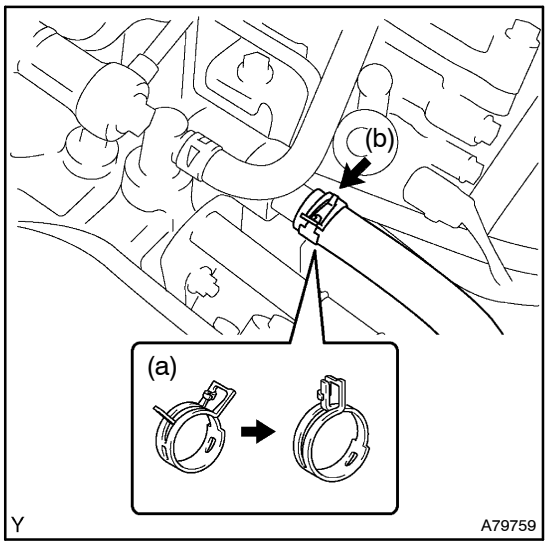
# CYLINDER HEAD GASKET (3MZ–FE)

141RQ–01

## REPLACEMENT

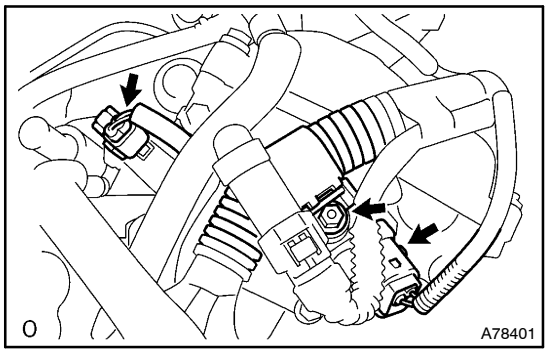
1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11–1)
2. DRAIN ENGINE COOLANT (See page 16–7)
3. DRAIN ENGINE OIL
4. REMOVE FR WIPER ARM LH (See page 66–7)
5. REMOVE FR WIPER ARM RH (See page 66–7)
6. REMOVE COWL TOP VENTILATOR LOUVER SUB–ASSY (See page 66–7)
7. REMOVE WINDSHIELD WIPER LINK ASSY (See page 66–7)
8. REMOVE COWL PANEL SUB–ASSY
9. REMOVE FRONT SUSPENSION BRACE SUB–ASSY UPPER CENTER
10. REMOVE V–BANK COVER SUB–ASSY (See page 14–24)
11. REMOVE AIR CLEANER CAP SUB–ASSY
12. REMOVE EMISSION CONTROL VALVE SET (See page 14–24)
13. REMOVE INTAKE AIR SURGE TANK (See page 14–24)
14. DISCONNECT FUEL PIPE SUB–ASSY NO.1 (See page 14–24)




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

16. REMOVE INTAKE MANIFOLD (See page 14–24)
17. DISCONNECT RADIATOR HOSE INLET
18. REMOVE WATER OUTLET (See page 14–24)
19. REMOVE FRONT WHEEL RH
20. REMOVE ENGINE UNDER COVER NO.1
21. REMOVE FRONT FENDER APRON SEAL RH
22. REMOVE V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 14–5)
23. REMOVE VANE PUMP V BELT (See page 14–5)
24. REMOVE ENGINE MOVING CONTROL ROD (See page 14–24)
25. REMOVE ENGINE MOUNTING STAY NO.2 RH (See page 14–24)
26. REMOVE GENERATOR BRACKET NO.2
27. REMOVE CRANKSHAFT PULLEY (See page 14–49)
28. REMOVE TIMING BELT NO.1 COVER
29. REMOVE TIMING BELT NO.2 COVER (See page 14–49)

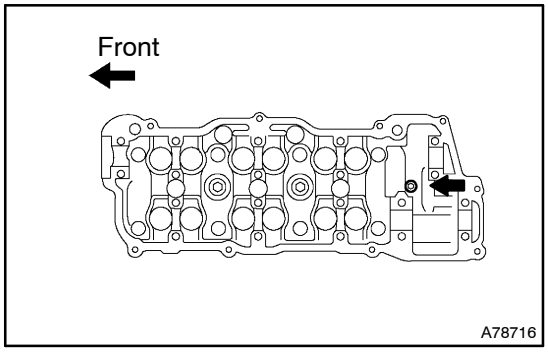
30. REMOVE ENGINE MOUNTING BRACKET RH
31. REMOVE TIMING BELT GUIDE NO.2
32. REMOVE TIMING BELT (See page 14–49)
33. REMOVE TIMING BELT IDLER SUB–ASSY NO.2
34. REMOVE CAMSHAFT TIMING PULLEY (See page 14–56)
35. REMOVE TIMING BELT NO.3 COVER (See page 14–56)
36. SEPARATE VANE PUMP ASSY (See page 14–24)
37. REMOVE PROPELLER SHAFT (See page 30–11)
38. DISCONNECT EXHAUST PIPE SUB–ASSY FRONT NO.3 (See page 15–2)
39. REMOVE EXHAUST MANIFOLD CONVERTER SUB–ASSY (See page 14–24)
40. REMOVE IGNITION COIL ASSY
41. REMOVE CYLINDER HEAD COVER SUB–ASSY (See page 14–7)
42. REMOVE CAMSHAFT (See page 14–56)
43. REMOVE NO.2 CAMSHAFT (See page 14–56)



