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2023 Ford Mustang Service and Repair Manual

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		the operating conditions when the DTC (diagnostic trouble code) was set. Observe the LONGFT1 and LONGFT2 PIDs.
PCM (powertrain control module) P2BF0:00	Fuel Control System 'B' Too Lean Bank 1: No Sub Type Information	Sets when PCM (powertrain control module) detects the adaptive fuel tables reach a rich calibrated limit. The adaptive fuel strategy continuously monitors the fuel delivery hardware. Refer to Fuel Trim for additional information. View the freeze frame data to determine the operating conditions when the DTC (diagnostic trouble code) was set. Observe the LONGFT1 and LONGFT2 PIDs.
PCM (powertrain control module) P2BF1:00	Fuel Control System 'B' Too Rich Bank 1: No Sub Type Information	Sets when PCM (powertrain control module) detects the adaptive fuel tables reach a lean calibrated limit. The adaptive fuel strategy continuously monitors the fuel delivery hardware. Refer to Fuel Trim for additional information. View the freeze frame data to determine the operating conditions when the DTC (diagnostic trouble code) was set. Observe the LONGFT1 and LONGFT2 PIDs.
PCM (powertrain control module) P2BF2:00	Fuel Control System 'B' Too Lean Bank 2: No Sub Type Information	Sets when PCM (powertrain control module) detects the adaptive fuel tables reach a rich calibrated limit. The adaptive fuel strategy continuously monitors the fuel delivery hardware. Refer to Fuel Trim for additional information. View the freeze frame data to determine the operating conditions when the DTC (diagnostic trouble code) was set. Observe the LONGFT1 and LONGFT2 PIDs.
PCM (powertrain control module) P2BF3:00	Fuel Control System 'B' Too Rich Bank 2: No Sub Type Information	Sets when PCM (powertrain control module) detects the adaptive fuel tables reach a lean calibrated limit. The adaptive fuel strategy continuously monitors the fuel delivery hardware. Refer to Fuel Trim for additional information. View the freeze frame data to determine the operating conditions when the DTC (diagnostic trouble code) was set. Observe the LONGFT1 and LONGFT2 PIDs.

Possible Sources

- Aftermarket exhaust accessories or performance modifications
- Ignition system concern
- Exhaust leak concern
- Intake air leak concern
- Vacuum leak concern
- PCV (positive crankcase ventilation) system concern
- Contaminated fuel
- Contaminated oil

Electronic Throttle Control System

303-04C Fuel Charging and Controls - 3.5L EcoBoost (BM)	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 10/2/2020***

Electronic Throttle Control System

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
PCM (powertrain control module)	P0068:00	MAP / MAF - Throttle Position Correlation: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P0120:00	Throttle / Pedal Position Sensor / Switch A Circuit: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P0121:00	Throttle/Pedal Position Sensor/Switch A Circuit Range/Performance: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P0122:00	Throttle/Pedal Position Sensor/Switch A Circuit Low: No Sub Type Information	GO to Pinpoint Test DV

PCM (powertrain control module)	P061C:00	Internal Control Module Engine RPM Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P061D:00	Internal Control Module Engine Air Mass Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P061F:00	Internal Control Module Throttle Actuator Controller Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P062B:00	Internal Control Module Fuel Injector Control Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P062C:00	Internal Control Module Vehicle Speed Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P1124:00	Throttle Position Sensor A Out Of Self Test Range: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P1584:00	Throttle Control Detected ETB Malfunction: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P1588:00	Throttle Control Detected Loss Of Return Spring: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	P162D:00	Internal Control Module Cruise Control Performance: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P1674:00	Control Module Software Corrupted: No Sub Type Information	GO to Pinpoint Test QE
PCM (powertrain control module)	P2100:00	Throttle Actuator A Control Motor Circuit / Open: No Sub Type Information	GO to Pinpoint Test DV

PCM (powertrain control module)	U0606:00	Lost Communication With Throttle/Pedal Position Sensor/Switch A: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	U210F:00	Throttle/Pedal Position Sensor/Switch A Communication Circuit Low: No Sub Type Information	GO to Pinpoint Test DV
PCM (powertrain control module)	U2110:00	Throttle/Pedal Position Sensor/Switch A Communication Circuit High: No Sub Type Information	GO to Pinpoint Test DV

Symptom Chart

Symptom	Possible Sources	Action
• The engine has limited power.	• Refer to the pinpoint test.	• GO to Pinpoint Test DV
• The engine has a loss of power.	• Refer to the pinpoint test.	• GO to Pinpoint Test QE

Pinpoint Tests

PINPOINT TEST 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.

