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2020 Ford EcoSport Service and Repair Manual

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Is the resistance less than 3 ohms?

Yes	GO to U9

No	INSTALL a new oil pressure control solenoid. REFER to: Oil Pressure Control Solenoid (303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Removal and Installation).

U9 VERIFY OIL PRESSURE CONTROL SOLENOID CONNECTION AND WIRING

- Disconnect Engine oil pressure control solenoid C1924 .
- Disconnect PCM (powertrain control module) connectors.
- Inspect connectors and wiring:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Reconnect
  all
  connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	REPAIR the circuit or connector as needed.

No	The system is operating correctly at this time. The concern may have been caused by loose module or solenoid connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST V : P06E9

Normal Operation and Fault Conditions

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

DTC Fault Trigger Conditions

Possible Sources

- Incorrect self-test procedure
- Unexpected response from the self-test monitors
- RPM out of specification

W1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

- KOEO (key on, engine off)
- Using a diagnostic scan tool retrieve and record all Diagnostic Trouble Codes (DTCs).
- Repair any self-test or Continuous Memory Diagnostic Trouble Codes (CMDTCs) and clear the DTC(s).
- Rerun the self test.

Did DTC (diagnostic trouble code) P1001 return?

Yes	GO to W2

No	The system is operating correctly at this time. The DTC (diagnostic trouble code) may have been set due to high network traffic or an intermittent fault condition.

W2 REPROGRAM THE PCM (POWERTRAIN CONTROL MODULE)

- Reprogram the PCM with the latest software.
  REFER to: Module Programming(418-01A Module Configuration, General Procedures).
- Rerun the self test.

Did DTC (diagnostic trouble code) P1001 return?

Yes	 Guided Routine available in the on-line Workshop Manual.

No	The system is operating correctly at this time. The DTC (diagnostic trouble code) may have been set due to high network traffic or an intermittent fault condition.

PINPOINT TEST X : P112A

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P0604:00	Internal Control Module Random Access Memory (RAM) Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects the RAM is corrupt. Reprogram or update the calibration. Check for other Diagnostic Trouble Codes (DTCs) or drive symptoms for further action. Check for aftermarket performance products.
PCM (powertrain control module) P0605:00	Internal Control Module Read Only Memory (ROM) Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects the ROM is corrupt. Reprogram the vehicle identification block. Check for other Diagnostic Trouble Codes (DTCs) or drive symptoms for further action. Check for aftermarket performance products. Refer to Flash EEPROM (electrically erasable programmable read only memory) , Programming the (VID) Block for a Replacement PCM (powertrain control module) .
PCM (powertrain control module) P0607:00	Control Module Performance: No Sub Type Information	Sets when the PCM (powertrain control module) detects the internal central processing unit (CPU) encounters an error. The PCM (powertrain control module) monitors itself and carries out internal checks of its own CPU. This DTC (diagnostic trouble code) sets if any of these checks returns an incorrect value. Reprogram or update the calibration. Check for other Diagnostic Trouble Codes (DTCs) and diagnose those first. Check for aftermarket performance products. Clear the Diagnostic Trouble Codes (DTCs), repeat the self-test.
PCM (powertrain control module) P062F:00	Internal Control Module EEPROM Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects the read only memory (ROM) is corrupt. Check for other Diagnostic Trouble Codes (DTCs) and diagnose those first. Check for aftermarket performance products. Reprogram or update the calibration. Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test. If the DTC is retrieved again, carry out the passive PATS (passive anti-theft system) parameter reset. Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test.
PCM (powertrain	VIN Not Programmed or Incompatible -	Sets when the PCM (powertrain control module) detects various VID data that is out of a specified acceptable range. The

