DIESEL PARTICULATE FILTER INFORMATION & FITTING ADVICE

EXCEEDING EXPECTATIONS

BM CATALYSTS

INDEX

IMPORTANT NOTE:

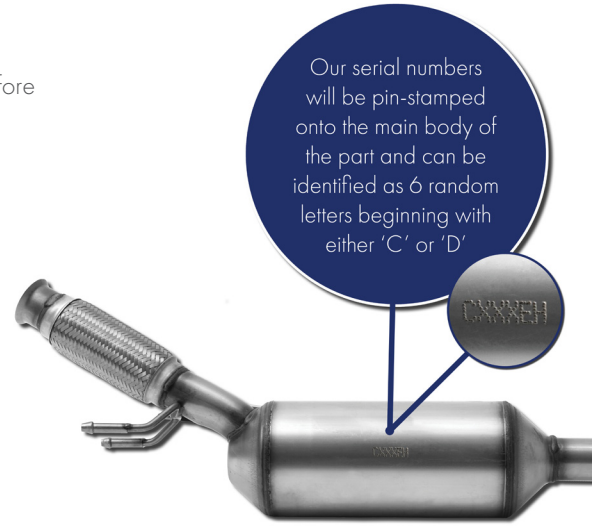
If you are thinking of replacing your diesel particulate filter (DPF), it is likely that either a fault occurring elsewhere on the vehicle or the driving style has triggered an engine management light (or dashboard warning light) to illuminate. A full fault diagnosis must be carried out by a fully trained technician with appropriate diagnostic equipment to establish if the DPF needs to be replaced. The checks listed in this guide should be carried out prior to replacement to ensure the new DPF operates correctly when fitted. By not carrying out these checks, the underlying issue may reappear shortly after the DPF has been replaced.

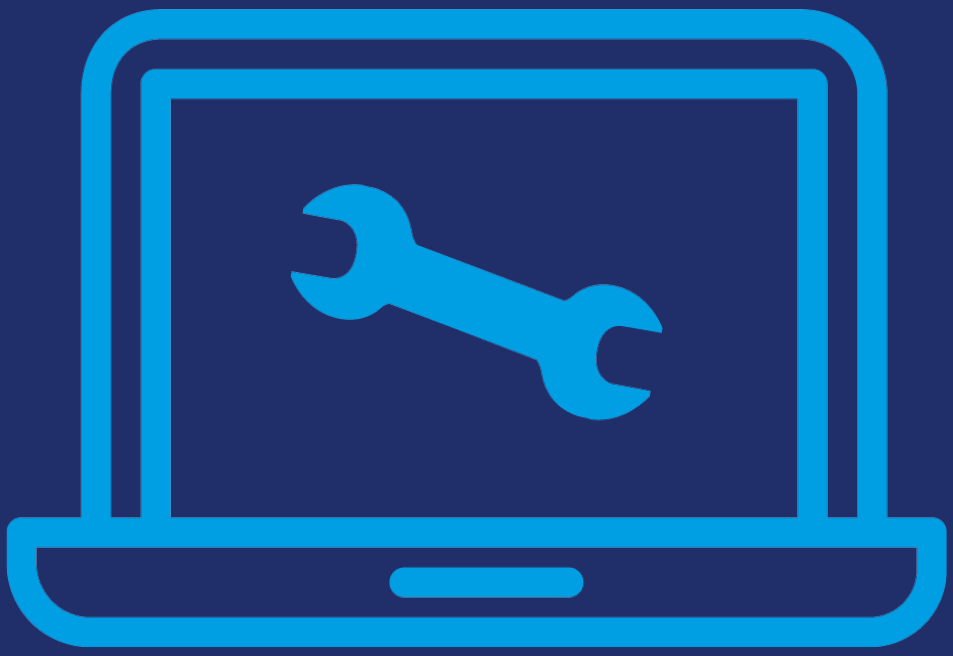
This information is provided for informative purposes only and should not be intended as a technical repairing guide. BM Catalysts cannot and will not be held responsible for any damages caused as a result of misusing this document.

SERIAL NUMBERS:

We strongly recommend noting or recording the serial number of your replacement unit before it is fitted as the label and/or stamp may be obscured after fitting. The serial number will be required for any query related to the unit, including warranties.

The serial number can be identified as six random letters beginning with either 'C' or 'D' which will generally be pin-stamped onto the main body of the unit and printed on the accompanying paperwork.





OVERVIEW

What are diesel particulate filters (DPFs) and how do they work:

How do DPFs work?

