

/// Race Louvers

Professional R&D - Wind Tunnel Tested - Track Proven

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Shrouding



No Shrouding

Fan Shroud Vs No Shroud



Test Cars

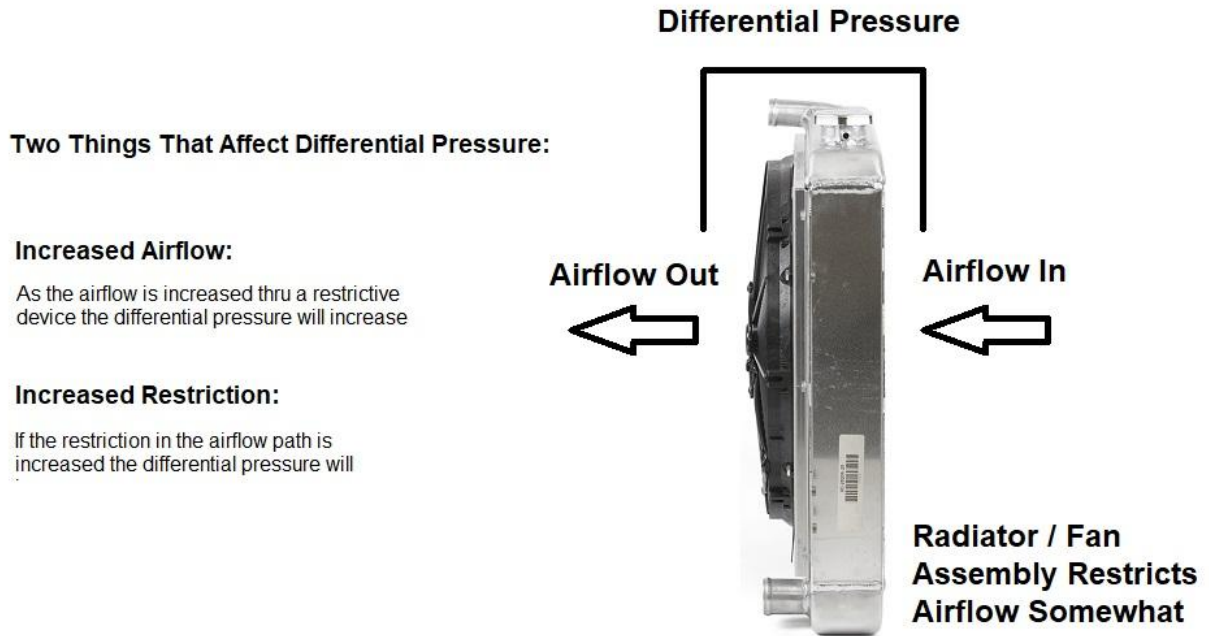
Audi A4

- OE radiator
- Small oil cooler
- Basic ducting front grill to radiator core
- OE fans with shrouding covering entire back of radiator core

BMW E36

- OE radiator
- Small oil cooler
- Basic ducting front grill to radiator core
- Small slimline fan with no shrouding, back of radiator core open to engine bay

Both cars were previously tested in the wind tunnel with the same eight common hood vent designs. While it would have been better to run this fan shroud vs no fan shroud test on the same car we happen to have this data already on hand and the goal is not to show exacting data but to simply show how restrictive a fan shroud can be at track speeds.

