

DV: Throttle Body Assembly Electronic Throttle Control (ETC)

WARNING: Substantial opening and closing torque is applied by this system. To prevent injury, be careful to keep fingers away from throttle mechanism when actuated. Failure to follow these instructions may result in personal injury.

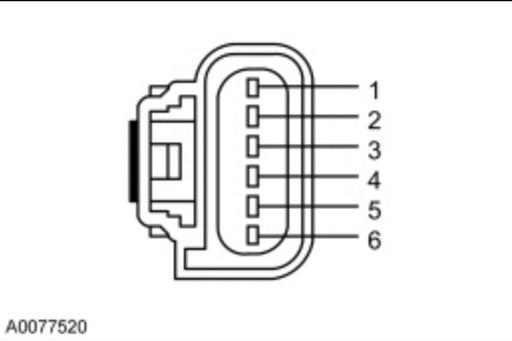
Note: The voltage of the TP2 circuit and PID reaches a limit of approximately 4.5 volts at approximately 45 degrees of throttle angle.

This pinpoint test is intended to diagnose the following:

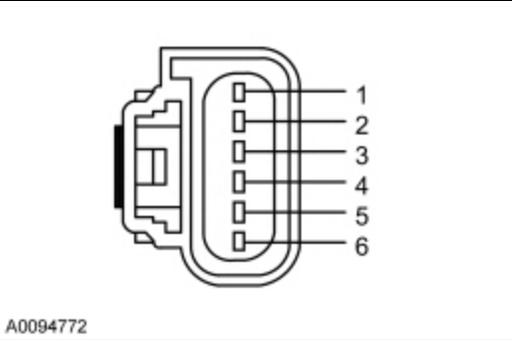
- electronic throttle body (ETB) (9F991)
- harness circuits: ETCRTN, ETCREF, TP1, TP2, TACM+, and TACM-
- powertrain control module (PCM) (12A650)

Electronic Throttle Body Throttle Position Sensor (ETBTPS) Connector

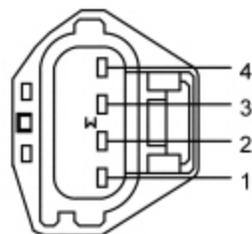
A



B



C

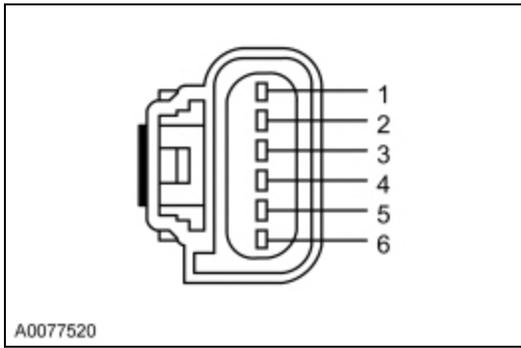


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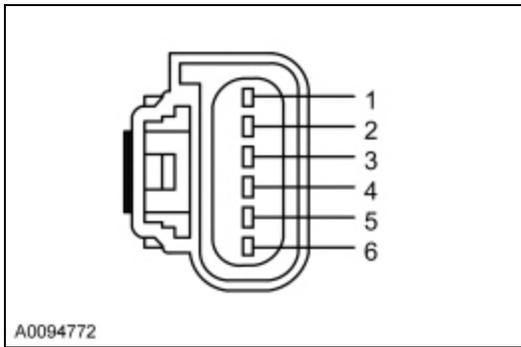
Vehicle	Connector	Pin	Circuit
E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, MKX, MKZ	A	4 1 2 3	TP2 TP1 ETCRTN ETCREF
Five Hundred, Freestyle, Fusion 3.0L, Milan 3.0L, Montego	B	6 3 4 5	TP2 TP1 ETCRTN ETCREF
Fusion 2.3L, Milan 2.3L	B	4 6 3 5	TP2 TP1 ETCRTN ETCREF
All other vehicles	C	1 4 3 2	TP2 TP1 ETCRTN ETCREF