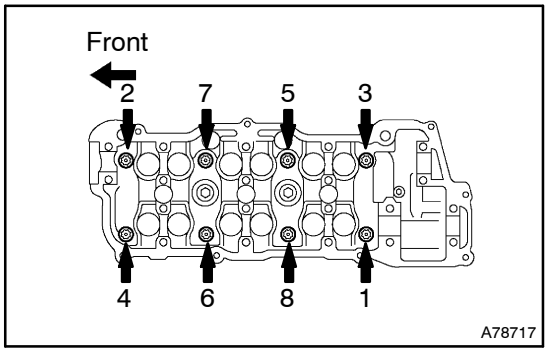

**44. REMOVE CYLINDER HEAD SUB–ASSY**

(a) Disconnect the camshaft timing oil control valve connector.

(b) Remove the nut and disconnect the engine wire harness clamp.




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

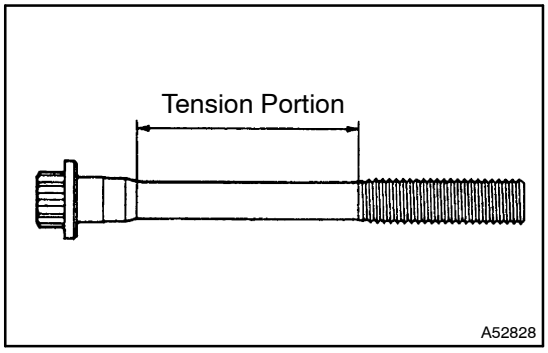



(d) Uniformly loosen the 8 cylinder head bolts in the sequence shown in the illustration. Remove the 8 cylinder head bolts and plate washers.

**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.**

**45. REMOVE CYLINDER HEAD GASKET**

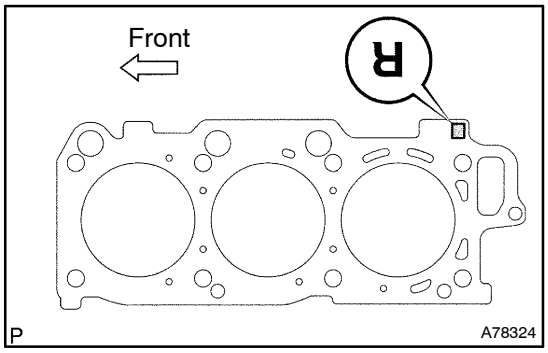



**46. INSPECT CYLINDER HEAD SET BOLT**

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

**Standard outside diameter:**
**8.95 to 9.05 mm (0.3524 to 0.3563 in.)**
**Minimum outside diameter: 8.75 mm (0.3445 in.)**

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




**47. 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.

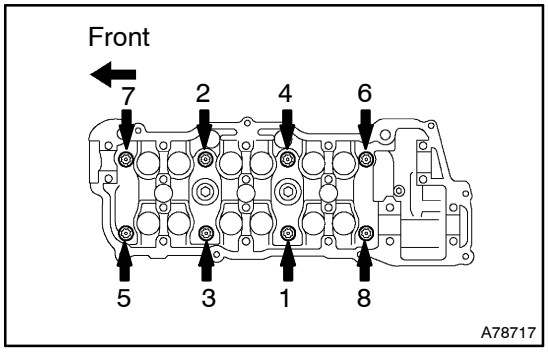
**NOTICE:**

- **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.**

**48. INSTALL CYLINDER HEAD SUB–ASSY**

**NOTICE:**

**The cylinder head bolts are tightened in 2 successive steps.**

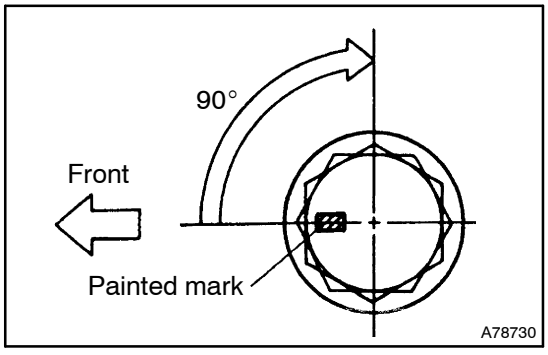



(a) Apply a light coat of engine oil on the threads of the cylinder head bolts.

