P0430 - Catalyst System Efficiency Below Threshold (Bank 2)

Description:	This DTC sets when the bank 2 catalyst system efficiency is below the acceptable threshold.
Possible Causes:	• Use of leaded fuel • Damaged heated oxygen sensor (HO2S) • Out of range engine coolant temperature (ECT) sensor • High fuel pressure. • Damaged exhaust manifold • Damaged catalytic converter • Oil contamination • Cylinder misfiring • Downstream HO2S wires incorrectly connected • Damaged exhaust system pipe • Damaged muffler and tailpipe assembly • Retarded spark timing • Leaking fuel injector
Diagnostic Aids:	Under normal closed loop fuel conditions, high efficiency catalysts have oxygen storage which reduces the frequency and amplitude of the downstream HO2S. As catalyst efficiency deteriorates, its ability to store oxygen declines and the downstream HO2S signal has an increased amplitude and frequency. The PCM compares the signal line length of the downstream HO2S to an expected signal line length of the downstream HO2S with a deteriorated catalytic converter.

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
All	GO to Pinpoint Test HF .		

HF: Catalyst Efficiency Monitor and Exhaust Systems

HF1 CHECK FOR DTCS

Are DTCs P0420 or P0430 present?

Yes	No
GO to HF2 .	For symptoms without DTCs, GO to HF6 . For all others, RETURN to Section 3 , Symptom Charts for further direction.

HF2 CHECK FOR OTHER DTCS

Note: Internal deterioration of a catalytic converter is usually caused by abnormal engine operation upstream of the catalyst. Events that can produce higher than normal temperatures in the catalyst are particularly suspect. For example, misfiring can cause higher than normal catalyst operating temperatures.

Note: Make sure the customer has not noticed a high engine oil consumption. An engine that consumes oil at a high rate deposits high levels of phosphorus on the catalyst and reduces the catalyst efficiency.

- Carry out the PCM self-test.

Are any DTCs present other than DTCs P0420 or P0430?

Yes	No
GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions for pinpoint test direction and REPAIR the other DTCs first. Clear the PCM DTCs. REPEAT the self-test.	GO to HF3 .

HF3 CHECK THE ELECTRONIC ENGINE CONTROL (EEC) WIRING HARNESS

Note: Check the HO2S electrical connectors to make sure the correct HO2S is connected to the correct electrical connector. The electrical connectors are color coded to make sure the correct connection is made.

If the electrical connections of the rear HO2S are crossed, the catalyst efficiency monitor test fails.

- Visually inspect the HO2S harness connectors for any indication of crossed wiring.
- Visually inspect the harness for exposed wiring, corrosion and correct routing.
- Visually inspect the PCM connectors for damaged, or pushed out pins, corrosion and loose wires.

Are there any concerns with the wiring or the PCM connection?

Yes	No
REPAIR as necessary. Clear the PCM DTCs. CARRY OUT the catalyst monitor drive cycle to verify the repairs.	GO to HF4 .

HF4 CHECK THE FUEL PRESSURE

WARNING: THE FUEL SYSTEM REMAINS PRESSURIZED WHEN THE ENGINE IS NOT RUNNING. TO PREVENT INJURY OR FIRE, USE CAUTION WHEN WORKING ON THE FUEL SYSTEM. REFER TO THE FUEL SYSTEM WARNING INFORMATION AT THE BEGINNING OF PINPOINT TEST HC. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.

Note: Fuel pressure above specification can produce an abnormally rich air to fuel mixture. This rich air to fuel mixture can cause higher than normal catalyst operating temperatures.

