



Tech TIPS

SUPPORTING TODAY'S PROFESSIONAL TECHNICIAN

Is the Water Pump Really the Problem?

Application:

All vehicles with belt driven water pumps.

Problem:

Water Pump Failure Diagnosis

Solution:

Common symptoms of water pump failure are leaks, noise or lack of cooling. Before rushing to the conclusion that the pump should be replaced, it is important to check these important factors:

Leaks: Where is the leak coming from? If the leak is from the bearing, make sure that a damaged fan or fan clutch isn't loading the bearing and seal causing the leak. If the engine is a V-belt system, check for correct belt tension. For serpentine applications, check the automatic tensioner for proper operation. If the leak is elsewhere, check for a loose or defective upper hose or fitting that is trickling fluid down across the bearing. A simple hose leak can make a seal or gasket appear at fault. Remember, seal failure can also be caused by incorrect coolant or running the system on water alone. Be sure the technician is using the correct coolant in the proportions specified by the OEM.

Noise: Modern serpentine belt systems drive many accessories, such as smog pumps, alternators and AC compressors. One of these components may actually be the source of the noise. Also inspect the belt and belt tensioner for proper performance. If the noise is from the water pump bearing, inspect the fan and fan clutch for damage or imbalance. Growling noises might be an indication of air in the system or low coolant levels. Visually inspect coolant level and check for coolant movement.

Lack of cooling: Check coolant level. Check for proper thermostat operation. Check radiator and airflow. Check for loose or slipping belts. Check the original pump impeller for damage. Inadequate coolant level or a damaged engine could destroy the impeller. Ensure there are no signs of combustion in the cooling system (using a block tester). This condition can cause an air lock in the cooling system, which results in low or no coolant flow. A failed head gasket or a cracked head can allow super-heated air to enter the system, which causes steam to form that can eventually erode the impeller. Contaminated coolant can corrode pump components, so check service intervals and use of correct fluid. Many times these conditions mislead the technician to blame the water pump, do not overlook what may have caused it to fail.

Damaged housing or broken shaft: Catastrophic failure of the pump housing, bearing or shaft are typically caused by defective rotating components, not flawed castings or material. Check for fan damage or a defective fan clutch. It is important to note that broken or bent fan blades cannot be repaired or bent back - never reuse damaged fans. Replacement is always the best insurance against premature water pump failure.