



‘The Future of Diesel Engines’

Maintain Clean Emissions
keep it clean

June 2019

Ceramex

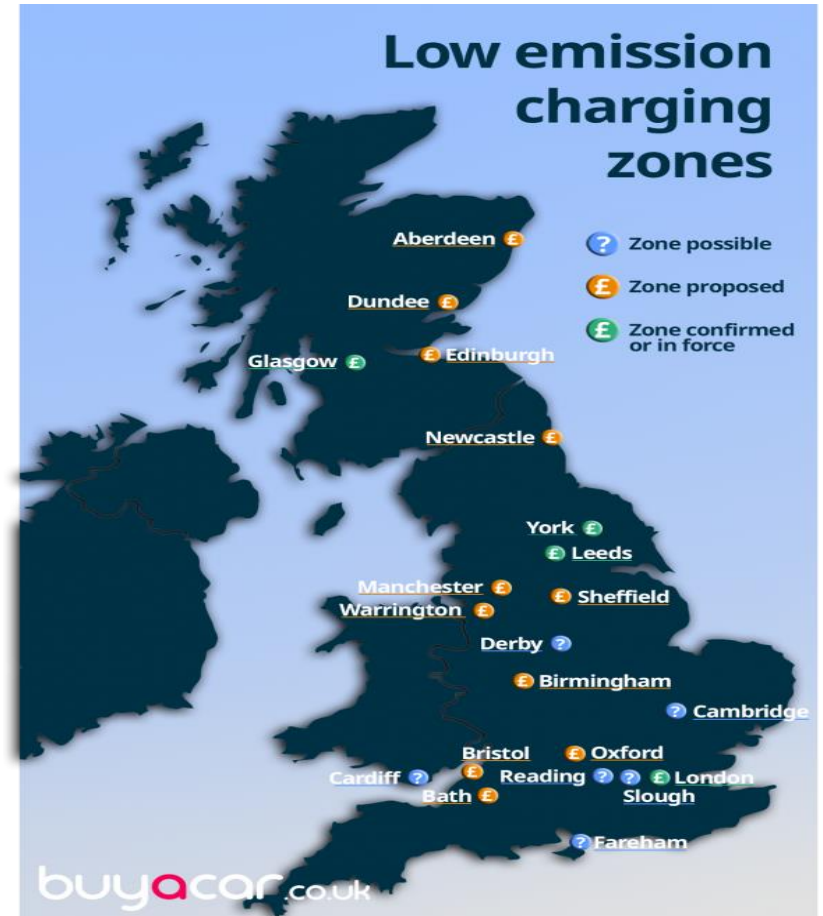
Maintain Clean Emissions

- Airborne Pollution is now a major concern in our towns and cities, not just here in the UK but around the world too.
- This is why we have Low Emission Zones and soon Ultra Low Emissions Zones



Where are the current UK Low Emissions Zones?

- London (ULEZ April 2019)
- Brighton
- Norwich
- Nottingham
- Oxford



Low Emissions Zones in Europe 2019

- 15 countries, over 200 schemes in place.
- 75 in Germany
- 100 in Italy
- 3 in the Netherlands
- Sweden, Austria, Finland and Denmark operate schemes for Larger Heavy Goods Vehicles.
- Belgium, Czech Republic, France, Greece, Norway, Portugal, Spain all operate at least one scheme.



Diesel Engine Emissions that Contribute to Airborne Pollution – These Include:

- Particulate Matter (PM) mostly made up of Soot (Carbon) and Ash (made from the combustion of Fuel & Oil Additives).
- (NO) Nitrogen Oxide and (NO₂) Nitrogen Dioxide (Known as NO_x)
- Unburnt (HC) Hydrocarbons from the Fuel
- (CO) Carbon Monoxide

