

Originally published in Practical Classics
August 1982.

OIL PUMP PROBLEMS?

*Lubrication problems
are engine killers —
is the oil pump to
blame? John Williams
heads the
investigation.*



Let us suppose that the needle on the oil pressure gauge or the oil pressure warning light tells you that your engine is in trouble. If you ignore the problem and hope it will go away you will probably end up with a breakdown that will cost you a lot of money.

Oil is the lifeblood of your engine and if sufficient oil does not get to the right places, a disaster is not far away because oil has three vital functions — it lubricates the moving parts to prevent wear, it acts as a coolant and it acts as a cleaning agent inside the engine. It is easy to assume that if the gauge or warning light show low oil pressure, then it must be the oil pump that circulates the oil throughout the engine that is the prime suspect but the truth

is that sudden failure of the oil pump is uncommon and in most cases the oil pump should be the last item to come under suspicion.

LUBRICATION FAULTS AND CAUSES

For cars fitted with an oil pressure gauge the correct oil pressure figure (with the engine at running temperature) will be found in the owners handbook. Low oil pressure is the most common fault and assuming that there is sufficient oil of the proper type in the sump and that the gauge and sender unit are working properly, other factors should be considered before the oil pump is investigated. Did the oil pressure drop suddenly or has there been a gradual decline over a period? Gradual loss of oil pressure can reflect increasing wear in the engine which causes a steady reduction in the resistance to the passage of oil between components, especially main and connecting rod bearings. A sudden loss of oil pressure can often be traced to the pressure relief valve being held open due for example to a piece of grit or carbon lodging

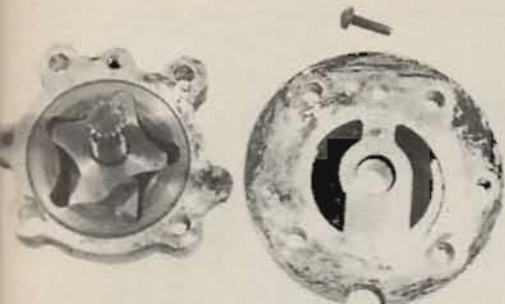
between the valve and its seating. A choked filter will starve the oil pump of oil thus reducing pressure and low pressure can also be caused by leaks allowing oil to escape from the system between the pump and the pressure sender unit, or allowing air to get into the oil before it reaches the pump. A high oil pressure reading is unusual (except when the engine is cold) and may indicate a problem which could cause even more damage to an engine in the short term. This is most likely to be caused by a partial or complete blockage of an oil pipe or oilway (in which case at least part of the engine will be deprived of oil). On cars fitted with an adjustable pressure relief valve the valve may have been adjusted in the past to compensate for low oil pressure due to engine wear and there will be an unusually high pressure following an engine overhaul unless the valve is re-adjusted to its normal setting.

It may be possible to check the oil pressure gauge and sender unit by substitution with others which are known to work correctly.

Some months ago our production director, Gordon Wright, reported that his Jaguar Mark X had very low oil pressure and he was urged to have a substitute sender unit fitted to

Above:

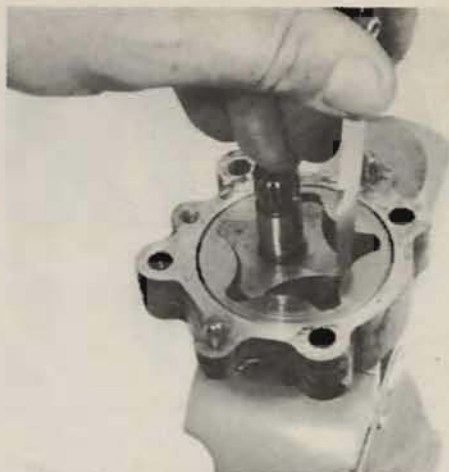
Checking the tolerances in an oil pump is a simple job requiring only a feeler gauge and a reliable straightedge, but the pump must be thoroughly clean. Here a straightedge is being used to simulate the top plate of the pump so that the amount of end float between the vanes and the plate can be measured.



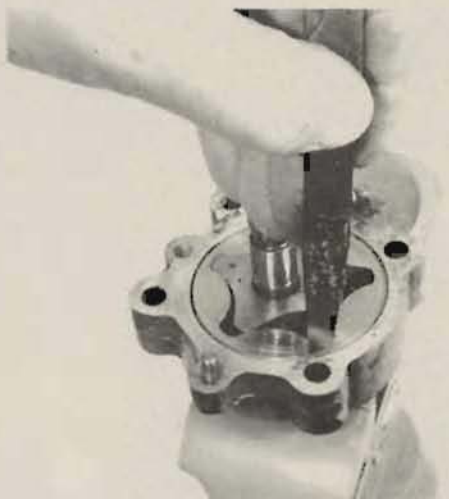
This is an eccentric vane (Hobourn-Eaton) pump with the top plate removed. The plate itself can become scored and worn and may need skimming to restore a perfectly flat inner surface. On re-assembly both the plate and the pump body faces must be perfectly clean so as to form a metal to metal seal with neither gasket nor jointing compound. This type of pump was used on 'A' series engines.

find out whether the gauge was giving a true reading. Unfortunately a second sender unit confirmed the same low readings and while promising his concerned colleagues that a rebuilt engine was soon to be fitted, Gordon drove on, by now without any hint of oil pressure. We daily warned him of the "big bang" that was due any day but nothing happened and when Classic Cars of Coventry recently fitted a rebuilt engine they confirmed that it was the sender at fault and the Mark X had had adequate oil pressure after all!

