DTC	P0121	THROTTLE/PEDAL POSITION SENSOR/SWITCH ”A” CIRCUIT RANGE/PERFORMANCE PROBLEM

HINT:
This is the purpose of the ”throttle position sensor”.

CIRCUIT DESCRIPTION

Refer to DTC P0120 on page 05−105.

DTC No.	DTC Detection Condition	Trouble Area
P0121	Condition (a) continues for 2.0 seconds: (a) Difference between VTA1*1/VTA*2 and VTA2 deviates from threshold	Throttle position sensor

*1: Except PZEV
*2: PZEV

MONITOR DESCRIPTION

The ECM uses the throttle position sensor to monitor the throttle valve opening angle.
This sensor includes 2 signals: VTA1*1/VTA*2 and VTA2. VTA1*1/VTA*2 is used to detect the throttle opening angle and VTA2 is used to detect malfunctions in VTA1*1/VTA*2. There are several checks that the ECM performs confirm proper operation of the throttle position sensor and VTA1*1/VTA*2.
There is a specific voltage difference expected between VTA1*1/VTA*2 and VTA2 for each throttle opening angle.
If the voltage output difference of the VTA1*1/VTA*2 and VTA2 deviates from the normal operating range, the ECM interprets this as a malfunction of the throttle position sensor. The ECM will turn on the MIL and a DTC is set.
*1: Except PZEV
*2: PZEV

FAIL SAFE

If the Electronic Throttle Control System (ETCS) has a malfunction, the ECM cuts off current to the throttle control motor. The throttle control valve returns to a predetermined opening angle (approximately 16°) by the force of the return spring. The ECM then adjusts the engine output by controlling the fuel injection (intermittent fuel−cut) and ignition timing in accordance with the accelerator pedal opening angle to enable the vehicle to continue at a minimal speed.
If the accelerator pedal is depressed firmly and slowly, the vehicle can be driven slowly.
If a ”pass” condition is detected and then the ignition switch is turned OFF, the fail−safe operation will stop and the system will return to normal condition.

MONITOR STRATEGY

Related DTCs	P0121: Throttle Position Sensor Rationality
Required sensors/components (Main)	Throttle position sensor
Required sensors/components (Related)	−
Frequency of operation	Continuous
Duration	Within 2 seconds
MIL operation	Immediate
Sequence operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever these DTCs are not present	See page 05−16
Either of the following conditions is met	Condition 1 or 2
1. Ignition switch	ON
2. Electronic throttle motor power	ON
TP sensor open/short malfunction (P0120, P0122, P0123, P0220, P0222, P0223, P2135)	Not detected

TYPICAL MALFUNCTION THRESHOLDS

Difference in voltage between VTA1 (opening angle, sensor 1) and VTA2 × 0.8 (opening angle, sensor 2)	Less than 0.8 V or more than 1.6V

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand−held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air−fuel ratio was lean or rich, and other data from the time the malfunction occurred.

REPLACE THROTTLE BODY ASSY (See page 10−18)