

On most overhead valve (OHV) engines, and on some which have the camshaft mounted in the cylinder head (OHC), the valves are operated by individual rockers. The rockers pivot on a common shaft which is supported by pedestal-type pillars.

High-pressure oil lubricates the shaft and rockers through oilways in the pedestals and the shaft.

Apart from the normal wear caused by high mileage, delayed oil and filter changes are the main causes of premature wear on the rockers and shaft. In extreme cases, the oilway may become blocked with dirt and oil sludge and so starve the rocker bearings of lubrication. Test for oil starvation (see below) and remove the shaft if necessary.

Remove the shaft

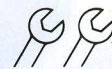
The only way to check the rocker components for wear is to remove

the shaft (or shafts) from the cylinder head (see *Expert 23* for OHV engines, or *Expert 45* and *46* and the various *Mechanics* sheets which describe camshaft removal on different types of OHC engine).

Note that on some engines the rocker shaft pedestal bolts also hold the cylinder head. Take care when fitting the pedestal bolts on these engines to observe the correct torque settings. If you move the cylinder head at all while removing the rocker shaft, you will have to replace the head gasket.

Before dismantling a rocker shaft, make a note of the spring and washer positions and the position of the support pillars in relation to the supply oilway.

There may be a split pin, spring clip, or roll pin at each end of the shaft which you must remove – this will let you slide the rockers and pedestals off. The exposed portion of the shaft between the rockers is



intermediate

Tools and materials

- Spanners and sockets
- Screwdrivers
- Rocker or camshaft cover gasket
- Hammer and punches
- Pliers
- Clean rags
- Cellulose thinners
- Feeler gauges
- Thin wire – to clean oilways

As required:

