KISS
DIAGNOSTICS
KEEP IT SIMPLE SMART

PROFESSIONAL • AUTOMOTIVE • DIAGNOSTIC SOLUTIONS • ALL MAKES & MODELS • DOMESTIC • IMPORT • EURO • OEM APPROVED

P0420

DIAGNOSTIC CODE

CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD BANK 1

CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD — BANK 1

P0420 | CATALYST EFFICIENCY | BANK 1 | O2 SENSOR COMPARISON

RELATED CODES

CODE	DESCRIPTION & NOTES
P0430	Catalyst system efficiency below threshold Bank 2 — same fault, opposite bank
P0136	O2 sensor circuit malfunction Bank 1 Sensor 2

MOST COMMON CAUSES

- **Aging/Degraded Catalyst** — 36%

Catalyst substrate has genuinely worn out and lost efficiency — most common on higher-mileage vehicles

- **Upstream Engine Fault (misfire/rich)** — 28%

Misfire or rich condition damaging or overwhelming an otherwise healthy catalyst

- **Downstream O2 Sensor Fault** — 22%

Sensor giving a false reading that mimics catalyst inefficiency

- **Exhaust Leak Near Sensors** — 14%

Leak affecting the O2 sensor comparison the PCM uses to judge efficiency

PROFESSIONAL TIPS & BEST PRACTICES

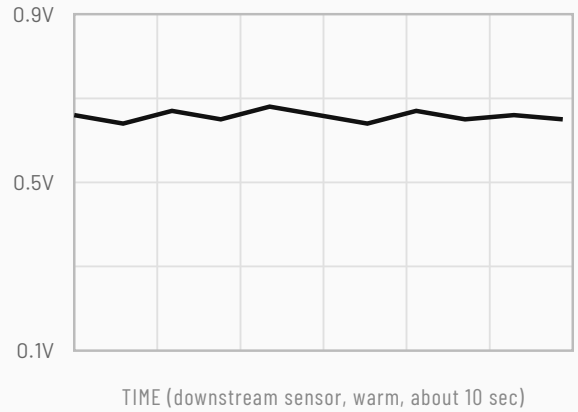
- **Multiple codes on the same module? Diagnose the root code first** — If this code shows up alongside several other codes from the same module, or a wave of "lost communication" U-codes for other modules (PCM, TCM, BCM, etc.), treat the primary circuit or module fault as the likely root cause rather than chasing every code individually. A module that's lost power, ground, or dropped off the network can trigger a cascade of communication codes elsewhere that clear on their own once the root fault is repaired — fix it, clear all codes, then retest
- **Rule out an upstream engine fault first** — A misfire or rich condition can damage or overload the catalyst — fix that first and recheck before replacing the cat
- **Compare upstream vs downstream O2 sensor activity** — A healthy catalyst shows a much flatter, slower-switching downstream signal compared to upstream

DIAGNOSTIC REFERENCE TABLE

TEST COMPONENT	NORMAL READING	FAILED CONDITION
Upstream vs Downstream O2 Pattern	Downstream flat/slow vs upstream active	Downstream mirrors upstream — cat inefficient
Engine Condition Check	No misfire, normal fuel trims	Misfire/rich found — fix before replacing cat

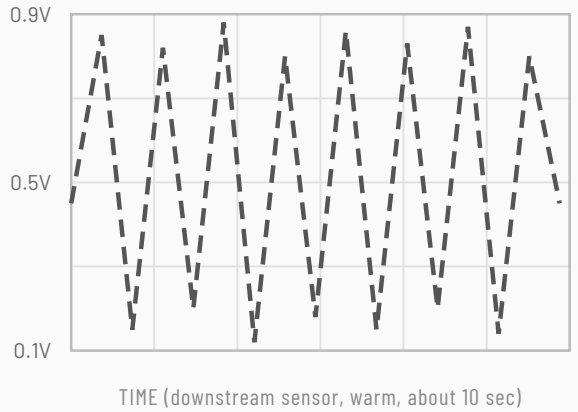
WAVEFORM REFERENCE

NORMAL PATTERN



Downstream steady about 0.6–0.7V
while the upstream sensor switches

FAULT PATTERN

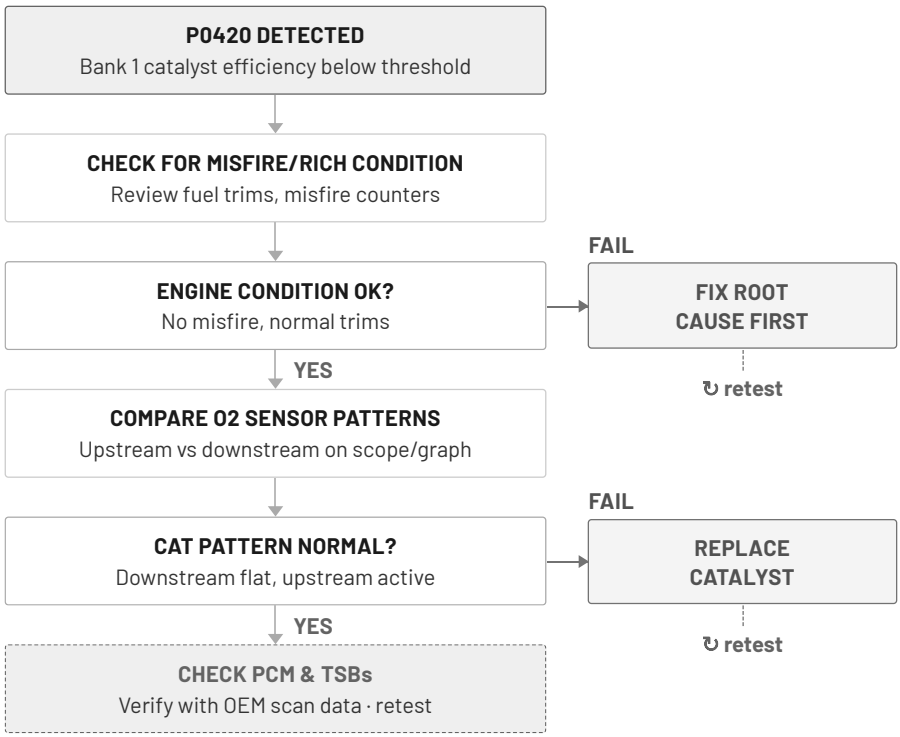


Downstream switches like the upstream —
catalyst no longer storing oxygen

Catalyst monitoring compares the two Bank 1 oxygen sensors: the upstream sensor switches rapidly, while a healthy catalyst stores oxygen and keeps the downstream signal steady (typically about 0.5–0.8V). As the catalyst wears out, the downstream signal starts to mirror the upstream switching. Rule out a lazy upstream sensor, misfires, fuel trim problems and exhaust leaks before condemning the catalyst.

DIAGNOSTIC FLOWCHART — CONTINUED BELOW

DIAGNOSTIC FLOWCHART



⚠ SAFETY & RELATED INFORMATION

- Allow the catalytic converter to cool fully before handling — it operates at extremely high temperatures
- Wear gloves when handling exhaust components — sharp edges and residual heat are common hazards
- Never tap or strike a catalytic converter to test for a rattle without proper support — internal substrate is fragile
- Confirm no unburned fuel or oil consumption issue exists before condemning the catalyst — those conditions damage a new one quickly

Generic/common DTC interpretation — exact descriptor, subtype, sensor architecture, test values and diagnostic procedure may vary by OEM.

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