

3MZ-FE ENGINE CONTROL SYSTEM

SERVICE DATA

Throttle body	Standard throttle valve opening percentage: 60 % or more
Accelerator pedal position sensor	Standard voltage: 0.6 to 1.0 V
Mass air flow meter assembly	THA (4) - E2 (5) at -20°C (-4°F): 13.6 to 18.4 kΩ at 20°C (68°F): 2.21 to 2.69 kΩ at 60°C (140°F): 0.493 to 0.667 kΩ
Camshaft timing oil control valve assembly	at 20°C (68°F): 6.9 to 7.9 Ω
Accelerator pedal rod assembly	VPA2 (3) - EP1 (5): 5.0 kΩ or less VPA1 (6) - EP2 (2): 5.0 kΩ or less VCP1 (4) - EP1 (5): 2.25 to 4.75 kΩ VCP2 (1) - EP2 (2): 2.25 to 4.75 kΩ
Throttle body	at 20°C (68°F) M+ (2) - M - (1): 0.3 to 100 kΩ VC (5) - E2 (3): 1.2 to 3.2 kΩ
EFI engine coolant temperature sensor	Approx. 20°C (68°F): 2.32 to 2.59 kΩ Approx. 80°C (176°F): 0.310 to 0.326 kΩ
Knock sensor	at 20°C (68°F): 120 to 280 kΩ
EFI relay	3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Applying battery voltage terminals 1 and 2)
Circuit opening relay	3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Applying battery voltage terminals 1 and 2)
Crankshaft position sensor	Cold: 1,630 to 2,740 Ω Hot: 2,065 to 3,225 Ω

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TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Throttle body assembly x Intake air connector	11	112	8
V-bank cover sub assembly x Cylinder head cover sub-assembly LH	7.9	81	70 in.*lbf
Knock sensor x Cylinder block sub-assembly	20	199	14
Water outlet x Cylinder head sub-assembly	15	153	11
Water outlet x Cylinder head LH	15	153	11
Intake manifold x Cylinder head sub-assembly	15	153	11
Intake manifold x Cylinder head LH	15	153	11
Ground cable x Intake manifold	8.4	86	74 in.*lbf
Crank shaft position sensor x Oil pump	8.0	80	71 in.*lbf
ECM x Instrument panel reinforcement	5.5	56	49 in.*lbf
ECM x Blower assembly	5.5	56	49 in.*lbf
Accelerator pedal rod assembly x Body	4.9	50	43 in.*lbf

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