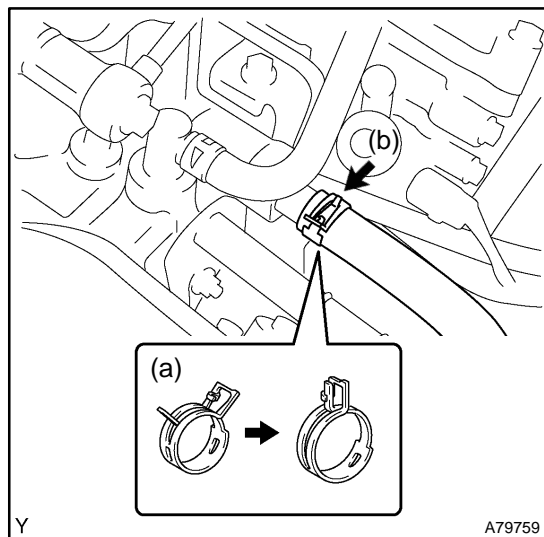


CYLINDER HEAD GASKET (1MZ-FE/3MZ-FE)

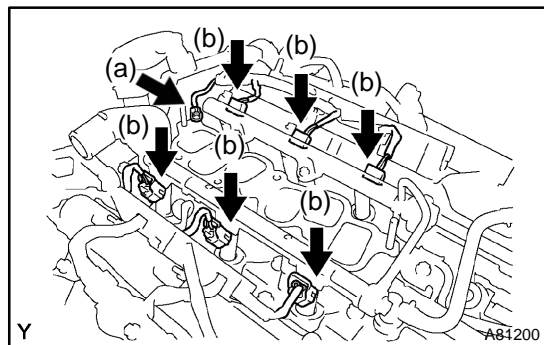
141IL-02

REPLACEMENT

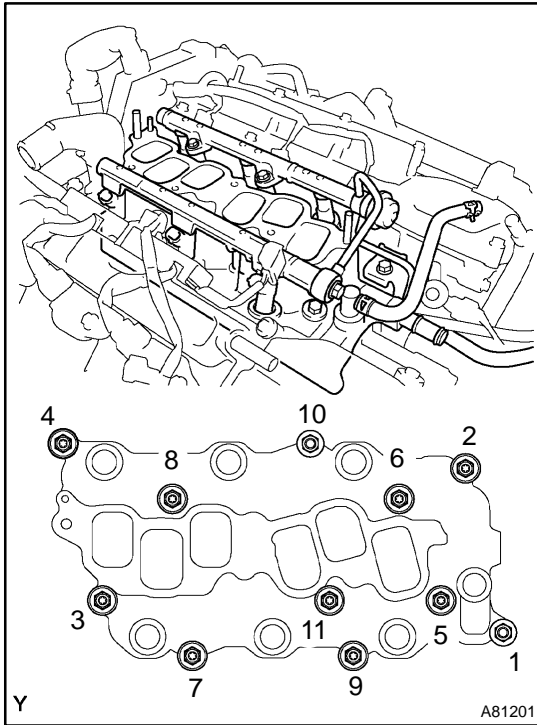
1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-26)
2. DRAIN ENGINE COOLANT (See page 16-27)
3. DRAIN ENGINE OIL
4. REMOVE EXHAUST PIPE NO.1 SUPPORT BRACKET (See page 15-7)
5. REMOVE EXHAUST PIPE ASSY FRONT (See page 15-7)
6. REMOVE EXHAUST MANIFOLD SUB-ASSY RH (See page 14-164)
7. REMOVE V-BANK COVER SUB-ASSY (See page 14-164)
8. REMOVE FRONT SUSPENSION UPPER BRACE CENTER (W/ FRONT SUSPENSION BRACE UPPER CENTER)
9. REMOVE AIR CLEANER ASSEMBLY WITH HOSE
10. REMOVE INTAKE AIR SURGE TANK (See page 14-142)
11. DISCONNECT FUEL PIPE SUB-ASSY NO.1 (See page 11-26)



12. DISCONNECT HEATER INLET WATER HOSE
 - (a) Lock the hose clamp as shown in the illustration.
 - (b) Disconnect the heater inlet water hose.

