DPF & CATALYTIC CONVERTER COMMON FAULT CODES GUIDE

EXCEEDING EXPECTATIONS

BM CATALYSTS

INDEX

PLEASE NOTE:

This information is provided for informative purposes only and should not be intended as a technical repairing guide. BM Catalysts cannot and will not be held responsible for any damages caused as a result of misusing this document.

WHAT ARE FAULT CODES?

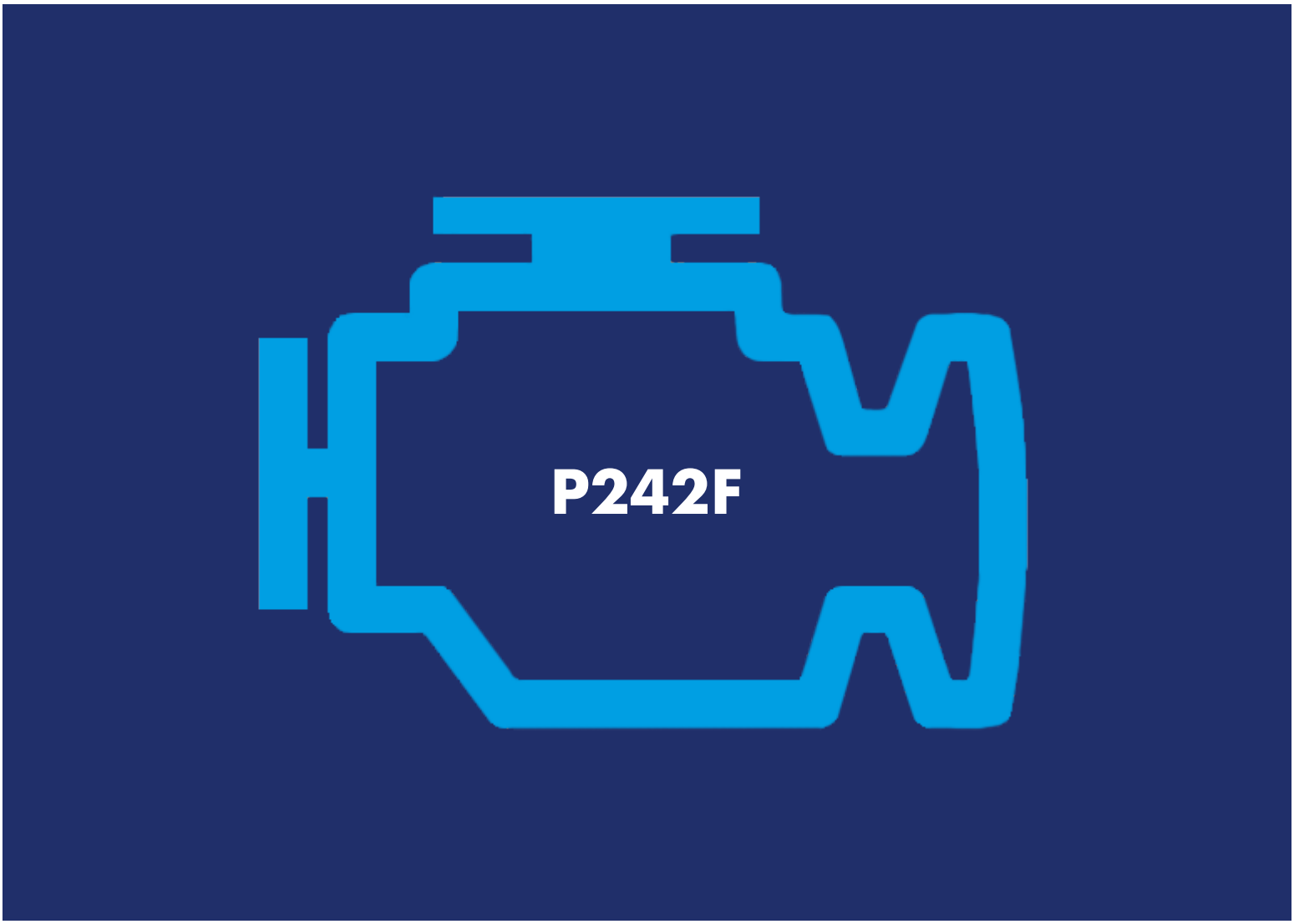
Fault codes, or 'Diagnostic Trouble Codes', are five-digit codes which identify a specific problem with a vehicle. These codes are stored by the vehicle's On Board Diagnostic (OBD) system.

