

/// Race Louvers

Professional R&D - Wind Tunnel Tested - Track Proven

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Front Fender Vent & Extractor Wind Tunnel Data

Welcome to Race Louvers. Below is data from our most recent trip to the wind tunnel. This trip we explored fender venting as well as a hood shootout on a mustang. As we usually do we have tested not only our fender extractors but several competitors designs so we can have raw data and comparable data. Here's a quick recap.

Test car prep level for fender testing:

- 2000 Mustang GT
- Ecoboost V6 swap
- Splitter with tunnels, air dam, front rad ducted to grill, rear rad open to engine bay, stock hood no vents, lower front fender vents sealed, no flat floor, no rear diffuser, dual element wing.

Vents tested:

- no vents (baseline)
- mesh / open hole vent, flush
- hot rod stamped louvers, 1/4" tall
- common recessed louvers, 1/4" tall
- common time attack style raised louvers, 1-7/8" tall
- Race Louvers RS Trim, 3/8" tall
- Race Louvers RT Trim, 3/4" tall

Test procedure:

- Simply swap out top fender vents with no other changes for back to back testing.

Conclusions:

- Not all fender vents are created equal.
- Fender venting is primarily for downforce but aids engine cooling and some brake cooling.
- Unlike hood venting where aggressive trim levels and physical vent size improves performance, fender venting likes larger physical sizes more than aggressive trim levels.
- Fender venting works best with two kits over one kit and the bigger the kits sqin size the better.
- Our over the tire curved kit, upper fender kit and lower fender kit work about the same, two will double performance, three not so much. Having the tire and bumper cover sticking further out then the door helps to improve the lower vents functionality at the cost of more frontal area.
- Our RS trim performed much better than expected, the RT trim as expected.
- The RT trim was right on the edge of being too aggressive for a fender, even though it performed as we expected drag was on the rise while its cooling and DF on the decline.
- Our thoughts that an RX extreme trim would be too aggressive was confirmed, hence the reason we never made an RX fender.

New Race Louvers RSF Fender trim is born:

- Our RT trim when compared to other wind tunnel testing worked as expected, however, our RS trim worked significantly better than expected with the same cooling, more downforce and less drag than the RT trim. After unsuccessfully testing various RT trim configurations in the wind tunnel in an attempt to improve its performance we applied that knowledge to the RS trim which netted a reduction in drag, slight reduction in cooling but a slight increase in downforce, hence the birth of our new RSF fender trim. We also created several new larger fender kit sizes. Our new RSF fender trim and larger physical sizes are now available to maximize performance. All the performance of a tall aggressive vent in a low profile package.

Race Louvers Wind Tunnel Video: <https://www.youtube.com/watch?v=yuAvbWmOA0Q>

AJ Hartman Aero Wind Tunnel Video: <https://www.youtube.com/watch?v=1B2LdsQdO1U&t=51s>

Wind Tunnel Front Downforce

Mustang, Fender Vent/Extractor Comparison.

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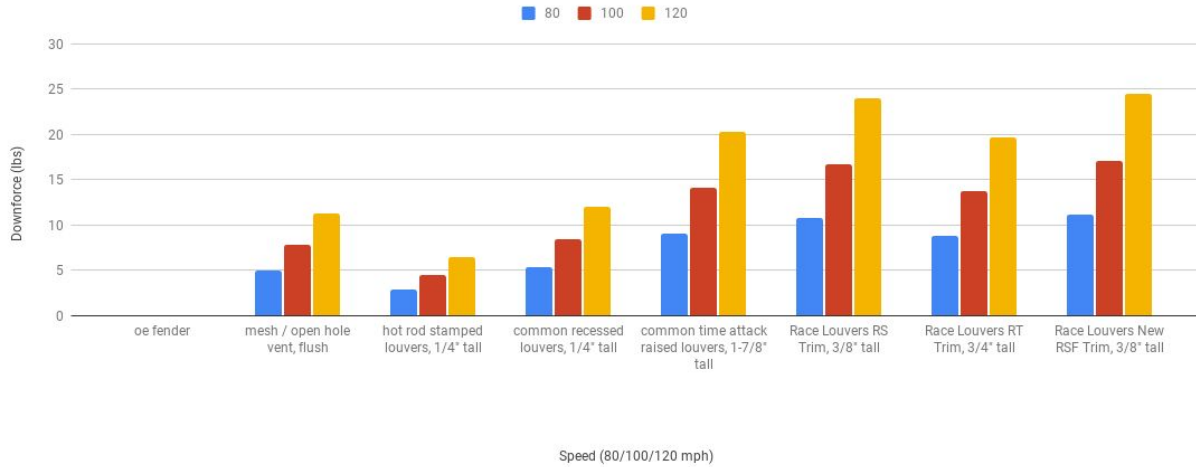