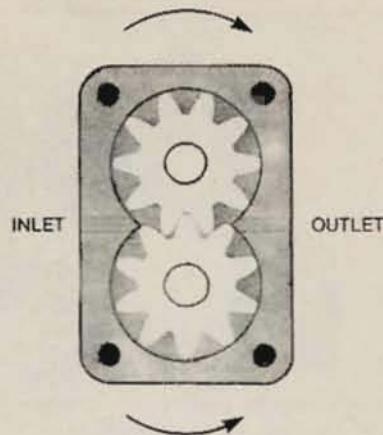
It is worth mentioning that the plague of the oil pressure warning light was common on basic models of manufacturer's ranges and if you wish to fit a gauge, temporarily or permanently, it is worth investigating and then copying the arrangements on similar "up-market" versions of the same model or on sports cars using the same power unit — sometimes all you have to do is unscrew and discard a plug and then fit the sender pipe and gauge.



Check the clearance between the lobes of the inner and outer rotors with the rotors in the position shown



. . . . and between the outer rotor and the pump body. Also check that the inner rotor is secure on its shaft and the condition of the spines or gearwheel by which the shaft is driven.



The gear type pump comprises a driving gear and a driven gear within a closely fitting housing. As the gears revolve a vacuum is created on the inlet side and oil is drawn into the pump to be carried around the perimeter of the gears and forced out of the outlet side.

The clearances between the outer diameters of the gears and the pump body should be checked as should the end float of the gears and the condition of the cover plate.

TYPES OF OIL PUMP

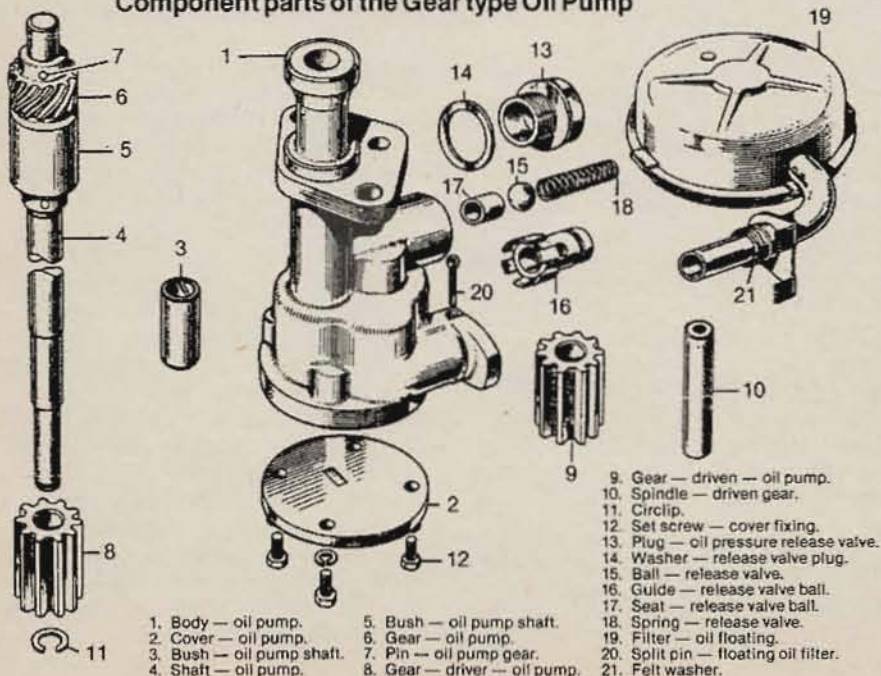
Various types of oil pumps have been used over the years ranging from the piston type pump with either spring loaded or sliding valves to the gear type pump used on many cars from the pre-war and immediate post-war period, the sliding vane pump and the most common pump of all in recent years which employs an eccentric vane. The latter features in our photographs and illustrates the parts which should be checked to ensure that the pump is capable of working at maximum efficiency.

OIL PUMP FAULTS

Oil pumps rarely create problems partly because they are simple devices with little scope for mechanical failure and partly because their most important components are permanently in contact with oil. As we are concerned with old cars we have to consider the possibility of oil pump wear even though it is still not the most likely cause of lubrication problems. All pumps work on the basis that oil drawn into the pump to fill a vacuum and is then forced out under pressure. It follows that the tolerances between the moving parts of the pump and between the moving parts and the pump casing are critical and these are usually specified in the better workshop manuals. Wear reduces the capacity of the pump to create a vacuum on its side and adequate pressure on its outlet side, and can result from sheer length of service or from actual damage due to grit etc, getting into the pump.

Generally parts are not available for reconditioning oil pumps and once they have worn to the extent that manufacturers tolerances have been exceeded it is necessary to find a replacement pump. □

Component parts of the Gear type Oil Pump



- 1. Body — oil pump.
- 2. Cover — oil pump.
- 3. Bush — oil pump shaft.
- 4. Shaft — oil pump.
- 5. Bush — oil pump shaft.
- 6. Gear — oil pump.
- 7. Pin — oil pump gear.
- 8. Gear — driver — oil pump.
- 9. Gear — driven — oil pump.
- 10. Spindle — driven gear.
- 11. Circlip.
- 12. Set screw — cover fixing.
- 13. Plug — oil pressure release valve.
- 14. Washer — release valve plug.
- 15. Ball — release valve.
- 16. Guide — release valve ball.
- 17. Seat — release valve ball.
- 18. Spring — release valve.
- 19. Filter — oil floating.
- 20. Split pin — floating oil filter.
- 21. Felt washer.