- Ignition ON, engine OFF.
- For Mustang 5.8L:
- Access the PCM and monitor the FRP (PRESS) PID.
- For Edge 2.0L, Escape 1.6L, Escape 2.0L, Explorer 2.0L, Explorer GTDI 3.5L, Fiesta 1.0L, Fiesta 1.6L GTDI, Focus, Fusion 1.5L, Fusion 1.6L, Fusion 2.0L, MKT 2.0L, MKZ 2.0L, and Taurus 2.0L:
- Access the PCM and monitor the FLP (PRESS) PID.
- For mechanical returnless fuel systems (MRFS):
- Mechanical fuel pressure gauge connected.
- Start the engine. Record the fuel pressure.
- Compare the recorded fuel pressure reading to the Fuel System Specification Chart found at the beginning of Pinpoint Test HC. GO to Pinpoint Test HC .
- Ignition OFF.

Is the fuel pressure within specifications?

Yes	No
GO to HF5 .	GO to HC3 .

HF5 CHECK FOR LEAKS IN THE EXHAUST SYSTEM

Note: If a catalyst is in series with a leaking exhaust system, it can fail the catalyst efficiency monitor test.

- Inspect the exhaust system for leaks, cracks, loose connections, punctures, or non-factory modifications.

Is a concern present?

Yes	No
REPAIR as necessary. Clear the PCM DTCs. CARRY OUT the catalyst monitor drive cycle to verify the repairs.	GO to HF10 .

HF6 CHECK FOR RESTRICTIONS IN THE EXHAUST SYSTEM

Note: A slight pressure in the exhaust system is normal, but excessive exhaust back pressure seriously affects engine operation.

- Inspect the following for damage or restrictions:
  - front and rear exhaust pipes
  - catalytic converter
  - muffler and tailpipe assembly

Is a concern present?

Yes	No
REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.	GO to HF7 .

HF7 CHECK FOR EXCESSIVE EXHAUST BACK PRESSURE

- The internal condition of exhaust system and its ability to flow can be checked with an exhaust back pressure tool.

Is an exhaust back pressure tester available?

Yes	No
GO to HF8 .	GO to HF9 .

HF8 CHECK FOR EXCESSIVE EXHAUST BACK PRESSURE WITH EXHAUST BACK PRESSURE TOOL

Note: Typical exhaust back pressure, when measured near the exhaust manifold and at normal engine operating temperature, should not exceed 20.7 kPa (3 psi) at idle and 55.2 kPa (8 psi) at wide open throttle (WOT) under load.

- Install an exhaust back pressure tester and follow the tool manufacturer installation and testing instructions.

Does the exhaust back pressure test indicate a restriction?

Yes	No
REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test. To continue diagnosis of a symptom (lack of power, loss of power, or no start), REFER to Section 3 , Symptom Charts.	No indication of restrictions or leaks has been detected in the exhaust system. To continue diagnosis of a symptom (lack of power, loss of power, or no start), REFER to Section 3 , Symptom Charts.

HF9 CHECK MANIFOLD VACUUM FOR AN INDICATION OF EXCESSIVE EXHAUST SYSTEM RESTRICTION

Note: When the engine is first started and is idled, the reading may be normal 51-74 kPa (15-22 in-Hg), but as the engine RPM is increased, the back pressure caused by a clogged exhaust system causes the needle to slowly drop to 0 kPa (0 in-Hg). The needle then may slowly rise. Excessive exhaust restriction causes the needle to drop to a low point even if the engine is only idling.

- Attach a vacuum gauge to the intake manifold vacuum source.
- Observe the vacuum gauge while increasing the engine RPM.

Does the vacuum gauge indicate an exhaust restriction concern?

Yes	No
REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test. To continue diagnosis of a symptom (lack of power, loss of power, or no start), REFER to Section 3 , Symptom Charts.	No indication of restrictions or leaks has been detected in the exhaust system. To continue diagnosis of a symptom (lack of power, loss of power, or no start), REFER to Section 3 , Symptom Charts.

HF10 CARRY OUT THE CATALYST MONITOR DRIVE CYCLE

- Carry out the catalyst monitor drive cycle. Refer to Section 2, On Board Diagnostic (OBD) Drive Cycle .
- Carry out the PCM self-test.

