

2003 MY for Pressure Control Solenoid "A" Performance (Shift Solenoid Valve SL1) Monitor (P0751)

2003 MY for Shift Solenoid "A" Performance (Shift Solenoid Valve S1) Monitor (P0751)

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MONITOR STRATEGY

Required sensors/Components	Main	Shift solenoid valve No.1
	Sub	None
Frequency of operation	Continuous	
Duration	5VZ-FE, 2JZ-GE, 3UZ-FE, 3RZ-FE	Less than 10 sec.
	1NZ-FE	OFF malfunction (A) 0.85 sec. (A) & OFF malfunction (B), (A) & ON malfunction (A), (A) & ON malfunction (B) 0.8 sec.
	2UZ-FE (SEQUOIA, TUNDRA)	(A) & OFF malfunction (A) 0.5 sec. (A) & ON malfunction (B) 0.8 sec.
	1MZ-FE	OFF malfunction (A) 1 sec. OFF malfunction (B) & ON malfunction (B), ON malfunction (A) 0.8 sec.
	1GR-FE	(A) & OFF malfunction (B), (A) & ON malfunction (A) Immediate (A) & OFF malfunction (A) 0.5 sec. (A) & ON malfunction (B) 0.8 sec.
	2UZ-FE (GX470, 4RUNNER, LAND CRUISER, LX470)	(A) & OFF malfunction (B), (A) & OFF malfunction (C) Immediate (A) & OFF malfunction (A), (A) & ON malfunction (A), (A) & ON malfunction (B), (A) & ON malfunction (C), (A) & ON malfunction (D) 0.4 sec. (A) & ON malfunction (E), (A) & ON malfunction (F) 0.5 sec.
	1ZZ-FE (CELICA)	OFF malfunction (A) 0.85 sec. OFF malfunction (B) & ON malfunction (A) & ON malfunction (B) 0.8 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
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 (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	80 % or more	-
	OFF malfunction (B)		
	Current ECM selected gear	2nd	
	Last ECM selected gear	1st	
	Throttle valve opening angle	10 % or more	-
	Closing change of throttle valve opening angle	-2 % or more	Less than 2 %
	THlast – THcurrent	-5 % or more	Less than 2 %
	OFF malfunction (C)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	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 %

3RZ-FE	OFF malfunction (F)	
	Engine idling	OFF
	Braking	OFF
	ECM selected gear	3rd
	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	4th
	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	ON
	Braking	ON
	ECM selected gear	2nd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (K)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	3rd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (L)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	4th
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	ON malfunction	
	ECM selected gear	4th
	Throttle valve opening angle	15 % or more Less than 50 %

Component T/M Outputs – Solenoid

5VZ-FE (TACOMA 2WD), 5VZ-FE (Prerunner)	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" (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 (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	50 % or more	–
	OFF malfunction (B)		
	ECM selected gear	1st to 2nd	
	Throttle valve opening angle	10 % or more	–
	Closing change of throttle valve opening angle	-2 % or more	Less than 2 %
	THlast – THcurrent	-5 % or more	Less than 5 %
	OFF malfunction (C)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	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	3rd	
	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 %

5VZ-FE (TACOMA 2WD), 5VZ-FE (Prerunner)	OFF malfunction (H)	
	Engine idling	OFF
	Braking	OFF
	ECM selected gear	4th
	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	ON
	Braking	ON
	ECM selected gear	2nd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (K)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	3rd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (L)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	4th
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	ON malfunction	
	ECM selected gear	4th
	Throttle valve opening angle	17 % or more Less than 38 %

Component T/M Outputs – Solenoid

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"	
	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 (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	50 % or more	–
	OFF malfunction (B)		
	ECM selected gear	1st to 2nd	
	Throttle valve opening angle	10 % or more	–
	Closing change of throttle valve opening angle	–2 % or more	Less than 2 %
	THlast – THcurrent	–5 % or more	Less than 5 %
	OFF malfunction (C)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	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	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %

