2003 MY for Pressure Control Solenoid ”A” Performance (Shift Solenoid Valve SL1) Monitor (P0750)

2003 MY for Shift Solenoid ”A” Performance (Shift Solenoid Valve S1) Monitor (P0750)

To return to monitor description, see page Cm–2.

MONITOR STRATEGY

Required sensors/Components	Main	Shift solenoid valve No.1
	Sub	None
Frequency of operation	Continuous	
Duration	1AZ–FE	1 sec.
	2ZZ–GE (MATRIX), 2AZ–FE (HIGH LANDER)	OFF malfunction & ON malfunction (A) 0.8 sec. ON malfunction (B) 1 sec.
	1ZZ–FE (COROLLA) 1ZZ–FE (MATRIX 2WD)	Less than 10 sec.
	1ZZ–FE (MATRIX 4WD)	OFF malfunction (A) 0.85 sec. OFF malfunction (B), ON malfunction (A) & (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
1ZZ–FE (COROLLA)	**Condition (A)**		
	Intake air temperature	–10 ˚C (14 ˚F) or more	Less than 70 ˚C (158 ˚F)
	Engine coolant temperature	55 ˚C (131 ˚F) or more	Less than 105 ˚C (221 ˚F)
	Transmission range	”D”	
	Shift solenoid ”A” (S1) circuit	Not circuit malfunction	
	Shift solenoid ”B” (S2) circuit	Not circuit malfunction	
	Shift solenoid ”E” (SL) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	0˚ CA or more	
	OFF malfunction (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	30 % or more	–
	OFF malfunction (B)		
	Current ECM selected gear	2nd	
	Last ECM selected gear	1st	
	Throttle valve opening angle	7 % or more	–
	Closing change of throttle valve opening angle	–5 % or more	Less than 5 %
	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 60 %
	OFF malfunction (D)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 60 %
	OFF malfunction (E)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 60 %
	OFF malfunction (F)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	5 % or more	Less than 60 %

1ZZ–FE (COROLLA)	**OFF malfunction (G)**		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (H)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (I)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (J)		
	Engine idling	ON	
	Braking	ON	
	ECM selected gear	2nd	
	Throttle valve opening angle	< 5 % or ≧ 65 %	
	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	< 3 % or ≧ 65 %	
	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	< 3 % or ≧ 65 %	
	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	12 % or more	Less than 35 %

1ZZ–FE (MATRIX 2WD)	**Condition (A)**		
	Intake air temperature	–10 ˚C (14 ˚F) or more	Less than 70 ˚C (158 ˚F)
	Engine coolant temperature	55 ˚C (131 ˚F) or more	Less than 105 ˚C (221 ˚F)
	Transmission range	”D”	
	Shift solenoid ”A” (S1) circuit	Not circuit malfunction	
	Shift solenoid ”B” (S2) circuit	Not circuit malfunction	
	Shift solenoid ”E” (SL) circuit	Not circuit malfunction	
	Battery voltage	10 V or more	–
	Spark retard by KCS control	0˚ CA or more	
	OFF malfunction (A)		
	ECM selected gear	1st	
	Throttle valve opening angle	30 % or more	–
	OFF malfunction (B)		
	Current ECM selected gear	2nd	
	Last ECM selected gear	1st	
	Throttle valve opening angle	7 % or more	–
	Closing change of throttle valve opening angle	–5 % or more	Less than 5 %
	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 60 %
	OFF malfunction (D)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 60 %
	OFF malfunction (E)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	2nd	
	Throttle valve opening angle	7 % or more	Less than 60 %
	OFF malfunction (F)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (G)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	3rd	
	Throttle valve opening angle	5 % or more	Less than 60 %

1ZZ–FE (MATRIX 2WD)	**OFF malfunction (H)**		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (I)		
	Engine idling	OFF	
	Braking	OFF	
	ECM selected gear	4th	
	Throttle valve opening angle	5 % or more	Less than 60 %
	OFF malfunction (J)		
	Engine idling	ON	
	Braking	ON	
	ECM selected gear	2nd	
	Throttle valve opening angle	< 5 % or ≧ 65 %	
	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	< 3 % or ≧ 65 %	
	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	< 3 % or ≧ 65 %	
	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	12 % or more	Less than 35 %

1ZZ–FE (MATRIX 4WD)	**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 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 (30 mph)
	Throttle valve opening angle	7 % or more and 4.0 % 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	4.0 % 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	4.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	ON malfunction (B)		
	ECM selected gear	4th	
	Throttle valve opening angle	4.0 % or more at engine speed 1,900 rpm (condition vary with engine speed)	–
	Vcurrent – Vlast	–	Less than 15 km/h (10 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	–

2ZZ–GE (MATRIX)	**Condition (A)**		
	Engine coolant temperature	60 ˚C (37 ˚F) or more	–
	Transmission range	”D”	
	Transmission fluid temperature	–20 ˚C (–4 ˚F) or more	–
	Transmission fluid temp. sensor ”A” circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor ”A” circuit	Not circuit malfunction	
	Output shaft speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid ”A” (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid ”B” (SL2) circuit	Not circuit malfunction	
	Shift solenoid ”D” (S4) circuit	Not circuit malfunction	
	OFF malfunction		
	ECM selected gear	1st	
	Vehicle speed	10 km/h (6 mph) or more	Less than 40 km/h (30 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	
	ON malfunction (C)		
	Throttle valve opening angle	5.0 % or more at output speed 850 rpm (condition vary with output speed)	–

