MODE $06 Data

Test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EVAP Control System (P0440 / P0455)	$24	$00	Differential pressure	*16.67/256/256 kPa
	$24	$10	Differential pressure	*16.67/256/256 kPa
	$24	$20	Differential rising pressure	(N-128)*16.67/256/256 kPa
	$24	$30	Differential pressure	(N-128)*16.67/256/256 kPa
	$24	$31	Differential pressure	(N-128)*16.67/256/256 kPa
	$24	$40	Differential pressure	(N-128)*16.67/256/256 kPa
	$24	$41	Differential pressure	(N-128)*16.67/256/256 kPa

OBD System Description - Fuel System Monitor

print=OFF, S1SQ011111012 (03/01)

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”.

Fuel System Monitor

Operation

DTCs	P0171, P0172
Monitor execution	Continuous
Sensors / components OK	IAT, BARO. press
Monitoring Duration	64 rev.

Enable condition

Parameter	Minimum	Maximum
Intake air temp.	–10 (14) °C (°F)	
Barometric pressure	560 mmHg	
Fuel control status	Closed loop mode	

Typical malfunction thresholds

P0171:	Long + short term > 43% and (short term > 20% or long term > 15%)
P0172:	Long + short term < –43% and (short term < –12% or long term < –12%)

OBD System Description - Oxygen Sensor Monitor

print=OFF, S1SQ011111013 (03/01)

System Description / Monitoring Procedure

Primary HO2S

For a primary HO2S, the system monitors maximum and minimum voltage, lean-to-rich and rich-to-lean response rates, and switching cycles during monitoring conditions once per driving cycle. The sensor is also monitored for activity continuously.

Secondary HO2S

A secondary HO2S is used for catalyst monitoring and dual oxygen sensor control for fuel control system. The output voltage of the secondary HO2S is maintained to be close to target voltage by dual oxygen sensor control. With non-aged catalyst system, amplitude of the voltage changing is very narrow and slow. But along with aging of the catalyst, the amplitude is going to be wider and quicker. Then the system calculates average of the voltage during monitoring conditions once per driving cycle, and compares the average with malfunction criteria.

DTC Description / Detecting Condition / Confirmation Procedure

P0131, P0132

Monitoring Duration	20 s

Enable condition

Parameter	Minimum	Maximum
Heater operation time (P0131 Phase 1)	24 s	
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Fuel control status	Idle with closed loop mode	
Preconditioning drive at > 32 km/h	20 s	
Engine coolant temp.	16 (61) °C (°F)	

Typical malfunction thresholds

P0131
Phase 1
Pull-up voltage > 4.5 V
Phase 2
Max. voltage average < 0.60 V Min. voltage average < 0.30 V
P0132
Max. voltage average > 0.74 V Min. voltage average > 0.34 V

Secondary HO2S Circuit Monitor

Operation

DTCs	P0136
Monitor execution	Once per driving cycle
Sensors / components OK	ECT, Primary / Secondary HO2S heater
Monitoring Duration	**Phase 1: 2 s** **Phase 2: 7 min**

Enable condition

Parameter	Minimum	Maximum
Heater operation time (Phase 1)	24 s	
Intake air temp.	–10 (14) °C (°F)	
Barometric pressure	560 mmHg	
Fuel system status	Closed loop mode	
CTP switch	OFF	

Typical malfunction thresholds

Phase 1
Pull-up voltage > 4.5 V
Phase 2
Voltage average < 0.12 V or > 0.9 V Max. voltage average < 0.20 V Min. voltage average > 0.40 V

MODE $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
O2S 1 circuit low volt (P0131)	$26	$00	Minimum terminal voltage	*5/256/256 V
	$26	$10	Minimum sensor voltage	*5/1024/256 V
	$26	$11	Maximum sensor voltage	*5/1024/256 V
O2S 1 circuit high volt (P0132)	$27	$00	Minimum terminal voltage	*5/256/256 V
	$27	$01	Minimum sensor voltage	*5/1024/256 V
	$27	$02	Maximum sensor voltage	*5/1024/256 V
Slow response (P0133)	$28	$00	Rich to lean sensor switch time	*0.01/256 s
	$28	$01	Lean to rich sensor switch time	*0.01/256 s
	$28	$02	Time between sensor transitions	*0.025/256 s

