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Valve Adjustment

By Dirk Parkins

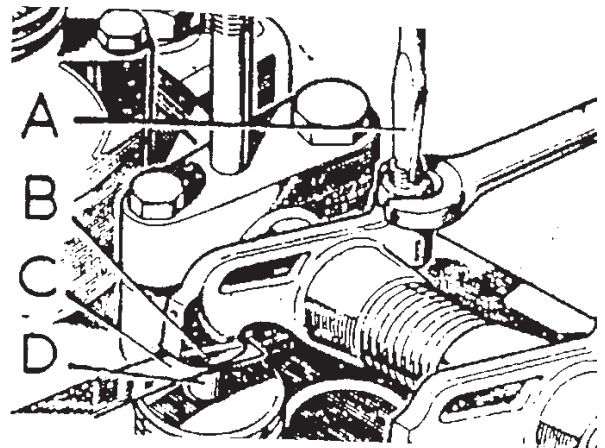
You Will Need:

1/2" wrench
Large Screwdriver
A .010" Feeler Gauge
Hand Crank

INTRODUCTION: Checking the adjustment of the valves is an important part of a Land Rover's tune-up. Even though this is a simple procedure, it is often overlooked. Incorrect valve clearances can cause the engine to run inefficiently if set too wide. That is often associated with a lot of "clatter" coming from under the valve cover. Valves that are adjusted too tight (not enough clearance) can cause the valves to overheat, resulting in damage to the valves and the cylinder head. Valve adjustments should be done on a warm engine, even though the tappet clearance label states HOT or COLD.

1) After removing the valve cover, insert the crank through the bumper and into the starter dog on the main pulley. With the gearbox in neutral and the parking brake on and the ignition off, rotate the engine and observe the valves open and close.

2) You will notice that valves are depressed in pairs (1&3, 2&5, 6&8, 4&7), one exhaust and one inlet. Depressed valves are fully open. Valve adjustment is checked when a valve is fully closed. A valve is fully closed when the corresponding valve is fully open.



3) Valve correspondence is easily remembered by the 9 rule. When a valve is open (depressed) subtract its number from 9 to find the valve that is closed. (Example: when #1 valve (closest to the radiator) is depressed, #8 valve is fully closed ($9-1=8$) and is ready to check. Likewise, when #3 valve is depressed, #6 is fully closed and ready to check. To check the valve, insert the feeler gauge (C) between the top of the valve stem (D) and the pad of the rocker arm (B). The feeler gauge should slide in with a bit of friction or drag. If it slips in too easily, the valve clearance needs to be tightened. If it is difficult or impossible to slip in the gauge, then the clearance is too small. To adjust the clearance, loosen the lock nut on the rocker arm. Now with the feeler gauge in position, use the screwdriver (A) to turn the adjuster screw to obtain the correct "feel" on the feeler gauge.

4) When the correct adjustment is obtained, lock the adjuster screw into position by tightening down on the lock nut while maintaining the adjustment with the screwdriver. This is the trickiest part of a valve adjustment. Repeat this check for each valve. It helps to have 1-8 written down on a scrap of paper and to cross off the numbers as each valve is checked.

5) Once the valves are adjusted, inspect the valve cover gasket and replace if needed. New gaskets come with adhesive on the cylinder head side of the gasket. Thoroughly clean the cylinder head, peel the tape off the gasket and apply to the head. Refit the valve cover without using any additional seal and snug down the acorn nuts but do not over-tighten them. Gaskets applied this way will last for several valve adjustments.

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