2AZ–FE, 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 ”A” circuit	Not circuit malfunction	
	ECT sensor circuit	Not circuit malfunction	
	Turbine speed sensor circuit	Not circuit malfunction	
	Intermediate shaft speed sensor ”A” circuit	Not circuit malfunction	
	Output speed sensor circuit	Not circuit malfunction	
	Pressure control solenoid ”A” (SL1) circuit	Not circuit malfunction	
	Pressure control solenoid ”B” (SL2) circuit	Not circuit malfunction	
	Shift solenoid ”D” (S4) circuit	Not circuit malfunction	
	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 (30 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	

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
1AZ–FE, 2ZZ–GE (MATRIX), 2AZ–FE (HIGH LANDER)	**Following condition met a. or (b. or c.)**	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	a. = (A) & OFF malfunction	
	Input speed/Intermediate shaft speed (NT/NC)	1.49 ≦ NT/NC < 1.63
	b. = (A) & ON malfunction (A)	
	Input speed/Intermediate shaft speed (NT/NC)	2.72 ≦ NT/NC < 2.86
	c. = (A) & ON malfunction (B)	
	NE – NT	250 rpm or more
1ZZ–FE (MATRIX 4WD)	**[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 ≦ NT/NO < 0.78
	b. = (A) & OFF malfunction (B)	
	Input speed/Output speed (NT/NO)	Change as follows 0.95 ≦ NT/NO < 1.09 (Last) ↓ 0.64 ≦ 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 ≦ NT/NO < 1.09 (Last) ↓ 0.64 ≦ NT/NO < 0.78 (Current)
	d. = (A) & ON malfunction (B)	
	NEcurrent – NElast	1,100 rpm or more

1ZZ–FE (COROLLA)	**OFF malfunction**	
	There are 2 judgment steps/driving cycle 1st judgment step; when following condition met, temporary flag becomes ON. a. or b. It is necessary 2 judgments/driving cycle 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)	< 2 x NO + 1,100 rpm
	b. = (A) & OFF malfunction (B)	
	NElast – NEcurrent	< 512.5 rpm at throttle angle 40 % (condition vary with throttle angle)
	c. = (A) & OFF malfunction (C)	
	Engine speed	< 1st gear ratio x NO + 50 rpm
	d. = (A) & OFF malfunction (D)	
	Engine speed	≧ 2nd gear ratio x NO + 50 rpm or < 2nd gear ratio x NO – 50 rpm
	e. = (A) & OFF malfunction (E)	
	Engine speed	< 3rd gear ratio x NO + 50 rpm and ≧ 3rd gear ratio x NO – 50 rpm
	f. = (A) & OFF malfunction (F)	
	Engine speed	< 3rd gear ratio x NO + 50 rpm and ≧ 3rd gear ratio x NO – 50 rpm
	g. = (A) & OFF malfunction (G)	
	Engine speed	≧ 4th gear ratio x NO + 50 rpm or < 4th gear ratio x NO – 50 rpm
	h. = (A) & OFF malfunction (H)	
	Engine speed	≧ 3rd gear ratio x NO + 50 rpm or < 3rd gear ratio x NO – 50 rpm
	i. = (A) & OFF malfunction (I)	
	Engine speed	< 4th gear ratio x NO + 50 rpm and ≧ 4th gear ratio x NO – 50 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	≧ 2 x NO + 1,100 rpm

1ZZ–FE (MATRIX 2WD)	**OFF malfunction**	
	There are 2 judgment steps/driving cycle 1st judgment step; when following condition met, temporary flag becomes ON. a. or b. It is necessary 2 judgments/driving cycle 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)	< 2 x NO + 1,300 rpm
	b. = (A) & OFF malfunction (B)	
	NElast – NEcurrent	< 512.5 rpm at throttle angle 40 % (condition vary with throttle angle)
	c. = (A) & OFF malfunction (C)	
	Engine speed	< 1st gear ratio x NO + 50 rpm
	d. = (A) & OFF malfunction (D)	
	Engine speed	≧ 2nd gear ratio x NO + 50 rpm or < 2nd gear ratio x NO – 50 rpm
	e. = (A) & OFF malfunction (E)	
	Engine speed	< 3rd gear ratio x NO + 50 rpm and ≧ 3rd gear ratio x NO – 50 rpm
	f. = (A) & OFF malfunction (F)	
	Engine speed	< 3rd gear ratio x NO + 50 rpm and ≧ 3rd gear ratio x NO – 50 rpm
	g. = (A) & OFF malfunction (G)	
	Engine speed	≧ 4th gear ratio x NO + 50 rpm or < 4th gear ratio x NO – 50 rpm
	h. = (A) & OFF malfunction (H)	
	Engine speed	≧ 3rd gear ratio x NO + 50 rpm or < 3rd gear ratio x NO – 50 rpm
	i. = (A) & OFF malfunction (I)	
	Engine speed	< 4th gear ratio x NO + 50 rpm and ≧ 4th gear ratio x NO – 50 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	≧ 2 x NO + 1,300 rpm