

2002 MY for Pressure Control Solenoid "A" Performance (Shift Solenoid Valve SL1) Monitor (P0750)

2002 MY for Shift Solenoid "A" Performance (Shift Solenoid Valve S1) Monitor (P0750)

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MONITOR STRATEGY

Required sensors/Components	Main	Shift solenoid valve No.1
	Sub	None
Frequency of operation	Continuous	
Duration	3RZ-FE, 5VZ-FE, 2JZ-GE, 3UZ-FE, 1ZZ-FE (COROLLA)	Less than 10 sec.
	1MZ-FE (RX300, HIGH LANDER), 1AZ-FE	1 sec.
	1MZ-FE (ES300)	0.8 sec.
	1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	OFF malfunction (A) 1 sec. OFF malfunction (B) & ON malfunction (B) 0.8 sec. ON malfunction (A) Continuous
	2AZ-FE (HIGH LANDER)	OFF malfunction & ON malfunction (A) 0.8 sec. ON malfunction (B) 1 sec.
	1MZ-FE (CAMRY)	(A) & OFF malfunction, (A) & ON malfunction (B) 0.85 sec. (A) & ON malfunction (A) 1 sec.
	2UZ-FE	(A) & OFF malfunction (B), (A) & ON malfunction (A), (A) & OFF malfunction (A) 0.5 sec. (A) & ON malfunction (B) 0.8 sec.
	2ZZ-GE	(A) & OFF malfunction, (A) & ON malfunction (A) 0.8 sec. (A) & ON malfunction (B) 1 sec.
	2AZ-FE (CAMRY, CAMRY SOLARA)	OFF malfunction & ON malfunction (A) 0.85 sec. ON malfunction (B) 1 sec.

Duration	1ZZ-FE (CELICA)	(A) & OFF malfunction (A) 0.85 sec. (A) & OFF malfunction (B), & ON malfunction (A), & ON malfunction (B) 0.8 sec.
	1NZ-FE	(A) & OFF malfunction (A) 0.85 sec. (A) & OFF malfunction (B), (A) & ON malfunction (A), (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
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	
	ETC 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)	–
	ON malfunction (A)		
	ECM selected gear	2nd	
	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)	–
	ON malfunction (B)		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	

Component T/M Outputs – Solenoid

1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	ETC 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	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (25 mph)
	Throttle valve opening angle	15 % or more and 10.5 % or more at engine speed 3,000 rpm (condition vary with engine speed)	–
	GN (Intake air amount per revolution)	0.35 g/rev. or more	–
	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	
	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 %

2AZ-FE (HIGH LANDER), 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 circuit	Not circuit malfunction	
	ETC 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)	—
	ON malfunction (A)		
	ECM selected gear	2nd	
	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)	—
	ON malfunction (B)		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	

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 circuit	Not circuit malfunction	
	ETC 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	
	OFF malfunction		
	ECM selected gear	1st	
	Vehicle speed	–	Less than 40 km/h (25 mph)
	Calculated load valve	19.5 % or more	–
	Throttle valve opening angle	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	ON malfunction (A)		
	ECM selected gear	2nd	
	Throttle valve opening angle When condition "ON malfunction (B)" is not detected: When condition "ON malfunction (B)" is detected:	4.5 % or more at engine speed 1,900 rpm (condition vary with engine speed) 5.0 % or more at output speed 850 rpm (condition vary with output speed)	–
	ON malfunction (B)		
	Throttle valve opening angle	5.0 % or more at output speed 850 rpm (condition vary with output 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 (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 %
	OFF malfunction (F)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	7 % or more	Less than 50 %

Component T/M Outputs – Solenoid

3RZ-FE	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	15 % or more	Less than 45 %

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 (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	
	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 %

Component T/M Outputs – Solenoid

5VZ-FE	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]

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	1st	
	Duration time from vehicle speed reach to 10 km/h (6 mph)	–	Less than 3.5 sec.
	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)	–
	OFF malfunction (B)		
	Current ECM selected gear	4th	
	Last ECM selected gear	3rd	
	Vehicle speed	3 km/h (2mph) 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)	–
	ON malfunction (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	10 km/h (6 mph) or more	–
	THcurrent – THlast	10 % or more	–
	Vehicle speed (current)	85 km/h (53 mph) or more	–
	Throttle valve opening angle (current)	–	Less than 25 %