A fault code will not tell you which exact part of the vehicle requires fixing or replacing, but it will provide insight into what needs to be tested in order to diagnose the underlying issue triggering the code. The codes referenced in this booklet all begin with 'P' which relates to a powertrain issue.

The vehicle's service manual should always be consulted for more information on potential causes of fault codes and the triggering of an engine management light (EML), along with the diagnostic tests required.

It is important to remember that fault codes often point to an issue with the operation of the vehicle that will affect the long-term function of a catalytic converter or diesel particulate filter (DPF). They are rarely caused by a defective catalytic converter or DPF but may cause such a defect if not properly/thoroughly investigated and resolved. A newly replaced catalytic converter or DPF should never be the cause of a fault code or EML.

The engine control unit (ECU) must be readapted/reset followed by a forced regeneration when a new DPF is fitted. All fault codes should be cleared. This is necessary to ensure that the ECU recognises that a new unit has been fitted.



P242F: DIESEL PARTICULATE FILTER RESTRICTION - ASH ACCUMULATION

Overview

This fault code is used exclusively in diesel-powered engines and is triggered when the powertrain control module (PCM) has detected a level of ash in the DPF which is deemed 'restrictive'. Ash accumulation happens as a result of both DPF filtration and regeneration.

Ash typically accumulates along the DPF channel walls or plugs near the rear of the filter which significantly decreases its effectiveness and reduces its soot storage capacity. With the ash being situated near the walls and/or rear of the DPF, this will force any particulate matter/soot to the front of the filter, essentially reducing the available filtering surface. This may result in an increased flow velocity in the DPF, causing an increase in the output voltage of the DPF pressure sensor. If the PCM detects variations in DPF flow, velocity, or volume, the P242F code may be stored and the check engine light illuminated.

