

2003 MY for Torque Converter Clutch Solenoid Performance (Shift Solenoid Valve SL) Monitor (P0741 / P0770)

2003 MY for Torque Converter Clutch Solenoid Performance (Shift Solenoid Valve DSL) Monitor (P0741 / P0770)

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MONITOR STRATEGY

Required sensors/Components	Main	Shift solenoid valve SL (DSL)
	Sub	None
Frequency of operation	Continuous	
Duration	5VZ-FE (Prerunner, TACOMA), 3RZ-FE, 1ZZ-FE (COROLLA), 1ZZ-FE, 2WD (MATRIX), 5VZ-FE (TUNDRA)	Less than 10 sec.
	1ZZ-FE (CELICA), 1MZ-FE (CAMRY SOLARA, AVALON, SIENNA), 1ZZ-FE, 4WD (MATRIX)	OFF malfunction 3.5 sec. ON malfunction 1.8 sec.
	1MZ-FE (CAMRY)	OFF malfunction (A) 3.5 sec. OFF malfunction (B) 0.85 sec. ON malfunction 1.8 sec.
	1MZ-FE (ES300, CAMRY '03/01 L/O)	OFF malfunction (A) 0.05 sec. OFF malfunction (B) 1 sec. OFF malfunction (C) 3.5 sec. ON malfunction 1.8 sec.
	2UZ-FE	(A) & OFF malfunction or ON malfunction 1.0 sec.
	2JZ-GE	OFF malfunction 2 sec. ON malfunction 1.8 sec.
	1MZ-FE (RX300, HIGH LANDER)	Rationality check 2 sec. OFF malfunction (A) 3.5 sec. OFF malfunction (B) 1 sec. ON malfunction 1.8 sec.

Component T/M Outputs – Solenoid

Duration	1GR-FE	(A) & OFF malfunction, (A) & ON malfunction 1.0 sec.
	1NZ-FE	(A) & malfunction 3.5 sec. (A) & malfunction 1.8 sec.
	2AZ-FE (CAMRY, CAMRY SOLARA), 2ZZ-GE (CELICA)	(A) & OFF malfunction (A) 3.5 sec. (A) & OFF malfunction (B) 0.85 sec. (A) & ON malfunction (A) 1.8 sec.
	1AZ-FE	(A) & OFF malfunction (A) 3.5 sec. (A) & OFF malfunction (B) 1 sec. (A) & ON malfunction 1.8 sec.
	2AZ-FE (CAMRY Supplement)	(A) & OFF malfunction (A) 3.5 sec. (A) & OFF malfunction (B) 0.8 sec. (A) & ON malfunction 1.8 sec.
	2ZZ-GE (MATRIX), 2AZ-FE (HIGH LANDER)	(A) & OFF malfunction (A) 3.5 sec. (A) & OFF malfunction (B) 0.8 sec. (A) & ON malfunction 1.8 sec.
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item		Specification		
		Minimum	Maximum	
The monitor will run whenever the following DTCs are not present.		See page In-39		
Engine family	Item	Specification		
		Minimum	Maximum	
5VZ-FE (Prerunner, TACOMA)	Condition (A)			
	Intake air temperature	-10 °C (14 °F) or more	Less than 70 °C (158 °F)	
	Engine coolant temperature	60 °C (140 °F) or more	Less than 105 °C (221 °F)	
	Transmission range	"D"		
	Time after shifting "N" to "D"	3 sec. or more	-	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction		
	Shift solenoid "B" (S2) circuit	Not circuit malfunction		
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction		
	Battery voltage	10 V or more	-	
	Spark retard by KCS control	-	Less than 8° CA	
	OFF malfunction			
	ECM selected gear	4th with lock up		
	ON malfunction			
	ECM selected gear	4th		
	Throttle valve opening angle	7 % or more	-	
	5VZ-FE (TUNDRA)	Condition (A)		
		Intake air temperature	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
Engine coolant temperature		60 °C (140 °F) or more	Less than 105 °C (221 °F)	
Transmission range		"D"		
Time after shifting "N" to "D"		3 sec. or more	-	
Shift solenoid "A" (S1) circuit		Not circuit malfunction		
Shift solenoid "B" (S2) circuit		Not circuit malfunction		
Torque converter clutch solenoid (SL) circuit		Not circuit malfunction		
Battery voltage		10 V or more	-	
Spark retard by KCS control		-	Less than 8° CA	
Transfer range "Hi" [4WD]				
Vehicle speed sensor "A" circuit		Not circuit malfunction		
Output speed sensor circuit		Not circuit malfunction		
Throttle valve opening angle		0 % or more	-	
OFF malfunction				
ECM selected gear		4th with lock up		
ON malfunction				
ECM selected gear		4th		
Throttle valve opening angle		7 % or more	-	

