

May 3, 2017

Attn: Linc Wehrly

**U.S. Environmental Protection Agency
Office of Transportation & Air Quality
Assessment and Standards Division
2000 Traverwood Drive
Ann Arbor, MI 48105**

Re: Application for Alternative Methodology for Off-Cycle Technology Credits

Dear Mr. Wehrly

Pursuant to the provisions of 40 CFR 86.1869-12(d), 49 CFR 531.6(b), and 49 CFR 533.6(b) FCA US LLC ("FCA US") hereby requests approval for off-cycle CO₂ credits for the following technologies:

- Active Engine Warm Up used in 2011 – 2013 model year vehicles
- Active Transmission Warm Up used in 2013 model year vehicles

This request for off-cycle credits is submitted in accordance with subsection 40 CFR 86.1869-12(d) which enables manufacturers to earn credits by demonstrating that a technology demonstrates a carbon-related exhaust emissions benefit when tested using an alternative EPA-approved methodology. This request and attached supporting documents address the application requirements described in 40 CFR 86.1869-12(e)(2).

FCA US is a full line automotive manufacturer engaged in the design and production of light-duty vehicles ranging from compact passenger cars to full size pickup trucks. FCA US is committed to implementing technologies that reduce greenhouse gases and fuel consumption.

FCA US appreciates the opportunity to submit this application for off-cycle credits and looks forward to your timely review.

Sincerely,



Paul Mendrick

Manager – Vehicle Environmental Certification
Vehicle Safety and Regulatory Compliance – FCA US LLC

Cc: Gary R Oshnock
Fuel Economy/GHG Programs, Vehicle Safety and Regulatory Compliance, FCA US LLC

REQUEST FOR ACTIVE ENGINE WARM-UP GHG CREDITS

Definition

Active engine warm-up means a system using waste heat from the vehicle to warm up targeted parts of the engine. This reduces engine friction losses and enables the closed-loop fuel control more quickly allowing for a faster transition from cold operation to warm operation, thereby decreasing CO₂ emissions, and increasing fuel economy.

Credits

Active Engine Warm Up Credits (40 CFR §86.1869-12 (b) (vii))

(A) The passenger automobile credit is 1.5 grams CO₂/mile.

(B) The light truck credit is 3.2 grams CO₂/mile.

Description of FCA Engine Warm-up Technology

FCA's Pentastar and FIRE engines utilize engine oil heat exchangers to warm the engine oil and the engine more quickly. This is done with a plate style coolant-to-oil heat exchanger attached to the oil filter housing. Oil flows from the engine oil pump to the oil filter, into the heat exchanger, and then to the main engine oil gallery. Coolant is routed from the engine block water jacket through the heat exchanger, and then returned to the water pump via a dedicated coolant loop to ensure targeted warm up of the engine.

FCA Methodology

FCA's Pentastar engine, introduced in 2011 MY, and FIRE engine, introduced in 2012 MY, utilize engine oil heat exchangers to heat the engine. Per the methodology described in the Joint TSD regarding credit determination, FCA is seeking to apply the pre-defined credit listed above for each active engine warm-up application per vehicle type (car/truck) for the 2011 – 2013 model years for the Pentastar, and the 2012-2013 model years for the FIRE. In cases where both a transmission oil heater and an engine oil heater are in use on the same vehicle, targeted warm up of both components is accomplished by using separate coolant loops. The engine oil heat exchanger functions for the full useful life of the vehicle; no reduction is taken for performance degradation. The fleet credit will be calculated based on the credit for each type of vehicle, vehicle lifetime miles, and U.S. sales volume for applicable products. FCA has already requested credits for this technology starting in 2014 MY.

Pentastar Engine Oil Heat Exchanger

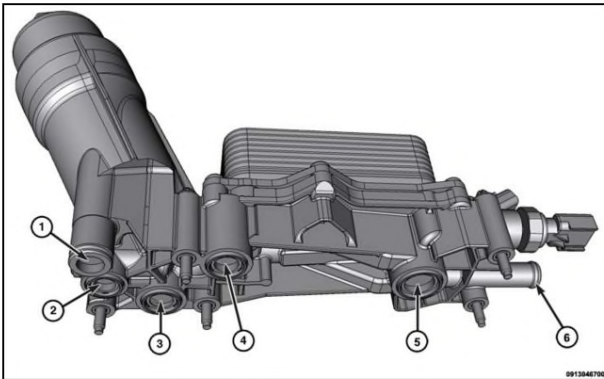


Figure 1 - Pentastar Engine Oil Heat Exchanger Port Diagram

1. Oil filter housing inlet
2. Oil drainback port
3. Coolant inlet right cylinder block
4. Coolant inlet left cylinder block
5. Oil outlet
6. Coolant outlet