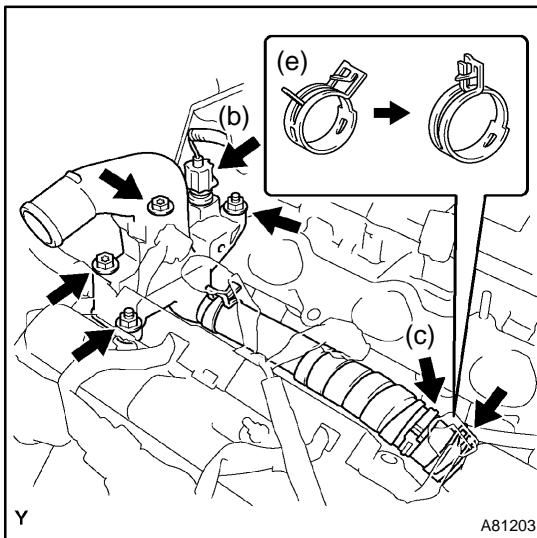


13. REMOVE INTAKE MANIFOLD
 - (a) Remove the nut and disconnect the ground cable.
 - (b) Disconnect the 6 fuel injector connectors.



- (c) Uniformly loosen and remove the intake manifold's 9 bolts and 2 nuts in the sequence shown in the illustration. Remove the intake manifold.

14. DISCONNECT RADIATOR HOSE INLET



15. REMOVE WATER OUTLET

- Disconnect the radiator hose inlet.
- Disconnect the engine coolant temperature sensor connector.
- Remove the clamp.
- Remove the 2 bolts, 2 nuts and 2 washers.
- Lock the hose clamp as shown in the illustration and remove the water outlet together with the water by-pass hose No. 1.
- Remove the 2 gaskets from the 2 cylinder heads.

16. REMOVE FRONT WHEEL RH

17. REMOVE FRONT FENDER APRON SEAL RH

18. REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 14-140)

19. REMOVE VANE PUMP V BELT (See page 14-140)

20. REMOVE ENGINE MOVING CONTROL ROD (See page 14-164)

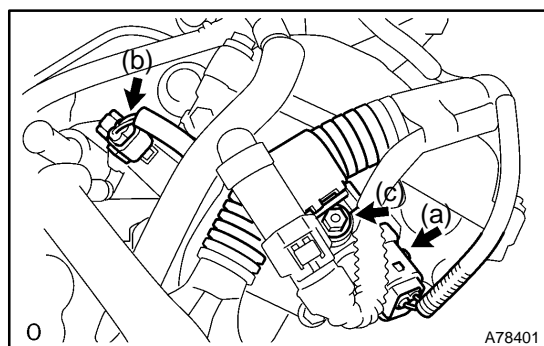
21. REMOVE ENGINE MOUNTING STAY NO.2 RH (See page 14-164)

22. REMOVE GENERATOR BRACKET NO.2

23. REMOVE CRANKSHAFT PULLEY (See page 14-186)

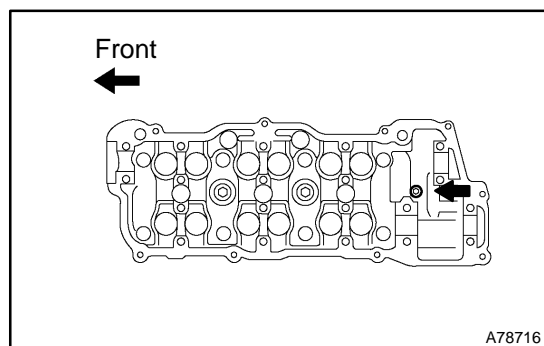
24. REMOVE TIMING BELT NO.1 COVER (See page 14-186)