Are DTCs P0420 or P0430 present?

Yes	No
INSTALL a new catalyst between the monitored HO2S, only for the bank referenced, (P0420 Bank 1), (P0430 Bank 2). Do not install a new unmonitored catalyst unless it is repaired as an assembly. REFER to the Workshop Manual Section 309-00, Exhaust System. Clear the PCM DTCs. REPEAT the self-test.	The test is complete and no concerns are present.

On Board Diagnostic (OBD) Drive Cycle

Description of On Board Diagnostic (OBD) Drive Cycle

The following procedure is designed to execute and complete the OBD monitors. To complete a specific monitor for repair verification, follow steps 1 through 4, then continue with the step described by the appropriate monitor found under the OBD Monitor Exercised column. For the evaporative emissions (EVAP) monitor to run, the ambient air temperature must be between 4.4 to 37.8°C (40 to 100°F), and the altitude below 2,438 meters (8,000 feet). If the OBD monitors must be completed in these conditions, the PCM must detect them once (twice on some applications) before the EVAP monitor can be bypassed and OBD monitors readied. The EVAP bypassing procedure is described in the following drive cycle.

Use a scan tool to carry out the OBD drive cycle. Refer to the scan tool manufacturer's instruction manual for each described function.

A detailed description for clearing the continuous diagnostic trouble codes (DTCs) is found in this section. Refer to Clear The Continuous Diagnostic Trouble Codes (DTCs) And Reset The Emission Monitors Information In The Powertrain Control Module (PCM) .

Drive Cycle Recommendations

WARNING: STRICT OBSERVANCE OF POSTED SPEED LIMITS AND ATTENTION TO DRIVING CONDITIONS ARE MANDATORY WHEN PROCEEDING THROUGH THE FOLLOWING DRIVE CYCLES. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.

1. Most OBD monitors complete more readily using a steady foot driving style during cruise or acceleration modes. Operating the throttle in a smooth fashion minimizes the time required for monitor completion.
2. The fuel tank level should be between 1/2 and 3/4 full with 3/4 full being the most desirable.
3. The evaporative monitor can operate only during the first 30 minutes of engine operation. When executing the procedure for this monitor, stay in part throttle mode and drive in a smooth fashion to minimize fuel slosh.
4. When bypassing the EVAP engine soak times, the PCM must remain powered (ignition ON) after clearing the continuous DTCs and relearning emission diagnostic information.

For best results, follow each of the following steps as accurately as possible:

OBD Monitor Exercised	Drive Cycle Procedure	Purpose of Drive Cycle Procedure
Drive Cycle Preparation	**Note:** To bypass the EVAP soak timer (normally 6 hours), the PCM must remain powered after clearing the continuous DTCs and resetting the emission monitors information in the PCM. 1. Install the scan tool. Turn the ignition ON with the engine OFF. Cycle the ignition OFF, then ON. If needed, select the appropriate vehicle and engine qualifier. Clear the continuous DTCs and reset the emission monitors information in the PCM.	Bypasses the engine soak timer. Resets the OBD monitor status.
	2. Begin to monitor the following PIDs (if available): AAT, ECT, EVAPDC, FLI, IAT and TP MODE. Start the vehicle without returning the ignition to the OFF position. 3. Idle the vehicle for 15 seconds. Drive at 77 to 104 km/h (48 to 65 mph) until the engine coolant temperature (ECT) is at least 76.7°C (170°F).	
Prep for Monitor Entry	4. Is the intake air temperature (IAT) between 4.4 and 37.8°C (40 and 100°F)? If not, complete the following steps, but note that step 14 is required to bypass the EVAP monitor and complete the OBD drive cycle.	Engine warm-up and provides intake air temperature input to the PCM.

