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PAUL REDEHOFT

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P0430

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P0430-CATALYST 2/1 EFFICIENCY

Theory of Operation

The State of Change (SOC) catalyst monitor uses the signals from both the upstream and downstream O₂ sensors to detect aging of the catalyst. Based on the fact that when a catalyst ages, it loses some of its Oxygen Storage Capacity (OSC). As a result, part of the untreated exhaust gases can breakthrough the catalyst and causes the downstream O₂ sensor to deviate from its neutral (Stoichiometric) position. By observing the activities in the downstream O₂ signal, the degradation level of catalyst can be detected. In general, the higher the downstream O₂ sensor SOC value, the more exhaust gas breakthrough and the lower the OSC of the [catalytic converter](#).

WHEN MONITORED

The monitor will run at between **1400 and 2300 RPM** . It also runs between **40 and 70 KPA** .

SET CONDITION

If the final State of Change index is within the calibrated fail threshold. Two trip fault. Three good trips to turn off the MIL.

POSSIBLE CAUSES

- Exhaust leak
- Engine mechanical condition
- Aging O₂ sensor
- [Catalytic converter](#)

Always perform the Pre-Diagnostic Troubleshooting procedure before proceeding.

Diagnostic Test

1. ACTIVE DTC

NOTE:

- A new rear O2 Sensor along with an aging front O2 Sensor may cause the DTC to set. Review the repair history of the vehicle before continuing.
- If an O2 Sensor DTC set along with the [Catalytic Converter Efficiency DTC](#) diagnose the O2 Sensor DTC(s) before continuing.
- Check for contaminants that may have damaged the O2 Sensor and [Catalytic Converter](#): contaminated fuel, unapproved silicone, oil and coolant, repair necessary.

Ignition on, engine not running.
With a scan tool, read DTCs.

Q: Is the DTC active at this time?

YES: Go To 2

NO: Refer to the INTERMITTENT CONDITION Diagnostic Procedure. [See: Component Tests and General Diagnostics](#)

Perform the POWERTRAIN VERIFICATION TEST. [See: Verification Tests\Powertrain Verification Test](#)

2. VISUALLY INSPECT [CATALYTIC CONVERTER](#)

NOTE: Ensure the top and bottom of the [Catalytic Converter](#) are thoroughly inspected.

Inspect the [Catalytic Converter](#) for the following damage.

Damage [Catalytic Converter](#), dents or holes.

Severe discoloration caused by overheating the [Catalytic Converter](#).

[Catalytic Converter](#) broke internally.

Leaking [Catalytic Converter](#).

Q: Were any problems found?

YES: Replace the [Catalytic Converter](#). Repair the condition that may have caused the failure. Perform the POWERTRAIN VERIFICATION TEST. [See: Verification Tests\Powertrain Verification Test](#)

NO: Go To 3

3. EXHAUST LEAK

Start the engine.

Inspect the exhaust for leaks between the engine and the O2 Sensor.

Inspect the exhaust for leaks between the engine and the O2 Sensor.

Turn the ignition off.

If a leak is heard but unable to be located, it may be necessary to use special tool Miller Tool #8404A Evaporative Emissions [Leak Detector](#) (EELD) on the exhaust system to find leaks.

Connect the SMOKE supply tip (black hose) to the exhaust cone adapter (if

equipped) and place it into the tail pipe. Set the smoke/air control switch to SMOKE.

Press the remote smoke/air start button.

While still holding the remote smoke/air start button, use the white light (#8404-CLL) to follow the EVAP system path, and look for the source of the leak indicated by exiting smoke.

If a leak is concealed from view, release the remote smoke/air start button, and use the ultraviolet (UV) black light #8404-UVL and the yellow goggles 8404-20 to look for residual traces of dye that is left behind by the smoke.

The exiting smoke deposits a residual fluid that is either bright green or bright yellow in color when viewed with a UV light.

Be sure to check the exhaust manifold to cylinder head connection for leaks.

Q: Are there any exhaust leaks?

YES: Repair or replace the leaking exhaust parts as necessary. Perform the POWERTRAIN VERIFICATION TEST. [See: Verification Tests\Powertrain Verification Test](#)

NO: Go To 4

4. ENGINE MECHANICAL CONDITION

Check the exhaust for excessive smoke caused by an internal problem in the engine.

Q: Is an engine mechanical condition present?

YES: Repair the engine mechanical condition as necessary. Perform the POWERTRAIN VERIFICATION TEST. [See: Verification Tests\Powertrain Verification Test](#)

NO: Go To 5

5. AGING O2 SENSOR

A new rear O2 Sensor along with an aging front O2 Sensor may cause the DTC to set. Review the vehicles repair history.

Q: Has the rear O2 Sensor been replaced without replacing the front O2 Sensor?

YES: Replace the 2/1 O2 Sensor as necessary. Perform the POWERTRAIN VERIFICATION TEST. [See: Verification Tests\Powertrain Verification Test](#)

NO: Go To 6

6. [CATALYTIC CONVERTER](#)

If there are no possible cause remaining, view repair .

Repair

Replace the [Catalytic Converter](#). Perform the POWERTRAIN VERIFICATION TEST.

[See: Verification Tests\Powertrain Verification Test](#)

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