25. REMOVE TIMING BELT NO.2 COVER (See page 14-186)
26. REMOVE ENGINE MOUNTING BRACKET RH
27. REMOVE TIMING BELT GUIDE NO.2
28. REMOVE TIMING BELT (See page 14-186)
29. REMOVE TIMING BELT IDLER SUB-ASSY NO.2
30. REMOVE CAMSHAFT TIMING PULLEY (See page 14-186)
31. REMOVE TIMING BELT NO.3 COVER (See page 14-186)
32. REMOVE VANE PUMP ASSY (See page 51-17)
33. REMOVE IGNITION COIL ASSY
34. REMOVE CYLINDER HEAD COVER SUB-ASSY (See page 14-186)
35. REMOVE CAMSHAFT (See page 14-186)
36. REMOVE NO.2 CAMSHAFT (See page 14-186)

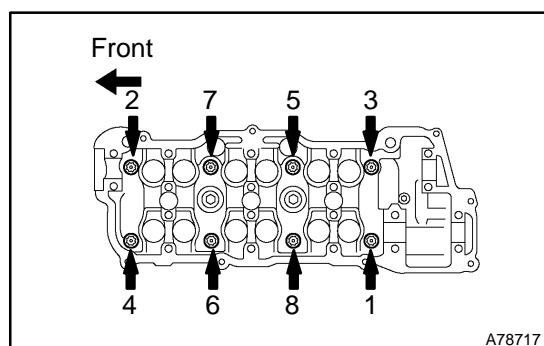


37. REMOVE CYLINDER HEAD SUB-ASSY

- (a) Disconnect the VVT sensor connector.
- (b) Disconnect the camshaft timing oil control valve connector.
- (c) Remove the nut and disconnect the engine wire harness clamp.



- (d) Using a socket hexagon wrench 8, remove the hexagon bolt.

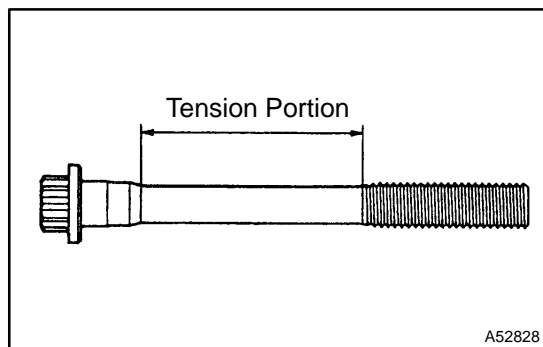


- (e) Uniformly loosen the 8 cylinder head bolts in the sequence shown in the illustration. Remove the 8 cylinder head bolts and plate washers.

NOTICE:

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

38. REMOVE CYLINDER HEAD GASKET

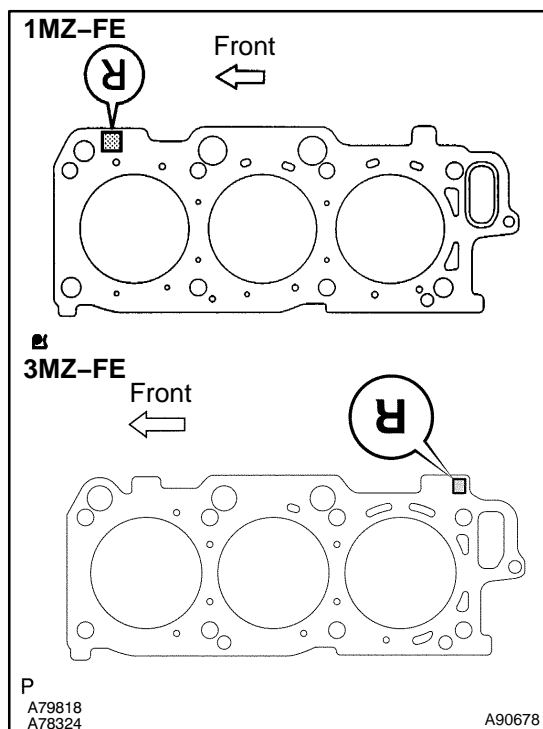
**39. INSPECT CYLINDER HEAD SET BOLT**

- (a) Using a vernier caliper, measure the tension portion diameter of the bolt.

Specified outside diameter:

8.75 to 9.05 mm (0.3445 to 0.3563 in.)

