

1	Disconnect the battery negative terminal.
2	Disconnect the ECM electrical connectors, EM10 and EM11.
3	Measure the resistance between EM10, pin 20 (BG) and PI42, pin 02 (BG).
4	Measure the resistance between EM11, pin 12 (BG) and PI42, pin 02 (BG).
Is either resistance greater than 5 ohms?	
Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.	
No Check the ECM GROUND circuits. If the GROUND circuits are sound, contact dealer technical support for advice on possible ECM failure.	

PINPOINT TEST T : DTC P1224, P1229; THROTTLE CONTROL POSITION SENSOR ERROR/THROTTLE MOTOR CONTROL CIRCUIT MALFUNCTION

• NOTE: Before commencing this test, check the TP sensor connections, perform the throttle adaptations procedure.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
T1: CHECK THE TP SENSOR TO ECM SENSE CIRCUIT 1 FOR HIGH RESISTANCE	
1	Disconnect the battery negative terminal.
2	Disconnect the TP sensor electrical connector, PI06.
3	Disconnect the ECM electrical connector, EM11.
4	Measure the resistance between PI06, pin 02 (G) and EM11, pin 10 (G).
Is the resistance greater than 5 ohms?	
Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.	
No GO to T2.	
T2: CHECK THE THROTTLE MOTOR RELAY CONSTANT SUPPLY	
1	Reconnect the battery negative terminal.
2	Remove the throttle motor relay.
3	Measure the voltage between the throttle motor relay base, pin 3 and GROUND.
Is the voltage greater than 10 volts?	
Yes GO to T3.	
No REPAIR the circuit. This circuit includes the EMS fuse box, fuse 09. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.	
T3: CHECK THE THROTTLE MOTOR RELAY EMS SWITCHED SUPPLY	
1	Turn the ignition switch to the ON position.
2	Measure the voltage between the throttle motor relay base, pin 1 and GROUND.
Is the voltage greater than 10 volts?	
Yes GO to T4.	
No REPAIR the circuit between the throttle motor relay base, pin 1 and the battery. This circuit includes the EMS fuse box, fuse 20, and the EMS control relay. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.	
T4: CHECK THE THROTTLE MOTOR RELAY TO ECM CIRCUIT FOR HIGH RESISTANCE	
1	Turn the ignition switch to the OFF position.
2	Disconnect the battery negative terminal.
3	Disconnect the ECM electrical connector, EM13.
4	Measure the resistance between EM13, pin 14 (GR) and throttle motor relay base, pin 2.
Is the resistance greater than 5 ohms?	
Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.	
No GO to T5.	
T5: CHECK THE THROTTLE MOTOR RELAY OUTPUT TO ECM	
1	Reconnect the ECM electrical connector, EM13.

	2	Disconnect the ECM electrical connector, EM14.
	3	INSTALL the throttle motor relay.
	4	Reconnect the battery negative terminal.
	5	Turn the ignition switch to the ON position.
	6	Measure the voltage between EM14, pins 01 and 02, (GY) and GROUND.
		Is the voltage greater than 10 volts?
		Yes GO to T6.
		No INSTALL a new throttle motor relay. For additional information, refer to the electrical guide. CLEAR the DTC. TEST the system for normal operation.
T6: CHECK THE THROTTLE MOTOR TO ECM DRIVE SUPPLY CIRCUIT FOR HIGH RESISTANCE		
	1	Disconnect the throttle motor electrical connector, PI33.
	2	Measure the resistance between PI33, pin 01 (R) and EM14, pins 05 and 06 (R).
		Is either resistance greater than 5 ohms?
		Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.
		No GO to T7.
T7: CHECK THE THROTTLE MOTOR TO ECM DRIVE GROUND CIRCUIT FOR HIGH RESISTANCE		
	1	Measure the resistance between PI33, pin 02 (G) and EM14, pins 11 and 12 (G).
		Is either resistance greater than 5 ohms?
		Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.
		No GO to T8.
T8: CHECK THE THROTTLE MOTOR TO ECM DRIVE SUPPLY CIRCUIT FOR SHORT TO HIGH VOLTAGE		
	1	Reconnect the ECM electrical connector, EM14.
	2	Turn the ignition switch to the ON position.
	3	Measure the voltage between PI33, pin 01 (R) and GROUND.
		Is the voltage greater than 10 volts?
		Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.
		No GO to T9.
T9: CHECK THE THROTTLE MOTOR TO ECM DRIVE SUPPLY CIRCUIT FOR SHORT TO GROUND		
	1	Disconnect the ECM electrical connector, EM14.
	2	Turn the ignition switch to the OFF position.
	3	Measure the resistance between PI33, pin 01 (R) and GROUND.
		Is the resistance less than 10,000 ohms?
		Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC. TEST the system for normal operation.
		No INSTALL a new throttle motor. REFER to Section 303-04 Fuel Charging and Controls . CLEAR the DTC. TEST the system for normal operation.

PINPOINT TEST U : DTC P1226; MECHANICAL GUARD SENSOR RANGE/PERFORMANCE, HIGH /LOW VOLTAGE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
U1: CHECK THE MECHANICAL GUARD SENSE CIRCUIT FOR HIGH RESISTANCE	
	1 Disconnect the battery negative terminal.
	2 Disconnect the mechanical guard sensor electrical connector, PI42.
	3 Disconnect the ECM electrical connector, EM11.
	4 Measure the resistance between PI42, pin 01 (BY) and EM11, pin 13 (BY).
	Is the resistance greater than 5 ohms?