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2020 Ford Police Responder Hybrid Service and Repair Manual

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- Using a diagnostic scan tool, clear all PCM (powertrain control module) diagnostic trouble codes (DTCs)
- Using a diagnostic scan tool, retrieve all PCM (powertrain control module) diagnostic trouble codes (DTCs)

Are any PCM (powertrain control module) diagnostic trouble codes (DTCs) present?

Yes	GO to W3

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.

W3 MONITOR THE ENGINE OIL PRESSURE CONTROL OUTPUT CIRCUIT FAULT PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Using the diagnostic scan tool, view PCM (powertrain control module) Parameter Identifications (PIDs).
- Access the PCM (powertrain control module) and monitor the EOPC_CIRC_F (Engine Oil Pressure Control Output Circuit Fault) PID (parameter identification)

Is the PID (parameter identification) reading True?

Yes	GO to W4

No	A circuit fault is not currently active. CLEAR any history diagnostic trouble codes (DTCs), drive the vehicle and RECHECK for PCM (powertrain control module) diagnostic trouble codes (DTCs).

W4 CHECK THE OIL PRESSURE CONTROL SOLENOID SUPPLY VOLTAGE

- Ignition OFF.
- Disconnect Oil pressure control solenoid C1890 .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead

C175T-60	Ω	C1890-2

Is the resistance less than 3 ohms?

Yes	GO to W7

No	REPAIR the circuit.

W7 CHECK THE OIL PRESSURE CONTROL SOLENOID CIRCUIT FOR A SHORT TO GROUND

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1890-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to W8

No	REPAIR the circuit.

W8 CHECK THE OIL PRESSURE CONTROL SOLENOID FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead

	module or solenoid connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST X : P1001

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) P1001:00	KOER Not Able to Complete, KOER Aborted: No Sub Type Information	This DTC (diagnostic trouble code) sets when the KOER self-test does not complete in the time allowed.

Possible Sources

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

X1 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 X2

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.

X2 REPROGRAM THE PCM (POWERTRAIN CONTROL MODULE)

- Reprogram the PCM with the latest software.

- Place the ignition switch in the START position.
- Using a diagnostic scan tool retrieve and record all Diagnostic Trouble Codes (DTCs).

Are DTC (diagnostic trouble code) P1060 or P1061 present?

Yes	Install a new accessory drive belt tensioner. REFER to: Accessory Drive Belt Tensioner (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation).

No	The system is operating correctly at this time.

PINPOINT TEST Z : P112A

Normal Operation and Fault Conditions

REFER to: Module Controlled Functions - System Operation and Component Description(419-10 Multifunction Electronic Modules, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P112A:00	Too Many Engine Starts During Factory/Transport Mode: No Sub Type Information	This DTC (diagnostic trouble code) sets when the factory/transport mode has not been deactivated.

Possible Sources

- Incorrect self-test procedure
- Unexpected response from the self-test monitors

Z1 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) P112A return?

- Throttle position sensor
- EVAP (evaporative emission) purge valve stuck open

WARNING

To prevent the risk of high-voltage shock, always follow precisely all warnings and service instructions, including instructions to depower the system. The high-voltage system utilizes approximately 450 volts DC, provided through high-voltage cables to its components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire covering. All high-voltage components are marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

AA1 CHECK FOR THE PRESENCE OF ANY DIAGNOSTIC TROUBLE CODES (DTCS) OTHER THAN THE INFORMATIONAL DTC (DIAGNOSTIC TROUBLE CODE)

- Using a diagnostic scan tool, retrieve all diagnostic trouble codes (DTCs)

Are there any PCM (powertrain control module) diagnostic trouble codes (DTCs) other than PCM (powertrain control module) DTC (diagnostic trouble code) P1A0C or SOBDMC (secondary on-board diagnostic control module C) P1A0C?

Yes	Disregard the current DTC (diagnostic trouble code) at this time.

No	GO to AA2

AA2 ENTER ENGINE RUNNING DIAGNOSTIC MODE

- Place the vehicle in PARK.
- Push the start button to enter the ACCESSORY mode.
- Press the brake pedal and accellerator pedal together for 5 seconds.
- **NOTE**

  Steps 4 and 5 should be performed within 15 seconds after completing Step 3.