Component T/M Outputs – Solenoid

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	1st	
	Vehicle speed	3 km/h (2mph) or more	Less than 40 km/h (25mph)
	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 (2mph) 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)	–
	ON malfunction (B)		
	ECM selected gear	4th	
	Vcurrent – Vlast	10 km/h (6 mph) or more	–
	THcurrent – THlast	10 % or more	–
	Vehicle speed (current)	85 km/h (53 mph) or more	–
	Throttle valve opening angle	–	Les than 20 %

3UZ-FE (SC430)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark advance from Max. retard 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	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 (25 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

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	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 (25 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)	—

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	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 (25 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

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)	–
	ON malfunction (A)		
	ECM selected gear	2nd	
	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)	–
	ON malfunction (B)		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	

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	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	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	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 %

Component T/M Outputs – Solenoid

2AZ-FE (CAMRY, CAMRY SOLARA)	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)	-
	ON malfunction (A)		
	ECM selected gear	2nd	
	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)	-
	ON malfunction (B)		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	
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	1st	
	Throttle valve opening angle	30 % or more	-
	OFF malfunction (B)		
	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 %

1ZZ-FE (COROLLA)	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 %
	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 %
	ON malfunction		
	IAT	-10 °C (14 °F) or more	Less than 70 °C (158 °F)
	ECM selected gear	4th	
	Throttle valve opening angle	12 % or more	Less than 35 %

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	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	
	Throttle valve opening angle	7.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	—
	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 opening angle (current)	—	Less than 45 %

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)	–
	ON malfunction (A)		
	ECM selected gear	2nd	
	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)	–
	ON malfunction (B)		
	ECM lock-up command	OFF	
	ECM selected gear	3rd or 4th	

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
1AZ-FE, 2ZZ-GE, 1MZ-FE (RX300, HIGH LANDER), 2AZ-FE (HIGH LANDER)	Following condition met a. or (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	
	Input speed/Intermediate speed (NT/NC)	$1.49 \leq \text{NT/NC} \leq 1.63$
	b. = (A) & ON malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} < 2.86$
	c. = (A) & ON malfunction (B)	
	Engine speed/Input shaft speed (NE/NT)	250 rpm or more
1MZ-FE (SIENNA, AVALON, CAMRY SOLARA)	[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)	
	NE _{current} – NE _{last}	1,100 rpm or more
1MZ-FE (ES300)	Following condition met a. or (b. and c.)	
	a. = (A) & OFF malfunction	
	Input speed/Intermediate speed (NT/NC)	$1.49 \leq \text{NT/NC} \leq 1.63$
	It is necessary 2 judgements/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	b. = (A) & ON malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} < 2.86$
	c. = (A) & ON malfunction (B)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} < 2.86$

1MZ-FE (CAMRY)	Following condition met a. or (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	
	Input speed/Intermediate speed (NT/NC)	$1.49 \leq \text{NT/NC} < 1.63$
	b. = (A) & ON malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} < 2.86$
	c. = (A) & ON malfunction (B)	
	Engine speed/Input shaft speed (NE/NT)	250 rpm or more
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)	$< 0.7 \times \text{NO} + 1,700 \text{ rpm}$
	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	$< 1\text{st gear ratio} \times \text{NO} + 6,000 \text{ rpm}$
	d. = (A) & OFF malfunction (D)	
	Engine speed	$< 2\text{nd gear ratio} \times \text{NO} + 50 \text{ rpm and}$ $\geq 2\text{nd gear ratio} \times \text{NO} - 50 \text{ rpm}$
	e. = (A) & OFF malfunction (E)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm and}$ $< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm}$
	f. = (A) & OFF malfunction (F)	
	Engine speed	$\geq 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm and}$ $< 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$
	g. = (A) & OFF malfunction (G)	
	Engine speed	$< 4\text{th gear ratio} \times \text{NO} + 50 \text{ rpm and}$ $\geq 4\text{th gear ratio} \times \text{NO} - 50 \text{ rpm}$
	h. = (A) & OFF malfunction (H)	
	Engine speed	$< 3\text{rd gear ratio} \times \text{NO} + 50 \text{ rpm and}$ $\geq 3\text{rd gear ratio} \times \text{NO} - 50 \text{ rpm}$
	i. = (A) & OFF malfunction (I)	
	Engine speed	$\geq 4\text{th gear ratio} \times \text{NO} + 50 \text{ rpm and}$ $< 4\text{th gear ratio} \times \text{NO} - 50 \text{ rpm}$
	(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	$\geq 1.3 \times \text{NO} + 1,100 \text{ rpm}$

