

1999 MY Catalyst Deterioration Monitor (P0420, P0430)

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MONITOR STRATEGY

Required sensors/Components	Main	Front heated oxygen sensor (or A/F sensor) and Rear heated oxygen sensor
	Sub	Crankshaft position sensor, ECT sensor, IAT sensor and MAF sensor (or MAP sensor)
Frequency of operation	Once per driving cycle	
Duration	Included in the Typical Malfunction Thresholds	
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	See page In-39
Included in the Typical Malfunction Thresholds	—

TYPICAL MALFUNCTION THRESHOLDS

Engine Family	Detection Criteria	Threshold (Duration)	Typical Enabling Condition
5E-FE	Catalyst deterioration level	0.5 or more(detected 3 times during 1 driving cycle for 15 min.)	- Battery voltage is 11 V or more - Closed Loop - Engine RPM is 3,500 rpm or less - Intake air amount is between 5 and 12 liters/sec. - Catalyst is warmed up - IAT is -10°C (14°F) or more - ECT is more than 80°C (176°F) 12 sec. have passed after above conditions are met
2JZ-GE	Catalyst deterioration level	0.6 or more (detected 3 times during 1 driving cycle for 10 min.)	- Battery voltage is 11 V or more - Closed Loop - Engine RPM is 3,000 rpm or less - Intake air amount is between 8 and 18 g/sec. - Catalyst is warmed up - ECT is more than 80°C (176°F) - IAT is -10°C (14°F) or more 15 sec. have passed after above conditions are met

1MZ-FE ES300 and RX300	Catalyst deterioration level (rear oxygen sensor locus length)	5.0 V* or more (detected 2 times during 1 driving cycle for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 2,700 rpm or less • Intake air amount is between 6 and 26 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Catalyst is warmed up • ECT is more than 50°C (122°F) • IAT is -10°C (14°F) or more • 20 sec. have passed after above conditions are met
1MZ-FE Sienna (Federal)	Catalyst deterioration level	0.4 or more (detected 2 times dur- ing 1 driving cycle for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 15 and 30 g/sec. • Catalyst is warmed up • ECT is more than 70°C (158°F) • IAT is -10°C (14°F) or more • 12 sec. have passed after above conditions are met
1MZ-FE Sienna (California)	Catalyst deterioration level (rear oxygen sensor locus length)	5 V* or more (detected 2 times during 1 driving cycle for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 2,700 rpm or less • Intake air amount is between 15 and 30 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Catalyst is warmed up • ECT is more than 50°C (122°F) • IAT is -10°C (14°F) or more • 20 sec. have passed after above conditions are met
• 1MZ-FE Avalon (50 states) • 1MZ-FE Camry (50 states) • 1MZ-FE Solara (50 states)	Catalyst deterioration level	0.32 or more (for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 15 and 30 g/sec. • Catalyst is warmed up • ECT is more than 70°C (158°F) • IAT is -10°C (14°F) or more • 12 sec. have passed after above conditions are met
• 1MZ-FE Avalon (California) • 1MZ-FE Camry (California) • 1MZ-FE Solara (California)	Catalyst deterioration level (rear oxygen sensor locus length)	6.5 V* or more (detected 2 times during 1 driving cycle for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 2,700 rpm or less • Intake air amount is between 6 and 26 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Catalyst is warmed up • ECT is more than 50°C (122°F) • IAT is -10°C (14°F) or more • 20 sec. have passed after above conditions are met

2RZ-FE and 3RZ-FE	Catalyst deterioration level	0.7 or more (detected 4 times during 1 driving cycle for 300 sec.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 8 and 30 g/sec. • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 20 sec. have passed after above conditions are met
3S-FE (California)	Catalyst deterioration level (rear oxygen sensor locus length)	5 V or more (detected 2 times during 1 driving cycle for 15 min.)	• Closed Loop • Engine RPM is 2,500 rpm or less • Intake air amount is between 4 and 14 liters/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 18 sec. have passed after above conditions are met
• 3S-FE (Federal) • 5S-FE Camry (Federal)	Catalyst deterioration level	0.7 or more (detected 3 times during 1 driving cycle for 15 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 5 and 14 liters/sec. • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 20 sec. have passed after above conditions are met
5S-FE Camry (California)	Catalyst deterioration level (rear oxygen sensor locus length)	5 V* or more (detected 2 times during 1 driving cycle for 10 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 2,500 rpm or less • Intake air amount is between 4 and 14 liters/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 18 sec. have passed after above conditions are met

5S-FE Celica	Catalyst deterioration level (vehicle running)	A/T: 0.6 or more (detected 4 times during 1 driving cycle for 15 min.) M/T: 0.55 or more (detected 4 times during 1 driving cycle for 15 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 5 and 19 liters/sec. • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 16 sec. have passed after above conditions are met
	Catalyst deterioration level (idling)	0.3 or more (detected 4 times during 1 driving cycle for 15 min.)	• Closed Loop • Intake air amount is between 1.5 and 3 liters/sec. • Shift position is D (A/T) • Vehicle speed is less than 3 km/h • Catalyst is warmed up • ECT is more than 80°C (176°F) • IAT is -10°C (14°F) or more • 16 sec. have passed after above conditions are met
1UZ-FE	Catalyst deterioration level	0.6 or more (detected 3 times during 1 driving cycle for 10 min.)	• Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 5 and 25 g/sec. • Catalyst is warmed up • IAT is -10°C (14°F) or more • ECT is more than 80°C (176°F) • 15 sec. have passed after above conditions are met
2UZ-FE	Catalyst deterioration level	0.6 or more (detected 4 times during 1 driving cycle for 9 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 10 and 25 g/sec. • Catalyst is warmed up • IAT is -10°C (14°F) or more • ECT is more than 80°C (176°F) • 15 sec. have passed after above conditions are met
• 5VZ-FE Tacoma • 5VZ-FE Tundra • 5VZ-FE 4Runner (Federal)	Catalyst deterioration level	0.6 or more (detected 4 times during 1 driving cycle for 300 sec.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 10 and 20 g/rev. • IAT is -10°C (14°F) or more • Catalyst is warmed up • 14 sec. have passed after above conditions are met

5VZ-FE 4Runner (California)	Catalyst deterioration level (rear oxygen sensor locus length)	3 V or more (detected 2 times during 1 driving cycle for 15 min.)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 2,500 rpm or less • Intake air amount is between 6 and 28 g/rev. • A/F sensor voltage is between 3.0 and 3.5 V • IAT is -10°C (14°F) or more • ECT is more than 80°C (176°F) • Catalyst is warmed up • 20 sec. have passed after above conditions are met
1ZZ-FE (Federal)	Catalyst deterioration level	0.5 or more (detected 3 times during 1 driving cycle for 15 min.)	• Altitude is less than 2400 m (7,870 ft.) • Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 4.8 and 12 g/sec. • Catalyst is warmed up • ECT is more than 65°C (149°F) • IAT is -10°C (14°F) or more • 13 sec. have passed after above conditions are met
1ZZ-FE (California)	Catalyst deterioration level	0.35 or more (detected 3 times during 1 driving cycle for 15 min.)	

* Varies with A/F sensor locus ratio

OBD MONITOR DRIVE PATTERNS

See page [In-13](#)

MODE 06 DATA (MONITOR RESULT)

- (a) Checking monitor status (See page [In-43](#))
- (b) Detecting Mode 06 data (See page [In-44](#))