PCM (powertrain control module) U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets when the PCM (powertrain control module) detects a programming error within the vehicle identification (VID) block. Program the VID block. Refer to Flash EEPROM (electrically erasable programmable read only memory) , Making Changes to the VID Block. If the PCM (powertrain control module) does not allow reprogramming of the VID block, reflashing of the PCM (powertrain control module) is required.
PCM (powertrain control module) U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets when the PCM (powertrain control module) detects the RAM is corrupt. Reprogram or update the calibration. Check for other Diagnostic Trouble Codes (DTCs) or drive symptoms for further action. Check for aftermarket performance products. Refer to Flash EEPROM (electrically erasable programmable read only memory) , Programming the VID Block for a replacement PCM (powertrain control module) .
PCM (powertrain control module) U2200:00	Control Module Configuration Memory Corrupt: No Sub Type Information	Sets when the PCM (powertrain control module) detects a programming error within the vehicle identification (VID) block. Program the VID block. Refer to Flash EEPROM (electrically erasable programmable read only memory) , Making Changes to the VID Block. If the PCM (powertrain control module) does not allow reprogramming of the VID block, reflashing of the PCM (powertrain control module) is required.

Possible Sources

- Network communication concern
- PCM (powertrain control module)

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

Global Customer Symptom Code Chart

Customer Symptom	Action
Start/Run/Move > Starting > Cranks Will Not Start > Always	GO to Pinpoint Test A
Start/Run/Move > Starting > Hard Start/Long Crank > Always	GO to Pinpoint Test A
Start/Run/Move > Starting > Auto Start/Stop > Inoperative	GO to Pinpoint Test AA

Pinpoint Tests

PINPOINT TEST A : NO START

WARNING

Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures may be present and may be ignited. Failure to follow these instructions may result in serious personal injury.

Normal Operation and Fault Conditions

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

Possible Sources

- Spark (as related to electronic engine control)
- PCM (powertrain control module) (12A650)

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

PINPOINT TEST AA : AUTO START STOP

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	Internal Control Module Start-Stop Performance:	Sets when an error occurs in the PCM (powertrain control module) . This DTC (diagnostic trouble code) may be accompanied by other Diagnostic Trouble Codes (DTCs).

Powertrain Control Module (PCM) Input and Output Controls

303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 03/11/2022***

Powertrain Control Module (PCM) Input and Output Controls

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)	P0219:00	Engine Overspeed Condition: No Sub Type Information	GO to Pinpoint Test Z
PCM (powertrain control module)	P0297:00	Vehicle Overspeed Condition: No Sub Type Information	GO to Pinpoint Test Z
PCM (powertrain control module)	P0603:00	Internal Control Module Keep Alive Memory (KAM) Error: No Sub Type Information	GO to Pinpoint Test QB
PCM (powertrain control module)	P0685:00	ECM/PCM Power Relay Control Circuit/Open: No Sub Type Information	GO to Pinpoint Test B

Soon (Engine Image) > Stays On	
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Stays On	GO to Pinpoint Test Z
Start/Run/Move > Starting > No Crank > Always	GO to Pinpoint Test C
Start/Run/Move > Starting > No Crank > Always	GO to Pinpoint Test QB
Start/Run/Move > Starting > No Crank > Intermittent	GO to Pinpoint Test Z
Start/Run/Move > Starting > Slow Crank/Battery > Intermittent	GO to Pinpoint Test Z
Start/Run/Move > Starting > Hard Start/Long Crank > Always	GO to Pinpoint Test C
Start/Run/Move > Starting > Hard Start/Long Crank > Always	GO to Pinpoint Test QB
Start/Run/Move > Starting > Hard Start/Long Crank > Intermittent	GO to Pinpoint Test Z
Start/Run/Move > Starting > Auto Start/Stop > Inoperative	GO to Pinpoint Test Z
Start/Run/Move > Running > Engine Won't Shut Off > Always	GO to Pinpoint Test B
Start/Run/Move > Moving > Upshift Quality > Intermittent	GO to Pinpoint Test Z
Start/Run/Move > Moving > Downshift Quality > Intermittent	GO to Pinpoint Test Z
Driving Performance > Runs Rough > All Running Modes > Intermittent	GO to Pinpoint Test Z
Driving Performance > Idle Quality > Rolling > Intermittent	GO to Pinpoint Test Z
Driving Performance > Stalls/Quits > At Idle > Intermittent	GO to Pinpoint