Normal Operation and Fault Conditions

Refer to the DTC (diagnostic trouble code) Fault Trigger Conditions.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

PCM (powertrain control module) P0124:00	Throttle/Pedal Position Sensor/Switch 'A' Intermittent: No Sub Type Information	Sets when the PCM (powertrain control module) detects the TP (throttle position) circuit is intermittently open or shorted. This concern exhibits a symptom of limited power.
PCM (powertrain control module) P0221:00	Throttle/Pedal Position Sensor/Switch 'B' Circuit Range/Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects the PCM (powertrain control module) indicates the TP (throttle position) sensor 2 circuit is out of range in either the closed or WOT (wide open throttle) modes. This concern exhibits a symptom of limited power.
PCM (powertrain control module) P0222:00	Throttle/Pedal Position Sensor/Switch 'B' Circuit Low: No Sub Type Information	Sets when the PCM (powertrain control module) detects the TP (throttle position) 2 signal is too low. This concern exhibits a symptom of limited power. A TP2 PID (parameter identification) reading less than 0.25 volt in ignition ON, engine OFF or ignition ON, engine running indicates a concern is present.
PCM (powertrain control module) P0223:00	Throttle/Pedal Position Sensor/Switch 'B' Circuit High: No Sub Type Information	Sets when the PCM (powertrain control module) detects the TP (throttle position) sensor signal is too high. This concern exhibits a symptom of limited power. A TP2 PID (parameter identification) reading greater than 4.75 volts in ignition ON, engine OFF or ignition ON, engine running indicates a concern is present.
PCM (powertrain control module) P1124:00	Throttle Position Sensor 'A' Out Of Self Test Range: No Sub Type Information	Sets when the PCM (powertrain control module) detects the TP1 or TP2 is greater than the expected value. During key KOEO (key on, engine off) and KOER (key on, engine running) self-tests, the PCM (powertrain control module) monitors the TP (throttle position) sensor inputs to determine if the TP1 and TP2 signals are less than an expected value. Repeat the self-test without applying the accelerator pedal. Make sure the floor mat is not interfering with the accelerator pedal. Diagnose any TP (throttle position) circuit Diagnostic Trouble Codes (DTCs) first.
PCM (powertrain control	Throttle Control Detected ETB Malfunction: No Sub Type Information	Sets when the PCM (powertrain control module) detects the electronic throttle body (ETB) fails the self-test. This DTC (diagnostic trouble code) may be accompanied by other

PCM (powertrain control module) P2112:00	Throttle Actuator 'A' Control System - Stuck Closed: No Sub Type Information	Sets when the PCM (powertrain control module) detects the fault status indicates the throttle plate is at a lower angle than commanded.
PCM (powertrain control module) P2118:00	Throttle Actuator 'A' Control Motor Current Range/Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects a concern with the electronic throttle body TACM circuits. Do not install a new electronic throttle body (ETB) for this DTC (diagnostic trouble code) . Check for circuit related Diagnostic Trouble Codes (DTCs). Check for intermittent TACM+ circuit and TACM- circuit shorted to ground.
PCM (powertrain control module) P2119:00	Throttle Actuator 'A' Control Throttle Body Range/Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects the throttle plate is at an angle other than commanded.
PCM (powertrain control module) P2135:00	Throttle/Pedal Position Sensor/Switch 'A'/'B' Voltage Correlation: No Sub Type Information	Sets when the PCM (powertrain control module) detects the TP (throttle position) voltage PIDs TP1 and TP2 disagree by greater than a calibrated limit.
PCM (powertrain control module) P2163:00	Throttle/Pedal Position Sensor 'A' Maximum Stop Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects the throttle plate does not reach the upper mechanical stop position within a calibrated amount of time. Visually inspect the throttle plate for an obstruction.
PCM (powertrain control module) P2176:00	Throttle Actuator 'A' Control System - Idle Position Not Learned: No Sub Type Information	Sets when the PCM (powertrain control module) detects the PCM (powertrain control module) is unable to learn the calibrated throttle positions. This DTC (diagnostic trouble code) may be accompanied by other Diagnostic Trouble Codes (DTCs). Diagnose other Diagnostic Trouble Codes (DTCs) first.
PCM (powertrain control	Lost Communication With Throttle/Pedal Position Sensor/Switch	Sets when the PCM (powertrain control module) detects no signal from the TP (throttle position) sensor. This concern exhibits a symptom of limited power.

