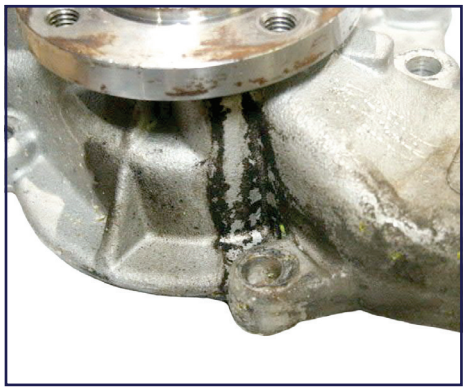
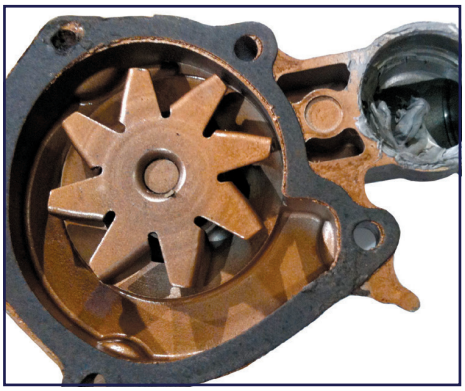
WHY DO WATER PUMPS FAIL?

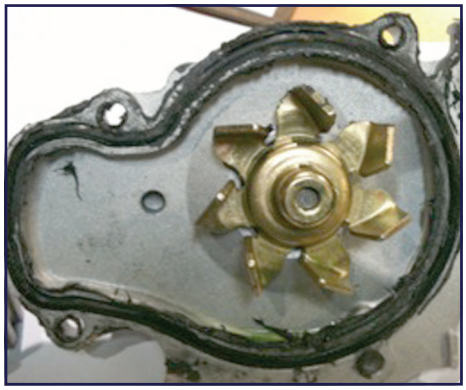
Cooling System Contamination

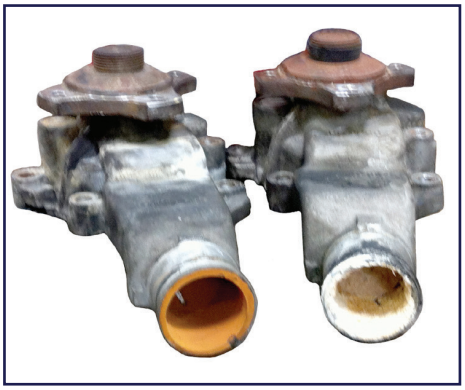
Rust & Corrosion

- Not flushing the cooling system
- Old or used coolant
- Deposits from system components
- Flakes from excessive sealant use
- Improper coolant/water mixture





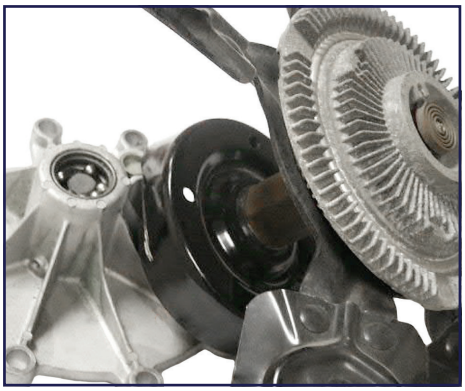




Shaft Breakage

Cause: Bearing Overload

- Evidenced by a clean break rather than blue heat discoloration
- Result of vibration or imbalance
- Always check alignment of pulleys and condition
- Tighten belts with a belt tensioner
- Check condition of fan/fan clutch
- Evenly tighten all mounting bolts



WHY DO WATER PUMPS FAIL?

Casting Breakage 1

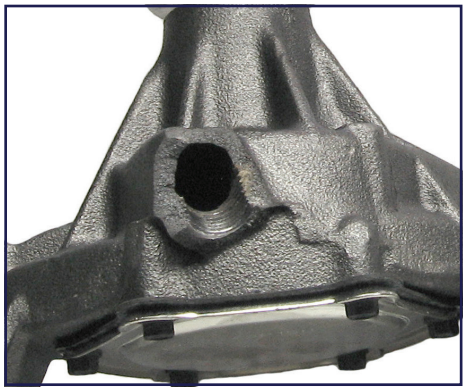
Cause: Excessive Vibration/Imbalance

- Breakage normally occurs around bearing support
- Result of vibration or imbalance resulting from a worn fan clutch or bent fan
- Tighten belts with a belt tensioner
- Check condition of fan/fan clutch
- Evenly tighten all mounting bolts

Casting Breakage 2

Cause: Excessive Torque When Mounting

- Overtightening bolts cause housing to shatter
- Use correct tightning sequence if applicable
- Use maximum 22 ft./lbs. when tightening



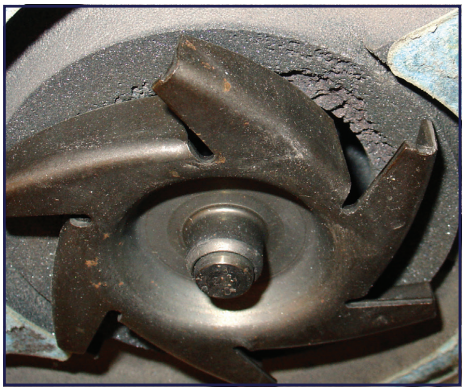
Thermal Shock to Seal

Cause: Adding Coolant to a Hot System

- No signs of contamination present
- Damage appears as a diametrical crack across seal face or mating ring
- Fill system with coolant before starting engine
- If overheated, allow engine to cool before filling system with coolant

WHY DO WATER PUMPS FAIL?

Corrosion Erosion



Cause: Cavitation

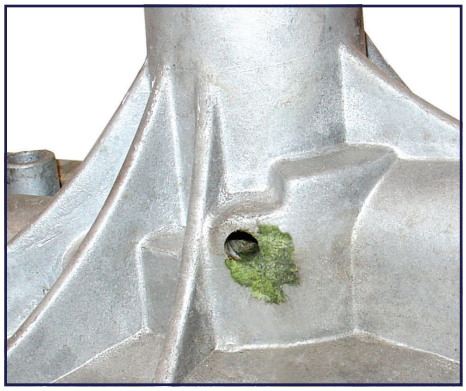
- Vapor bubbles form in the cooling system and implode
- Causes abrasive aluminum oxide formation and corrosion erosion

Recommendation:

- Repair all cooling system leaks, even if minor
- Test pressure caps regularly
- Keep cooling system clean with manufacturer's recommended coolant

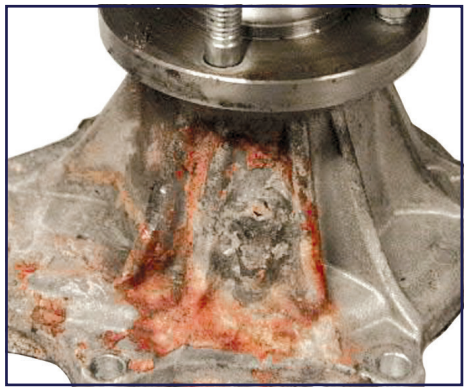
Weep/Leak Differences

Normal Weep Stain



A small amount of weepage is expected during the normal operation of a water pump. The weepage is necessary to maintain lubrication of the seal faces.

Leaking Pump



As a water pump seal begins to fail, coolant will flow from the weep hole at a much faster rate. This results in more visible staining, indicating the pump should be replaced. Left unattended, the exessive leakage will lead to bearing failure, complete pump failure and possible damage to related cooling system components.