

1999 MY for Shift Solenoid "B" Performance (Shift Solenoid Valve S2) Monitor (P0755)

1999 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	Less than 10 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
5E-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"	
	Battery voltage	10 V or more	—
	Spark retard by KCS control	—	Less than 10° CA
	OFF malfunction		
	ECM selected gear	2nd	
	Throttle valve opening angle	15 % or more	Less than 35 %
	ON malfunction		
	ECM selected gear	4th with lock up	

1ZZ-FE	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"	
	Battery voltage	10 V or more	-
	Spark retard by KCS control	9° CA or more	-
	OFF malfunction		
	ECM selected gear	2nd	
	Throttle valve opening angle	13 % or more	Less than 35 %
	ON malfunction		
	ECM selected gear	4th with lock up	
5S-FE (CELICA)	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"	
	Spark retard by KCS control	-	Less than 10° CA
	OFF malfunction		
	ECM selected gear	2nd	
	Throttle valve opening angle	10 % or more	Less than 35 %
	ON malfunction		
	ECM selected gear	4th with lock up	
	5S-FE (CAMRY-SOLARA/Calif. & Fed.)	Condition (A)	
Intake air temperature		-10 °C (14 °F)	70 °C (158 °F)
Engine coolant temperature		60 °C (140 °F)	105 °C (221 °F)
Transmission range		"D"	
Spark retard by KCS control		-	Less than 10° CA
OFF malfunction			
ECM selected gear		2nd	
Throttle valve opening angle		10 %	30 %
ON malfunction			
ECM selected gear		4th with lock up	
3S-FE (RAV4/Calif. & Fed./2WD)		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"	
	Battery voltage	10 V or more	-
	Spark retard by KCS control	10° CA 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	

Component T/M Outputs – Solenoid

3S-FE (RAV4/Calif. & Fed./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"	
	Battery voltage	10 V or more	-
	Spark retard by KCS control	10° CA 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	
1MZ-FE (SIENNA)	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"	
	Battery voltage	10 V or more	-
	Spark retard by KCS control	10° CA 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	
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"	
	Spark retard by KCS control	-	Less than 10° CA
	Transfer range "Hi" [4WD]		
	Throttle valve opening angle	0 % or more	-
	Vehicle speed	5 km/h (3 mph) or more	-
	Battery voltage	10 V or more	-
	Transmission fluid temperature	-	Less than 130 °C (266 °F) (hysteresis 110 °C (230 °F))
	OFF malfunction		
	ECM selected gear	2nd	
	Throttle valve opening angle	12 % or more	Less than 35 %
	ON malfunction		
	ECM selected gear	4th with lock up	

5VZ-FE (TACOMA, 4RUNNER)	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"		
	Battery voltage	10 V or more	-	
	Spark retard by KCS control	-	Less than 8° CA	
	Transfer range "Hi" [4WD]			
	Throttle valve opening angle	0 % or more	-	
	Vehicle speed	5 km/h (3 mph) or more	-	
	Transmission fluid temperature	-	Less than 130 °C (266 °F) (hysteresis 110 °C (230 °F))	
	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		
5VZ-FE (Prerunner/2WD)	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"		
	Battery voltage	10 V or more	-	
	Spark retard by KCS control	-	Less than 8° CA	
	Transmission fluid temperature	-	Less than 130 °C (266 °F) (hysteresis 110 °C (230 °F))	
	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		
	1MZ-FE (CAMRY, CAMRY SOLARA, AVALON)	Condition (A)		
		Engine coolant temperature	60 °C (140 °F) or more	-
		Transmission range	"D"	
OFF malfunction (A)				
ECM selected gear		2nd		
OFF malfunction (B)				
ECM selected gear		3rd		
OFF malfunction (C)				
ECM selected gear		4th		
ON malfunction (A)				
ECM selected gear		1st		
Vehicle speed		-	Less than 40 km/h (25 mph)	
ON malfunction (B)				
ECM selected gear		3rd		
ON malfunction (C)				
ECM selected gear		4th		

Component T/M Outputs – Solenoid

2JZ-GE (GS300)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark 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	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)	—
	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 (SC300)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark retard by KCS control	10° CA or more	—
	OFF malfunction (A)		
	ECM selected gear	2nd	
	Vehicle speed	10 km/h (6 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	10 km/h (6 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	10 km/h (6 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	10 km/h (6 mph) or more	—
	Throttle valve opening angle	15 % or more and 6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	ON malfunction (B)		
	ECM selected gear	3rd	
	Vehicle speed	10 km/h (6 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	10 km/h (6 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

1UZ-FE (LS400, GS400, SC400)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Spark 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	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)	—
	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	