trouble code)		
PCM (powertrain control module) P0685:00	ECM/PCM Power Relay Control Circuit/Open: No Sub Type Information	Sets when the ISP-R circuit indicates the ignition is in the OFF, ACC, or LOCK mode, and the amount of time the PCM (powertrain control module) remains powered through the PCM (powertrain control module) power relay exceeds a predetermined amount of time. Ability to communicate with the PCM (powertrain control module) when the ignition is in the OFF, ACC, or LOCK mode indicates a hard fault.
PCM (powertrain control module) P068A:00	ECM/PCM Power Relay De-Energized - Too Early: No Sub Type Information	Sets when the non volatile random access memory write did not complete successfully after the ignition key was turned OFF, prior to PCM (powertrain control module) shutdown. This DTC (diagnostic trouble code) also sets when the PCM (powertrain control module) power relay is de-energized too early.
PCM (powertrain control module) P06B8:00	Internal Control Module Non-Volatile Random Access Memory (NVRAM) Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects a concern with the ability of the PCM (powertrain control module) to correctly store permanent Diagnostic Trouble Codes (DTCs). Check for other Diagnostic Trouble Codes (DTCs) and diagnose those first. Check for aftermarket performance products. Check for an electrical or charging system concern. If an updated calibration is available, update the calibration to the latest level. If an updated calibration is not available, clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test. If this DTC (diagnostic trouble code) is retrieved after a PCM (powertrain control module) reprogramming, turn the ignition OFF and allow the PCM (powertrain control module) to complete a normal power down sequence.

Possible Sources

- PCM (powertrain control module) power circuitry concern
- PCM (powertrain control module) power relay (12A646)
- PCM (powertrain control module) (12A650)

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

PINPOINT TEST C : REFERENCE VOLTAGE (VREF)

Refer to Wiring Diagrams Cell 26for schematic and connector information.

- MAP (manifold absolute pressure) / CAC (charge air cooler) temperature sensor (9F479)
- MAP (manifold absolute pressure) / IAT2 (intake air temperature 2) sensor (9F479)
- Particulate filter pressure sensor (9G824)
- Turbocharger boost pressure sensor (9F479)
- Turbocharger boost pressure / CAC (charge air cooler) temperature sensor (9F479)
- Turbocharger wastegate motor
- Wastegate vacuum sensor (9F479)
- PCM (powertrain control module) (12A650)

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

PINPOINT TEST QB : KEEP ALIVE POWER (KAPWR)

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) P0603:00	Internal Control Module Keep Alive Memory (KAM) Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal memory concern. However, there are external items that can cause this DTC (diagnostic trouble code) . If keep alive power is interrupted to the PCM (powertrain control module) because of a battery or PCM (powertrain control module) disconnect, this DTC (diagnostic trouble code) can be generated on the first power-up. If keep alive power is interrupted to the PCM (powertrain control module) because of a battery or PCM (powertrain control module) disconnect, this DTC (diagnostic trouble code) can be generated on the first power-up.
PCM (powertrain control module) P1633:00	Keep Alive Power Voltage Too Low: No Sub Type Information	Sets when the PCM (powertrain control module) detects the keep alive power circuit has experienced a voltage interrupt. Loss of keep alive power to the PCM (powertrain control module) results in immediate MIL (malfunction indicator lamp) illumination and sets DTC (diagnostic trouble code) P1633.
PCM (powertrain	ECM/PCM Engine Off Timer	Sets when the PCM (powertrain control module) detects the difference between the engine off time and the central processing