- New rocker shaft
- New rockers and bushes

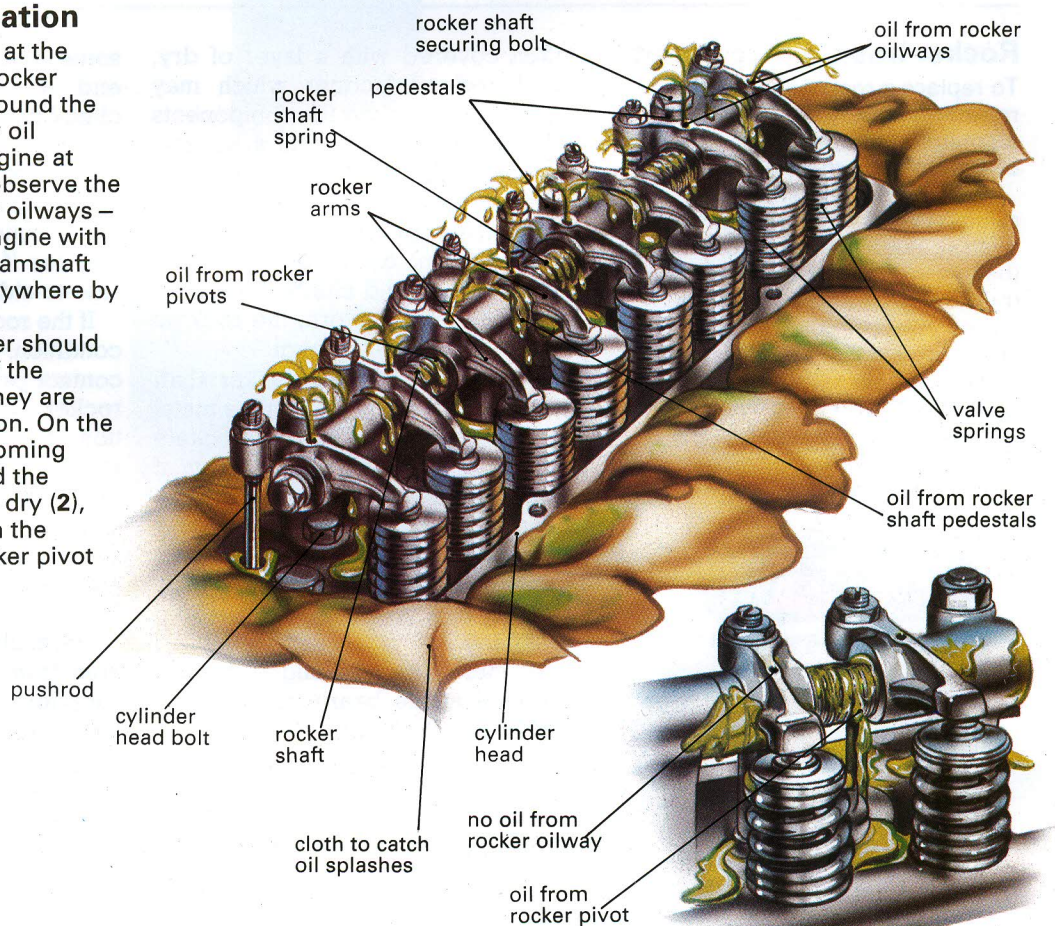
Wear on the rocker shaft

A light tapping noise, in the area of the valves, may indicate there is wear on the rocker shaft and rocker bushes. Before you conclude that the noise is coming from the rocker shaft you should check and adjust the valve clearances, then run the engine to see if the noise is still present.

Testing for oil starvation

To check for oil starvation at the rocker shaft, remove the rocker cover and place a cloth around the cylinder head to catch any oil splashes. Then run the engine at normal idling speed and observe the flow of oil from the rocker oilways – don't try this test on an engine with a chain-driven overhead camshaft as oil will be sprayed everywhere by the chain.

Both the shaft and rocker should be wet with fresh oil (1); if the components appear dry they are suffering from oil starvation. On the other hand, if oil is only coming from the rocker pivots and the remainder of the rocker is dry (2), then there is a blockage in the rocker oilway – or the rocker pivot bearing is severely worn.

