

The Volkswagen Impeller Debate: Plastic or Metal?



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For quite some time the impeller quality (or lack thereof) of the Volkswagen water pump has been debated. Past experience sent many technicians in search of a pump made with a metal impeller instead of plastic.

Volkswagen's OE water pump has always been manufactured with a plastic impeller. Originally the impellers were molded from a nylon-based plastic. Over time, it was discovered that the nylon material was not compatible with all types of antifreeze, resulting in premature pump failure and system contamination.

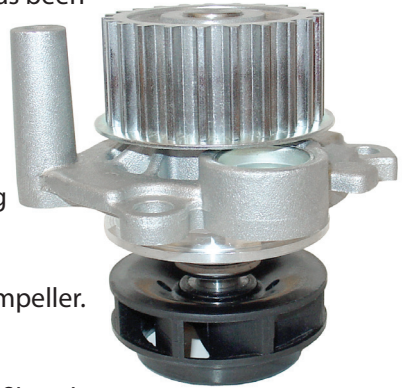
To avoid this situation, many aftermarket water pump manufacturers switched to a metal impeller. The metal impellers are not the only solution, however.

Over the past ten years, OE manufacturers, including Volkswagen, switched to a 40% filled, fiberglass-reinforced plastic (PPS) to enhance impeller durability. PPS offers the broadest resistance to corrosives of any advanced engineering plastic and is used in thousands of automotive, aerospace, medical and industrial applications where high temperature, solvent-proof, electrically-shielded parts are needed. There are no known solvents which degrade PPS below 392°F (200°C) including steam and harsh chemicals, making it the perfect substance for use in plastic impellers.

Additional PPS impeller advantages:

1. PPS is a superior compound that can be manipulated for enhanced curvature and precise angles during the molding process. This provides optimized coolant flow through the system that in many cases cannot be matched by substituting the design with metal or cast iron.
2. Plastic weighs less than metal. It takes less horsepower to operate a water pump with a PPS impeller, making the engine more efficient.
3. Due to the light weight, PPS impellers put less stress on the water pump bearing. Metal impellers not perfectly centered or weighted can cause excessive bearing stress and premature pump failure. Specifically, cast iron impellers require dynamic balancing or the off-center load will destroy the water pump bearing.

A large number of OE manufacturers are now utilizing PPS impellers in the majority of their water pumps, including ToughOne water pump supplier, ASC, who uses PPS for both its OE and aftermarket impellers. In addition, ASC also has moved to a one-piece shrouded (enclosed) impeller (where applicable) for even greater durability.



**Our premium impeller
is made from glass
reinforced PPS**



**Cracking and deterioration
will occur on lesser-quality
impellers**



**Flaking and disintegration can
occur on previous impeller designs**

