



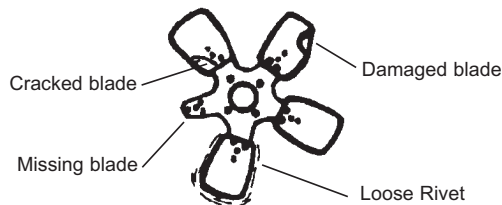
Why Did the Water Pump Shaft Break?

Application Broken water pump housing or shaft fracture.

Problem Excessive vibration and unbalanced load due to:

- Improperly torqued mounting bolts
- Bent or distorted pulley(s)
- Defective fan clutch (if applicable)
- Improperly tightened belts

**Always replace damaged fans,
never try to straighten**



Blue Discoloration



Heat stress shaft fracture indicates excessive high temperatures generated by centrifugal forces due to unbalance



Clean instantaneous fracture indicates engine accelerated rapidly with an unbalanced load

- Solution**
- Torque mounting bolts and fan assembly bolts evenly to proper manufacturer's specifications.
 - Check fan clutch for binding, looseness or leakage - replace if necessary.
 - DO NOT strike shaft.
 - Check fan for damage.
 - Make sure pump turns freely by hand.
 - Tighten fan belts to factory recommended tension - replace if worn or frayed.
 - Check motor mounts - loose or broken mounts will allow fan to hit radiator shroud.

Note Always flush entire cooling system. Failure to do so will lead to premature pump failure and **VOID THE WARRANTY.**