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
No activity detect (P0134)	$29	$00	Maximum sensor voltage	*5/1024/256 V
	$29	$01	Unexpected transition time	*0.5/256 s
O2S 2 circuit volt (P0136)	$2B	$00	Minimum terminal voltage	*5/256/256 V
	$2B	$10	Mean sensor voltage	*5/256/256 V
	$2B	$10	Mean sensor voltage	*5/256/256 V
	$2B	$11	Minimum sensor voltage	*5/1024/256 V
	$2B	$12	Maximum sensor voltage	*5/1024/256 V

OBD System Description - HO2S Heater Monitor

print=OFF, S1SQ011111014 (03(01)

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-1 Heater Circuit Malfunction”.

P0141

Refer to “DTC P0141: HO2S-2 Heater Circuit Malfunction”.

Primary HO2S Heater Monitor

Operation

DTCs	P0135
Monitor execution	Continuous
Monitoring Duration	3 s

Enable condition

Parameter	Minimum	Maximum
Heater control	On	

Typical malfunction thresholds

Heater current < 0.15 A or > 4.03 A Heater voltage < 10 V or > 13.8 V

Secondary HO2S Heater Monitor

Operation

DTCs	P0141
Monitor execution	Continuous
Monitoring Duration	3 s

Enable condition

Parameter	Minimum	Maximum
Heater control	On	

Typical malfunction thresholds

Heater current < 0.15 A or > 4.03 A Heater voltage < 10 V or > 13.8 V

MODE $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
O2S 1 heater circuit malfunction (P0135)	$2D	$00	Duration of unexpected current	*0.025/256 s
	$2D	$01	Duration of unexpected voltage	*0.025/256 s
O2S 2 heater circuit malfunction (P0141)	$2E	$00	Duration of unexpected current	*0.025/256 s
	$2E	$01	Duration of unexpected voltage	*0.025/256 s

OBD System Description - EGR System Monitor

print=OFF, S1SQ011111015 (03(01)

System Description / Monitoring Procedure

To monitor electric controlled EGR system, the system measures pressure change caused by switching of the EGR valve during deceleration condition and also measures the voltage of EGR valve stepping motor electrical circuit continuously.

EGR System Monitoring System

I3JA01112004-01

DTC Description / Detecting Condition / Confirmation Procedure

P0400

Refer to "DTC P0400: Exhaust Gas Recirculation (EGR) Flow Malfunction".

P0403

Refer to "DTC P0403: Exhaust Gas Recirculation (EGR) Circuit Malfunction".

EGR System Monitor

Operation

DTCs	P0400
Monitor execution	Once per driving cycle
Sensors / components OK	MDP, TP, ECT, Back-up power
Monitoring Duration	3 s

Enable condition

Parameter	Minimum	Maximum
Engine coolant temp.	55 (131) °C (°F)	110 (230) °C (°F)
Intake air temp.	–8 (17.6) °C (°F)	
Barometric pressure	560 mmHg	
Engine speed	1780 rpm	4000 rpm
Vehicle speed	50 km/h	
Engine speed change		172 rpm / s
EGR operation time	30 s	
Time from switch change (A/C, PPS, P/N position switch)	6.3 s	
Fuel control status	Fuel shut-off mode	

Typical malfunction thresholds

MDP difference between EGR ON & OFF < 41.7 – 100.2 mmHg (G16) (according to engine speed) MDP difference between EGR ON & OFF < 28.8 – 93.7 mmHg (J20) (according to engine speed)

EGR System Circuit Monitor

Operation

DTCs	P0403
Monitor execution	Continuous
Monitoring Duration	3 s

Enable condition

Parameter	Minimum	Maximum
Valve control	Low	

Typical malfunction thresholds

Monitor signal: High

MODE $06 Data

Self diagnostic test item (related DTC)	Test value		Description	Scaling
	TID	CID		
EGR (P0400)	$30	$00	Differential Pressure	*31.68/256/256 kPa