5VZ-FE (TUNDRA)	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	4th	
	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	ON	
	Braking	ON	
	ECM selected gear	2nd	
	Throttle valve opening angle	< 5 % or $\geq$ 55 %	
	THcurrent – TH2ndstep	10 % or more	Less than –10 %
	Closing change of throttle valve opening angle	10 % or more	Less than –10 %
	OFF malfunction (K)		
	Engine idling	ON	
	Braking	ON	
	ECM selected gear	3rd	
	Throttle valve opening angle	< 5 % or $\geq$ 55 %	
	THcurrent – TH2ndstep	10 % or more	Less than –10 %
	Closing change of throttle valve opening angle	10 % or more	Less than –10 %
	OFF malfunction (L)		
	Engine idling	ON	
	Braking	ON	
	ECM selected gear	4th	
	Throttle valve opening angle	< 5 % or $\geq$ 55 %	
	THcurrent – TH2ndstep	10 % or more	Less than –10 %
	Closing change of throttle valve opening angle	10 % or more	Less than –10 %
	ON malfunction		
	ECM selected gear	4th	
	Throttle valve opening angle	17 % or more [4WD] 17 % or more [2WD]	Less than 40 % [4WD] Less than 38 % [2WD]

Component T/M Outputs – Solenoid

5VZ-FE (TACOMA 4WD)	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" (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 (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	50 % or more	–
	OFF malfunction (B)		
	ECM selected gear	1st to 2nd	
	Throttle valve opening angle	10 % or more	–
	Closing change of throttle valve opening angle	–2 % or more	Less than 2 %
	ECM selected gear	1st to 2nd	
	Throttle valve opening angle	10 % or more	–
	Closing change of throttle valve opening angle	–2 % or more	Less than 2 %
	THlast – THcurrent	–5 % or more	Less than 5 %
	OFF malfunction (C)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 50 %
	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	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %

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5VZ-FE (TACOMA 4WD)	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	4th
	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	ON
	Braking	ON
	ECM selected gear	2nd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (K)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	3rd
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	OFF malfunction (L)	
	Engine idling	ON
	Braking	ON
	ECM selected gear	4th
	Throttle valve opening angle	< 5 % or ≥ 55 %
	THcurrent – TH2ndstep	10 % or more Less than –10 %
	Closing change of throttle valve opening angle	10 % or more Less than –10 %
	ON malfunction	
	ECM selected gear	4th
	Throttle valve opening angle	17 % or more Less than 40 %

Component T/M Outputs – Solenoid

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" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "C" (S3) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	ETC 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 (30 mph)
	Throttle valve opening angle	8 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	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 or more (condition vary with engine speed)	—
	OFF malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (30 mph)
	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	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	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" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Shift solenoid "C" (S3) circuit	Not circuit malfunction	
	Shift solenoid "D" (S4) circuit	Not circuit malfunction	
	ETC 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 (30 mph)
	Throttle valve opening angle	8 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	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 (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (30 mph)
	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	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)	—

Component T/M Outputs – Solenoid

2UZ-FE (GX470, LAND CRUISER, LX470, 4RUNNER)	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	—
	Transfer range "Hi" [4WD]		
	Vehicle speed sensor "A" circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	ECM	Not circuit malfunction	
	OFF malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (30 mph)
	Throttle valve opening angle	8 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	OFF malfunction (B)		
	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 or more (condition vary with engine speed)	—
	OFF malfunction (C)		
	Current ECM selected gear	5th	
	Last ECM selected gear	4th	
	ON malfunction (A)		
	ECM selected gear	1st	
	Vehicle speed	2 km/h (1 mph) or more	Less than 40 km/h (30 mph)
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm or more (condition vary with engine speed)	—
	ON malfunction (B)		
	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 (C)		
	ECM selected gear	3rd	
	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)	—

2UZ-FE (GX470, LAND CRUISER, LX470, 4RUNNER)	ON malfunction (D)		
	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 or more (condition vary with engine speed)	–
	ON malfunction (E)		
	Current ECM selected gear	5th	
	Last ECM selected gear (During 4 to 5 shift)	4th	
	Vehicle speed	–	Less than 100 km/h (62 mph)
	ON malfunction (F)		
	ECM selected gear (After 4 to 5 shift)	5th	
	Vehicle speed	–	Less than 100 km/h (62 mph)
2UZ-FE (SEQUOIA, TUNDRA)	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	
	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 (A)		
	ECM selected gear	1st	
	Vehicle speed	3 km/h (2 mph) or more	Less than 40 km/h (30 mph)
	Throttle valve opening angle	15 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last 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)		
	Current ECM selected gear	4th	
	Last ECM selected gear	3rd	
	Throttle valve opening angle	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–