Unlike a catalytic converter, a DPF is not a flow through device. It is a soot trap that collects particulates from exhaust emissions. The exhaust gases flow into the DPF but cannot exit down the same channel as the exit is blocked. The gases escape through the porous cell walls but the particulate matter is too large to escape so is trapped within the DPF. The vehicle disposes of the soot during a process called "regeneration", whereby the particulates are 'burnt off'. On a properly functioning vehicle, regeneration will occur approximately every 300 miles (it can vary substantially depending on the vehicle and driving conditions).

Why do DPFs fail?

The most common reason for the failure of a DPF is that it has become too 'clogged' with soot for regeneration to take place. It is easy in this instance to simply assume the DPF is at fault and replace it, but if no diagnostic work is carried out it is likely the new DPF will fail quickly within a short period of time (less than 300 miles).

INSTALLATION GUIDE

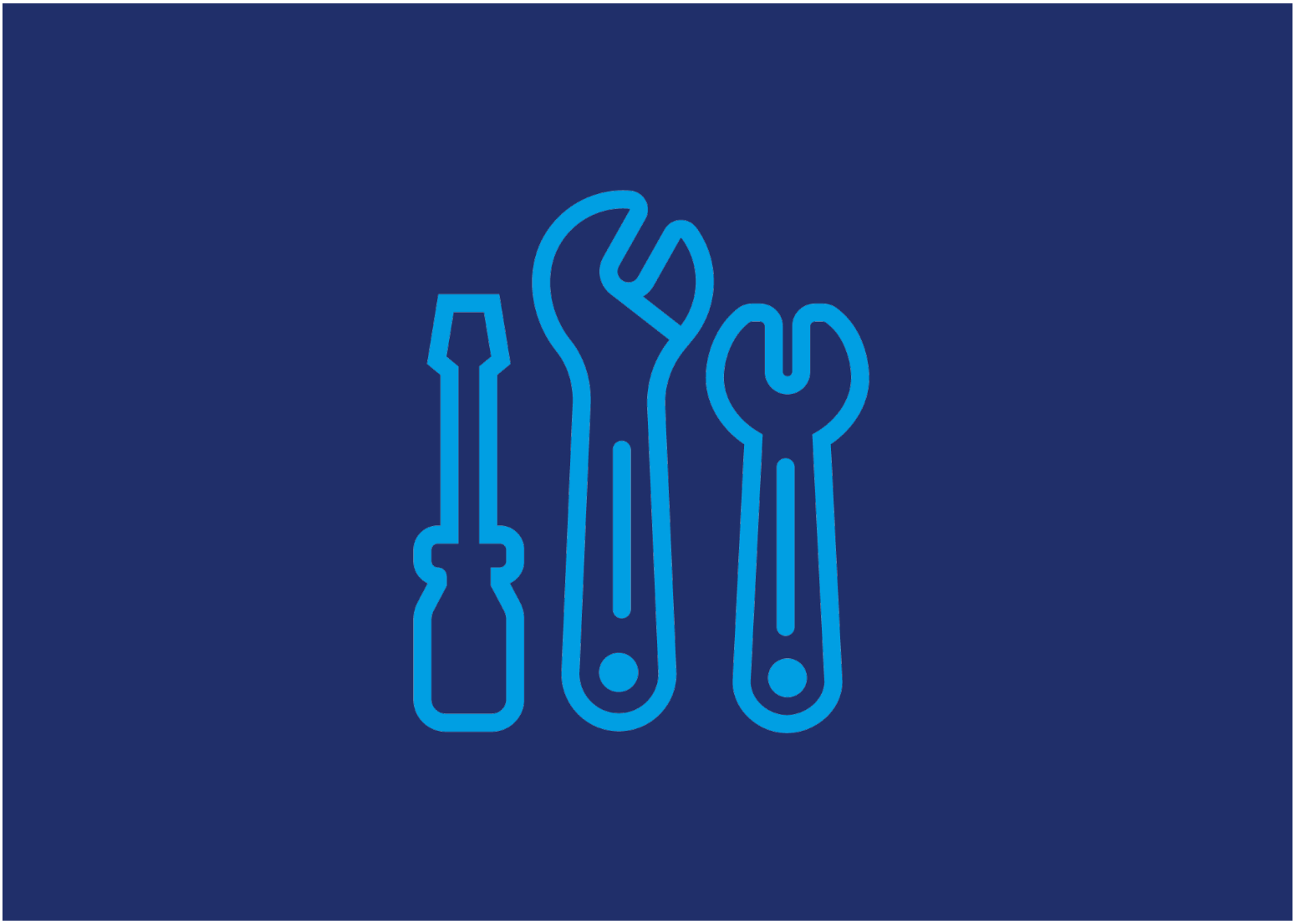
Before fitting a replacement diesel particulate filter (DPF), you must ensure that the root cause of the failure of the existing unit has been correctly diagnosed and rectified. Failure to resolve any faults or defective components may result in damage to the replacement DPF and invalidate the unit's warranty.