Component T/M Outputs – Solenoid

1ZZ–FE (CELICA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Vehicle speed	25 km/h (16 mph) or more	–
	Transmission range	"D"	
	Time after shifting "N" to "D"	4.5 sec. or more	–
	ECM selected gear	3rd or 4th	
	ECT sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
	Input (turbine) speed sensor circuit	Not circuit malfunction	
	Internal counter shaft speed sensor circuit	Not circuit malfunction	
	OFF malfunction		
	ECM lock–up command	ON	
	ON malfunction		
	ECM lock–up command	OFF	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	–	Less than 60 km/h (37 mph)
1MZ–FE (CAMRY SOLARA, AVALON, SIENNA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Vehicle speed	25 km/h (16 mph) or more	–
	Transmission range	"D"	
	ECM selected gear	3rd or 4th	
	ECT sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
	OFF malfunction		
	ECM lock–up command	ON	
	ON malfunction		
	ECM lock–up command	OFF	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	–	Less than 60 km/h (37 mph)

1MZ-FE (CAMRY)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	
	Electronic throttle system	Not circuit malfunction	
	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	–
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	–
	Throttle vale opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)

Component T/M Outputs – Solenoid

1MZ–FE (ES300)	Condition (A)		
	Engine coolant temperature	10 °C (50 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Pressure control solenoid "C" (SL3) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Shift solenoid "E" (SR) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	
	OFF malfunction (A)		
	ECM selected gear	3rd	
	During gear shifting	2nd to 3rd	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	ECM selected gear	5th	
	Throttle vale opening angle	5 % or more	–
	Vehicle speed	10 km/h (6 mph) or more	–
	OFF malfunction (C)		
	ECM lock–up command	ON	
	ECM selected gear	3rd or 4th or 5th	
	Vehicle speed	25 km/h (16 mph) or more	–
	ON malfunction		
	ECM lock–up command	OFF	
	ECM selected gear	3rd or 4th or 5th	
	Throttle valve operating angle	13 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)

2UZ-FE	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	–
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SLU) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	0° CA or more	–
	Transfer range "Hi" [4WD]		
	Vehicle speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	–
	OFF malfunction		
	ECM selected gear	3rd or 4th	
	ECM lock-up command	ON	
	Vehicle speed	25 km/h (16 mph) or more	Less than 100 km/h (62 mph)
	IAT	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ON malfunction		
	ECM selected gear	3rd or 4th	
	ECM lock-up command	OFF	
	Throttle valve opening angle	9 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
	IAT	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
1MZ-FE (RX300, HIGH LANDER)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	

Component T/M Outputs – Solenoid

1MZ-FE (RX300, HIGH LANDER)	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	-
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	-
	Throttle vale opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	-
	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	-
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
2AZ-FE (CAMRY SOLARA, CAMRY, CAMRY Supplement)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	-
	Transmission range	"D"	
	Transmission fluid temperature	-20 °C (-4 °F) or more	-
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	
	Electronic throttle system	Not circuit malfunction	
	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	-
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	-
	Throttle vale operating angle	3.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	-

2AZ-FE (CAMRY SOLARA, CAMRY, CAMRY Supplement)	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	—
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
2ZZ-GE (CELICA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	—
	Transmission range	"D"	
	Transmission fluid temperature	-20 °C (-4 °F) or more	—
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	
	Electronic throttle system	Not circuit malfunction	
	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	—
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	—
	Calculated load value	19.5 % or more	—
	Throttle vale opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	—
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)

Component T/M Outputs – Solenoid

1NZ-FE	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Vehicle speed	25 km/h (16 mph) or more	–
	Transmission range	"D"	
	ECM selected gear	3rd or 4th	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Input (Turbine) speed sensor circuit	Not circuit malfunction	
	Vehicle speed sensor circuit	Not circuit malfunction	
	OFF malfunction		
	ECM lock-up command	ON	
	ON malfunction		
	ECM lock-up command	OFF	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	–	Less than 60 km/h (37 mph)
1GR-FE	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	–
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
	Spark retard by KCS control	0° CA or more	–
	Transfer range "Hi" [4WD]		
	Vehicle speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	–
	OFF malfunction		
	ECM selected gear	3rd or 4th	
	ECM lock-up command	ON	
	Vehicle speed	25 km/h (16 mph) or more	Less than 100 km/h (62 mph)
	IAT	–10 °C (14 °F) or more	Less than 90 °C (194 °F)
	ON malfunction		
	ECM selected gear	3rd or 4th	
	ECM lock-up command	OFF	
	Throttle valve opening angle	9 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
	IAT	–10 °C (14 °F) or more	Less than 90 °C (158 °F)

