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Tappet Adjustment

TAPPETS

There must be a gap between the bottom of each valve stem and the top of the tappet screw. Unless there is a gap the particular valve concerned will probably not bed properly on its seating.

This will mean loss of power, misfiring and burning of the valve seatings. On the other hand if the gap is excessive the valve will rise too late and not far enough to admit the explosive mixture if it is an inlet valve or eject burnt gases if it is an exhaust valve. For an engine to run quietly and efficiently the tappets must be adjusted to the correct gap. The normal running of an engine will slowly change the settings of the tappets so they should be inspected and adjusted as necessary every 3000 to 4000 miles.

There is much debate as to the ideal tappet settings with different authorities proffering different clearances but a reasonable setting is .006in on the inlet and .008 on the exhaust valve as set when the engine is cold or .004in for both when the engine is hot.

The ideal condition for the engine when setting tappets is hot as the cold settings are only an approximation designed to achieve the ideal .004in gap when the engine parts expand due to heat. The cold settings will give an adequate result but for accuracy they should really be readjusted when the engine is hot.

TAPPET ADJUSTMENT

This is a job best done with a nice clean engine on the bench, failing this the tappets are easier to get at if the carburettor, inlet pipe and exhaust manifold are all removed but the job can be done if these components are in place and it is considered too time -consuming a job to remove them. the usual situation is that the engine is in the car, everything is in place and you have to work in a dark, awkward and oily space. Before starting it is a good idea to remove the spark plugs so that when the engine is turned on the crank handle there will be less resistance.

First you need to remove the valve spring cover and the cork gasket behind it. This involves removing of the two circular thumb knobs. pulling the cover and gasket straight forward and off, keeping the cover and gasket together if possible. Unless you want to or need to replace the gasket you should treat it carefully.

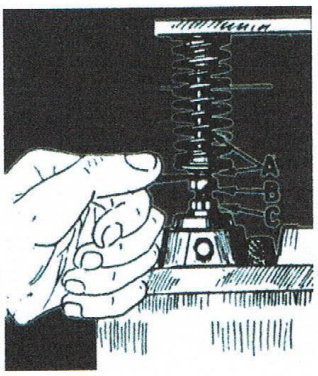
You should inspect and adjust the tappets as necessary in order beginning with the one nearest to the radiator.

Fully Open	Type	Adjust	Type	Cold Gap
5	Ex	4	Ex	.008in
2	In	7	In	.006in
8	Ex	1	Ex	.008in
6	In	3	In	.006in
4	Ex	5	Ex	.008in
7	In	2	In	.006in
1	Ex	8	Ex	.008in
3	In	6	In	.006in

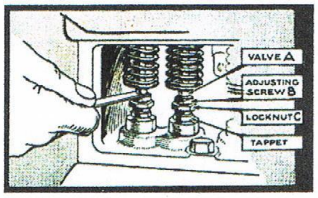
Table indicating which tappets can be adjusted as each tappet opens and cold gap to which they need to be adjusted.

Turning the starting handle slowly until you see the first valve lift and then descend. When it is apparently down to its lowest point give a further quarter turn to ensure the tappet plunger is fully down and take your tappet gauge inserting the appropriate thickness blade (see the table below) between the top of the adjusting screw and the bottom of the valve stem.

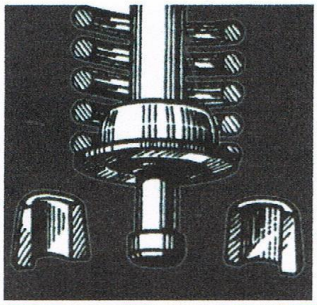
There may not be enough clearance for you to do so. You should not force the blade, it should go in just comfortably. If it doesn't loosen the lock nut and screw down the set-screw until you can insert the blade. Then retighten the lock nut holding the set-screw with a second spanner while you do so. After the adjustment is locked, test again with the blade, adjusting more accurately, if necessary.



Repeat the operation for all eight valves. So far we have assumed that it will be necessary to enlarge the gap by turning the set-screw down. This is because the gap tends to reduce with use of the engine rather than to increase. It may, however, prove necessary to reduce the gap, in which case, you will need to turn the set-screw upwards before locking.



It is now possible to get at the valve tappets, screws and the lock nuts. There is an adjusting screw for each tappet which enters the tappet plunger. The extent to which it does determines the depth of the gap between the head of the screw and the bottom of the valve stem. One full turn of the screw represents about .040in, so to get within an accuracy of .001in or .002in its position must be quite precise. The tappet screws develop recessed heads with long service, which makes getting a true feeler gauge reading difficult in this case the screw heads should be ground back flat if possible. The consequences of setting with too little clearance are greater than those of setting with too much so, if in doubt, err on the side of greater clearance. After adjustment the setting is locked by tightening the lock nut. This nut, being split, binds tightly on the thread of the screw and so holds it fast.



The tappets should be adjusted if the valves are re-ground and again when the car has covered a further 100 miles, as the valves have a tendency to bed down.

One further note regarding higher performance engines; By grinding a flat on the cam follower (bottom of the tappet) it is possible to change slightly the timing and dwell of the valve opening and closing. The theory is that flattening the followers improves the aspiration of the engine by increasing the time that the valve is fully open, but it also increases the overlap. The overall result is a trade off in that there is more power at higher revs but less torque at the bottom end. You need to beware and shorten the tappet guides as well so that the adjusters don't bottom out with the new shorter tappets.

Cylinder Head Nuts.

Tightening in sequence

When replacing the cylinder head on an Austin Seven the cylinder head nuts should be tightened in the correct sequence to avoid putting undue stress on the head casting. The sequence is annotated in the photo to the right.

After an initial hand tightening use a torque wrench to tighten to 18lb ft otherwise use a spanner length appropriate to the diameter of the studs. Be careful not to over tighten.