wiper link assembly (See page [WW-38](#)).

53. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY

- (a) Install the cowl top ventilator louver sub-assembly (See page [WW-38](#)).

54. INSTALL FR WIPER ARM LH

- (a) Install the FR wiper arm LH (See page [WW-38](#)).

55. INSTALL FR WIPER ARM RH

- (a) Install the FR wiper arm RH (See page [WW-38](#)).

56. INSTALL FRONT WHEEL RH

- (a) Install the front wheel RH (See page [EM-6](#)).

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- 57. ADD ENGINE OIL**
 - (a) Add engine oil (See page [LU-5](#)).
 - 58. ADD ENGINE COOLANT**
 - (a) Add engine coolant (See page [CO-7](#)).
 - 59. CHECK FOR ENGINE OIL LEAKS**
 - 60. CHECK FOR ENGINE COOLANT LEAKAGE**
 - (a) Check the engine coolant leakage (See page [CO-1](#)).
 - 61. INSPECT FUEL LEAKAGE**
 - 62. CHECK FOR EXHAUST GAS LEAKAGE**
 - 63. INSPECT IGNITION TIMING**
SST 09843-18040
 - (a) Inspect the ignition timing (See page [EM-1](#)).
 - 64. INSPECT ENGINE IDLE SPEED**
SST 09843-18040
 - (a) Inspect the engine idle speed (See page [EM-1](#)).
 - 65. INSPECT COMPRESSION**
SST 09992-00500
 - (a) Inspect the compression (See page [EM-1](#)).
 - 66. INSPECT CO/HC**
 - (a) Inspect the CO/HC (See page [EM-1](#)).