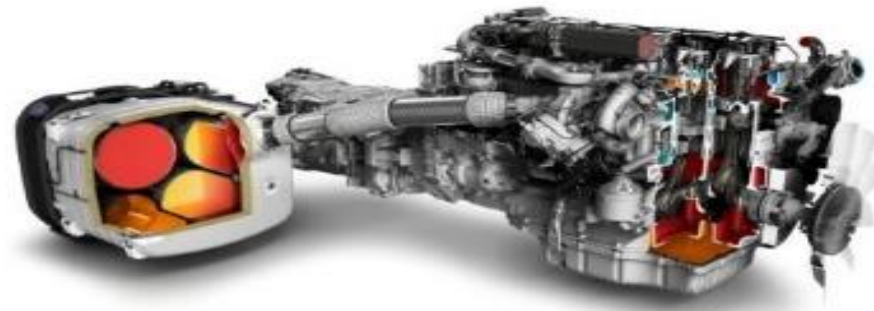


Maintain Clean Emissions

- To help combat these Emissions Issues, most Diesel Vehicles are fitted with exhaust after treatment systems.
- These systems include Various Catalysts to help Reduce the CO, HC and Nox
- All New Trucks (and other Heavy Duty Vehicles) Supplied from January 2014 are fitted with a Diesel Particulate Filter (DPF)



Scania
300g



CerameX

DPF's Various Shapes & Sizes



What Does This Warning Light Mean?



What Causes DPF's to Block?

- Short Journeys, (engine not reaching optimum operating temperature)
- Poor Maintenance (irregular Servicing)
- Clogging EGR Valve, (allowing excessive soot to the DPF)
- Faulty Fuel Injectors, (allowing too much fuel into the air/fuel mixture)
- Turbo Issues, caused if the DPF is blocked. Back pressure and temperature increase causing oil and gas leaks and carbonisation of oil.
- Incorrect Engine Oil, (Low Ash + Low Sulphur Oil should be used for vehicles fitted with a DPF)

How do you keep your DPF Healthy?

- Maintain Regular Service Intervals
- Use the Correct Grade of Engine Oil
- Good mix of driving, repetitive short Journeys can cause issues.
- Rotating the Fleet
- Cut down on Idling
- Perform a Manual DPF Regeneration whilst Stationary (Now available)





DPFs and why they matter to lubricant choice

Legislation changes are forcing updates in engine design

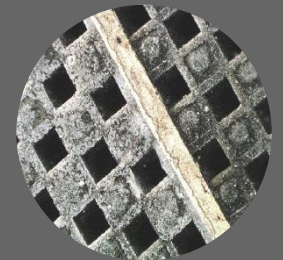
- Engine downsizing
- Heavier turbocharging
- New materials
- Fuel economy
- Exhaust gas aftertreatment devices (DPFs) **and their protection**

What are SAPs?...

- SAPs provide benefits to engine operation through anti-wear, detergency and anti-oxidation
- Both fuel and lubricant combustion by-products can block DPFs; but while soot can burn off SAPs cannot, thus blocking them

...and why do they affect lubricant choice?

- Modern engine design has required a reduction in SAP levels to protect DPFs
- Incorrectly using a high SAPs oil prematurely ages DPFs, unnecessarily increasing operating costs for customers



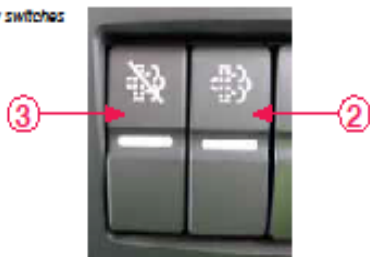
The **right** engine oil is designed to extend the life of customer equipment, saving them money year after year

Before you press the Button!

New Switches

Two new switches control the Active or Manual Regeneration:

New switches



② Manual (Active) Regeneration

To start active regeneration (see phase 4) press and hold switch for 3 seconds or more.

③ Manual Deactivation

To stop or disable any regeneration process (from phase 2 onwards).

Note: when illuminated the system is switched off

Long-haul Applications

Experience has shown that the active regeneration process is unlikely to be required, as the passive regeneration automatically keeps the DPF clean.

Distribution Applications

For stop - start distribution applications there is more of a requirement for the active regeneration process (manual operation) due to lack of temperature in the exhaust.

Full details of how to regenerate can be found in the operator's manual.

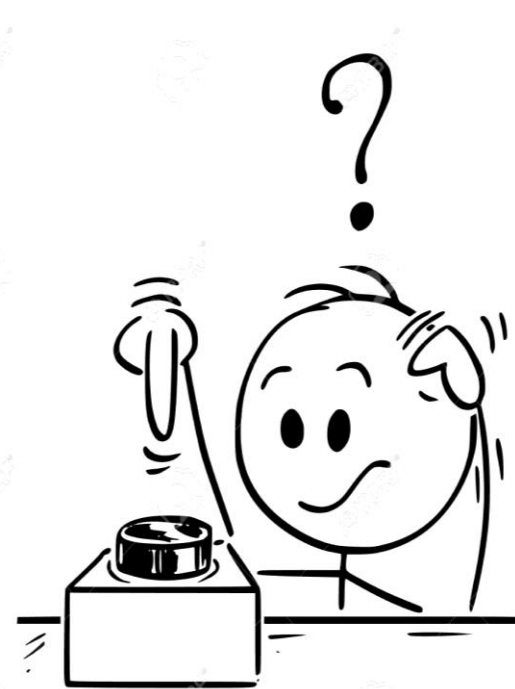
Ref: MAN DPF Regeneration Guide
Issue Date: May 2014
Subject to modifications in the course of progress.

