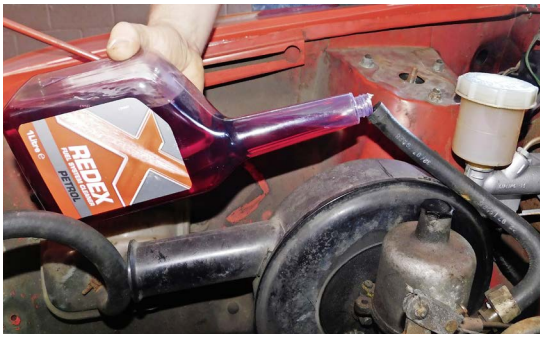
ENGINE ADDITIVES

Rob Marshall investigates three types of easy-to-use, pour-in engine additives that you can use as preventive and cost-saving measures at service time.



Older engines were less affected by deposit build-up. Even so, pouring a fuel additive directly into the engine breather gave the inlet system an effective clean. Modern engines are far more sophisticated and are more easily damaged, but pour-in additives at service time can benefit not only the fuel but also the lubrication systems.

Engine oil and fuel additives have been around for almost as long as the motor car. Over the years, a variety of products have claimed to improve running, provide lower emissions, raise fuel efficiency and increase mechanical life. Some motorists claim that fuel and oil additives are invaluable, while others consider them to be a placebo and not worth the money.

The arguments against

In 2009, the consumer organisation *Which?* evaluated the performance, emissions and fuel economy claims of a number of popular petrol and diesel additives, concluding that all of them had only a minimal effect and were not worth the money. Is the same true today? Many of those products tested are no longer on sale, or their formulations may have been refined and improved.

A further issue is that fuel and oil additives do not have to meet any quality, or technical, standards and some companies, such as Shell Lubricants, argue that they could upset the balance of chemistry within an engine oil's complex formulation. David Wright of the Verification of Lubrication Specifications (VLS), a British-based organisation that tests the claims made on the packaging of lubricants, says: "Oil fortifiers are general products that are not specifically formulated for different types of vehicles. With the increasing sophistication of modern engines, one type of engine oil cannot suit all vehicles, just as one type of oil fortifier cannot suit all engines."

The arguments for

Companies that sell both engine oil and additives defend these pour-in add-ons. Liqui Moly says that its own additives cannot affect the chemistry of engine oil negatively, provided that they are applied correctly, and Wynn's told *CM* that its oil additives complement the lubricant and will not harm any components within the engine.

From a technical standpoint, the demand to make engines more fuel-efficient and less polluting has resulted in them being less tolerant of carbon and oil deposits, the build-up of which reduces efficiency and courts mechanical failure. For example, while no pour-in fuel/oil additive can insure against coking of the cylinderhead intake, some direct-injection petrol engines (GDI) can be fitted with low-tension piston rings that promote freer running and reduce frictional losses. Coupled with higher compression ratios, the rings tend to not seal as effectively as earlier types did and, as the oil quality degrades, due to combustion gases blowing-past the rings over time, oil that is present behind the rings can harden. This reduces the piston rings' sealing effectiveness even further.

This issue, coupled with extended oil drain intervals of almost all modern engines, is one example why a number of garages recommend that cleansing additives are used as preventive measures at every service. Several main dealer technicians told *CM* that, while most car manufacturers aren't in favour of additives formally, they still recommend that their dealerships use them to address certain 'in service' problems with deposits.

1 Engine oil flushes

▶ These products are added to the old oil, prior to running the engine for a specified period with no load, before draining the sump. A common argument against engine flushes is that they risk loosening contaminants that become free to circulate and cause even more damage. Good quality flushes, however, should dissolve and hold these particles in suspension, although this risks the oil becoming over-saturated. In case of severe contamination in a particularly neglected engine, Liqui Moly endorses an extra flush.

BG Products says that its EPR (Engine Performance Restoration) flush removes hardened oil deposits that collect behind the piston rings, making it ideal for GDI applications. BG recommends running the engine at a high idle speed (approximately 1200rpm) for a minimum of 20 minutes – longer is preferred but BG cautions that the cleaning properties of its flush expire after 45 minutes.

Should you own a diesel with a particulate filter (DPF), ask the vendor if a flush – and any other oil additive, for that matter – is compatible with low SAPS oils, otherwise you risk producing additional ash within the filter and shortening its life. Wynn's says that its engine flushes are compatible with DPFs and that the removal of deposits can quieten hydraulic valve lifters and extend the life of new oil, because the engine is cleaner internally.