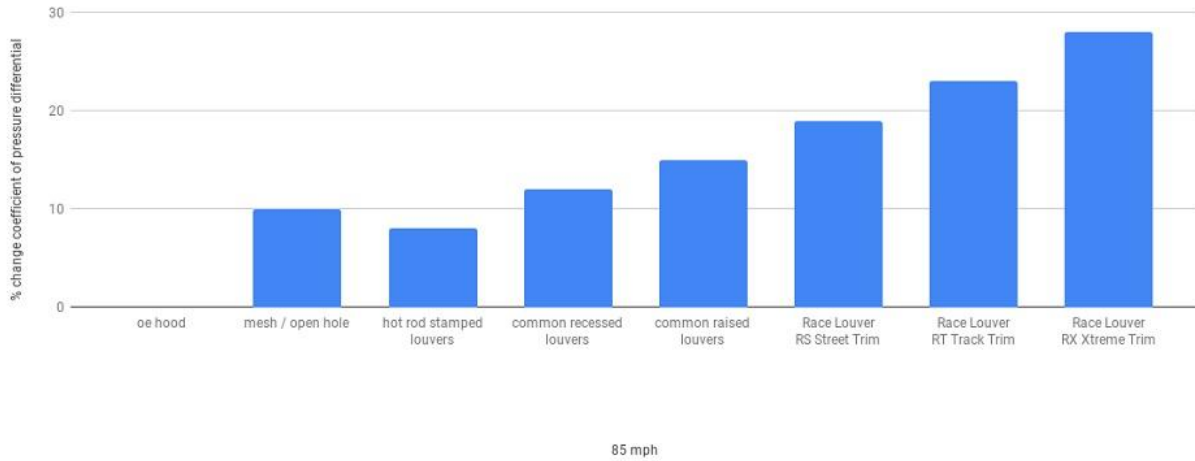


- If the restriction from the radiator and fan assembly stays constant, adding hood and/or fender venting causes a differential pressure increase and airflow thru the radiator is increased.
- If the hood and/or fender vent stays constant, swapping a fan with shroud for a fan with no shroud causes a reduction in restriction netting a reduction in differential pressure and airflow thru the radiator is increased.

RACE LOUVERS - Wind Tunnel Radiator Differential Pressure - Fan Shroud

2004 Audi A4, 24"x14" Center Vent Comparison.

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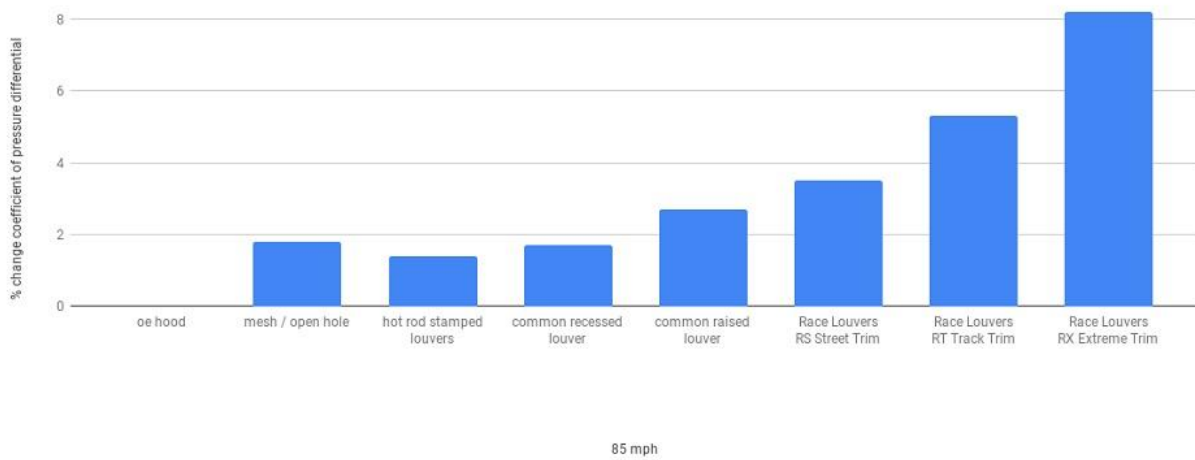


Audi A4 Radiator Differential Pressure. As a reference there is a 3x gain from a stamped louver to our RT Race Louver.

RACE LOUVERS - Wind Tunnel Radiator Differential Pressure - No Fan Shroud

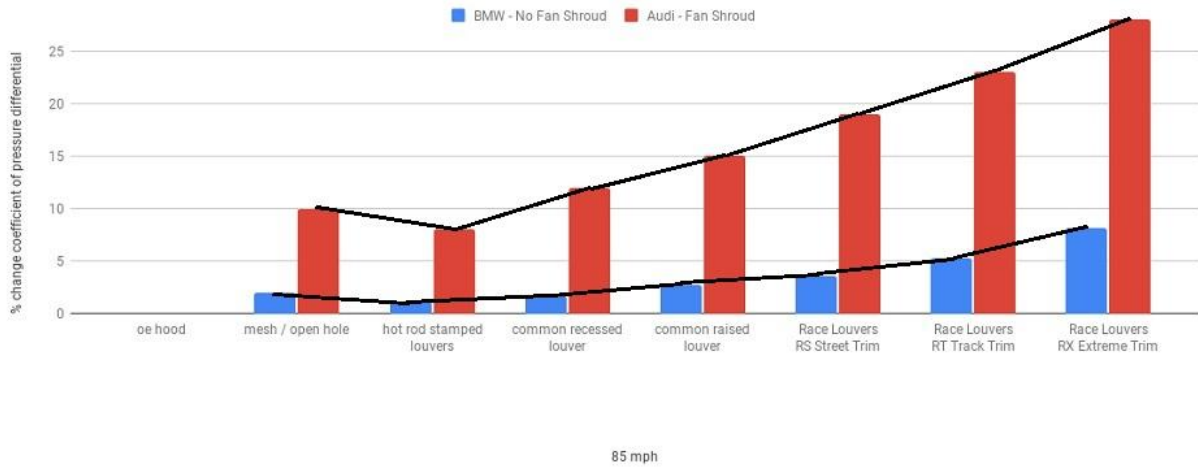
BMW E36, Single 24"x14" Center Vent Comparison. OE Grill Opening.