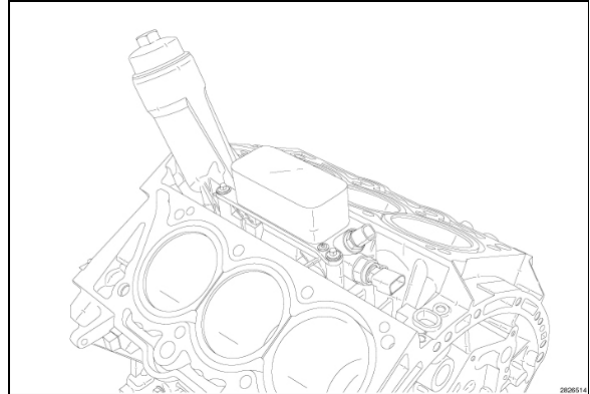


Figure 2 - Pentastar Engine Oil Heat Exchanger Location

The Pentastar engine oil heat exchanger is located in the "V" between the left and right sides of the engine.

FIRE Engine Oil Heat Exchanger

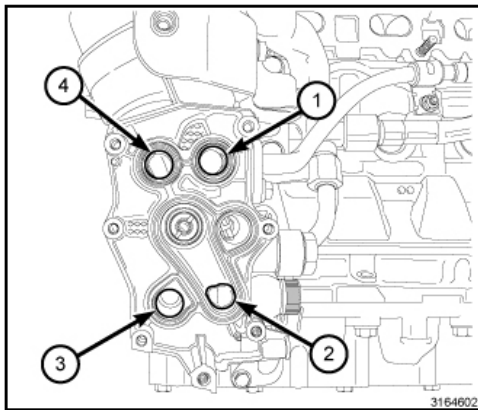


Figure 3 - FIRE Engine Oil Heat Exchanger Port Diagram

1. Coolant inlet
2. Oil inlet
3. Coolant outlet
4. Oil outlet

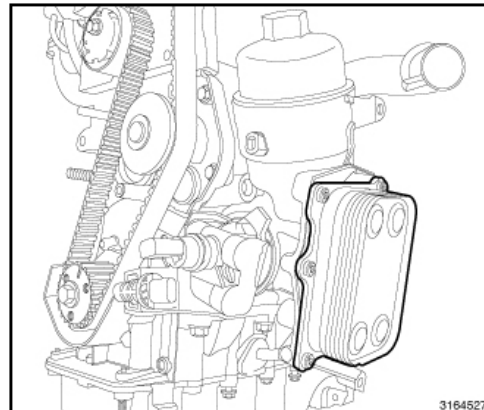


Figure 4 - FIRE Engine Oil Heat Exchanger Location

The FIRE engine oil heat exchanger is located on the left side of the cylinder block.

REQUEST FOR ACTIVE TRANSMISSION WARM-UP GHG CREDITS

Definition

Active transmission warm-up is a system using waste heat from the vehicle for targeted warm up of the transmission. This reduces friction losses and enables a faster transition from cold operation to warm operation, thereby decreasing CO₂ emissions, and increasing fuel economy.

Credits

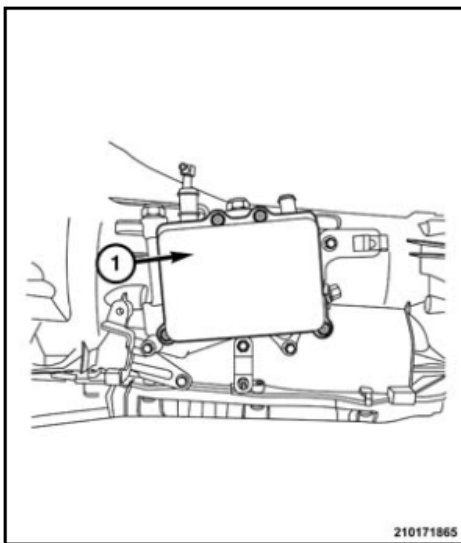
Active Transmission Warm Up Credits (40 CFR §86.1869-12 (b) (vi))

(A) The passenger automobile credit is 1.5 grams CO₂/mile.

(B) The light truck credit is 3.2 grams CO₂/mile.

Description of FCA Transmission Warm-up Technology

The transmission heater is an assembly containing an plate style oil-to-water heat exchanger and Thermal Bypass Valve (TBV). Coolant not required for cabin heat is directed to the transmission heater in order get the transmission oil up to ideal operating temperature faster. The targeted warm up of the transmission oil provides improved fuel economy performance by minimizing parasitic losses during initial warm up.