MAN Truck & Bus UK Ltd.,
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DPF Regeneration Guide

EURO 6



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Manual DPF Regeneration – How?

- Now more common on Trucks & 4x4's especially on vehicles that might not reach the required conditions.
- Allows the Vehicle to Regenerate whilst stationary.
- Especially Fitted on Vehicles that are:
 - Driven Off Road
 - Speed Restricted
 - Stop/Start
 - Constantly Towing



DPF Refurbishing

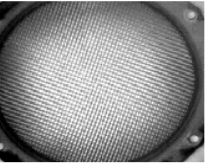
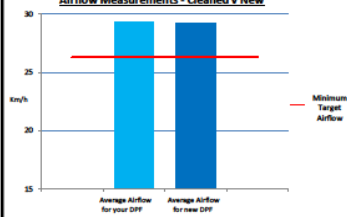
Ash is non-combustible and like your log fire at home the ash needs to be physically removed.

- Chemical Cleaners only remove soot at best
- Chemical Cleaners do not remove ash



DPF Refurbishing - Xpurge®

- Patented & Endorsed by OEM's
- Using only Purified Water & Air
- Removes Very High levels of Soot & Ash
- Suitable for Cordierite & Silicon Carbide
- Post Cleaning Report

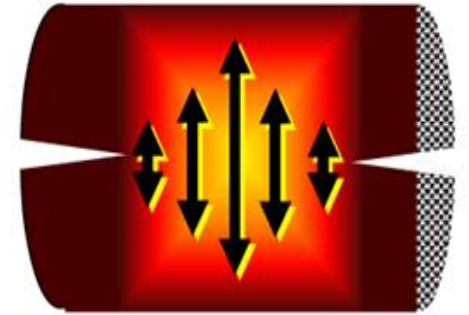
 Service Exchange DPF cleaning report	
Customer: JTP Depot: Part: 9 INCH 1871004430 Asset Details: Order Number: Reference: SL000023977 Serial No: 311223 0440 Inspection Date: 24/03/2016 Job Number:	
Post-Clean Image of DPF Inlet Image No.1 	Explanation of Post-Clean Image of DPF Inlet Image No.1 Example of holes in cells or cell walls  Example of typical cracks in filter 
Post-Clean Image of DPF Inlet Image No.2 	Explanation of Post-Clean Image of DPF Inlet Image No.2 Example of clean cells in good condition  Example of minor debris in cells  Example of significant blockage or damage 
Airflow Measurements - Cleaned v New 	Filter Condition Result: Pass Additional Notes: The DPF has cleaned well

Importance of Ash Removal

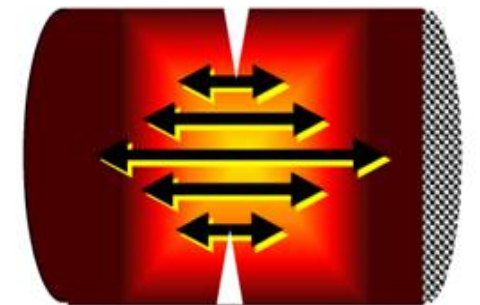
Any residual ash deposits stay (relatively) cold when a regen occurs. The rest of the filter expands more rapidly than the area containing ash.

There are two types of cracking caused by thermal expansion:

Face Cracking - This appears when the centre of the substrate core is hotter than the end faces.



Ring-Off Cracking - This appears when the centre of the substrate core is hotter than the skin.



Benefits of a OEM Approved DPF Clean

- Superior performance over conventional cleaning processes
- Patented, Automated technology
- High capacity and Fast turnaround
- Longer intervals between cleans
- Up to 7% Reduction in Fuel consumption
- Less Filter Failures and Expensive replacements
- Full Inspection Report
- Filter imaging for Audits and Monitoring



Thank You!