If the diameter is less than the minimum, replace the bolt.

**40. INSTALL CYLINDER HEAD GASKET**

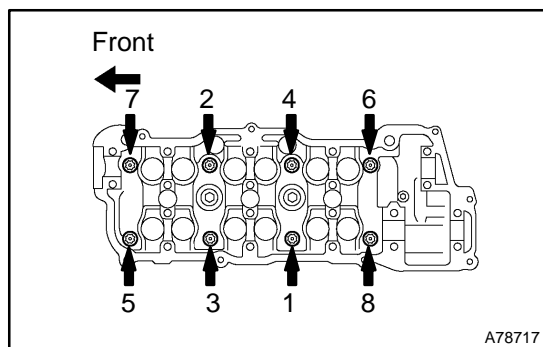
- (a) Place a new cylinder head gasket on the cylinder block with the R mark upside down, as shown in the illustration.

NOTICE:

- Remove any oil from the contact surface.
- Be careful of the installation direction.
- To avoid damage to the gasket, place the cylinder head on the gasket carefully.

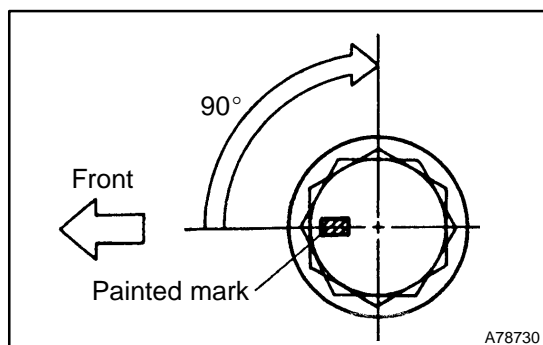
41. INSTALL CYLINDER HEAD SUB-ASSY**NOTICE:**

The cylinder head bolts are tightened in 2 successive steps.

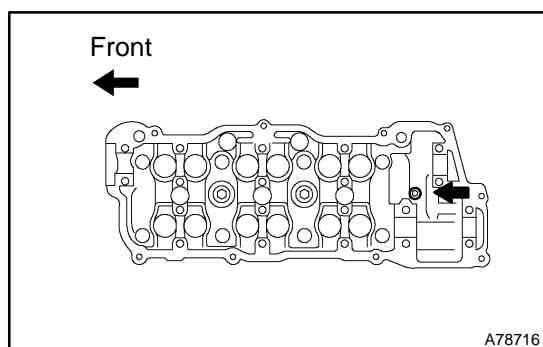


- (a) Apply a light coat of engine oil on the threads of the cylinder head bolts.
- (b) Install the plate washers to the cylinder head bolts.
- (c) Uniformly install and tighten the 8 cylinder head bolts in the sequence shown in the illustration.

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

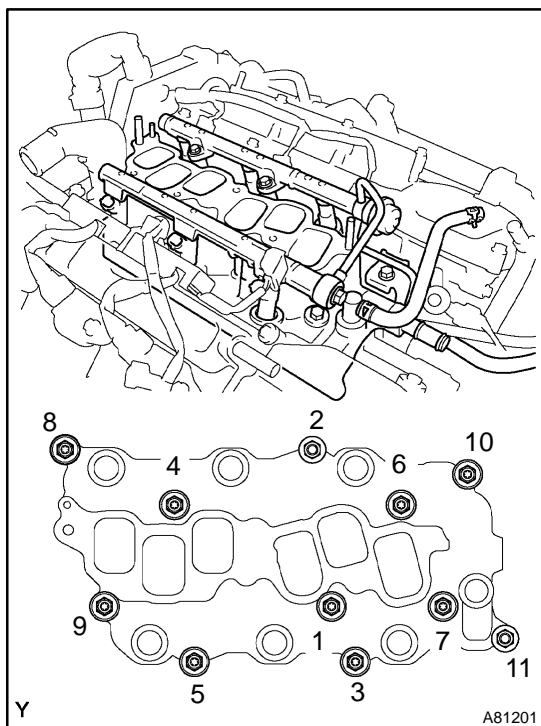


- (d) Mark the front side of each cylinder head bolt head with paint as shown in the illustration.
- (e) Retighten the cylinder head bolts by 90° in the same sequence as step (c).
- (f) Check that each painted mark is now at a 90° angle to the front.