Electronic Throttle Body Throttle Actuator Control Motor (ETBTACM) Connector

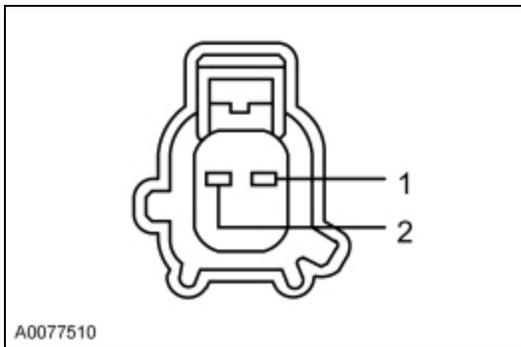
A



B



C



Vehicle	Connector	Pin	Circuit
E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, MKX, MKZ	A	6 5	TACM- TACM+
Five Hundred, Freestyle, Fusion 2.3L, Milan 2.3L, Montego	B	2 1	TACM- TACM+
Fusion 3.0L, Milan 3.0L	B	1 2	TACM- TACM+
All other vehicles	C	2 1	TACM- TACM+

Powertrain Control Module (PCM) Connector

For PCM connector views or reference values, refer to Section 6.

Vehicle	Connector	Pin	Circuit
E-Series, F-Series Super Duty	170 PIN	B16, B4, E66 B18, B6, E59 B35 B47 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1
Edge, MKX	190 PIN	B21, B28, E66 B59, B65, E59 B51 B67	ETCREF ETCRTN VPWR PWRGND

Vehicle	Connector	Pin	Circuit
		E51 E34 E60 E61	TACM- TACM+ TP2 TP1
Expedition, Navigator	140 PIN	B21, B28, E66 B59, B65, E59 B51 B67 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1
Explorer, Explorer SportTrac, Mountaineer	170 PIN	B24, B4, E66 B43, B6, E59 B35 B47 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1
F-150, Mark LT	190 PIN	B21, B28, E66 B58, B59, E59 B51 B67 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1
Five Hundred, Freestyle, Montego	150-PIN	B24, B4, E18 B41, B6, E7 B35 B47 E48 E47 E29 E19	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1

Vehicle	Connector	Pin	Circuit
Fusion, Milan, MKZ	140 PIN	B21, B28, E66 B59, B60, E59 B51 B67 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1
All other vehicles	170 PIN	B24, B4, E66 B41, B6, E59 B35 B47 E51 E34 E60 E61	ETCREF ETCRTN VPWR PWRGND TACM- TACM+ TP2 TP1

DV1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

Note: Diagnose and repair ETBTPS circuit DTCs before addressing DTC P0068.

Are DTCs P0068, P0121, P0122, P0123, P0221, P0222, P0223, P2100, P2101, P2107, P2111, P2112, or P2135 present?

Yes	For DTC P0068, GO to DV18 . For DTCs P0121, P0122, P0123, P0221, P0222, P0223, P2101, P2111, or P2112, GO to DV2 . For DTCs P2100, GO to DV25 . For DTC P2107, GO to DV24 . For Fusion and Milan with DTC P2135, GO to DV6 . For all others with DTC P2135, GO to DV7 .
No	For all others, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .

DV2 CHECK THE THROTTLE POSITION (TP) OPEN AND CLOSED VOLTAGES

Note: Certain failure mode effects management (FMEM) operating strategies maintain limited vehicle function in the event of a PCM, harness, or component concern and may prevent the throttle plate from opening. If the throttle plate does not open, follow the NO answer.

- Ignition ON, engine OFF.
- Access the PCM and monitor the TP1 (VOLT) and TP2 (VOLT) PIDs.

- Press the accelerator pedal to the floor and release.

Electronic Throttle Control Throttle Position Sensor Signal Voltages

Accelerator Pedal Position	TP1	TP2
Pedal fully released	3.7 - 4.7	0.3 - 1.9
Pedal fully applied	0.7 - 2.9	4.1 - 4.7

Are both PIDs within the chart ranges?

Yes	For DTCs P2111 or P2112, GO to DV3 . For all others, GO to DV23 .
No	For DTCs P2111 or P2112, GO to DV3 . For all others, GO to DV4 .

DV3 CHECK FOR OBSTRUCTION OF THE THROTTLE BODY

 **WARNING:** Substantial opening and closing torque is applied by this system. To prevent injury, be careful to keep fingers away from throttle mechanism when actuated. Failure to follow these instructions may result in personal injury.

Note: Moving the throttle plate manually may cause DTC P2106 to set during the self-test.

- Ignition OFF.
- Remove the inlet tube from the throttle body.
- Visually inspect for throttle plate obstructions or engine deposits.
- Slowly, push the throttle plate to wide open and release.

Is the throttle plate free of any visible obstruction or debris?

