

AERO 101

Welcome to the tenth segment of Aero 101. Today's topic is on louvers. Louvers are ventilation slots, usually found on the front fenders of a race car, which, when properly placed, can increase downforce. Their purpose is to release the high pressure air underneath the wheel well arches into the high speed flow above the fenders. Please don't feel afraid to ask questions!

Most race car fenders are convex, and this means that there is low pressure traveling over the top of them (high speed), which would contribute to total lift. In the wheel well, the rotating tire creates high pressure, sucking in air from the back of the wheel well forward. In order to negate this pressure difference, louvers are incorporated to introduce the high pressure air from below to spoil the high speed upper flow. A benefit of incorporating louvers is that they can affect the underbody flow at the front of the car. They can reduce the high pressure ahead of the wheel, and in effect increase the speed under the front of the car. This works best when there are no obstructions between the underbody and the louvers. For the best results, louvers should be placed near the maximum curvature of the fender. Louvers can be gill shaped (triangular and jutting out) or just simple slots. Louvers can also be found on hoods, to reduce both cooling temperatures and pressure.



Source: Competition Car Aerodynamics by Simon McBeath & Race Car Aerodynamics by Joseph Katz