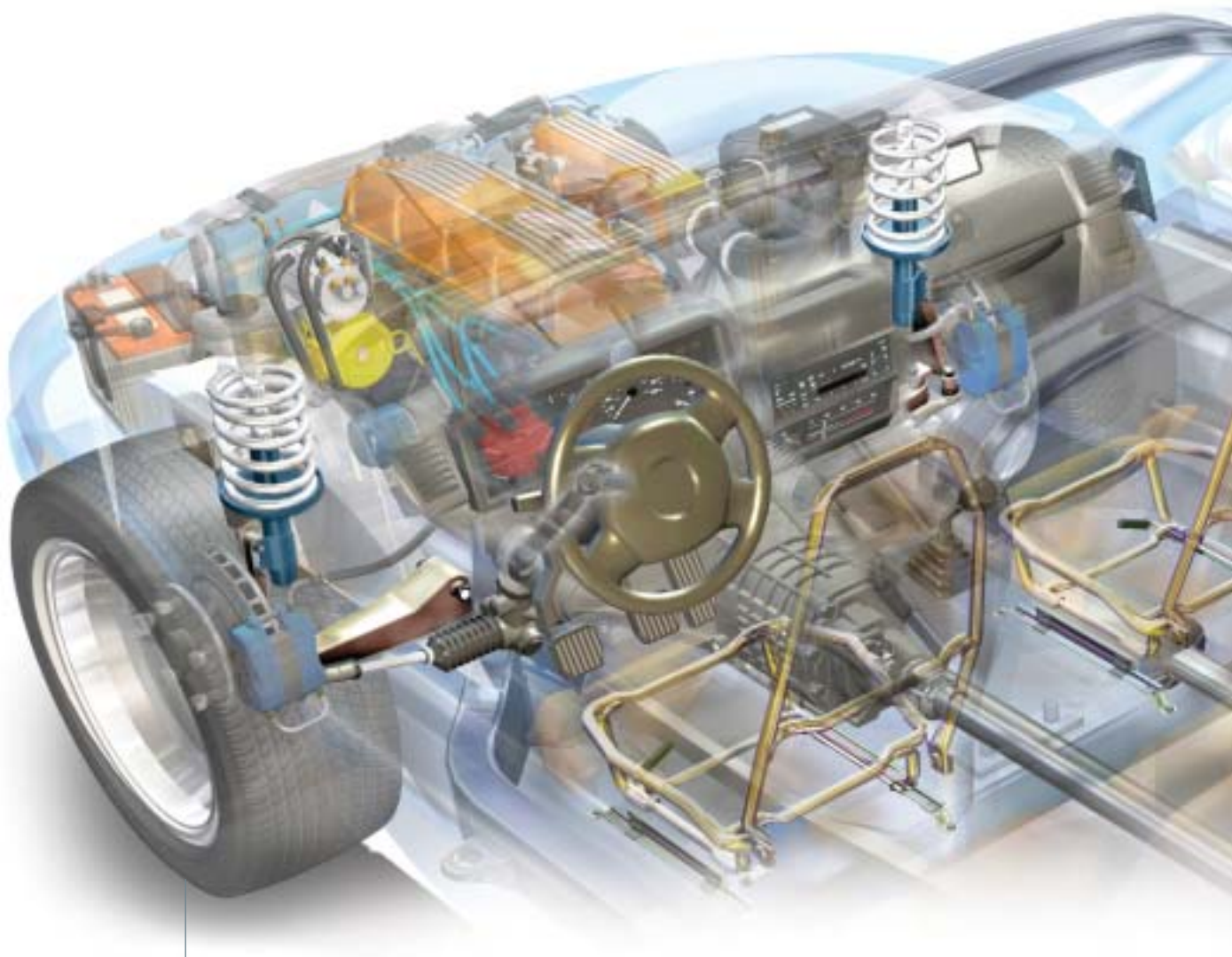
Nye® Synthetic Lubricants



Steering & Suspension

A lubrication guide for engineers who design steering and suspension systems

Steering & Suspension

Synthetic lubricants for the long haul.

