

Blood Transfusion

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mixing. It shows itself as a black paste on the inside of the coolant header tank floating on the surface of the coolant.

When a head gasket does fail, common symptoms are coolant loss with no signs of coolant leak. Erratic engine temperatures, some white smoke (actually it's steam) from the exhaust, uneven running, poor running on starting the engine may also be evident, or at worst, the engine hydraulics. An emulsion we fondly call brylcream on the inside of the oil filler cap (which can also occur in the winter on cars which do low mileage and has no significance with head gasket failure at all) and a cooling system which likes to erupt like Mount Etna as soon as you release the header tank cap are also main symptoms. Cross contamination is rarely a symptom in the VW/Audi units.

So, we've got an oil slick on

the top of the header tank, and it probably isn't the head gasket, so what is it then?

Head gasket failure can be checked with a chemical tester, but when oil contamination is present the hydrocarbons in the oil can give a false result, leading to the wrong repair being done.

So how does oil get into the cooling system? The most common cause we find is the coolant-cooled oil cooler. With the majority of our units the oil filter screws onto the oil cooler, a rectangular hollow block. The oil flows through galleries in the block, and so does the coolant to cool the oil. Hey presto! If this fails the oil and coolant can mix. Anti-freeze acts as an anti-corrosant, and prevents electrolysis as well as what its name suggests, so if the coolant level is not maintained, corrosion

The problem of oil in your cooling system could be easier to fix than you think...

Oil is the lifeblood of your engine. But when it seeps into your cooling system, it can do more harm than good. VANESSA WHITE explains what you can do about it

Oil contamination of cooling systems is one of those things which can turn into unwarranted costly repairs. This can occur in both petrol and diesel engines, and the cause can sometimes be the same for both. Often the wrong conclusion is reached, and a repair undertaken, only to find the fault still occurring after the wallet has undertaken a fair blow. VW and Audi blocks rarely suffer from cracking, and we have only ever come across 2 porous blocks. So, our engines are really very reliable.

All right, so diesel heads do crack, between the valve seats, and run up into the coolant galleries, this fault is normally picked up on a head gasket chemical test, but does not normally show up as oil contamination in the cooling system. Petrol cylinder heads are far more reliable and rarely cause a problem. Head gasket failure can occasionally result in cross contamination, but this is not a regular occurrence, but is what most people seem to assume is the cause of the oil and water



An oil cooler is often the biggest culprit when it comes to oil contamination

within the cooling system can take place. As the oil cooler is part of the cooling system it can corrode internally, or sometimes fail due to a manufacturing defect. The oil cooler is the most common cause of oil/coolant mixing that we come across. It makes an awful mess, and needs to be addressed quickly.

Coolant hoses are designed to carry hot anti-freeze and water mixtures, not oil. The hydrocarbons in the oil have a degrading effect on the coolant hoses and if the problem is left, all coolant hoses will suffer and need replacing.

The oil cooler can be tested for failure. When removed from the front of the engine block, the cooler can be submersed in a bucket of water, and an air line put onto the inlet for coolant and the outlet blocked. If you see any bubbles, you know you are on the right lines.

Oil coolers are readily available through the main dealer or aftermarket. But that is the easy bit, the new part is straightforward to fit and quick. Now comes the tedious part. The oil contamination must be cleaned from the cooling system to prevent repetitive hose failure and 'hotspotting' of the engine. We always remove the hoses and header tank and clean them through and then refit. The engine block can be flushed through with a hose and the radiator, but there will still be oil deposits that you just can't get to. There are coolant flushes available which can be used. Our favourite trick is to run with dishwasher powder - a non foaming detergent which is biodegradable. Yes, I know, it doesn't have anti-corrosants in it, (my dishwasher isn't rusty though) but we only use it for as long as it takes to rid the cooling system of all the pockets of oil. We run the cooling system up with the dishwasher powder, and in the worst cases will leave it in for a couple of days to flush through. Drain the cooling system and replenish with full strength anti-freeze straight away (50-50 mix). Check the type of anti-freeze VW recommend for your particular vehicle. The old coolant from your vehicle should be disposed of in the correct manner using your local recycling centre. Using surface water or foul sewers can result in some major fines.

If, when carrying out the oil cooler test, you found no leaks

evident, you now need to consider removing the cylinder head to check the head gasket for breaches. If the gasket is not breached then the head needs to be checked for cracks, and if that is OK then the block must be examined. However, if your car is a diesel, do look again at the contamination in the header tank before you do anything. Dip your finger into the contamination in the header tank, because if it is oil, it will adhere to your finger and will be a fluid like substance. Go back to the oil cooler to check first. If the contamination is of a paste-like consistency and does not appear as a liquid, then this may not be oil at all.

Typically diesel engines of the early 90s' (but all others to a lesser degree) can suffer with 'head chatter' (lifting). Sounds a bit like a girlie thing really doesn't it, but diesel engines are just as bad! Usually the engine will have cleared 100,000 miles, just run in, when a sooty type of deposit can be seen in the header tank, and coating the inside. This is caused by the lifting of the head, allowing for some exhaust contamination to cross over into the cooling system.

This does mean that the head must come off, and the head gasket replaced. A revised head gasket has been produced to prevent the re-occurrence of this, and it is a multi-layered metal gasket. There is no need to do a re-torque on the head after 600 miles which is good news with this style of gasket. The cooling system will need cleaning through, but should be easier than with oil contamination.

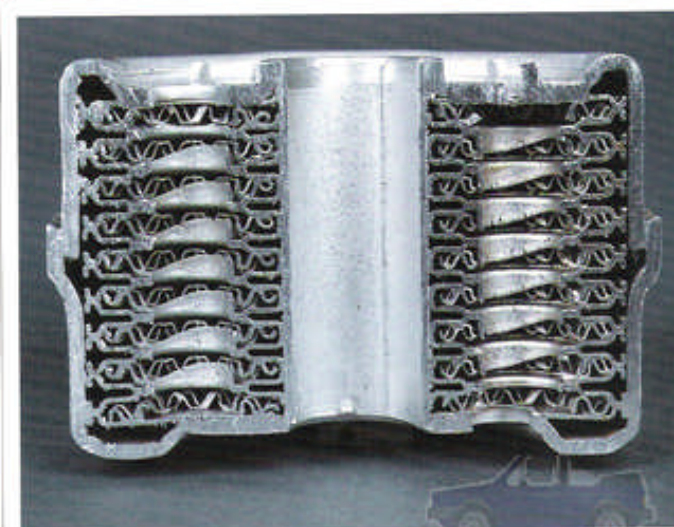
VW and Audi cars use stretch bolts for the cylinder head, so new head bolts must be fitted every time a cylinder head is refitted. If a diesel cylinder head is removed for any other reasons, always specify a multi-layered head gasket to be fitted to avoid the head lifting problem. The cost is greater, but the bonus of not needing the re-torque after 600 miles outweighs the price.

Don't forget!

For more technical advice, always remember to check out www.vwmonline.co.uk for the latest questions and answers



Works of art they are not, but the humble oil cooler is a necessary piece of kit.



And this is what an oil cooler looks like cut open. Very, er, pretty!