2JZ-GE	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	–
	Vehicle speed	25 km/h (16 mph) or more	–
	Transmission range	"D"	
	Spark advance from Max. retard timing by KCS control	0° CA or more	
	ECM selected gear	4th or 5th	
	Torque converter clutch pressure control solenoid (SLU) circuit	Not circuit malfunction	
	OFF malfunction		
	ECM lock-up command	ON (SLU duty ratio 90 % or more)	
	ECM selected gear	5th	
	Vehicle speed	–	Less than 100 km/h (62 mph)
	ON malfunction		
	ECM lock-up command	OFF (SLU duty ratio 10 % or less)	
	ECM selected gear	4th	
	Throttle valve opening angle	9 % or more	–
	Vehicle speed	–	Less than 60 km/h (37 mph)
1AZ-FE, 2AZ-FE (HIGH LAND-ER)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor circuit	Not circuit malfunction	
	Coolant temperature sensor circuit	Not circuit malfunction	
	Input shaft speed sensor circuit	Not circuit malfunction	
	Internal counter shaft speed sensor circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Shift solenoid "E" (SR) circuit	Not circuit malfunction	
	Electronic throttle system	Not circuit malfunction	
	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	–
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	–
	Throttle vale opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–

Component T/M Outputs – Solenoid

1AZ–FE, 2AZ–FE (HIGH LAND-ER)	ON malfunction		
	ECM lock–up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
1ZZ–FE, 2WD (MATRIX)	Condition (A)		
	Intake air temperature	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
	Engine coolant temperature	55 °C (131 °F) or more	Less than 105 °C (221 °F)
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "E" (SL) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	0° CA or more	–
	OFF malfunction		
	ECM selected gear	4th with lock up	
	ON malfunction		
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	–
1ZZ–FE (COROLLA)	Condition (A)		
	Intake air temperature	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
	Engine coolant temperature	55 °C (131 °F) or more	Less than 105 °C (221 °F)
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "E" (SL) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	0° CA or more	–
	OFF malfunction		
	ECM selected gear	4th with lock up	
	ON malfunction		
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	–

2ZZ-GE (MATRIX)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Input shaft speed sensor circuit	Not circuit malfunction	
	Internal counter shaft speed sensor circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (SL1) circuit	Not circuit malfunction	
	Shift solenoid "B" (SL2) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Shift solenoid "E" (DSL) circuit	Not circuit malfunction	
	OFF malfunction (A)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th	
	Vehicle speed	25 km/h (16 mph) or more	–
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 mph) or more	–
	Throttle vale opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)
1ZZ-FE, 4WD (MATRIX)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Vehicle speed	25 km/h (16 mph) or more	–
	Transmission range	"D"	
	ECM selected gear	3rd or 4th	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "E" (SL) circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Input shaft speed sensor circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	OFF malfunction		
	ECM lock-up command	ON	
	ON malfunction		
	ECM lock-up command	OFF	
	Throttle valve opening angle	8 % or more	–
	Vehicle speed	–	Less than 60 km/h (37 mph)

Component T/M Outputs – Solenoid

3RZ–FE	Condition (A)		
	Intake air temperature	–10 °C (14 °F) or more	Less than 90 °C (194 °F)
	Engine coolant temperature	55 °C (131 °F) or more	Less than 105 °C (221 °F)
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	2° CA or more	–
	Transfer range "Hi" [4WD]		
	Vehicle speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	–
	OFF malfunction		
	ECM selected gear	4th with lock up	
	ON malfunction		
	ECM selected gear	4th	
	Throttle valve opening angle	8 % or more	–
1MZ–FE (CAMRY '03/01 L/O)	Condition (A)		
	Engine coolant temperature	10 °C (50 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Transmission fluid temperature sensor "A" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	

1MZ-FE (CAMRY '03/01 L/O)	Pressure control solenoid "A" (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid "B" (SL2) circuit	Not circuit malfunction	
	Pressure control solenoid "C" (SL3) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	Shift solenoid "E" (SR) circuit	Not circuit malfunction	
	Torque converter clutch solenoid (DSL) circuit	Not circuit malfunction	
	OFF malfunction (A)		
	ECM selected gear	3rd	
	During gear shifting	2nd to 3rd	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	ECM selected gear	5th	
	Throttle valve opening angle	5 % or more	—
	Vehicle speed	10 km/h (6 mph) or more	—
	OFF malfunction (C)		
	ECM lock-up command	ON	
	ECM selected gear	3rd or 4th or 5th	
	Vehicle speed	25 km/h (16 mph) or more	—
	ON malfunction		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th or 5th	
	Throttle valve opening angle	13 % or more	—
	Vehicle speed	25 km/h (16 mph) or more	Less than 60 km/h (37 mph)

