

2002 MY for Shift Solenoid "B" Performance (Shift Solenoid Valve S2) Monitor (P0755)

2002 MY for Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2) Monitor (P0755)

To return to monitor description, see page [Cm-158](#).

MONITOR STRATEGY

Required sensors/Components	Main	Shift solenoid valve No.2
	Sub	None
Frequency of operation	Continuous	
Duration	3RZ-FE, 5VZ-FE, 3UZ-FE (LS430, GS430), 2JZ-GE	Less than 10 sec.
	2ZZ-GE	0.8 sec.
	2AZ-FE, 1NZ-FE, 1ZZ-FE (CELICA)	0.85 sec.
	1MZ-FE (RX300, HIGH LANDER, SIENNA, AVALON, CAMRY SOLARA), 1AZ-FE	1 sec.
	3UZ-FE (SC430), 1ZZ-FE (COROLLA)	Less than 10 sec.
	1MZ-FE (ES300)	(A) & OFF malfunction (A) 1.8 sec. (A) & OFF malfunction (B), (C) 0.8 sec. (A) & OFF malfunction (A), (B) 0.8 sec. (A) & OFF malfunction (C) 0.4 sec.
	1MZ-FE (CAMRY)	(A) & OFF malfunction, (A) & ON malfunction 0.85 sec.
	2UZ-FE (TUNDRA, SE-QUOIA)	(A) & OFF malfunction (A), (B) 0.5 sec. (A) & ON malfunction (A), (B), (C) 0.5 sec.
	2UZ-FE (LX470, LAND CRUISER)	(A) & OFF malfunction (A), (B), (C) 0.5 sec. (A) & ON malfunction (A), (B), (C) 0.5 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	
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 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 shaft speed sensor circuit	Not circuit malfunction		
	Shift solenoid "A" circuit	Not circuit malfunction		
	Shift solenoid "B" circuit	Not circuit malfunction		
	Shift solenoid "D" circuit	Not circuit malfunction		
	OFF malfunction			
	ECM selected gear	1st		
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–	
	Throttle valve opening angle	15 % or more	–	
	ON malfunction			
	ECM selected gear	3rd or 4th		
	Vehicle speed	10 km/h (6 mph) or more	–	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–	
	1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	Condition (A)		
		Engine coolant temperature	60 °C (140 °F) or more	–
		Transmission range	"D"	
ECT sensor circuit		Not circuit malfunction		
Shift solenoid "A" circuit		Not circuit malfunction		
Shift solenoid "B" circuit		Not circuit malfunction		
OFF malfunction (A)				
ECM selected gear		2nd		
Throttle valve opening angle		10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–	
Vehicle speed		10 km/h (6 mph) or more	–	

1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	OFF malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	Vehicle speed	10 km/h (6 mph) or more	–
	OFF malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	Vehicle speed	10 km/h (6 mph) or more	–
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	ON malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	Vehicle speed	10 km/h (6 mph) or more	–
	ON malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	Vehicle speed	10 km/h (6 mph) or more	–
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 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 shaft speed sensor circuit	Not circuit malfunction	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "C" circuit	Not circuit malfunction	
	Shift solenoid "D" circuit	Not circuit malfunction	
	"SR" solenoid circuit	Not circuit malfunction	
	Shift solenoid "E" circuit	Not circuit malfunction	

Component T/M Outputs – Solenoid

1MZ-FE (ES300)	OFF malfunction (A)		
	ECM lock-up command	OFF	
	Vehicle speed	—	Less than 60 km/h (37 mph)
	Throttle valve opening angle	13 % or more	—
	OFF malfunction (B)		
	ECM selected gear	1st	
	Vehicle speed	—	Less than 40 km/h (25 mph)
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (C)		
	ECM selected gear	3rd	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (D)		
	ECM selected gear	4th or 5th	
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	—	Less than 40 km/h (25 mph)
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	7.0 % or more at output speed 1,400 rpm (condition vary with engine speed)	—
	Malfunction of shift solenoid "B" & "C"	Not detected	
	ON malfunction (C)		
	Throttle valve opening angle	7.0 % or more at output speed 1,050 rpm (condition vary with engine speed)	—
	Malfunction of shift solenoid "B"	Not detected	