Ask drivers what they want from steering and suspension systems and the answer is: reliability, responsiveness, and no squeaks, rattles, or vibrations. OEMs want improved handling, new lightweight materials to boost fuel economy, and reduced cost. Both sets of demands underscore the need for synthetic lubricants. Carefully formulated synthetic oils and greases can eliminate squeaks and rattles, tolerate high loads, and minimize friction and wear — even on rough terrain, where steering and suspension systems take a beating.

In this brochure, we highlight some of what we've learned about the lubrication of steering and suspension systems — knowledge that comes from working with OEMs and world-class Tier One suppliers. Use it to think about the best lubricant for your application early in the design process. Then, call Nye for specific recommendations — for a SmartGrease™ that knows how you want your product to perform.

Log-on to NyeAutomotive.com for data sheets, MSDS, and more information about synthetic lubricants.

SmartGrease™

Synthetic lubricants designed for your product

Steering Column Bearings

Ball bearings located at the end of the steering column can make or break the driving experience. If not properly lubricated, they impact steering responsiveness and transfer noise and vibration through the steering column to the operator. Extreme temperatures, moisture, dust, and constant load shifts require a viscous, wide-temperature, rust-inhibited grease to ensure long service intervals. ***Nye suggests: Rheolube™ 368A***

Steering Wheel Tilt & Telescoping Mechanisms

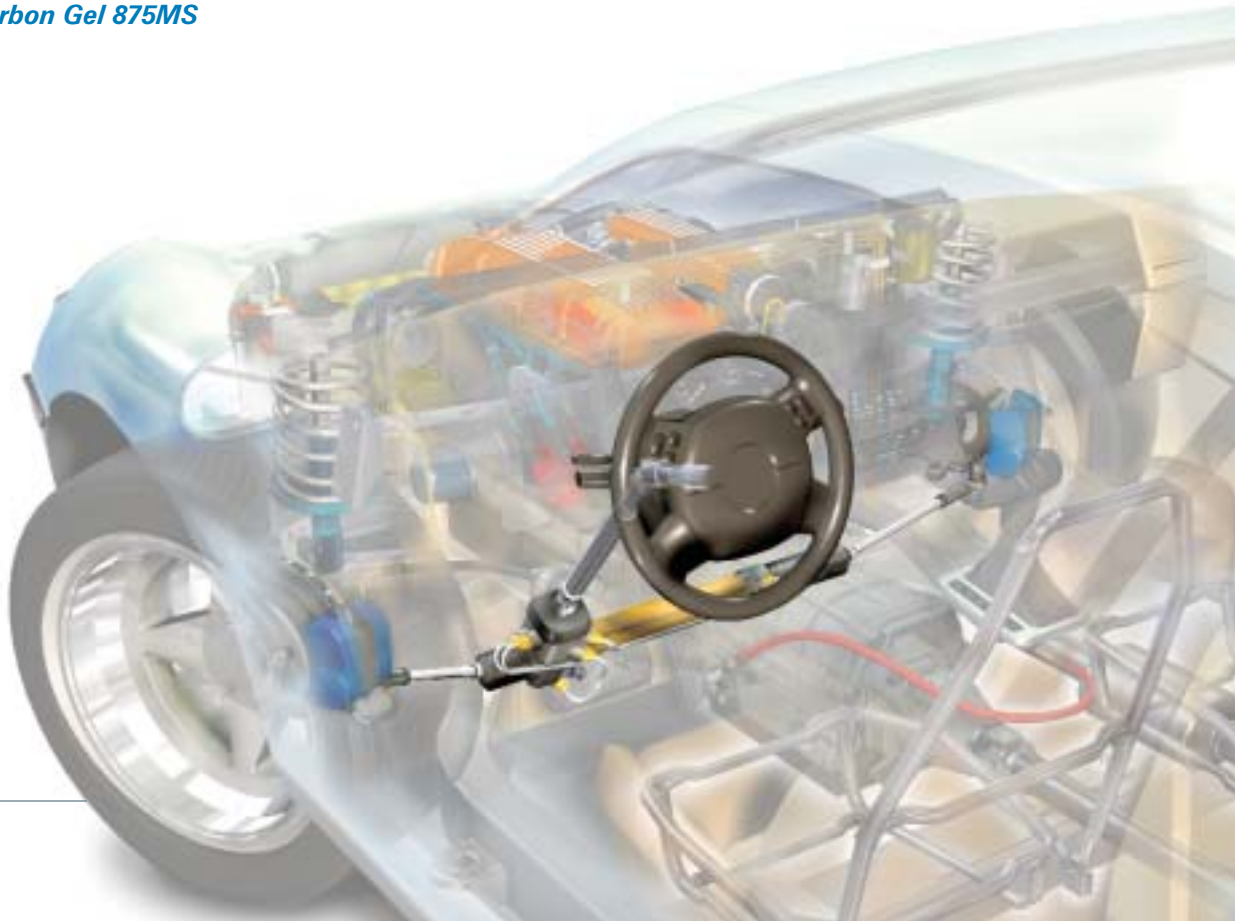
Tilt and telescoping mechanisms call for damping greases, which are engineered to prevent wear and inhibit unwanted motion and noise. When thickened with PTFE, they provide reliable, smooth, low-friction motion for high-shear mechanisms. ***Nye suggests: Fluorocarbon Gel 868***

