



ENGINEERING REPORT

2015–2018 Dodge Ram 6.7L Cummins Transmission Cooler | SKU: MMTC-RAM-15

By Jason Wettig, *Mishimoto Engineer*

REPORT AT A GLANCE

- **Goal:** Create a transmission cooler that outperforms the stock unit. The Mishimoto cooler should fit the 2015–2018 Dodge RAM 6.7L Cummins without any cutting or modification required.
- **Results:** The Mishimoto transmission cooler lowers transmission fluid temperatures by up to 20 degrees when compared to the stock Transmission Cooler. The increased fin surface area promotes greater heat transfer and takes advantage of the airflow in the front of the truck.
- **Conclusion:** : The Mishimoto transmission cooler is a valuable upgrade for Dodge owners who drive their vehicles hard in hot climates or with heavy loads. The upgraded heat exchanger helps to ensure transmission fluid temperatures stay at optimal levels throughout all driving conditions.

CONTENTS

PG	1	— DESIGN OBJECTIVES
		— DESIGN AND FITMENT
PG	4	— PERFORMANCE TESTING
		— CONCLUSION

DESIGN OBJECTIVES

The design requirements assigned to this project are as follows:

- Create a transmission cooler package that reduces fluid temperatures when compared to the stock cooler.
- Must be a direct fit, with no cutting or permanent modification necessary.

a general understanding of the available space was necessary. It was determined that the cooler could be thicker and longer than stock. Internal fluid tabulator fins would also be necessary to improve on the stock setup. Finally, a louvered external fin would be necessary to promote even greater heat transfer.

DESIGN AND FITMENT

The R&D process began by evaluating the stock system and understanding how the Dodge team chose to package the truck's cooling stack. Before the core size could be increased,



FIGURE 1: *The stock 2015-2018 Dodge RAM 6.7L Cummins transmission cooler mounted in the truck.*

The Mishimoto transmission cooler increases core volume by 112% over the stock transmission cooler. The Transmission Cooler is thicker and has more rows, therefore it has a greater volume than

the stock unit. Figure 2 below shows the fluid capacity comparison between the stock and Mishimoto transmission coolers.

