

Oil leaks on A Series engines

Overview:

These instructions refer specifically to the later M28/1 (A06, 602cc) engines but the information is generally relevant to all the flat twin engines regardless of capacity as they have not changed that much in concept. If you are using more than 1 liter of oil per thousand miles you have a problem – cure it.

Explanation of the “problem”

The “problem” is caused by the movement of the pistons in their bores due to the “boxer” configuration of the crankshaft. This configuration means that both pistons travel up and down the bores at the same time as opposed to moving in the same plane. Because of this a vacuum is built up when the pistons are on their compression stroke and pressure is built up in the crankcase when the two pistons are traveling back down the bores on the power stroke (away from the heads). Pressure in the crankcase will cause oil to be blown out of every orifice and so a number of methods are used to keep everything oil tight.

Causes

The main cause of oil leaks is failure of the crankcase ventilation system that is part of the oil filler tube mounted at the front of the engine. This part contains a moveable rubber breather, which is pushed apart as the pistons compress the crankcase, and allows the pressure to be vented out through a tube into the air cleaner. On the compression stroke the vacuum created in the crankcase “pulls” the seal down onto its base effectively trapping the vacuum in the crankcase.

It goes without saying that if the rubber in this component hardens or cracks then the seal will not be effective and oil will leak from somewhere regardless of the condition of anything else as it will be blown out of the engine. Any problems anywhere else in the system will be magnified by the failure of this unit.



Next up as a likely leakage area is the pushrod tube seals. There are two of these one on each side of the engine and they are a pair of rubber seals with a thin strip that holds the two pieces together. There are a number of different types available but they all look a little like spectacles – care should be taken to ensure you get the right type and that you install them correctly. The type shown on the left have “shoulders” on them that should help to locate them properly and the idea is that you rock the heads a bit as you locate them and this helps the seal.



The other type for the later engines don't have these shoulders but are just as easy/hard to install properly. It seems to be a bit of a black art and many people use a sealer as well. If you are using a sealer then make sure it is of the RTV type or you will cause damage to the alloy of the engine block. Fitting a new set is relatively easy if you are capable of removing the cylinder heads, otherwise best left to an expert.

The other things you need to be aware of are the various seals that are fitted into the engine. The first of these are the valve stem seals which are located (as their name suggests) around the stems of the intake and exhaust valves. If these fail then you will notice an increase in oil consumption as oil will get into the combustion chamber and be burnt. In bad cases this will cause the spark plugs to foul up. If you are carrying out a top end overhaul these should always be replaced.

At the front of the engine are the oil feed pipes for the cylinder heads and these can be problematic (they have been for me anyway). A double feed comes out of the crankcase and runs out to each cylinder head. The unions are either double copper washers (photo) or two single washers per feed. There appears to be two main problems:

- fatigue in the pipes themselves causes the pipes to crack and leak (the rust doesn't help) or a failure of the threads where the unions screw into the cylinder head.

I always have trouble with this when I remove the heads and you need to be super careful that when you screw the unions back in that your are going in perfectly straight and that you don't over tighten them (10lb/ft). T



The two seals at either end of the crank are also likely leakage points. If your points box is particularly oily then the front crank seal could be gone. This is relatively easy to replace as you can get at it pretty easily. If the flywheel of your car is really oily then the rear crankcase seal could be gone. This is a much bigger deal as you have to take the engine out and the flywheel off to get at it. Don't assume however that oil at the back of the engine is a sure sign that the rear seal has gone because the blowing action of the fan causes the any leaked oil to end up there anyway – check everything else (particularly pushrod tube seals) first.



On a more general note you should also check the rocker cover gaskets for leakage. Leaks here are usually caused by either penny pinching (replace them EVERY time) or by not doing them up tightly enough. Gaskets are available in two types rubber and cork and it is merely a matter of personal preference. The rubber type is supposed to be glued onto the rocker covers prior to seating but the cork ones are meant to be fitted dry. I must say I never glued the rubber ones in, but you should ensure that all surfaces are perfectly clean before reassembly and that all traces of old gasket are removed. Some people use Hermetite type sealers when they fit the rocker cover gaskets, but this is not necessary.



Finally, the oil pressure switch can cause a major leak if its internal seal fails. I have never spoken to anyone who has had this happen, but apparently it does and will dump pretty much all of your oil on the road. The switch is located on the nearside (UK) of the vehicle just below the cylinder. It is easy to spot as it has an electrical connector leading to it. The small size and low cost of this item means that it is probably worthwhile carrying a spare around just in case. A flickering oil pressure light at any revs above tickover could mean that yours is on its way out.