Yes	GO to DV4 .
No	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.

DV4 CHECK THE VREF VOLTAGE TO TP

Note: In the following measurement please take note of the polarity of the probes.

- ETBTPS connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) ETBTPS Connector, Harness Side	(-) ETBTPS Connector, Harness Side
ETCREF	ETCRTN

Is the voltage between 4 - 6 V?

Yes	GO to DV5 .
No	GO to Pinpoint Test C .

DV5 DTCS P2101 OR P2107: CHECK FOR DTCS

- Ignition OFF.
- ETBTPS connector connected.
- Ignition ON, engine OFF.
- Carry out the PCM self-test.

Are DTCs P2101 or P2107 present?

Yes	GO to DV15 .
No	For Fusion and Milan, GO to DV6 . For all others, GO to DV7 .

DV6 CHECK THE FUNCTIONALITY OF THE TP SENSOR

Note: Do not move the throttle plate during the resistance measurement. Measure the sensor resistance with the throttle plate at the default position.

- Ignition OFF.
- ETBTPS connector disconnected.
- For Fusion 2.3L and Milan 2.3L, measure the resistance between:

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
ETCREF	ETCRTN	2,000	4,000

- For Fusion 3.0L and Milan 3.0L, measure the resistance between:

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
TP1	ETCREF	380	987

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
TP1	ETCRTN	665	1,890
TP2	ETCREF	608	1,932
TP2	ETCRTN	390	1,187
ETCREF	ETCRTN	475	1,365

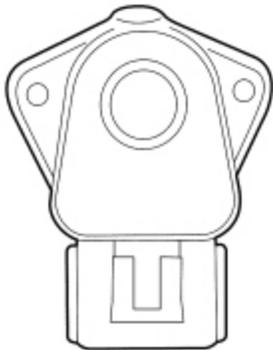
Are all the resistances within specifications?

Yes	GO to DV14 .
No	INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.

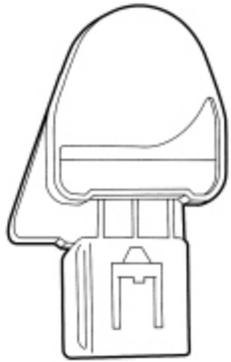
DV7 DETERMINE THE TYPE OF ETBTPS ON THE VEHICLE

Note: There are 3 types of ETBTPS available for the vehicle. Compare the sensor housing of the ETBTPS on the vehicle to the illustrations. The illustrations for the 4-pin Type I ETBTPS and 6-pin Type I ETBTPS are in this step.

- Ignition OFF.
- Determine if the vehicle is equipped with one of the Type I ETBTPS shown below.



N0027685



N0027687

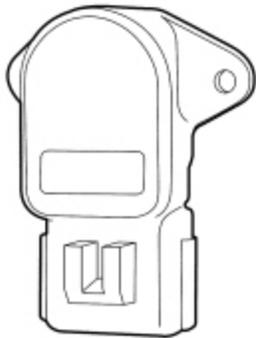
Is the vehicle equipped with a Type I ETBTPS?

Yes	GO to DV10 .
No	GO to DV8 .

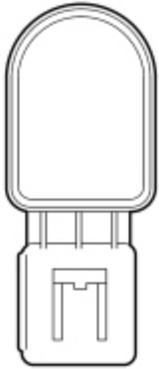
DV8 CHECK FOR A TYPE II ETBTPS

Note: There are 3 types of ETBTPS available for the vehicle. Compare the sensor housing of the ETBTPS on the vehicle to the illustrations. The illustrations for the 4-pin Type II ETBTPS and 6-pin Type II ETBTPS are in this step.

- Determine if the vehicle is equipped with one of the Type II ETBTPS shown below.



N0027686



N0027692

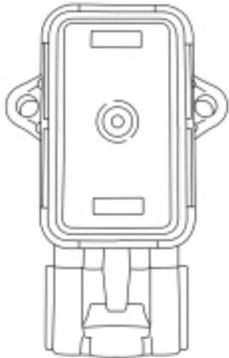
Is the vehicle equipped with a Type II ETBTPS?

Yes	GO to DV11 .
No	GO to DV9 .

DV9 CHECK FOR A TYPE III ETBTPS

Note: *There are 3 types of ETBTPS available for the vehicle. Compare the sensor housing of the ETBTPS on the vehicle to the illustrations. The illustrations for the 4-pin Type III ETBTPS and 6-pin Type III ETBTPS are in this step.*

- Determine if the vehicle is equipped with one of the Type III ETBTPS shown below.