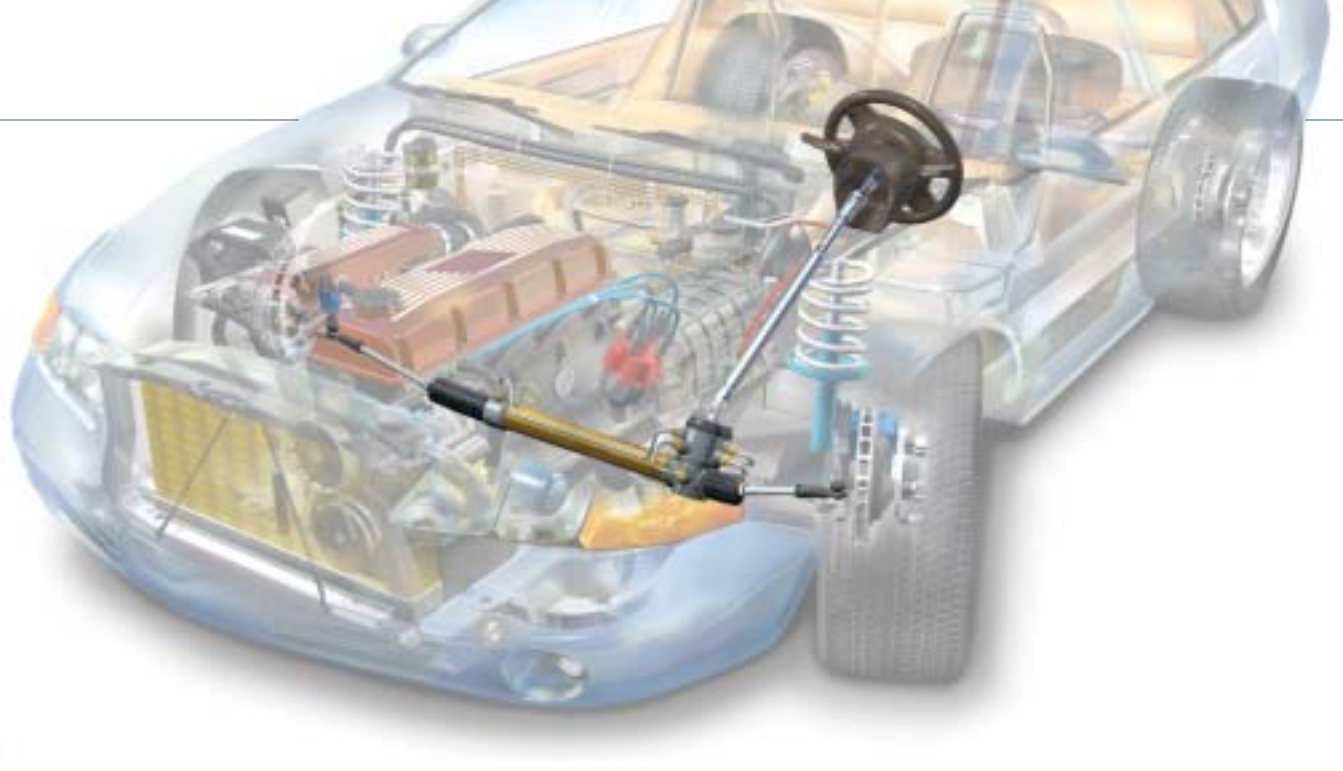
Power tilt and telescope systems have small motors with fairly high torque. Damping grease provides lifetime lubrication within the gearbox and reduces the transmission of motor vibration and noise through the steering column. ***Nye suggests: NyoGel® 774LF***

Lubrication Tip
A higher viscosity base oil improves wear protection but may increase viscous drag.

