

SUMMARY:

CAR_V4_Nose shows the modified configurations of CAR_V4. Nose Height indicates Sketch28 Dimension was adjusted. Nose Slope indicates Sketch29 Dimension was adjusted.

Adjusted both would shape the general angle of the nose. Changing the nose height reduced the frontal surface area and provided some slope downward from the top of the car; the idea was to reduce pressure contact in that front area and reducing drag. Increasing the dimension in Sketch29 would elongate this slope further back to the top of the car, creating a more continuous (less boxy) curve, reducing drag. The experimental nose shapes tested had a curve from the bottom surface of the car meet the top surface at a blunt tip.

Configuration	Nose Height (Sketch28: height from base of car to most forward protruding point of nose)	Nose Slope
Default	250	300
1-2	250	600
1-3	250	900
1-4	250	100
2-1	125use	300
2-2	125	600
2-3	125	900
3-1	0	300
3-3	0	900
4-1	400	300

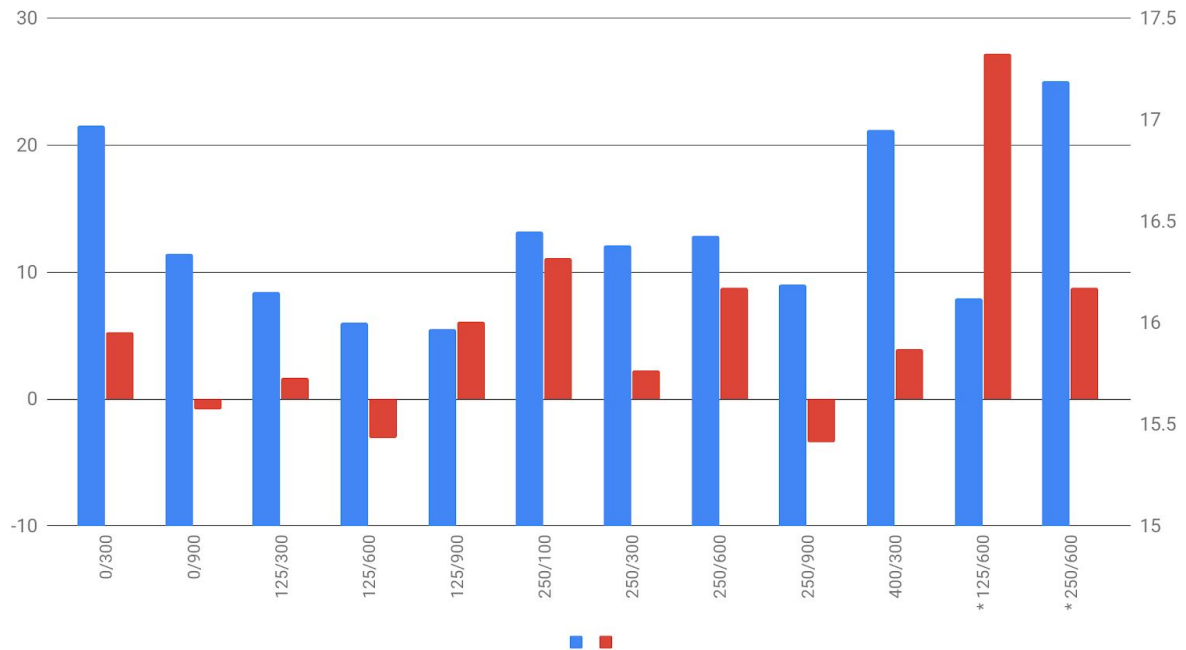
RESULTS:

Changing the height and slope of Sketch28 and Sketch29 respectively did not impact the normal force or the drag coefficient immensely. The normal force results had a range between 15.86N and 17.49N while the drag coefficient had a range between .1363 and .1504. Both normal force and drag coefficient had only a marginal change in value between results with only the lift force showing any actual variation in values. The lift force results are all over the place with values ranging from -3.26N to 27.24N. However, the Nose with the 24.27N lift force was experimental with the nose not only featuring a change in Sketches 28 and 29, but this nose (named "New Nose 1") along with "New Nose 2" featuring a upward sloping surface as the bottom surface of the nose of the car (verses simply having a flat bottom base of the nose). While these two experimentally modified noses did not impact the normal force any differently than any of the other trials, they did cause the most lift.