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
1MZ-FE (RX300, HIGH LANDER, CAMRY), 2AZ-FE, 1AZ-FE, 2ZZ-GE	Following condition met (a. and b.) or c.	
	a. = (A) & OFF malfunction (A)	
	Engine speed – Input speed (NE – NT)	100 rpm or more
	b. = (A) & OFF malfunction (B)	
	Input speed/Intermediate shaft speed (NT – NC)	$1.49 \leq NT/NC < 1.63$
	c. = (A) & ON malfunction	
	Engine speed – Input speed (NE – NT)	Less than 35 rpm
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON Vehicle speed must be under 10 km/h (6 mph) once before 2nd judgment	

Component T/M Outputs – Solenoid

3RZ-FE, 5VZ-FE	(A) & OFF malfunction	
	Engine speed	$\geq$ 4th gear ratio x NO + 100 rpm < 3rd gear ratio x NO – 100 rpm
	(A) & ON malfunction	
	Engine speed	$\geq$ 4th gear ratio x NO – 50 rpm < 4th gear ratio x NO + 50 rpm
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
1MZ-FE (SIENNA, AVALON)	Following conditions met	
	(A) & OFF malfunction	
	Engine speed – Input speed (NE – NC2)	130 rpm or more
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON Vehicle speed must be under 10 km/h (6 mph) once before 2nd judgment	
	(A) & ON malfunction	
	Engine speed – Input speed (NE – NC2)	Less than 35 rpm
2UZ-FE, 1GR-FE	Following condition met a. or b.	
	(A) & OFF malfunction	
	(NE – NO x 4th gear ratio)	70 rpm or more
	(A) & ON malfunction	
	NE – NC0	Less than 35 rpm
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON Vehicle speed must be under 10 km/h (6 mph) once before 2nd judgment	
1ZZ-FE 2WD (MATRIX), 1ZZ-FE (COROLLA)	(A) & OFF malfunction	
	Engine speed	$\geq$ 4th gear ratio x NO + 100 rpm < 3rd gear ratio x NO – 100 rpm
	(A) & ON malfunction	
	Engine speed	$\geq$ 4th gear ratio x NO – 50 rpm < 4th gear ratio x NO + 50 rpm
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
1ZZ-FE 4WD (MATRIX), 1ZZ-FE (CELICA), 1NZ-FE	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	(A) & OFF malfunction	
	Engine speed – Input shaft speed (NE – NT)	100 rpm or more
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON Vehicle speed must be under 10 km/h (6 mph) once before 2nd judgment	
	(A) & ON malfunction	
	Engine speed – Input shaft speed (NE – NT)	Less than 35 rpm

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2JZ-GE	(A) & OFF malfunction	
	Engine speed – Output speed x 5th gear ratio (NE – NO x 5th gear ratio)	150 rpm or more
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	(A) & ON malfunction	
	Engine speed – Input speed (NE – NC0)	Less than 35 rpm
1MZ-FE (CAMRY SOLARA)	Following conditions met	
	(A) & OFF malfunction	
	Engine speed – Input speed (NE – NC2)	200 rpm or more
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON Vehicle speed must be under 10 km/h (6 mph) once before 2nd judgment	
	(A) & ON malfunction	
	Engine speed – Input speed (NE – NC2)	Less than 35 rpm
1MZ-FE (ES300)	Following condition met (a. and b. and c.) or d.	
	a. = (A) & OFF malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$0.93 \leq NT/NC < 1.07$
	b. = (A) & OFF malfunction (B)	
	Intermediate speed/Output speed (NC/NO)	$0.95 \leq NC/NO < 1.09$
	c. = (A) & OFF malfunction (C)	
	Engine speed – Input speed (NE – NT)	
	When condition "a" of shift solenoid "D" is detected;	75 rpm or more
	When condition "a" of shift solenoid "D" is not detected;	100 rpm or more
	d. = (A) & ON malfunction	
	Engine speed – Input speed (NE – NT)	Less than 35 rpm

Component T/M Outputs – Solenoid

1MZ-FE (CAMRY '03/01 L/O)	Following condition met (a. and b. and c.) or d.	
	a. = (A) & OFF malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$0.93 \leq \text{NT/NC} < 1.07$
	b. = (A) & OFF malfunction (B)	
	Intermediate speed/Output speed (NC/NO)	$1.02 \leq \text{NC/NO} < 1.16$
	c. = (A) & OFF malfunction (C)	
	Engine speed – Input speed (NE – NT)	
	When condition "a" of shift solenoid "D" is detected;	75 rpm or more
	When condition "a" of shift solenoid "D" is not detected;	100 rpm or more
	d. = (A) & ON malfunction	
	Engine speed – Input speed (NE – NT)	Less than 35 rpm