

Powertrain Control Module (PCM) Connector

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

Vehicle	Connector	Pin	Circuit
Aviator, Explorer 3.0L, Explorer 3.3L	306 PIN	T43 T13 T25 T58	PFP22 PFP21 PFP12 PFP11
Continental	198 PIN	B76	PFP11
Edge 2.7L, Mustang 5.0L	306 PIN	T13 T58	PFP21 PFP11
Expedition, F-150, Navigator	198 PIN	B93 B32	PFP21 PFP11
Nautilus 2.7L	306 PIN	B3 B4 B5	PFP21 PFP12 PFP11
All other vehicles	198 PIN	B57	PFP11

RC1 PRELIMINARY DIAGNOSIS

Note: If the PCM was reflashed, reprogrammed or replaced prior to entering this pinpoint test, drive the vehicle for 8 km (5 miles) to update the PF PID data.

Are DTCs P2452, P2453, P2454, P2455, P2456, P245E, P245F, P2460, P2461, P2462, P2CE5, P2CE6, P2CE7, P2CE8, P2CE9, P2CEA, P2CEB, P2CEC, P2CED, P2CEE, U0601, U0602, U0696 or U0697 present?

Yes	For DTCs P2452, P2453, P245E, P245F, P2CE5, P2CE6, P2CEA, P2CEB or P2CEC, GO to RC2 . For all others, GO to RC3 .
No	RETURN to Section 3, Symptom Charts for further direction.

RC2 CHECK THE PARTICULATE FILTER PRESSURE SENSOR CONNECTOR AND HOSE FOR DAMAGE

- For particulate filter pressure bank 1, sensor 1,
- Particulate Filter Pressure Bank 1, Sensor 1 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Visually inspect the exhaust system for the following:
 - Leaks in the particulate filter pressure bank 1, sensor 1 connecting hose
 - Restrictions in the particulate filter pressure bank 1, sensor 1 port
- For particulate filter pressure bank 1, sensor 2,
- Particulate Filter Pressure Bank 1, Sensor 2 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Visually inspect the exhaust system for the following:
 - Leaks in the particulate filter pressure bank 1, sensor 2 connecting hose
 - Restrictions in the particulate filter pressure bank 1, sensor 2 port

- For particulate filter pressure bank 2, sensor 1,
- Particulate Filter Pressure Bank 2, Sensor 1 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Visually inspect the exhaust system for the following:
 - Leaks in the particulate filter pressure bank 2, sensor 1 connecting hose
 - Restrictions in the particulate filter pressure bank 2, sensor 1 port
- For particulate filter pressure bank 2, sensor 2,
- Particulate Filter Pressure Bank 2, Sensor 2 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Visually inspect the exhaust system for the following:
 - Leaks in the particulate filter pressure bank 2, sensor 2 connecting hose
 - Restrictions in the particulate filter pressure bank 2, sensor 2 port

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	Install a new particulate filter pressure sensor in question. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the HO2S and Catalyst and EGR (if equipped) OBD Monitor Drive Cycle Procedures. REFER to Section 2, On Board Diagnostic (OBD) Drive Cycle . Clear the PCM DTCs. REPEAT the self-test.

RC3 CHECK THE VREF AND SIGRTN CIRCUITS FOR AN OPEN

- Ignition OFF.
- For particulate filter pressure bank 1, sensor 1,
- Particulate Filter Pressure Bank 1, Sensor 1 connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side
VREF - Pin 3	SIGRTN - Pin 2

- For particulate filter pressure bank 1, sensor 2,
- Particulate Filter Pressure Bank 1, Sensor 2 connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side
PFP12 - Pin 1	SIGRTN - Pin 2

- For particulate filter pressure bank 2, sensor 1,
- Particulate Filter Pressure Bank 2, Sensor 1 connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side
PFP21 - Pin 1	SIGRTN - Pin 2

- For particulate filter pressure bank 2, sensor 2,
- Particulate Filter Pressure Bank 2, Sensor 2 connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side
PFP22 - Pin 1	SIGRTN - Pin 2

Is the voltage between 4.5 - 5.5 V?

