There are two golden rules when it comes to looking after a Jaguar V12 engine; don't cook it and don't cook it.

The V12 is one of most reliable, refined and unstressed engines ever produced, but it cannot tolerate overheating, even for a brief amount of time.

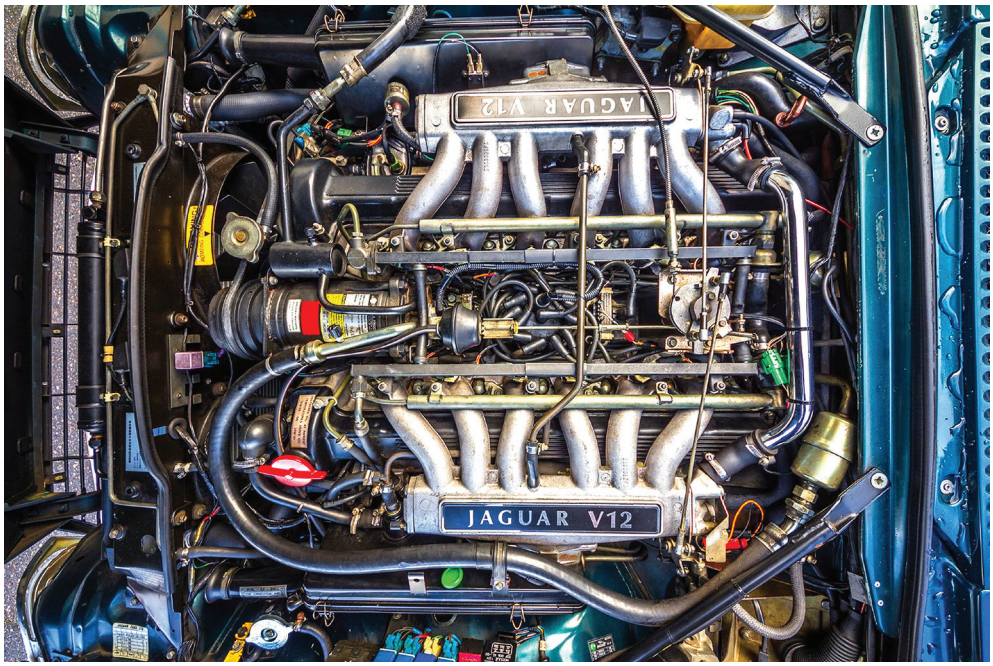
Let it happen and there will not only be the normal head gasket issues, but the cylinder head will expand at a faster rate than the valve seats which then loosen when everything cools.

The engine may restart once cooled and even run well initially, but one morning - even a month later when starting from dead cold a seat will fall out, take the head off the valve, and proceed to mash everything within range into scrap.

So, if an engine is inadvertently overheated the heads should be removed immediately and the head face around the valve seats peened over to secure them. If the pistons show signs of having grabbed in the bore, or the engine has a distinctive burned smell, there will be no option but to strip the whole thing down for a full inspection.

Much of the VI 2's reputation for poor reliability is due to the quality (or lack thereof) of the ancillary components, manly those supplied by Lucas.

In addition to the ignition issues (mentioned latter), neither the alternator nor starter motor have covered themselves in glory over the years, particularly as the oil cooler and steering rack, respectively, have to be removed to access them when they do go wrong.



Jaguar produced the world's first mass-produced VI 2 engined cars

The V12 is still physically a big engine, but compared to today's cars its engineering, once feared for its complexity, now seems quite straightforward.

There is certainly room for improvement when it comes to the ancillaries and major repairs do require a large degree of patience, but in terms of the V 12's basic engineering, Jaguar got it just about spot-on right from the start.

Preventive Maintenance

Cooling System

A well-maintained V12 should be perfectly capable of keeping its cool, even into the far side of 40 degrees Celsius, but only when at maximum efficiency.

Check the hoses and drive belts regularly, not just for peace of mind but because most are nearly impossible to access at the roadside anyway.

Silted and corroded radiators, debris blocking the air intake, worn viscous fan couplings and incorrect thermostats which do not blank off the bypass when opening will all lower the threshold at which the engine can hold its own.

Two worthwhile upgrades, however, are a pair of electric fans (with integral shroud) to allow removal of the original and complicated mechanical assembly, and a replacement to the later (post-1987) aluminium full-flow oil cooler in place of the original steel one, which only cooled the bypass oil.

Finally, replace coolant every 2 years or 50,000 km; whichever comes first.

Wiring

The engine bay of any VI 2 can get VERY hot, and in the process give the extensive wiring a thorough roasting.

The engine and injection looms are the most vulnerable, the latter clamped down low in the vee and positioned perfectly to short out against its metal securing clamps when the brittle insulation eventually cracks.

A new or overhauled loom can be expensive, but is still cheaper than repairing even minor fire damage.

Fuel

Under-bonnet fires, contrary to popular belief, do not occur without prior warning; it's just that most owners are not aware of the warning signs.

Fuel hose hardens with age and heat, and if not replaced every ten years or so will eventually crack and leak

As mentioned, the wiring insulation will also perish over time and crack, often leaving an exposed wire to short to earth should any metal component be close enough. Combine the two and the result can be utterly devastating.

Fuel rail hoses should always be replaced with the correct size and grade, preferably secured with the original type of collar.