Fig 1. Front downforce gains compared to no fender venting

Wind Tunnel Radiator Differential Pressure Percent Increase (Cooling Air Flow Increase)

Mustang, Fender Vent/Extractor Comparison

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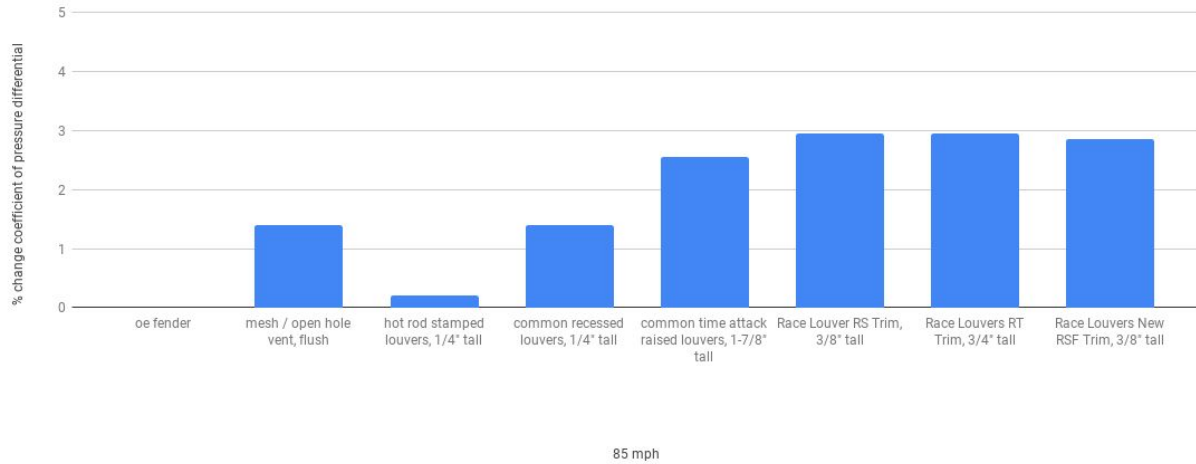


Fig 2. Radiator cooling gains compared to no fender venting

Wind Tunnel Drag

Mustang, Fender Vent/Extractor Comparison.

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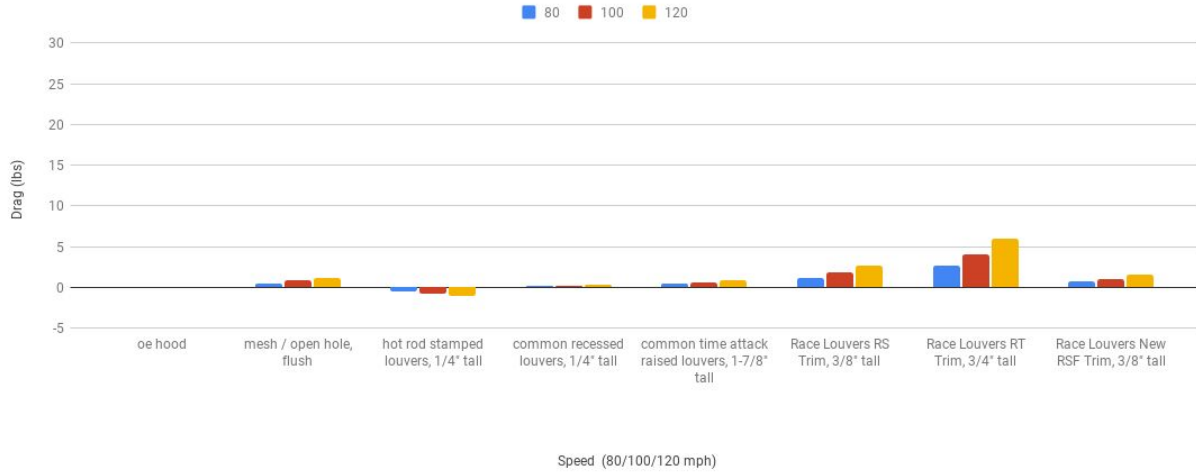


Fig 3. Overall drag change compared to no fender venting

Wind Tunnel Horsepower

Mustang, Fender Vent/Extractor Comparison.