Yes	GO to RC4 .
No	GO to Pinpoint Test C .

RC4 CHECK THE SIGNAL CIRCUIT FOR AN OPEN

- Ignition OFF.
- PCM connector disconnected.
- For particulate filter pressure bank 1, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-) PCM Connector, Harness Side
PFP11 - Pin 1	PFP11

- For particulate filter pressure bank 1, sensor 2,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-) PCM Connector, Harness Side
PFP12 - Pin 1	PFP12

- For particulate filter pressure bank 2, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-) PCM Connector, Harness Side
PFP21 - Pin 1	PFP21

- For particulate filter pressure bank 2, sensor 2,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-) PCM Connector, Harness Side

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-) PCM Connector, Harness Side
PFP22 - Pin 1	PFP22

Is the resistance less than 5 ohms?

Yes	GO to RC5 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

RC5 CHECK THE SIGNAL CIRCUIT FOR A SHORT TO SIGRTN OR GND

- For particulate filter pressure bank 1, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side
PFP11 - Pin 1	SIGRTN - Pin 2

- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-)
PFP11 - Pin 1	Ground

- For particulate filter pressure bank 1, sensor 2,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side
PFP12 - Pin 1	SIGRTN - Pin 2

- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-)
PFP12 - Pin 1	Ground

- For particulate filter pressure bank 2, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side
PFP21 - Pin 1	SIGRTN - Pin 2

- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-)
PFP21 - Pin 1	Ground

- For particulate filter pressure bank 2, sensor 2,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side
PFP22 - Pin 1	SIGRTN - Pin 2

- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-)
PFP22 - Pin 1	Ground

Are the resistances greater than 10K ohms?

Yes	GO to RC6 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

RC6 CHECK THE SIGNAL CIRCUIT FOR A SHORT TO VREF

- For particulate filter pressure bank 1, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side
PFP11 - Pin 1	VREF - Pin 3

- For particulate filter pressure bank 1, sensor 2,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side
PFP12 - Pin 1	VREF - Pin 3

- For particulate filter pressure bank 2, sensor 1,
- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side
PFP21 - Pin 1	VREF - Pin 3

- For particulate filter pressure bank 2, sensor 2,

- Measure the resistance between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side
PFP22 - Pin 1	VREF - Pin 3

Is the resistance greater than 10K ohms?

Yes	GO to RC7 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

RC7 CHECK THE SIGNAL CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition ON, engine OFF.
- For particulate filter pressure bank 1, sensor 1,
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 1, Sensor 1 Connector, Harness Side	(-)
PFP11 - Pin 1	Ground

- For particulate filter pressure bank 1, sensor 2,
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 1, Sensor 2 Connector, Harness Side	(-)
PFP12 - Pin 1	Ground

- For particulate filter pressure bank 2, sensor 1,
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 2, Sensor 1 Connector, Harness Side	(-)
PFP21 - Pin 1	Ground

- For particulate filter pressure bank 2, sensor 2,
- Measure the voltage between:

(+) Particulate Filter Pressure Bank 2, Sensor 2 Connector, Harness Side	(-)
PFP22 - Pin 1	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to RC8 .

RC8 CHECK FOR CORRECT OPERATION

- Disconnect all the PCM connectors.
- For particulate filter pressure bank 1, sensor 1,
- Particulate Filter Pressure Bank 1, Sensor 1 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors, and the particulate filter pressure bank 1, sensor 1 connector, and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.
- For particulate filter pressure bank 1, sensor 2,
- Particulate Filter Pressure Bank 1, Sensor 2 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors, and the particulate filter pressure bank 1, sensor 2 connector, and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.
- For particulate filter pressure bank 2, sensor 1,
- Particulate Filter Pressure Bank 2, Sensor 1 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors, and the particulate filter pressure bank 2, sensor 1 connector, and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.
- For particulate filter pressure bank 2, sensor 2,
- Particulate Filter Pressure Bank 2, Sensor 2 connector disconnected.
- Visually inspect for:
 - pushed out pins
 - corrosion
- Connect all the PCM connectors, and the particulate filter pressure bank 2, sensor 2 connector, and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.