Symptoms

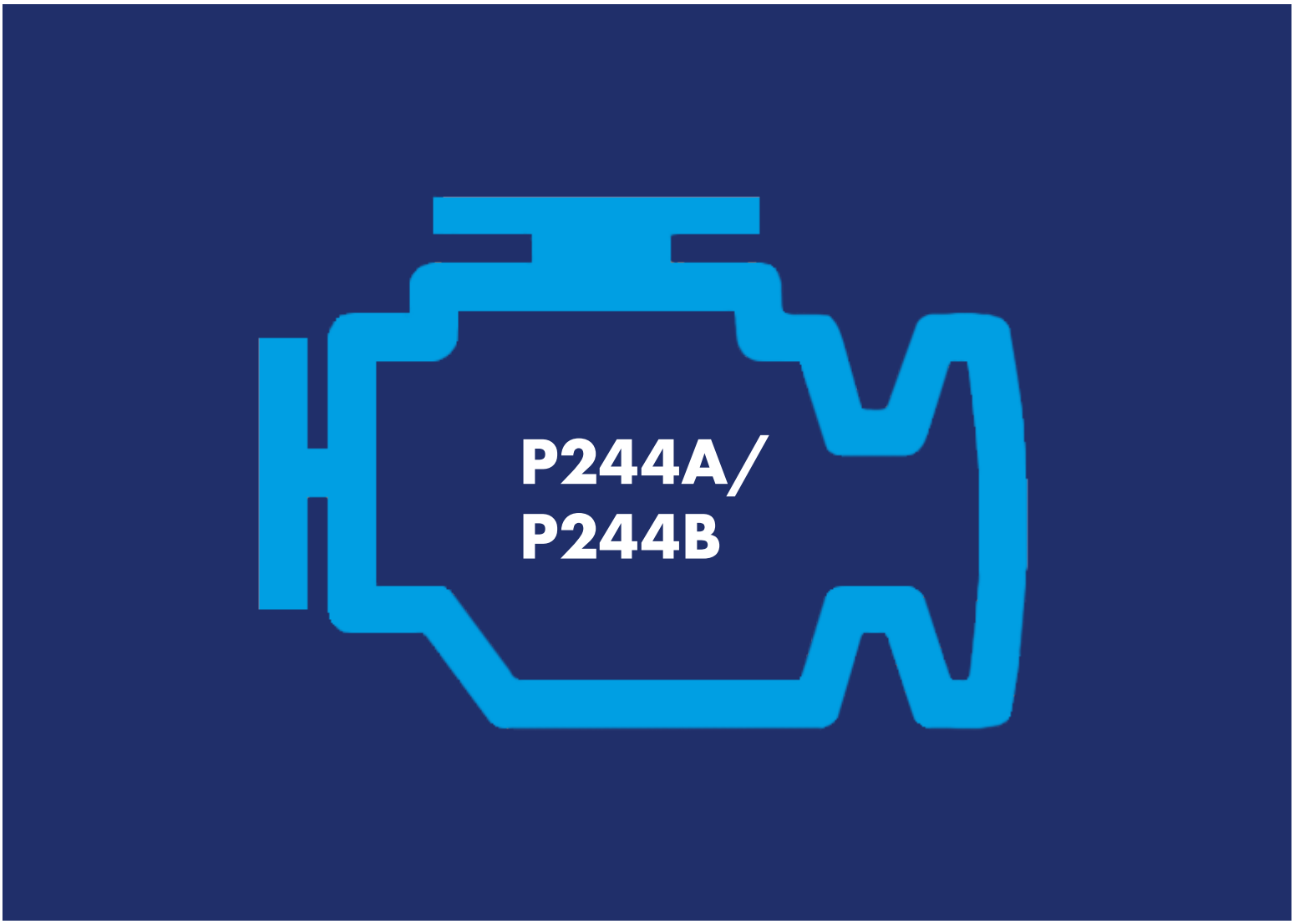
The conditions for prompting code P242F to be stored may also cause damage to the internal engine or fuel system and should be addressed as soon as possible. Symptoms of code P242F include:

- Poor engine performance
- Black smoke emitted from the exhaust
- Higher transmission temperature
- Higher engine temperature

Possible Causes

The following issues could cause code P242F to be triggered and should be investigated before assuming the DPF is at fault:

- Excessive ash accumulation within the DPF
- Defective DPF pressure sensor
- Clogged DPF pressure sensors or hoses
- Open or shorted circuit(s) in the DPF pressure sensor circuit
- Inefficient regeneration of the DPF
- Overuse of engine and/or fuel system additives



P244A: DIESEL PARTICULATE FILTER DIFFERENTIAL PRESSURE TOO LOW, BANK 1
P244B: DIESEL PARTICULATE FILTER DIFFERENTIAL PRESSURE TOO HIGH, BANK 1

Overview

A vehicle's engine control unit (ECU) will regularly perform diagnostic checks to ensure that the DPF is present and functioning correctly. It does this by using the exhaust pressure sensor to monitor the differential pressure through the DPF. If the ECU detects that the DPF is not present (because the pressure is too low), a fault code P244A will be logged and active regeneration will be disabled. If the ECU detects that the differential pressure is too high, a P244B will be stored.

