

DK: Accelerator Pedal Position (APP) Sensor

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DK1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

Are DTCs P1575, P2104, P2121, P2122, P2123, P2126, P2127, P2128, P2131, P2132, P2133, or P2138 present?

Yes	No
For DTC P1575, GO to DK2 . For all others, GO to DK4 .	For a lack/loss of power, GO to DK3 . For all others, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .

DK2 DTC P1575: REPEAT THE KOEO SELF-TEST

Note: Make sure the accelerator pedal is not applied during the KOEO self-test.

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

Are any DTCs present other than P1575?

Yes	No
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 .	GO to DK3 .

DK3 CHECK THE ACCELERATOR PEDAL FOR OBSTRUCTION

- Ignition ON, engine OFF.
- Press the accelerator pedal fully to the floor and release.

Does the pedal move freely to the floor and back?

Yes	No
GO to DK4 .	ISOLATE and REPAIR the obstruction. CLEAR the DTCs. REPEAT the self-test.

DK4 CHECK THE APP SENSOR SIGNAL VOLTAGE RANGES FOR THE ACCELERATOR PEDAL FULLY APPLIED AND RELEASED POSITIONS

- Access the PCM and monitor the APP1, APP2 and APP3 PIDs.
- Press the accelerator pedal fully to the floor and release.

Accelerator Pedal Fully Applied Voltage Values

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Vehicle	APP1	APP2	APP3
Crown Victoria, Grand Marquis, Town Car	0.35 - 1.83	3.06 - 4.48	2.51 - 3.93
E-Series 4.6L, E-Series 5.4L, Escape/Mariner, Expedition, F-150, Focus, Navigator	3.59 - 4.60	1.72 - 2.40	-
Explorer, Explorer Sport Trac, Mountaineer	0.60 - 1.57	3.07 - 4.50	2.57 - 3.89
F-Super Duty	0.28 - 0.97	3.45 - 4.71	2.95 - 4.10
Fusion, Milan, MKZ	1.20 - 2.50	2.50 - 3.94	2.00 - 3.33
All others	0.48 - 1.76	2.95 - 4.62	2.43 - 4.02

Accelerator Pedal Fully Released Voltage Values

Vehicle	APP1	APP2	APP3
E-Series 4.6L, E-Series 5.4L, Escape/Mariner, Expedition, F-150, Focus, Navigator	0.64 - 0.96	0.27 - 0.53	-
All others	3.43 - 4.69	1.13 - 1.88	0.64 - 1.28

Are all APP signals out of range for the pedal fully applied and released positions?

Yes	No
GO to DK5 .	For continuous memory DTCs P2121 and P2126 with P2131, GO to DK22 . For all others, GO to DK5 .

DK5 CHECK THE VREF VOLTAGE TO APP SENSOR

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

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
ETCREF	ETCRTN
ETCREF2	ETCRTN2
ETCREF3	ETCRTN3

Are the voltages between 4 - 6 V?

Yes	No
For E-Series 6.8L, Explorer, Explorer Sport Trac, F-Super Duty with an adjustable accelerator pedal, and Mountaineer, GO to DK6 . For Fusion, Milan, and MKZ, GO to DK7 . For E-Series 4.6L, E-Series 5.4L, Escape/Mariner, or Focus with DTC P2122,	

<p>P2123, or P2138, GO to DK10.</p> <p>For E-Series 4.6L, E-Series 5.4L, Escape/Mariner or Focus with DTC P2127 or P2128, GO to DK14.</p> <p>For Expedition, F-150, or Navigator, GO to DK8.</p> <p>For all others, GO to DK9.</p>	<p>GO to Pinpoint Test C.</p>
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DK6 E-SERIES 6.8L, EXPLORER, EXPLORER SPORT TRAC, F-SUPER DUTY WITH AN ADJUSTABLE ACCELERATOR PEDAL, MOUNTAINEER: CHECK THE APP SENSOR FOR THE CORRECT RESISTANCE

Note: Make sure the accelerator pedal is fully released when taking the resistance measurements.

