

AERO 101

Thanks for sticking with us so far! Welcome to the fifth segment of Aero 101. Today we will talk about splitters and airdams. Both these devices are used to reduce lift and produce downforce at the front of the car. They first started appearing on cars in the 60's due to the new trend of streamlining cars that could actually create positive lift. Don't be afraid to ask questions below!

Airdams

In its simplest form, an airdam protrudes downward from the lower front panel to reduce the car to ground gap. As airdam length increases, downforce increases and drag decreases (to a certain point, usually around 100mm). With an airdam, the stagnation point (where the air hits the car dead on) is lower, so more air is forced over the top of the car, restricting the air flowing underneath the car. This causes some additional lift over the hood, but is negated by the additional downforce created behind the airdam. On a normal car without a flat underbody, an airdam will decrease the drag because it limits the amount of air interacting with the surface underneath the car.

Airdams may actually benefit other parts of the car as well. By creating a low static pressure area below a car, the flow of cooling air through the engine compartment may be enhanced. This works because the low pressure creates suction on the air inside the engine compartment, thereby drawing more air through the radiator.



Splitters

In its basic form, a splitter is a horizontal extension of the lower lip of an airdam that protrudes forward (and oftentimes rearward, to a certain point depending on regulations). Most race car splitters you see in the grassroots arena are made of plywood, simply because it is cheap and durable. A splitter should be a readily disposable piece, so for the average Joe, carbon fiber is too costly. Although it can be a crude piece, the splitter is an extremely efficient aerodynamic device. A splitter works by “tapping” the high pressure zone ahead of the nose of the car. This high pressure zone is “split”, with the majority of the airflow being forced over the splitter and the rest of the car. Underneath the splitter, much like the airdam, is a low pressure region, and it is this pressure differential that creates downforce. Generally speaking, the downforce created by a splitter peaks at 100mm

length, but the actual length you can get away with depends on the car's shape and how it interacts with the airflow. That being said, a car with a blunt front end (think NASCAR) will have a significantly larger high pressure zone to "tap" instead of a sleek car. Too large a splitter will increase drag without additional downforce.



KazeSpec - Acura RSX Type-S

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