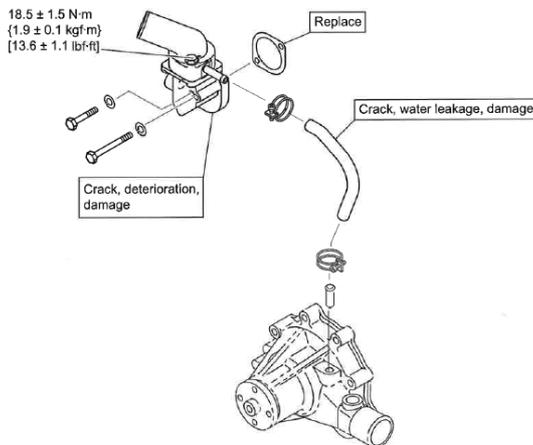
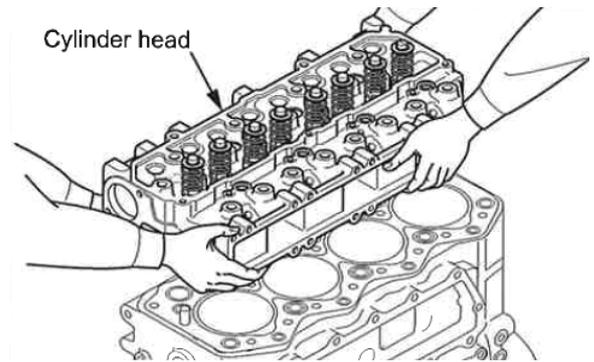


## Engine Top Overhaul

Occasionally, an engine may not require a full engine overhaul and engineers will perform an engine top overhaul instead, avoiding a complete engine tear down and rebuild. An engine top overhaul may act as an interim service for engine until the full operation hours are reached to warrant a complete overhaul. Cost is also often another factor for such practice.

A top overhaul job more often means removing the cylinder head and servicing the valves and rocker parts. Disassembly of the rocker cover, cylinder head and internal components necessitates the replacement of the joining gaskets and seals, notably the cylinder head gasket. Work then commences on the removal of parts such as the valves, valve springs and valve stems. Service guidelines advise the replacement of the valve stem seals since they are worn. The next step is checking the clearances against stated tolerances in the service manual. Parts with measurements found out-of-limits are to be replaced. Parts that can be reworked e.g. valve and valve seat are refaced. However if the valve seat is found beyond tolerances, it has to be replaced as well, similarly for the valve guide.



Taking additional steps, engineers will remove the thermostat for a thorough check and inspection, and along the way replacing the gasket on the thermostat case. Another inspection is done on the bypass hose connecting the thermostat assembly to the water pump. In most cases, bypass hose is replaced as a result of observable deterioration. For a more complete service, engineers would also take the opportunity to remove the inlet and exhaust manifold, conducting inspection for any distortion or abnormalities. Taking out the inlet and exhaust manifold also requires change of the joining gaskets.

When all the parts servicing are done, parts are cleaned up and the inverse process of assembling them back is carried out, thus completing the whole top overhaul work.

To list down the parts needed to be replaced for easy reference, they are:

1. Cylinder Head Gasket
2. Rocker Cover Gasket
3. Valve Stem Seal
4. Inlet Manifold Gasket
5. Exhaust Manifold Gasket
6. Thermostat Assembly Gasket
7. Thermostat Assembly Return Hose
8. Cylinder Head Rear Gasket