Intermediate Shaft

The intermediate shaft connects the steering column to the rack and pinion system. I-shafts must absorb vibration and shock, without allowing road noise to reach the vehicle interior. For plastic-to-metal interfaces, a medium-viscosity, synthetic hydrocarbon grease enhanced by PTFE ensures good slip and low "stiction." For metal-to-metal interfaces, a heavier synthetic hydrocarbon grease is recommended. To lubricate the tight spaces within newer telescoping shafts, use a lighter grease designed for sliding surfaces. ***Nye suggests: Rheolube™ 362HB, Fluorocarbon Gel 875MS***





Rack and Pinion System

The rack and pinion mechanism presents many lubrication challenges. The interface of the toothed rack and the pinion gear requires synthetic lubricants with extreme pressure and anti-wear additives to reduce noise and transferred vibration, often referred to as “rack knock.” Where rack and pinion systems are placed relatively close to the exhaust systems, lubricants must also handle temperatures of 150°C or higher. ***Nye suggests: Fluorocarbon Gel 875MS***

The spring-loaded yoke that keeps the rack teeth mated to the pinion gear can be another source of noise and wear. In certain Y-shaped yokes, the racks are heat-treated and hand-polished to remove scaling and asperities. A viscous synthetic hydrocarbon grease fortified for high loads can prevent wear on unpolished racks, eliminating the need for a labor-intensive, hand-polishing process. ***Nye suggests: Fluorocarbon Gel 875MS***

Power-Assisted Steering Motors

Some power-assisted steering motors are mounted directly on the rack and pinion mechanism. They benefit from a medium-viscosity synthetic gear lubricant, fortified with rust inhibitors and extreme-pressure additives. ***Nye suggests: Rheolube™ 365A-MS***

For motors with small plastic gearboxes inside the vehicle interior, often near the foot pedals, a lighter synthetic hydrocarbon lubricant fortified with PTFE is suitable. ***Nye suggests: Rheolube™ 363F***

Lubrication Tip

The base oil provides the primary lubrication in a grease. The potential for oil migration is one factor that determines how much oil is used.

Ball Joints

Tight-fitting, ball-and-socket designs are subject to dynamic motion in almost every direction. Lubricants within the ball joint must be able to withstand extreme environmental conditions, engine heat, jolts on rough surfaces, and continuous micro-motion on smooth roads. Contemporary ball joints are designed without grease fittings, so the initial fill must provide lifetime lubrication. Look for wide-temperature, water- and saltwater-resistant synthetic greases. ***Nye suggests: Fluorocarbon Gel 880, NyoGel® 774LF***

Lubrication Tip
Fluorinated oils and greases offer the widest possible temperature capabilities — from -90°C to over 250°C.

