

# Chapter 9 Your VEHICLE and it's LOADS

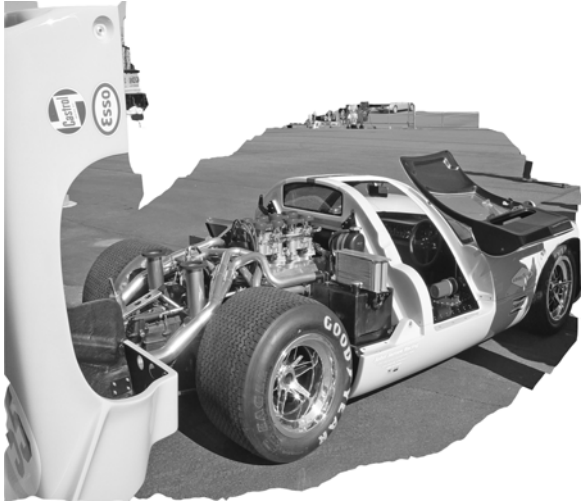


Figure 9.1 1972 LOLA Racing Vehicle – Lots of Aerodynamic Loads When Panels Are Removed

This chapter looks at what's “pushing and pulling” your vehicle. Racers that understand these causes can setup a safer and better handling vehicle. Three tech laps are required for this chapter: 1. *Vehicle Configuration*, 2. *Longitudinal Loads & Transfers* and 3. *Lateral Loads*. Numerous Graphs are provided to help the racer in decision making. Some equations are involved in each lap, but as Sleepy Gomez<sup>†</sup> always says “*the hardest working racers are usually the fastest*”. Most racers will find the first lap helpful since it explains numerous terms that are required to define your unique vehicle. Many will find the second lap useful since various sources of longitudinal loading and weight transfer are examined. Those racers that do any cornering will find the third lap to be helpful.

<sup>†</sup>Contributing Editor for *Stock Car Racing* magazine.

## Section Details

### 1. Vehicle Configuration:

Wheelbase & Track width, Track Offset, Total Weight & Cross Weight, Front and Rear Distances (fractional weights), C.G. for Total Vehicle, CG Height & Total CG Height, Spring & Unsprung Weights, Unsprung & Sprung C.G.s, and Sprung & Unsprung CG Heights

### 2. Longitudinal Loads & Transfers

### 3. Lateral Loads::

Centrifugal (Inertia) Force & Centripetal Acceleration, Instantaneous Radius & Center, Total Velocity, Inertial Forces for Crest or Dips, Flat Corner Acceleration (or braking), Banked Curve, and Neutral Banked Speed.

**Total number of safety ideas = 38**

**Total number of safety principles = 15**

**Total number of illustrations = 23**

**Total number of examples = 15**