Component T/M Outputs – Solenoid

2UZ-FE (SEQUOIA, TUNDRA)	ON malfunction (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	–	10 km/h (6 mph) or less
	THcurrent – THlast	–	10 % or less
	Vehicle speed (current)	–	85 km/h (53 mph) or less
	Throttle opening angle (current)	–	Less than 25 %
	Engine speed (current)	3,200 rpm or more	–
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	
	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 (A)		
	ECM selected gear	1st	
	Vehicle speed	3 km/h (2 mph) or more	Less than 40 km/h (30 mph)
	Throttle valve opening angle	10 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last 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)		
	Current ECM selected gear	4th	
	Last ECM selected gear	3rd	
	Throttle valve opening angle	6.5 % or more engine speed at 2,000 rpm (condition vary with engine speed)	–
	ON malfunction (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	–	10 km/h (6 mph) or less
	THcurrent – THlast	–	10 % or less
	Vehicle speed (current)	–	85 km/h (53 mph) or less
	Throttle valve opening angle (current)	–	Less than 25 %
	Engine speed (current)	3,200 rpm or more	–

1NZ-FE	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) 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 (A)		
	ECM selected gear	1st	
	Vehicle speed	9 km/h (6 mph) or more	Less than 40 km/h (30 mph)
	Throttle valve opening angle	25 % or more and 7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last 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 (A)		
	Current ECM selected gear	4th	
	Last 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 (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	–	Less than 15 km/h (9 mph)
	THcurrent – THlast	–	Less than 30 %
	Vehicle speed (current)	–	Less than 85 km/h (53 mph)
	Throttle valve opening angle (current)	–	Less than 45 %
	Engine speed (current)	3,200 rpm or more	–

Component T/M Outputs – Solenoid

1MZ-FE	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	ECT sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) 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 (30 mph)
	Throttle valve opening angle	15 % or more and 10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last ECM selected gear	3rd	
	ON malfunction (A)		
	Current ECM selected gear	4th	
	Last ECM selected gear	3rd	
	ON malfunction (B)		
	ECM selected gear (current)	4th	
	V _{current} – V _{last}	–	Less than 15 km/h (9 mph)
	TH _{current} – TH _{last}	–	Less than 20 %
	Vehicle speed (current)	–	Less than 85 km/h (53 mph)
	Throttle valve opening angle (current)	–	Less than 35 %
	Engine speed (current)	3,200 rpm or more	–

1ZZ-FE (CELICA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	ECT sensor circuit	Not circuit malfunction	
	Shift solenoid "A" (S1) circuit	Not circuit malfunction	
	Shift solenoid "B" (S2) circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Vehicle 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 (30 mph)
	Throttle valve opening angle	15 % or more and 7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last 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 (A)		
	Current ECM selected gear	4th	
	Last 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 (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	–	Less than 15 km/h (9 mph)
	THcurrent – THlast	–	Less than 20 %
	Vehicle speed (current)	–	Less than 85 km/h (53 mph)
	Throttle valve opening angle (current)	–	Less than 35 %
	Engine speed (current)	3,200 rpm or more	–