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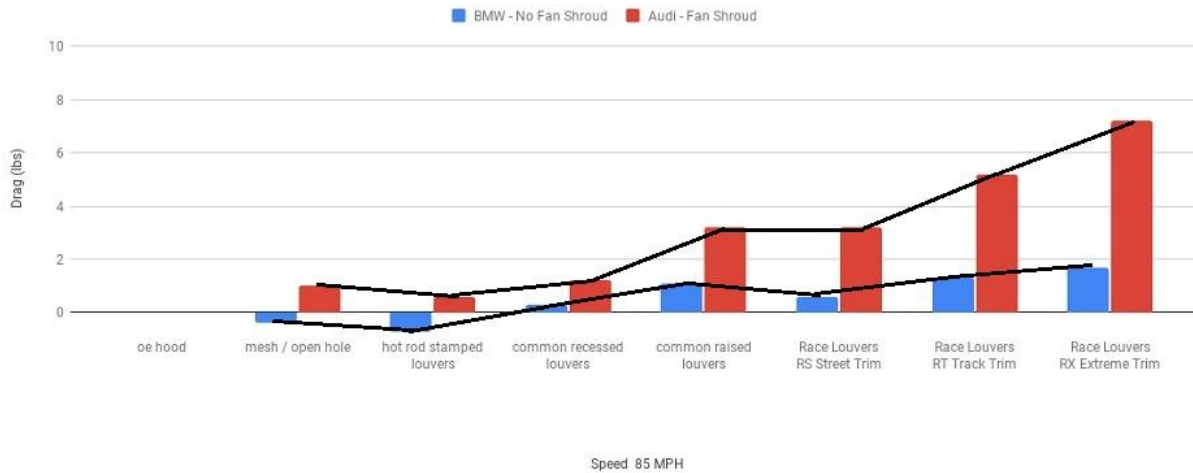
BMW E36 Radiator Differential Pressure. As a reference there is a 3x gain from a stamped louver to our RT Race Louver.

RACE LOUVERS - Wind Tunnel Radiator Differential Pressure - Audi A4 With OE Fan Shroud Vs BMW E36 With Slimline Fan No Shroud
 Single 24"x14" Center Vent Comparison. OE Grill Opening.



Audi & BMW plotted together. Both show a 3x gain from a stamped louver to our RT Race Louver however the Audi's fan shroud causes an overall higher differential pressure than the BMW's no shroud indicating a restriction to airflow by the shroud.

RACE LOUVERS - Wind Tunnel Drag - Audi A4 With OE Fan Shroud Vs BMW E36 With Slimline Fan No Shroud
 Single 24"x14" Center Vent/Extractor Comparison. OE Grill Opening.



Here we can see that the restriction of a fan shroud also causes increased drag.



Fans & Shrouds:

Great for traffic lights and daily driving, bad for track duty



No Fans:

Great for track duty, bad for traffic lights and daily driving



Fans & No Shrouds:

Good dual purpose setup for daily driving and track duty

To sum up, street cars need fan shrouds to allow the fan to provide airflow over the entire radiator and ac condenser core areas when the vehicle is at little to no speed. However at a certain point in vehicle speed, 30-50mph, the airflow entering the grill from vehicle speed will become more than the cooling fan and shroud assemblies airflow and at this point the fan and shroud assembly becomes restrictive to airflow and moreso at higher speeds. Removing the entire fan and shroud assembly allows the air exiting the radiator to be unrestricted at high vehicle speeds providing good cooling but at little to no vehicle speed there is no airflow for cooling. Keeping a fan but removing the shrouding removes most of the restriction at high vehicle speeds for improved cooling on track while the fan allows for reasonable cooling at little to no vehicle speed.