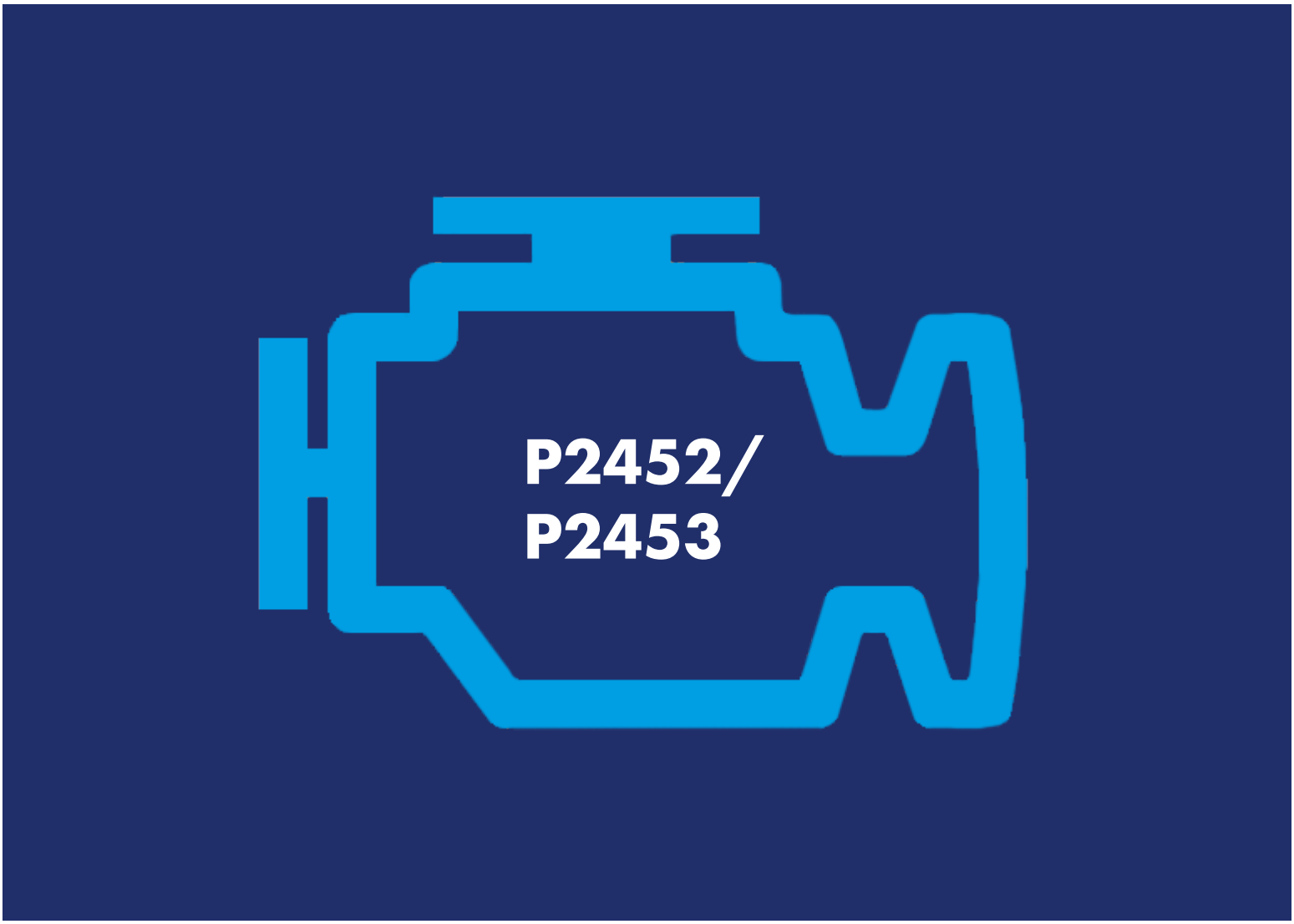
Symptoms

- Check engine light is illuminated

Possible Causes

The following issues could cause codes P244A/P244B to be triggered and should be investigated before assuming the DPF is at fault:

- Exhaust leak(s) before or near the DPF pressure sensor
- Leak(s) in the DPF pressure sensor connecting hose
- Aftermarket accessories and/or performance modifications



P2452: DIESEL PARTICULATE FILTER SENSOR A CIRCUIT
P2453: DIESEL PARTICULATE FILTER SENSOR A CIRCUIT RANGE/PERFORMANCE

Overview

If a vehicle is presenting a check engine light along with either code P2452/P2453, it indicates that the powertrain control module (PCM) has detected a malfunction in the electrical circuit of the DPF pressure sensor, specifically the one which has been given the designation 'A'.

In many cases, the DPF pressure sensor is mounted away from the DPF within the engine compartment. It will monitor exhaust back pressure before it enters the DPF via one or more silicon hoses which are connected to the DPF and the DPF pressure sensor. If the PCM detects an exhaust pressure which doesn't coincide with set specifications (which will vary), it will cause the check engine light to illuminate and will store the fault code.

