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MISHIMOTO ENGINEERING REPORT

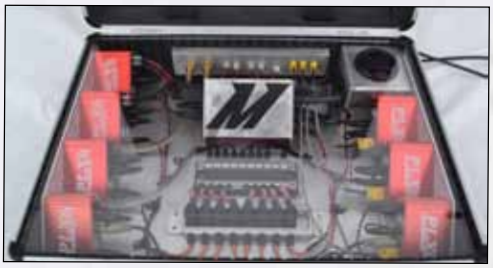
Testing of the Subaru WRX/STI Direct-Fit Oil Cooler

Test Vehicle
2012 Subaru WRX

Objective
To make an oil cooler kit that directly bolts onto the 2008-2014 WRX/STI and that is robust enough for the track but still safe for street conditions.

Testing conditions
Testing took place on a mild day. Temperature range: 70-74°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.



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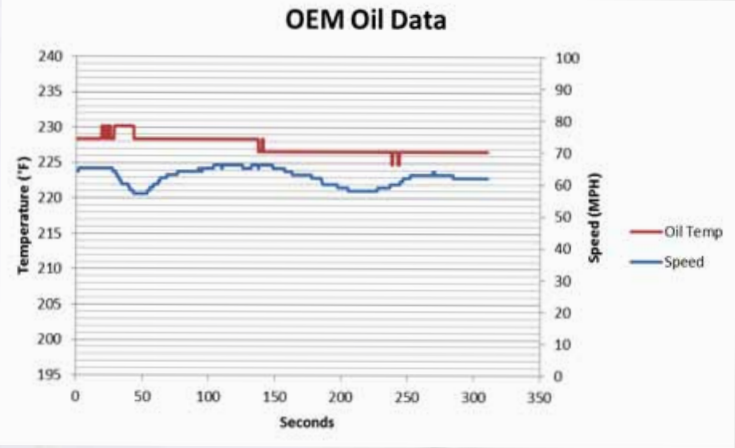
Fluid temperatures were taken from both the inlet and outlet of the 19-row oil cooler using a Mishimoto oil sandwich plate with PLX fluid temperature sensors. Oil pressure was also measured to ensure that no dramatic pressure drop occurs when installing the oil cooler.

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

Experiment

The test compares the OEM oil temperatures versus 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 WRX on a highway at approximately 65 mph 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.



At cruising speeds, the OEM oil temperature is around 225-230 degrees F.

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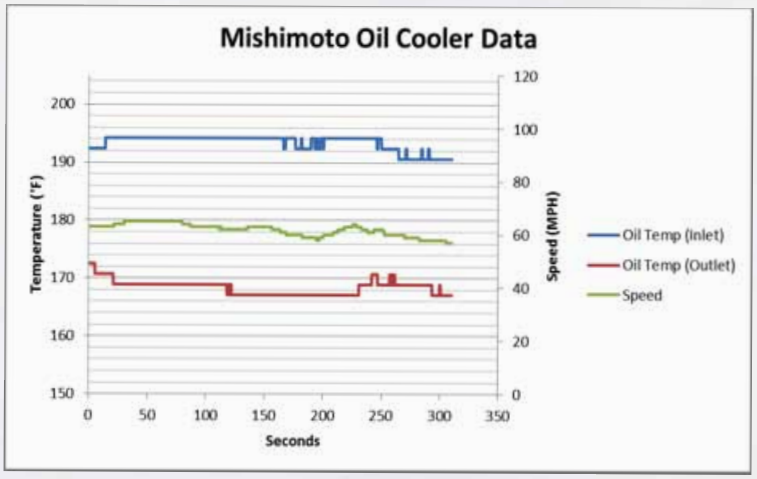
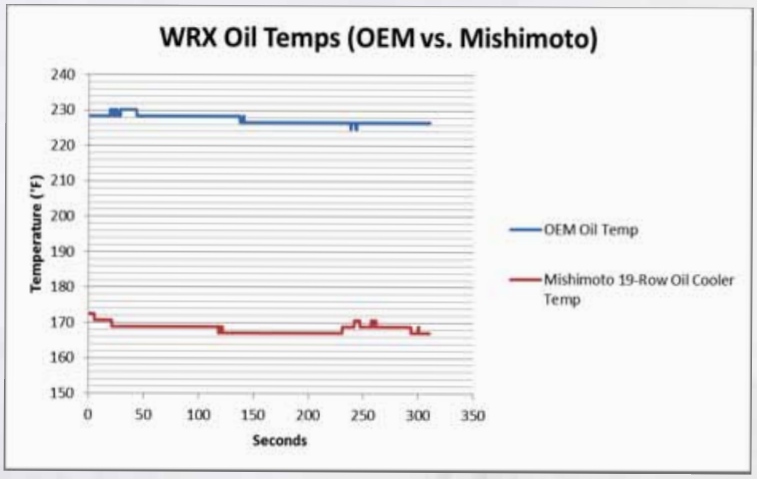


At cruising speeds, the oil temperatures entering the cooler are around 190-195 degrees F.



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 60°F occurs when the WRX is equipped with the Mishimoto 19-row oil cooler.

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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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