2003 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
1AZ–FE	Catalyst deterioration level (rear oxygen sensor locus length)	15 V* or more for 30 sec. (detected 5 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 6 and 32 g/sec. • A/F sensor voltage is between 3.1 and 3.7 V • Estimated catalyst temp. is between 400˚C (752˚F) and 900˚C (1,652˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more • 30 sec. have passed after above conditions are met
2AZ–FE Highlander	Catalyst deterioration level (rear oxygen sensor locus length)	20 V* or more for 30 sec. (detected 5 times during 1 driving cycle)	
2AZ–FE Camry and Solara	Catalyst deterioration level (rear oxygen sensor locus length)	15 V* or more for 30 sec. (detected 5 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 7 and 45 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Estimated up stream catalyst temp. is between 550˚C (1,022˚F) and 900˚C (1,652˚F) • Estimated down stream catalyst temp. is between 550˚C (1,022˚F) and 900˚C (1,652˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more • 30 sec. have passed after above conditions are met

1GR–FE	Catalyst deterioration level (rear oxygen sensor locus length)	18 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 5 and 45 g/rev. • Estimated up stream catalyst temp. is between 500˚C (932˚F) and 900˚C (1,652˚F) • Estimated down stream catalyst temp. is between 350˚C (662˚F) and 900˚C (1,652˚F) • A/F sensor voltage is between 3.0 and 3.5 V • IAT is –10˚C (14˚F) or more • ECT is 75˚C (167˚F) or more • 30 sec. have passed after above conditions are met
2JZ–GE (A/T)	Catalyst deterioration level (Bank 1)	0.5 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 8 and 25 g/sec. • Estimated catalyst temp. is between 450˚C (842˚F) and 800˚C (1,472˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more • 20 sec. have passed after above conditions are met
	Catalyst deterioration level (Bank 2)	0.4 or more for 30 sec. (detected 3 times during 1 driving cycle)	
2JZ–GE (M/T)	Catalyst deterioration level	0.45 or more for 30 sec. (detected 3 times during 1 driving cycle)	
1MZ–FE Camry and ES300	Catalyst deterioration level (rear oxygen sensor locus length)	10 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,000 rpm or less • Intake air amount is between 6 and 35 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Estimated up stream catalyst temp. is between 500˚C (932˚F) and 800˚C (1,472˚F) • Estimated down stream catalyst temp. is between 500˚C (932˚F) and 800˚C (1,472˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more

1MZ–FE Solara	Catalyst deterioration level (rear oxygen sensor locus length)	4.5 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Throttle valve open • Closed Loop • Engine RPM is 4,000 rpm or less • Intake air amount is between 5 and 30 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Estimated up stream catalyst temp. is between 450˚C (842˚F) and 900˚C (1,652˚F) • Estimated down stream catalyst temp. is between 310˚C (590˚F) and 800˚C (1,472˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more
1MZ–FE Sienna	Catalyst deterioration level (rear oxygen sensor locus length)	5 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	
1MZ–FE Avalon, RX300 and Highlander	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 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
1NZ–FE	Catalyst deterioration level	0.4 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 5.5 and 25 g/sec. • Estimated catalyst temp. is between 470˚C (878˚F) and 750˚C (1,382˚F) • ECT is 75˚C (176˚F) or more • IAT is –10˚C (14˚F) or more
2RZ–FE	Catalyst deterioration level (rear oxygen sensor locus length)	10 V* or more for 20 sec. (detected 4 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 3,200 rpm or less • Intake air amount is between 5 and 23 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Estimated up stream catalyst temp. is between 540˚C (1,004˚F) and 900˚C (1,652˚F) • Estimated down stream catalyst temp. is between 380˚C (716˚F) and 800˚C (1,472˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more

3RZ–FE	Catalyst deterioration level (rear oxygen sensor locus length)	12 V* or more for 20 sec. (detected 4 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,000 rpm or less • Intake air amount is between 5 and 30 g/sec. • A/F sensor voltage is between 3.0 and 3.5 V • Estimated up stream catalyst temp. is between 540˚C (1,004˚F) and 900˚C (1,652˚F) • Estimated down stream catalyst temp. is between 380˚C (716˚F) and 800˚C (1,472˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more
2UZ–FE	Catalyst deterioration level	0.6 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is less than 4,000 rpm • Intake air amount is between 8 and 50 g/sec. • Estimated up stream catalyst temp. is between 450˚C (842˚F) and 830˚C (1,526˚F) • Estimated down stream catalyst temp. is between 450˚C (842˚F) and 830˚C (1,526˚F) • IAT is –10˚C (14˚F) or more • ECT is more than 75˚C (167˚F) • 20 sec. have passed after above conditions are met
3UZ–FE	Catalyst deterioration level	0.45 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,000 rpm or less • Intake air amount is between 8 and 45 g/sec. • Estimated up stream catalyst temp. is between 450˚C (842˚F) and 850˚C (1,562˚F) • Estimated down stream catalyst temp. is between 450˚C (842˚F) and 850˚C (1,562˚F) • IAT is –10˚C (14˚F) or more • ECT is more than 75˚C (167˚F) • 20 sec. have passed after above conditions are met
5VZ–FE Tacoma (2WD)	Catalyst deterioration level (rear oxygen sensor locus length)	10 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	• 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 • Estimated catalyst temp. is between 450˚C (842˚F) and 700˚C (1,292˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more
5VZ–FE Tacoma (4WD)	Catalyst deterioration level (rear oxygen sensor locus length)	15.5 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	
5VZ–FE Tundra	Catalyst deterioration level (rear oxygen sensor locus length)	18 V* or more for 30 sec. (detected 3 times during 1 driving cycle)	

1ZZ–FE Celica	Catalyst deterioration level	0.52 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 5 and 30 g/sec. • Estimated catalyst temp. is between 450˚C (842˚F) and 750˚C (1,382˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more
1ZZ–FE Corolla and Matrix (2WD)	Catalyst deterioration level	0.6 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,000 rpm or less • Intake air amount is between 8.5 and 25 g/sec. • Estimated catalyst temp. is between 500˚C (932˚F) and 900˚C (1,652˚F) • ECT is more than 75˚C (167˚F) • IAT is –10˚C (14˚F) or more
1ZZ–FE Matrix (4WD)	Catalyst deterioration level	0.24 or more for 30 sec. (detected 3 times during 1 driving cycle)	
1ZZ–FE MR2	Catalyst deterioration level	0.6 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,000 rpm or less • Intake air amount is between 5 and 30 g/sec. • Estimated front catalyst temp. is between 440˚C (824˚F) and 870˚C (1,598˚F) • Estimated rear catalyst temp. is between 320˚C (608˚F) and 690˚C (1,274˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more
2ZZ–GE	Catalyst deterioration level	0.55 or more for 30 sec. (detected 3 times during 1 driving cycle)	• Battery voltage is 11 V or more • Closed Loop • Engine RPM is 4,500 rpm or less • Intake air amount is between 7 and 25 g/sec. • Estimated catalyst temp. is between 500˚C (932˚F) and 750˚C (1,382˚F) • ECT is 75˚C (167˚F) or more • IAT is –10˚C (14˚F) or more

* 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)