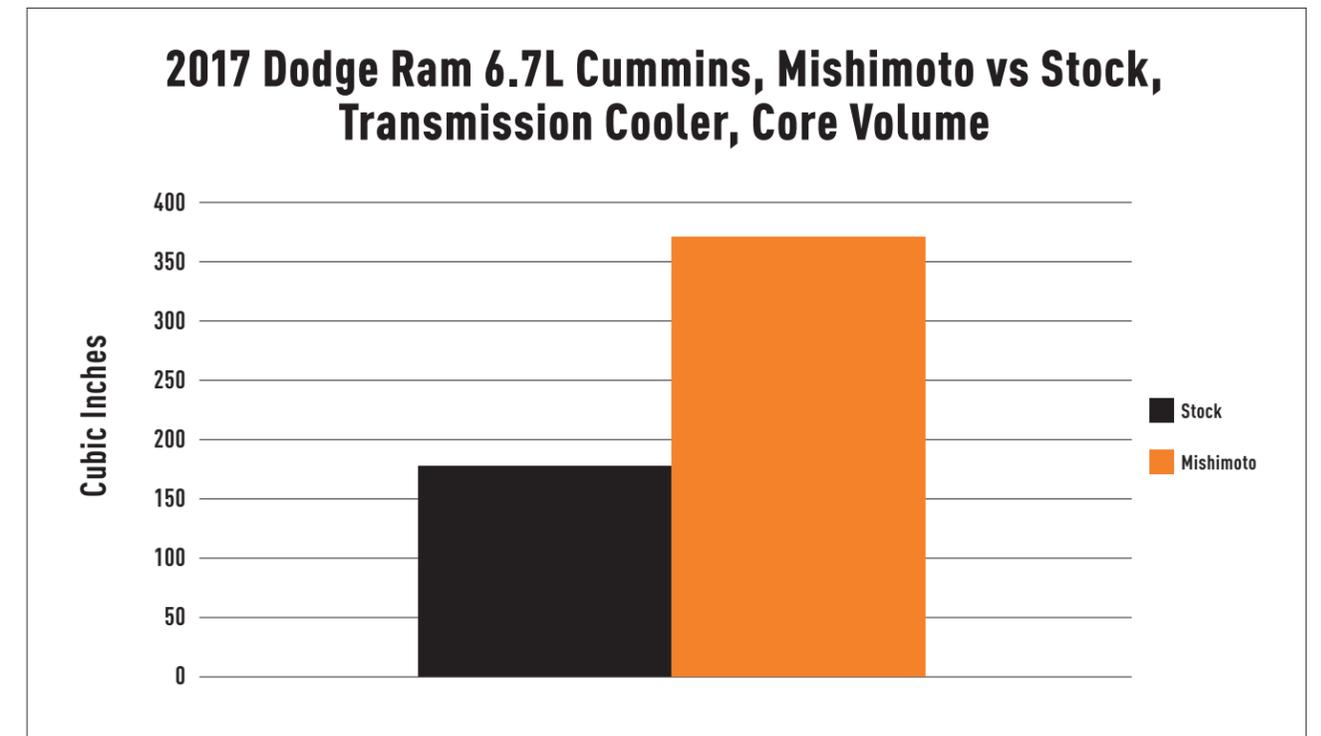


FIGURE 2: *The Mishimoto transmission cooler features an increase in core volume, which promotes greater heat transfer.*

The Mishimoto 2015-2018 Dodge RAM 6.7L Cummins transmission cooler also increases fin surface area by 234% when compared to the stock transmission cooler. With the

thicker core and more rows, a larger amount of fin surface area can be created. Figure 3 displays the difference between the stock and Mishimoto transmission cooler external fin area.

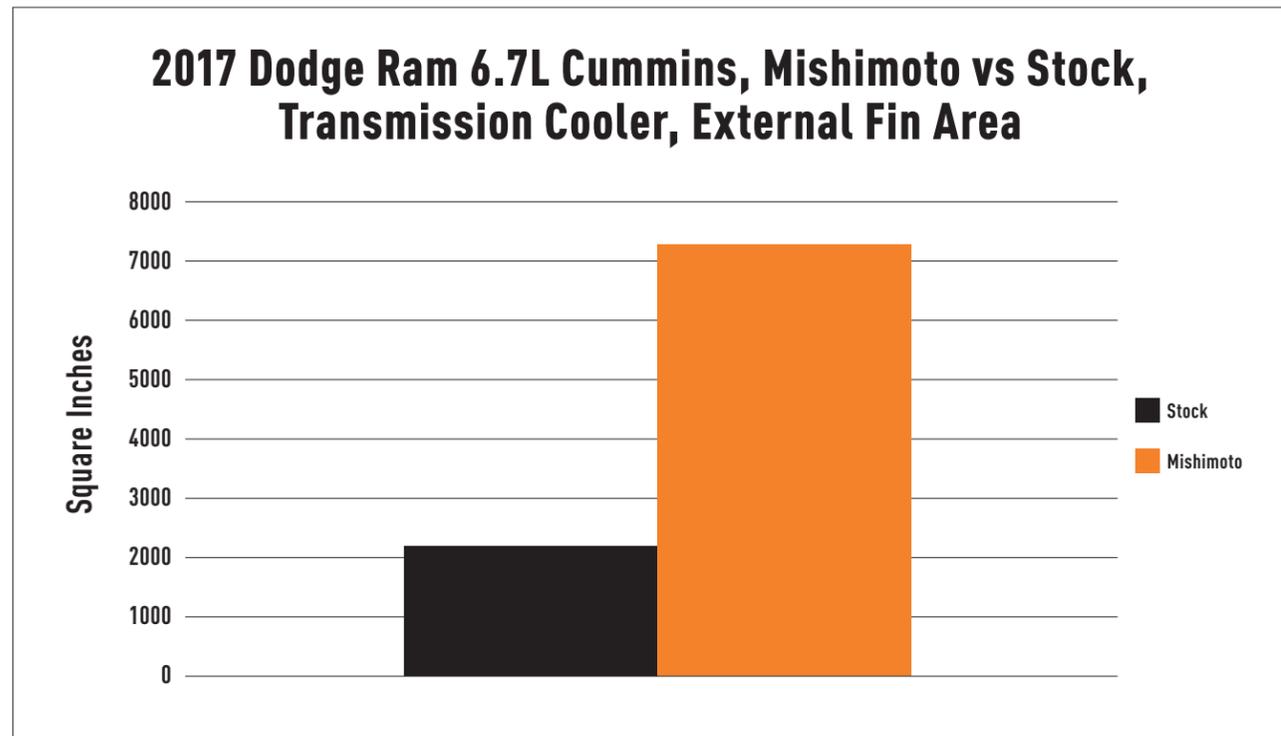


FIGURE 3: The Mishimoto transmission cooler features an increase in fin surface area, which promotes greater heat transfer.