- Ignition OFF.
- APP Sensor connector disconnected.
- Measure the resistance between:

(+) APP Sensor Connector, Component Side	(-) APP Sensor Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
APP1	ETCREF	550	1,390
APP1	ETCRTN	1,030	2,590
APP1	APP2	2,125	5,335
APP1	APP3	1,930	4,845
APP2	ETCREF	1,785	4,480
APP2	ETCRTN	1,475	3,705
APP2	APP3	2,520	6,330
APP3	ETCREF	1,620	4,070
APP3	ETCRTN	1,135	2,860
ETCREF	ETCRTN	780	1,955
ETCREF	ETCREF	0	10
ETCRTN	ETCRTN	0	10

Are all the resistances within specifications?

Yes	No
<p>For DTCs P2121, P2122 or P2123 alone or in combination, GO to DK10.</p> <p>For DTCs P2126, P2127 or P2128 alone or in combination, GO to DK14.</p> <p>For DTCs P2131, P2132 or P2133 alone or in combination, GO to DK18.</p> <p>For DTC P2104 alone, GO to DK28.</p> <p>For a lack/loss of power, the concern is elsewhere. RETURN to Section 3, Symptom Charts for further direction.</p>	<p>INSTALL a new APP sensor. REFER to the Workshop Manual Section 310-02, Acceleration Control to INSTALL a new accelerator pedal.</p> <p>CLEAR the DTCs. REPEAT the self-test.</p>

For all others, GO to [DK22](#).

DK7 FUSION, MILAN, MKZ: CHECK THE APP SENSOR FOR THE CORRECT RESISTANCE

Note: Make sure the accelerator pedal is fully released when taking the resistance measurements.

- Ignition OFF.
- APP Sensor connector disconnected.
- Measure the resistance between:

(+) APP Sensor Connector, Component Side	(-) APP Sensor Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
APP1	ETCREF	650	1,340
APP1	ETCRTN	1,210	2,470
APP1	APP2	2,430	4,960
APP1	APP3	2,390	4,880
APP2	ETCREF	2,020	4,120
APP2	ETCRTN	1,650	3,380
APP2	APP3	3,000	6,130
APP3	ETCREF	2,010	4,110
APP3	ETCRTN	1,450	2,970
ETCREF	ETCRTN	900	1,840
ETCREF	ETCREF	0	10
ETCRTN	ETCRTN	0	10

Are all the resistances within specifications?

Yes	No
<p>For DTCs P2121, P2122 or P2123 alone or in combination, GO to DK10.</p> <p>For DTCs P2126, P2127 or P2128 alone or in combination, GO to DK14.</p> <p>For DTCs P2131, P2132 or P2133 alone or in combination, GO to DK18.</p> <p>For DTC P2104 alone, GO to DK28.</p> <p>For a lack/loss of power, the concern is elsewhere. RETURN to Section 3, Symptom Charts for further direction.</p> <p>For all others, GO to DK22.</p>	<p>INSTALL a new APP sensor. REFER to the Workshop Manual Section 310-02, Acceleration Control to INSTALL a new accelerator pedal.</p> <p>CLEAR the DTCs. REPEAT the self-test.</p>

DK8 EXPEDITION, F-150, NAVIGATOR: CHECK THE APP SENSOR FOR THE CORRECT RESISTANCE

Note: Make sure the accelerator pedal is fully released when taking the resistance measurements.

- Ignition OFF.
- APP Sensor connector disconnected.
- Measure the resistance between:

(+) APP Sensor Connector, Component Side	(-) APP Sensor, Connector Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
APP1	ETCREF1	1,550	2,700
APP1	ETCRTN1	850	1,550
ETCREF1	ETCRTN1	950	1,700
APP2	ETCREF2	2,200	4,000
APP2	ETCRTN2	850	1,500
ETCREF2	ETCRTN2	1,600	2,800
ETCREF1	ETCREF2	10,000	-

Are all the resistances within specifications?

