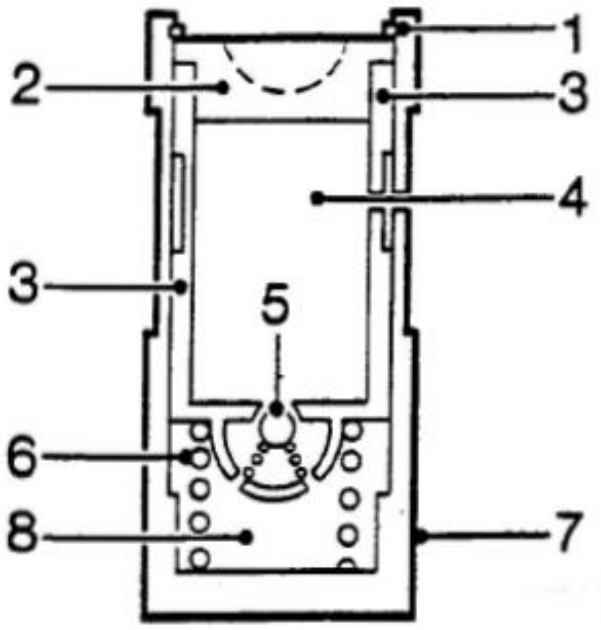


Cross section of a hydraulic tappet

1. Clip
2. Pushrod seat
3. Inner sleeve
4. Upper chamber
5. Non-return ball valve
6. Spring
7. Outer sleeve
8. Lower chamber - high pressure

Source: Engine, page 8 DESCRIPTION AND OPERATION 2003-Rover-V8-3528cc-3946cc-4275cc-Overhaul-Manual-LR Publication Part No. LRL 0164ENG 2nd Edition. Land Rover

Problems with a very noisy hydraulic tappet

James Clydesdale contacted the V8 Register saying “I have problems with a very noisy hydraulic tappet in my RV8 and wonder if somebody could point me in the right direction regarding this. Would appreciate any help or advice or perhaps guidance to a company or professional who could make it good”. Tony Lake and Victor Smith provided a response. (July 2024)

Hydraulic tappets on a Rover V8 engine

The Buick derived engine produced by Rover was a key feature of the MGBGTV8 and MGRV8 models with the sophistication of hydraulic tappets which are self-adjusted by pressurised engine oil. The purpose of the hydraulic tappet is to provide maintenance free and quiet operation of the inlet and exhaust valves. It achieves this by utilising engine oil pressure to eliminate the mechanical clearance between the rockers and the valve stems. During normal operation, engine oil pressure present in the upper chamber passes through the non-return ball valve and into the lower, high pressure, chamber. When the cam begins to lift the outer sleeve, the resistance of the valve spring felt through the push rod and seat causes the tappet inner sleeve to move downwards inside the outer sleeve. This downward movement of the inner sleeve closes the ball valve and increases the pressure in the lower, high pressure chamber, sufficiently to ensure that the push rod opens the valve fully. As the tappet moves off the peak of the cam the ball valve opens to equalise the pressure in both chambers which ensures the valve closes when the tappet is on the back of the cam.

Regular oil changes are vital with the Rover V8 engine

It ensures there is clean oil circulating. Looking at the oil can give an indication if any muck is gathering in the lubrication passageways which will not help a good oil flow, particularly in a "low pressure high volume" lubrication system we have in our V8 engines. Fellow member Tony Lake has mentioned that.

Preliminary checks on tappet noise

Noisy hydraulic tappets are often heard when firing up an MGV8, particularly after a lay-up of some months, and that is because it takes time for the oil to pump round. When in the lay-up much of the oil will have drained down. Usually after a few minutes any rattle fades away as the oil moves up the passageways, over the rocker shafts and into the cam followers, but if James is hearing a continuation of the rattle then that may suggest some wear in the system and need for replacements. As the engine lubrication system in the V8 engine is a “low pressure high volume” system, after an inactive period with an engine oil “drain down” it can take time for a good amount of oil to get round the passageways to the tappets and then normally any rattle noise fades away after a couple of minutes. Then only the music of the burble of the V8 engine can be heard!

If the rattle noise continues when the engine is warm then further preliminary checks will need to be made.

- **Check the condition of the oil** – the trace of oil on the dip stick should be clear with no sign of black sludge. It’s recommended the engine oil is changed annually and every 3,000 miles to ensure there is clean oil which will not leave even minor sludge deposits in the passageways to the rocker shafts.

- **Check whether you can also hear the rattle when the engine is warmed up** to normal running temperatures after start-up? If the rattle persists then that suggests substantial wear on a tappet or several tappets and that replacement will be necessary. Other parts may also be worn.