PERFORMANCE TESTING

A controlled laboratory test was put into place to ensure all environmental and fluid variables were accurately controlled from test to test. The transmission fluid was heated to 206 °F and the pump was set to a flow rate of 4 gallons per minute. Our adjustable dyno fan was used to push 70 °F air at 20 MPH

across the cores. The tests were done under the same conditions for stock and the Mishimoto core. The results of these tests indicated that, in the same amount of time, the Mishimoto core cooled the transmission fluid by 20 degrees more than the stock core. Figure4:

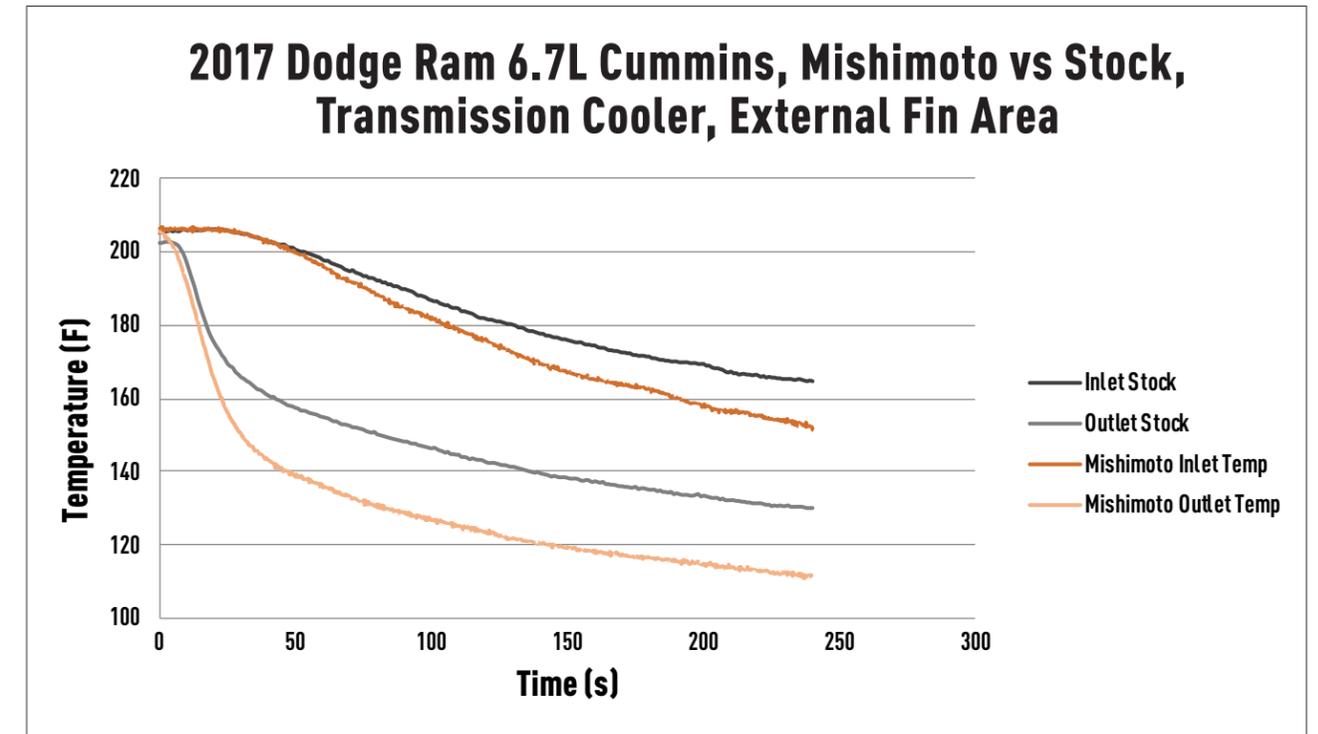


FIGURE 4: The stock transmission cooler and Mishimoto transmission cooler were tested under the same conditions. Mishimoto's core showed an increase in heat transfer when compared to stock.

CONCLUSION

As seen in Figure 4, the Mishimoto core outperformed the stock core by lowering transmission fluid temperatures by 20 °F. The 2015-2018 Dodge RAM 6.7L Cummins transmission cooler lowers transmission fluid temperatures, increases core volume and fin surface area over stock, and features a durable all-aluminum construction. All these features help your Dodge perform better no matter what you tow or where you drive.

Jason Wettig
Product Engineer, Mishimoto Automotive

FOLLOW US

Mishimoto is very active on social media so we can be in constant contact with our customers. Our Social Media Team is available via Facebook, Instagram, Twitter, YouTube, our Engineering Blog, and forums. We sponsor contests and promotional events, so be sure to follow us.



GoMishimoto



Mishim0t0



Mishimoto



Engineering.
Mishimoto.com

CONTACT US

EMAIL

For sales and technical questions please contact support@mishimoto.com

BY PHONE

USA: 877.466.4744
International: +1.302.762.4501

MAIL

Mishimoto
7 Boulden Circle
New Castle, DE 19720

VISIT

Mishimoto.com
Mishimoto.co.uk
Mishimoto.eu
Mishimoto.com.au

