Image 1 - Portable Drill with Quill Shaft

Priming the oil system in a V8 engine after a prolonged layup

Jim Livingstone has been preparing instructions for his son when he inherits the car and one useful guide is priming the oil system when a Rover V8 engine is unused for extended periods. Here Jim sets out his useful guide.

Introduction

When an engine is unused for extended periods the pressurised oil which lubricated the bearings and filled the galleries prior to shutdown will ultimately drain by gravity back into the sump. It is not good practice to start an engine with dry bearings and then wait for the oil galleries to be reprimed by the engine driven pump as that can take a disturbingly long time. The best strategy to avoid this is to drive the car regularly and enjoy the driving experience the MGBGTV8 provides. However, the MGB was designed and produced in a period when measures to minimise body corrosion were not well understood or cynically ignored by car manufacturers and many owners prefer to lay up their vulnerable cars over the winter period when road salt is applied. It may be argued that a simple regular starting with a stationary run up to temperature would alleviate the problem of dry bearings but there is a contrary argument that this accelerates cylinder bore wear and causes oil dilution. The author prefers to coat the bore surfaces in preservative introduced via the spark plug holes prior to an uninterrupted winter storage. There are various aerosols designed for this purpose – see **image 2** (Anti Corrosion Spray for Engine Cylinders) above.

Image 2 – the Wynn's anti corrosion spray

The MGBGTV8 Workshop Manual Supplement AKD 8468 makes great play of the need to prime the oil pump prior to start up after an overhaul but fails to mention how this might be achieved after a prolonged period of inactivity. It is fortunate that the early Rover V8 engine in its MGBGT V8 application featured an oil pump which can be driven by an external means once the distributor is removed. Aspects of this topic are raised in V8NOTES 206, 430 and 487 and the author is indebted to the writers of those notes for the information repeated here. The matter of rotation is complicated by the fact that the MGBGTV8 Workshop Manual Supplement incorrectly specifies the direction of rotation of the distributor and, by implication, that of the oil pump as anti-clockwise. The **oil pump rotates clockwise (when viewed from the drive end)**. The purpose of this article is to integrate the information in those earlier V8NOTES and combine in a single note the procedure for priming the oil system together with the steps required to remove and replace the distributor and retime the ignition. An Appendix is included to explain the engine's lubrication system.

Preparation

It is assumed that the priming is a precursor to an engine start up after a period of inactivity. If that is the case, then the cylinders would benefit from some additional lubrication introduced through the spark plug holes before it is rotated. The engine needs to be rotated to 6 degrees before top dead centre (BTDC) on the compression stroke of number one cylinder for static timing purposes. Removal of the spark plugs will facilitate this rotation and the rotation itself will help distribute the oil. A small amount of light engine oil directed via a flexible tube at the far side wall of each cylinder is all that is required (the V8's piston tops are at 45° to the horizontal and oil injected at the far wall will drain to coat the top ring). Note: Rotating the engine in the V8 is complicated by the closeness of the radiator and the Workshop Manual method of engaging a bar in the dogs on the crankshaft pulley risks damaging the radiator if the bar slips. The author has found a socket inserted onto the pulley nut and driven by a short extension and long tommy bar to be a more secure method. Although it is highly unlikely that the pulley nut will be disturbed the engine should be rotated clockwise.

Image 3 - Quill Shaft to Drive Oil Pump

Tools and Materials

- Spark plug socket.
- Socket (15/16”AF), extension and driver for engine rotation.
- Ring spanner (9/16”AF) for distributor clamp bolt.
- Scriber.
- Oil can with flexible extension.
- Quill shaft for driving oil pump – see **image 3**. V8NOTES 430 and 487 contain suggestions for d.i.y. fabrication as well as sourcing information for commercial versions.
- Electric drill with adjustable torque drive feature – see **image 1**.
- Timing light.
- Light engine oil.
- Paint or marker blue.