- (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)

- 42. **INSTALL NO.2 CAMSHAFT** (See page [14-186](#))
- 43. **INSTALL CAMSHAFT** (See page [14-186](#))
- 44. **INSTALL CYLINDER HEAD COVER SUB-ASSY** (See page [14-186](#))
- 45. **INSTALL IGNITION COIL ASSY**
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)
- 46. **INSTALL VANE PUMP ASSY** (See page [51-17](#))
- 47. **INSTALL TIMING BELT NO.3 COVER** (See page [14-186](#))
- 48. **INSTALL CAMSHAFT TIMING PULLEY** (See page [14-186](#))
- 49. **INSTALL TIMING BELT IDLER SUB-ASSY NO.2**
Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)
- 50. **INSPECT TIMING BELT** (See page [14-186](#))
- 51. **INSTALL TIMING BELT** (See page [14-186](#))
- 52. **INSTALL TIMING BELT TENSIONER ASSY** (See page [14-186](#))
- 53. **INSTALL TIMING BELT GUIDE NO.2** (See page [14-186](#))
- 54. **INSTALL ENGINE MOUNTING BRACKET RH**
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)
- 55. **INSTALL TIMING BELT NO.2 COVER** (See page [14-186](#))
- 56. **INSTALL TIMING BELT NO.1 COVER** (See page [14-186](#))
- 57. **INSTALL CRANKSHAFT PULLEY** (See page [14-186](#))
- 58. **INSTALL GENERATOR BRACKET NO.2**
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)
- 59. **INSTALL ENGINE MOUNTING STAY NO.2 RH** (See page [14-164](#))
- 60. **INSTALL ENGINE MOVING CONTROL ROD** (See page [14-164](#))
- 61. **INSTALL VANE PUMP V BELT** (See page [14-140](#))
- 62. **INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1**
(See page [14-140](#))
- 63. **INSPECT DRIVE BELT TENSION** (See page [14-136](#))
- 64. **INSTALL WATER OUTLET**
 - (a) Install 2 new gaskets to the 2 cylinder heads.
 - (b) Install the water outlet together the 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.

**65. INSTALL INTAKE MANIFOLD**

- (a) Install the intake manifold with the 9 bolts, 2 nuts and 2 washers. Uniformly tighten the bolts and nuts 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.

66. CONNECT FUEL PIPE SUB-ASSY NO.1 (See page 11-26)

67. INSTALL INTAKE AIR SURGE TANK (See page 14-142)

68. INSTALL AIR CLEANER ASSEMBLY WITH HOSE

69. CONNECT VACUUM HOSES (See page 14-164)

70. INSTALL FRONT SUSPENSION UPPER BRACE CENTER (W/ FRONT SUSPENSION BRACE UPPER CENTER)

Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)

71. INSTALL V-BANK COVER SUB-ASSY (See page 14-164)

72. INSTALL EXHAUST MANIFOLD SUB-ASSY RH (See page 14-164)

73. INSTALL EXHAUST PIPE ASSY FRONT (See page 15-7)

74. INSTALL EXHAUST PIPE NO.1 SUPPORT BRACKET (See page 15-7)

75. INSTALL FRONT WHEEL RH

76. ADD ENGINE OIL

77. ADD ENGINE COOLANT (See page 16-27)

78. CHECK FOR ENGINE OIL LEAKS

79. CHECK FOR ENGINE COOLANT LEAKS (See page 16-21)

80. CHECK FOR FUEL LEAKS (See page 11-29)

81. CHECK FOR EXHAUST GAS LEAKS

82. INSPECT IGNITION TIMING (See page 14-136)

83. INSPECT ENGINE IDLE SPEED (See page 14-136)

84. INSPECT COMPRESSION (See page 14-136)

85. INSPECT CO/HC (See page 14-136)