Typical malfunction thresholds

P0442
Coefficient of estimated leak area from tank pressure change during depressurized condition> 0.636
P0455
Tank pressure> – 0.50 kPa
P0456
Coefficient of tank pressure change during depressurized condition> 0.600
Derive the result from statistics> 0

Mode $06 Data

Test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EVAP Control System (P0442)	$44	$20	Calculated cross section of leak	*0.000047936 mm^2
	$44	$30		*0.000047936 mm^2
	$44	$60		*0.000047936 mm^2
Gross leak (P0455)	$45	$00	Tank pressure	(N-$8000) *0.001912 mmHg
	$45	$01		(N-$8000) *0.001912 mmHg
	$45	$02		(N-$8000) *0.001912 mmHg
Very small leak (P0456)	$A3	$00	Last score	(N-$80000) / 256
	$A3	$01	Total score	(N-$80000) / 256
	$A3	$02	Cross section of leak	*0,000047936

OBD System Description - Fuel System Monitor

S3JA011111019

System Description / Monitoring Procedure

As fuel system components age or otherwise change over the life of the vehicle, the adaptive fuel strategy learns deviations from stoichiometry while running in closed loop fuel. These learned corrections are stored in keep alive memory as long term fuel trim corrections. They may be stored continue to change beyond normal limits or if a malfunction occurs, the long term fuel trim values will reach a calibratable rich or lean limit where the adaptive fuel strategy is no longer allowed to compensate for additional fuel system changes. Long term fuel trim corrections at their limits, in conjunction with a calibratable deviation in short term fuel trim, indicate a rich or lean fuel system malfunction.

DTC Description / Detecting Condition / Confirmation Procedure

P0171, P0172

Refer to “DTC P0171 / P0172: Fuel System Too Lean / Rich (Bank-1)”.

P0174, P0175

Refer to “DTC P0174 / P0175: Fuel System Too Lean / Rich (Bank-2)”.

Fuel System Monitor

Operation

DTCs	P0171 (for bank 1), P0174 (for bank 2) P0172 (for bank 1), P0175 (for bank 2)
Monitor execution	Continuous
Monitoring Duration	**Phase 1: 20 s** **Phase 2: 10 s**

Mode $06 Data

Self diagnostic test item	Test value		Description	Scaling
	TID	CID		
O2S 1 circuit low volt (P0131)	$47	$00	Min voltage of O2	*10/256 mV
O2S 1 circuit high volt (P0132)	$48	$00	Max voltage of O2	*10/256 mV
	$48	$01	Max voltage of O2	*10/256 mV
Slow response (P0133)	$49	$00	Sensor deterioration	/16384
	$49	$01	Period of feed back	*40/256*2 msec
No activity detect (P0134)	$4A	$00	Sensor voltage	*10/256 mV
	$4A	$01	Sensor voltage	*10/256 mV
O2S 2 circuit volt (P0137/ P0138)	$4C	$00	Sensor voltage	*10/256 mV
Low voltage (P0137)	$4D	$00	Voltage	*10/256 mV
O2S 1 circuit low volt (P0151)	$53	$00	Minimum volt	*10/256 mV
O2S 1 circuit high volt (P0152)	$54	$00	Maximum volt	*10/256 mV
	$54	$01	Maximum volt	*10/256 mV
Slow response (P0153)	$55	$00	Sensor Deterioration	/16384
	$55	$01	Period of feed back	*40/256/2 msec
No activity detect (P0154)	$56	$00	Sensor Volt	*10/256 mV
	$56	$01	Sensor Volt	*10/256 mV
O2S 2 circuit volt (P0157 / P0158)	$58	$00	Sensor Volt	*10/256 mV
High voltage (P0157)	$59	$00	Voltage	*10/256 mV
O2S B1S1 circuit Power supply (P2231)	$4B	$00	Voltage	*10/256 mV
O2S B1S1 circuit Power supply (P2234)	$57	$00	Voltage	*10/256 mV
O2S B1S2 heater circuit Power supply (P2232)	$50	$00	Voltage	*10/256 mV
O2S B1S2 heater circuit Power supply (P2235)	$5D	$00	Voltage	*10/256 mV

OBD System Description - HO2S Heater Monitor

S3JA011111021

System Description / Monitoring Procedure

For both primary and secondary HO2S heaters, the system monitors proper current and loaded voltage. The HO2S heaters are monitored once per driving cycle during monitoring conditions.