Component T/M Outputs – Solenoid

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 conditions 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	$\geq 1.1 \times NO + 1,700 \text{ rpm}$

2UZ-FE (TUNDRA, SEQUOIA)	[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 (LX470, LAND CRUISER)	[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	950 rpm or more

Component T/M Outputs – Solenoid

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)	$3.14 \leq \text{NC0/NO} \leq 7.34$
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)	$3.14 \leq \text{NC0/NO} \leq 7.34$

1NZ-FE, 1ZZ-FE (CELICA)	[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)	Changed as follows $0.95 \leq \text{NT/NO} < 1.09$ (Last) ↓ $0.64 \leq \text{NT/NO} < 0.78$ (Current)
	[ON malfunction]	
	Following conditions met c. and d.	
	c. = (A) & ON malfunction (A)	
2AZ-FE (CAMRY, CAMRY SOLARA)	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	1,000 rpm or more
	Following condition met a. or (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	
	Input speed/Intermediate speed (NT/NC)	$1.49 \leq \text{NT/NC} < 1.63$
	b. = (A) & ON malfunction (A)	
	Input speed/Intermediate speed (NT/NC)	$2.72 \leq \text{NT/NC} < 2.86$
	c. = (A) & ON malfunction (B)	
	Engine speed/Input shaft speed (NE/NT)	200 rpm or more

Component T/M Outputs – Solenoid

1ZZ-FE (COROLLA)	OFF malfunction	
	There are 2 judgment steps/driving cycle 1st judgment step; when following conditions met, temporary flag becomes ON. a. or b. It is necessary 2 judgments/driving cycle 2nd judgment step; when following conditions met, pending fault code becomes ON. {e. and (not g.) and (not h.)} or {(not c.) and (not d.) and f. and i.}	
	a. = (A) & OFF malfunction (A)	
	Engine speed (NE)	$< 0.7 \times NO + 2,100 \text{ rpm}$
	b. = (A) & OFF malfunction (B)	
	NElast – NEcurrent	$< 512.5 \text{ rpm at throttle angle } 40 \%$ (condition vary with throttle angle)
	c. = (A) & OFF malfunction (C)	
	Engine speed	$\geq 1\text{st gear ratio} \times NO + 50 \text{ rpm}$
	d. = (A) & OFF malfunction (D)	
	Engine speed	$\geq 2\text{nd gear ratio} \times NO - 50 \text{ rpm}$ $< 2\text{nd gear ratio} \times NO + 50 \text{ rpm}$
	e. = (A) & OFF malfunction (E)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	f. = (A) & OFF malfunction (F)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	g. = (A) & OFF malfunction (G)	
	Engine speed	$\geq 4\text{th gear ratio} \times NO - 50 \text{ rpm}$ $< 4\text{th gear ratio} \times NO + 50 \text{ rpm}$
	h. = (A) & OFF malfunction (H)	
	Engine speed	$\geq 3\text{rd gear ratio} \times NO - 50 \text{ rpm}$ $< 3\text{rd gear ratio} \times NO + 50 \text{ rpm}$
	i. = (A) & OFF malfunction (I)	
	Engine speed	$\geq 4\text{th gear ratio} \times NO - 50 \text{ rpm}$ $< 4\text{th gear ratio} \times NO + 50 \text{ rpm}$
	ON malfunction	
	Engine speed	$\geq 1.8 \times NO + 1,200 \text{ rpm}$