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Jeep Wrangler JK Direct-Fit Oil Cooler

MISHIMOTO ENGINEERING REPORT

Testing of the Jeep Wrangler JK Direct-Fit Oil Cooler

Test Vehicle

2008 Jeep Wrangler

Objective

To make an oil cooler kit that directly bolts onto the 2007-2011 Jeep Wrangler and that is robust enough for off-road use but still safe for street conditions.

Testing conditions

Testing took place on a mild day. Temperature range: 68°-72°F.

Apparatus

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



Fluid temperatures were taken for both the inlet and outlet of the 19-row oil cooler at the Mishimoto oil sandwich plate using two PLX fluid temperature sensors. Oil pressure was also measured to ensure that no dramatic pressure drop occurs when installing the oil cooler.

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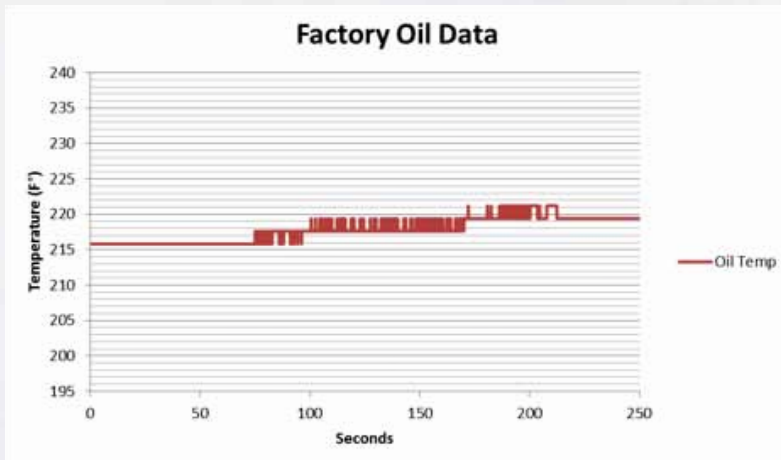
A thermocouple was mounted in the front grille with no obstructions so that ambient air temperatures could be measured.

Experiment

The test compares the factory oil temperatures versus those of the Mishimoto 19-row direct-fit oil cooler. Both setups were tested until they reached steady-state conditions. To conduct the test we first let the car idle until it became heat soaked. Next, we drove the Wrangler on a highway at approximately 65 mph and cruised for approximately five miles. Special attention was given to the space between the Wrangler and the car in front of it to ensure that fresh air was flowing into the oil cooler. This experiment is 100% repeatable when the test is conducted under similar weather conditions.

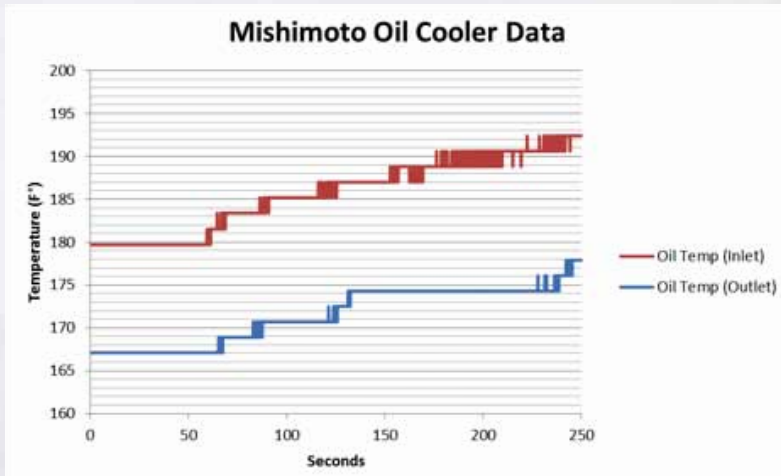
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Factory Oil Data



At cruising speeds, oil temperature of the factory vehicle is around 218°-223°F.

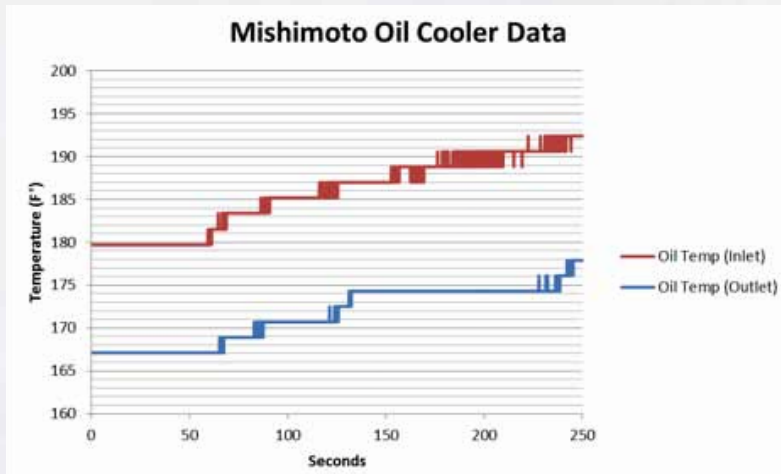
Mishimoto Oil Cooler Data



At cruising speeds, the oil temperatures entering the cooler are around 185°-192°F. The graph above shows that, under cruising conditions, the Mishimoto oil cooler reduced temperatures by an average of approximately 16 degrees, with minimal pressure loss.

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The graph above compares the temperatures of the oil returning to the engine with and without the oil cooler installed. A drop in temperature of roughly 40°F occurs when the Wrangler is equipped with the Mishimoto 19-row oil cooler.

Conclusion

The testing results show that the Mishimoto oil cooler works well to reduce oil temperatures, with no dramatic pressure loss. Under more harsh driving conditions the inlet temperatures to the cooler will increase, resulting in an even greater difference between inlet and outlet temperatures.

Dan Tafe
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