1MZ-FE (CAMRY), 1AZ-FE	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 shaft speed sensor circuit	Not circuit malfunction		
	Shift solenoid "A" circuit	Not circuit malfunction		
	Shift solenoid "B" circuit	Not circuit malfunction		
	Shift solenoid "D" circuit	Not circuit malfunction		
	Electronic throttle system	Not circuit malfunction		
	OFF malfunction			
	ECM selected gear	1st		
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–	
	Throttle valve opening angle	15 % or more	–	
	ON malfunction			
	ECM selected gear	3rd or 4th		
	Vehicle speed	10 km/h (6 mph) or more	–	
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–	
	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" circuit		Not circuit malfunction		
Shift solenoid "B" circuit		Not circuit malfunction		
Shift solenoid "E" 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 circuit		Not circuit malfunction		
Output shaft speed sensor circuit		Not circuit malfunction		
Throttle valve opening angle		0 % or more	–	
OFF malfunction				
ECM selected gear		2nd		
Throttle valve opening angle		12 % or more (condition vary with engine speed)	Less than 35 %	
ON malfunction				
ECM selected gear		4th with lock up		

Component T/M Outputs – Solenoid

5VZ-FE	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"	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "E" 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 circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	-
	OFF malfunction		
	ECM selected gear	2nd	
	Throttle valve opening angle	10 % or more	Less than 30 %
	ON malfunction		
	ECM selected gear	4th with lock up	
2UZ-FE (TUNDRA, SEQUOIA)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	-
	Transmission range	"D"	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" 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 circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	-
	OFF malfunction (A)		
	ECM selected gear	2nd	
	Vehicle speed	3 km/h (2 mph) or more	-
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	-
	OFF malfunction (B)		
	ECM selected gear	3rd	
	Vehicle speed	3 km/h (2 mph) or more	-
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	-
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	3 km/h (2 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	15 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	-

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2UZ-FE (TUNDRA, SEQUOIA)	ON malfunction (B)		
	ECM selected gear	3rd	
	Vehicle speed	3 km/h (2 mph) or more	–
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	ON malfunction (C)		
	Vehicle speed	3 km/h (2 mph) or more	–
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
2UZ-FE (LX470, LAND CRUISER)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	–
	Transmission range	"D"	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" 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 circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	Throttle valve opening angle	0 % or more	–
	OFF malfunction (A)		
	ECM selected gear	2nd	
	Vehicle speed	3 km/h (2 mph) or more	–
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	ECM selected gear	3rd	
	Vehicle speed	3 km/h (2 mph) or more	–
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	OFF malfunction (C)		
	ECM selected gear	4th	
	Vehicle speed	3 km/h (2 mph) or more	–
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	3 km/h (2 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	15 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–

Component T/M Outputs – Solenoid

2UZ-FE (LX470, LAND CRUISER)	ON malfunction (B)			
	ECM selected gear	3rd		
	Vehicle speed	3 km/h (2 mph) or more	—	
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	
	ON malfunction (C)			
	ECM selected gear	4th		
	Vehicle speed	3 km/h (2 mph) or more	—	
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	
	3UZ-FE (SC430)	Condition (A)		
		Engine coolant temperature	40 °C (104 °F) or more	—
Transmission range		"D"		
Spark advance from Max. retard timing by KCS control		0° CA or more	—	
OFF malfunction (A)				
ECM selected gear		1st		
Vehicle speed		2 km/h (1 mph) or more	Less than 40 km/h (25 mph)	
Throttle valve opening angle		6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	
OFF malfunction (B)				
ECM selected gear		2nd		
Vehicle speed		2 km/h (1 mph) or more	—	
Throttle valve opening angle		6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	
OFF malfunction (C)				
Current ECM selected gear		5th		
Last ECM selected gear		4th		
Vehicle speed		2 km/h (1 mph) or more	—	
Throttle valve opening angle		6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	
OFF malfunction (D)				
Current ECM selected gear		5th		
Last ECM selected gear		4th		
ON malfunction (A)				
Current ECM selected gear		5th		
Last ECM selected gear		4th		
Vehicle speed		2 km/h (1 mph) or more	—	
Throttle valve opening angle		6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—	

3UZ-FE (SC430)	ON malfunction (B)		
	ECM selected gear	5th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
3UZ-FE (LS430, GS430)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark advance from Max. retard timing by KCS control	0° CA or more	—
	Neutral start switch circuit	Not circuit malfunction	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "C" circuit	Not circuit malfunction	
	Shift solenoid "D" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	OFF malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (D)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	

