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87-06 Jeep Wrangler Radiator

MISHIMOTO TECHNICAL SPECS

Subject: Testing of 1987-2006 Jeep Wrangler Radiator

Apparatus

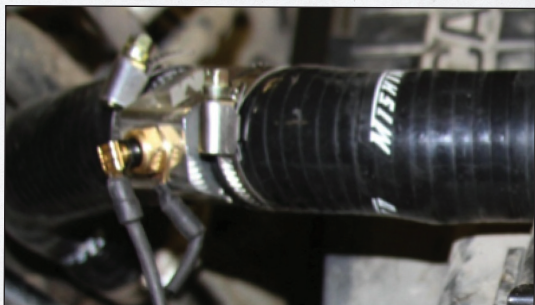
For hardware Mishimoto chose PLX sensor modules driven by the Kiwi WiFi, plus IMFD. This is a wireless system from the sensor modules to the iPad or laptop computer. The software used was the Palmer Performance Scan XL pro, which has full data logging capabilities.



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Fluid temperatures were taken from both the inlet and outlet of the radiator using Mishimoto inline water temperature sensor adapters and PLX fluid temperature sensors.



A thermocouple was mounted in the grill of the Jeep to measure the temperature of the air as it entered the system.

Testing Conditions

Temperatures were mild, ranging from 60°F to 70°F, with scattered showers throughout the day.

Experiment

The test compares the temperatures of the OEM radiator versus the Mishimoto radiator. To conduct the test we drove the car on a highway at 60mph (engine RPM range was 1400-1800) and cruised for approximately five miles. Special attention was given to the distance between the Jeep and any cars in front of it to ensure that fresh air was flowing into the radiator.

Special Notes

Water without added antifreeze was used in both tests because we would be draining the water after testing. We used the OEM thermostat, which measures relatively high at 195°F.

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Product Notes

The OEM Jeep radiator holds 0.53gal (2L) of coolant, whereas the Mishimoto radiator holds 0.89gal (3.37L) of coolant.

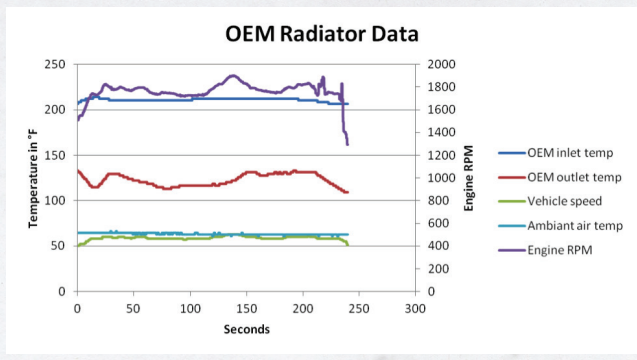


Figure 1: Highway test of OEM radiator

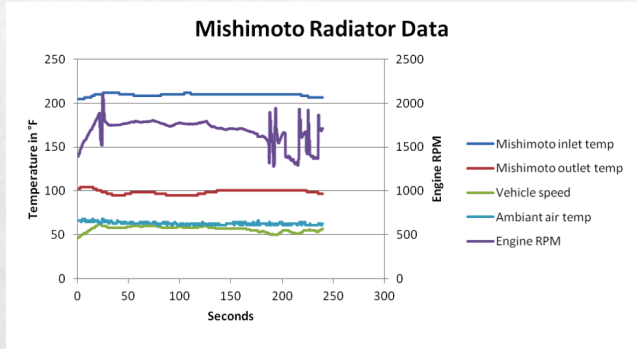


Figure 2: Highway test of Mishimoto radiator

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Mishimoto vs. OEM: Radiator Outlet Temps

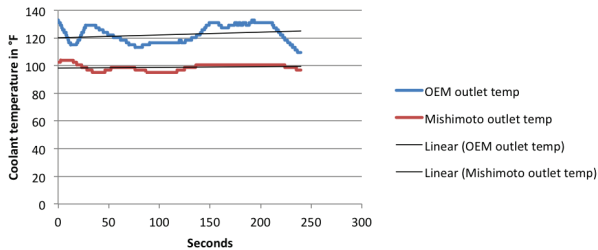


Figure 3: Comparison of radiator outlet temperatures measured from both the OEM and Mishimoto radiators. Notice that the temperatures recorded from the Mishimoto radiator averaged 20°F cooler than the temperatures recorded from the OEM.

Mishimoto vs. OEM: Efficiency

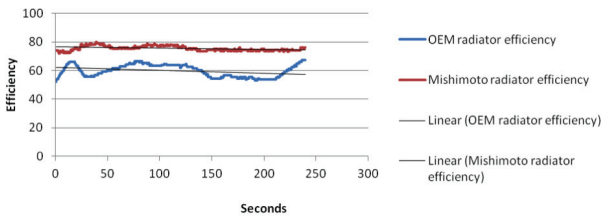


Figure 4: Comparison of efficiency between the OEM and Mishimoto radiators. Notice that at the beginning of the test, both radiators have higher rates of efficiency, which slowly begin to taper with time. This occurs because, at the start of the test, the radiators were heat soaked from sitting at idle for a few minutes. At the beginning of the test the Mishimoto radiator was roughly 18% more efficient than the OEM. By the end of the test, despite the decrease in efficiency of both radiators, the Mishimoto radiator had approximately 20% more efficiency than the OEM. This observation proves that the Mishimoto radiator has a greater capacity to keep the Jeep engine running cooler.

Mishimoto vs. OEM: % Change in Temperature

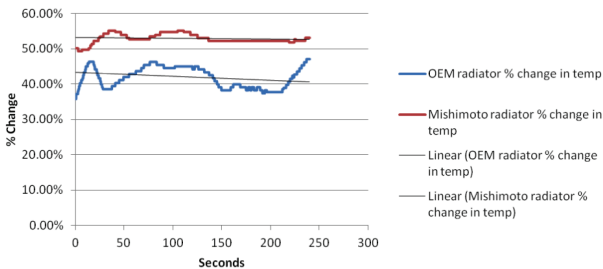


Figure 5: Comparison of percent change in temperature between the OEM and Mishimoto radiators. Notice that the Mishimoto radiator has a 10% greater change in temperature than the OEM radiator.



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Summary

From the data above we have concluded that the Mishimoto radiator is more efficient than the OEM radiator. The all-aluminum Mishimoto radiator holds 0.36gal (1.37L) more coolant than the OEM radiator, resulting in 20% more efficiency under highway driving conditions and a 20°F drop in coolant temperature exiting the radiator.

A handwritten signature in black ink, appearing to read "Dan Tafe".

Dan Tafe
Product Engineer, Mishimoto Automotive

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