N0073243



N0073242

Is the vehicle equipped with a Type III ETBTPS?

Yes	GO to DV12 .
No	GO to DV7 .

DV10 CHECK THE RESISTANCE OF THE TYPE I ETBTPS

Note: Do not move the throttle plate during the resistance measurement. Measure the sensor resistance with the throttle plate at the default position.

- ETBTPS connector disconnected.
- Measure the resistance between:

Type I

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
TP1	ETCREF	1,100	3,500
TP1	ETCRTN	2,500	5,900
TP2	ETCREF	1,800	4,900
TP2	ETCRTN	800	2,800
ETCREF	ETCRTN	1,800	4,900

Are all the resistances within the specifications?

Yes	GO to DV14 .
No	For E-Series 4.6L, Edge,

F-150 4.2L,
 F-150 4.6L,
 Five Hundred,
 Freestyle,
 MKX,
 MKZ, and
 Montego, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls.
 Clear the PCM DTCs. REPEAT the self-test.
 For all others, INSTALL a new ETBTPS. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.
 Clear the PCM DTCs. REPEAT the self-test.

DV11 CHECK THE RESISTANCE OF THE TYPE II ETBTPS

Note: Do not move the throttle plate during the resistance measurement. Measure the sensor resistance with the throttle plate at the default position.

- ETBTPS connector disconnected.
- Measure the resistance between:

Type II

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
TP1	ETCREF	700	1,800
TP1	ETCRTN	1,300	2,800
TP2	ETCREF	1,000	2,400
TP2	ETCRTN	500	1,500
ETCREF	ETCRTN	700	2,100

Are all the resistances within the specifications?

Yes	GO to DV14 .
No	For E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, Five Hundred, Freestyle, MKX, MKZ, and

Montego, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls.

Clear the PCM DTCs. REPEAT the self-test.

For all others, INSTALL a new ETBTPS. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.

Clear the PCM DTCs. REPEAT the self-test.

DV12 CHECK THE RESISTANCE OF THE TYPE III ETBTPS

Note: Do not move the throttle plate during the resistance measurement. Measure the sensor resistance with the throttle plate at the default position.

- Ignition OFF.
- ETBTPS connector disconnected.
- Measure the resistance between:

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side
TP1	ETCREF
TP2	ETCRTN

Are the resistances between 9K - 11K ohms?

Yes	GO to DV13 .
No	For E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, Five Hundred, Freestyle, MKX, MKZ, and Montego, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test. For all others, INSTALL a new ETBTPS. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.

DV13 CHECK THE DIODE INTERNAL TO THE TYPE III ETBTPS

Note: Make sure the positive test lead is on the ETCRTN circuit to measure the forward bias of the diode.

- Select diode test on the digital multimeter (DMM).
- Measure the voltage between:

(+) ETBTPS Connector, Component Side	(-) ETBTPS Connector, Component Side
ETCRTN	TP1
ETCRTN	TP2

Are the voltages between 0.2 - 0.9 V?

Yes	GO to DV14 .
No	<p>For E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, Five Hundred, Freestyle, MKX, MKZ, and Montego, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.</p> <p>For all others, INSTALL a new ETBTPS. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.</p>

DV14 CHECK THE TP1 AND TP2 CIRCUITS FOR A SHORT TO VOLTAGE IN THE HARNESS

- PCM connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) ETBTPS Connector, Harness Side	(-)
TP1	Ground
TP2	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to DV15 .

DV15 CHECK THE TP1 AND TP2 CIRCUITS FOR AN OPEN OR CROSSED SENSOR WIRES IN THE HARNESS

- Ignition OFF.
- Measure the resistance between:

(+) ETBTPS Connector, Harness Side	(-) PCM Connector, Harness Side
TP1	TP1
TP2	TP2

Are the resistances less than 5 ohms?

Yes	For DTCs P2101 or P2107, GO to DV25 . For all others, GO to DV16 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

DV16 CHECK THE TP1 AND TP2 CIRCUITS FOR A SHORT TO GROUND IN THE HARNESS

- Measure the resistance between:

(+) ETBTPS Connector, Harness Side	(-) Vehicle Battery
TP1	Negative terminal
TP2	Negative terminal

Are the resistances greater than 10K ohms?

