

2015 - 2016 Corvette Z06: GM TechLink: Track Engine Temperature on Track-Ready Corvettes

Subject: Track Engine Temperature on Track-Ready Corvettes

Model and Year: 2015 - 2016 Corvette Z06 (equipped with the 6.2L engine – RPO LT4)

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There may be some questions from owners of track-ready 2015-2016 Corvette Z06 models (equipped with the 6.2L engine – RPO LT4) regarding the hot temperature message. Here's some information to relay to owners about Corvette track-ready vehicles and track engine temperature.

The manual transmission-equipped Z06 is designed to keep engine oil, coolant, transmission and differential fluids below the hot warning targets when driven by a professional driver on an 86°F (30°C) day on a "typical" racetrack for an indefinite period of time (effectively the time to burn through a full tank of fuel). The Corvette team validates the durability of the Z06 cooling systems with a 24 hour accumulated track test to simulate the most aggressive track day usage by Corvette owners.

The Milford Road Course at the GM Proving Ground used by the Corvette team is designated as a "typical" standard track, but GM recognizes that there are tracks around the world that are easier on a cooling system and some that are harder on a cooling system. Generally speaking, tighter tracks with a lower average speed and higher sustained RPM will drive higher fluid system temperatures. In addition, higher ambient temperature conditions affect any car's ability to run sustained laps at ten-tenths.

On Z06 models equipped with an automatic transmission, when in the Drive (D) position, the transmission selects the lowest possible gear ratio for the best acceleration and, because it has eight closely-spaced ratios, typically runs a higher average RPM than vehicles with the manual transmission. This optimizes lap time performance, but also taxes the engine oil and coolant more for any given track. As a result, the automatic transmission has the capability to run faster laps than the manual transmission, but thermal limitations are reached more quickly. Owners who are planning to run extended track-day sessions at "professional" speeds are advised to use a vehicle equipped with the manual transmission, or to paddle shift the automatic transmission and select higher gears when conditions warrant.

Any time the maximum recommended temperatures are reached in any condition, warnings will display on the Driver Information Center at the appropriate time for coolant, oil, or transmission fluid. A cool-down lap or two will bring operating temperatures back to a reasonable level and then aggressive track driving can be resumed.

Some may wonder why the Corvette is not designed to higher temperatures, say 110°F (43°C), to accommodate southern tracks in the summer. Corvettes have been designed using the “pro driver at 86 degrees” criteria for generations and, for the vast majority of owner use, it has resulted in excellent performance. If the Corvette was designed to higher temperature criteria, it would require adding additional cooling hardware, which drives up mass and, perhaps more importantly, requires the system to be fed more air. This would have a great impact on appearance and aerodynamic drag. Like most aspects of car design, the challenge is in finding the best balance of conflicting requirements.

- *Thanks to Tracy Lucas*

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