Parameter	Minimum	Maximum
EVAP purge density	50% (according to atmosphere pressure)	
Disablement period for fuel slosh	30 – 100% (according to fuel level)	
Fuel level	0 – 85% (according to fuel level)	85%
Fuel vapor temp. change		3 (5.4) °C (°F) / during monitor
Barometric pressure change		0.48 kPa / during monitor
Fuel system status	Closed loop mode	
EVAP purge density term	Carried out	
Common prohibition mode	Off	
Misfire monitor	Normal	
Canister purge circuit continuity	Normal	
Fuel system monitor	Normal	

Common prohibition mode

Intake air temp. at engine start	< –8 °C
Intake air temp.	< –8 °C
Intake air temp. sensor	Out of order
Engine coolant temp. at start	< –8 °C
Engine coolant temp. sensor	Out of order
Barometric pressure	< 74.5kPa
Barometric sensor	Out of order
ECM check sum	Error

Typical malfunction thresholds

P0441
Calculated load value change < 2.34% IAC change < 10 L/min
P0442
Tank pressure change during depressurized condition: 1.9 – 2.8 kPa (according to fuel vapor temperature and fuel level)
P0496
Min tank pressure < –5.47 kPa
P0455
Tank pressure > –2.67 kPa Max tank pressure change < 0.391 kPa
P0456
Tank pressure change during depressurized condition: 1.5 – 3.6 kPa (according to fuel vapor temperature and fuel level) Derive the result from statistics > 0

MODE $06 Data

Self diagnostic test item	Test value		Description	Scaling
	TID	CID		
EVAP Control System (P0442 / P0455 / P0496)	$24	$00	Differential rising pressure	(N-128)*16.67/256/256 kPa
	$24	$10	Differential pressure	(N-128)*16.67/256/256 kPa
EVAP Control system (P0441)	$25	$00	Purge vapor density	*100/128/14.7%
	$25	$10	Deviation	/128/256
	$25	$11	Deviation	*100/128/256%
	$25	$12	Deviation	/256 L/min
	$25	$20	Differential rising pressure	(N-128)*16.67/256/256 kPa
	$25	$30	Differential pressure	(N-128)*16.67/256/256 kPa
Gross leak (P0455)	$84	$00	Differential pressure	*16.67/256/256 kPa
	$84	$10	Tank pressure	(N-128)*16.67/256/256 kPa
	$84	$11	Tank pressure	(N-128)*16.67/256/256 kPa

Self diagnostic test item	Test value		Description	Scaling
	TID	CID		
Very small leak (P0456)	$85	$00	Last score	(N-128)/256 kPa
	$85	$01	Total score	(N-128)/256 kPa
	$85	$02	Differential pressure	(N-128)*16.67/256/256 kPa
	$85	$10	Last score	(N-128)/256 kPa
	$85	$11	Total score	(N-128)/256 kPa
	$85	$12	Differential pressure	(N-128)*16.67/256/256 kPa
	$85	$20	Last score	(N-128)/256 kPa
	$85	$21	Total score	(N-128)/256 kPa
	$85	$22	Differential pressure	(N-128)*16.67/256/256 kPa
Purge valve open (P0496)	$86	$00	Differential pressure	(N-128)*16.67/256/256 kPa

OBD System Description - Fuel System Monitor

print=OFF, S3SQ011101012 (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: System Too Lean / Rich”.

Fuel System Monitor

Operation

DTCs	P0171, P0172
Monitor execution	Continuous
Sensors / components OK	MAP, TP, ECT, Back-up power, Primary / Secondary HO2S, Primary / Secondary HO2S heater
Monitoring duration	43 rev.

Enable conditions

Parameter	Minimum	Maximum
Engine coolant temp. at engine start		95 (203) °C (°F)
Intake air temp. at engine start		60 (140) °C (°F)
Engine coolant temp.		110 (230) °C (°F)
Long term duration time	43 rev.	
Time from long term zone change	43 rev.	
EVAP purge density term	Off	
Common prohibition mode	Off	
Misfire monitor	Normal	
Fuel system monitor	Normal	

Common prohibition mode

Intake air temp. at engine start	< –8 °C
Intake air temp.	< –8 °C
Intake air temp. sensor	Out of order
Engine coolant temp. at start	< –8 °C
Engine coolant temp. sensor	Out of order
Barometric pressure	< 74.5kPa
Barometric sensor	Out of order
ECM check sum	Error