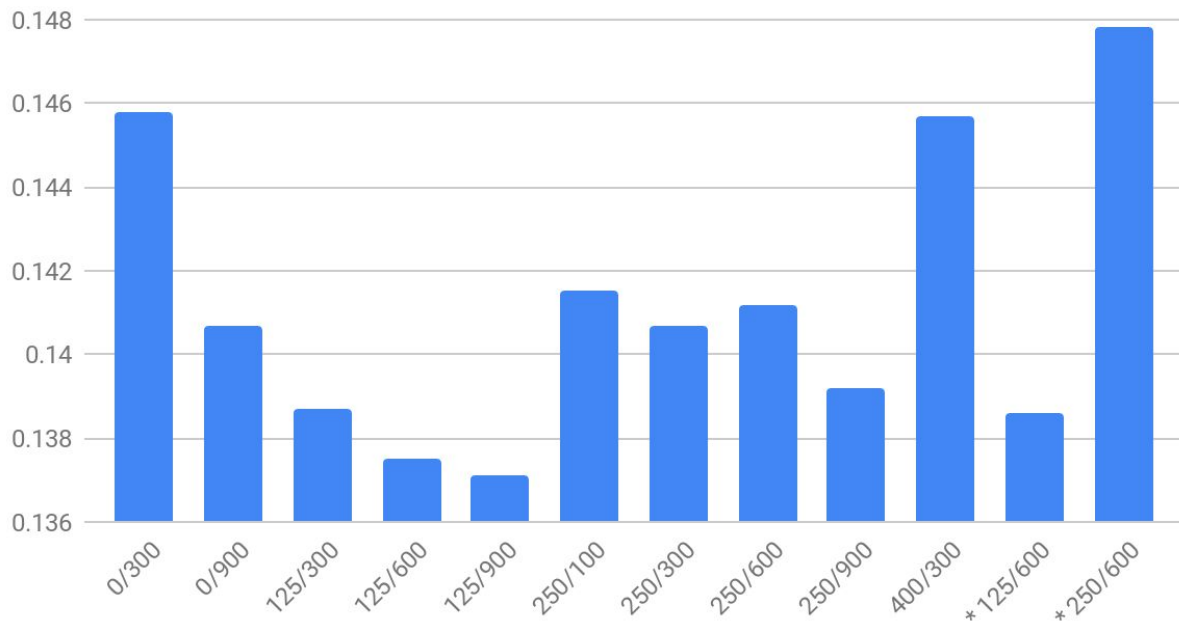
All configurations showed normal streamlines. Most configurations showed a high pressure zone in the nose tip. Noticeably, configuration 1-3 had lower pressure in this area (yellow rather than red); configuration 4-1 had a dip on the top front end and experience low pressure at this point. The experimental nose shapes kept the red high pressure zones, only slightly smaller in size.

0/300 => 0 = nose height and 300 = top curve

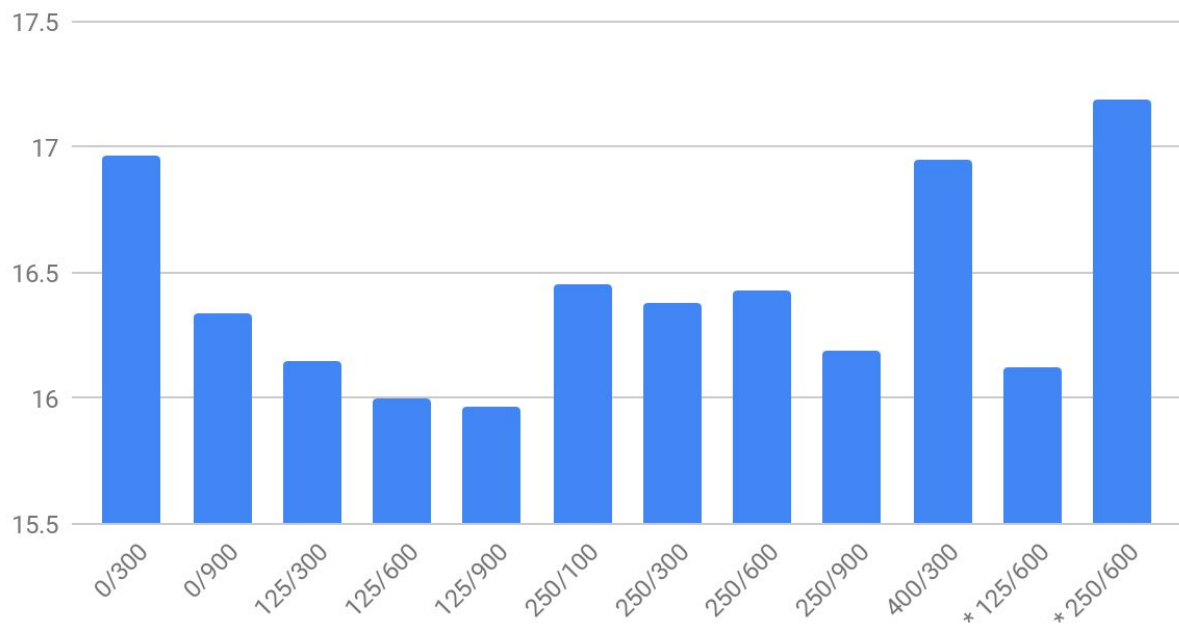
Config vs Normal Force and Lift



Config vs Coeff of Drag



Config vs Normal Force



Config vs Coeff of Drag