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
3RZ-FE	OFF malfunction	
	There are 2 judgment steps/driving cycle 1st judgment step; when following conditions met, temporary flag becomes ON. a. (2 times) or b. (1 time) 2nd judgment step; when following conditions met, pending fault code becomes ON. (e. & g. & h.) or (c. & d. & f. & i.)	
	a. = (A) & OFF malfunction (A)	
	Engine speed (NE)	$< 0.7 \times NO + 1,700 \text{ rpm}$
	b. = (A) & OFF malfunction (B)	
	NElast – NEcurrent	$< 475 \text{ rpm}$ at throttle angle 40 % (condition vary with throttle angle)
	c. = (A) & OFF malfunction (C)	
	Engine speed	$< 1\text{st gear ratio} \times NO + 6,000 \text{ rpm}$
	d. = (A) & OFF malfunction (D)	
	Engine speed	$< 2\text{nd gear ratio} \times NO + 50 \text{ rpm}$ and $\geq 2\text{nd gear ratio} \times NO - 50 \text{ rpm}$
	e. = (A) & OFF malfunction (E)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ and $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	f. = (A) & OFF malfunction (F)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$ and $< 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$
	g. = (A) & OFF malfunction (G)	
	Engine speed	$< 4\text{th gear ratio} \times NO + 50 \text{ rpm}$ and $\geq 4\text{th gear ratio} \times NO - 50 \text{ rpm}$
	h. = (A) & OFF malfunction (H)	
	Engine speed	$< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$ and $\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$
	i. = (A) & OFF malfunction (I)	
	Engine speed	$\geq 4\text{th gear ratio} \times NO + 50 \text{ rpm}$ and $< 4\text{th gear ratio} \times NO - 50 \text{ rpm}$
	(A) & (OFF malfunction (J) & (K) & (L))	
	When following secondary parameter conditions met, 2nd judgment is stopped.	(See secondary parameters and condition)
	ON malfunction	
	Engine speed	$\geq 1.3 \times NO + 1,100 \text{ rpm}$

5VZ-FE	OFF malfunction	
	There are 2 judgment steps/driving cycle 1st judgment step; when following condition met, temporary flag becomes ON. a. (2 times) or b. (2 times) or (a. and b.) 2nd judgment step; when following condition met, pending fault code becomes ON. (e. & g. & h.) or (c. & d. & f. & i.)	
	a. = (A) & OFF malfunction (A)	
	Engine speed (NE)	$< 0.5 \times NO + 2,100 \text{ rpm}$
	b. = (A) & OFF malfunction (B)	
	NElast – NEcurrent	$< 300 \text{ rpm}$ at throttle angle 40 % (condition vary with throttle angle)
	c. = (A) & OFF malfunction (C)	
	Engine speed	$< 1\text{st gear ratio} \times NO + 50 \text{ rpm}$
	d. = (A) & OFF malfunction (D)	
	Engine speed	$< 2\text{nd gear ratio} \times NO - 50 \text{ rpm}$ and $\geq 2\text{nd gear ratio} \times NO + 50 \text{ rpm}$
	e. = (A) & OFF malfunction (E)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ and $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	f. = (A) & OFF malfunction (F)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ and $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	g. = (A) & OFF malfunction (G)	
	Engine speed	$< 4\text{th gear ratio} \times NO - 50 \text{ rpm}$ and $\geq 4\text{th gear ratio} \times NO + 50 \text{ rpm}$
	h. = (A) & OFF malfunction (H)	
	Engine speed	$< 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ and $\geq 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	i. = (A) & OFF malfunction (I)	
	Engine speed	$\geq 4\text{th gear ratio} \times NO - 50 \text{ rpm}$ and $< 4\text{th gear ratio} \times NO + 50 \text{ rpm}$
	(A) & (OFF malfunction (J))	
	When following secondary parameter conditions met, 2nd judgment is stopped.	(See secondary parameters and condition)
	(A) & (OFF malfunction (K))	
	When following secondary parameter conditions met, 2nd judgment is stopped.	(See secondary parameters and condition)
	(A) & (OFF malfunction (L))	
	When following secondary parameter conditions met, 2nd judgment is stopped.	(See secondary parameters and condition)
	ON malfunction	
	Engine speed	$\geq 1.1 \times NO + 1,700 \text{ rpm}$

Component T/M Outputs – Solenoid

2JZ-GE	[OFF malfunction]	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.20$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	Changed as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ ↓ $0.00 \leq \text{NC0/NO} \leq 0.20$
	c. = (A) & OFF malfunction (C)	
	Output record from ECM for 4th → 5th upshifting	Recorded
	[ON malfunction]	
	Following conditions met a. and b.	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$
3UZ-FE	[OFF malfunction]	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	Changed as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ ↓ $0.00 \leq \text{NC0/NO} \leq 0.20$
	c. = (A) & OFF malfunction (C)	
	Output record from ECM for 4th → 5th upshifting	Recorded
	[ON malfunction]	
	Following conditions met a. and b.	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$