Yes	GO to DV17 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

DV17 CHECK THE TP CIRCUITS FOR A SHORT TOGETHER

- Measure the resistance between:

(+) ETBTPS Connector, Harness Side	(-) ETBTPS Connector, Harness Side
TP1	TP2
TP1	ETCREF

(+) ETBTPS Connector, Harness Side	(-) ETBTPS Connector, Harness Side
TP1	ETCRTN
TP2	ETCREF
TP2	ETCRTN

Are the resistances greater than 10K ohms?

Yes	GO to DV23 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

DV18 DTC P0068: CHECK FOR DTCS

- Carry out the PCM self-test.

Are DTCs P0121, P0122, P0123, P0221, P0222, P0223 or P2135 present?

Yes	For DTCs P0121, P0122, P0123, P0221, P0222, and P0223, GO to DV2 . For Fusion and Milan with DTC P2135, GO to DV6 . For all others with DTC P2135, GO to DV7 .
No	GO to DV19 .

DV19 CHECK FOR INLET AIR LEAKS

- Check the air inlet system for leaks.
- Listen for air noise around the mass air flow (MAF) sensor and throttle body while the engine is running.

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	GO to DV20 .

DV20 CHECK FOR A TP2 SIGNAL HIGH VERSUS LOAD WHILE DRIVING THE VEHICLE

- ETBTPS connector connected.
- PCM connector connected.
- Ignition ON, engine running.
- Access the PCM and monitor the TP2 (VOLT) PID.
- Access the PCM and monitor the LOAD (PER) PID.
- Drive the vehicle while exercising the throttle and ETCTP sensor and accessing the PIDS.

Is the TP2 PID greater than 2.44 volts and the LOAD PID less than 30%?

Yes	GO to DC5 .
No	GO to DV21 .

DV21 CHECK FOR A TP2 SIGNAL LOW VERSUS LOAD WHILE DRIVING THE VEHICLE

- Ignition ON, engine running.
- Access the PCM and monitor the TP2 (VOLT) PID.
- Access the PCM and monitor the LOAD (PER) PID.
- Drive the vehicle while exercising the throttle and ETCTP sensor and accessing the PIDS.

Is the TP2 PID less than 0.24 volt and the LOAD PID greater than 55%?

Yes	GO to DV22 .
No	GO to DV23 .

DV22 CHECK FOR SELF-TEST DTCS

Note: After retrieving the continuous memory DTCs, diagnose any non-ETC related DTCs before continuing.

- Ignition ON, engine OFF.
- Clear the PCM DTCs.
- Drive the vehicle while exercising the throttle.
- Carry out the PCM self-test.

Are any DTCs present?

Yes	For continuous memory DTC P0068, CHECK the MAF sensor and connector for damage and corrosion. REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test. For all others, GO to DV23 .
No	Unable to duplicate or identify the concern at this time. GO to Pinpoint Test Z .

DV23 CHECK THE TP CIRCUITS FOR AN INTERMITTENT CONCERN

- ETBTPS connector connected.
- PCM connector connected.
- Access the PCM and monitor the TP1 (VOLT) and TP2 (VOLT) PIDs.
- Wiggle, shake, and bend the harness from the TP to the PCM.

Are the voltages between 0.49 - 4.65 V?

Yes	<p>For DTCs P2111 or P2112, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls to INSTALL a new throttle body.</p> <p>Clear the PCM DTCs. REPEAT the self-test.</p> <p>For E-Series 4.6L, Edge, F-150 4.2L, F-150 4.6L, Five Hundred, Freestyle, Fusion, MKX, MKZ, Milan, and Montego with DTC P2135, INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls to INSTALL a new throttle body.</p> <p>Clear the PCM DTCs. REPEAT the self-test.</p> <p>For all others with DTC P2135, INSTALL a new ETBTPS. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls to INSTALL a new TP sensor.</p> <p>Clear the PCM DTCs. REPEAT the self-test.</p> <p>For all others, GO to DV35.</p>
No	<p>REPAIR as necessary. If DTC P2100 or P2101 is present, GO to DV25.</p>

DV24 DTC P2107: CHECK FOR OTHER SELF-TEST DTCS

Note: *The DTC P2107 may set when a failure mode effects management (FMEM) action is taken. If the FMEM DTC P2110 is present with other DTCs, diagnose the other DTCs before diagnosing the DTC P2110.*

- Ignition ON, engine OFF.
- Carry out the PCM self-test.