Yes	No
<p>For DTCs P2121, P2122 or P2123 alone or in combination, GO to DK10.</p> <p>For DTCs P2126, P2127 or P2128 alone or in combination, GO to DK14.</p> <p>For DTCs P2131, P2132 or P2133 alone or in combination, GO to DK18.</p> <p>For DTC P2104 alone, GO to DK28.</p> <p>For a lack/loss of power, the concern is elsewhere. RETURN to Section 3, Symptom Charts for further direction.</p> <p>For all others, GO to DK22.</p>	<p>INSTALL a new APP sensor. REFER to the Workshop Manual Section 310-02, Acceleration Control to INSTALL a new accelerator pedal.</p> <p>CLEAR the DTCs. REPEAT the self-test.</p>

DK9 ALL OTHERS: CHECK THE APP SENSOR FOR THE CORRECT RESISTANCE

Note: Make sure the accelerator pedal is fully released when taking the resistance measurements.

- Ignition OFF.
- APP Sensor connector disconnected.
- Measure the resistance between:

(+) APP Sensor Connector, Component Side	(-) APP Sensor Connector, Component Side	Minimum Resistance (ohms)	Maximum Resistance (ohms)
APP1	ETCREF	600	1,370
APP1	ETCRTN	720	1,660
APP1	APP2	1,300	2,960
APP1	APP3	1,250	2,860
APP2	ETCREF	750	1,720
APP2	ETCRTN	660	1,520
APP2	APP3	1,230	2,810

APP3	ETCREF	710	1,640
APP3	ETCRTN	580	1,340
ETCREF	ETCRTN	200	470
ETCREF	ETCREF	0	10
ETCRTN	ETCRTN	0	10

Are all the resistances within specifications?

Yes	No
<p>For DTCs P2121, P2122 or P2123 alone or in combination, GO to DK10.</p> <p>For DTCs P2126, P2127 or P2128 alone or in combination, GO to DK14.</p> <p>For DTCs P2131, P2132 or P2133 alone or in combination, GO to DK18.</p> <p>For DTC P2104 alone, GO to DK28.</p> <p>For a lack/loss of power, the concern is elsewhere. RETURN to Section 3, Symptom Charts for further direction.</p> <p>For all others, GO to DK22.</p>	<p>INSTALL a new APP sensor. REFER to the Workshop Manual Section 310-02, Acceleration Control to INSTALL a new accelerator pedal.</p> <p>CLEAR the DTCs. REPEAT the self-test.</p>

DK10 CHECK THE APP1 CIRCUIT FOR AN OPEN CIRCUIT IN THE HARNESS

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

(+) APP Sensor Connector, Harness Side	(-) PCM Connector, Harness Side
APP1	APP1

Is the resistance less than 5 ohms?

Yes	No
GO to DK11 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

DK11 CHECK THE APP1 CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS

- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) Vehicle Battery
APP1	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to DK12 .	REPAIR the short circuit. CLEAR the DTCs.

REPEAT the self-test.

DK12 CHECK THE APP1 CIRCUIT FOR A SHORT IN THE HARNESS

- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP1	ETCRTN
APP1	ETCRTN2
APP1	ETCREF
APP1	ETCREF2

Are the resistances greater than 10K ohms?

Yes	No
GO to DK13 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK13 CHECK THE APP1 CIRCUIT FOR A SHORT TO POWER IN THE HARNESS

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

(+) APP Sensor Connector, Harness Side	(-) Vehicle Battery
APP1	Negative terminal

Is any voltage present?

Yes	No
REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.	GO to DK22 .

DK14 CHECK THE APP2 CIRCUIT FOR AN OPEN CIRCUIT IN THE HARNESS

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

(+) APP Sensor Connector, Harness Side	(-) PCM Connector, Harness Side
APP2	APP2

Is the resistance less than 5 ohms?

Yes	No
GO to DK15 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

DK15 CHECK THE APP2 CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS

- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) Vehicle Battery
APP2	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to DK16 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK16 CHECK THE APP2 CIRCUIT FOR A SHORT IN THE HARNESS

- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP2	ETCRTN
APP2	ETCRTN3
APP2	ETCREF
APP2	ETCREF3

Are the resistances greater than 10K ohms?