Enable conditions

Parameter	Minimum	Maximum
F/C duration time	2.5 s	
Engine coolant temp.		110 (230) °C (°F)
Engine mode	Running	
Idle switch	Off	
Common prohibition mode	Off	
Misfire monitor	Normal	
EGR system monitor	Normal	
Fuel system	Normal	

Common prohibition mode

Intake air temp. at engine start	< –8 °C
Intake air temp.	< –8 °C
Intake air temp. sensor	Out of order
Engine coolant temp. at start	< –8 °C
Engine coolant temp. sensor	Out of order
Barometric pressure	< 74.5kPa
Barometric sensor	Out of order
ECM check sum	Error

Typical malfunction thresholds

Voltage average < 0.12 V
Max. voltage < 0.2 V

MODE $06 Data

Self diagnostic test item	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
No activity detect (P0134)	$29	$00	Maximum sensor voltage	*5/1024/256 V
	$29	$01	Unexpected transition time	*0.5/256 s
O2S circuit open (P0137)	$2A	$00	Minimum terminal voltage	*5/256/256 V
O2S 2 circuit volt (P0138)	$2B	$00	Mean sensor voltage	*5/256/256 V
	$2B	$01	Minimum sensor voltage	*5/1024/256 V
No activity / low voltage (P0140)	$2C	$00	Mean sensor voltage	*5/256/256 V
	$2C	$01	Maximum sensor voltage	*5/1024/256 V

OBD System Description - HO2S Heater Monitor

print=OFF, S3SQ011101014 (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

P0031, P0032

Refer to “DTC P0031 / P0032: O2S Heater Control Circuit Low / High (Sensor 1)”.

P0037, P0038

Refer to “DTC P0037 / P0038: O2S Heater Control Circuit Low / High (Sensor 2)”.

Monitor execution	Continuous
Monitoring duration	3 s

Enable conditions

Parameter	Minimum	Maximum
Valve control	Low	

Typical malfunction thresholds

Monitor signal: High

MODE $06 Data

Self diagnostic test item	Test value		Description	Scaling
	TID	CID		
EGR (P0401)	$30	$00	Differential pressure	*31.68/256/256 kPa
EGR (P0402)	$90	$00	Differential pressure	*31.68/256/256 kPa

OBD System Description - Thermostat Monitor

print=OFF, S3SQ011101016 (03(01)

System Description / Monitoring Procedure

The system accumulates the intake air quantity to simulate the engine operating condition as the warm up counter. The thermostat is considered malfunctioning if the coolant temperature does not reach 75 °C at which the thermostat is at the regulating temperature (82 °C) within 11 °C. The time interval required for monitoring is based on the accumulated intake air quantity.

1. Time interval required for monitoring: Approximately 15 minutes maximum
2. Monitoring condition: engine start ECT = –8 to 80 °C

DTC Description / Detecting Condition / Confirmation Procedure

P0128

Refer to “DTC P0128: Coolant Thermostat (Coolant Temperature below Thermostat Regulating Temperature) (with ORVR System)”.

Thermostat Monitor

Operation

DTCs	P0128
Monitor execution	Once per driving cycle
Monitoring duration	Within 15 min

Enable conditions

Parameter	Minimum	Maximum
Engine coolant temp. at engine start	–8 (18) °C (°F)	80 (176) °C (°F)
Engine warm up counter	2048 count	
Low engine load counter		500 count
High engine load counter		70 count
Engine mode	Running	

Typical malfunction thresholds

Engine coolant temp. < 75 (167) °C (°F)

OBD System Description - Comprehensive Component (Engine Input) Monitor

print=OFF, S3SQ011101017 (03(01)

Monitoring Procedure

Input signals of MAF (P0102 / P0103), MAP (P0107 / P0108), IAT (P0112 / P0113), ECT (P0117 / P0118), TP (P0122 / P0123), Knock sensor (P0327 / P0328), Fuel tank pressure sensor (P0452 / P0453), Fuel vapor temp. sensor(P2026 / P2027), Fuel level sensor (P0463) and Barometric pressure sensor (P2227 / P2228 / P2229) are checked for open, short of circuit by monitoring input voltage.

DTC Description / Detecting Condition / Confirmation Procedure

P0101