EVAP System Monitoring Procedure

I1JA01110037-01

DTC Description / Detecting Condition / Confirmation Procedure

P0440, P0455

Refer to “DTC P0440 / P0455: Evaporative Emission Control System Malfunction / Leak Detected”.

EVAP Control System Monitor

Operation

DTCs	P0440, P0455 (gross leak)
Monitor execution	Once per driving cycle
Sensors / components OK	Engine speed, MAF, TP, ECT, Fuel tank pressure, Fuel level, IAC control system, MDP, Back-up Power, Primary / Secondary HO2S, Primary / Secondary HO2S Heater, VSS
Monitoring duration	Min. 18 s

Enable condition

Parameter	Minimum	Maximum
Engine coolant temp.	70 (158) °C (°F)	110 (230) °C (°F)
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Fuel level		85%
Engine speed	1000 rpm	3500 rpm
Vehicle speed	15 km/h	
MDP	160 mmHg	
Fuel system status	Closed loop mode	
Calculated load value	12.5%	
Purge accumulation time	300 s	
Disablement period for fuel slosh	20 s	

Typical malfunction thresholds

P0440
Tank pressure change during depressurized condition > 4.88 – 7.81 mmHg (according to fuel level)
P0455
Max tank pressure change < 2.0 mmHg Tank pressure: –3.9 – 3.9 mmHg

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	$40	Differential pressure	(N-128)*16.67/256/256 kPa
	$24	$41	Tank pressure	(N-128)*16.67/256/256 kPa

OBD System Description - Fuel System Monitor

SWSE011101011 (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.

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 level	15%	
Fuel system status	Closed loop mode	
CTP switch	OFF	

Typical malfunction thresholds

Phase 1
Pull-up voltage > 4.5 V
Phase 2
Voltage average < 0.15 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
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

SWSE011101013 (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

P0400

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

EGR System Monitor

Operation

DTCs	P0400
Monitor execution	Once per driving cycle
Sensors / components OK	MDP, TP, ECT, Back-up power
Monitoring duration	Method A: 2.25 s Method B: 2 s

Enable condition

Parameter	Minimum	Maximum
Method A		
Engine coolant temp.	70 (158) °C (°F)	110 (230) °C (°F)
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Engine speed	2300 rpm (M/T) 1500 rpm (A/T)	3000 rpm
Calculated load value	18.8% (M/T) 21.1% (A/T)	31.3%
Vehicle speed	30 km/h	
TP	11 °	
TP change		0.37 ° / s
Engine speed change		50 rpm / s
EGR operation time	30 s	
Time from switch change (A/C, PPS, P/N position switch)	3 s	
Method B		
Engine coolant temp.	70 (158) °C (°F)	110 (230) °C (°F)
Intake air temp.	–10 (14) °C (°F)	70 (158) °C (°F)
Barometric pressure	560 mmHg	
Engine speed		4000 rpm
Vehicle speed	50 km/h	
Engine speed change		150 rpm / s
EGR operation time	30 s	
Time from switch change (A/C, PPS, P/N position switch)	3 s	
Fuel system status	Fuel shut-off mode	

Typical malfunction thresholds

Method A
MDP difference between EGR ON & OFF < 3.7 – 10.2 mmHg (insufficient EGR flow) (according to engine speed) MDP difference between EGR ON & OFF < 52.0 – 142.9 mmHg (excessive EGR flow) (according to engine speed)
Method B
MDP difference between EGR ON & OFF < 35.3 – 100.2 mmHg (according to engine speed)

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
	$30	$00	Differential pressure	*31.68/256/256 kPa
	$30	$01	Differential pressure	*31.68/256/256 kPa

OBD System Description - Comprehensive Component (Engine Input) Monitor

SWSE011101015 (03(01)