- **Check is to see if you have a loose exhaust manifold** as that can give rise to a very pronounced and continuous 'clicking' noise, (detonation) which may sound like a noisy tappet.

What's causing a rattling sound with an RV8 engine?

Andreas Gloor, an RV8 enthusiast in Switzerland, raised the question in October 2020: "who has experienced valve rattling as soon as the engine is heating up a bit? It sounded a bit like a 4 cylinder engine is running next to the V8." He provided a copy of a short report on this matter which was published in Sign Post, the Swiss Centre's magazine which we released as a workshop note with the addition of comments from Tony Lake and Nick Houslip. RV8NOTE463

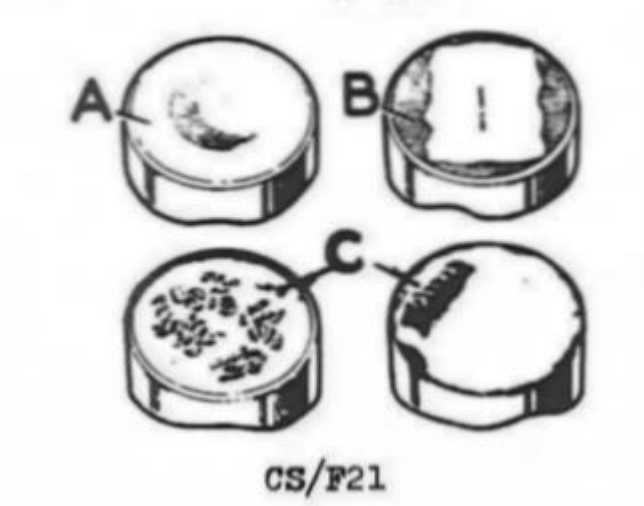
Inspecting the hydraulic cam followers or tappets

The tappets are non-serviceable and will need to be replaced if the body of a tappet is roughly scored or grooved or has a blow hole extending through the wall in a position which permits leakage of oil from the lower chamber of the tappet. Also inspect the cam contact surfaces of the tappets:

- **Hydraulic tappets must rotate** and a circular wear pattern is normal - see the example “**A**” alongside.

- **Non-rotating tappet** will show wear as in example "**B**". In these cases replace the tappets and ensure they are free to revolve in the cylinder block.

- **Excessive wear of the tappet surface** – see example "**C**" which shows excessive wear of the tappet surface and in those cases the tappets should be replaced.



The pushrods can be fitted either way round when new, but after use the rocker shaft end of the rod becomes polished and should be refitted in the original position. For further details see pages CS/F21 in the **Students Technical Notes** on the MGBGTV8 (AKD5188). More

Replacement of hydraulic tappets
Ralph Hardwick noted "as far as replacement goes, it is normally recommended to change the tappets as a set of 16 rather than individually, but also with a camshaft change. Changing individual components will accelerate wear on older mating surfaces. If an individual tappet is diagnosed as faulty, perhaps it is better to live with a noisy tappet for a while, until you are ready for a full top-end engine overhaul". For most MGV8 enthusiasts a professional engine rebuild by a specialist will be their preferred option. Ralph added "I see Clive Wheatley is selling individual tappets at £10.75 (incl VAT) each and Rimmer Bros are selling a set for £240, which is £15 each. See mgv8parts

Suggested options for James
As James Clydesdale is a member of the Caledonian Centre of the MG Car Club, a well regarded MG specialist in Scotland is the Dreadnaught Garage in Callander run by the Lutis who have considerable experience with Rover V8 engines. Callander is about 45/50 miles north of Glasgow & Edinburgh, just north west of Stirling on the A9. Fellow V8 member Lorraine Noble-Thompson had part of the mechanical restoration work on her MGBGTV8 carried out by the Lutis. Giving the Dreadnaught a call to discuss their views on how to approach the task of diagnosing the issues James reports with the rattle would then enable him to agree a date for taking his car to Callander for an inspection and assessment. They would then be a position to suggest what maintenance work and any replacements would be necessary so James can decide on the scope of the work that he would want to see carried out.

The Lutis will also be able to explain the issues raised by Ralph Hardwick (the need to replace other parts as part of an engine rebuild) which could justify the scope of work including an engine rebuild with replacement parts.
https://www.dreadnoughtgarage.com/

Other engine rebuild specialists
Two specialists in the south of England are:
- **Brown & Gammons** at Baldock in Hertfordshire (just off the A1).
- **Manor Garage & Sons** at Gove near Wantage in Oxfordshire.