Procedure

1. Rotate the engine to the 6 degrees before TDC graduation on the crankshaft pulley - see **image 4**. Check that the rotor arm is pointing to the lead terminal for number one cylinder by removing the distributor cap. If it is pointing to the terminal for number six cylinder, then rotate the crank by a further revolution.

Image 4 - Crankshaft Set at 6° BTDC

2. Mark the distributor position on the adjacent timing cover – see **image 5**.
3. Loosen and remove the bolt securing the distributor clamp and remove the clamp.
4. Carefully remove the distributor by pulling upwards without rotating the body. The distributor shaft will rotate anticlockwise as it is withdrawn due to the disengagement of the skew gears.

Image 5 – Orientation Markings on Distributor Body and Timing Cover

5. Note the new position of the rotor arm relative to the distributor body. This will help with positioning for reassembly– see **image 6**.
6. Note the position of the slot in the drive shaft of the oil pump – see **image 7**.

Caution: Avoid excessive rotation of the engine while the distributor is removed. This will avoid having to retime the ignition from scratch.

7. Fit the quill shaft in the drill chuck and tighten. Select clockwise rotation and a low torque driver setting.
8. Engage the drive end of the quill in the slot in the pump shaft and slowly rotate the drill.
9. Increase the drill speed until the torque limit is reached and check if oil pressure is recorded on the dashboard gauge. An assistant is helpful at this stage.
10. If pressure is not registered increase the torque setting. If the engine has been idle for long, it may take some time to register pressure. Do not be tempted to drive the pump at a high torque setting or at high speed.
11. When pressure has been registered for several minutes and you are satisfied that the galleries and tappets have

been purged stop the drill and disengage the quill shaft from the oil pump.
12. Rotate the pump shaft slot to the position noted in step 6.

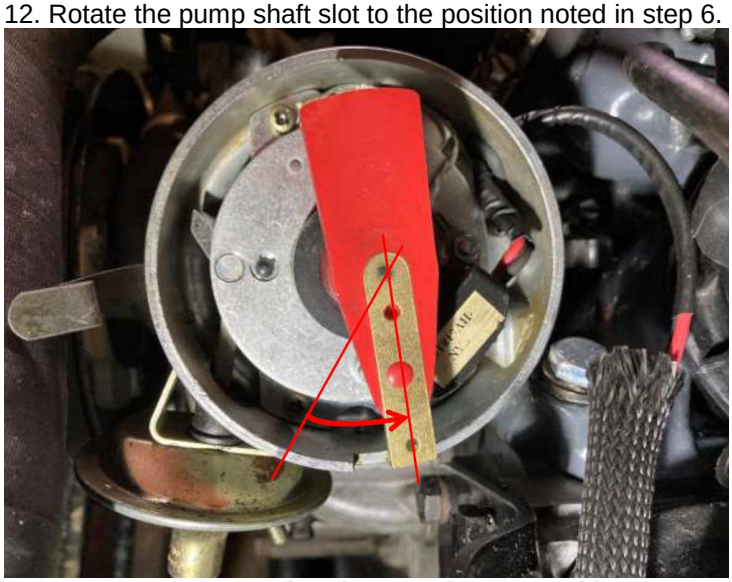


Image 6 – Rotor Arm showing rotation caused by extraction (viewed from nearside)

Image 7 - Slot in Oil Pump Shaft (viewed from nearside)

13. Check that the distributor rotor arm is still at the position recorded in step 5.
14. Examine the O ring on the distributor body and renew if necessary.
15. Oil the O ring and insert the distributor until it is fully home in its housing.
16. If the distributor/oil pump coupling does not engage fully, rotate the engine slightly in either direction until it does. It may be necessary to remove the distributor and repeat the alignment process.
17. When the distributor is fully seated rotate its body until the marks made in step 2 align and replace the clamp and bolt.
18. This timing setting should be adequate to start and run the engine but to be completely confident in the ignition timing it should confirmed dynamically using a timing light.