Is the concern still present?

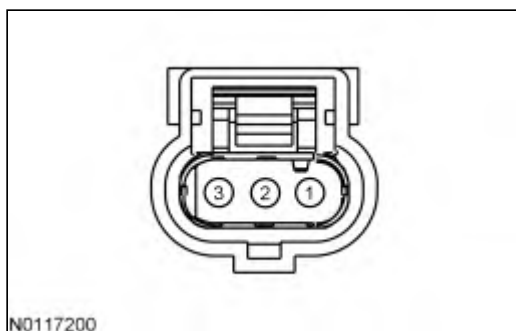
Yes	Install a new particulate filter pressure sensor in question. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CARRY OUT the HO2S and Catalyst and EGR (if equipped) OBD Monitor Drive Cycle Procedures. REFER to Section 2, On Board Diagnostic (OBD) Drive Cycle . Clear the PCM DTCs. REPEAT the self-test.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

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HG: Positive Crankcase Ventilation (PCV) System

This pinpoint test is intended to diagnose the following:

- positive crankcase ventilation (PCV) valve (6A666) and related vacuum lines
- crankcase pressure sensor (6758)
- PCM (12A650)

Crankcase Pressure Sensor Connector

Pin	Circuit
1	CKCP (Crankcase Pressure)
2	SIGRTN (Signal Return)
3	VREF (Reference Voltage)

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Vehicle	Connector	Pin	Circuit
Aviator, Edge 2.7L, Explorer 3.0L, F-150 2.7L, F-150 3.5L, Nautilus 2.7L, Transit	306 PIN	E73	CKCP
Escape/Kuga 1.5L	198 PIN	B17	CKCP
Expedition, F-150 3.5L High Output, Navigator	198 PIN	E18	CKCP
Mustang 5.2L	306 PIN	E75	CKCP

Vehicle	Connector	Pin	Circuit
All other vehicles	198 PIN	B72	CKCP

HG1 CHECK FOR DTCS

Are DTCs P04DB, P051A, P051B, P051C, P051D, P051E, P2282 or U060E present?

Yes	GO to HG3 .
No	For symptoms without DTCs, GO to HG2 . For all others, RETURN to Section 3, Symptom Charts for further direction.

HG2 VISUAL INSPECTION OF THE PCV SYSTEM

- Check the PCV valve, hoses and connections for leaks or restrictions.
- Verify the PCV valve maintenance schedule has been followed.
- Verify the correct PCV valve part number.
- Verify the PCV valve is clean.
- Verify the fresh air tube and related hoses are clean and routed correctly.

Is a concern present?

Yes	REPAIR as necessary. VERIFY the symptom no longer exists.
No	GO to HG10 .

HG3 CHECK FOR LEAKS

- Check for disconnected, damaged or restricted vacuum lines between the engine and any vacuum operated components.
- Check for disconnected, damaged or restricted intake air system lines between the engine and any intake air system components.
- Check for disconnected, damaged or restricted positive crankcase ventilation (PCV) system lines between the engine and any PCV components.
- Visually inspect for a damaged or pinched PCV hose o-ring seal.
- Visually inspect for a correctly installed oil level indicator or a damaged oil level indicator o-ring seal.
- Check for a correctly installed oil cap and valve cover, or valve cover component for leaks.
- Check for air leaks between the throttle body and intake valves.
- Visually inspect the intake throttle plate for sticking or binding.
- Verify the correct PCV valve part number.

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	For DTCs P04DB or P2282, GO to HG10 . For all others, GO to HG4 .

HG4 MONITOR THE CRANKCASE PRESSURE SENSOR PID

- Ignition ON, engine running.
- Access the PCM and monitor the CRNKCAS_P_V (VOLT) PID.

Is the voltage between 3.3 - 4.3 V?

Yes	GO to HG9 .
No	GO to HG5 .