



Head Gasket Failures.

Head gaskets are designed and manufactured to perform at 100% reliability. So why would they fail?

Here are a few reasons.

Head gasket failures seem to be more prevalent after the first time the head has been removed. This is especially true since the introduction of substitute materials to replace asbestos. As a result, materials and assembly procedures have changed to assure optimal performance of head gaskets. Following is a list of possible causes for failures:

1. **LINER STAND-OUT:** Cylinder liner height above block must be to specification. Also, no more than 0.002 in. (0.05mm) variation between adjacent cylinders.
2. **IMPROPER PREPARATION:** Clean, dry, oil free deck surface without adhesives is essential. It is a good idea to restore the threads and pre-lube capscrews before installing.
3. **IMPROPER ASSEMBLY:** Locating head with aid of guide studs prevents damage to gasket while aligning bolt holes.
4. **TIGHTENING SEQUENCE:** Some new procedures have been adopted. Refer to current component technical manual.
5. **HEAD CAPSCREW TORQUE:** Four systems are in use for Waterloo block. Depends on bolt length and design. Refer to technical manual.
6. **NEW CAPSCREWS:** Use new head capscrews if existing ones are damaged or previously taken to yield.
7. **OVERHEATING:** Heating damage to gasket can cause failure.
8. **OVERSPEEDING:** Increased cylinder pressure can cause gasket to fail due to overspeeding engine under load.
9. **OVERFUELING:** Increased power increases cylinder pressure (BMEP) which can damage gasket.
10. **HEAD AND BLOCK FLATNESS:** Check face for straightness both lengthwise and across the width.
11. **INCORRECT RESURFACING:** Micro-finish according to specifications.
12. **SHIPPING DAMAGE:** Head gaskets can be easily damaged by improper handling during shipment (bending). Inspect carefully.
13. **BAD GASKET:** It is possible to have a manufacturing defect. Inspect new gaskets carefully.