Shock Absorbers and Struts

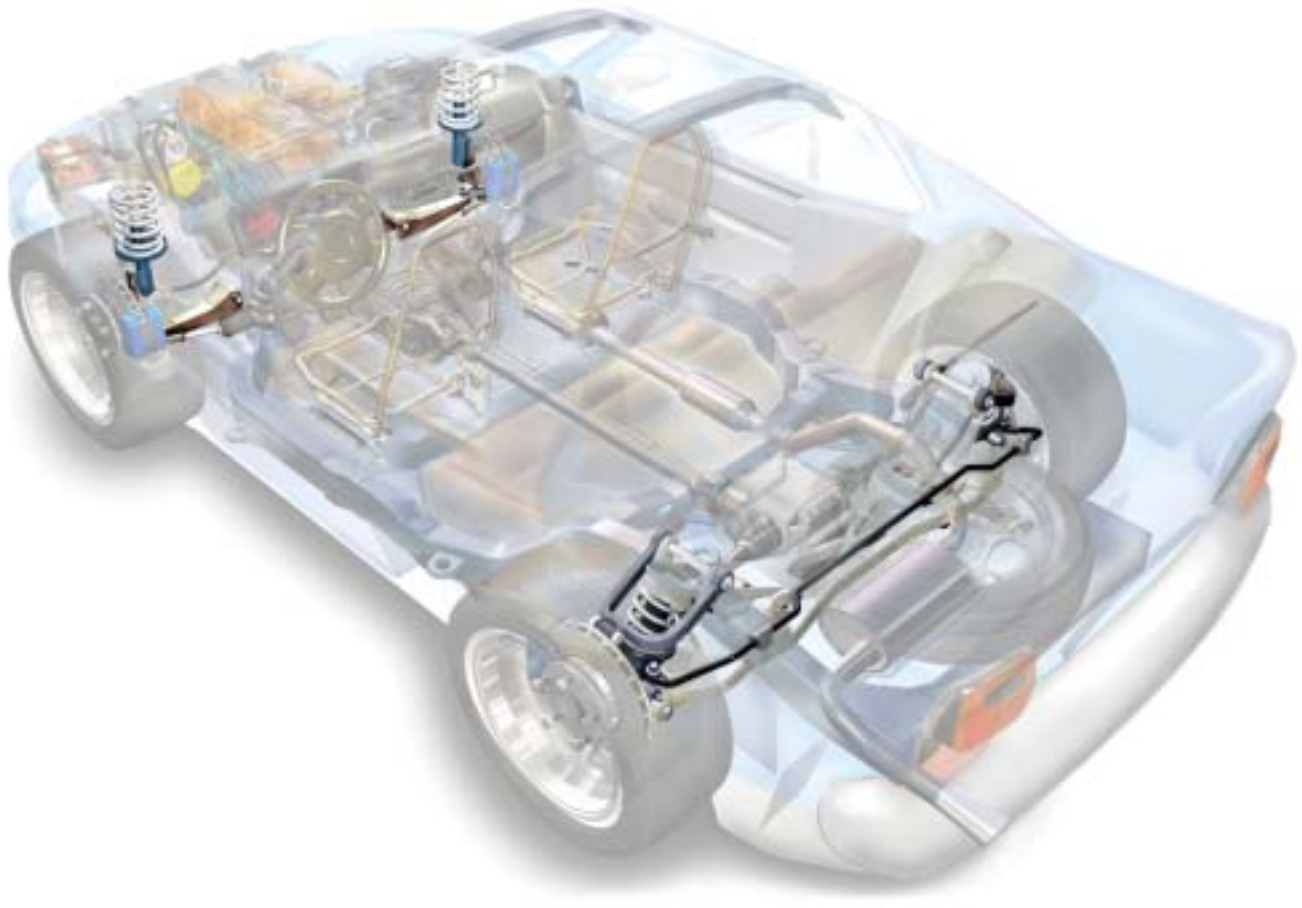
Contemporary suspension systems can be customized as never before. Yet at low temperatures, traditional shock absorber fluid may become too viscous to pass through the valves that control the fluid level and adjust the stiffness of the suspension. A very low viscosity synthetic fluid with a temperature range to -60°C is recommended for servicing adjustable suspension systems. ***Nye suggests: Nye Synthetic Oil 167F***

Stabilizer Bushings

Stabilizer bushings must maintain a tight fit with the stabilizer bar and control arms, while exposed to high underhood temperatures. Such temperatures combined with constant changes in force and stress tend to dry the rubber. Silicone greases can be used for these bushings. A fluorinated grease is an exceptional stabilizer bushing lubricant. ***Nye suggests: Fluorocarbon Gel 880, Fluorocarbon Gel 875R, UniFlor™ 8612***

Leaf Springs

Leaf springs, typically found on pickup trucks and SUVs, provide rear suspension and shock absorption. Exposed to water, saltwater, and road grit, they can wear down, crack, or produce squeaks and squeals. A viscous synthetic grease fortified for extreme-pressure service reduces wear and corrosion; its high damping capability also minimizes road noise. ***Nye suggests: NyoGel® 774VH-MS***



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