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Subject: 01-05 Subaru WRX & STI Oil Cooler Kit

Test Vehicle
2003 Subaru WRX

Installation Difficulty

Objective
To make an oil cooler kit that directly bolts onto the 2001-2005 WRX/STI and is robust enough for the track, but still safe for street conditions.

Testing Conditions
Testing took place on a humid day with light showers. Temperature range: 70-74°F.

Apparatus
For hardware Mishimoto chose the PLX sensor modules 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.

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Fluid temperatures were taken from both the inlet and outlet of the 10-row oil cooler using a Mishimoto oil sandwich plate with PLX fluid temperature sensors. Oil pressure was also tested to ensure no dramatic pressure drop occurs when installing the oil cooler.

A thermocouple was mounted in the front grill with no obstructions to measure ambient air temperature.

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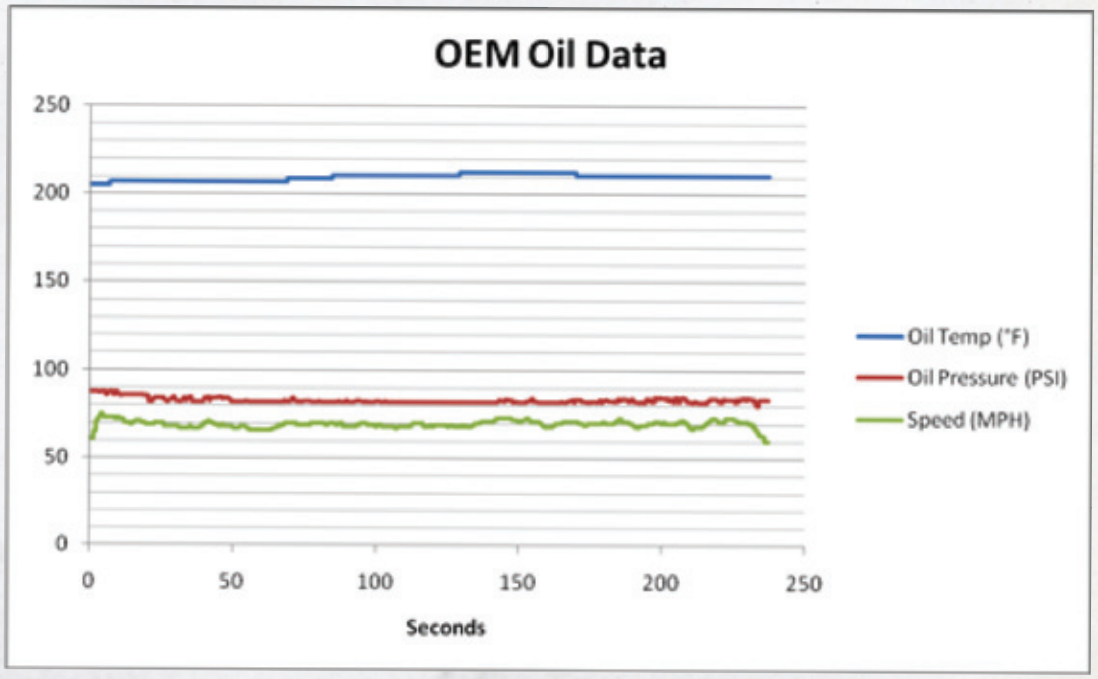
Experiment

The test compares the OEM oil temperatures versus the Mishimoto 10-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 WRX on a highway at approximately 65mph and cruised for approximately five miles. Special attention was given to the space between the WRX 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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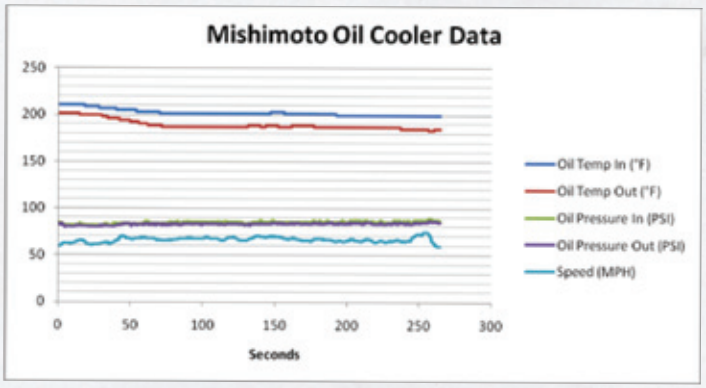
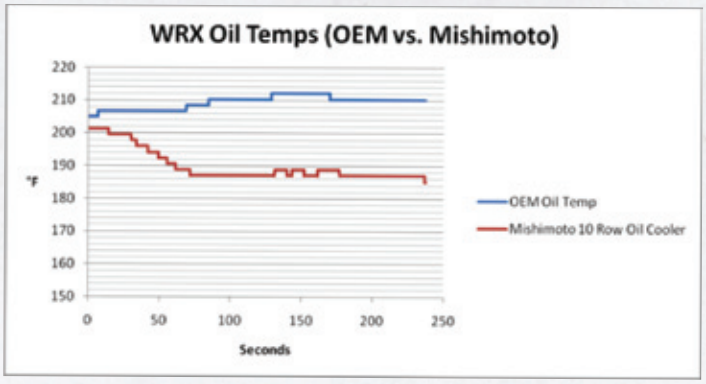


The graph on the left shows that the Mishimoto oil cooler loses only 1-2 psi of pressure compared to the stock setup.



At cruising speeds, the oil temperatures coming into the cooler are around 200-215°F. The graph on the left shows that, under cruising conditions, the Mishimoto oil cooler reduced temperatures by more than 25°F and approximately 20°F on average over stock.

Summary

The testing results show that the Mishimoto oil cooler works well to reduce temperatures while losing only a few psi of pressure. Under more harsh driving conditions the inlet temperatures to the cooler will increase, resulting in an even greater difference between inlet and outlet temperatures.

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