Carburettored engines, operating at lower fuel pressure and with fewer hoses, are not quite as prone to fire, but should nevertheless be watched just as carefully.

In addition to checks of the fuel hoses, keep a close eye also on the carburettors themselves, positioned as they are directly over the hot exhaust. Ensure all overflow pipes are in place and unrestricted, and replace the O-rings on the float bowl plugs if the car has stood for any length of time as they can dry out and leak.

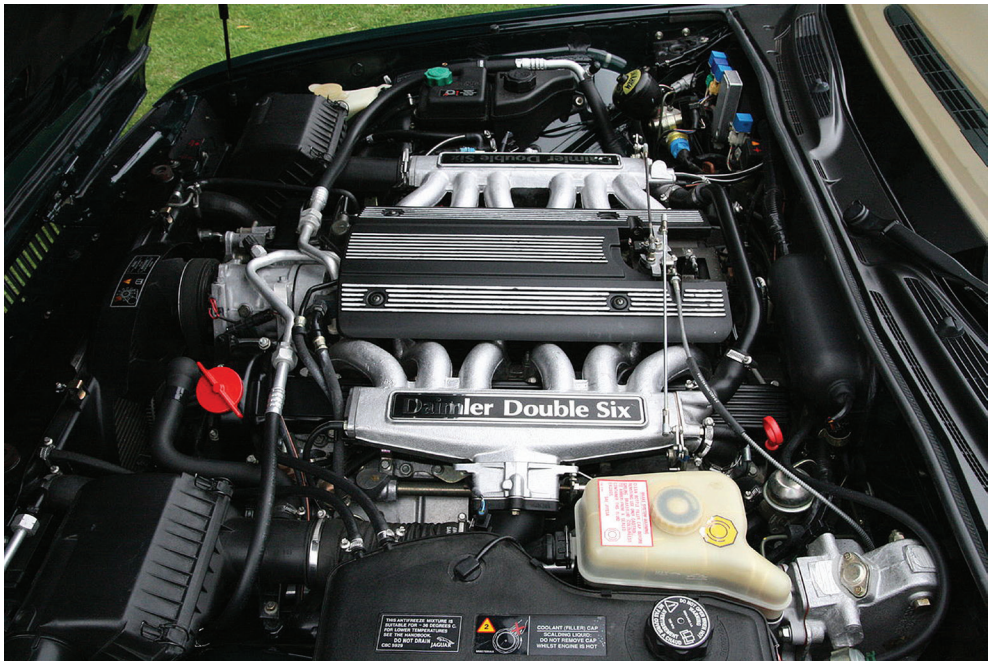
Ignition system

There are two prominent weaknesses in the ignition systems used on pre- 1988 cars. The earlier OPUS type can fail through overheating of the amplifier, intermittently at first with spark returning when the amp cools down. A factory modification improved things slightly by moving the amplifier from the centre of the vee to a cooler point on top of the radiator, but to do this a long lead amplifier is needed. Do not try and lengthen the wires on a short lead amp as the overall resistance will then be wrong.

Oil leaks

Before tackling any V12 oil leak, always remove and clean the mesh filter inside the breather housing at the front of the left-hand head as these can block completely, requiring several days soaking in thinners to clear.

If the engine isn't breathing correctly nothing will keep the oil in. Two common and easily repaired leaks are at the timing chain tensioner access plug on the right side of the front timing cover - the rubber bung hardens and eventually falls out - and at the oil pressure switch located at the rear of the valley.



By the time that the last V12 6.0L engines were produced, the engine bay was substantially decluttered.The engine-cover hid the upgraded coil on plug distributor-less electronics.

A leaking front crank seal can simply be levered out (with the harmonic balancer removed) and a new one driven in.

The rear main seal, however, can really only be carried out with the crankshaft removed.

Brake Fluid

Although a separate issue from the engine, it goes without saying that brake fluid is a crucial component.

When you are changing your coolant, it is important to also change the brake fluid to ensure water absorption does not cause issues. (Especially if you have the Teves Brake System).

- Check the quality and level of your brake fluid once a month using a chemical test strip, an optical refractometer, or an electronic tester.
- Replace your brake fluid every 2 years or 50,000 km; whichever comes first.

Rebuilding a V12

Although more physical work is involved than on an XK 'six', rebuilding a V 12 is actually less stressful because you are dealing with much more of a known quantity.

The crank tunnel should always be checked for straightness but, being a wet liner engine, any damaged bores can simply be slipped out and replaced together with the piston.

The cranks themselves are Nitrided and rarely require replacement, although the main bearings for some reason seem to take a real hammering (listen for a deep rumble when starting from cold).

Perhaps the most difficult part is ensuring that the rear main seal does not leak; it's a rope seal which must be sized correctly and has strips of plastic either side to seal the bearing cap. In fact, some rebuilders prefer to omit the 'hockey sticks' (as they are known) and have made a tool to inject sealant instead.

V12 Engine Service Manual

If you own a Jaguar with a V12 engine, consider purchasing a *Jaguar V12 Engine Service Workshop Repair Manual*

The manual is available for AU$33.50 as a PDF digital download or as a bound hard copy for AU$70.82. To purchase the manual just search on Google *"Jaguar V12 Engine Book"*. ■

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