Circuit Diagnostic Trouble Codes (DTCs) can be accompanied by the informational Diagnostic Trouble Codes (DTCs) and should be diagnosed first. Informational Diagnostic Trouble Codes (DTCs) without circuit Diagnostic Trouble Codes (DTCs) may or may not indicate the actual concern and should be diagnosed as a symptom.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P0600:00	Serial Communication Link: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal PCM (powertrain control module) communication error.
PCM (powertrain control module) P060A:00	Internal Control Module Monitoring Processor Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal error. Verify the PCM (powertrain control module) is at the latest calibration level.
PCM (powertrain control module) P060B:00	Internal Control Module A/D Processing Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal error.
PCM (powertrain control module) P060C:00	Internal Control Module Main Processor Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal error.
PCM (powertrain control module) P061A:00	Internal Control Module Torque Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal calculation error. The presence of this DTC (diagnostic trouble code) may indicate that the vehicle is operating in failure mode and may experience a loss of power. Check for sensor and circuit related Diagnostic Trouble Codes (DTCs). Do not install a new electronic throttle body for this DTC (diagnostic trouble code) .

		or TCM (transmission control module) related Diagnostic Trouble Codes (DTCs) in other modules, before diagnosing this DTC (diagnostic trouble code) .
PCM (powertrain control module) P162D:00	Internal Control Module Cruise Control Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects a calculation error in the PCM (powertrain control module) . Check for sensor and circuit related Diagnostic Trouble Codes (DTCs). Do not install a new electronic throttle body for this DTC (diagnostic trouble code) .
PCM (powertrain control module) P1674:00	Control Module Software Corrupted: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal error. Verify the PCM (powertrain control module) is at the latest calibration level.
PCM (powertrain control module) U0300:00	Internal Control Module Software Incompatibility: No Sub Type Information	Sets when the PCM (powertrain control module) detects incompatible software levels within the PCM (powertrain control module) that control the ETC system. The electronic throttle control system uses multiple microprocessors within the PCM (powertrain control module) , each having its own software level and function. The microprocessors must have the correct level of software in order to communicate and function together. Verify the PCM (powertrain control module) is at the latest calibration level.

Possible Sources

- Aftermarket performance products
- Radio frequency interference or electromagnetic interference
- Software incompatibility concern
- CKP (crankshaft position) circuitry concern
- CMP (camshaft position) circuitry concern
- CKP (crankshaft position) sensor
- CMP (camshaft position) sensor
- PCM (powertrain control module) configuration
- PCM (powertrain control module)

Pinpoint Test Steps available in the on-line Workshop Manual.

Fuel Charging

303-04C Fuel Charging and Controls - 3.5L EcoBoost (BM)	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 07/26/2022***

Fuel Charging

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
PCM (powertrain control module)	P0201:00	Cylinder 1 Injector A Circuit/Open: No Sub Type Information	GO to Pinpoint Test DI
PCM (powertrain control module)	P0202:00	Cylinder 2 Injector A Circuit/Open: No Sub Type Information	GO to Pinpoint Test DI
PCM (powertrain control module)	P0203:00	Cylinder 3 Injector A Circuit/Open: No Sub Type Information	GO to Pinpoint Test DI
PCM (powertrain control module)	P0204:00	Cylinder 4 Injector A Circuit/Open: No Sub Type Information	GO to Pinpoint Test DI
PCM (powertrain control module)	P0205:00	Cylinder 5 Injector A Circuit/Open: No Sub Type Information	GO to Pinpoint Test DI