2 Engine oil fortifiers

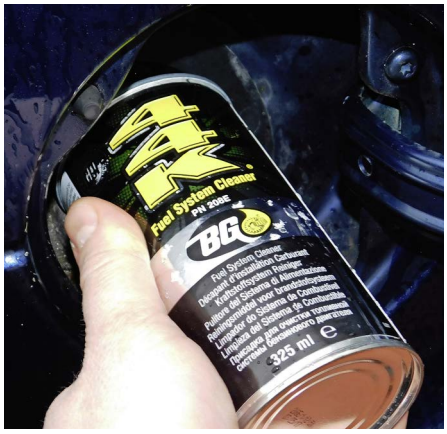
Apart from additives that are used to address high oil consumption/low oil pressure, several respected companies – such as Wynn's – produce engine oil conditioners, or fortifiers, although there are a number of arguments that they can do more harm than good.

Liqui Moly has a range of friction-reducing additives. Oil Additiv contains molybdenum disulphide particles that adhere to the metal surfaces. A chemical alternative is offered too, which uses friction modifiers that smooth metal surfaces, to complement those present in the oil. Cera Tec uses ceramic particles for its solid lubricant instead of molybdenum disulphide, as well as friction modifiers. The company quotes results at the German engine test centre, APL, which showed that the wear protection level for engine oil doubled when fortified with Cera Tec.

BG Products says its MOA (Motor Oil Additive) conditioner for petrol engines maintains the oil's viscosity and integrity for longer, by resisting acid formation and reducing friction. It keeps GDI engines clean, by reducing varnish and sludge, as well as cleaning piston rings. Alternately, BG's Diesel Oil Conditioner (DOC) maintains the oil's viscosity for longer, improves soot control and reduces friction, sludging, oil breakdown and evaporation effects.

None of these additives allows you to extend the oil drain interval, because long engine life is proven to be linked with regular oil changes, using quality lubricants and OE oil filters.

3 Fuel additives



Additive firms tend to boast of their products' cleaning functions, from the injectors to the whole 'wet' side of the fuel system, but they should not be a substitute for regular filter changes. The effect of some products will last only for the tank of fuel to which they are dosed, so look for products that claim longer-lasting effects. Certain additives recommend making several re-doses between services, something that is worth considering for GDI and direct-injection diesel engines, where the injectors are exposed to the combustion process. Wynn's told *CM* that there is no harm applying additional fuel treatments between service intervals to maintain the efficiency of the fuel system.

BG Products advises that cleaning accumulated carbon from within injectors is critical to restoring an optimum spray pattern and, therefore, controlling emissions, which its BG235 additive ensures for diesels. The company's BG44K performs this function for GDI injectors, as well as cleaning Lambda sensors and catalytic converters.

Liqui Moly says that its Super Diesel Additive not only prevents injector needles from sticking due to gumming, but also guards against future deposits and corrosion, both of which are important factors with current blends of biofuel within pump diesel.

4 Extra cleaners

A major issue with direct-injected engines is clogging of the inlet tracts. Unfortunately, no pour-in additive can address this problem currently. In addition, exhaust gas recirculation causes inlet issues, but the EGR valve itself tends to suffer mostly from the effects of carbon and oil residues. Some technicians recommend cleaning EGR valves as part of the preventive maintenance schedule on some engines. Certain companies offer a kit of parts for this, but they are more invasive than simple pour-in additives, so there is a risk of damaging components if they are used incorrectly.

When replacing an air filter, a simple MAF solvent cleaner aerosol will remove deposits that can affect the sensor's operation, or shorten its life. Throttle body cleaners can be employed periodically, to help remove any dirt, gum and varnish residue.

With DPFs, unless there is a defect, or a vehicle is used regularly for short journeys, cleaning should be unnecessary. Interestingly, the movement of variable vane and geometry systems on turbochargers can become restricted due to carbon build-up, which is why Revive developed its Service Shot as a preventive measure that is sprayed into the air intake while the engine is running. This helps to not only prevent subsequent seizure, which might necessitate turbocharger replacement, but also subsequent illumination of the engine management lamp, which could result in an MOT fail.

CONSUMER vs PROFESSIONAL products

The proliferation of additive brands makes it tricky to make an informed choice, with some companies offering both DIY- and workshop-oriented pour-in additives. Wynn's Additives, which is celebrating its 80th anniversary in 2019, offers both and a spokesperson told us that its consumer products are sold to the public via motor stores and that they are unlikely to cause issues if used incorrectly – say, if a petrol cleaner were used in a diesel engine.

Wynn's Professional additives tend to have less detailed packaging and have either a different formulation, or are supplied in a more concentrated version than the retail alternative. These are designed for trade use, where faster results are required in a workshop environment. However, the company insists that both types are equally effective.