2UZ-FE (LAND CRUISER, LX470)	Condition (A)		
	Engine coolant temperature	40 °C (104 °F) or more	—
	Transmission range	"D"	
	Transfer range "Hi" [4WD]		
	Throttle valve opening angle	0 % or more	—
	Vehicle speed	5 km/h (3 mph) or more	—
	Transmission fluid temperature	—	Less than 130 °C (266 °F) (hysteresis 110 °C (230 °F))
	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	6.5 % or more at engine speed 2,000 rpm (condition vary with engine speed)	—
	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)	—

Component T/M Outputs – Solenoid

1MZ-FE (ES300)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Rationality check (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	3.5 % at engine speed 1,900 rpm (condition vary with engine speed)	–
	Rationality check (B)		
	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)	–
1MZ-FE (RX300)	Condition (A)		
	Engine coolant temperature	60 °C (140 °F) or more	–
	Transmission range	"D"	
	Transmission fluid temperature	–20 °C (–4 °F) or more	–
	Rationality check (A)		
	ECM selected gear	1st	
	Vehicle speed	–	Less than 40 km/h (25 mph)
	Throttle valve opening angle	15 % or more	–
	Rationality check (B)		
	ECM selected gear	3rd	
	Vehicle speed	–	Less than 40 km/h (25 mph)

TYPICAL MALFUNCTION THRESHOLDS

Engine family	Detection criteria	Threshold
5E-FE, 5S-FE, 3RZ-FE, 5VZ-FE, 1ZZ-FE, 3S-FE, 1MZ-FE (SIENNA)	Following condition met a. or b.	
	It is necessary 2 judgments/driving cycle 1st judgment; temporary flag ON 2nd judgment; pending fault code ON	
	OFF malfunction	
	Engine speed	$\leq$ 1st gear ratio x NO + 0 rpm
	ON malfunction	
	Engine speed	$\leq$ 3rd gear ratio x NO – 50 rpm < 3rd gear ratio x NO + 50 rpm

1MZ-FE (CAMRY, CAMRY SOLARA, AVALON)	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) and OFF malfunction (A)	
	Input speed/Output speed (NC2/NO)	$2.07 \leq \text{NC2/NO} \leq 2.37$
	b. = (A) and OFF malfunction (B)	
	Input speed/Output speed (NC2/NO)	$0.63 \leq \text{NC2/NO} \leq 0.77$
	c. = (A) and 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) and ON malfunction (A)	
	Input speed/Output speed (NC2/NO)	$0.00 \leq \text{NC2/NO} \leq 0.20$
	b. = (A) and ON malfunction (B)	
	Input speed/Output speed (NC2/NO)	$0.88 \leq \text{NC2/NO} \leq 1.02$
	c. = (A) and ON malfunction (C)	
	Input speed/Output speed (NC2/NO)	$0.88 \leq \text{NC2/NO} \leq 1.02$
2JZ-GE (GS300), 1UZ-FE (LS400, GS400, SC400)	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) and OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$
	b. = (A) and OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	$3.14 \leq \text{NC0/NO} \leq 7.34$
	c. = (A) and OFF malfunction (C)	
	Input speed/Output speed (NC0/NO)	Change as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ ↓ $0.00 \leq \text{NC0/NO} \leq 0.20$
	d. = (A) and OFF malfunction (D)	
	Output record from ECM for 4th → 5th upshifting	Recorded

Component T/M Outputs – Solenoid

2JZ-GE (GS300), 1UZ-FE (LS400, GS400, SC400)	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) and ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	Not change as follows $0.93 \leq \text{NC0/NO} \leq 1.07$ ↓ $0.00 \leq \text{NC0/NO} \leq 0.20$
	b. = (A) and ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$1.30 \leq \text{NC0/NO} \leq 1.55$
	c. = (A) and ON malfunction (C)	
	Output record from ECM for 4th → 5th upshifting	Recorded
2JZ-GE (SC300), 2UZ-FE (LAND CRUISER, LX470)	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) and OFF malfunction (A)	
	Input speed/Output speed (NC0/NO)	$2.63 \leq \text{NC0/NO} \leq 3.20$
	b. = (A) and OFF malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	c. = (A) and OFF malfunction (C)	
	Input speed/Output speed (NC0/NO)	$0.00 \leq \text{NC0/NO} \leq 0.22$
	ON malfunction	
	Following conditions met ON malfunction 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) and ON malfunction (A)	
	Input speed/Output speed (NC0/NO)	$1.40 \leq \text{NC0/NO} \leq 1.67$
	b. = (A) and ON malfunction (B)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$
	c. = (A) and ON malfunction (C)	
	Input speed/Output speed (NC0/NO)	$0.93 \leq \text{NC0/NO} \leq 1.07$
1MZ-FE (ES300, RX300)	Rationality check	
	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) and Rationality check (A)	
	Input speed/Output speed (NT/NC)	$0.93 \leq \text{NT/NC} \leq 1.07$
	b. = (A) and Rationality check (B)	
	Input speed/Output speed (NT/NC)	$1.49 \leq \text{NT/NC} \leq 1.63$