Component T/M Outputs – Solenoid

3UZ-FE (LS430, GS430)	ON malfunction (A)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	5th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
2JZ-GE	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark advance from Max. retard timing by KCS control	0° CA or more	—
	Neutral start switch circuit	Not circuit malfunction	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "C" circuit	Not circuit malfunction	
	Shift solenoid "D" circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	OFF malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	ECM selected gear	2nd	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (C)		
	Current ECM selected gear	5th	
	Lest ECM selected gear	4th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—

2JZ-GE	OFF malfunction (D)		
	Current ECM selected gear	5th	
	Lest ECM selected gear	4th	
	ON malfunction (A)		
	Current ECM selected gear	5th	
	Lest ECM selected gear	4th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	5th	
	Vehicle speed	2 km/h (1 mph) or more	—
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
2ZZ-GE	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 shaft speed sensor circuit	Not circuit malfunction	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "D" circuit	Not circuit malfunction	
	OFF malfunction		
	ECM selected gear	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	Throttle valve opening angle	15 % or more	—
	ON malfunction		
	ECM selected gear	3rd or 4th	
	Vehicle speed	10 km/h (6 mph) or more	—
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—

Component T/M Outputs – Solenoid

1ZZ-FE (CELICA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	—
	Transmission range	"D"	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" 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 (A)		
	ECM selected gear	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (A)		
	ECM selected gear	2nd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—

2AZ-FE	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 shaft speed sensor circuit	Not circuit malfunction	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" circuit	Not circuit malfunction	
	Shift solenoid "D" circuit	Not circuit malfunction	
	Electronic throttle system	Not circuit malfunction	
	OFF malfunction		
	ECM selected gear	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	3.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	Throttle valve opening angle	15 % or more	—
	ON malfunction		
	ECM selected gear	3rd or 4th	
	Vehicle speed	10 km/h (6 mph) or more	—
	Throttle valve opening angle	3.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
1ZZ-FE (COROLLA)	Condition (A)		
	Engine coolant temperature	55 °C (131 °F) or more	Less than 105 °C (221 °F)
	Transmission range	"D"	
	Battery voltage	10 V or more	—
	Spark retard by KCS control	0° CA or more	—
	OFF malfunction (A)		
	IAT	−10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ECM selected gear	2nd	
	Throttle valve opening angle	18 % or more	Less than 35 %
	OFF malfunction (B)		
	IAT	−10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ECM selected gear	1st	
	Throttle valve opening angle	30 % or more	—

Component T/M Outputs – Solenoid

1ZZ-FE (COROLLA)	OFF malfunction (C)		
	IAT	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
	Current ECM selected gear	2nd	
	Last ECM selected gear	1st	
	Throttle valve opening angle	10 % or more	–
	Closing change of throttle valve opening angle	-5 % or more	Less than 5 %
	OFF malfunction (D)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (E)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (F)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (G)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (H)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (I)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	Less than 50 %
	OFF malfunction (J)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (A)		
	IAT	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ECM selected gear	4th with lock up	

1ZZ-FE (COROLLA)	ON malfunction (B)		
	IAT	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ECM selected gear	1st	
	Throttle valve opening angle	30 % or more	—
	ON malfunction (C)		
	IAT	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
	Current ECM selected gear	2nd	
	Last ECM selected gear	1st	
	Throttle valve opening angle	10 % or more	—
	Closing change of throttle valve opening angle	-5 % or more	Less than 5 %
	ON malfunction (D)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (E)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (F)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (G)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (H)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (I)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	Less than 50 %
	ON malfunction (J)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	7 % or more	Less than 50 %

Component T/M Outputs – Solenoid

1NZ-FE	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	—
	Transmission range	"D"	
	Shift solenoid "A" circuit	Not circuit malfunction	
	Shift solenoid "B" 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 (A)		
	ECM selected gear	1st	
	Vehicle speed	9 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	OFF malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (A)		
	ECM selected gear	2nd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	3rd	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	ON malfunction (C)		
	ECM selected gear	4th	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
1MZ-FE (RX330, HIGH LANDER, CAMRY), 2ZZ-GE, 2AZ-FE, 1AZ-FE	Following conditions met a. and b.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) and OFF malfunction	
	Input speed/Output speed (NT/NC)	$0.93 \leq \text{NT/NC} \leq 1.07$
	b. = (A) and ON malfunction	
	Input speed/Output speed (NT/NC)	$1.49 \leq \text{NT/NC} \leq 1.63$
1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	OFF malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC2/NO)	$2.07 \leq \text{NC2/NO} \leq 2.37$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC2/NO)	$0.63 \leq \text{NC2/NO} \leq 0.77$
	c. = (A) & OFF malfunction (C)	
	Input speed/Output speed (NC2/NO)	$0.63 \leq \text{NC2/NO} \leq 0.77$
	ON malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC2/NO)	$0.00 \leq \text{NC2/NO} \leq 0.20$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC2/NO)	$0.88 \leq \text{NC2/NO} \leq 1.02$
	c. = (A) & ON malfunction (C)	
	Input speed/Output speed (NC2/NO)	$0.88 \leq \text{NC2/NO} \leq 1.02$

