



All you need to know about Diesel Particulate Filters DPFs

DPFs or diesel particulate filters were first introduced on Peugeot-Citröen cars as long ago as 2001 and have been fitted on all new diesel cars since 2009 to meet Euro 5 emissions standards and to improve air quality.

February 2014 saw a significant change in the MOT test for diesel cars & LCVs. As part of the new test, it will be necessary to examine the car's exhaust system to ensure that the Diesel Particulate Filter or DPF has not been removed or tampered with (if one had originally been fitted by the manufacturer when the vehicle was new). If the DPF is missing or found to have been tampered with then the vehicle owner could be fined up to £2500, if found to be driving the vehicle on the public highway.

Why are DPFs fitted and their Social Implications?

Air pollution causes an estimated 29,000 early deaths per year in the UK, and has annual health costs of roughly £15 billion. The health effects of PM are more significant than those of other air pollutants. Chronic exposure contributes to the risk of developing cardiovascular diseases and lung cancer. Current evidence suggests that there is no "safe" limit for exposure to fine particulate matter (PM). The Report of the Committee on the Medical Effects of Air Pollutants (COMEAP) from 2008 concluded that, although there had been improvements in pollutant levels, the average reduction in life expectancy as a result of airborne particulate matter across the population was 6 months.

DPF Structures

DPFs are constructed from porous ceramic materials and consist of a honeycomb of numerous small channels, which are closed at alternate ends. The exhaust gas enters the DPF through the inlet channels at one end. It is forced through the porous walls of the channels and emerges from the outlet channels. As it passes through the channel walls, the particulate matter (PM) is trapped.

DPF Blockages

PM is a complex mixture of small particles and droplets which are usually considered as 2 main components – Soot and Ash.

Soot

Soot is produced by all diesel vehicles and consists of small particles of carbon. This soot can be removed by a process known as regeneration. However, vehicles that operate in city centres with lots of stop-start driving do not regenerate their DPFs very effectively, which can lead to premature soot blockages and in some cases even a forced regeneration will fail to operate due to over capacity.

Ash Accumulation

You will often hear people talking about soot blockages but ash rarely gets a mention. Ash accumulates over time and should not be ignored, it needs to be periodically and physically



removed, just like the ash found in your log fire. Ash is a standard by-product of the combustion process that takes place in the engine, the main culprits being calcium from the engine oil and sulphur from diesel. However, unlike soot, the ash that accumulates in filters cannot be burned off by a simple regeneration processes (or by adding chemical cleaners to the fuel tank). After a certain mileage (typically in excess of 80,000 miles), the filter will become clogged with ash – even if the garage carries out a forced regen, ash will still be present. This means that vast numbers of cars fitted with DPFs 4 or 5 years ago are entering a stage where they are becoming blocked owing to long term ash accumulation. Given the fact that widespread adoption of DPFs took place in 2009, ash blockages are becoming an increasingly common and important problem.

You will hear many references where a forced regen has been carried out, to only find the DPF warning light reappearing again, even after a few days or weeks.. In most cases, this will be the result of ash accumulation.

If the vehicle's ash accumulation is high, then the on board diagnostic (OBD) system will register an increase in back pressure on the DPF. As a result, the OBD will trigger a regeneration in the DPF (as if it were a normal soot blockage). These regenerations will become more frequent as the backpressure continues to build up over time and eventually the vehicle may enter limp-home mode. By assessing the mileage and information gathered by the OBD it should be possible to determine whether a DPF is blocked with soot (for which a forced regeneration would be sufficient) or ash (in which case the DPF requires removal and cleaning or replacement).

Vehicle regeneration

Most vehicles are fitted with regeneration systems that operate without any intervention from the driver. However for a successful regeneration to take place a vehicle needs to drive constantly for at least 20 minutes at around 2000 rev uninterrupted. For more information refer to your vehicles handbook.

Remedy

Until recently DPF refurbishment for cars (or 'ash cleaning') was not very widely available or even known about. However, in the truck and bus industry, DPF refurbishment and testing has been established for some time because these vehicles cover larger mileages and ash cleaning needs to be done more regularly (typically every 2 years for a truck). CerameX, International leaders in DPF refurbishment, have been refurbishing DPFs for over 15 years and have cleaned over 100,000 DPFs. The Xpurge® patented process used by CerameX is a tried and tested process that has been heavily scrutinised by OEMs, prior to being accepted as their preferred service provider. Great care should be taken when adopting a cleaning / refurbishment service in order not to cause any detrimental effect to the catalyst washcoat used by many OEMs.

Xpurge® Process

The filters are cleaned in a fully automated Xpurge unit. The filter is sealed and fluids (no chemicals are used) injected at pre-set pressures. The patented method forces the



accumulated ash and particulate matter out of the filter, cleaning throughout the filter structure. Not only does the Xpurge process clean filters it restores them to as-new levels of cleanliness. All filters are inspected prior to refurbishment and come complete with an inspection report showing airflow measurements before and after cleaning along with weight removed. This same cleaning technology has been heavily scrutinised by many vehicle & equipment manufacturers all over the world, so you can be assured you are dealing with a world class service provider.

Service

In order to achieve a professional refurbishing service the DPF is sent to CerameX and returned within 3-5 days and it is available nationally from all leading Parts Distributors. The whole refurbishment service costs significantly less than an OEM replacement and restores the filter to as good as new levels of cleanliness. The only service that comes with a 12 month or 12,000 mile free clean warranty, whichever comes sooner.

Tel 01753 501970
www.ceramex.com
January 2015