

POWERTRAIN COMPONENTS

Lubricants developed to deliver more engine efficiency, better fuel economy, and a quieter drive.





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EXTENDING OPERATING LIFE WITH SYNTHETIC LUBRICANTS

AIR MANAGEMENT

Air Management

- Throttle Body Bearings** - UniFlor™ 8911
- Bearings in Throttle Position Sensors** - UniFlor™ 8981R
- Throttle Actuator Valves** - UniFlor™ 8901F
- EGR Valves** - UniFlor™ 8921
- EGR Gears** - UniFlor™ 8472
- EGR Temperature Sensors** - Rheotemp™ 768G
- Supercharger Needle Bearings** - Rheotemp™ 500
- Supercharger Gears** - Nye Synthetic Oil 605
- Variable Air Intake Control Valves** - UniFlor™ 8921
- Turbo Diesel Actuator Bearings** - UniFlor™ 8921
- Throttle Position Sensors** - UniFlor™ 8950 & UniFlor™ 8921SU
- Ball Bearings in Smart Remote Actuators** - UniFlor™ 8512R
- Actuator Motors** - UniFlor™ 8512R

Cooling System

Radiator fan motor bearings must withstand high heat, dust, dirt, and debris. A complex sodium-soap, light viscosity ester is effective. It is also an option for bearings in alternators, water pumps, and air conditioner compressors.

Assembly Aid - NyoGel® 783H

Bearings - Rheotemp™ 500

Connector

Insertion force reduction has also become a major OEM challenge. Mating multi-pin connectors, sometimes in difficult to reach locations, often requires significant force – creating the potential for incomplete mating, as well as repetitive-motion injuries for assembly workers. Synthetic lubricants have been proven to reduce high insertion force with no effect on electrical continuity, all while protecting against fretting corrosion.

Electrical Contacts - NyoGel® 760G

Fuel Pump Connectors - Rheotemp™ 768G

High Temperature Electrical Connectors - UniFlor™ 8917

Starter

Starter motors must withstand the elements, temperatures from -40°C to 200°C, and 50,000 duty cycles or more. Issues of high load and torque, especially during cold crank, also have to be considered. Effectively lubricating the motors' gears, bearings, and splines requires a careful blend of synthetic oils, additives and gellants. Popular starter motor lubricants feature PAO and ester blends with additives for extreme pressure, corrosion protection, and friction reduction.

Electrical Leads - NyoGel® 760G

Gears - Rheolube® 380

Motors - Rheolube® 373

Planetary Gears - Rheolube® 377AL

Transmission

Bearings in Dual Clutch Transmission - Rheolube® 380

PRNDL Gear Shifting - Rheosil™ 500F

Shift Linkage - Rheolube® 363F

Electronic Throttle Control

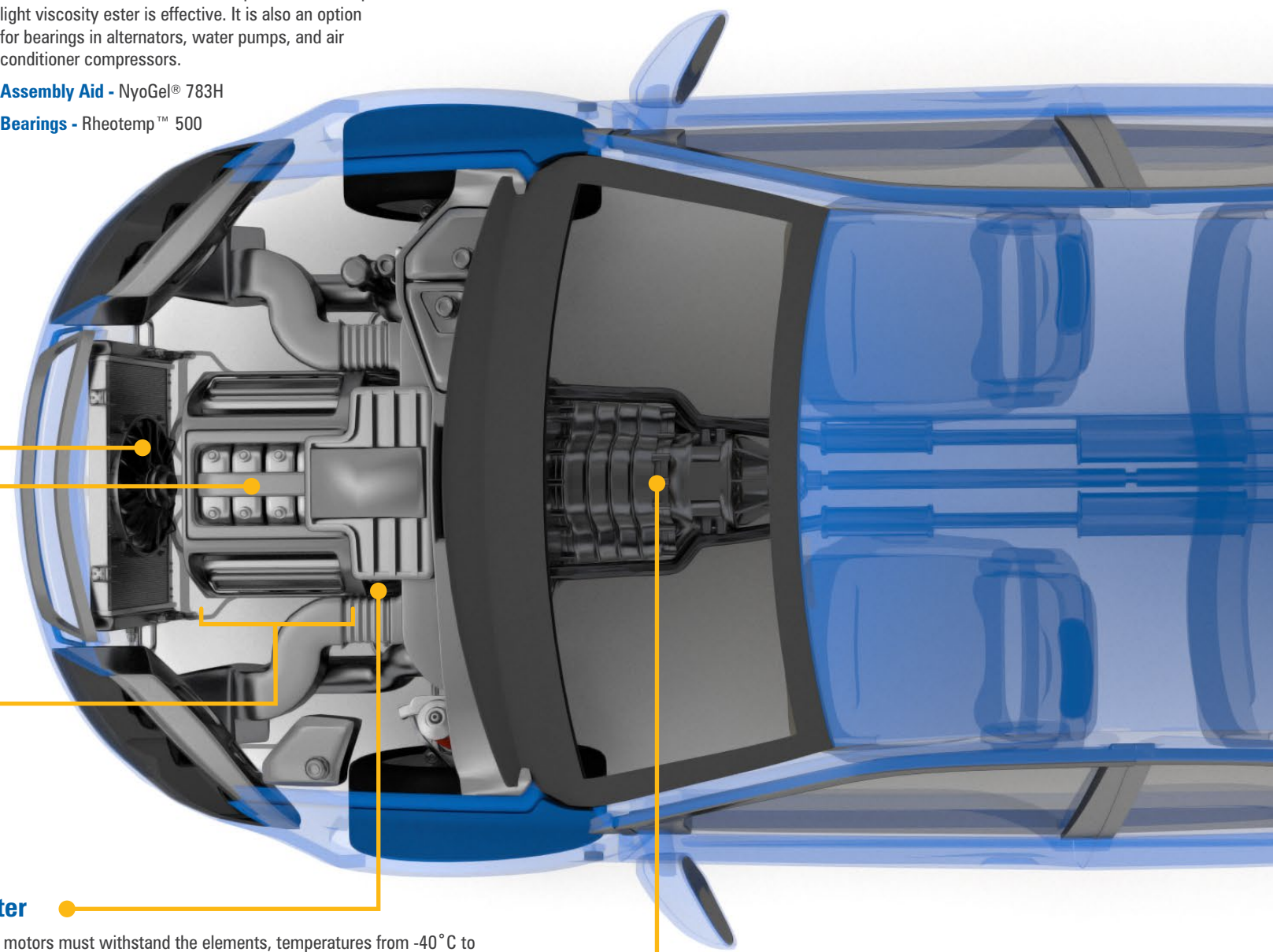
The stepper motor that powers an electronic throttle control must withstand high temperatures and corrosive fuel-system vapors. Fluorinated lubricants, which are inherently inert, tolerate this kind of environment. In addition to staying fluid at very low temperatures, their superior thermo-oxidative stability prevents high-temperature varnishing, even at continuous temperatures of 250°C.

EGR Valves

The Exhaust Gas Recirculation (EGR) valve is exposed to extremely high temperatures and acidic exhaust fumes. PFPEs thickened with PTFE perform well in this demanding environment. They offer the broadest temperature capabilities of any synthetic lubricant and are unaffected by corrosive gases and liquids. PFPE/PTFE lubricants regularly ensure 100,000 mile EGR service.

Superchargers

Synthetic lubricants have been a mainstay in lube-for-life superchargers and turbochargers. For gears and powdered metal parts, a light viscosity ester oil with a robust antioxidant package is recommended. For high-speed bearing applications, a light viscosity ester grease with EP additives has been proven extremely effective.





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