Yes	No
GO to DK17 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK17 CHECK THE APP2 CIRCUIT FOR A SHORT TO POWER IN THE HARNESS

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

(+) PCM Connector, Harness Side	(-) Vehicle Battery
APP2	Negative terminal

Is any voltage present?

Yes	No
REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.	GO to DK23 .

DK18 CHECK THE APP3 CIRCUIT FOR AN OPEN CIRCUIT IN THE HARNESS

- PCM connector disconnected.
- Measure the resistance between:

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(+) APP Sensor Connector, Harness Side	(-) PCM Connector, Harness Side
APP3	APP3

Is the resistance less than 5 ohms?

Yes	No
GO to DK19 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

DK19 CHECK THE APP3 CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS

- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) Vehicle Battery
APP3	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to DK20 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK20 CHECK THE APP3 CIRCUIT FOR A SHORT IN THE HARNESS

- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP3	ETCRTN
APP3	ETCREF

Are the resistances greater than 10K ohms?

Yes	No
GO to DK21 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK21 CHECK THE APP3 CIRCUIT FOR A SHORT TO POWER IN THE HARNESS

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

(+) PCM Connector, Harness Side	(-) Vehicle Battery
APP3	Negative terminal

Is any voltage present?

Yes	No
REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.	GO to DK24 .

DK22 CHECK FOR THE APP1 CIRCUIT SHORTED TO SIGNALS IN THE SAME HARNESS

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

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP1	APP2
APP1	APP3
APP1	ETCREF
APP1	ETCREF2
APP1	ETCRTN
APP1	ETCRTN2

Are the resistances greater than 10K ohms?

Yes	No
GO to DK25 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK23 CHECK FOR THE APP2 CIRCUIT SHORTED TO SIGNALS IN THE SAME HARNESS

- Ignition OFF.
- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP2	APP1
APP2	APP3
APP2	ETCREF
APP2	ETCREF3
APP2	ETCRTN
APP2	ETCRTN3

Are the resistances greater than 10K ohms?

Yes	No
GO to DK25 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK24 CHECK FOR THE APP3 CIRCUIT SHORTED TO SIGNALS IN THE SAME HARNESS

- Ignition OFF.
- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side

(+) APP Sensor Connector, Harness Side	(-) APP Sensor Connector, Harness Side
APP3	APP1
APP3	APP2
APP3	ETCREF
APP3	ETCRTN

Are the resistances greater than 10K ohms?

Yes	No
GO to DK25 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DK25 CHECK THE APP SENSOR CIRCUITS FOR AN INTERMITTENT CONCERN

- Wiggle, shake, and bend small sections of the wiring harness while working from the sensor to the PCM.
- Measure the resistance between:

(+) APP Sensor Connector, Harness Side	(-) PCM Connector, Harness Side
APP1	APP1
APP2	APP2
APP3	APP3

Are the resistances less than 5 ohms?

Yes	No
For E-Series 4.6L, E-Series 5.4L, Escape/Mariner, and Focus, GO to DK26 . For all others, GO to DK28 .	ISOLATE the concern and REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.

DK26 CHECK FOR DTCS

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

Are DTCs P2122 and P2127 present?

Yes	No
GO to DK27 .	GO to DK28 .

DK27 SIMULATE THE OPPOSITE SIGNAL

- Ignition OFF.
- Connect a 5 amp fused jumper wire between the following:

Point A APP Sensor Connector, Harness Side	Point B APP Sensor Connector, Harness Side
ETCREF2	APP1
ETCREF3	APP2

- Ignition ON, engine OFF.
- Access the PCM and monitor the APP1 and APP2 PIDs.

Are the voltages greater than 4.5 V?

Yes	No
INSTALL a new APP sensor. REFER to the Workshop Manual Section 310-02, Acceleration Control to INSTALL a new accelerator pedal. CLEAR the DTCs. REPEAT the self-test.	GO to DK28 .

DK28 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 and verify the concern is still present.

Is the concern still present?

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