Component T/M Outputs – Solenoid

1MZ-FE (ES300)	Following conditions met (a. and b. and c. and d.) or (e. and f and g.)	
	a. = (A) & OFF malfunction (A)	
	Engine speed – Input speed (NE – NT)	Less than 35 rpm
	b. = (A) & OFF malfunction (B)	
	Input speed/Intermediate speed (NT/NC)	$0.93 \leq \text{NT/NC} \leq 1.07$
	c. = (A) & OFF malfunction (C)	
	Input speed/Intermediate speed (NT/NC)	$0.93 \leq \text{NT/NC} \leq 1.07$
	d. = (A) & OFF malfunction (D)	
	Input speed/Intermediate speed (NT/NC)	$0.64 \leq \text{NT/NC} \leq 0.74$
	e. = (A) & ON malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} \leq 2.86$
	f. = (A) & ON malfunction (B)	
	Input speed/Intermediate speed (NT – NC)	Less than 700 rpm
	g. = (A) & ON malfunction (C)	
	Input speed/Intermediate speed (NT – NC)	$< -500 \text{ rpm or } \geq 700 \text{ rpm}$
3RZ-FE, 5VZ-FE	Following condition met a. or b.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction	
	Engine speed	$\geq 1\text{st gear ratio} \times \text{NO rpm}$
	b. = (A) & ON malfunction	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm and}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$
2UZ-FE (TUNDRA, SEQUOIA)	OFF malfunction	
	Following conditions met a. and b.	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$2.63 \leq \text{NC0/NO} \leq 3.20$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	ON malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	$1.40 \leq \text{NC0/NO} \leq 1.67$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$
	c. = (A) & ON malfunction (C)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$

2UZ-FE (LX470, LAND CRUISER)	OFF malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$2.63 \leq \text{NC0/NO} \leq 3.20$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	c. = (A) & OFF malfunction (C)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	ON malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	$1.40 \leq \text{NC0/NO} \leq 1.67$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$
	c. = (A) & ON malfunction (C)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$

Component T/M Outputs – Solenoid

3UZ-FE, 2JZ-GE	OFF malfunction	
	Following conditions met a. and b. and c. and d.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq NC0/NO \leq 7.34$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq NC0/NO \leq 7.34$
	c. = (A) & OFF malfunction (C)	
	Input speed/Output speed (NC0/NO)	Change as follows $0.93 \leq NC0/NO \leq 1.07$ ↓ $0.00 \leq NC0/NO \leq 0.20$
	d. = (A) & OFF malfunction (D)	
	Output record from ECM for 4th → 5th upshifting	Recorded
	ON malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	Not change as follows $0.93 \leq NC0/NO \leq 1.07$ ↓ $0.00 \leq NC0/NO \leq 0.20$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$1.30 \leq NC0/NO \leq 1.55$
	c. = (A) & ON malfunction (C)	
	Output record from ECM for 4th → 5th upshifting	Recorded
1ZZ-FE (CELICA), 1NZ-FE	OFF malfunction	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NT/NO)	$1.50 \leq NT/NO \leq 1.80$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NT/NO)	$0.95 \leq NT/NO \leq 1.09$
	c. = (A) & OFF malfunction (C)	
	Input speed/Output speed (NT/NO)	$0.95 \leq NT/NO \leq 1.09$
	ON malfunction	
	Following conditions met d. and e. and f.	
	d. = (A) & ON malfunction (A)	
	Input speed/Output speed (NT/NO)	$2.75 \leq NT/NO \leq 3.35$
	e. = (A) & ON malfunction (B)	
	Input speed/Output speed (NT/NO)	$0.64 \leq NT/NO \leq 0.78$
	f. = (A) & ON malfunction (C)	
	Input speed/Output speed (NT/NO)	$0.64 \leq NT/NO \leq 0.78$