(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.

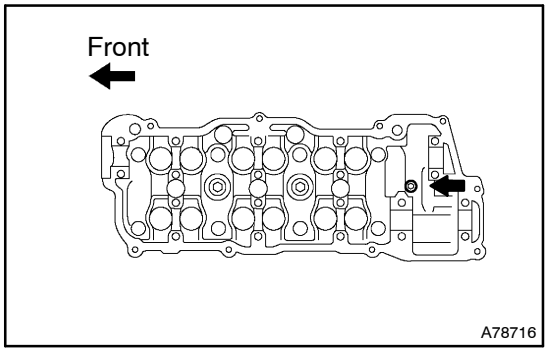
**Torque: 54 N·m (550 kgf·cm, 40 ft·lbf)**




(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 (194 kgf·cm, 14 ft·lbf)**

(h) Connect the engine wire harness clamp with the nut.
**Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)**

**49. INSTALL NO.2 CAMSHAFT (See page 14–56)**
**50. INSTALL CAMSHAFT (See page 14–56)**
**51. INSTALL CYLINDER HEAD COVER SUB–ASSY (See page 14–7)**
**52. INSTALL IGNITION COIL ASSY**
**Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)**
**53. INSTALL EXHAUST MANIFOLD CONVERTER SUB–ASSY (See page 14–24)**
**54. CONNECT EXHAUST PIPE SUB–ASSY FRONT NO.3 (See page 15–2)**
**55. INSTALL PROPELLER SHAFT (See page 30–11)**
**56. INSTALL VANE PUMP ASSY (See page 14–24)**
**57. INSTALL TIMING BELT NO.3 COVER (See page 14–56)**
**58. INSTALL CAMSHAFT TIMING PULLEY (See page 14–56)**
**59. INSTALL TIMING BELT IDLER SUB–ASSY NO.2**
**Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)**
**60. INSPECT TIMING BELT (See page 14–49)**
**61. INSTALL TIMING BELT (See page 14–49)**
**62. INSTALL TIMING BELT TENSIONER ASSY (See page 14–49)**
**63. INSTALL TIMING BELT GUIDE NO.2 (See page 14–49)**
**64. INSTALL ENGINE MOUNTING BRACKET RH**
**Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)**
**65. INSTALL TIMING BELT NO.2 COVER (See page 14–49)**
**66. INSTALL TIMING BELT NO.1 COVER (See page 14–49)**
**67. INSTALL CRANKSHAFT PULLEY**
**68. INSTALL GENERATOR BRACKET NO.2**
**Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)**
**69. INSTALL ENGINE MOUNTING STAY NO.2 RH (See page 14–24)**
**70. INSTALL ENGINE MOVING CONTROL ROD (See page 14–24)**
**71. INSTALL VANE PUMP V BELT (See page 14–5)**
**72. INSTALL V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1 (See page 14–5)**
**73. INSPECT V BELT (See page 14–5)**
**74. INSTALL WATER OUTLET (See page 14–24)**
**75. CONNECT RADIATOR HOSE INLET**
**76. INSTALL INTAKE MANIFOLD (See page 14–24)**
**77. CONNECT HEATER INLET WATER HOSE**
**78. CONNECT FUEL PIPE SUB–ASSY NO.1 (See page 14–24)**
**79. INSTALL INTAKE AIR SURGE TANK (See page 14–24)**
**80. INSTALL EMISSION CONTROL VALVE SET (See page 14–24)**
**81. INSTALL AIR CLEANER CAP SUB–ASSY**
**82. CONNECT VACUUM HOSES (See page 14–24)**
**83. INSTALL V–BANK COVER SUB–ASSY (See page 14–24)**

84. INSTALL FRONT SUSPENSION BRACE SUB–ASSY UPPER CENTER
Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)
85. INSTALL COWL PANEL SUB–ASSY
86. INSTALL WINDSHIELD WIPER LINK ASSY (See page 66–7)
87. INSTALL COWL TOP VENTILATOR LOUVER SUB–ASSY (See page 66–7)
88. INSTALL FR WIPER ARM LH (See page 66–7)
89. INSTALL FR WIPER ARM RH (See page 66–7)
90. INSTALL FRONT WHEEL RH
91. ADD ENGINE OIL
92. ADD ENGINE COOLANT (See page 16–7)
93. CHECK FOR ENGINE OIL LEAKS
94. CHECK FOR ENGINE COOLANT LEAKS (See page 16–1)
95. INSPECT FOR FUEL LEAKS
96. CHECK FOR EXHAUST GAS LEAKS
97. INSPECT IGNITION TIMING (See page 14–1)
98. INSPECT ENGINE IDLE SPEED (See page 14–1)
99. INSPECT COMPRESSION (See page 14–1)
100. INSPECT CO/HC (See page 14–1)