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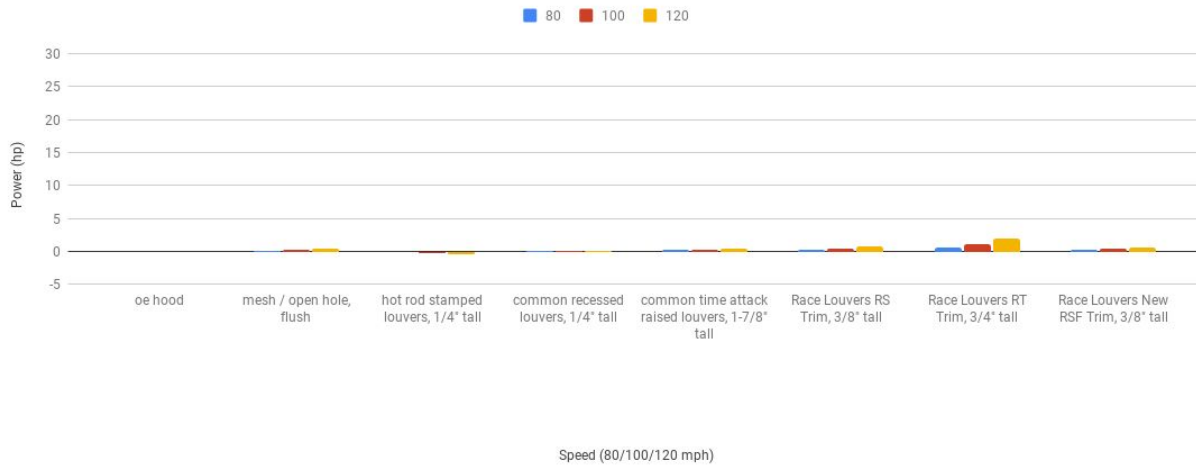


Fig 4. Additional horsepower required to maintain same vehicle speed from increased drag compared to no fender venting

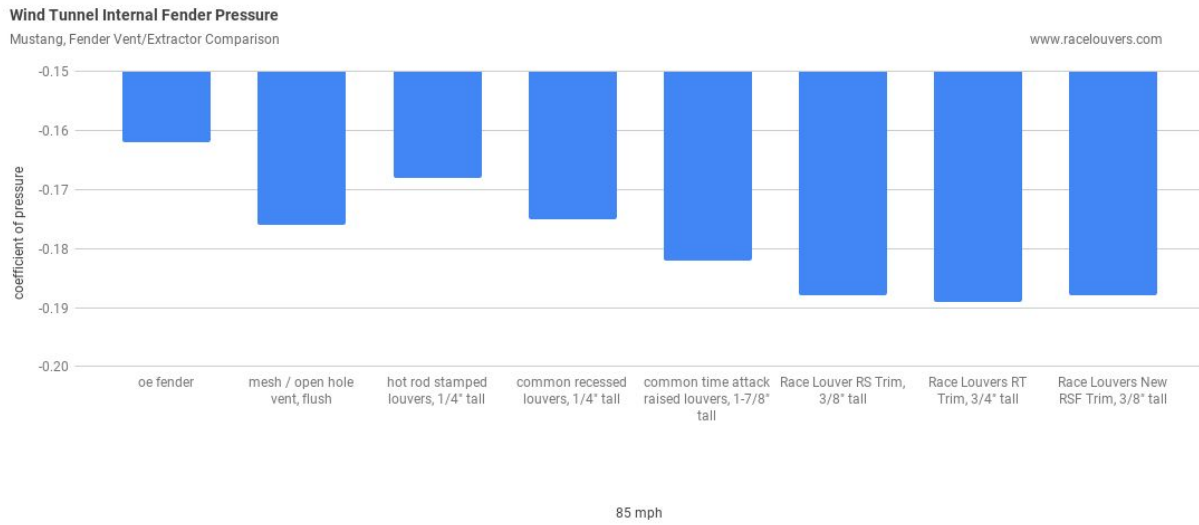


Fig 5. Internal front fender pressure