

<b>DTC</b>	<b>P0121</b>	<b>Throttle Pedal Position Sensor/Switch "A" Circuit Range/Performance Problem</b>
------------	--------------	--

**HINT:**

This is the purpose of the "throttle position sensor".

**CIRCUIT DESCRIPTION**

Refer to DTC P0120 on page [DI-548](#).

DTC No.	DTC Detecting Condition	Trouble Area
P0121	Condition (a) continues for 2.0 sec.: (a) Difference between VTA1 and VTA2 deviates from the threshold	Throttle control motor and sensor

**MONITOR DESCRIPTION**

The ECM uses throttle position sensor to monitor the throttle valve opening angle.

This sensor includes two signals, VTA1 and VTA2. VTA1 is used to detect the throttle opening angle and VTA2 is used to detect malfunctions in VTA1. There are several checks that the ECM performs confirm proper operation of the throttle position sensor and VTA1.

There is a specific voltage difference expected between VTA1 and VTA2 for each throttle opening angle. If the voltage output difference of the VTA1 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.

**FAIL SAFE**

If the ETCS (Electronic Throttle Control System) 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 minimum 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	Throttle position sensor	
Frequency of operation	Continuous	
Duration	Within 2 seconds	
MIL operation	Immediate	
Sequence of operation	None	

## TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever this DTC is not present	See page <a href="#">DI-437</a>	
Either of the following condition is met:	Condition 1 or 2	
1. Ignition switch	ON	
2. Electric throttle motor power	ON	
TP sensor malfunction (P0120, P0122, P0123, P0220, P0222, P0223, P2135)	Not detected	

## TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
Different between VTA1 and VTA2 $ VTA1 - (VTA2 \times 0.8 \text{ to } 1.2) ^*$ * Corrected by learning value	Less than 0.8 V, or more than 1.6 V

## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using the hand-held tester. 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, as well as other data from the time when a malfunction occurred.

**Replace throttle control motor and sensor (See page [SF-43](#)).**