

High-Performance Handling for Street or Track



- Vehicle dynamics and suspension mods
- How to fit anti-roll bars, bushings, camber adjusters and chassis braces
- Suspension alignment and setup tweaks
- High-performance driving techniques

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EFFECTS OF WHEEL, TIRE, AND SUSPENSION MODIFICATIONS



In some respects a competition package is easier to create than a street package. *Eibach Springs*

Changing to High Performance Tires, Ultra High Performance Tires, and Wider Tires

Improves: Braking performance, acceleration performance, cornering performance

Problems: Accelerated tire wear, increased body roll causing more camber change and less cornering traction, increased ride harshness



Rigid lower control arms and frame braces also reduce flex. The larger, stickier tires that are now available from tire companies can easily create enough traction to exceed 1.0 g of cornering force. Lower control arms are vulnerable to flex, especially on older muscle cars. The lower control arms from Hotchkis eliminate flex, and combined with chassis bracing, can really allow suspension tuning that results in high levels of lateral traction. *Hotchkis Sport Suspension*

Stiffer Suspension Springs

Improves: Lower ride height for better handling and looks, reduced body roll for improved tire traction, quicker response to driver steering inputs, improved handling balance if well engineered

Problems: Harsher ride, handling balance too extreme if poorly engineered. Cut (shortened) springs or poorly engineered springs can allow suspension or chassis to bottom out, leading to potential damage or crashes



If well engineered, stiffer suspension springs allow lower ride height for better handling and looks, reduced body roll for improved tire traction, quicker response to driver steering inputs, and improved handling balance. *Eibach Springs*



Stiffer Suspension Anti-roll Bars

Improves: Reduced body roll for improved tire traction, quicker response to driver steering inputs, improved handling balance if well engineered

Problems: Slightly harsher ride, handling balance too extreme if poorly engineered



Stiffer suspension anti-roll bars reduce body roll for improved tire traction, provide quicker response to driver steering inputs, and improve handling balance—if the system is well engineered. *Progress Technology*

Stiffer Suspension Bushings

Improves: Quicker response to driver steering inputs, less compliance in suspension for improved tire wear and handling

Problems: Harsher ride, sometimes noisier



Stiffer suspension bushings provide quicker response to driver steering inputs and less compliance in suspension. This Aurora spherical bearing is solid and virtually eliminates any compliance in the control arm. *Eibach Springs*

Stiffer Shock Absorber Rates

Improves: Quicker response to driver steering inputs, better feel of steering, improved handling during cornering, braking, and acceleration transitions when valving is correct for application

Problems: Harsher ride, handling deterioration if incorrectly valved for application



Stiffer shocks provide quicker response to driver steering inputs; better feel of steering; improved handling during cornering, braking, and acceleration transitions—when the valving is correct for the application. *Hotchkis Sport Suspension*

Competition Packages

In some respects, a competition package is even easier to create than a street package. There are fewer compromises because ride quality is not an issue. However, everything must be perfect. Total tire traction is the most significant goal. Suspension alignment, crossweight, roll couple distribution, suspension frequencies, shock rates and responsiveness must all be perfect to achieve maximum traction.

In all cases, a well-designed system made from quality materials will assure that your goals are realized. Consult with manufacturers or dealers. Web sites and catalogs provide excellent information, and many companies have trained sales staffs to help you with specific applications.

Suspension Alignment

After making any suspension modifications (as opposed to just wheel/tire changes), have the alignment checked. In most cases, realignment will be required. For street, use factory settings for toe, camber, and caster. For competition, use the component manufacturer's specs, or refer to the alignment chapter in this book.



Camber plates like this one from Eibach allow quick, easy, and accurate camber adjustments in order to assure that the entire tire contact patch is working at maximum traction levels. *Eibach Springs*