

CYLINDER HEAD TUNE UP (ALSO CALLED A VALVE JOB)



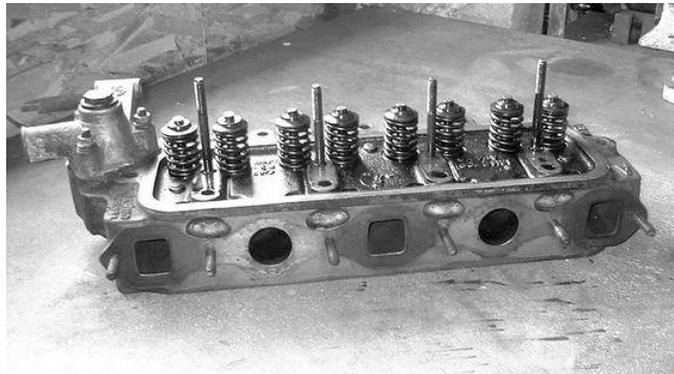
Before starting, you might want to take a compression test of your engine for which you will need a compression gauge. To start, remove the spark plugs, disarm the ignition system, install the compression gauge in each of the cylinders, one at a time and rotate the engine with the starter about six revolutions for each cylinder tested and take note of the readings. If they are fairly equal, you do not have a big problem. GOOD.

Now you can proceed with the cylinder head tune up (valve job). The first thing you will need is a work shop manual, then a general tool kit, a torque wrench, feeler gauges (for adjusting the valves), a rotating wire brush, emery cloth, a small electric drill, a valve tapping stick and some tapping paste and a valve spring compressor.

NOW IT'S TIME TO START

Disconnect the battery, drain the cooling system, mark the ignition wires for firing order, disconnect the throttle linkage, fuel lines, heater valve and the top radiator hose. Remove the intake and exhaust manifolds and carbs. Remove the valve cover, loosen and remove the rocker shaft bolts and shaft assembly, then rotate the push rods with your fingers before removing them. It's a good idea to keep every component in sequence when you remove them to facilitate reassembly.

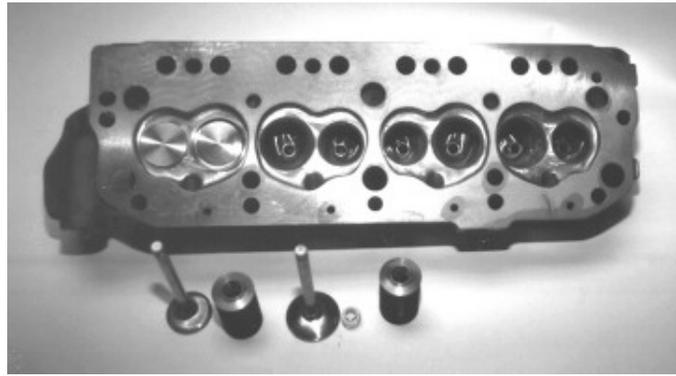
Now loosen and remove the cylinder head bolts and remove the cylinder head. Put the head on the bench and using the valve spring compressor, remove the valve springs and valves from the head. Take a good look at the valve seats and the valve faces to see if they are badly pitted. If so, they will have to go to a machine shop for machining. I find a good way to keep the valves in sequence is make eight holes in a piece of wood or cardboard and place the valves in the holes as they are removed.



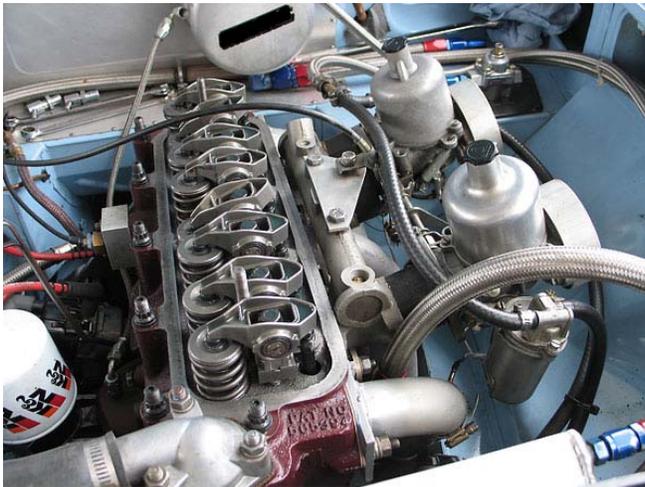
Clean out the carbon from the exhaust and intake ports in the cylinder with the electric drill and the rotating wire brush. If you have a bench grinder with a wire brush, this is good for cleaning the carbon off the valves. If not, put the electric drill sideways in the bench vise and the valves in the chuck and use it as a lathe using emery cloth to clean off the carbon. To clean off the carbon from the top of the pistons, use the fan belt to rotate the engine bringing each piston to the top of the cylinder in turn.

Now it's time to put a little lapping paste on the face of the valve and with the lapping stick suction cup on the head of the valve, rotate the stick between your palms lifting now and then. What you are trying to achieve is a thin grey line on both the valve seat and the valve face by grinding the two surfaces with grinding paste thus making a perfect mating surface. Once the above is completed, wash all parts in Varsol (or similar solvent) and dry.

Next, line up the valve springs and check that they are equal in height. If not, replace them. Start reassembling the cylinder head with new valve stem seals and add a little lube on the valve stems. Reinstall the cylinder head on the engine block with a new head gasket and torque the head bolts to specs. Make sure to recheck the torque and then install the push rods, rocker shaft and bolts and torque them to specs.



Now it's time to adjust the valve clearance using the procedure in the work shop manual. Once that is complete, reinstall the valve cover with a new gasket, exhaust and intake manifolds with new gaskets together with the carbs and linkage, heater valve, temperature sensor, vacuum line, etc.



At this time it might be a good idea to consider replacing the thermostat and any hoses that have seen better days. That also brings up the point of the condition of the water pump and fan belt. Before refilling the cooling system, you should check on its colour and strength.

Basically, all that's left to complete this cylinder head tune up is spark plugs, points, condenser and any other ignition components. This is also a good time to change the engine oil and filter.

Now we can reconnect the battery and crank the engine over a few times (without ignition). If all sounds and looks good and there are no parts left over we can hook up the ignition circuit, turn the key and let the engine burst into life.

Let the engine run and warm up to take it off choke. At this point you may have to adjust the idle. I recommend that you drive the car for about 75 to 100 kms and then re-torque the cylinder head and readjust the valve clearances.

Sounds good? No oil leaks? No coolant leaks? - Give yourself a pat on the back. (Remember your wife said at the beginning when you started this job that the car will never run again).

Hold on – YOU ARE NOT FINISHED YET!

To complete the Spring Check Up, you should perform the following:

- A. Check the tires.
- B. Check and service the brakes.
- C. Check lubrication and oil levels
- D. Check exhaust and under the car
- E. Check the electrical system, battery, etc.
- F. Nut and bold check.
- G. Trim & hardware – a good wash and polish

If any member needs further help in completing the cylinder head tune up, please contact the author, John Wagner at one of the MGCCT meetings or by email; (tech@mgctoronto.com).