DTC Description / Detecting Condition / Confirmation Procedure

P0135

Refer to “DTC P0135: HO2S (Bank-1 Sensor-1) Heater Circuit Malfunction”.

P0141

Refer to “DTC P0141: HO2S (Bank-1 Sensor-2) Heater Circuit Malfunction”.

P0155

Refer to “DTC P0155: HO2S (Bank-2 Sensor-1) Heater Circuit Malfunction”.

P0161

Refer to “DTC P0161: HO2S (Bank-2 Sensor-2) Heater Circuit Malfunction”.

Primary HO2S Heater Monitor

Operation

DTCs	P0135 (for bank 1), P0155 (for bank 2)
Monitor execution	Continuous
Monitoring Duration	0.20 s

Enable conditions

Parameter	Minimum	Maximum
Phase 1		
Battery voltage	9 V	16 V
Engine speed	600 rpm	
Heater control	On	
Phase 2		
Engine speed	600 rpm	
Heater control	On	

Typical malfunction thresholds

Phase 1: Heater current < 0.16 – 0.28 A (according to battery voltage (V))
Phase 2: Heater current> 10 A

Secondary HO2S Heater Monitor

Operation

DTCs	P0141 (for bank 1), P0161 (for bank 2)
Monitor execution	Continuous
Monitoring Duration	2 s (Phase 1) 0.08 s (Phase 2)

Enable conditions

Parameter	Minimum	Maximum
Phase 1		
Battery voltage	9 V	16 V
Engine speed	600 rpm	
Heater control	On	
Phase 2		
Engine speed	600 rpm	
Heater control	On	

Typical malfunction thresholds

Phase 1: Heater current < 0.16 – 0.28 A (according to battery voltage (V))
Phase 2: Heater current> 10 A

Mode $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
O2S B1S1 heater malfunction (P0135)	$4E	$00	Current of heater	*40/256
	$4E	$01		*40/256
O2S B2S1 heater malfunction (P0155)	$5A	$00		*40/256
	$5A	$01		*40/256
O2S B1S2 heater circuit malfunction (P0141)	$4F	$00		*40/256
	$4F	$01		*40/256
O2S B2S2 heater circuit malfunction (P0161)	$5B	$00		*40/256
	$5B	$01		*40/256

OBD System Description - EGR System Monitor

S3JA011111022

P0402: MAP difference between EGR on & off> 14.7 kPa

EGR System Circuit Monitor

Operation

DTCs	P0403

Enable conditions

Parameter	Minimum	Maximum
EGR valve control	Operated	

Typical malfunction thresholds

Monitor signal> 127 count

Mode $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EGR (P0402 / P0401)	$51	$00	Differential Pressure	*5/32/256 mmHg
EGR (P0402)	$51	$00	Differential Pressure	*5/32/256 mmHg

OBD System Description - Thermostat Monitor

S3JA011111023

System Description / Monitoring Procedure

The engine block temperature is estimated to modelize accumulated combustion heat value since engine start (based on mass intake air flow) and radiation heat value (radiation from engine, radiation when fuel shut-off, etc.). The heat exchange value between engine and engine coolant is estimated, and the engine coolant temperature is estimated. When estimated temperature reaches the specified temperature and the measured temperature is lower than criteria, the malfunction is detected.

DTC Description / Detecting Condition / Confirmation Procedure

P0128

Refer to “DTC P0128: Coolant Thermostat (Coolant Temp. below Thermostat Regulating Temp.)”.

Thermostat Monitor

Operation

DTCs	P0128
Monitor execution	Once per driving cycle
Monitoring Duration	900 s

Enable conditions

Parameter	Minimum	Maximum
Engine coolant temp. at engine start	–10 (14) °C (°F)	45 (113) °C (°F)
Difference of ECT and IAT at engine start		10 (50) °C (°F)
Difference of ECT and ECT at engine start		40 (104) °C (°F)
Estimated ECT	60 – 70 (140 – 158)°C (°F) (according to engine coolant temp.)	
Time for engine start		900 s
ECT sensor	Normal condition or not monitored	
MAF sensor range check	Normal condition or not monitored	
IAT sensor range check	Normal condition or not monitored	

Typical malfunction thresholds

Engine coolant temp. < 45 – 65 (113 – 149) °C (°F) (according to engine coolant temp.)

OBD System Description - Comprehensive Component (Engine Input) Monitor

S3JA011111024