Footnote

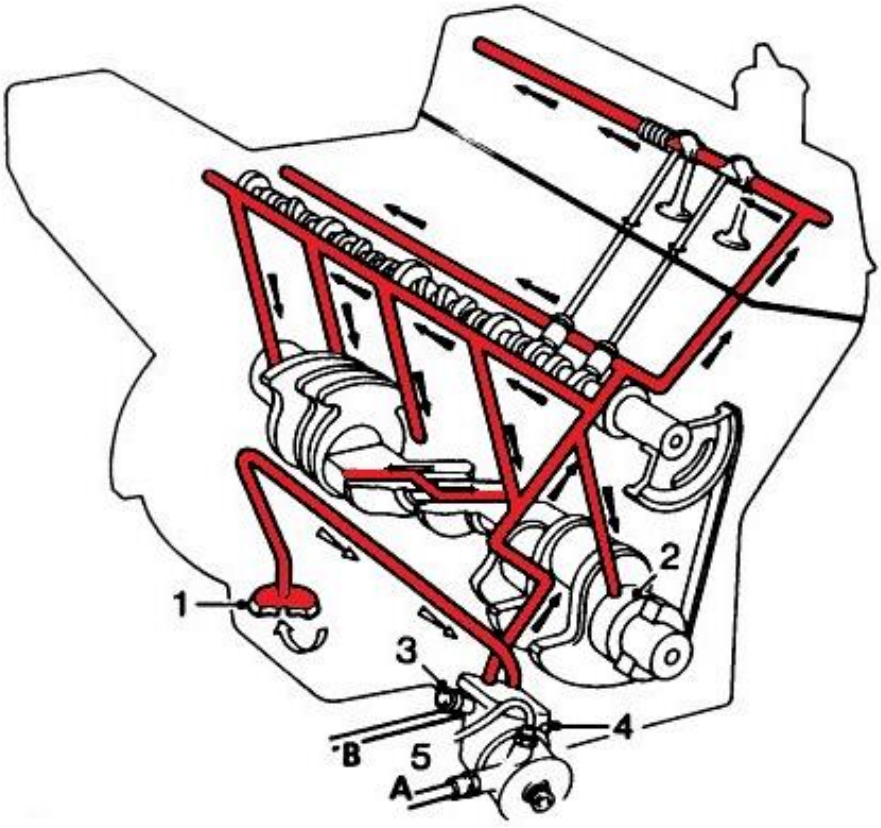
If the engine has been stored with fresh oil, it may be assumed that the bearing surfaces will still be coated with lubricant after several months of inactivity. In these circumstances it is simply a matter of confirming that normal pressure is recorded shortly after the engine is started. For those owners reluctant to disturb their ignition setting, removal of the spark plugs and cranking over the engine via the starter motor would eventually reprime the lubrication system with minimum damage to bearing surfaces. However, during the recent lockdown (2020) cars may have been inactive for longer than usual and for peace of mind the owner may wish to exercise the extra precautions detailed in this procedure.

Appendix - MGB V8 Engine Lubrication System

Note: This diagram is of a contemporary Rover installation of the V8 engine in which the oil filter is integral with the oil pump. In the MG installation the oil filter is remote and annotation B should read “Oil from Filter”.

Oil is drawn from the pressed steel sump through a strainer to the inlet of the oil pump. At the pump outlet there is a pressure relief valve and an oil pressure gauge feed. From there pressurised oil (**A**) passes through reinforced hoses, first to the oil cooler and then to the remote full flow oil filter. Filtered and cooled oil then passes back into the engine (**B**) and through internal drillings to the crankshaft where it is directed to each main bearing and to the big end bearings via Nos. 1, 3 and 5 main bearings. An internal drilling in the cylinder block directs oil to the camshaft where it passes through further internal drillings to the hydraulic tappets, camshaft journals and rocker shaft.

Lubrication of the thrust side of the cylinders is by oil grooves machined in each connecting rod big end joint face, which are timed to align with holes in the big end journals on the power and exhaust strokes.



1. Oil strainer
2. Crankshaft main bearing oil feed
3. Oil pressure relief valve
4. Oil pump
5. Main galleries
   - **A** Oil to cooler
   - **B** Oil from cooler