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2019 Ford Ranger Service and Repair Manual

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No	VERIFY BJB (battery junction box) fuse F8 (10A) is OK. If OK, REPAIR the open circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

S5 CHECK THE OIL PRESSURE CONTROL SOLENOID CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PCM (powertrain control module) C1551E .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1211-2	V	Ground

Is any voltage present?

Yes	REPAIR the circuit.

No	GO to S6

S6 CHECK THE OIL PRESSURE CONTROL SOLENOID CIRCUIT FOR AN OPEN

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1551E-60	Ω	C1211-2

Is the resistance less than 3 ohms?

Yes	GO to S7

Is the resistance less than 3 ohms?

Yes	GO to S9

No	INSTALL a new oil pressure control solenoid. REFER to: Oil Pressure Control Solenoid (303-14B Electronic Engine Controls - 3.3L Duratec-V6, Removal and Installation).

S9 VERIFY OIL PRESSURE CONTROL SOLENOID CONNECTION AND WIRING

- Disconnect Engine oil pressure control solenoid C1211 .
- 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 T : 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

U1 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 U2

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.

U2 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 V : P112A

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P0602:00	Powertrain Control Module Programming Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects a programming error within the vehicle identification (VID) block.
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) P0606:00	Control Module Processor: No Sub Type Information	Sets when the PCM (powertrain control module) detects an internal communication error. 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) 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

		(powertrain control module) , to reprogram the PCM (powertrain control module) .
PCM (powertrain control module) P064F:00	Unauthorized Software/Calibration Detected: No Sub Type Information	Sets when the PCM (powertrain control module) detects an unauthorized calibration.
PCM (powertrain control module) P160A:00	Control Module Vehicle Options Reconfiguration Error: No Sub Type Information	Sets when the PCM (powertrain control module) detects a mismatch in configuration data and programmable parameters between the PCM (powertrain control module) and BCM (body control module) . Reprogram or update the calibration. If the PCM (powertrain control module) already has the latest calibration, carry out the relearn vehicle data procedure on the scan tool. Check for other Diagnostic Trouble Codes (DTCs) or drive symptoms for further action.
PCM (powertrain control module) P161C:00	Automatic Engine Shutdown Mismatch with Vehicle Configuration: No Sub Type Information	Sets when the IPC (instrument panel cluster) detects a mismatch in configuration data and programmable parameters between the PCM (powertrain control module) and the IPC (instrument panel cluster) .
PCM (powertrain control module) P1635:00	Tire/Axle Out of Acceptable Range: No Sub Type Information	Sets when the PCM (powertrain control module) detects the tire and axle information contained in the vehicle identification (VID) block does not match the vehicle hardware. Using the scan tool, view the tire and axle parameters within the VID block. They must match the vehicle hardware.
PCM (powertrain control module) P1639:00	Vehicle ID Block Corrupted, Not Programmed: No Sub Type Information	Sets when the PCM (powertrain control module) detects the VID block is not programmed or the information within is corrupt. Program the PCM (powertrain control module) to the most recent calibration available. The VID block must be programmed. Refer to Flash EEPROM (electrically erasable programmable read only memory) , Making Changes to the VID Block.
PCM (powertrain control	Brake Switch/Sensor Signal: No Sub Type Information	Sets when the PCM (powertrain control module) does not receive the ABS (anti-lock brake system) message within the defined amount of time. The PCM (powertrain control module)

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

303-14B Electronic Engine Controls - 3.3L Duratec-V6	***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)	P0685:00	ECM/PCM Power Relay Control Circuit/Open: No Sub Type Information	GO to Pinpoint Test B
PCM (powertrain control module)	P068A:00	ECM/PCM Power Relay De-Energized - Too Early: No Sub Type Information	GO to Pinpoint Test B

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 Test Z
Driving Performance > Backfires > At Idle > Intermittent	GO to Pinpoint Test Z
Driving Performance > Backfires > Acceleration > Intermittent	GO to Pinpoint Test Z
Driving Performance > Backfires > Deceleration > Intermittent	GO to Pinpoint Test Z
Driving Performance > Lack/Loss of Power > Acceleration > Intermittent	GO to Pinpoint Test Z
Driving Performance > Lack/Loss of Power > Cruise/ Steady Speed > Intermittent	GO to Pinpoint Test Z
Driving Performance > Spark Knock > Acceleration > Intermittent	GO to Pinpoint Test Z
Driving Performance > Spark Knock > Cruise/ Steady Speed > Intermittent	GO to Pinpoint Test Z