Are any DTCs present other than P2107 and P2110?

Yes	<p>DISREGARD the current diagnostic trouble code (DTC) at this time. DIAGNOSE the next DTC. GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions.</p>
No	<p>For DTC P2110, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions and diagnose the DTC.</p> <p>For DTC P2107, GO to DV29.</p>

DV25 VISUALLY INSPECT THE ETB

Note: *Make sure the ETB harness connector is properly connected.*

- Ignition OFF.
- Inspect the ETB for damaged housing, harness connector, and harness.

Are there any concerns with the ETB hardware?

Yes	<p>INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls.</p> <p>Clear the PCM DTCs. REPEAT the self-test.</p>
No	<p>GO to DV26.</p>

DV26 CHECK THE TACM FOR A SHORT OR OPEN

- ETBTACM connector disconnected.

- Measure the resistance between:

(+) ETBTACM Connector, Component Side	(-) ETBTACM Connector, Component Side
TACM+	TACM-

Is the resistance between 1 - 900 ohms?

Yes	GO to DV27 .
No	INSTALL a new ETB. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.

DV27 CHECK THE TACM HARNESS FOR AN OPEN

- PCM connector disconnected.
- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-) PCM Connector, Harness Side
TACM+	TACM+
TACM-	TACM-

Are the resistances less than 5 ohms?

Yes	GO to DV28 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

DV28 CHECK THE TACM+ AND TACM- CIRCUITS FOR A SHORT TO GROUND IN THE HARNESS

- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-)
TACM+	Ground
TACM-	Ground

Are the resistances greater than 10K ohms?

Yes	GO to DV29 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

DV29 CHECK THE HARNESS FOR A SHORT TO GND, PWR, ETCREF, AND ETCRTN

- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-) PCM Connector, Harness Side
TACM+	PWRGND
TACM+	VPWR
TACM+	ETCRTN
TACM+	ETCREF
TACM-	PWRGND
TACM-	ETCRTN
TACM-	VPWR
TACM-	ETCREF

Are the resistances greater than 10K ohms?

Yes	GO to DV30 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

DV30 CHECK FOR TACM HARNESS CIRCUITS SHORTED TOGETHER

- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-) ETBTACM Connector, Harness Side
TACM+	TACM-

Is the resistance greater than 10K ohms?

Yes	For DTCs P2111 or P2112, GO to DV31 . For all others, GO to DV32 .
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No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
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DV31 CHECK FOR AN INTERMITTENT CONCERN

- ETBTACM connector connected.
- PCM connector connected.
- Ignition ON, engine OFF.
- Access the PCM and monitor the TP1 (VOLT) and TP2 (VOLT) PIDs.
- Wiggle, shake, and bend the harness from the TP to the PCM.

Are the voltages between 0.49 - 4.65 V?

Yes	GO to DV32 .
No	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.

DV32 CHECK FOR SELF-TEST CODES

- ETBTACM connector connected.
- PCM connector connected.
- Ignition ON, engine OFF.
- Carry out the PCM self-test.

Is DTC P2101 present?

Yes	GO to DV33 .
No	GO to DV35 .

DV33 CHECK FOR PROPER TACM+ WIRING IN THE HARNESS CONNECTOR

- Ignition OFF.
- ETBTACM connector disconnected.
- PCM connector disconnected.
- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-) PCM Connector, Harness Side
TACM+	TACM+

Is the resistance less than 5 ohms?

Yes	GO to DV34 .
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No	REPAIR the open circuit. WIRE the TACM harness connector per the TACM and PCM connector diagrams. Clear the PCM DTCs. REPEAT the self-test.
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DV34 CHECK FOR PROPER TACM- WIRING IN THE HARNESS CONNECTOR

- Measure the resistance between:

(+) ETBTACM Connector, Harness Side	(-) PCM Connector, Harness Side
TACM-	TACM-

Is the resistance less than 5 ohms?

Yes	GO to DV36 .
No	GO to DV35 .

DV35 CHECK THE REPAIR THROUGH PROCEDURE

- Ignition ON, engine OFF.
- Clear the PCM DTCs.
- Cycle the accelerator pedal to the floor and back several times.
- Carry out the PCM self-test.

Are any ETC system related DTCs present?

Yes	GO to DV36 .
No	GO to Pinpoint Test Z .

DV36 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