Symptoms

P2452/P2453 indicate conditions which could lead to internal engine or fuel system damage so should be considered as a priority. Symptoms can include:

- Poor engine performance
- Black smoke emitted from the exhaust
- Increased engine temperature
- Higher transmission temperature

Possible Causes

The following issues could cause codes P2452/P2453 to be triggered and should be investigated before assuming the DPF is at fault:

- Clogged DPF pressure sensors or hoses
- Faulty DPF pressure sensor
- Inappropriate diesel exhaust fluid
- Empty diesel exhaust fluid reservoir
- Open or shorted circuit(s) in the DPF pressure sensor A circuit
- Inefficient regeneration of the DPF

P2463: DIESEL PARTICULATE FILTER RESTRICTION - SOOT ACCUMULATION

Overview

If the powertrain control module (PCM) detects a restriction in the DPF due to soot accumulation, this code will be stored and the check engine light may be illuminated. This is usually detected by the PCM when exhaust pressure levels exceed the set limit (which will vary).

Symptoms

Addressing P2463 should be considered as a priority as DPF restriction can lead to internal engine or fuel system damage. Symptoms may include:

- Other codes linked to DPF/DPF regeneration will likely accompany P2463
- Black smoke emitted from the exhaust
- Failure to produce and maintain desired RPM
- Increased engine temperature

Possible Causes

The following issues could cause code P2463 to be triggered and should be investigated before assuming the DPF is at fault:

- Excessive soot accumulation due to insufficient regeneration
- Faulty DPF pressure sensor
- Faulty exhaust pressure sensor
- Insufficient and/or incorrect diesel exhaust fluid
- Shorted or open wiring to DPF injection system or exhaust pressure sensor

P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD, BANK 1
P0430: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD, BANK 2

Overview

If the powertrain control module (PCM) triggers a P0420 or P0430 fault code, it means that the vehicle has detected that the catalytic converter is not working as efficiently as it should. It's important to note that this doesn't necessarily mean that the catalytic converter is at fault.

Codes are triggered by oxygen sensor readings rather than by measuring vehicle emissions. Two oxygen sensors, one positioned upstream and another downstream, monitor the catalytic converter. Typically, readings for the upstream oxygen sensor will fluctuate, whereas the downstream sensor should produce steady readings. If both sensors produce similar readings to one another, the engine control unit (ECU) calculates that the catalytic converter is not working as intended, which will trigger one of these codes.

Symptoms

While there may not be any driveability issues associated with these codes, it is important to address it as soon as possible to avoid further complications or causing serious damage to other components. Symptoms may include:

- Check engine light is illuminated
- Lack of engine power/poor acceleration
- Decreased fuel economy
- Rotten egg/sulphur smell from the exhaust

Possible Causes

- Damaged exhaust pipe or leak in the exhaust system
- Damage to or leak from exhaust manifold
- Engine misfire
- Leaking fuel injector
- High fuel pressure
- Defective oxygen sensor(s)
- Defective oxygen sensor wiring/connections
- Faulty engine coolant sensor
- Use of incorrect fuel
- Oil contamination of the catalyst
- Degraded catalyst function, possibly as a result of one or more of the above

WARRANTY GUIDANCE

In order for us to assess warranties, specifically for claims related to a catalyst warning light, the following information must be supplied as part of your claim:

Part details

- Part number
- Serial number

Vehicle details

- Make, model and engine size
- Year of manufacture
- VIN
- Date the unit was fitted and the vehicle mileage at the time of fitting
- Date the unit was removed or date the issue was identified and the vehicle mileage at the time
- Reason for replacing the previous unit
- Fault codes being triggered

What has been checked and/or changed and any reported findings, for example:

- EGR valves
- EGR system
- Injection valves
- Pressure pipes
- Pressure sensors
- Temperature sensor
- Glow plugs
- Intercooler
- Air flow meter
- Air filter
- Oil level and specification
- Wear of engine and turbo
- Leaks in the turbocharger
- Fuel additive (if appropriate)

PRODUCT SUPPORT

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