



# CHASSIS COMPONENTS

SYNTHETIC LUBRICANTS FOR THE LONG HAUL

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## STEERING COLUMN

### Rear Suspension

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.

**NyoGel® 774VH-MS** - Leaf springs

### Gas Pedal

For safety and ergonomics, pedal positioning systems are proliferating. A drip less, odorless synthetic hydrocarbon grease fortified with PTFE is recommended for the bearings, gears, and sliding surfaces in this motorized assembly.

**Fluorocarbon Gel 875MS** - Kick down module

### Steering Column

**Fluorocarbon Gel 866** - Intermediate shaft spline

**NyoGel® 741A-RED** - Steering angle position sensor

**Fluorocarbon Gel 885** - Steering angle position sensor

**NyoGel® 774VLF** - Column shaft

**Rheolube® 362HB** - Telescoping steering column

**Fluorocarbon Gel 868MS-X** - Tilt steering column

**Rheolube® 368F** - Steering column spline

**Rheolube® 362** - Ignition switch

### Electronic Power Steering

As automakers work to improve the efficiency of today's modern vehicle, many are moving away from the old hydraulic steering assist to the more advanced electronic power steering systems. Reducing friction between mating gears and protecting the sensitive componentry from the elements is a primary concern. Light weight synthetic hydrocarbon greases with advanced additive packages greatly reduce low temperature torque and friction, while also providing wear protection and vibrational damping. Calcium sulfonate thickened greases can be used on bearings, gears, and as environmental seals due to their superior water washout/spray-off characteristics, corrosion protection, and wear mitigating capabilities.

**Rheolube® 363F** - EPS gear

**Rheotemp™ 662** - EPS Housing

### Steering Linkage

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 temperature of 150°C or higher.

The spring-loaded yoke that keeps 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 labor-intensive, hand-polishing process.

**Fluorocarbon Gel 880MS** - Rack & pinion system

**Fluorocarbon Gel 875MS** - Steering gear/yoke

### Front Suspension

**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. Wide temperature, water- and saltwater-resistant synthetic greases are recommended.

**Shock Absorbers & 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 adjusts the stiffness of the suspension. A very low viscosity synthetic fluid with temperature range to -60°C is recommended for servicing adjustable suspension systems.

**Fluorocarbon Gel 880** - Ball joints

**Fluorocarbon Gel 880** - Jounce bumper

**Rheolube® 393** - Jounce bumper

**Nye Synthetic Oil 185D** - Struts

**Nye Synthetic Oil 148G** - Struts

### Brakes

Bearings, pistons, and lead screws in anti-lock braking systems are constantly exposed to brake fluid. EPDM rubber seals and o-rings also pose potential compatibility problems when exposed to some synthetic oils and greases. Silicone and polyglycol greases provide the compatibility, wear protection, and temperature requirements to meet the demands in these applications.

**Fluorocarbon Gel 880** - Parking brake cable

**Fluorocarbon Gel 990A** - Parking brake cable

**Fluorocarbon Gel 990A** - Brake caliper pins

**UniFlor™ 8512** - ABS bearings & pistons

### 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, offering material compatibility, superior water washout characteristics and aiding in assembly.

**Fluorocarbon Gel 880** - Stabilizer bushings

### 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.

### 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.

Power tilt and telescope systems have small motors with fairly high torque. A damping grease provides lifetime lubrication within the gearbox and reduces the transmission of motor vibration and noise through the steering column.

### 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.