Safety notice

Ensure all work is undertaken by a competent individual using only the appropriate tools and equipment. Don't attempt to fit a DPF unless you have experience doing in so. Ensure that safety legislation relevant to your region and/or country is adhered to during the replacement of the DPF.

Removal

- Disconnect the earth terminal from the vehicle battery
- Safely lift the vehicle and ensure that the vehicle is secure before commencing any work underneath it
- Take a moment to observe the exact positioning of the current unit and perhaps take photographs as a point of reference should you get stuck later on
- Identify any electrical connectors that link any sensors to the DPF
- Proceed to disconnect any electrical connectors and ensure all wires are completely free
- Carefully remove any sensors and keep them protected from damage until they are refitted
- Loosen all retaining nuts and bolts that secure the DPF to the vehicle and any other exhaust components
- Any rusted or seized fittings may require application of penetrating oil or heat to aid removal. Ensure appropriate safety measures are undertaken when using naked flame heat sources.
- Remove all nuts and bolts and remove the DPF (assistance may be required if the unit is large and/or heavy)



INSTALLATION GUIDE

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Fitting

- Ensure all mating surfaces are clean and free from contaminants
- Always use a new fitting kit wherever possible to ensure that any nuts and bolts used are new - rusty nuts and bolts sometimes lose threads, meaning they may not be long enough to fit the replacement unit
- Check the integrity of rubber pressure sensor hoses for any signs of wear and tear; ensure new ones are used if necessary
- Do not apply sealant or exhaust paste; doing so may damage your replacement DPF and invalidate the warranty
- Install the replacement DPF using the new fitting kit but do not fully tighten the nuts and bolts
- Re-install any sensors removed from the original unit but do not tighten fully
- Inspect the areas around the replacement DPF and ensure there is no possibility of contact with the vehicle floor or other components
- Fully tighten all nuts, bolts and sensors but take care not to over-tighten
- Ensure all sensor cables are secure and are not in contact with the exhaust system
- Slowly lower the vehicle, reconnect the battery and then start the engine and inspect for any leakage - you may need to lift the vehicle again for inspection access
- Ensure any associated fault codes are cleared from the ECU
- Perform a forced regeneration and reset the ECU accordingly

INITIAL INVESTIGATION

The best source of information is the vehicle owner. The information they provide can be invaluable in identifying the fault:

What type of driving does the customer mostly do?

If the customer mostly does town or city driving, it is possible that the vehicle has not reached the optimum temperature required to regenerate and the DPF has become 'clogged'. If the customer does a lot of motorway driving and the vehicle has 6 gears, the revs are sometimes so low that the exhaust temperature does not rise enough for regeneration to occur. In these cases, occasional harder driving in lower gears should be enough to burn off the soot.