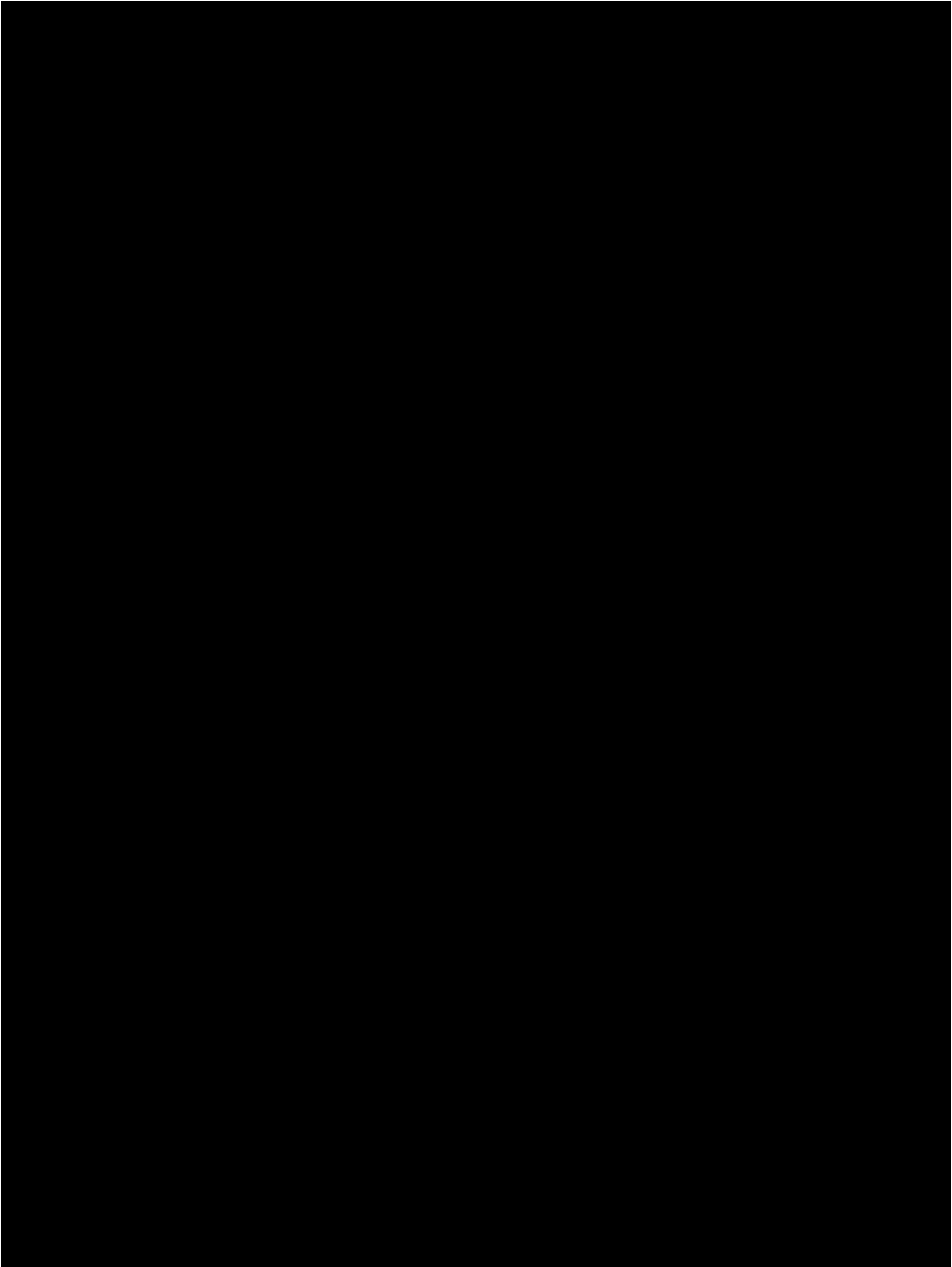
The transmission oil heat exchanger is mounted to the side of the transmission housing. Oil is routed through the transmission oil heater and back into the transmission. Coolant is directed by a 3-way valve to the transmission oil heater in accordance with cabin compartment heat demand.

Figure 5 - FCA Transmission Oil Heater Diagram

FCA Methodology

FCA US introduced transmission oil heater technology in the 2013 model year. Per the methodology described in the Joint TSD regarding credit determination, FCA US is seeking to apply the pre-defined credit listed above for each active transmission warm-up application per vehicle type (car/truck) for the 2013 model year. In cases where both a transmission oil heater and an engine oil heater are in use on the same vehicle, targeted warm up of both components is accomplished by using separate coolant loops. The transmission oil heat exchanger functions for the full useful life of the vehicle; no reduction is taken for performance degradation. The fleet credit will be calculated based on the credit for each type of vehicle, vehicle lifetime miles, and U.S. sales volume for applicable products. FCA has already requested credits for this technology starting in 2014 MY.

FCA Confidential Business Information
Appendix A – Credit Esitmates



FCA Confidential Business Information