2UZ-FE (GX470, LAND CRUISER, LX470, 4RUNNER)	[OFF malfunction]	
	Following conditions met a. and b. and c.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NT/NO)	$0.93 \leq NT/NO \leq 1.07$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NT/NO)	Changed as follows $0.93 \leq NT/NO \leq 1.07$ ↓ $0.65 \leq NT/NO \leq 0.79$
	c. = (A) & OFF malfunction (C)	
	Output record from ECM for 4th → 5th upshifting	Recorded
	[ON malfunction]	
	Following conditions met (a. and b.) or ((c. or d.) and (e. or f.))	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NT/NO)	$3.30 \leq NT/NO \leq 7.50$
	b. = (A) & ON malfunction (B)	
	Input speed/Output speed (NT/NO)	$3.30 \leq NT/NO \leq 7.50$
	c. = (A) & ON malfunction (C)	
	Input speed/Output speed (NT/NO)	$1.91 \leq NT/NO \leq 2.35$
	d. = (A) & ON malfunction (D)	
	Input speed/Output speed (NT/NO)	$3.30 \leq NT/NO \leq 7.50$
	e. = (A) & ON malfunction (E)	
	Input speed–Output speed x 4th gear ratio (NT – NO x 4th gear ratio)	1,000 rpm or more
	f. = (A) & ON malfunction (F)	
	Input speed–Output speed x 5th gear ratio (NT – NO x 5th gear ratio)	1,000 rpm or more

Component T/M Outputs – Solenoid

1MZ-FE	[OFF malfunction]	
	Following conditions met a. and b.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC2/NO)	$0.63 \leq \text{NC2/NO} \leq 0.77$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC2/NO)	Changed as follows $0.88 \leq \text{NC2/NO} \leq 1.02$ (Last) ↓ $0.63 \leq \text{NC2/NO} \leq 0.77$ (Current)
	[ON malfunction]	
	Following conditions met a. and b.	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC2/NO)	Not changed as follows $0.88 \leq \text{NC2/NO} \leq 1.02$ (Last) ↓ $0.63 \leq \text{NC2/NO} \leq 0.77$ (Current)
	b. = (A) & ON malfunction (B)	
	NEcurrent – NElast	1,100 rpm or more
1GR-FE	OFF malfunction	
	Following conditions met a. and b.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	Changed as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ (Last) ↓ $0.00 \leq \text{NC0/NO} \leq 0.22$ (Current)
	[ON malfunction]	
	Following conditions met a. and b.	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	Not changed as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ (Last) ↓ $0.00 \leq \text{NC0/NO} \leq 0.22$ (Current)
	b. = (A) & ON malfunction (B)	
	NEcurrent – NElast	500 rpm or more

2UZ-FE (SEQUOIA, TUNDRA)	OFF malfunction	
	Following conditions met a. and b.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	Change as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ (Last) ↓ $0.00 \leq \text{NC0/NO} \leq 0.22$ (Current)
	ON malfunction	
	Following conditions met a. and b.	
	a. = (A) & ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	Not changed as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ (Last) ↓ $0.00 \leq \text{NC0/NO} \leq 0.22$ (Current)
	b. = (A) & ON malfunction (B)	
	NEcurrent – NElast	500 rpm or more
1ZZ-FE (CELICA), 1ZZ-FE, 1NZ-FE	[OFF malfunction]	
	Following conditions met a. and b.	
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction (A)	
	Input speed/Output speed (NT/NO)	$0.64 \leq \text{NT/NO} < 0.78$
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NT/NO)	Change as follows $0.95 \leq \text{NT/NO} < 1.09$ (Last) ↓ $0.64 \leq \text{NT/NO} < 0.78$ (Current)
	[ON malfunction]	
	Following condition met c. and d.	
	c. = (A) & ON malfunction (A)	
	Input speed/Output speed (NT/NO)	Not changed as follows $0.95 \leq \text{NT/NO} < 1.09$ (Last) ↓ $0.64 \leq \text{NT/NO} < 0.78$ (Current)
	d. = (A) & ON malfunction (B)	
	NEcurrent – NElast	1,100 rpm or more