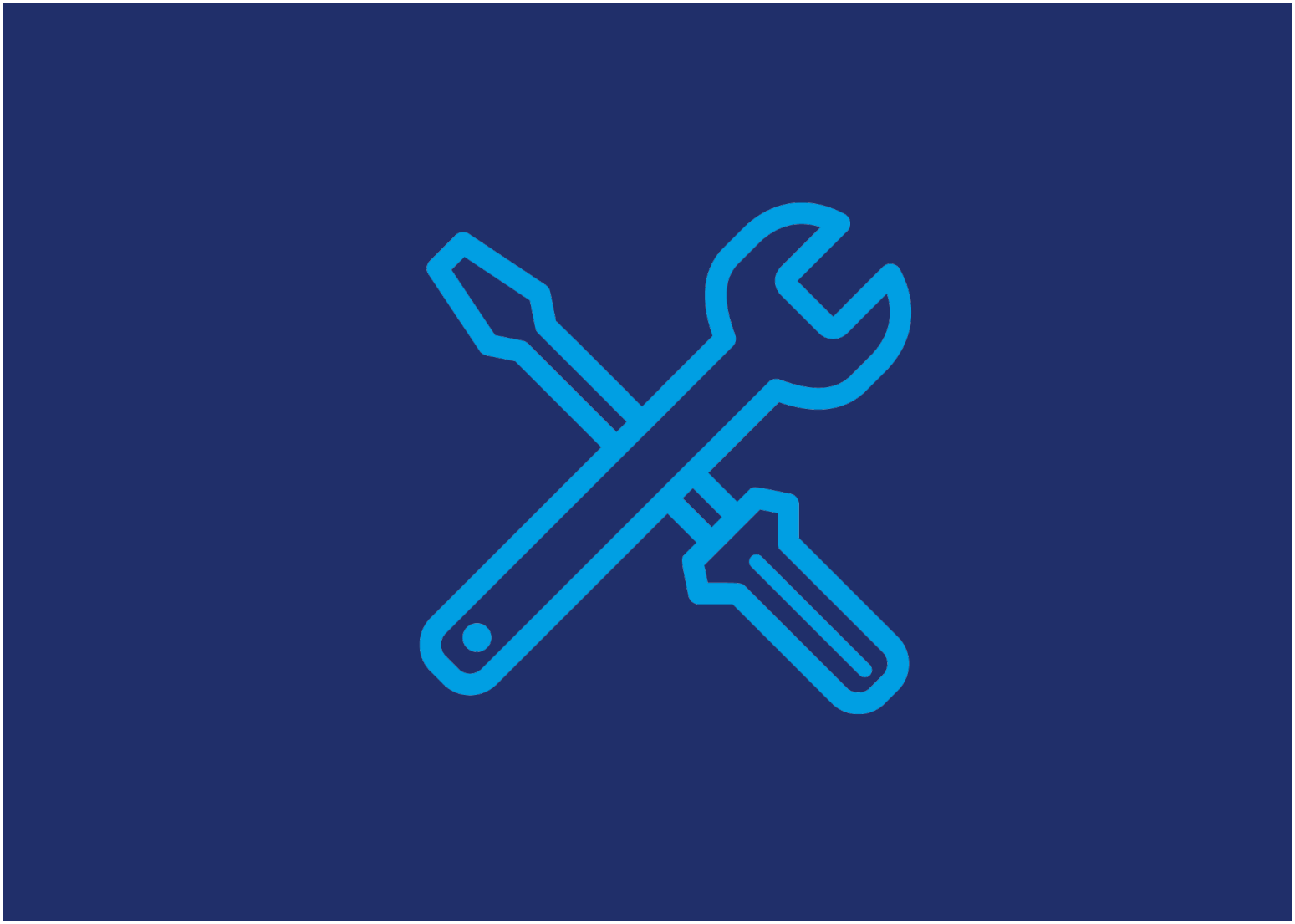
Has the vehicle been serviced recently or has the oil been changed?

If the vehicle has recently been serviced, it is worth checking that the correct type of oil has been used. Most vehicles with a DPF require a special type of low ash oil and using the incorrect oil can lead to problems during the regeneration process. If the vehicle uses a fuel additive system to aid regeneration, it should be checked that the additive tank has been filled. The additive tank is normally located near the fuel tank.

How long has the DPF warning light been illuminated?

Many DPF problems are caused by simply ignoring the warning lights which advise that regeneration is required. Once the DPF is around 45% full, the ECU makes changes to the fuel injection timing to increase the exhaust temperature and burn off the particulates. If the journey at this point is stop/start, the conditions for regeneration may not be met and a warning light will be illuminated, indicating a partial blockage. It should be possible to clear this warning light by driving at speeds greater than 40mph for around 10 minutes, although this can take up to 25 minutes if there are lots of downhill descents etc. If the warning light continues to be ignored or conditions for regeneration are not met, the level of soot in the DPF will continue to increase and at around 75% full (this may vary by manufacturer), regeneration will have to be carried out by a dealer or specialist garage.

You can also expect other dashboard warning lights to be illuminated. If the warnings are still ignored and the soot levels increase to around 95%, you can expect the vehicle to be put into "limp mode" by the ECU in order to protect the engine from damage due to the increased back pressure. At this point, regeneration cannot be performed and the DPF needs to be replaced.



DIAGNOSTIC CHECKS

The following diagnostic checks may be useful in identifying the root cause of the issue and will help ensure the issue does not reoccur:

- **DPF pressure pipes and sensors:** DPF pressure pipes and sensors checks should be made to ensure all pipes are free from blockages and the pressure sensors are operating correctly.
- **Oil specification:** check the correct low ash oil has been used.
- **Oil level:** if the oil level is high, this is a sign it has been contaminated with fuel from failed regeneration attempts. The extra fuel intended to increase the exhaust temperature can find its way into the engine sump, contaminating the lube oil and sometimes leading to a breakdown as the engine can start to run uncontrollably on its sump oil. An oil change will be necessary.
- **Fuel additive (where applicable):** check the level of fuel additive and fill the additive tank as required. There is normally a manufacturer's procedure that must be followed to reprogram the ECU to the new additive level.
- **Sensor checks:** check all sensors (such as the temperature sensor) to ensure they are operating correctly.
- **EGR system:** check the EGR valve is working correctly and the EGR pipe is free from blockages.
- **The following should also be checked:** air flow meter, engine and turbo wear, injectors (in case of leaking), glow plug condition, air filter condition and the ECU should also be checked for any malfunctions.

PRODUCT SUPPORT

Tel: +44 (0)1623 663802
Email: Support@bmcatalysts.com

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