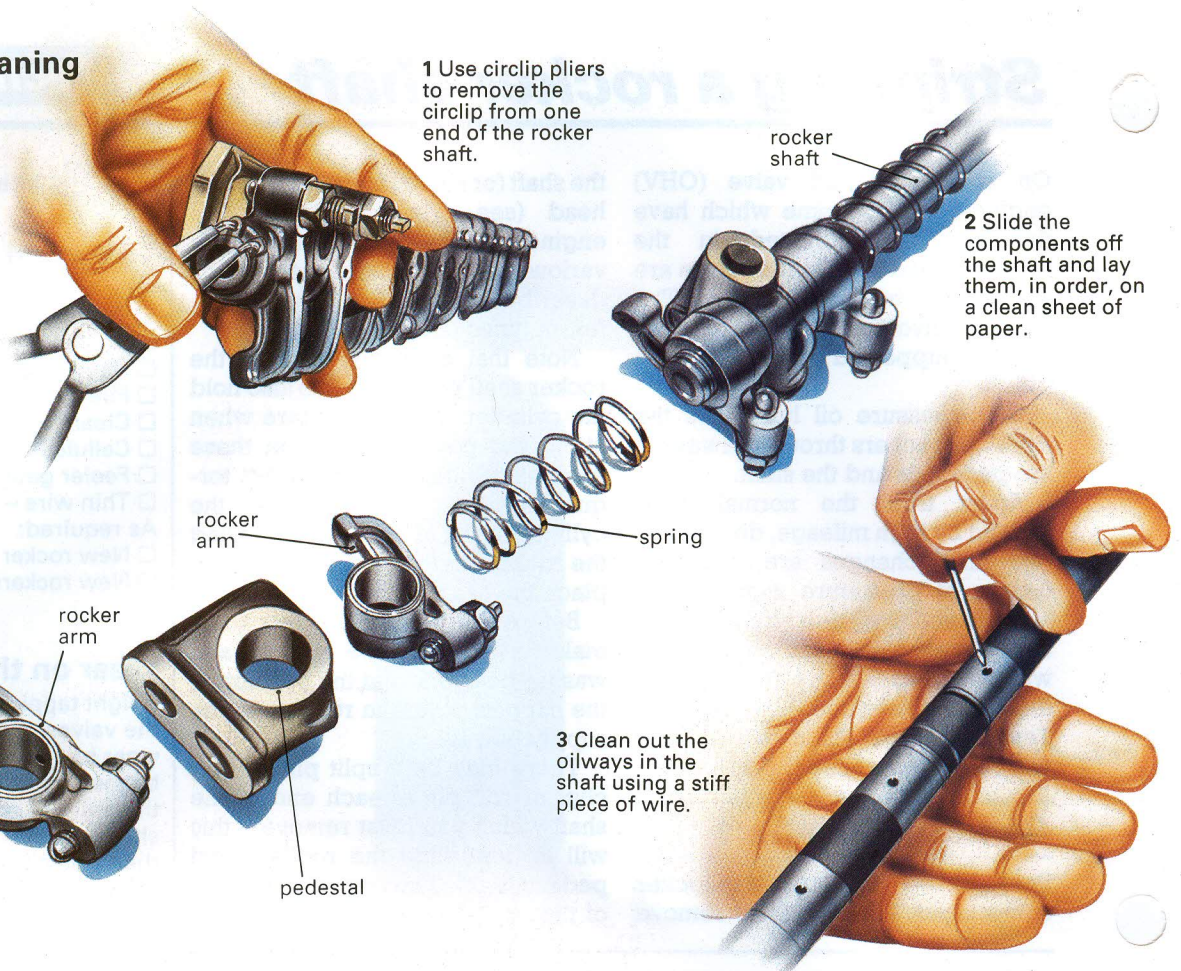


Stripping and cleaning

Remove the retaining device from the end of the rocker shaft. This may be a split pin, spring clip, roll pin or circlip (1).

Pull off the rockers, pedestals, springs and washers and lay them, in the correct order, on a clean sheet of paper (2).

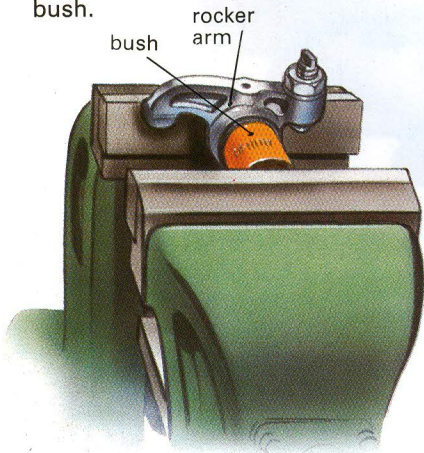
Use a clean rag, and cellulose thinners to wipe the oil from the shaft and use a piece of wire to clean out the oilways (3).



Rocker bush replacement

To replace a rocker bush, put the rocker on its side on a suitable diameter socket, then use a socket or drift to drive the old bush out.

Make sure the bush housing is clean before you press the new bush squarely into position in a vice (below) – you can use a soft metal drift to push it home if it sticks. Before you ream out the bush, take an accurate measurement of the rocker shaft diameter and adjust the reamer until you have cut the correct internal diameter in the bush.



often covered with a layer of dry, hardened oil lacquer which may prevent you pulling the components off. Clean the shaft with a solvent, such as cellulose thinners, to make removal easier.

Lay the parts, in the order you removed them, on a clean sheet of paper. Clean and check the rocker shaft first; if it is worn, the rockers are also likely to be worn.

Severe wear on the rocker shaft will show up as grooves in the metal at the points where the rockers pivot; renew the rocker shaft or, if new parts are not available, you can have the shaft repaired by a process known as metal spraying. This is an expensive repair which can be carried out by a good auto-engineering company.

If there is only slight surface marking at the bearing points you can re-use the shaft.

Cleaning

Clean out the oil holes in the shaft using an air line, if possible. On

some shafts there is a plug in one end which you can unscrew to check the central oilway.

If the shaft is in good condition, check the rocker bearings for wear. Fit them one-by-one to their respective positions on the cleaned shaft and see if you can rock them from side-to-side.

If the rocker bearings are in good condition, inspect the valve stem contact pad at the outer end of the rocker. Look for a circular indentation – this indicates that the valve has worn through the case-hardening of the rocker.

Some types of cast rocker have a small oilway that supplies oil to lubricate the valve stem and push-rod.

Normally, new rockers are available from spares shops or engine suppliers, but on very old engines, the rockers had a replaceable bush-type bearing which can be fitted by an auto-engineer. Or you can do it yourself provided you can use an adjustable reamer tool and micrometer (see sideline, left).