HO2S	5. Cruise at 77 to 104 km/h (48 to 65 mph) for greater than 5 minutes.	Executes the HO2S monitor.
EVAP	6. Cruise at 77 to 104 km/h (48 to 65 mph) for 10 minutes (avoid sharp turns and hills). NOTE: To initiate the monitor, the throttle should be at part throttle, EVAPDC must be greater than 75%, and FLI must be between 15 and 85%, and for fuel tanks over 25 gallons FLI must be between 30 and 85%.	Executes the EVAP monitor if the intake air temperature is between 4.4 to 37.8°C (40 to 100°F).
Catalyst	7. Drive in stop and go traffic conditions. Include 5 different constant cruise speeds, ranging from 40 to 72 km/h (25 to 45 mph) over a 10 minute period.	Executes the catalyst monitor.
EGR	8. From a stop, idle for 30 seconds, accelerate to 72 km/h (45 mph) at 1/2 to 3/4 throttle, cruise at steady throttle for 1 minute. Repeat idle, acceleration and cruise 3 times.	Executes the exhaust gas recirculation (EGR) monitor.
CCM (Engine)	9. Bring the vehicle to a stop. Idle with the transmission in drive (neutral for M/T) for 2 minutes.	Executes the idle air control portion of the comprehensive component monitor (CCM).
CCM (Transmission)	10. For M/T, accelerate from 0 to 80 km/h (0 to 50 mph), and continue to step 11. For A/T, from a stop and in overdrive, moderately accelerate to 80 km/h (50 mph) and cruise for greater than 15 seconds. Stop the vehicle and repeat without overdrive to 64 km/h (40 mph) cruising for greater than 30 seconds. While at 64 km/h (40 mph), activate the overdrive, accelerate to 80 km/h (50 mph) and cruise for greater than 15 seconds. Stop for at least 20 seconds and repeat step 10 five times.	Executes the transmission portion of the CCM.
Misfire, Fuel And Deceleration Fuel Shut Off Rear HO2S Monitors	11. From a stop, accelerate to 104 km/h (65 mph), hold steady throttle for 5 seconds, then decelerate at closed throttle to 64 km/h (40 mph) (no brakes), accelerate from 64 km/h (40 mph) to 104 km/h (65 mph), hold steady throttle for 5 seconds, repeat deceleration 5 times.	Allows learning for the misfire monitor, and completion of the deceleration fuel shut off rear HO2S monitor.
Readiness Check	12. Access the On Board System Readiness (OBD monitor status) function on the scan tool. Determine whether all non-continuous monitors have completed. If not, go to step 13.	Determines if any monitor has not completed.
Pending Code Check And EVAP Monitor Bypass Check	13. With the scan tool, check for pending codes. Conduct the normal repair procedures for any pending code concern. Otherwise, repeat any incomplete monitor. If the EVAP monitor is not complete and the intake air temperature (IAT) was out of the 4.4 to 37.8°C (40 to 100°F) temperature range in step 4, or the altitude is over 2438 m (8000 ft.), the EVAP bypass procedure must be followed. Go to Step 14.	Determines if a pending code is preventing the completion of the OBD drive cycle.
EVAP Monitor Bypass	14. Park the vehicle for a minimum of 8 hours. Repeat steps 2 through 11. Do not repeat step 1.	Allows the bypass counter to increment to 2.

Clear the Continuous Diagnostic Trouble Codes (DTCs) and Reset the Emission Monitors Information in the Powertrain Control Module (PCM)

Description

All on board diagnostic (OBD) scan tools support the clearing of continuous DTCs and resetting of emission monitors information in the PCM.

The clearing of the continuous DTCs allows the scan tool to command the PCM to clear and reset all emission related diagnostic information.

The following events occur when the continuous DTCs and the emission monitors information is cleared from the PCM:

- the number of DTCs is reset
- the DTCs are cleared (on vehicles with permanent DTCs, additional vehicle operation is required to complete and pass the appropriate monitors to complete the clearing of permanent DTCs)
- the freeze frame data is cleared
- the diagnostic monitoring test results are reset
- the status of the OBD system monitors is reset