1996–2003 ADDITION OF OBD (OTH021U)

1ZZ-FE (COROLLA)	OFF malfunction	
	Following condition met I = a. or II = b. c. d. e. f. g. h. i. j.	
	(I) = a.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Engine speed	$\geq 1\text{st gear ratio} \times \text{NO rpm}$
	(II) = b. & (d. and (not g.) and (not i.)) = b. & ((not e.) and (not f.) and h. and (not i.)) = c. & (d. and (not g.) and (not i.)) = c. & ((not e.) and (not f.) and h. and (not i.))	
	There are 2 judgment steps/driving cycle 1st judgment step; when following condition met, temporary flag becomes ON. b. (times) or c. (times) It is necessary 2 judgments/driving cycle 2nd judgment step; when following condition met, pending fault code becomes ON. {d. and (not g.) and (not i.)} or {(not e.) and (not f.) and h. and (not i.)}	
	b. = (A) & OFF malfunction (B)	
	Engine speed	$< 0.7 \times \text{NO} + 2,100 \text{ rpm}$
	c. = (A) & OFF malfunction (C)	
	NElast – NEcurrent	$< 512.5 \text{ rpm at throttle angle } 40 \%$ (condition vary with throttle angle)
	d. = (A) & OFF malfunction (D)	
	Engine speed	$\geq 1\text{st gear ratio} \times \text{NO} + 50 \text{ rpm}$
	e. = (A) & OFF malfunction (E)	
	Engine speed	$\geq 2\text{nd gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 2\text{nd gear ratio} \times \text{NO} + 50 \text{ rpm}$
	f. = (A) & OFF malfunction (F)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$
	g. = (A) & OFF malfunction (G)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$
	h. = (A) & OFF malfunction (H)	
	Engine speed	$\geq 4\text{th gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 4\text{th gear ratio} \times \text{NO} + 50 \text{ rpm}$
	i. = (A) & OFF malfunction (I)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$
	j. = (A) & OFF malfunction (J)	
	Engine speed	$\geq 4\text{th gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 4\text{th gear ratio} \times \text{NO} + 50 \text{ rpm}$
	ON malfunction	
	Following condition met I or II	
	(I) = a.	
	a. = (A) & ON malfunction (A)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$

1ZZ-FE (COROLLA)	(II) = b. & (e. and (not h.) and (not j.)) = b. & ((not d.) and (not f.) and (not h.) and i.) = c. & (e. and (not h.) and (not j.)) = c. & ((not d.) and (not f.) and (not h.) and i.)	
	There are 2 judgment steps/driving cycle 1st judgment step; when following condition met, temporary flag becomes ON. b.(times) or c. (times) It is necessary 2 judgments/driving cycle 2nd judgment step; when following condition met, pending fault code becomes ON. {e. and (not h.) and (not j.)} or {(not d.) and (not f.) and (not h.) and i.})	
	b. = (A) & ON malfunction (B)	
	Engine speed	< 0.7 x NO + 2,100 rpm
	c. = (A) & ON malfunction (C)	
	NElast – NEcurrent	< 512.5 rpm at throttle angle 40 % (condition vary with throttle angle)
	d. = (A) & ON malfunction (D)	
	Engine speed	≥ 1st gear ratio x NO + 50 rpm
	e. = (A) & ON malfunction (E)	
	Engine speed	≥ 2nd gear ratio x NO – 50 rpm < 2nd gear ratio x NO + 50 rpm
	f. = (A) & ON malfunction (F)	
	Engine speed	≥ 3rd gear ratio x NO – 50 rpm < 3rd gear ratio x NO + 50 rpm
	g. = (A) & ON malfunction (G)	
	Engine speed	≥ 3rd gear ratio x NO – 50 rpm < 3rd gear ratio x NO + 50 rpm
	h. = (A) & ON malfunction (H)	
	Engine speed	≥ 4th gear ratio x NO – 50 rpm < 4th gear ratio x NO + 50 rpm
	i. = (A) & ON malfunction (I)	
	Engine speed	≥ 3rd gear ratio x NO – 50 rpm < 3rd gear ratio x NO + 50 rpm
	j. = (A) & ON malfunction (J)	
	Engine speed	≥ 4th gear ratio x NO – 50 rpm < 4th gear ratio x NO + 50 rpm