  Release the accellerator and brake pedals.
- Press the brake pedal and push the start button so that the vehicle is in drivable state.
- Press the brake pedal and accellerator pedal together for 5 seconds.

No	GO to AA4

AA4 CHECK THE VPWR PID (PARAMETER IDENTIFICATION)

- Using the diagnostic scan tool, view PCM (powertrain control module) Parameter Identifications (PIDs).
- Access the PCM (powertrain control module) and monitor the VPWR (Module Supply Voltage) (V) PID (parameter identification)

Is the PID (parameter identification) value between 10.5 and 17 V?

Yes	GO to AA5

No	REFER to: Powertrain Control Module (PCM) Input and Output Controls(303-14E Electronic Engine Controls - 3.5L V6 PowerBoost (CN), Diagnosis and Testing). **Pinpoint Test PPT B**

AA5 CHECK THE FUEL LEVEL

- Using the diagnostic scan tool, view PCM (powertrain control module) Parameter Identifications (PIDs).
- Access the PCM (powertrain control module) and monitor the FLI (Fuel Level) (%) PID (parameter identification)

Is the PID (parameter identification) value greater than 15%?

Yes	GO to AA6

No	ADD fuel to the fuel tank until the PID (parameter identification) exceeds 15%. CLEAR the PCM (powertrain control module) and SOBDMC (secondary on-board diagnostic control module C) diagnostic trouble codes (DTCs). REPEAT the self-test.

AA6 CHECK THE ENGINE OIL LEVEL

- Park the vehicle on level ground.
- Ignition OFF.
- Check the engine oil level.

Is the engine oil level correct?

AA9 INSPECT THE SECONDARY IGNITION SYSTEM

- Inspect the ignition coils to make sure they are correctly connected.
- Inspect the wiring harness and connectors for damage.
- Make sure the vehicle battery is in good condition and all accessories are turned off.
- Remove and inspect the spark plugs for damage, wear, carbon tracking or deposits and correct plug gap.
- Inspect the coil boots for holes, splits or white discolorations that could indicate arcing.

Is a concern present?

Yes	REPAIR as necessary. CLEAR the PCM (powertrain control module) and SOBDMC (secondary on-board diagnostic control module C) diagnostic trouble codes (DTCs). REPEAT the self-test.

No	GO to AA10

AA10 CHECK FOR RESTRICTIONS IN THE EXHAUST SYSTEM

- Ignition OFF.
- Check the following for damage or restrictions:
  - front and rear exhaust pipes
  - catalytic converter
  - muffler and tailpipe assembly

Is a concern present?

Yes	REPAIR as necessary. CLEAR the PCM (powertrain control module) and SOBDMC (secondary on-board diagnostic control module C) diagnostic trouble codes (DTCs). REPEAT the self-test.

No	GO to AA11

AA11 CHECK THE FUEL SYSTEM

- Ignition OFF.
- Relieve the fuel pressure.
  REFER to: Fuel System Pressure Release(310-00D Fuel System - General Information - 3.5L V6 PowerBoost (CN), General Procedures).

Yes	REPAIR as necessary. CLEAR the PCM (powertrain control module) and SOBDMC (secondary on-board diagnostic control module C) diagnostic trouble codes (DTCs). REPEAT the self-test.
No	REFER to: Powertrain Control Module (PCM) Input and Output Controls(303-14E Electronic Engine Controls - 3.5L V6 PowerBoost (CN), Diagnosis and Testing). **Pinpoint Test Z**

PINPOINT TEST QA : UNABLE TO ACTIVATE SELF-TEST/NETWORK COMMUNICATION ERROR

Refer to Wiring Diagrams Cell 024for schematic and connector information.
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) 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	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

module) P1935:00		continuously monitors the CAN (controller area network) for messages from the ABS (anti-lock brake system) module. Check for other ABS (anti-lock brake system) Diagnostic Trouble Codes (DTCs) or ABS (anti-lock brake system) related symptoms. Diagnose all other ABS (anti-lock brake system) Diagnostic Trouble Codes (DTCs) or ABS (anti-lock brake system) related symptoms first.
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.